

**FINAL ENVIRONMENTAL  
ASSESSMENT**

FOR

**PROPOSED KAUHALE LANI  
RESIDENTIAL SUBDIVISION**

*Prepared for:*

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# EXECUTIVE SUMMARY

<i><b>Project Name:</b></i>	Proposed Kauhale Lani Residential Subdivision
<i><b>Type of Document:</b></i>	Final Environmental Assessment
<i><b>Applicable Chapter 343 Review "Trigger":</b></i>	Use of State or County lands
<i><b>Approving Agency:</b></i>	Land Use Commission
<i><b>Agency Determination:</b></i>	FONSI
<i><b>Applicant:</b></i>	Pukalani Associates, LLC Contact: Ms. Sharon Wright (808.244.1600)
<i><b>Consultant:</b></i>	Chris Hart & Partners, Inc. Contact: Mr. Matthew Slepín (808.242.1955)
<i><b>Property:</b></i>	Pukalani, Maui TMK (2) 2-3-09:007 (49.99 acres) and 064 (38.629 acres)
<i><b>Land Use Controls:</b></i>	State Land Use: Agricultural (AG) Community Plan: Single Family (SF) County Zoning: Agricultural (AG)
<i><b>Project Summary:</b></i>	The applicant is proposing the development of a 170 lot-only residential subdivision, with attendant infrastructural improvements, on Parcel 7. Parcel 64 is proposed for open space and recreational uses, with recreational trails and a bicycle park. The private wastewater treatment facility proposed in the Draft Environmental Assessment has been removed from the project.
<i><b>Anticipated Impacts:</b></i>	There are no long-term impacts associated with the proposed project. Short-term impacts are associated with demolition-related activities, and include noise and air impacts from construction vehicles.



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## I. PROJECT OVERVIEW

### A. Property Location

The subject property is located in Pukalani, Maui. **See Figure 1, Regional Location Map.** The property is further identified by Tax Map Key (2) 2-3-09:007 (49.99 acres) and TMK (2)2-3-09:064 (38.629 acres). **See Figure 2, Tax Map.** Old Haleakala Highway bisects the two parcels. Parcel 7 is the more *makai* parcel, located adjacent to and west of Old Haleakala Highway, while Parcel 64, the more *mauka* parcel, is a linear parcel that extends up from the “Y” created by the intersection of Haleakala Highway and Old Haleakala Highway.

The subject property is situated adjacent to the urbanized residential district of Pukalani.

### B. Existing Land Use

Parcel 7 is a former pineapple field. Elevations range from about 1,088 feet at the northwest end of the property up to about 1,186 feet at the southeast end, providing an approximately seven percent (7) grade. The elevation and gentle grade provide for expansive views of Central Maui from nearly all points on the property. The New Hamakua Ditch bounds the parcel to the north and west, with the Lower Pukalani Terrace subdivision to the south.

Parcel 64 is similarly fallow, containing abandoned pineapple fields in some areas and heavy vegetation in other areas. A grove of Eucalyptus trees on the property borders Haleakala Highway. Elevations range from approximately 1,110 feet to 1,440 feet and a shallow gulch cuts through the length of the linear parcel. **See Figure 3a-c, Site Photographs.**



## C. Land Ownership and Project Applicant

The subject property is owned in fee simple by Pukalani Associates, LLC, who purchased the property from Maui Land & Pineapple, Inc. in June 2005. The land owner is the applicant for the project.

## D. Proposed Action

The applicant proposes to develop approximately 170 residential lots in Pukalani on a site already designated for residential use in the *Makawao-Pukalani-Kula Community Plan (1996)*. See **Figure 4, Conceptual Master Plan**. Parcel 7, the more *makai* parcel located west of Old Haleakala Highway, will contain the lots in a landscaped, residential neighborhood. Parcel 64, the more *mauka* parcel located between Old Haleakala Highway and Haleakala Highway, will be utilized for open space and public recreational purposes.

The Kauhale Lani Residential Subdivision is intended to provide a cohesive addition to the Pukalani community in character with the Upcountry region. To fully integrate with the existing community, Kauhale Lani roadways allow a connection to the existing Lower Pukalani Terrace subdivision, providing continuity between the two neighborhoods and alternative routes within Pukalani. Connectivity between the two neighborhoods is in compliance with provisions of the *Makawao-Pukalani-Kula Community Plan* and recommended by the County of Maui Planning Department.

Parcel 64, the linear parcel between Old Haleakala Highway and Haleakala Highway, will include a recreational trail running the length of the property from Old Haleakala Highway to Makani Road, as well as a BMX (non-motorized) bicycle park.



The Draft Environmental Assessment filed with the Land Use Commission on May 13, 2005, described a wastewater treatment facility serving Kauhale Lani as located on Parcel 64. That wastewater facility has been eliminated from the project. Wastewater services will be provided by the nearby Pukalani Wastewater Treatment Plant (STP). Wastewater flows will be accommodated by the installation of sewer lines from Kauhale Lani and a sewer pump station located in Parcel 7.

In furtherance of the *Makawao-Pukalani-Kula Community Plan*, the A'eola Road right-of-way, which fronts the property but is mostly undeveloped, will be developed to County, collector road standards, with curbs, gutters, sidewalks, and landscape planting. The improved A'eola Road will provide the two (2) access points into the residential subdivision, as well as providing an alternate means of access for Pukalani as a whole.

Lot sizes within Kauhale Lani will range from approximately 7,500 square feet to approximately 12,000 square feet.

The proposed action is estimated to cost approximately \$37 million. Development of the Kauhale Lani Residential Subdivision is projected to be completed within 10 years of obtaining all necessary government approvals.

Lots within Kauhale Lani will be market priced. Based on recent marketing data for the Pukalani area it is estimated that lot prices will range from approximately \$375,000 to approximately \$425,000.

## **E. Alternatives**

Four (4) alternatives to the Kauhale Lani community were considered. These alternatives are discussed below.





**1. No Action**

Under the No Action Alternative, Kauhale Lani would not be built and the property would remain fallow pineapple fields. Under this alternative, use of the property would remain inconsistent with the *Makawao-Pukalani-Kula Community Plan*, which designates the entire area of the Kauhale Lani site as “Single-Family,” and would not implement other State and County governmental policies as discussed in Chapter III.

**2. Agricultural Subdivision**

The Agricultural Subdivision Alternative would see the property developed in accordance with Agricultural District standards. The property is currently within the County Agricultural Zoning District. Permitted uses in the Agricultural District include: agriculture, animal and livestock raising, and agricultural land conservation. One farm dwelling per lot is also allowed within the Agricultural District. In addition, one (1) farm labor dwelling per every five (5) acres is permitted provided the owner can provide proof of at least \$35,000 of gross sales of agricultural products per year for each farm labor dwelling on the lot.

The County of Maui Zoning Ordinance lays out provisions for an agricultural subdivision. The formula that applies to the Kauhale Lani community is:

*For properties at least 31 but less than 61 acres, the maximum number of permitted lots is:*

*Seven lots that have a two-acre minimum lot size; plus one additional lot for each 10 acres above 31 acres.*

Applying this formula to the Kauhale Lani parcels, Parcel 7 could be subdivided into eight (8) lots and Parcel 64 could be subdivided into seven (7) lots.



To implement this alternative, the *Makawao-Pukalani-Kula Community Plan* must be amended to designate the area for “Agricultural” uses. This alternative would be inconsistent with the determination of the *Makawao-Pukalani-Kula Community Plan*, which enunciates that community’s desire that the entire area of the Kauhale Lani site be used for “Single-Family” residential purposes.

**3. Alternate Action**

The Alternate Action Alternative is the project as proposed in the May 13, 2005 Draft EA. This alternative included the private, wastewater treatment facility located on Parcel 7, multiple access points on Old Haleakala Highway and A’elo Road, and limited improvements to the intersection of those two roadways.

This alternative is deemed less desirable than the Preferred Alternative due to the presence of the wastewater treatment facility, the infeasibility of the Highway access points, and the lack of traffic improvements effected by improving the Old Haleakala Highway/A’elo Road intersection.

**4. Preferred Action**

The Preferred Action is the project as described in this Final EA, without wastewater treatment facility, but including restricted access points, and regional traffic improvements resulting from the improvement of the Old Haleakala Highway/A’elo Road intersection.



## **F. Entitlements and Approvals**

### **1. Environmental Assessment**

The proposed project is required to undergo review pursuant to Chapter 343, Hawaii Revised Statutes (HRS), for the following reasons:

#### **a. Proposal of a wastewater facility**

The project as described in the May 13, 2005 Draft EA (the "Alternate Action") included a wastewater treatment facility to be located on Parcel 7. This project element required the preparation of an Environmental document. The wastewater treatment facility has been deleted under the currently proposed project (the "Preferred Action") in favor of connecting to the existing Pukalani STP.

#### **b. Use of State or County land**

The proposed project included improvements to the County-owned A'eloia Road. Additionally, implementation will require work within the State-controlled right-of-way of the Old Haleakala Highway, to create subdivision access. Finally, work will be performed within the Iolani Street right-of-way, a County roadway, to install sewer lines from Kauhale Lani to the Pukalani STP.

### **2. State Land Use District Boundary Amendment**

Development of the Kauhale Lani project will require an amendment to the State land Use District designation from "Agricultural" to "Urban".

### **3. County Change in Zoning**

Project implementation will require a change in the Maui County Zoning designation from "Agricultural" to "R-2, Residential". It is noted that both parcels are designated for "Single Family" uses in



the *Makawao-Pukalani-Kula Community Plan* and that is no amendment to County general Plan proposed.

**4. Grading Permit**

The proposed project will require a permit for mass grading from the County of Maui.

**5. Subdivision Approval**

The proposed project will require subdivision approval from the County of Maui.



## II. AFFECTED ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATION MEASURES

### A. Physical Environment

#### 1. Surrounding Land Uses

*Existing Conditions.* Parcel 7 is located adjacent to the residential Pukalani Terrace Subdivision, at the northern extent of Pukalani. Portions of Haleakala Highway and the Old Haleakala Highway are adjacent to Parcel 7 on its east side. While the New Hamakua Ditch forms the boundary of the property on the north and west sides, it is not within the property and is owned by Alexander and Baldwin, Inc. (A&B). Beyond the ditch are sugarcane fields, which are operated by Hawaiian Commercial & Sugar Company (HC&S), a subsidiary of A&B. The County-owned right-of-way for A'elo Road is at the southern boundary of the property, although this road has not been paved at present. On the other side of the A'elo Road right-of-way are the single-family homes of the Lower Pukalani Terrace subdivision.

Haleakala Highway is adjacent to Parcel 64 on both its north and east sides, with sugar cane fields beyond. The west side of the parcel is bound partially by Old Haleakala Highway, a large vacant parcel and single-family homes. Makani Road forms the southern boundary of Parcel 64, with primarily single-family homes beyond.

*Potential Impacts and Mitigation Measures.* The proposed Kauhale Lani subdivision is consistent with adjacent and nearby residential land uses. Development of the single-family residential subdivision would be a reasonable extension of Pukalani and is recognized as such in the *Makawao-Pukalani-Kula Community Plan*.



## 2. Topography and Soils

*Existing Conditions.* Geologically, the island of Maui is characterized as East and West Maui, with East Maui dominated by Haleakala Volcano. Kauhale Lani is located on the windward slopes of Haleakala, a dormant volcano which last erupted around 1700. Haleakala was formed through three distinct periods of volcanism. The Honomanu Series formed the primitive shield of Haleakala during the Tertiary Period. In the Pleistocene Epoch these lavas were completely overlain by the Kula Series, which is composed of hawaiiite with lesser amounts of alkalic olivine basalt and ankaramite. The Kula lavas are primarily composed of thick a'a flows with some pāhoehoe present near the vents. Following a lengthy period of erosion, a third series of eruptions and flows, named the Hana Volcanic Series covered much of the Kula lavas. However, because the north rift zone of the Kula series did not reopen during the third period of volcanism, the Hana series is absent from the entire northwestern section of East Maui, where Kauhale Lani is located (Macdonald, Abbott, and Peterson 1983).

Parcel 7 is gently sloping with an average gradient of approximately 7 percent and elevations ranging from approximately 1,088 feet up to 1,186 feet. The slope of the open space site varies more, with elevations between 1,110 feet and 1,440 feet.

The site of the Kauhale Lani subdivision includes numerous soil types, as described in the *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. See **Figure 5, Soils Map**. Under the Soil Conservation Service's Land Capability Grouping, soil types are rated according to eight levels, ranging from the highest classification level, I, to the lowest level, VIII. Lower case letters following the classification level indicate specific subclasses.



A brief description of these soils, along with their Land Capability Grouping rating follows:

Hali'imaile Silty Clay (HhB), 3-7 percent slopes. On these soils, permeability is moderately rapid, runoff is slow, and the erosion hazard is slight. This soil has subangular blocky and angular blocky structure. The soil is strongly acid in the surface layer and strongly acid to medium acid in the subsoil. This soil is used for sugarcane, pineapple, and homesites.

Approximately 22.8 acres (25%) of Kauhale Lani contain HhB soils. HhB soils are rated IIe, irrigated or nonirrigated. Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices. Subclass IIe soils are subject to moderate erosion if they are cultivated and not protected.

Hali'imaile Silty Clay (HhC), 7-15 percent slopes. On this soil, runoff is medium and the erosion hazard is moderate. The soils include cobbly areas and small, moderately steep areas. This soil is used for sugarcane, pineapple, and homesites.

Approximately 34.8 acres (39%) of Kauhale Lani contain HhC soils. HhC soils are rated IIIe, irrigated or nonirrigated. Subclass IIIe soils have severe limitations that reduce the choice of plants, require special conservation practices, or both. They are subject to severe erosion if they are cultivated and not protected.

Rough Broken Land (rRR). Rough Broken Land consists of very steep land broken by numerous intermittent drainage channels. In most places, this land type is not stony, runoff is rapid, and geologic erosion is active. This soil type is used primarily for watershed and wildlife habitat. In places it is used also for pasture and woodland.



Approximately 3.2 acres (3.5%) of Kauhale Lani contain rRR soils. These soils capability classification is VIIe, nonirrigated. Subclass VIIe soils are very severely limited by risk of erosion.

Hali'imaile Gravelly Silty Clay (HkC2), 7-15 percent slopes, eroded. This soil has a profile like that of Hali'imaile Silty Clay, 3 to 7 percent slopes, except that in most places about 50 percent of the original surface layer has been lost through erosion. Runoff is medium to rapid, and the erosion hazard is severe. This soil is used for pineapple and pasture.

Approximately 15.6 acres (17.5%) of Kauhale Lani contain HkC2 soils. HkC2 soils are classified as IVe, irrigated or nonirrigated. Subclass IVe soils are subject to severe erosion if they are cultivated and not protected.

Hali'imaile Silty Clay Loam (HgB), 3-7 percent slopes. This soil has a profile like that of Hali'imaile Silty Clay, 3 to 7 percent, except for the texture of the surface layer. Runoff is medium, and the erosion hazard is moderate. This soil is used for pineapple, pasture, and homesites.

Approximately 0.8 acres (1%) of Kauhale Lani contain HgB soils. HgB soils are classified as IIe, whether irrigated or nonirrigated. Subclass IIe soils are subject to moderate erosion if they are cultivated and not protected.

Hali'imaile Silty Clay Loam (HgC), 7-15 percent slopes. This soil has a profile like that of Hali'imaile Silty Clay, 3 to 7 percent, except for the texture of the surface layer. Runoff is medium, and the erosion hazard is moderate. This soil is used for pineapple, pasture, and homesites.

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Approximately 9.6 acres (11%) of Kauhale Lani contain HgC soils. The capability classification of HgC soils is IIIe, irrigated or nonirrigated. Subclass IIIe soils are subject to severe erosion if they are cultivated and not protected.

Keāhua Silty Clay Loam (KnC), 7-15 percent slopes. The Keāhua Series consists of well-drained soils developed in material weathered from basic igneous rock. On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. This soil is used for sugarcane and pasture. Small acreages are used for pineapple and truck crops.

KnC soil covers approximately 2.8 acres (3%) of Kauhale Lani. This soil is classified as IIIe if irrigated, IVe if nonirrigated. Subclass III e soils are subject to severe erosion if they are cultivated and not protected.

***Potential Impacts and Mitigation Measures.*** No significant impacts on the geology and topography are anticipated as a result of developing the community. The roadways and homesites have been planned to minimize the need for extensive grading and generally conform to the natural contours of the land. However, some grading will be necessary for roads and house pads.

A National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water Activities will be required from the State of Hawaii Department of Health (DOH). During site preparation, storm runoff from the community site will be controlled in compliance with the County's "Soil Erosion and Sediment Control Standards." Typical mitigation measures include appropriately stockpiling materials on-site to prevent runoff and building over or establishing landscaping as early as possible on disturbed soils to minimize length of exposure.



Parcel 7 of the Kauhale Lani site is dominated by Hali'imaile Silty Clay, 3-7 percent slopes (HhB) and 7-15 percent slopes (HhC). In its natural state, this land is not irrigated. The non-irrigated capability classification of the Parcel 7 has a subclass rating of IIIe, which indicates severe limitations and erosion potential when cultivated and not protected. Without irrigation, these lands are naturally unsuitable for agriculture. Therefore, the change in land use from agricultural to residential will not have a significant impact on the inventory of valuable agricultural lands.

Parcel 64 is not cultivated due to its configuration, topography and soil types. Upon completion of the Kauhale Lani community, adequate landscaping will be implemented to minimize erosion.

Impacts to the soils include the potential for soil erosion and the generation of dust during construction. Clearing and grubbing activities will temporarily disturb the soil retention values of the existing vegetation and expose soils to erosion forces. Some wind erosion of soils could occur without a proper watering and re-vegetation program. Heavy rainfall could also cause erosion of soils within disturbed areas of land.

To the extent possible, improvements will conform to the contours of the land, further limiting the need for extensive grading of the site. In addition, graded areas will be limited to specific areas for short periods of time.

Measures taken to control erosion during the site development period will include:

- Minimizing the time of construction;
- Retaining existing ground cover as long as possible;
- Constructing drainage control features early;



- Using temporary area sprinklers in non-active construction areas when ground cover is removed;
- Providing a water truck on-site during the construction period to provide for immediate sprinkling as needed;
- Using temporary berms and cut-off ditches, where needed, for control of erosion;
- Watering graded areas when construction activity for each day has ceased;
- Grassing or planting all cut and fill slopes immediately after grading work has been completed; and
- Installing silt screens where appropriate.

All construction activities will comply with all applicable Federal, State, and County regulations and rules for erosion control. Before issuance of a grading permit by the County of Maui, the final erosion control plan and best management practices required for the NPDES permit will be completed. All construction activities will also comply with the provisions of Chapter 11-60.1, HAR, Section 11-60.1-33, Fugitive Dust.

After construction, the establishment of permanent landscaping will provide long-term erosion control.

### **3. Natural Hazards**

*Existing Conditions.* Natural hazards impacting the Hawaiian Islands include hurricanes, tsunamis, volcanic eruptions, earthquakes, and flooding.

Devastating hurricanes have impacted Hawaii twice since 1980: Hurricane Iwa in 1982 and Hurricane Iniki in 1992. While it is difficult to predict these natural occurrences, it is reasonable to assume that future events could be likely given the recent record.



Tsunamis are large, rapidly moving ocean waves triggered by a major disturbance of the ocean floor, which is usually caused by an earthquake but sometimes can be produced by a submarine landslide or a volcanic eruption. About 50 tsunamis have been reported in the Hawaiian Islands since the early 1800s. Seven caused major damage, and two of these were locally generated. The Kauhale Lani community is outside of the Civil Defense Tsunami Evacuation Zone.

Volcanic hazards in the Pukalani area are considered minimal due to the dormant status of Haleakala Volcano, which last erupted in 1700 (MacDonald, Abbott, and Peterson 1983).

In Hawaii, most earthquakes are linked to volcanic activity, unlike other areas where a shift in tectonic plates is the cause of an earthquake. Each year, thousands of earthquakes occur in Hawaii, the vast majority of them so small they are detectable only with highly sensitive instruments. However, moderate and disastrous earthquakes have rocked the islands.

The 1938 Maui Earthquake, with a magnitude of 6.7-6.9 on the Richter Scale and an epicenter six (6) miles north of Maui, created landslides and forced the closure of the road to Hana. Damaged water pipes and ground fractures also were reported in Lahaina.

Flood hazards are primarily identified by the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA), National Flood Insurance Program. According to the FIRM, Kauhale Lani community is located in Zone C, areas of minimal flooding. **See Figure 6, Flood Map.**

***Potential Impacts and Mitigation Measures.*** Kauhale Lani will not exacerbate any hazardous conditions. All structures will be constructed for protection from earthquakes and the destructive



winds and torrential rainfall of tropical hurricanes in accordance with the Building Code adopted by the County of Maui.

All work will comply with applicable flood zone standards, such as set forth in Chapter 19.62, "Flood Hazard Areas", Maui County Code. The proposed project is not anticipated the neighboring properties with regard to flood hazard potential.

#### 4. Flora and Fauna

*Existing Conditions.* The project site is an extensively disturbed area of long-term agricultural cultivation. Onsite flora are typical of such areas and include weeds and scrub grasses, as well as bananas trees. Onsite fauna include rats, mice, mongoose, francolins, and mynah.

No endangered or threatened species, or candidates for listing as endangered or threatened species, or any critical habitat for any such species were observed on the Kauhale Lani site during a botanical field survey conducted for the project. **See Appendix A, Botanical Resources Assessment Study.** Former pineapple fields (fallow since 2002) cover the majority of the two (2) parcels that make up the Kauhale Lani community site. Weedy species commonly associated with agricultural lands are usually found as a narrow band along the edges of fields that border roads, ditches, and other uncultivated areas. Further descriptions of the various botanical resources are summarized below:

Parcel 7. Parcel 7 was fallow at the time of the field survey. A few rock piles are scattered through the parcel, which support a cover of green panicgrass (*Panicum maximum var. trichoglume*) and sourgrass (*Digitaria insularis*). Flora found along the perimeter of this parcel consists mainly of weedy species including green panicgrass, Natal redtop grass (*Melinis repens*), Spanish needle

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(*Bidens pilosa*), fireweed (*Senecio madagascariensis*), spiny amaranth (*Amaranthus spinosus*), pualele (*Emilia fosbergii*), *Crassocephalum crepidioides*, Cuba jute (*Sida rhombifolia*), goosegrass (*Eleusine indica*), sourgrass, swollen fingergrass (*Chloris barbata*), *Brachiaria subquadripara*, and crabgrass (*Digitaria sp.*). A row of oleander shrubs (*Nerium oleander*) is planted alongside the highway. Additionally, two native species, popolo (*Solanum americanum*) and 'uhaloa (*Waltheria indica*), were found.

Along the ditch, the weedy vegetation found includes: Spanish needle, sowthistle (*Sonchus oleraceus*), crabgrass, spiny amaranth, koa haole shrubs (*Leucaena leucocephala*), California grass (*Brachiaria mutica*), castor bean (*Ricinus communis*), hairy abutilon (*Abutilon grandifolium*), 'ilima (*Sida fallax*), and koali 'awa (*Ipomoea indica*).

The band of weedy vegetation adjacent to the residential area is similar to that found along the highway, but also includes cheeseweed (*Malva parviflora*), apple of Peru (*Nicandra physalodes*), Jimson weed (*Datura stramonium*), California grass, lion's ear (*Leonotis nepetifolia*), prickly lettuce (*Lactuca serriola*), and a yellow-flowered morning glory (*Ipomoea ochracea*). A few landscape plantings from the adjacent yards spill over onto the parcel; these include New Zealand spinach (*Tetragonia tetragonioides*), aloe (*Aloe vera*), and guava (*Psidium guajava*).

Parcel 64. Flora on Parcel 64 consists mainly of overgrown pineapple fields. The pineapple fields on the eastern half of the parcel appear to have been more recently abandoned since the rows of pineapple plants are not as overgrown and the weedy assemblage of species, mostly Natal redtop grass and sourgrass, occur along the edge of the fields and on the dirt roads.

On the western half of the parcel, the old fields are open and grassy with a few remnant clumps of pineapple plants. Additional



botanical resources found on the western half of this parcel include sourgrass, Natal redtop, Guinea grass (*Panicum maximum*), green panicgrass, sourbush shrubs (*Pluchea carolinensis*), spiny amaranth, golden crown-beard (*Verbesina encelioides*), castor bean, lion's ear, pualele, Spanish needle, Cuba jute, Fireweed, and a few koa haole shrubs with koali 'awa vines growing on them.

On this parcel there is a planting of various Eucalyptus species, 40 to 70 feet tall, bordering Haleakala Highway and also a few trees of silk oak (*Grevillea robusta*) and Chinaberry (*Melia azedarach*). Koa haole and Christmas berry (*Schinus terebinthifolius*) shrubs form scattered, small thickets under the tree canopy. Ground cover consists of scattered clumps of Guinea grass, along with a few weedy plants of maile hohono (*Ageratum conyzoides*), Spanish needle, burbush (*Triumfetta sp.*), and Jamaica vervain (*Stachytarpheta jamaicensis*). However, areas with bare soil and leaf and branch litter are common. Axis deer tracks and scats are occasionally encountered. A few native species are quite common in this forested area. Shrubs of 'a'ali'i (*Dodonaea viscosa*) and yäkia (*Wikstroemia oahuensis*), three to eight feet tall, are common to occasional. 'Uhaloa and 'ilima are found along the edge of the tree planting. Vines of *Sicyos hispidus*, a member of the cucumber or squash family, are found on the edge of the tree planting facing the highway. This species of *Sicyos* is easily identified by its fuzzy fruits.

The small gully found between the Eucalyptus planting and the overgrown pineapple fields supports abundant patches of Napier or elephant grass (*Pennisetum purpureum*) as well as dense clumps of Guinea grass. *Neonotonia wightii*, a member of the pea family, is locally abundant in some places, forming tangled mats over the grasses and scattered koa haole shrubs.



There were seven (7) native species observed on the site. Of these native species, five (5) are indigenous (native to the Hawaiian Islands and elsewhere) and two (2) are endemic (they are native only to the Hawaiian Islands). The native species found include: popolo (*Solanum americanum*), 'uhaloa (*Waltheria indica*), koali 'awa (*Ipomoea indica*), 'ilima (*Sida fallax*), and 'a'ali'i (*Dodonaea viscosa*). The endemic species include: 'äkia (*Wikstroemia oahuensis*) and Sicyos.

No endangered or threatened species of birds or mammals or candidates for listing as endangered or threatened species, or any critical habitat for any such species were observed on the Kauhale Lani site during an avifaunal and feral mammal field survey conducted on May 1 and 2, 2004. **See Appendix B, Faunal Survey.** In addition, no native land birds, native waterbirds, seabirds, or migratory birds were observed. The absence of these birds was expected, given the location of the site, the available habitats, and the time of year. Results of the survey are summarized below.

Fourteen (14) species of alien birds were tallied on the survey, which are listed below:

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>
Cattle Egret	<i>Bulbucus ibis</i>
Gray Francolin	<i>Francolinus pondicerianus</i>
Black Francolin	<i>Francolinus francolinus</i>
Red Junglefowl	<i>Gallus fallus</i>
Spotted Dove	<i>Streptopelia chinensis</i>
Zebra Dove	<i>Geopelia striata</i>
Japanese White-eye	<i>Zosterops japonicus</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Common Mynah	<i>Acridotheres tristis</i>
Red-crested Cardinal	<i>Paroaria coronata</i>





Northern Cardinal	<i>Cardinalis cardinalis</i>
House Finch	<i>Capodacus mexicanus</i>
Nutmeg Mannikin	<i>Lonchura punctulata</i>
Chestnut Mannikin	<i>Lonchura atricapilla</i>

Two (2) cats (*Felis catus*) were the only type of mammal seen during the avifaunal and feral mammal field survey. Given the proximity of nearby homes it is possible that these cats are pets. It is likely that rats (*Rattus spp.*), Small Indian Mongoose (*Herpestes auro-punctatus*), and mice (*Mus musculus*) occur in this area. Axis deer tracks and scats were also observed during the botanical survey. No endangered Hawaiian Hoary Bats (*Lasiurus cinereus semotus*) were detected on the night survey using the ultrasound detector. This result was expected since there are very few bats on Maui.

**Potential Impacts and Mitigation Measures.** There are no significant impacts to flora or fauna from the proposed project. Kauhale Lani is not expected to have a significant negative impact on botanical resources since no endangered or threatened species, or candidates for listing as endangered or threatened species of concern, or any critical habitat for any such species are known to occur on the site. If feasible, the Eucalyptus trees on Parcel 64 will be retained and kept in open space as the topography is rough and broken, and the erosion hazard is of some concern.

Kauhale Lani will include new landscaping appropriate to the residential setting. Design standards for the community will include a unified streetscape planting theme and program to ensure the appropriate use of landscaping and compliance with the Maui County Planting Plan. New landscaping will include non-invasive species and, where feasible, native and indigenous plants.



Drought-tolerant, hardy plants and grasses will also be use where feasible to minimize the need for irrigation.

Kauhale Lani is not expected to impact endangered or threatened species, or candidates for listing as endangered or threatened native species of wildlife, since none were observed on the site. All of the birds and mammals found on the site are alien species.

## 5. Air Quality

*Existing Conditions.* The air quality in the Pukalani area is generally good. Existing impacts to air quality include periodic impacts from distant volcanic emissions (VOG) and possibly occasional localized impacts from traffic congestion or agricultural activities.

Regional and local climate together with the amount and type of human activity generally dictate the air quality of a given location. The climate of the Pukalani area is very much affected by its mauka location on the slopes of Haleakala. Winds are often breezy trade winds from the north or northeast. Temperatures in the Pukalani area are relatively cool due to the upcountry elevation with an average daily temperature range of about 60 to 75 degrees Fahrenheit. Average annual rainfall in the area amounts to about 43 inches.

Both Federal and State standards have been established to maintain ambient air quality. Seven parameters are regulated: particulate matter, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone, and lead. State of Hawaii air quality standards are either equally or more stringent than the comparable national standards.



*Potential Impacts and Mitigation Measures.* An air quality impact assessment was prepared for the project to examine the potential short- and long-term air quality impacts related to the Kauhale Lani community, as well as to suggest mitigative measures to reduce any potential air quality impacts where possible and appropriate. **See Appendix C, Air Quality Study.**

Demolition-related activities will result in short-term impacts to air and noise quality. Best Management Practices (BMPs) will help to mitigate such impacts. Adequate dust control measures, in compliance with Section 11-60-1-33, “Fugitive Dust”, of the Hawaii Administrative Rules will be implemented during all phases of construction. Demolition-activities will be limited to normal daylight hours in order to limit noise impacts and adhere to the Department of Health’s noise regulations for construction equipment.

Project implementation is not anticipated to result in substantive impacts to air or noise quality in the long-term.

Short-Term Impacts. Short-term impacts from fugitive dust will likely occur during the Kauhale Lani construction phase. To a lesser extent, exhaust emissions from stationary and mobile construction equipment, from disruption of traffic, and from worker’s vehicles may also affect air quality during the construction period.

Long-Term Impacts. After construction, motor vehicles coming to and from Kauhale Lani will result in a long-term increase in emissions in the area. To assess the impact of emissions from vehicles, an air quality modeling study was undertaken to estimate current ambient concentrations of carbon monoxide at several intersections in the Kauhale Lani vicinity and to predict future levels both with and without the community.



Model results indicated that present one- (1) hour and eight- (8) hour carbon monoxide concentrations are well within both Federal and State ambient air quality standards. In the year 2010, without Kauhale Lani, carbon monoxide concentrations are predicted to remain unchanged or decrease somewhat at two of the three locations studied despite the expected increase in ambient traffic volumes. This is because older vehicles that emit more air pollution will be replaced with newer vehicles during the intervening years. With Kauhale Lani in the year 2010, maximum carbon monoxide concentrations are estimated to increase by about seven percent (7%) or less in the vicinity compared to the without Kauhale Lani alternative. Nonetheless concentrations are predicted to remain within Federal and State standards. Implementing mitigation measures for traffic-related air quality impacts is thus unnecessary and unwarranted.

Electrical Demand and Solid Waste Disposal. The air quality study concludes that significant long-term impacts on air quality are unlikely due to indirect emissions associated with the community's electrical power and solid waste disposal requirements. Nevertheless, Kauhale Lani will include energy conservation design features (such as solar water heating), conservation and recycling programs to further reduce any associated impacts and conserve the island's resources.

*Mitigative Measures.* Mitigation measures will be implemented to minimize potential air quality impacts, as listed below.

Short-Term Construction Activities. All construction activities will comply with the provisions of HAR, Chapter 11-60.1, "Air Pollution Control," Section 11-60.1-33, Fugitive Dust. In compliance with these provisions a dust control plan will be implemented.

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Fugitive dust emissions will be controlled to a large extent by watering of active work areas, using wind screens, keeping adjacent paved roads clean, and by covering of open-bodied trucks. Other dust control measures that may be implemented include limiting the area disturbed at any given time and/or mulching or stabilizing inactive areas that have been worked. Paving and landscaping early in the construction schedule will also reduce dust emissions.

Exhaust emissions from construction equipment can be mitigated by moving equipment and workers to and from the site during off-peak traffic hours.

Long-Term Operations. Because traffic-related emissions are expected to remain within Federal and State standards, the air quality study concludes that implementing mitigation measures for traffic-related air quality impacts is unnecessary and unwarranted.

While significant long-term impacts on air quality due to indirect emissions associated with Kauhale Lani electrical power and solid waste disposal requirements are unlikely, Kauhale Lani will include energy conservation design features (such as solar water heating) and conservation and recycling programs to further reduce any associated impacts and conserve the island's resources.

## 6. Noise Quality

*Existing Conditions.* The dominant noise sources in the vicinity of the Kauhale community site are from traffic on Haleakala Highway (Pukalani Bypass). Other noise sources include vehicular traffic on other roads in the area, occasional aircraft flyovers, wind, birds, and crickets. Existing agricultural operations nearby can also contribute to noise in the area depending on field operations, such

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as harvesting and plowing. Noise measurements taken on property near Haleakala Highway indicate noise levels ranging from 50 decibels (dBA) during low traffic times at night to 65 dBA during the daytime high traffic times.

***Potential Impacts.*** An environmental noise assessment report was prepared for the Kauhale Lani community to examine potential noise impacts and suggest possible mitigation measures. **See Appendix D, Environmental Noise Assessment Report.** Potential impacts on the ambient quality of the site and surrounding area due to the creation of the Kauhale Lani community are primarily limited to short-term construction activity and, in the long-term, human activity within the community and increases in ambient traffic.

Construction Noise. Creation of the Kauhale Lani community will involve excavation, grading, and construction of new buildings and infrastructure. Earthmoving equipment, such as bulldozers and diesel trucks, will likely be the dominant noise sources during construction. Typical road construction equipment, such as asphalt or concrete paving machines will also be required. Nearby residences may be impacted by construction noise depending on proximity to the site. The actual noise levels produced during construction will be a function of the methods employed during each stage of the construction process. Construction activity will occur during daytime hours. Noise from construction activity will be short-term and will comply with DOH noise regulations.

Traffic Noise. Traffic-generated noise impacts on the surrounding community and Kauhale Lani are not expected. While vehicular traffic volumes in the area will increase, the increase in noise due to traffic from Kauhale Lani is expected to be less than one dBA. This change in noise level is not perceptible to most people.



Mechanical Noise. Some of the new residences may incorporate stationary mechanical equipment typical for residential housing. Expected mechanical equipment may include air conditioning units.

Human Activity. After the establishment of the Kauhale Lani community, the ambient quality of the site will be changed from the previous agricultural uses to typical residential sound patterns. These include, people talking, children playing, cars entering and exiting the community, and other sounds from human habitation.

*Mitigative Measures.* All Kauhale Lani activities will comply with HAR, Chapter 11-46, Community Noise Control.

Construction Noise. Proper mitigative measures will be employed to minimize construction-related noise impacts and comply with all Federal and State noise control regulations. Increased noise activity due to construction will be limited to daytime hours and persist only during the construction period. Noise from construction activities will be short-term and will comply with DOH noise regulations (HAR, Chapter 11-46, Community Noise Control). When construction noise exceeds, or is expected to exceed the DOH's allowable limits, a permit must be obtained from the DOH.

Specific permit restrictions for construction activities are:

- No permit shall allow any construction activities that emit noise in excess of the maximum permissible sound levels before 7:00 a.m. and after 6:00 p.m. of the same day, Monday through Friday.
- No permit shall allow any construction activities that emit noise in excess of the maximum permissible sound levels before 9:00 a.m. and after 6:00 p.m. on Saturday.



- No permit shall allow any construction activities that would emit noise in excess of the maximum permissible sound levels on Sundays and holidays.

The use of pile drivers, hoe rams, jack hammers 25 pounds or larger, high-pressure sprayers, and chain saws may be restricted to 9:00 a.m. to 5:30 p.m., Monday through Friday.

Traffic Noise. The increase in traffic-related noise due to Kauhale (less than one dBA) is not considered significant and will not be perceptible to most people. Therefore mitigation measures related to increases in traffic noise are not proposed. However, to buffer Kauhale Lani homes from Haleakala Highway (Pukalani Bypass) noise, the design of Kauhale Lani provides for a wide landscaped greenway along Old Haleakala Highway.

While a wide landscaped buffer will be provided at the edge of Kauhale Lani along Old Haleakala Highway, noise mitigation measures will be considered for homes near the Old Haleakala Highway/Haleakala Highway (Pukalani Bypass) intersection. The following noise mitigation options may be considered:

- Install air conditioning in the new homes.
- Construct an earth berm or sound barrier wall to block the line-of-sight between the impacted residences and the highway.

Mechanical Noise. The design of the homes will give consideration to controlling noise emanating from any stationary mechanical equipment, such air conditioning, so as to comply with the DOH *Community Noise Control* rules. Noisy equipment will be located away from neighbors and residential units, as much as is practical.





Human Activity. Noise levels generated by residential uses within Kauhale Lani will conform to DOH rules and regulations, which state maximum permissible noise limits at individual property lines. Kauhale Lani design standards and building requirements will control noise emanating from stationary mechanical equipment, such as air conditioning units. Noisy equipment will be located away from homes, as much as is practical.

## 7. **Historical and Archaeological Resources**

*Existing Conditions.* Archaeological Services Hawaii conducted an archaeological inventory survey of the Kauhale Lani community site in November 2004. **See Appendix E, Archaeological Inventory Survey.** Research was conducted in three stages: 1) research of archaeological and historical literature for background information and to enhance site predictability and interpretation; 2) a surface survey; and 3) subsurface testing.

A total of 15 trenches were excavated in the Parcel 7 and 10 trenches in Parcel 64. No cultural remains were encountered during the surface survey or in any of the trenches.

*Potential Impacts and Mitigation Measures.* Based on the negative results of subsurface testing in both parcels, together with evidence for previous disturbances in the area from pineapple cultivation, no impacts to archaeological resources are anticipated. No further archaeological inventory work is recommended.

The archaeological inventory survey was reviewed and approved by SHPD. That agency did not recommend archaeological monitoring. However, due to the presence of significant sites in the vicinity but not within the Kauhale Lani site, archaeological monitoring is recommended by the project archaeologist during initial construction activities to ensure that any subsurface cultural



remains or deposits underlying the till zone are properly documented. Prior to commencing any construction activities, an archaeological monitoring plan will be prepared for approval by the State Historic Preservation Division (SHPD).

All construction plans will include the following language as normally recommended by the State Historic Preservation Division: Should historic remains such as artifacts, burials, concentrations of shell or charcoal be encountered during the construction activities, work shall cease immediately in the immediate vicinity of the find and the find shall be protected from further damage. The contractor shall immediately contact the State Historic Preservation Division at 692-8015 which will assess the significance of the find and recommend an appropriate mitigation measure, if necessary.

## 8. Cultural Impact Assessment

*Existing Conditions.* A cultural assessment was prepared for the Kauhale Lani community in January 2005. **See Appendix F, Cultural Impact Assessment Report.** The assessment included historical research and interviews with people knowledgeable of the area.

The cultural assessment concludes that "...no cultural or archaeological properties were found for preservation on this [Kauhale Lani] project site." The assessment also concludes that "no evidence of past or present use for Hawaiian cultural practices, resources, or beliefs was found in the study area."

Kauhale Lani is located in the *ahupua'a* of Kula, in the *ili* of Makaeha (the historical name for Pukalani). The report identified several areas of cultural importance in the neighboring *ili*. However, many of the culturally significant sites such as *heiau* and *ahu* no longer exist in Makaeha, primarily due to prior ranching in

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the area. Before it was under pineapple cultivation, Parcel 7 was a ranch established by the Enos family. During that time, much of the land was cleared for cattle ranching. After the ranching era, an influx of population moved to the area, leaving little behind of what was already destroyed during ranching times. No known Hawaiian cultural or spiritual practices were performed on the either Parcel 7 or Parcel 64.

Historically, medicinal plants and other vegetation of cultural importance grew in the area. Today, the region is overrun with foreign plants, wild feral and fowl, which have left much of Kula's natural habitat destroyed.

***Potential Impacts and Mitigation Measures.*** Based on the lack of any identified cultural or traditional practices or resources on the property, no cultural impacts are anticipated to result from the proposed demolitions.

No impacts to cultural resources, practices, and beliefs are anticipated as a result of the proposed community. The cultural assessment concludes that the Kauhale Lani community "...will not have any significant adverse effects to native Hawaiian traditional and customary rights..." Thus the development will not affect any exercise of Hawaiian customary and traditional rights under Article XII, Section 7 of the Hawaii State Constitution. Although the area is culturally associated with neighboring *ili*, no significant cultural resources or ongoing cultural practices are associated with the Kauhale Lani site. Kauhale Lani will not substantially affect the economic welfare, social welfare, and cultural practices of the community or State.



## 9. Visual Resources

*Existing Conditions.* The subject property is located along the *makai* (northern) boundary of Pukalani, in Upcountry Maui. Notable visual resources in the area include the Pacific Ocean to the north, the peak of Haleakala to the south, and the West Maui Mountains to the west. Public views of these resources exist in various locations from Haleakala Highway and the Old Haleakala Highway. There are no publicly-identified and protected viewplanes in the project vicinity.

*Potential Impacts and Mitigation Measures.* The proposed project will not substantially impact public views along the area roadways. Due to the slope of the project site, private views from adjacent and nearby residential developments are anticipated to have some moderate, but not substantive, decrease.

## 10. Agricultural Resources

*Existing Conditions.* Both parcels that form the Kauhale Lani community are former pineapple fields. Maui Pineapple Company, Ltd. (MPC) ended pineapple cultivation on these parcels in 2002. The fields have been fallow since then, with the exception of a small section of Parcel 64, on which MPC cultivated organic pineapple until 2003. Both parcels were deemed inefficient to farm as part of MPC operations following construction of the Pukalani Bypass, which separated these parcels from other contiguous, more suitable MPC pineapple fields.

ALISH. In 1977, the State Department of Agriculture developed a classification system to identify Agricultural Lands of Importance to the State of Hawaii (ALISH). The classification system is based primarily, though not exclusively, upon the soil characteristics of the lands. The three (3) classes of ALISH lands are: "Prime",



“Unique”, and “Other”, with all remaining lands termed “Unclassified”. When utilized with modern farming methods, “Prime” agricultural lands have a soil quality, growing season, and moisture supply necessary to produce sustained crop yields economically. “Unique” agricultural lands possess a combination of soil quality, growing season, and moisture supply to produce sustained high yields of a specific crop. “Other” agricultural lands include those that have not been rated as “Prime” or “Unique”.

The lands underlying the project site as classified as “Prime”, “Other”, and “not classified” See **Figure 7, ALISH Map**. Approximately 30 acres of the Parcel 7 are classified as “Prime” Agricultural Land. The remaining 20 acres of the Parcel 7 and approximately 32.6 acres of Parcel 64 are classified as “Other” Agricultural Land, for a total of 52.6 acres. The remaining 6 acres of Parcel 64 are “not classified”.

LSB. The University of Hawaii, Land Study Bureau (LSB), developed the Overall Productivity Rating, which classifies soils according to five (5) levels, ranging from “A”, representing the class of highest productivity soils, to “E”, representing the lowest productivity.

The lands underlying the project site are classified as Fair (C), Poor (D), and Very Poor (E). Approximately 21.6 acres are classified as C21, 18 acres as E96, and 49 acres as D44. See **Figure 8, LSB Map**. These particular soil characteristics are given in Table 1 below.

<b>Table 1. LSB Soils Types</b>	<b>C21</b>	<b>E96</b>	<b>D44</b>
<b>Machine Tilability</b>	Well-suited	Not suited	Well-suited
<b>Stoniness</b>	Nonstony	Nonstony to rocky	Nonstony
<b>Depth (inches)</b>	Deep, over 30	Variable	Deep, over 30

Kauhale Lani Residential Subdivision



<b>Slope (%)</b>	0-10, predominantly 5	36-80, predominantly 45	0-10, predominantly 8
<b>Texture</b>	Fine	Moderately fine to medium	Fine
<b>Drainage</b>	Well-drained	Well-drained	Well-drained
<b>Mean Annual Rainfall (inches)</b>	30 to 40	40 to 60	20 to 35
<b>Elevation (feet)</b>	100 to 1200	100 to 5000	0 to 1200
<b>Color</b>	Dark reddish brown	Dark brown to dark reddish brown	Dark reddish brown
<b>Soil Series</b>	Kahana, Hali'imaile	Rough broken lands, C zones	Lahaina, Keahua
<b>Major Existing Uses</b>	Pineapple, sugar cane	Grazing, forest	Pineapple, sugar cane
<b>District</b>	Lahaina, Makawao	Lahaina, Wailuku, Hana, Makawao	Lahaina, Makawao

*Potential Impacts and Mitigation Measures.* An Agricultural Impact Assessment was performed for the project. **See Appendix G, Agricultural Impact Assessment.** There will be no significant impacts to agricultural resources from development of the proposed project.

Creation of Kauhale Lani will require that the approximately 89 acres of land previously used for pineapple cultivation be permanently withdrawn from agricultural use. This amount of land could only support approximately 4 agricultural jobs if the lands were in active production. The proposed action involves the loss of too little agricultural land to significantly affect (1) the availability of land to farmers in Hawai'i, (2) agricultural land rents, (3) the growth of diversified crops, or (4) potential agricultural employment. This conclusion is based on the finding that, as a result of the major contraction of plantation agriculture, ample land



is available statewide for cultivation of diversified crops, with the available supply far exceeding likely or potential demand. Statewide, a vast amount of land has been released from plantation agriculture: about 251,800 acres between 1968 and 2005, resulting in an average release of over 6,800 acres per year over a 37-year period. The Agricultural Impact Assessment report does note that land for diversified crops in the Kula-region is more limited, however no mitigation is recommended.

In conformance with the *Makawao-Pukalani-Kula Community Plan*, Kauhale Lani will provide for the carefully considered expansion of Pukalani within a defined area, while preserving the surrounding agricultural land and open space that is so valuable to the character of the region. The New Hamakua Ditch provides a natural boundary to the edge of Pukalani. By limiting residential uses to this appropriate area, Kauhale Lani allows for needed housing while respecting and acknowledging the value of agricultural land and open spaces.

Regarding potential nuisance complaints from Kauhale Lani residents about ongoing neighboring sugar cultivation operations, the applicant will notify all prospective buyers and lessees that the Hawaii Right to Farm Act (Chapter 165, HRS) limits the circumstances under which pre-existing farm activities may be deemed a nuisance.

## **11. Hazardous Substances**

*Existing Conditions.* The project site was formerly cultivated for pineapple. As part of its agricultural operations, MPC used fertilizers, pesticides, fungicides, herbicides, and plant growth regulators in compliance with all product labeling and applicable government regulations.



Fertilizers. MPC used the following fertilizers—which provide nutrients essential for plant growth—as part of its pineapple operations: UAN-32 (Urea-Ammonium nitrate), urea, potassium sulfate, potassium chloride, Treble Super Phosphate, rock phosphate, lime, magnesium sulfate, iron sulfate, and zinc sulfate.

Pesticides. MPC used the following pesticides—to control nematodes, ants, or, other insects—as part of its pineapple operations: Telone II Soil Fumigant (1, 3 dichloropropene), Nemacur 3 (Fenamiphos), Vydate (Oxamyl), Thiodan (Endosulfan), Amdro Pro Fire Ant Bait (Hydramethylnon), and Diazinon 50W (Diazinon).

Fungicides, Herbicides, and Plant Growth Regulators. MPC uses the following fungicides, herbicides, and plant growth regulators—to regulate plant growth, induce flowering, control weeds, or control disease—as part of its pineapple operations: Ethrel 4 or Ethephon 2 (Ethephon), Ethylene gas (Ethylene), Karmex DF or Direx L (Diuron), Evik (Ametryne), Hyvar X (Bromacil), Aliette (Fosetyl-Al), Phosguard (Phosphorous acid), Tilt (Propiconazole), Herbimax, Assure II Herbicide (Qualifop-ethyl), Velpar (Hexazinone), and Round-up (Glyphosate).

*Potential Impacts and Mitigative Measures.* A Phase I, Environmental Site Assessment was performed for the project. **See Appendix H, Phase I, Environmental Site Assessment.** Based on the former agricultural use of the subject property, there is a potential that residual concentrations of agricultural chemicals remain in the soil. These materials are likely limited to the near surface soils. Site redevelopment and grading activities will serve as a mitigating factor as these soils will be mixed with fill material.





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## B. Socio-Economic Environment

The Hallstrom Group, Inc. prepared a market study, economic impact analysis, and public cost/benefit assessment for the Kauhale Lani community. Key findings of the analysis along with other social-economic information are provided below. **Appendix I, Market Study** contains the complete study, updated since the June 8, 2005 Draft EA.

### 1. Population

*Existing Conditions.* Maui County experienced strong population growth during the past two (2) decades. The Year 2000 resident population expanded from 1980's 70,991 to 128,241. This growth represents an 80.6 percent increase (Maui County Data Book, 2005). Population growth is expected to continue with the year 2020 resident population projected at 229,700. Visitor counts have increased even more dramatically, with the average daily visitor count increasing from 15,363 in 1980 to 43,854 in 2000. This growth represents a 285 percent increase in visitor per day. Thus the County's de facto population, which includes residents and visitors, grew from 85,803 in 1980 to 168,544 in 2000, representing an 88 percent increase.

Population projections commissioned by the Maui Planning Department and calculated by SMS Research indicate that the population of the Upcountry region will be 24,644 people in 2010 (SMS 2002). The region is trending towards typical suburban status, with lowering household sizes (in persons), increasing income levels, and an escalating average age. In comparison to Maui as a whole, the Pukalani population is fairly representative of the island's age groups and ethnic composition; it has significantly fewer vacant housing units and a higher percentage of owner-occupied units.



Currently the Kauhale Lani site does not contain any residents.

*Potential Impacts and Mitigation Measures.* The population of Kauhale Lani is estimated to be approximately 564 persons, comprised of 490 full-time residents, with an additional 74 second home owners and guests. This represents a relatively insignificant increase of approximately two percent compared to the projected 2010 Upcountry population.

Upon completion and occupancy of homes, the residents will contribute to the long-term support of the local economy through the payment of income, property, and sales taxes, as well as via the purchase of goods and services from local businesses.

As the Kauhale Lani community is not expected to have a significant impact on population levels, no mitigative measures relating to population are planned. Analysis of projected tax revenues to the State of Hawaii and Maui County indicates the actual effect of governmental services relating to the population of Kauhale Lani would not create the need to expand additional County and State funding on Maui.

## **2. Housing**

*Existing Conditions.* Historically, vast potentially habitable areas of Maui and significant water resources have been devoted to agriculture. Until the past decade, the long term viability of the sugar industry was unquestioned and the business remained a major employer and tax payer. As a result, cane land was reclassified for urban uses only after lengthy public agency reviews and negotiation with labor unions.

The long-term impact of this policy, in the face of unmet resident housing needs and off-island capital driven visitor-oriented land

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use demands, has been high appreciation in real estate prices on Maui since the early 1970s, primarily due to the high demand versus low supply of available residential land.

Median homes prices increased substantially over the last few years. In April 2007, the median sales price of a single-family home on Maui was \$690,000, a 29 percent increase from the April 2004 median sales price of \$500,000. In the Pukalani area, the median home price increased 28 percent from \$459,000 in April 2004 to \$765,000 in April 2007. These recent increases in median home prices are even more significant considering that in 2000 the island-wide median price of a home was \$275,000 and the Pukalani median price was \$261,000 (Realtors Association of Maui, Inc.).

That trend has been somewhat diminished recently. The June 2008 median homes price in Maui was \$616,000, as compared with \$667,000 in June 2007. Pukalani, however, continues an upward trend, with June 2008 median homes prices at \$710,000, as compared with \$680,000 in June 2007. There is virtually no unsold, overhanging inventory in the area.

The Upcountry residential sector has been dominated by single family homes, ranging from smaller plantation-style subdivisions (as at Hali'imaile) to bulk acreage ranch and agricultural lots (in Olinda and Kula). Prices cover a similar spectrum, from entry level homes to upscale gentleman farms. The low density "country" ambience and housing alternatives have been major attractions of the region.

As a result of the limited housing opportunities in Wailuku/Kahului, and the relative proximity of Upcountry to Maui economic centers, the Upcountry region is evolving into a bedroom community offering a variety of unit types typical of suburban development. The movement has gained momentum in recent



years as the ease of commute has been enhanced through the expansion of Haleakala Highway and completion of the Pukalani Bypass.

Forecasts of housing demand project a need for approximately 5,294 homes (mid-point estimate), or an increase of 60%, in the Upcountry area during the next 23 years. Approximately 91%, or more than 4,860 of the homes, would need to be single-family homes. Fewer than 55% of this number are currently proposed for the area.

***Potential Impacts and Mitigative Measures.*** The Kauhale Lani community will contain a total of 170 new residential lots. The Kauhale Lani community needs only to capture a portion of the area demand to achieve rapid absorption and be considered a meaningful source of residential inventory. The subject inventory will be oriented towards the estimated 29% of the purchasers seeking homes at moderate and above market-pricing levels (more than \$615,000).

The project will also provide residential workforce housing in compliance with Chapter 2.96 of the Maui County Code, "Residential Workforce Housing Policy". Preliminary negotiations have been undertaken with the County to forge an agreement. Compliance will be achieved in one or a combination of approved methods, with the provision of affordable units likely to be made off-site.

### **3. Economy**

***Existing Conditions.*** Tourism and agriculture are the predominate components of Maui County's economy. Maui County hosted 2,207,826 visitors in the year 2004 and hotels experienced a 78.69 percent occupancy rate. In Central Maui, economic activity centers

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on sales and service industries, including air and water transportation, as well as the various branches of state and county government.

Large-scale mono-crop agriculture, including sugar, pineapple, and cattle ranching, is the County's dominant agricultural land use and generates the majority of agricultural revenues. As of 2002, approximately 256,690 acres of land in the County were in agricultural use of some kind. This total is a decrease from the 355,786 acres in farmland in 1992. Central Maui mirrors the county as a whole in this trend.

As of June 2008, unemployment in Maui County was 4.6 percent. This is an increase from the June of 2007, when the County's unemployment rate was 2.8 percent. However, Maui's unemployment rate is substantially better than the nationwide average of 5.7 percent.

Notwithstanding a few minor stagnant periods focused in several submarkets during the early 1980s and from 1991 through late 1994, the Maui economy has generally "boomed" over the last two decades, growing at a long-term rate which places it among the more vibrant regions in the country. The island has been successfully transformed from a simple agrarian-based structure to a diversified service model founded on a widely recognized and well-established tourism industry.

The County has had one of the lowest unemployment rates in the nation, ranging from 2.2 to 7.6 percent over the last 20 years, and one of the highest incidences of multi-job workers. Only at the depths of the recession in 1992 to 1994 (when the unemployment rate rose to a record 7.6 percent) has the figure been above six percent during the last 15 years.



The investment value represented by the existing resort, industrial, commercial and residential components of the real estate market is many billions of dollars, and serves as a strong foundation for the island's economy far exceeding the other neighbor islands. Base historical indicators support long-term conclusions favoring a vital and growing Maui economy.

***Potential Impacts and Mitigation Measures.*** The creation of the Kauhale Lani community will generate significant efforts and expenditures that will favorably impact the Maui economy on both a direct and indirect basis, increasing the level of capital investment, capital growth, and capital flow in the region.

The community will generate approximately \$139.6 million in direct, new capital investment and spending into the Maui economy during the planning and construction period. This investment will create an estimated \$19.5 million in profits for local contractors and suppliers. On a stabilized basis after completion, some 21 maintenance/renovation workers and other on- and off-site employees will earn \$711,000 in wages each year.

A total of 554 worker years of direct on-site employment will be created during the construction and operation study timeframe, along with an additional 222 worker years in associated and indirect off-site employment. The total wages paid during the initial decade of development and use will be \$39.2 million.

Discretionary expenditures by residents and guests are expected to reach \$15.9 million annually at build-out. The total household income of full-time residents is forecast to reach a stabilized level of \$20.9 million per year.

The expenditure of employee wages, business profits, and resident/guest discretionary funds into the Maui economy will

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enhance hundreds of additional off-site, secondary/indirect jobs on the island, and generate several million dollars in additional wages.

The total direct, local economic impact to Maui (dollars flowing into the island economy) is estimated to be \$140.1 million during the initial decade of construction and operation, and will stabilize at \$18.7 million annually thereafter. As these dollars move through the island market, they will have a multiplier effect increasing the economic impact of Kauhale Lani to Maui during its first 10 years to some \$280.3 million.

The County of Maui will receive \$4.75 million in real property tax receipts from Kauhale Lani property owners over the initial decade of construction and operation, and an estimated stabilized level of \$691,145 per year thereafter. The County government operating costs associated with serving Kauhale Lani, using a per capita basis, will total \$4.8 million for the initial decade, and be some \$1.06 million per year on a stabilized basis. The County will enjoy a net revenue benefit (taxes less costs), totaling \$345,145, although, under a per capita assessment, the County will show a negative, totaling \$45,193 during the first 10 years of construction and use, and \$366,021 each year after build-out.

The State of Hawaii will also show a positive net revenue benefit from Kauhale Lani. The total gross tax revenues during the initial decade will reach \$18.4 million from income and gross excise taxes, and will stabilize at \$2.6 million annually following build-out. State costs associated with Kauhale Lani on an actual basis are estimated at \$507,000 per year and, on a per capita basis, will be \$12.2 million during the first decade and \$2.7 million per year subsequently. The State will experience a net profit of \$6.1 million in the first 10 years and a stabilized shortfall of \$127,593 annually after build-out. A positive benefit of \$2.1 million is estimated on an actual basis.

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#### 4. Community Character

*Existing Conditions.* Pukalani is the newest community in Upcountry Maui and is home to both businesses and residences. The Pukalani community is a highly desirable place to live, providing a rural-like lifestyle within close proximity to the economic centers of Maui. The location provides superior view panoramas in the midst of a cool climate while allowing residents to access employment centers and other areas of the island with relative ease.

The commercial component of Pukalani is not characterized by any one dominant architectural style. Since the area was not established as a commercial district until modern times, there are only a few potentially historic buildings in Pukalani. The architectural mix in Pukalani consists of western false-front, rustic style, modern style, and an unusual mix of commercial and residential style buildings (Country Town Design Guidelines April 1992).

*Potential Impacts and Mitigative Measures.* Kauhale Lani is the logical expansion of Pukalani, as the site is designated for residential uses (single-family) on the *Makawao-Pukalani-Kula Community Plan (1996)*, and is adjacent to the existing Lower Pukalani Terrace subdivision. Further, the New Hamakua Ditch that borders Kauhale Lani on the makai sides provides a definite edge to the expansion of Pukalani and a transition zone between the community and the agricultural lands beyond.

To more fully integrate with the existing community, Kauhale Lani roadways allow a connection to the existing Lower Pukalani Terrace subdivision, providing continuity between the two neighborhoods and alternative routes within Pukalani.

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Connectivity between the two neighborhoods is in compliance with provisions of the *Makawao-Pukalani-Kula Community Plan*, and is recommended by the Maui County Planning Department.

Kauhale Lani will enrich the entrance to Pukalani by providing a prominent community at the forefront of the town with architectural cohesiveness, as there is no one dominant architectural theme that exists in Pukalani. Although Kauhale Lani will be built at the entrance to Pukalani, the community will not adversely affect the sense of place that currently exists. The majority of Parcel 64 remaining in open space will enhance the entrance to Pukalani, as landscaping on this parcel will be improved and maintained on a regular basis. Further, Parcel 7 will include a wide landscaped buffer area along Old Haleakala Highway and design standards will include a unified streetscape planting theme and program to ensure the appropriate use of landscaping and compliance with the Maui County Planting Plan.

## C. Public Services

### 1. Recreational Facilities.

*Existing Conditions.* There are a number of park facilities in the Makawao-Pukalani-Kula Community Plan region, despite a lack of an extensive park system in terms of acreage. The Upcountry area has three (3) neighborhood parks, five (5) district parks, six (6) tennis courts, 21 sports fields, two (2) sports courts, five (5) community centers, and three (3) gyms. Recreation facilities near the Kauhale Lani community site include:

- Pukalani Park, Pukalani Street
- Kula Community Center, E. Lower Kula Road
- New Kula Ballfield, Kula Highway
- Harold Rice Park, Lower Kula Road



- Eddie Tam Memorial Park, Makawao Avenue
- Haili'imaile Park and Tennis, Makomako Street

*Potential Impacts and Mitigation Measures.* Parcel 7 will include a small, centralized, passive park. Parcel 64 between Old Haleakala Highway and Haleakala Highway will be the site of recreational trails in furtherance of the Upcountry Greenway Masterplan, as well as the proposed bicycle park. The applicant has approached the County of Maui for dedication of the facilities on parcel 64; however, ultimate dedication of the open space and trails on Parcel 64 are undecided at present.

In addition, the project may be subject to other parks dedication requirements, in whole or in part, depending upon the County's decision regarding the park facilities.

Development of the proposed Kauhale Lani community and its 170 lots is not anticipated to have any negative impact upon the demand for recreational facilities.

## **2. Medical Facilities**

*Existing Conditions.* Maui Memorial Medical Center, located approximately 10.7 miles from the project site in Wailuku, is the island's only acute care hospital. It is a 251 bed hospital. Various private medical offices and facilities are located in the Upcountry area.

*Potential Impacts and Mitigation Measures.* The proposed Kauhale Lani community is not anticipated to increase demand upon medical facilities substantively.



### **3. Police and Fire Protection Services**

*Existing Conditions.* The Kauhale Lani community falls within the Maui Police Department's (MPD) District 1 – Wailuku (Central). This police district is served by the Wailuku Station, with a substation located in Makawao. The Wailuku Station houses the MPD Headquarters for the entire County. Wailuku headquarters is located approximately 10.4 miles northwest of the community at 55 Mahalani Street.

A new police substation at Kulamalu was dedicated in May 2005. The police facility is a component of the Kulamalu Town Center, which encompasses Kamehameha Schools' 180-acre Maui campus in Pukalani and will soon house the University of Hawaii Institute for Astronomy's new Advanced Technology Research Center (Pacific Business News 2005).

The Kauhale Lani community will be serviced by Maui County's Engine 5, the Makawao Fire Station. The fire station is located on Makawao Avenue approximately 1.3 miles southeast of the community and is equipped with a 1,500 gallon pumper.

*Potential Impacts and Mitigation Measures.* The Kauhale Lani community is not expected to increase emergency service area limits or place undue additional demand upon police or fire protection services. The Market Study estimates the annual additional police/enforcement cost to Maui County on a stabilized basis after project build-out will be about \$146,400 and an additional yearly fire protection cost of \$132,000. This estimate does not include projected tax revenue increases due to the project.



#### 4. Schools

*Existing Conditions.* The Kauhale Lani Community is located within the State Department of Education’s (DOE) King Kekaulike District, and is serviced by Kula Elementary, Makawao Elementary, Pukalani Elementary, Kalama Intermediate and King Kekaulike High School. Private schools in the area include the Kamehameha Schools Maui Campus, Seabury Hall, and St. Joseph School.

The DOE Facilities Division last compiled school enrollment for the 2007 – 2008 school year. All schools in the area, with one exception, are currently under capacity and projected enrollment for the 2013 school year is not expected to exceed capacity. Current and projected enrollments and capacities for area schools are given in Table 2 below.

<b>Table 2. DOE School Capacity: King Kekaulike District</b>	<b>2007-2008 Enrollment</b>	<b>2007-2008 Capacity</b>	<b>2013 Projected Enrollment</b>
Kula Elementary	455	478	440
Makawao Elementary	493	616	480
Pukalani Elementary	479	584	443
Kalama Intermediate	894	1,292	951
King Kekaulike High	1,354	1,254	1,178

*Potential Impacts and Mitigation Measures.* In 2007, the Hawaii Legislature enacted Act 245 as Section 302A, HRS, “School Impact Fees”. Based upon this legislation, the Department of Education will be enacting impact fees for residential developments that occur within identified school impact districts. Based upon projected enrollments and capacities, the project area is not anticipated to be designated as a school impact district. Should the area be so designated prior to final subdivision approval, the applicant will



coordinate with the DOE to determine the appropriate measures to be taken as required by the Section 302A-1603(b), HRS.

The Kauhale Lani community is not expected to have an adverse effect on the public schools as enrollments are currently projected to remain below capacity in the year 2013.

## 5. Solid Waste

*Existing Conditions.* Weekly, residential, solid-waste collection in the area is provided by the County of Maui, Department of Public Works and Environmental Management. The Department's Residential Collection program collects and disposes of residential waste in 3 major districts: Wailuku (including Kahului and South Maui), Makawao (including Kula, Pukalani, Paia, and Haiku) and Lahaina (West Maui).

Currently, significant levels of solid waste are not being generated on the Kauhale Lani site; as the area is fallow fields.

The County provides weekly garbage pick-up for a fee. The Central Maui Landfill, which is located in the Wailuku-Kahului Community Plan region, receives residential solid waste from the area. Green waste is collected by Eko Compost, which is located at the Central Maui Landfill. Construction and demolition (C&D) waste is accepted at the privately operated C&D Landfill in Maalaea.

Plastic, glass, metal, cardboard, and newspaper can be recycled when left at various drop-boxes throughout the County. Green waste recycling is provided by several private organizations.

*Potential Impacts and Mitigation Measures.* The proposed project will not impact substantially County solid-waste services.



In the *Public Facilities Assessment Update County of Maui* (2007), R.M. Towill Corporation projected that the Central Maui Landfill will have adequate capacity to accommodate residential and commercial waste through the year 2025. This projection was arrived at by multiplying the Maui County's de facto population projections by an estimated number of pounds per person per day of waste generated, and assumes that solid waste generated by commercial and industrial growth will be captured by a corresponding trend in projected population growth.

The County of Maui's Solid Waste Division estimates that households on Maui generate approximately nine pounds of solid waste per day. Using this estimate, after build-out and sales of all Kauhale Lani homes, total waste from all households in the Kauhale Lani community would be approximately 1,485 pounds per day (nine pounds x 165 residences).

Waste generated by site preparation will primarily consist of vegetation, rocks, and debris from clearing, grubbing, and grading. Very little demolition material is expected, as the site is essentially vacant.

During the short term, construction activities will require the disposal of the existing onsite waste, as well as cleared vegetation and construction-related solid waste. A solid waste management plan will be coordinated with the County's Solid Waste Division for the disposal of onsite and construction-related waste material. Pukalani Associates, LLC, will work with the contractor to minimize the amount of solid waste generated during the construction of the project.

Provisions for recycling, such as collection systems and space for bins for recyclables, will be incorporated into the Kauhale Lani



community. After the community is occupied by residents, to the extent practical, wastes such as aluminum, paper, newspaper, glass, and plastic containers will be recycled. Waste that cannot be recycled will be disposed of in the County's Central Maui Landfill in Puunene.

## D. Infrastructure

### 1. Roadways

*Existing Conditions.* A Traffic Impact Analysis Report (TIAR) was prepared for Kauhale Lani in May 2005, and then updated in February 2008, to: 1) determine and describe the traffic characteristics of Kauhale Lani; 2) quantify and document the traffic related impacts of Kauhale Lani; and 3) identify and evaluate traffic related improvements required to provide adequate access to and egress from Kauhale Lani and mitigate traffic impacts. **See Appendix J, Traffic Impact Analysis Report.**

Haleakala Highway (Pukalani Bypass). Haleakala Highway (Pukalani Bypass) forms the eastern boundary of Parcel 64 and serves as the primary arterial roadway in the Upcountry region. It is generally oriented in the *mauka-makai* direction and connects to other regional highway systems serving other parts of the island. Haleakala Highway is connected to Old Haleakala Highway, Hana Highway, and Kula Highway.

Between Hana Highway and Old Haleakala Highway, Haleakala Highway is a two-way, three-lane highway with a posted speed limit of 55 miles per hour (mph). East of the intersection with Old Haleakala Highway, Haleakala Highway is a divided two-way, four-lane highway with a 45 mph posted speed limit until its intersection with Makani Avenue. East of Makani Avenue, Haleakala Highway is a divided two-way, four-lane highway with

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a 45 mph posted speed limit until its intersection with Makawao Avenue. East of Makawao Avenue until Kula Highway, Haleakala Highway is a divided two-way, three-lane highway with a 45 mph posted speed limit.

Old Haleakala Highway. Old Haleakala Highway is a two-way, two-lane County-owned highway with a 35 mph posted speed limit. The intersection of Old Haleakala Highway and Haleakala Highway is unsignalized. The intersection of Old Haleakala Highway and Makawao Avenue is controlled by a traffic signal system with eastbound and northbound left-turn lanes.

Makawao Avenue. Makawao Avenue is a two-way, two-lane County-owned roadway with a 30 mph posted speed limit. The intersection of Makawao Avenue and Haleakala Highway is controlled by a traffic signal system with northbound, eastbound, westbound, and southbound left-turn lanes

Makani Road. Makani Road is a two-way, two-lane County-owned roadway with a 30 mph posted speed limit. The intersection of Makani Road and Haleakala Highway is unsignalized; however, the State of Hawaii Department of Transportation plans to signalize the intersection. A scheduled completion date is not known, but it assumed that the signal will be installed before construction of Kauhale Lani has been completed. The intersection has southbound and northbound left-turn lanes.

Hana Highway. South of Haleakala Highway, Hana Highway is a divided two-way, two-lane State-owned highway with a 55 mph posted speed limit. North of Haleakala Highway, Hana Highway is a two-way, four-lane State-owned highway with a 55 mph posted speed limit. The intersection of Hana Highway and Haleakala Highway is controlled by a traffic signal system with eastbound and southbound left-turn lanes.





Pukalani Street. Pukalani Street is a two-way, four-lane County-owned roadway with a 20 mph posted speed limit. The intersection of Pukalani Street and Old Haleakala Highway is controlled by a traffic signal system with southbound and westbound left-turn lanes.

Kula Highway. Kula Highway is a two-way, two-lane State-owned highway with a 45 mph posted speed limit. The intersection of Kula Highway and Haleakala Highway is controlled by a traffic signal system with westbound left-turn lanes.

Koea Place. Koea Place is a two-way, two-lane County-owned roadway. Koea Place is a connection that is not intended to be an access and egress point of Kauhale Lani but could provide a connection between the existing Lower Pukalani Terrace subdivision and the Kauhale Lani community without having to use Old Haleakala Highway.

A'elo Road. A'elo Road is a County-owned, unimproved right-of-way that runs along the southern boundary of the Kauhale Lani site. This right-of-way is not paved or in use and will not be used as an access point to Kauhale Lani.

The TIAR studied the following intersections:

1. Haleakala Highway at Kula Highway/Old Haleakala Highway
  2. Haleakala Highway at Makawao Avenue
  3. Haleakala Highway at Makani Road
  4. Haleakala Highway at Old Haleakala Highway
  5. Haleakala Highway at Hana Highway
  6. Old Haleakala Highway at Makawao Avenue
  7. Old Haleakala Highway at Pukalani Street
  8. Old Haleakala Highway at Makani Road
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9. Old Haleakala Highway the primary Kauhale Lani entrance (Drive B)
10. Old Haleakala Highway the secondary Kauhale Lani entrance (Drive A)

Highway Capacity Analysis. A highway capacity analysis was conducted for the above intersections using data from: 1) manual traffic counts during AM and PM peak traffic times; and 2) other related development projects within and adjacent to the study area. Regarding other related development projects, this list included both development projects and anticipated roadway improvement projects.

The analysis indicates that, in general, several key intersections are currently operating below acceptable levels, meaning that traffic at the intersections experience long delays. However, delays in the operations at these intersections are a result of regional traffic. Refer to Appendix H, p. 7-17.

*Potential Impacts and Mitigation Measures.* The TIAR was performed with the assumption that other, related projects will be developed within the horizon year of 2015. These projects include the Upcountry Town Center (Pukalani Triangle), various Kulamalu developments, and the DHHL subdivisions at Waiohuli. These projects represent additional trip generation as well as associated roadway improvements. **Refer to Appendix J, p. 19-24.**

The TIAR projects that the project will generate 62 inbound and 171 outbound trips during the morning peak hour, and 187 inbound and 111 outbound trips during the afternoon peak hour.

Level-of-service analyses were performed for the above-referenced intersections for the year 2015, both with and without project development. **Refer to Appendix J, 34-41, Tables 10-31.** In



general, project development is not anticipated to result in substantial impacts to roadway conditions. The one exception is the intersection of Pukalani and Iolani Streets. The eastbound approach is anticipated to operate below acceptable levels without further mitigation. Based upon the recommendations in the TIAR and consultation with the community and the County of Maui, the applicant proposes to create a four-way intersection in place of the existing two-way intersection.

The TIAR further notes that Kauhale Lani traffic will comprise a small percentage of the total traffic projected at the studied intersections. This indicates that the existing and projected traffic conditions are regional issues that should be addressed on a regional scale. Improvements identified in the *Maui Long-Range Land Transportation Plan* should be identified. If so, the project should be assessed its pro-rata share of these improvements.

The Report does not recommend the signalization of Old Haleakala Highway and A'eola Road. The project will provide a separate left-turn lane from westbound Old Haleakala Highway onto A'eola Road, as well as enhanced signage at the crosswalk across the Old Highway.

Internal roadways will incorporate traffic-calming measures.

## 2. Utilities

### *Existing Conditions.*

Electricity. Electrical power on Maui is supplied by Maui Electric Company, Inc. (MECO). A MECO primary electrical distribution overhead pole-line is routed along the Old Haleakala Highway on the side opposite the Kauhale Lani site. MECO will serve the



community with a new underground line extension originating from the existing overhead line.

Telephone. Hawaiian Telcom, Inc. also provides telephone service to the community via overhead lines. The telephone lines are on joint poles on the southwest or Wailuku side of the Old Haleakala Highway. The telephone cables presently end at the *makai* end of the Lower Pukalani Terrace subdivision. The Pukalani area is served by the Makawao Central Office and Hawaiian Telcom, Inc. presently has fiber optic lines extending to Pukalani Street.

Cable Television. The Oceanic Time Warner Cable television (CATV) system also provides service to the area of the Kauhale Lani community via overhead lines. The CATV cable shares the same poles as the telephone and electrical distribution system. CATV cable presently ends at the *makai* end of the Lower Pukalani Terrace subdivision. Oceanic Cable has indicated that CATV service will be extended to the community from the existing overhead pole-line.

*Potential Impacts and Mitigation Measures.* The proposed Kauhale Lani project will not place substantial demand upon utility services or significantly expand service areas.

### 3. Drainage

*Existing Conditions.* A Preliminary Drainage Report was prepared for Kauhale Lani. **See Appendix K, Preliminary Drainage Report.**

The majority of the Kauhale Lani site lies between elevations of 1,088 feet and 1,186 feet. The site is gradually sloped with an average slope of seven percent (7%) and is unimproved. There are two drainage ways that bound the community. The New Hamakua Ditch traverses along the northern and western



boundary. On the eastern boundary, a drainage swale adjacent to Old Haleakala Highway discharges into the irrigation ditch. The existing drainage pattern from the future community site is generally for runoff to sheet flow from the south to the north toward the irrigation ditch. It is estimated that the present 10-year, one-hour runoff from community site is 108 cubic feet per second (cfs).

***Potential Impacts and Mitigation Measures.*** The project site will be improved with a new storm drainage system. This system will convey runoff to a central detention basin located in the *makai* portion of the site.

The post-development runoff from the Kauhale Lani community is estimated to be 198 cfs; an increase of 90 cfs. This increase in onsite runoff will be diverted and detained in the on-site detention basin. No additional runoff will be released into the existing drainage ways or onto Old Haleakala Highway. The net result of the proposed drainage improvements will be no increase in runoff from the community.

Several methods of water quality treatment will be used for the project, including grass swales, the detention basin, and stormwater quality filtering devices. These methods will treat runoff for such stormwater pollutants as phosphorous, nitrogen, total suspended solids (TSS) and petroleum-oils and lubricants (POL). Kauhale Lani will not have an adverse effect on the adjoining or downstream properties.

All drainage improvements will be developed in accordance with applicable DOH and County of Maui drainage requirements and standards.



Storm runoff during site preparation will be controlled in compliance with the County Code Chapter 20.08 “Soil Erosion and Sediment Control Minimum BMPs”. Typical mitigation measures are appropriately stockpiling materials on-site to prevent runoff and building over or establishing landscaping as early as possible on disturbed soils to minimize length of exposure.

#### 4. Water

*Existing Conditions.* A Preliminary Engineering Report was prepared for Kauhale Lani. **See Appendix L, preliminary Engineering Report.**

Potable water service in the Pukalani area is currently provided from the County of Maui, Department of Water (DWS), Pukalani-Makawao Water System. The distribution system is fed from a 1.0 million gallon (mg) concrete reservoir located off Kula Highway near Makawao Avenue.

The transmission mains servicing the area range from six- (6) inch to 16-inch diameter pipes of various materials. The nearest connection points to the existing water system include a six- (6) inch main within Old Haleakala Highway that terminates on Ikea Place, approximately 200 feet away from Kauhale Lani. This line services the Lower Pukalani Subdivision. There is also a second eight-(8) inch water main under Old Haleakala Highway, which services properties east of the highway and terminates at Mauna Street, approximately 2,200 feet mauka of Kauhale Lani. Properties southwest of Kauhale Lani are serviced by an eight-inch water main that terminates at Iolani Street, just south of A’eloa Road.

*Potential Impacts and Mitigation Measures.* Based on the Water System Standards, the proposed maximum daily demand for the



project is 161,175 gallons. Fire-flow requirements are anticipated to be 1,000 gallons per minute.

A new well is being constructed by Maui Land & Pineapple Company, Inc. (ML&P) at about the 1,800-foot elevation along Piiholo Road above Makawao. The well will be constructed in accordance with the design requirements of the Maui County DWS and will be dedicated to the County. Pukalani Associates, LLC has obtained an agreement from ML&P for an allocation of water to serve the project. Under its proposal to the County, 45% of the daily yield, or 301,500 gallons per day (gpd) will be allocated to projects initiated by ML&P, including Kauhale Lani. Out of this yield, Kauhale Lani will receive the demand quantity at minimum.

The off-site water system improvements include the extension of the existing 12-inch water main in Old Haleakala Highway from Piimauna Street to A'eloia Road, approximately 2,300 feet. A pressure reducing valve may have to be installed in the system, due to the high pressures in the line. The 12-inch main will be extended in A'eloia Road from Old Haleakala Highway to Iolani Street, where it will tie into the existing 8-inch main. The Kauhale Lani water transmission system will consist of eight-inch water mains with valving, fire hydrants, and water meter connections appropriately provided and designed in accordance with the Water System Standards.

Fire hydrants will be installed throughout the subdivision at intervals of 300 and 350 feet in accordance with DWS standards. The distribution system will be designed to satisfy the fire demand of 1,000 gallons per minute (gpm) for urban residential districts.

To reduce and conserve the consumption of potable water, within Kauhale Lani:



- Single pass cooling will not be allowed pursuant to Maui County Code Section 14.21.20;
- Low-flow fixtures and devices will be used pursuant to Maui County Code Section 16.20A.680;
- Individual homeowners and businesses will be encouraged to maintain fixtures to prevent leaks;
- Climate-adapted native and other appropriate plants will be used in landscaping as practical; and
- Best management practices designed to minimize infiltration and runoff from daily operations will be implemented.

Development of the Kauhale Lani community is not anticipated to have an adverse effect on water sources, storage facilities, and distribution and transmission systems. Development of Kauhale Lani will provide additional water sources that will be made available to the County within the Pukalani-Makawao area.

## 5. Wastewater

*Existing Conditions* The Upcountry region is rural and agricultural in nature, although Makawao and Pukalani are becoming suburban communities. The majority of the region is not served by County wastewater facilities. Only the Haili'imaile subdivision is served by a County collection system while a portion of the Pukalani area is served by a private wastewater treatment system operated by Hawaii Water Service Company, Inc. (successor to Pukalani STP Co.). Cesspools or septic tanks serve the remainder of the area (Maui Infrastructure Assessment Update).

The County of Maui Department of Public Works and Environmental Management, Wastewater Reclamation Division, has indicated that it does not have plans to provide collection and treatment facilities to service the area within the next 25 years. The





County has also indicated that constructing and dedicating such facilities to the County is not an option.

The Department of Health (DOH) sets forth certain criteria that must be followed in the processing, disposal, and re-use of wastewater (Chapter 62, HAR, Subchapter 1). DOH desires to ensure that wastewater or wastewater sludge does not impact or “contaminate water resources, does not give rise to public nuisance, and does not become a hazard or potential hazard to public health safety and welfare”.

The Kauhale Lani community site lies within a Critical Wastewater Disposal Area as defined in HAR §11-62-05, and above the Underground Injection Control (UIC) Line (HAR Chapter 23). Designation of Critical Wastewater Disposal Areas is based on the protection of groundwater resources. Septic tank liquid wastes cannot be disposed of directly into the soil within these areas because of the possibility of ground water contamination.

*Potential Impacts and Mitigative Measure.* Pukalani Associates, LLC has contracted with Hawaii Water Service Company, Inc. to dispose of wastewater generated from Kauhale Lani utilizing Pukalani’s private watershed treatment system.

Based on the Department of Wastewater Management's "Wastewater System Standards," the Project will generate an average daily flow of approximately 59,560 gallons per day of wastewater, a maximum of 0.298 million gallons per day (mgd) and a peak of 0.360 mgd. Assuming a 16-hour period, peak flow translates to 0.84 cfs. Refer to Appendix L.

A wastewater collection system will be implemented allowing gravity flow from approximately 60% of the lots to the existing collection system at the end of lolani Street within the adjacent

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existing subdivision. A wastewater pump station is proposed for the remaining lots which are lower than the existing wastewater system. The required improvements will include a force main connecting to the existing collection system at the end of lolani Street. All wastewater will be discharge and treated at the Pukalani Wastewater Treatment Plant.

## **E. Cumulative and Secondary Impacts**

Cumulative impacts are defined as the impact on the environment, which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions.

The proposed project is represents the natural edge and conclusion of Pukalani's residential development. While further development in the Upcountry area is probable, Kauhale Lani is an in-fill of the recognized residential growth boundaries of Pukalani and has been seen as such by the *Makawao-Pukalani-Kula Community Plan*.

Secondary impacts are those that have the potential to occur later in time or farther in distance, but which are reasonably foreseeable. They can be viewed as actions of others that are taken because of the presence of the project. Secondary impacts from highway projects, for example, can occur because they can induce development by removing transportation impediments to growth.

There are no substantial, adverse, secondary impacts associated with the proposed project. The eventual build-out of 170 residential homes will create small impacts upon area infrastructure, as discussed above. However, mitigation measures such as the roadway improvements and connection to the Pukalani water treatment system will ensure that these are minimal and will not generate a need to expand public infrastructure.



## **F. Summary of Unavoidable Impacts on the Environment and Resources**

Construction-related activities will generate moderate, unavoidable, short-term impacts. Once the development is completed, the project is not anticipated to have substantial adverse impacts upon the environment or residents of the area. The following mitigation measures could reduce impacts to air and water quality, and reduce noise, and vector impacts.

- Provide vector control before construction activities in accordance with the rules and regulations of the Department of Health
- Provide Best-Management-Practices (BMPs) to contain dust and runoff from the project area. Such measures could include dust and silt screens, construction watering, covering disturbed and loose soils, and covering vehicular loads of materials leaving and entering the project site.
- Provide environmental noise control by limiting construction activities to daylight hours, requiring engine-driven machinery to have the appropriate mufflers, and obtaining a construction noise permit, if required, from the Department of Health
- Properly disposing of demolition wastes in a designated landfill and/or recycling construction materials

The project will require the irretrievable commitment of time, energy, and land.



### III. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES, AND CONTROLS

#### A. State Land Use

Chapter 205, Hawaii Revised Statutes, relating to the Land Use Commission (LUC), establishes four (4) major land use districts in which all lands in the state are placed. These districts are designated as “Urban”, “Rural”, “Agricultural”, and “Conservation”. The subject property is located within the Agricultural District. See **Figure 9, State Land Use Map**.

The applicant is seeking a State Land Use District Boundary Amendment to change the designation of the site to the Urban District. Single-family residential use is allowed within the Urban District.

Decision-making criteria to be used in the LUC’s review of petition for reclassification of district boundaries is found in Section 205-17, HRS, and Section 15-15-77, *Hawaii Administrative Rules* (HAR). In addition, standards for determining the Urban district are contained in Section 15-15-18, HAR. The following is an analysis of how the Kauhale Lani community conforms to these criteria and standards.

#### 1. **§205-17, HRS, Land use commission decision making criteria.**

*In its review of any petition for reclassification of district boundaries pursuant to this chapter, the commission shall specifically consider the following:*

- (1) *The extent to which the proposed reclassification conforms to the applicable goals, objectives, and policies of the Hawaii state plan and*



*relates to the applicable priority guidelines of the Hawaii state plan and the adopted functional plans;*

Kauhale Lani conforms to the goals, objectives, and policies of the *Hawaii State Plan* and functional plans, as discussed in sections below.

(2) *The extent to which the proposed reclassification conforms to the applicable district standards; and*

Conformance of Kauhale Lani to the Urban district standards is discussed in following sections.

(3) *The impact of the proposed reclassification on the following areas of state concern:*

(A) *Preservation or maintenance of important natural systems or habitats;*

The Kauhale Lani community will not impact natural systems; the parcels are former agricultural fields, which have been extensively cultivated.

There are no endangered or threatened flora, fauna, or avifauna species, or critical habitats for these species, on the Kauhale Lani community site.

(B) *Maintenance of valued cultural, historical, or natural resources;*

No archaeological resources have been identified on the Kauhale Lani site. Implementation of Kauhale Lani will comply with all laws and rules regarding the preservation of archaeological, cultural, and historic sites should any sites be found during construction.



Kauhale Lani is not expected to impact cultural resources as no cultural resources have been identified on the property. As discussed in Section II.A.8 above, there is no evidence of past or present use for Hawaiian cultural practices, resources, or beliefs.

*(C) Maintenance of other natural resources relevant to Hawaii's economy, including, but not limited to, agricultural resources;*

Cultivation of the project site was discontinued in 2002. Both parcels became inefficient to farm as part of Maui Pineapple Company, Ltd. operations after construction of the Pukalani Bypass separated these parcels from other contiguous, more suitable fields. These lands are also classified as ranging from Fair to Very Poor, in terms of the Land Study Bureau's agricultural assessment of soils.

*(D) Commitment of state funds and resources;*

Use of State or County lands or funds is not expected, but could include, on-site and off-site infrastructure improvements relating to roadway, traffic, water, utility and drainage facilities affecting State and/or County roadways or other lands, however the specific nature of all potential improvements is not known at this time.

*(E) Provision of employment opportunities and economic development;*

Economic impacts associated with Kauhale Lani include:

- \$139.6 million in direct, new capital investment and spending into the Maui economy during the planning and construction period;
- \$18.4 million in total gross tax revenues for the State of Hawaii and \$4.8 million in taxes for the County of Maui during the build out period;



- \$2.6 million annually in stabilized taxes for the State and approximately \$691,145 annually for the County after the build out period;
- 554 worker years (one worker/year is approximately equal to 2,000 hours) in construction related jobs during the build out period;
- \$39.2 million in total wages over the build out period;
- 21 full-time equivalent jobs related to on-site activities, on a stabilized basis, after build-out; and
- \$711,000 in annual wages after build out.

*(F) Provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups; and*

Kauhale Lani will provide 170 market-priced residential lots for purchase and will comply with the County of Maui's Residential Workforce Housing Policy, to ensure that affordable housing need are addressed.

*(4) The representations and commitments made by the petitioner in securing a boundary change.*

Conditions imposed on reclassification will be recorded as an encumbrance on the property.

**2. §15-15-77, HAR, Decision-making criteria for boundary amendments.**

*(a) The commission shall not approve an amendment of a land use district boundary unless the commission finds upon the clear preponderance of the evidence that the proposed boundary amendment is reasonable, not violative of section 205-2, HRS, and consistent with the policies and criteria established pursuant to sections 205-16, 205-17, and 205A-2, HRS.*



(b) *In its review of any petition for reclassification of district boundaries pursuant to this chapter, the commission shall specifically consider the following:*

(1) *The extent to which the proposed reclassification conforms to the applicable goals, objectives, and policies of the Hawaii state plan and relates to the applicable priority guidelines of the Hawaii state plan and the adopted functional plans;*

(2) *The extent to which the proposed reclassification conforms to the applicable district standards;*

(3) *The impact of the proposed reclassification on the following areas of state concern;*

(A) *Preservation or maintenance of important natural systems or habitats;*

(B) *Maintenance of valued cultural, historical, or natural resources;*

(C) *Maintenance or other natural resources relevant to Hawaii's economy including, but not limited to agricultural resources;*

(D) *Commitment of state funds and resources;*

(E) *Provision for employment opportunities and economic development; and*

(F) *Provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups;*

(4) *In establishing the boundaries of the districts in each county, the commission shall give consideration to the general plan of the county in which the land is located;*

Kauhale Lani is in conformance with and implements the *Makawao-Pukalani-Kula Community Plan*. The entire area of Kauhale Lani is designated as "Single Family" on the *Makawao-Pukalani-Kula Community Plan Land Use Map*.

(5) *The representations and commitments made by the petitioner in securing a boundary change, including a finding that the petitioner has the necessary economic ability to carry out the representations and commitments relating to the proposed use or development; and*





(6) *Lands in intensive agricultural use for two years prior to date of filing of a petition or lands with a high capacity for intensive agricultural use shall not be taken out of the agricultural district unless the commission finds either that the action:*

(A) *Will not substantially impair actual or potential agricultural production in the vicinity of the subject property or in the county or State;*  
*or*

Cultivation of the parcels was discontinued in 2002. Both parcels became inefficient to farm after construction of the Pukalani Bypass separated these parcels from other contiguous, more suitable pineapple fields. In addition the long, narrow configuration and topography of Parcel 64 now renders the parcel inefficient for cultivation. As a result actual agricultural production is not impaired.

(B) *Is reasonably necessary for urban growth.*

Use of the land for housing is appropriate in the context of the *Makawao-Pukalani-Kula Community Plan* and the current need for new housing inventory. Forecasts of housing demand project a need for approximately 5,294 homes (mid-point estimate), or an increase of 60 percent, in the Upcountry area during the next 23 years. Approximately 91%, or more than 4,860 of the homes, would need to be single-family homes. Fewer than 55% of this number are currently proposed for the area.

(c) *Amendments of a land use district boundary in conservation districts involving land areas fifteen acres or less shall be determined by the commission pursuant to this subsection and section 205-3.1, HRS.*

(d) *Amendments of land use district boundary in other than conservation districts involving land areas fifteen acres or less shall be determined by the appropriate county land use decision-making authority for the district.*



(e) *Amendments of a land use district boundary involving land areas greater than fifteen acres shall be determined by the commission, pursuant to this subsection and section 205-3.1, HRS.*

**3. §15-15-18 Standards for determining “U” urban district boundaries.**

*Except as otherwise provided in this chapter, in determining the boundaries for the “U” urban district, the following standards shall be used:*

(1) *It shall include lands characterized by “city-like” concentrations of people, structures, streets, urban level of services and other related land uses;*

The Kauhale Lani site is contiguous to the town of Pukalani, which is characterized by “city-like” concentrations of people, structures, streets, urban level of services and other related land uses.

(2) *It shall take into consideration the following specific factors:*

(A) *Proximity to centers of trading and employment except where the development would generate new centers of trading and employment;*

The Kauhale Lani site is contiguous to, and a natural extension of, Pukalani, a residential community in the State Land Use Urban District, which is a center of trading and employment.

(B) *Availability of basic services such as schools, parks, wastewater systems, solid waste disposal, drainage, water, transportation systems, public utilities, and police and fire protection; and*

Basic services are available, or can be made available, to the Kauhale Lani site. Old Haleakala Highway bisects the site and will provide access to both parcels. Electrical and telecommunication services are nearby. A water source has been identified and a



service connection to the wastewater treatment facility will be built. Public services such as police, fire, and emergency medical facilities, are nearby, as are educational and recreational facilities.

(C) *Sufficient reserve areas for foreseeable urban growth;*

The *Makawao-Pukalani-Kula Community Plan* designates the site for single-family residential uses. The site is the logical expansion of Pukalani.

(3) *It shall include lands with satisfactory topography, drainage, and reasonably free from the danger of any flood, tsunami, unstable soil condition, and other adverse environmental effects;*

Elevations of the Kauhale Lani site range from about 1,088 feet at the northwest end of the property up to about 1,186 feet at the southeast end, providing an approximately seven percent (7) grade. The elevation and gentle grade provide for expansive views of Central Maui from nearly all points on the property.

The site is reasonably free from danger of flood, tsunami, unstable soil conditions and other adverse environmental effects.

(4) *Land contiguous with existing urban areas shall be given more consideration than non-contiguous land, and particularly when indicated for future urban use on state or county general plans;*

The Kauhale Lani site is contiguous to, and a natural extension of, Pukalani, a residential community in the State Land Use Urban District.

The *Makawao-Pukalani-Kula Community Plan* designates the site for single family residential uses. The site is the logical expansion of Pukalani.

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(5) *It shall include lands in appropriate locations for new urban concentrations and shall give consideration to areas of urban growth as shown on the state and county general plans;*

As represented by the “single-family” designation on *Makawao-Pukalani-Kula Community Plan*, residential uses on the site are appropriate and represent the carefully thought out expansion of Pukalani.

(6) *It may include lands which do not conform to the standards in paragraphs (1) to (5):*

*When surrounded by or adjacent to existing urban development; and  
Only when those lands represent a minor portion of this district;*

The proposed project is in conformance with paragraphs (1) to (5).

(7) *It shall not include lands, the urbanization of which will contribute toward scattered spot urban development, necessitating unreasonable investment in public infrastructure or support services; and*

Kauhale Lani will not contribute to scattered spot urban development, necessitating unreasonable investment in public infrastructure or support services.

(8) *It may include lands with a general slope of twenty per cent or more if the commission finds that those lands are desirable and suitable for urban purposes and that the design and construction controls, as adopted by any federal, state, or county agency, are adequate to protect the public health, welfare and safety, and the public’s interests in the aesthetic quality of the landscape.*



## **B. Hawaii State Plan**

Chapter 226, HRS, also known as the *Hawaii State Plan*, is a long-range comprehensive plan that serves as a guide for the future long-range development of the State by identifying goals, objectives, policies, and priorities, as well as implementation mechanisms. The Kauhale Lani community is in accordance with the following goals of the *Hawaii State Plan*:

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

The Kauhale Lani Community is in conformance with the following objectives and policies of the *Hawaii State Plan*.

### **Chapter 226-5, HRS, Objective and Policies for Population**

**226-5(b)(1), HRS:** *Manage population growth statewide in a manner that provides increased opportunities for Hawaii's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each county.*

**226-5(b)(3), HRS:** *Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.*

### **Chapter 226-6, HRS, Objectives and Policies for the Economy – in General**



*226-6(b)(6), HRS: Strive to achieve a level of construction activity responsive to, and consistent with, State growth objectives.*

***Chapter 226-11, HRS, Objectives and Policies for the Physical Environment – Land Based, Shoreline, and Marine Resources***

*226-11(b)(3), HRS: Take into account the physical attributes of areas when planning and designing activities and facilities.*

*226-11(b)(8), HRS: Pursue compatible relationships among activities, facilities, and natural resources.*

**Chapter 226-13, Hawaii Revised Statutes, Objectives and Policies for the Physical Environment – Land, Air, and Water Quality**

*226-13(b)(6), HRS: Encourage design and construction practices that enhance the physical qualities of Hawaii’s communities.*

*226-13(b)(7), HRS: Encourage urban developments in close proximity to existing services and facilities.*

**Chapter 226-19, HRS, Objectives and Policies for Socio-Cultural Advancement – Housing**

*226-19(a)(2), HRS: The orderly development of residential areas sensitive to community needs and other land uses.*

*226-19(b)(1), HRS: Effectively accommodate the housing needs of Hawaii’s people.*

*226-19(b)(3), HRS: Increase home ownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.*



**226-19(b)(5), HRS:** *Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.*

**226-19(b)(7), HRS:** *Foster a variety of lifestyles traditional to Hawaii through the design and maintenance of neighborhoods that reflect the culture and values of the community.*

The Kauhale Lani community complies with the following priority guidelines of the *Hawaii State Plan*.

**Chapter 226-103, HRS, Economic Priority Guidelines**

**226-103(1), HRS:** *Seek a variety of means to increase the availability of investment capital of new and expanding enterprises.*

**226-103(1)(a), HRS:** *Encourage investments which:*

- (i) Reflect long-term commitments to the State;*
- (ii) Rely on economic linkages within the local economy;*
- (iii) Diversify the economy;*
- (iv) Reinvest in the local economy;*
- (v) Are sensitive to community needs and priorities; and*
- (vi) Demonstrate a commitment to management opportunities to Hawaii residents.*

**Chapter 226-104, HRS, Population Growth and Land Resources Priority Guidelines**

**226-104(a)(1), HRS:** *Encourage planning and resource management to insure that population growth rates throughout the State are consistent with available planned resource capacities and reflect the needs and desires of Hawaii's people.*

**226-104(b)(1), HRS:** *Encourage urban growth primarily to existing urban areas where adequate public facilities are already available or can be provided with*



*reasonable public expenditures and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.*

**226-104(b)(2), HRS:** *Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.*

**226-104(b)(12), HRS:** *Utilize Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline conservation lands, and other limited resources for future generations.*

## **C. State Functional Plans**

The *Hawaii State Plan* directs State agencies to prepare functional plans for their respective program areas. There are 13 state functional plans that serve as the primary implementing vehicle for the goals, objectives, and policies of the *Hawaii State Plan*. The functional plans applicable to the Kauhale Lani community, along with each plan's applicable objectives, policies, and actions are discussed below.

**Agriculture.** The *Agriculture Functional Plan* seeks to increase the overall level of agricultural development in Hawaii, in accordance with the two fundamental *Hawaii State Plan* objectives for agriculture: 1) continued viability of Hawaii's sugar and pineapple industries, and 2) continued growth and development of diversified agriculture throughout the State.

Cultivation of the parcels was discontinued in 2002. Both parcels became inefficient to farm as part of any sustainable large scale agricultural operations after construction of the Pukalani Bypass separated these parcels from other contiguous, more suitable pineapple fields.





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Historic Preservation. The long-term philosophy of the *Historic Preservation Functional Plan* highlights the importance of maintaining a record of Hawaii's unique history. History enriches our social, intellectual, aesthetic and economic lives with insights from the past. With the rapid change and development of our island state, our historical resources are at risk. The *Historic Preservation Functional Plan* attempts to preserve these resources by focusing on three main issue areas: (1) preservation of historic properties, (2) collection and preservation of historic records, artifacts and oral histories, and (3) provision of public information and education on the ethnic and cultural heritages and history of Hawaii.

No archaeological resources have been identified on the Kauhale Lani site. Development will comply with all laws and rules regarding the preservation of archaeological, cultural, and historic sites should any sites be found during construction.

Kauhale Lani is not expected to impact cultural resources as no cultural resources have been identified on the property; there is no evidence of past or present use for Hawaiian cultural practices, resources, or beliefs.

Housing. The State *Housing Functional Plan*, prepared by the State Housing Finance and Development Corporation (now Hawaii Housing Finance and Development Corporation), addresses six major areas of concern: 1) increasing home ownership; 2) expanding rental housing opportunities; 3) expanding rental housing opportunities for the elderly and other special need groups; 4) preserving housing stock; 5) designating and acquiring land that is suitable for residential development; and 6) establishing and maintaining a housing information system. The majority of the objectives, policies, and implementing actions of the State *Housing Functional Plan* apply to the government sector.

Forecasts of housing demand project a need for approximately 5,294 homes (mid-point estimate), or an increase of 60%, in the Upcountry area

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during the next 23 years. Approximately 91%, or more than 4,860 of the homes, would need to be single-family homes. Fewer than 55% of this number is currently proposed for the area.

Kauhale Lani will provide 170 market-priced residential lots for purchase and will comply with the County of Maui's Residential Workforce Housing Policy, to ensure that affordable housing need is addressed.

Recreation. The *Recreation Functional Plan* outlines the public and private sectors' roles in serving the recreation and open space needs of the public. It organizes objectives, policies, and actions into six major issue areas: (1) ocean and shoreline recreation, (2) mauka, urban, and other recreational opportunities, (3) public access to shoreline and upland recreation areas, (4) resource conservation and management, (5) management of recreation programs, facilities, and areas, and (6) wetlands protection and management.

Recreational facilities of the community, such as the central open space on Parcel 7 and the extensive trail system and BMX bicycle park on Parcel 64, will provide opportunities for increased physical fitness, contemplative views of Central Maui, and relief from daily stress.

## D. Maui County General Plan

*The Maui County General Plan (1990 Update)* sets forth broad objectives and policies to help guide the long-range development of the County. As stated in the Maui County Charter:

*The general plan shall indicate desired population and physical development patterns for each island and region within the county; shall address the unique problems and needs of each island and region; shall explain the opportunities and the social, economic, and environmental consequences related to potential developments; and shall set forth the desired sequence, patterns, and characteristics of future developments. The*



*general plan shall identify objectives to be achieved, and priorities, policies, and implementing actions to be pursued with respect to population density, land use maps, land use regulations, transportation systems, public and community facility locations, water and sewage systems, visitor destinations, urban design, and other matters related to development.*

The proposed action is in accord with the following General Plan objectives and policies:

**LAND USE**

***Objective 1:** To preserve for present and future generations existing geographic, cultural and traditional community lifestyles by limiting and managing growth through environmentally sensitive and effective use of land in accordance with the individual character of the various communities and regions of the County.*

The Kauhale Lani community will provide a cohesive addition to Pukalani in character with the Upcountry region.

***Policy b:** Provide and maintain a range of land use districts sufficient to meet the social, physical, environmental and economic needs of the community.*

Kauhale Lani community will meet the social, physical, environmental, and economic needs of the community by providing needed housing in conformance with in Makawao-Pukalani-Kula Community Plan.

***Objective 2:** To use the land within the County for the social and economic benefit of all the County's residents.*

In addition to providing needed housing, Kauhale Lani is expected to have a direct beneficial effect on the local economy. Economic impacts associated with Kauhale Lani include:



- \$139.6 million in direct, new capital investment and spending into the Maui economy during the planning and construction period;
- \$18.4 million in total gross tax revenues for the State of Hawaii and \$4.8 million in taxes for the County of Maui during the build out period;
- \$2.6 million annually in stabilized taxes for the State and approximately \$691,145 annually for the County after the build out period;
- 554 worker years (one worker/year is approximately equal to 2,000 hours) in construction related jobs during the build out period;
- \$39.2 million in total wages over the build out period;
- 21 full-time equivalent jobs related to on-site activities, on a stabilized basis, after build-out; and
- \$711,000 in annual wages after build out.

***Policy a:** Mitigate environmental conflicts and enhance scenic amenities, without having a negative impact on natural resources.*

Kauhale Lani is not expected to have a negative impact on natural resources. Impacts, such as site grading, increased runoff, and use of resources, will not be significant and can be mitigated with proper management techniques.

Although Kauhale Lani will be built at the entrance to Pukalani, the community is expected to enhance this gateway, as landscaping will be improved and maintained on a regular basis and design standards will provide for a unified streetscape planting theme in compliance with the Maui County Planting Plan.

***Policy b:** Encourage land use patterns that foster a pedestrian oriented environment to include such amenities as bike paths, linear parks, landscaped buffer areas, and mini-parks.*



Kauhale Lani will be a walkable community designed to enhance connectivity by way of pedestrian-friendly streets, and conformance to the Upcountry Greenways Master Plan.

***Objective 1:** To preserve lands that are well suited for agricultural pursuits.*

***Policy a:** Protect prime agricultural lands from competing nonagricultural land uses.*

***Policy b:** Discourage conversion, through zoning or other means, of productive or potentially productive agricultural lands to nonagricultural land uses, including but not limited to golf courses and residential subdivisions.*

While the Kauhale Lani site is zoned agricultural, the Makawao-Pukalani-Kula Community Plan designates the site for residential uses. Cultivation of the parcels was discontinued in 2002. Both parcels became inefficient to farm as part of any sustainable large scale agricultural operations after construction of the Pukalani Bypass separated these parcels from other contiguous, more suitable pineapple fields. In addition the long, narrow configuration and topography of Parcel 64 now renders the parcel inefficient for cultivation.

## **ENVIRONMENT**

***Objective 1:** To preserve and protect the County's unique and fragile environmental resources.*

The design of the Kauhale Lani community will be sensitive to the site on which it is located, and will be constructed in such a way as to minimize the impacts to the environment.

Design will take advantage of the natural topography of the land, and grading and contouring of the properties will be minimized.



***Policy a:** Preserve for present and future generations the opportunity to experience the natural beauty of the islands.*

***Policy b:** Preserve scenic vistas and natural features.*

Kauhale Lani preserves and protects the County’s unique and fragile environmental resources by providing residential uses in an appropriate area contiguous to existing urban uses and in conformance with the *Makawao-Pukalani-Kula Community Plan*.

***Objective 2:** To use the County’s land-based physical and ocean-related coastal resources in a manner consistent with sound environmental planning practice.*

As represented by the “single-family” designation on *Makawao-Pukalani-Kula Community Plan*, residential uses on the site are appropriate and represent the carefully thought out expansion of Pukalani consistent with sound environmental planning practice.

***Policy b:** Evaluate all land-based development relative to its impact on the County’s land and ocean ecological resources.*

Impacts from Kauhale Lani, such as site grading, increased runoff, and use of resources, are not expected to be significant and can be mitigated with proper management techniques. As such, the community is not anticipated to have any significant adverse effects on the County’s land and ocean ecological resources.

### **CULTURAL RESOURCES**

***Objective 1:** To preserve for present and future generations the opportunity to know and experience the arts, culture and history of Maui County.*

***Policy b:** Encourage the recordation and preservation of all cultural and historic resources, to include culturally significant natural resources.*



***Policy e:** Identify and maintain an inventory of significant and unique cultural resources for special protection.*

Kauhale Lani is not expected to impact cultural resources as no cultural resources have been identified on the property; there is no evidence of past or present use for Hawaiian cultural practices, resources, or beliefs.

No archaeological resources have been identified on the Kauhale Lani site. Development will comply with all laws and rules regarding the preservation of archaeological, cultural, and historic sites should any sites be found during construction

## **HOUSING**

***Objective 1:** To provide a choice of attractive, sanitary and affordable homes for all of our residents.*

***Policy a:** Provide or require adequate physical infrastructure to meet the demands of present and planned future affordable housing needs.*

Forecasts of housing demand project a need for approximately 5,294 homes (mid-point estimate), or an increase of 60 percent, in the Upcountry area during the next 23 years. Approximately 91 percent, or more than 4,860 of the homes, would need to be single-family homes. Fewer than 55 percent of this number are currently proposed for the area.

Kauhale Lani will provide 170 market-priced residential lots for purchase and will comply with the County of Maui's Residential Workforce Housing Policy, to ensure that affordable housing need are addressed.

## **URBAN DESIGN**



**Objective 1:** *To see that all developments are well designed and are in harmony with their surroundings.*

Kauhale Lani is the logical expansion of Pukalani, as the site designated for residential uses (single-family) on the Makawao-Pukalani-Kula Community Plan, and is adjacent to the existing Lower Pukalani Terrace subdivision.

**Policy a:** *Require that appropriate principles of urban design be observed in the planning of all new developments.*

Kauhale Lani will enrich the entrance to Pukalani by providing a community at the forefront of the town with architecture consistent with Upcountry Maui.

**Objective 2:** *To encourage developments which reflect the character and the culture of Maui County's people.*

**Policy b:** *Encourage community design that will establish a cohesive identity.*

The Kauhale Lani community will provide a cohesive addition to Pukalani in character with the Upcountry region.

**Policy c:** *Encourage the establishment of continuous green areas, bike-paths, active and passive recreation areas and mini-parks in new subdivision development.*

Parcel 7 will include walkable streets and greenways. Parcel 64 will include a recreational trail running the length of the property from Old Haleakala Highway to Makani Road with hopes to connect to the Upcountry Greenway Masterplan.





**WATER**

***Objective 1:** To provide an adequate supply of potable and irrigation water to meet the needs of Maui County's residents.*

***Policy g:** Seek new sources of water by exploration in conjunction with other government agencies.*

***Objective 2:** To make more efficient use of our ground, surface and recycled water sources.*

***Policy a:** Reclaim and encourage the productive use of wastewater discharges in areas where such use will not threaten the integrity of ground water resources.*

Maui Land & Pineapple Company, Inc. is drilling a new well, which will be dedicated to the County of Maui. The Kauhale Lani development has an agreement to receive sufficient potable water for its need.

**PUBLIC UTILITIES AND FACILITIES**

***Objective 2:** To improve the quality and availability of public facilities throughout Maui County.*

***Policy a:** Encourage the design of multi-purposed public facilities accessible to all age groups and the handicapped.*

***Policy b:** Continue the development of community centers throughout the County.*

The extensive trail system and BMX bicycle park on Parcel 64 will provide opportunities for increased physical fitness, contemplative views of Central Maui, and relief from daily stress. These facilities will be accessible to people of all ages and ability and will be open to the public.



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## **RECREATION AND OPEN SPACE**

***Objective 1:** To provide high-quality recreational facilities to meet the present and future needs of our residents of all ages and physical ability.*

***Policy b:** Maintain recreational facilities for both active and passive pursuits.*

***Policy c:** Maintain the natural beauty of recreational areas.*

***Policy d:** Develop facilities that will meet the different recreational needs of the various communities.*

The extensive trail system and BMX bicycle park on Parcel 64 will provide opportunities for increased physical fitness, contemplative views of Central Maui, and relief from daily stress. These facilities will be accessible to people of all ages and ability and will be open to the public.

### **E. Makawao-Pukalani-Kula Community Plan**

Within Maui County, there are nine (9) community plan regions. From a General Plan implementation standpoint, each region is governed by a Community Plan which sets forth desired land use patterns, as well as goals, objectives, policies, and implementing actions for a number of functional areas including infrastructure-related parameters.

The project site is located within the Makawao-Pukalani-Kula Community Plan region. The project site is designated for “Single Family” residential uses in the Community Plan. **See Figure 10, Community Plan Map.**

The *Makawao-Pukalani-Kula Community Plan* was adopted in 1987 and updated in 1996. The update process started with the work of the Makawao-Pukalani-Kula Citizens Advisory Committee. This 13-member panel met 18 times for almost one year to identify, formulate, and



recommend appropriate revisions to the *Makawao-Pukalani-Kula Community Plan*.

The update process incorporated technical studies and assessments. The technical studies included: 1) Social-Economic Forecast, 2) Land Use Forecast, 3) Infrastructure Assessment, and 4) Public Facilities and Service Assessment. As a result of this process, the Kauhale Lani site was designated Single Family. The Land Use Forecast assessment provided a measure of existing vacant and undeveloped lands (by Community Plan land use designation) and addressed the future needs for each Community Plan region. Designating the Kauhale Lani site for Single-Family uses reflects the consensus by the community for residential uses on the site.

The proposed project is compatible with its Single-Family designation. The proposed improvements to A'eloia Road further the Community Plan by complying with Implementing Action No. 2 of the Transportation Policy Recommendations.

*“Establish an additional roadway connection to Haleakala Highway from Pukalani Terrace through the 65-acre single-family area located north of and adjacent to the existing Pukalani Terrace residential subdivision. The alignment of this new roadway shall not displace existing residences.”*

The proposed action is further in accord with the following *Makawao-Pukalani-Kula Community Plan* objectives and policies:

### **LAND USE**

**Goal:** *The maintenance and enhancement of Upcountry's unique and diverse rural land use character with sensitivity to existing land use patterns, natural resource values, and economic and social needs of the region's residents.*



**Objective 1:** *Recognize the value of open space, including agricultural lands and view planes to preserve the region's rural character.*

Primary scenic views will not be significantly impacted by the Kauhale Lani community due to the topography of the site. Significant portions of the project site, Parcel 64 in particular, will be preserved and enhanced as open space.

**Objective 6:** *Encourage new residential developments in areas which are contiguous extensions of, or infills within the established residential pattern, and which do not adversely affect agricultural uses.*

While the Kauhale Lani site is zoned Agricultural, the *Makawao-Pukalani-Kula Community Plan* designates the site for residential uses. The site is the logical expansion of Pukalani, as it is contiguous to residential uses at Pukalani and represents an in-fill of the recognized boundary.

**Objective 7:** *Ensure that adequate lands are set aside for recreational and open space purposes.*

Kauhale Lani will include extensive recreational open space, with a pedestrian/equestrian trail system and BMX bicycle park that ties into the Upcountry Greenway Master Plan. The project will also comply with Maui County parks dedication requirements.

**Objective 16:** *Recognize the four (4) semi-urban centers of Makawao Town, Pukalani, Hali'imaile, and Waiakoa Village. Within them, support the following land use and circulation patterns:*

b. *Within Pukalani:*

- *Single family expansion contiguous with existing residential uses.*
- *Parks and open spaces within and surrounding commercial and residential areas.*



The site is the logical expansion of Pukalani, as it is contiguous to residential uses of Pukalani.

Kauhale Lani will include extensive recreational open space, with a pedestrian/equestrian trail system and BMX bicycle park that ties into the Upcountry Greenway Master Plan. The project will also comply with Maui County park dedication requirements.

***Objective 18:** Where appropriate, support the reclassification of State Land Use districts to ensure consistency between State Land Use designations and land use designations defined by the Makawao-Pukalani-Kula Community Plan land use map.*

Kauhale Lani is in conformance with and implements the *Makawao-Pukalani-Kula Community Plan*. The entire area of Kauhale Lani is designated as “Single Family” on the *Makawao-Pukalani-Kula Community Plan Land Use Map*. The applicant is proposing a reclassification of the State Land Use District from “Agricultural” to “Urban” to establish consistency with the *Makawao-Pukalani-Kula Community Plan*.

***Objective 24:** Ensure an adequate supply of land designated for residential use to provide opportunity for residents to participate in housing market “trade ups.”*

The range of lot sizes within Kauhale Lani (from 6,000 square feet to approximately 12,000 square feet) will provide for a range of prices and allow for residents to participate in housing market “trade ups.”

***Objective 25:** Establish water resource availability as a major criteria in establishing land uses.*

Maui Land & Pineapple Company, Inc., is drilling a new well to be dedicated to the County of Maui. Kauhale Lani will use that well for potable water and will not strain infrastructural resources.



***Implementing Action 8:*** Utilize the land productivity inventory and assessment (i.e., Land Study Bureau “D” and “E” lands and ALISH) to identify low productivity lands which may be suitable for housing development.

The lands of Parcel 7 are classified as “Poor” under the LSB classification system, and “Prime” and “Other” under the ALISH system. The lands of Parcel 64 are classified as “Fair” and “Very Poor” under the LSB classification system and “Other” and “Not Classified” under the ALISH system. Combined with the Community Plan designation of “Single Family”, the project site is deemed suitable for residential development.

***Implementing Action 11:*** Determine the need for an additional school site(s) within the planning region at the time of LUC boundary amendments and/or zoning applications for additional housing projects. Special consideration should be given in this regard to additional housing in Hali’imaile Town.

The public schools that will service the Kauhale Lani community are currently under capacity and are anticipated to remain underutilized through the year 2009 according to projections provided by the State Department of Education. The project is estimated to produce 37 school-aged children. Private schools in the area such as the Kamehameha Schools Maui Campus, Seabury Hall and St. Joseph School provide additional school choices outside of the State system.

## **ENVIRONMENT**

***Goal:*** Protection of Upcountry’s natural resources and environment as a means of preserving and enhancing the region’s unique beauty, serenity, ecology, and productivity, in order that future generations may enjoy and appreciate an environment of equal or higher quality.

The design of the Kauhale Lani community will be sensitive to the site on which it is located, and will be constructed in such a way as to minimize the impacts to the environment.



**Objective 1:** *Preserve environmental resources by maintaining important agricultural lands as an integral part of the open space setting in each community.*

While the Kauhale Lani site is zoned agricultural, the University of Hawaii Land Study Bureau document titled *Detailed Land Classification, Islands of Kauai, Oahu, Maui, Molokai, and Lana* classifies the land of Kauhale Lani as follows: approximately 21.6 acres as “fair” (C), 49 acres as “poor” (D), and 18 acres as “very poor” (F).

Although the creation of Kauhale Lani will require that the approximately 89 acres of land previously used for pineapple cultivation be permanently withdrawn from agricultural use, this acreage only amounts to about one percent (1%) of the approximately 5,800 acres in pineapple cultivation by Maui Pineapple Company, Ltd. in 2005. Development of Kauhale Lani will not lead to a decrease in Maui Land & Pineapple Company, Inc.’s agricultural viability. Cultivation of the project site was discontinued in 2002. Both parcels became inefficient to farm as part of Maui Pineapple Company, Ltd. operations after construction of the Pukalani Bypass separated these parcels from other contiguous, more suitable fields. In addition the long, narrow configuration and topography of Parcel 64 renders the parcel inefficient for cultivation. These lands are also classified as ranging from Fair to Very Poor, in terms of the Land Study Bureau’s agricultural assessment of soils. The *Makawao-Pukalani-Kula Community Plan* designates the site for single family residential uses, making the site a logical expansion of Pukalani.

The proposed recreational facilities will provide open space in the community as well as a transition zone to the remaining agricultural lands adjacent to the community site.

**Objective 3:** *Recognize and protect rare, endangered and unique biological resources in the region.*



There are no rare, threatened, or endangered flora, fauna, or avifauna species, or habitats for these species, on the Kauhale Lani community site.

***Objective 9:** Promote landscaping which utilizes endemic and indigenous plant species.*

Kauhale Lani landscaping will include non-invasive species and, where feasible, native and indigenous plants. Drought-tolerant, hardy plants and grasses will also be used where feasible to minimize the need for irrigation.

### **CULTURAL RESOURCES**

***Goal:** The identification, preservation and where appropriate, restoration and promotion of cultural resources and practices which reflect the rich and diverse heritage found in the Upcountry region.*

***Objective 1:** Recognize the importance of historically and archaeologically sensitive sites, both known and undiscovered, and encourage their preservation and protection.*

***Objective 2:** Support public and private efforts to inventory, evaluate, classify, register, and protect, as appropriate, cultural resources to increase public knowledge of the region's rich and diverse cultural character.*

Kauhale Lani is not expected to impact cultural resources as no cultural resources have been identified on the property; there is no evidence of past or present use for Hawaiian cultural practices, resources, or beliefs.

No archaeological resources have been identified on the Kauhale Lani site, however, development will comply with all laws and rules regarding the preservation of archaeological, cultural, and historic sites should any sites be found during construction.





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## **URBAN DESIGN**

***Goal:** Recognition and preservation of the unique design characteristics of the Makawao, Pukalani and Kula communities in order to enhance Upcountry's man-made environment.*

***Objectives 5:** Preserve the unique characteristics of all of the Upcountry towns by recognizing and respecting architectural styles as described in the Country Town Design Guidelines.*

***Objectives 7:** Encourage the use of appropriate landscaping, with greenways where possible, along major roadways, parking areas and land use transition areas to establish and maintain landscape themes which are consistent with the character of each Upcountry community.*

Parcel 7 will include a wide landscaped buffer area along Old Haleakala Highway and design standards will include a unified streetscape planting theme and program to ensure the appropriate use of landscaping and compliance with the Maui County Planting Plan.

## **LIQUID AND SOLID WASTE DISPOSAL**

***Objectives 3:** Support wastewater reclamation and grey water alternatives as a means of reducing demands upon limited water resources in the Upcountry region.*

***Implementing Action 2:** Construct a wastewater collection and treatment system for the Waiakoa, Makawao, Pukalani and all new urban developments.*

***Implementing Action 3:** Utilize treated effluent for irrigation of farms, golf courses, parks and highway landscaping.*



The Kauhale Lani community will have its wastewater pumped to the Pukalani STP, to be treated and used as irrigation water for the nearby golf course. This facility will be undergoing expansion and improvement and possibly extending its service area limits as well.

### **Drainage**

*Objective 1: Respect and preserve natural drainage ways as part of good land development practices and recognize their value as open-space corridors.*

Natural drainage patterns on Parcel 7 (towards the New Hamakua Ditch) will be preserved. The majority of Parcel 64 will also be preserved as an open space corridor; it is a natural drainage way and will consist of mature trees and native vegetation.

### **ENERGY**

*Implementing Action 3: Use energy efficient street lights and develop appropriate street lighting standards for agricultural and rural areas.*

It is anticipated that public street lighting will be “dark sky” compliant to minimize light pollution and interference with observatories at the summit of Haleakala.

### **HOUSING**

*Goal: Housing opportunities for the residents of Makawao-Pukalani-Kula, to include all income and age groups, which are affordable, safe, and environmentally and culturally compatible.*

*Objective 2: Provide increased opportunities for affordable housing through:*

*Policy i: Provision of variable housing densities in areas designated for residential use.*



Kauhale Lani will provide 170 market-priced residential lots for purchase and will comply with the County of Maui's Residential Workforce Housing Policy, to ensure that affordable housing need are addressed.

### **SOCIAL INFRASTRUCTURE**

*Goal: An efficient and responsive system of people-oriented public services which enable residents to live a safe, healthy and enjoyable lifestyle, and offer the youth and adults of the region opportunities and choices for self and community improvement.*

#### **Recreation**

*Objective 4: Pursue the development of equestrian trails, pathways, greenways and related facilities which will meet the recreational needs of runners, joggers, walkers, horseback riders and cyclists.*

Kauhale Lani's trail system and BMX bicycle park will provide opportunities for increased physical fitness, contemplative views of Central Maui, and relief from daily stress.

### **GOVERNMENT**

*Goal: The provision of accessible, cost effective and responsive government services and programs which meet the needs of Upcountry residents.*

#### **Planning Standards**

*The following planning standards are specific guidelines or measures for development and design. These standards are essential in clarifying the intent of the land use and urban design objectives and policies and the Land Use Map.*



**1. Land Use**

- b.** *New residential subdivisions shall be reviewed for possible encroachment or other impacts to existing agricultural operations. Appropriate mitigative measures such as the provision of buffers and/or open spaces; larger building setbacks; significantly larger lot sizes; the incorporation of cluster housing to maintain overall allowable densities; or the use of other appropriate means to mitigate possible impacts shall be used. Possible uses for buffer spaces could be utilized for such uses such as bikepaths, equestrian trails and jogging.*

Landscaped buffers and open spaces will be incorporated into the new community. The New Hamakua Ditch provides an effective buffer between parcel 7 and the agricultural operations makai.

**5. Landscape Planting**

- a.** *Native plant species which are found in the region should be utilized for new public and quasi-public facilities. The use of native plants in landscaping should be encouraged in all new developments.*

Kauhale Lani landscaping will include non-invasive species and, where feasible, native and indigenous plants recommended by the County of Maui for the specific climate. Drought-tolerant, hardy plants and grasses will also be use where feasible to minimize the need for irrigation.

Design standards for the community will include a unified streetscape planting theme and program to ensure the appropriate use of landscaping and compliance with the Maui County Planting Plan.



**6. Subdivisions**

*Subdivision review for applications of four (4) lots or more shall include the following considerations:*

*a. Socio-Economic Considerations*

*The direct and cumulative impacts on agriculture and the socio-economic impacts on the community shall be assessed and considered.*

Section II.B contains discussion of Socio-economic considerations.  
Section II.A.11 contains discussion impacts on agriculture.

*c. Improvements*

*County urban subdivision standards shall not apply to rural and agricultural lands of the Upcountry Region. The following rural standards shall be considered:*

- Curbs and gutters shall not be required. Grassed shoulders and swales shall be allowed without curbs.*
- Sidewalks shall be provided on one side of the street for County roads within a 3/4-mile radius of developed or proposed school sites.*
- Street lighting shall not be required.*
- Roadway pavement width shall provide for a minimum 4-ft. bikelane in each direction of travel.*
- Highways and major roadways shall have a minimum pavement width of 20 feet (10 foot travel lanes), and shoulder width of 4 feet, to provide for the safe passage of two-way traffic, except in areas where natural landforms, historic structures and other environmental constraints preclude widening beyond existing roadway widths.*

Roadways within the community will be built to County of Maui standards, while keeping in character with the Upcountry region. The typical street section design was based upon Chapter 18.16.050 "Minimum



Right-of-Way and Pavement Widths”, Subdivision Design Standards of the County Code for rural streets

## F. County Zoning

The project site is zoned “Agricultural” by the County of Maui. The existing use is compatible with this designation, as is the proposed project. **See Figure 11, County Zoning Map.**

The applicant is seeking a change in zoning to “R-2, Residential”. Lots will be at least 7,500 square feet with a minimum lot width of 65 feet, a minimum front yard of 15 feet, and minimum side and rear yards of six feet, or ten feet for two-story structures. Homes will not be allowed to be constructed over two stories or 30 feet.

Section 19.30A.020 of the Maui County Zoning Ordinance states:

*Agricultural lands that meet at least two of the following criteria should be given the highest priority for retention in the agricultural district:*

- A. *Agricultural Lands of Importance to the State of Hawaii (ALISH);*
- B. *Lands not classified by the ALISH system whose agricultural land suitability, based on soil, topographic, and climatic conditions, supports the production of agricultural commodities, including, but not limited to coffee, taro, watercress, ginger, orchard and flower crops and non-irrigated pineapple. In addition, these lands shall include lands used for intensive animal husbandry, and lands in agricultural cultivation in five of the ten years immediately preceding the date of approval of this chapter; and*
- C. *Lands which have seventy-five percent or more of their boundaries contiguous to lands within the agricultural district.*

Although the lands of the Kauhale Lani community site meet two of the above criteria, the site should be rezoned to the Residential zone for the following reasons:



The entire area of the Kauhale Lani site is designated as “Single Family” on the *Makawao-Pukalani-Kula Community Plan* Land Use Map. Changing the zoning to the Residential classification will bring the property into conformance with, and implement, the *Makawao-Pukalani-Kula Community Plan*. As represented by the “Single Family” designation, residential uses on the site are appropriate and represent the carefully thought out expansion of Pukalani consistent with sound environmental planning practice.

While the Kauhale Lani site is zoned Agricultural, the University of Hawaii Land Study Bureau’s “*Detailed Land Classification, Islands of Kauai, Oahu, Maui, Molokai, and Lanai*” classifies the land of the Kauhale Lani site as follows: approximately 21.6 acres as “fair” (C), 49 acres as “poor” (D), and 18 acres as “very poor” (F), indicating the poor suitability of the soils for agriculture.

According to the *United States Department of Agriculture Soil Conservation Service, Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai*, the Parcel 7 is dominated by Hali’imaile Silty Clay (HhB), and (HhC) soils. In their natural state, these soils are not irrigated. The non-irrigated capability classification of these soils have a subclass rating of IIIe, which indicates severe limitations and erosion potential when cultivated and not protected. Without irrigation, these lands are naturally unsuitable for agriculture.

Approximately 30% of the boundaries of Parcel 64 are contiguous to lands in the Residential zone. However this calculation does not include the boundary with Haleakala Highway and Old Haleakala Highway, which are both in the Agricultural zone but are substantially in urban use. Approximately 25% of the boundaries of the Parcel 7 are contiguous to lands in the Residential zone, however this calculation does not include the boundary with Old Haleakala Highway which is in the Agricultural zone but is substantially in urban use.

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Parcel 64 is a remnant parcel created by the construction of the Haleakala Highway. Its long, long narrow configuration and topography renders much of this parcel unsuitable for cultivation.

Cultivation of the parcels was discontinued in 2002. Both parcels became inefficient to farm after construction of the Pukalani Bypass separated these parcels from other contiguous, more suitable pineapple fields.

## **G. Coastal Zone Management**

Coastal Zone Management objectives and policies (section 205A-2 HRS) and the Special Management Area Rules for the Maui Planning Commission (Chapter 202) have been developed to preserve, protect, and where possible, to restore the natural resources of the coastal zone of Hawaii. The project's potential direct or indirect impacts on the coastal zone within the context of these objectives, policies, and guidelines is described below:

### **1. Recreational Resources**

*Objective:* Provide coastal recreational resources accessible to the public.

*Policies:*

- (a) Improve coordination and funding of coastal recreational planning and management; and
- (b) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:
  - (i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;
  - (ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches,





- when such resources will be unavoidably damaged by development; or require reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;
- (iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;
  - (iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;
  - (v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having standards and conservation of natural resources;
  - (vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;
  - (vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing;
  - (viii) Encourage reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of Section 46-6, HRS.

**Analysis.** The Kauhale Lani community site is not near the shoreline and its development will not impact coastal recreational opportunities or affect existing public access to the shoreline.



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## 2. Historical/Cultural Resources

*Objective:* Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

*Policies:*

- (a) Identify and analyze significant archeological resources;
- (b) Maximize information retention through preservation of remains and artifacts or salvage operations; and
- (c) Support state goals for protection, restoration, interpretation, and display of historic structures.

**Analysis.** There are no known historical or cultural resources on the subject property. Nevertheless, the applicant and its contractors will comply with all laws and rules regarding the preservation of archaeological, cultural, and historic sites should any sites be found during construction.

Kauhale Lani is not expected to impact cultural resources as no cultural resources have been identified on the property; there is no evidence of past or present use for Hawaiian cultural practices, resources, or beliefs.

## 3. Scenic and Open Space Resources

*Objective:* Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

*Policies:*

- (a) Identify valued scenic resources in the coastal zone management area;
  - (b) Ensure that new developments are compatible with their visual environment by designing and locating such developments to
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minimize the alteration of natural landforms and existing public views to and along the shoreline;

- (c) Preserve, maintain, and where desirable, improve and restore shoreline open space and scenic resources; and
- (d) Encourage those developments that are not coastal dependent to locate in inland areas.

**Analysis.** The Kauhale Lani community site is not near the shoreline and its development will not impact coastal scenic and open space resources.

Although Kauhale Lani will be built at the entrance to Pukalani, the community is expected to enhance this gateway, as landscaping will be improved and maintained on a regular basis and design standards will provide for a unified streetscape planting theme in compliance with the Maui County Planting Plan.

#### **4. Coastal Ecosystems**

*Objective:* Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

*Policies:*

- (a) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
- (b) Improve the technical basis for natural resource management;
- (c) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
- (d) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
- (e) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine



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ecosystems and maintain and enhance water quality through the development and implementation of point and non-point source water pollution control measures.

**Analysis.** No direct impacts to the coastal or marine environment are anticipated. Appropriate Best Management Practices (BMP) will be utilized during demolition activities to ensure that there is no substantial, adverse impact to coastal ecosystems. The community's drainage system will be designed in accordance with applicable regulatory standards to assure that there are no adverse effects to adjacent or downstream properties.

## 5. Economic Use

*Objective:* Provide public or private facilities and improvements important to the State's economy in suitable locations.

*Policies:*

- (a) Concentrate coastal dependent development in appropriate areas;
- (b) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area;
- (c) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:
  - (i) Use of presently designated locations is not feasible;
  - (ii) Adverse environmental impacts are minimized; and
  - (iii) The development is important to the State's economy.

**Analysis.** The proposed construction is not a coastal dependant development. As represented by the "Single Family" designation on

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*Makawao-Pukalani-Kula Community Plan*, residential uses on the site are appropriate and represent the carefully thought out expansion of Pukalani. Development is anticipated to generate economic benefits in the form of property taxes and construction-related employment.

## 6. Coastal Hazards

*Objective:* Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.

*Policies:*

- (a) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and non-point source pollution hazards;
- (b) Control development in areas subject to storm wave, tsunami, flood, erosion, subsidence, and point and non-point pollution hazards;
- (c) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and
- (d) Prevent coastal flooding from inland projects.

**Analysis.** The proposed construction is not anticipated to impact the region's susceptibility to coastal hazards. The community site is not on the shoreline and is not likely to be impacted from tsunamis or storm wave. The community site is reasonably free from danger of flood, unstable soil conditions and other adverse environmental effects.

The Kauhale Lani drainage system will be designed in accordance with the Drainage Standards of the County of Maui to ensure that surface runoff from the site will not adversely affect downstream and adjoining properties.



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## 7. Managing Development

*Objective:* Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

*Policies:*

- (a) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
- (b) Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and
- (c) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

**Analysis.** Kauhale Lani will be developed in conformance with all applicable, laws, regulations, and requirements. Assessment and evaluation of the project will entail the following processes:

- Environmental Impact Review (Chapter 343 HRS Review)
- State Land Use District Boundary Amendment
- County Change in Zoning

Each process entails a form of public participation, which is detailed in the following section.

## 8. Public Participation

*Objective:* Stimulate public awareness, education, and participation in coastal management.



*Policies:*

- (a) Promote public involvement in coastal zone management processes;
- (b) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and
- (c) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

**Analysis.** As noted above, the Environmental Impact Statement, State Land Use District Boundary Amendment, and County Change in Zoning processes all provide for both agency and public review and comment, as well as opportunities for the public and decision-makers to ask for more information.

## 9. Beach Protection

*Objective:* Protect beaches for public use and recreation.

*Policies:*

- (a) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;
- (b) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and
- (c) Minimize the construction of public erosion-protection structures seaward of the shoreline.

**Analysis.** The Kauhale Lani community site is located a significant distance from the shoreline and therefore this development is not expected to have adverse impacts on beaches, natural shoreline processes, or existing recreational and waterline activities. Appropriate BMP's will



be utilized during demolition activities to ensure that there is no substantial, adverse impact to coastal ecosystems.

## 10. Marine Resources

*Objective:* Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

*Policies:*

- (a) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
- (b) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;
- (c) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
- (d) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and
- (e) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

**Analysis.** No direct impact to the coastal or marine environment is anticipated as the project is located inland.

The project will include mitigation measures aimed at protecting marine resources by containing dust and project runoff during the construction period. The anticipated method of containment will be to enclose the project area with a combination dust/silt fence. Additional measures could include project watering for dust control, promptly vegetating bared areas, and controlling dust from equipment by covering truckloads. A





BMP plan will be developed in conjunction with the project's grading plans, which will detail the physical protective measures used at the project site, the locations of such measures, and other intermittent requirements such as project watering. Prior to construction the BMP plan will be reviewed by the County engineering division of the Development Services Administration of the Department of Public Works and Environmental Management, and the State Clean Water Branch (as part of the NPDES general permit).

The Kauhale Lani community site is located a significant distance from the shoreline and will not involve the use or development of marine and coastal resources

In addition to the foregoing objectives and policies, SMA permit review criteria pursuant to Act 244 (2005) provides that:

*No special management area use permit or special management area minor permit shall be granted for structures that allow artificial light from floodlights, uplights, or spotlights used for decorative or aesthetic purposes when the light:*

- (a) Directly illuminates the shoreline and ocean waters; or*
- (b) Is directed to travel across property boundaries toward the shoreline and ocean waters.*

**Analysis.** The proposed project will not directly illuminate the shoreline or ocean waters, nor cause light to be directed across property boundaries in that direction.

## **H. OEQC Guidelines for Sustainable Development**

The Office of Environmental Quality Control (OEQC) has issued "Guidelines for Sustainable Building Design in Hawaii: A Planner's Checklist" (OEQC May 1999) and has requested that consideration be



given to applying sustainable building techniques to projects. The OEQC Guidelines state, “[a] sustainable building is built to minimize energy use, expense, waste and impact on the environment. It seeks to improve the region’s sustainability by meeting the needs of Hawaii’s residents and visitors today without compromising the needs of future generations.”

Techniques from “Guidelines for Sustainable Building Design in Hawaii: A Planner’s checklist” considered in the Kauhale Lani community design include:

*Site Selection & Site Design:*

1. *Select a site with short connections to existing municipal infrastructure (sewer lines, water, waste water treatment plant, roads, gas, electricity, telephone, data communication lines and services). Select a site close to mass transportation, bicycle routes and pedestrian access.*

**Discussion.** The Kauhale Lani site is adjacent to existing residential uses. The site is adjacent to or close to existing roads, electrical and telephone facilities, and other services.

2. *Site building(s) to take advantage of natural features and maximize their beneficial effects. Provide for solar access, daylighting and natural cooling. Design ways to integrate the building(s) with the site that maximizes and preserves positive site characteristics, enhances human comfort, safety and health, and achieves operational efficiencies.*

**Discussion.** The site plan for Kauhale Lani has been optimized to minimize grading of the site. Buildings will be sited to take advantage of natural features and maximize their beneficial effects where practical.

3. *Locate building(s) to encourage bicycle and pedestrian access and pedestrian oriented uses. Provide bicycle and pedestrian paths, bicycle*



*racks, etc. Racks should be visible and accessible to promote and encourage bicycle commuting.*

**Discussion.** The design of the Kauhale Lani community provides for pedestrian-friendly streets. Street design includes slight cranks and bends of roads within the neighborhood to allow for natural traffic calming, and continuous sidewalks and street trees to provide a comfortable pedestrian environment. Moreover, Pukalani Associates, LLC proposes to provide trails, open space, and other community amenities on Parcel 64 between Old Haleakala Highway and Haleakala Highway.

*Building Design:*

1. *For natural cooling, use:*
  - *Reflective or light colored roofing, radiant barrier and/or insulation, roof vents;*
  - *Light colored paving (concrete) and building surfaces'*
  - *Tree planting to shade buildings and paved areas; and*
  - *Building orientation and design that captures trade winds and/or provides for convective cooling of interior spaces when there is no wind.*

**Discussion.** Natural cooling such as street trees that shade buildings and paved areas will be included within Kauhale Lani.

*Energy Use:*

1. *Use renewable energy. Use solar water heaters and consider the use of photovoltaics and Building Integrated Photovoltaics (BIPV).*

**Discussion.** Design controls to be contained in covenants for Kauhale Lani will permit the installation of solar water heaters and photovoltaic cells in each home built in Kauhale Lani.



Landscape and Irrigation:

1. *Incorporate water efficient landscaping (xeriscaping) using the following principles:*
  - a. *Soil analysis/improvement: Use (locally made) soil amendments and compost for plant nourishment, improved water absorption and holding capacity.*
  - b. *Appropriate plant selection: Use drought tolerant and/or slow growing hardy grasses, native and indigenous plants, shrubs, ground covers, trees, appropriate for local conditions, to minimize the need for irrigation.*
  - c. *Mulches: Use mulches to minimize evaporation, reduce weed growth and retard erosion.*

**Discussion:** Where feasible, landscaping will include the use of locally-made soil amendments and compost for plant nourishment, improved water absorption, and holding capacity; the use of drought-tolerant and/or slow-growing hardy grasses, native and indigenous plants, shrubs, ground covers, and trees appropriate for local conditions to minimize the need for irrigation; and the use of mulches to minimize evaporation, reduce weed growth, and retard erosion.

2. *Irrigate with non-potable water or reclaimed water when feasible. Collect rainwater from the roof for irrigation.*

**Discussion.** Wastewater will be treated to a high level of quality at the Pukalani STP to provide for reuse. The reclaimed water will be used to irrigate landscaped areas such as the gold course.



## IV. FINDINGS AND CONCLUSIONS

The accepting authority anticipates a Finding of No Significant Impact (FONSI). A final declaration will be made after the authority has considered all agency and public comments on the Draft Environmental Assessment.

According to the Department of Health Rules (HAR §11-200-12(b)), an applicant or agency must determine whether an action may have a significant impact on the environment, including all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short and long-term effects. In making the determination, the Rules establish “Significance Criteria” to be used as a basis for identifying whether significant environmental impact will occur.

**1. The proposed action will not result in an irrevocable commitment to loss or destruction of natural or cultural resources.**

**Analysis.** The Kauhale Lani community will not result in an irrevocable commitment to loss or destruction of any natural or cultural resources. There are no known archaeological or cultural properties, no evidence of past or present use for Hawaiian cultural practices, resources, or beliefs, and no known rare, endangered or threatened species of flora, fauna or avifauna or critical habitat for any such species located within the property.

**2. The proposed action will not curtail the range of beneficial uses of the environment.**

**Analysis.** The Kauhale Lani community will not curtail the range of beneficial uses of the environment. This community is intended to provide additional housing in the Upcountry region. Use of the land for housing is appropriate in the context of the *Makawao-Pukalani-Kula Community Plan* and the current need for new housing inventory.



**3. The proposed action will not conflict with State or County long-term environmental policies and goals as expressed in Chapter 344, HRS, court decisions or executive orders.**

**Analysis.** The State's Environmental Policy is set forth in Chapter 344-3, Hawaii Revised Statutes.

- (1) *Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State's unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawaii.*
- (2) *Enhance the quality of life by:*
  - (A) *Setting population limits so that the interaction between the natural and artificial environments and the population is mutually beneficial;*
  - (B) *Creating opportunities for the residents of Hawaii to improve their quality of life through diverse economic activities which are stable and in balance with the physical and social environments;*
  - (C) *Establishing communities which provide a sense of identity, wise use of land, efficient transportation, and aesthetic and social satisfaction in harmony with the natural environment which is uniquely Hawaiian; and*
  - (D) *Establishing a commitment on the part of each person to protect and enhance Hawaii's environment and reduce the drain on nonrenewable resources.*

The Kauhale Lani community is in accord with these policies and goals. Kauhale Lani will not waste or misuse natural resources. The proposed project is suitable for the area proposed and will improve social and economic welfare by providing additional housing inventory. The resulting community will have a sense of identity tied into the Upcountry region in which it is situated.



**4. The proposed action will not substantially affect the economic or social welfare and cultural activities of the community, county or state.**

**Analysis.** The Kauhale Lani community is expected to have a direct beneficial effect on the local economy. The addition of new housing units addresses the need for homes in the region. Analysis of projected tax revenues to the State of Hawaii and Maui County indicates the actual effect of governmental services relating to the population of Kauhale Lani would not create the need to expand additional County and State funding on Maui.

The State of Hawaii and the County of Maui will both show a positive net revenue benefit from Kauhale Lani. Direct tax benefits to the State and County will primarily flow from the community and its operation over time from three major sources: real property taxes, gross excise tax receipts, and state income taxes. Should the County choose to allocate these additional tax revenues to fund more services to protect public health, welfare, and safety, any cost to the public that may result will be effectively minimized.

Kauhale Lani is not expected to impact cultural resources as no cultural resources have been identified on the property; there is no evidence of past or present use for Hawaiian cultural practices, resources, or beliefs.

**5. The proposed action will not substantially affect public health.**

**Analysis.** The Kauhale Lani community is not expected to substantially affect public health. Environmental impacts from the community, such as noise and air pollution, will be minimal. A clean source of water will be provided. Wastewater will be property handled. Additional drainage will be retained onsite. Solid waste will be disposed of properly.

In addition, recreational facilities of the community, such as an extensive trail system, will provide opportunities for increased physical fitness, contemplative views of Central Maui, and relief from daily stress. Further, the neighborhood park will provide a gathering place for the community and family functions.



**6. The proposed action will not result in substantial secondary impacts.**

**Analysis.** The Kauhale Lani community does involve substantial secondary impacts. The 170 residential lots of Kauhale Lani represent a relatively insignificant two percent (2%) of the projected increase of approximately 5,000 people to the estimated 2010 Upcountry population of 24,644 people. Kauhale Lani residents are not expected to adversely impact public services such as police, fire, and emergency medical operations, nor are they anticipated to have an adverse effect upon educational and recreational facilities. State and county revenues generated by Kauhale Lani will offset any costs to public services that may occur as a result of the new community.

**7. The proposed action will not involve substantial degradation of environmental quality.**

**Analysis.** Kauhale Lani does not involve a substantial degradation of environmental quality. During the construction phase, there will be short-term air quality and noise impacts. In the long-term, effects upon air quality and ambient noise levels will be minimal. Other impacts, such as site grading, increased runoff, and use of resources, are not expected to be significant and can be mitigated with proper management techniques. .

**8. The proposed project will not produce cumulative impacts and does not have considerable effect upon the environment or involve a commitment for larger actions.**

**Analysis.** The Kauhale Lani community does not involve a commitment to larger actions as it is an “infill” project. As represented by the “single-family” designation on *Makawao-Pukalani-Kula Community Plan*, residential uses on the site represent the carefully thought out expansion of Pukalani. While Kauhale Lani will add residents to the area, impacts from these new residents are not expected to be significant, and can be accommodated without substantially increasing public infrastructure or services.





**9. The proposed project will not affect a rare, threatened, or endangered species, or its habitat.**

**Analysis.** No endangered or threatened species or critical habitat are known to exist in the immediate project area. Best Management Practices will be implemented to prevent secondary impacts to the coastal habitat, which may contain rare, threatened, or endangered species.

**10. The proposed action will not substantially or adversely affect air and water quality or ambient noise levels.**

**Analysis.** The proposed project will meet all required State and County air, water, and ambient noise quality standards prior to and during construction. No significant long-term impacts are anticipated.

Construction activities will result in short-term air quality and noise impacts. Dust control measures, such as regular watering and sprinkling, will be implemented to minimize wind-blown emissions. Noise impacts will occur primarily from construction-related activities. It is anticipated that construction will be limited to daylight working hours. Water quality is not expected to be affected.

In the long-term, the community is not anticipated to have a significant impact on air, water quality, or ambient noise levels.

**11. The proposed action will not substantially affect or be subject to damage by being located in an environmentally sensitive area, such as flood plain, shoreline, tsunami zone, erosion-prone areas, estuary, fresh waters, geologically hazardous land or coastal waters.**

**Analysis.** The Kauhale Lani community is not located within, and will not affect, environmentally sensitive areas. The site is not subject to flooding or tsunami



inundation. There are no geologically hazardous lands, estuaries, or coastal waters within or adjacent to the site.

**12. The proposed action will not substantially affect scenic vistas or view planes identified in county or state plans or studies.**

**Analysis.** The subject property is not specifically identified in any county or State plans or studies as containing scenic vistas or view planes. The Kauhale Lani community site is not identified as a scenic vista or view plane nor will it affect identified scenic vistas or view planes. The community will not affect scenic corridors and coastal scenic and open space resources. Although Kauhale Lani will be built at the entrance to Pukalani, the community is expected to enhance this gateway, as landscaping will be improved and maintained on a regular basis and design standards will provide for a unified streetscape planting theme in compliance with the Maui County Planting Plan.

**13. The proposed action will not require substantial energy consumption.**

**Analysis.** No substantial increase in energy consumption is expected as a result of the proposed action. The Kauhale Lani community will involve the short-term commitment of fuel for equipment, vehicles, and machinery during construction activities. However, this use is not anticipated to result in a substantial consumption of energy resources. In the long-term, the community will create an additional demand for electricity. However, this demand is not deemed substantial or excessive within the context of the region's overall energy consumption.

Based on the foregoing findings, it is anticipated that the Kauhale Lani community will not result in any significant impacts.



## V. CONSULTATION AND REVIEW

### A. Early Consultation

The following agencies were requested to provide early consultation comments regarding the proposed project. **See Appendix L, Early Consultation Comment and Response.**

#### *Federal*

1. Natural Resources Conservation Service
2. Federal Emergency Management Agency
3. U.S. Geological Survey

#### *State of Hawaii*

4. Department of Agriculture
5. Department of Agriculture, Maui Office
6. Department of Business Economic Development & Tourism
7. Department of Business Economic Development & Tourism, Office of State Planning
8. Department of Health
9. Department of Health, Clean Water Branch
10. Department of Health, Environmental Planning Office
11. Department of Health, Maui District Health Office
12. Department of Health, Wastewater Branch
13. Department of Education
14. Department of Land & Natural Resources
15. Department of Land & Natural Resources, Historic Preservation Division
16. Department of Transportation
17. Office of Hawaiian Affairs

#### *County of Maui*

18. Department of Fire Control & Public Safety



19. Department of Housing & Human Concerns
20. Department of Parks & Recreation
21. Department of Planning
22. Department of Public Works & Environmental Services Management
23. Department of Water Supply
24. Police Department

*Local Utilities*

25. Maui Electric Company
26. Hawai'ian Telcom, Inc.

## **B. Draft Environmental Assessment**

A Draft Environmental Assessment for the subject project was filed and published in the Office of Environmental Quality Control's The Environmental Notice on June 8, 2005. During the 30-day public comment period, agencies were provided the opportunity to comment on the proposed action. Response was made to those letters providing substantive comments. **See Appendix M, Draft Environmental Assessment Comment and Response.**

## **C. Community Consultation**

A meeting was held with the Upcountry community on May 21, 2008. Residents within 500' as well as additional interested parties and various County agencies were invited to the meeting. The meeting was re-introduction to the project, discussing what planning steps had occurred subsequent to the publication of the Draft EA, as well as current project plans. Feedback from the community was taken. Items of discussion included the following:

Increase in traffic:

- Will make the already-difficult left-turn onto Old Haleakala Highway even worse.



- The intersection geometrics at Haleakala Highway and the Old Highway won't be able to accommodate the increased traffic.
- The proposed A'eola Road is too large to connect with Iolani Street. Iolani is hampered by narrow driveways and on-street parking and may not be able to safely accommodate the traffic from A'eola.
- Children who walk to Pukalani Elementary along Iolani Street are forced to cross the street twice. The increased traffic poses a hazard to them.

One suggestion made was that the intersection of A'eola and Iolani be gated so as to allow only emergency vehicles access.

Views:

- Existing residents' views of the ocean would be disrupted either by the houses or by the proposed landscaping on the *mauka* side of A'eola.

Water:

- Would the subdivision's draw of water impact existing residents.
- Whether the subdivision would be allowed to proceed if the well is not able to accommodate.

Wastewater:

- Expansion of the Pukalani Sewer Treatment Plant will lead to increased unpleasant odor.
- Question as to whether the project was driving the expansion of the Pukalani STP.

Reclassification of agricultural lands:

- Converting "prime" agricultural land for residential use is to be avoided.
- Converting some agricultural lands opens up the potential to convert more.



Proposed Park:

- Support for not developing Parcel 64 and for making it a public park.
- Concern whether or not the County would be able to maintain the park.



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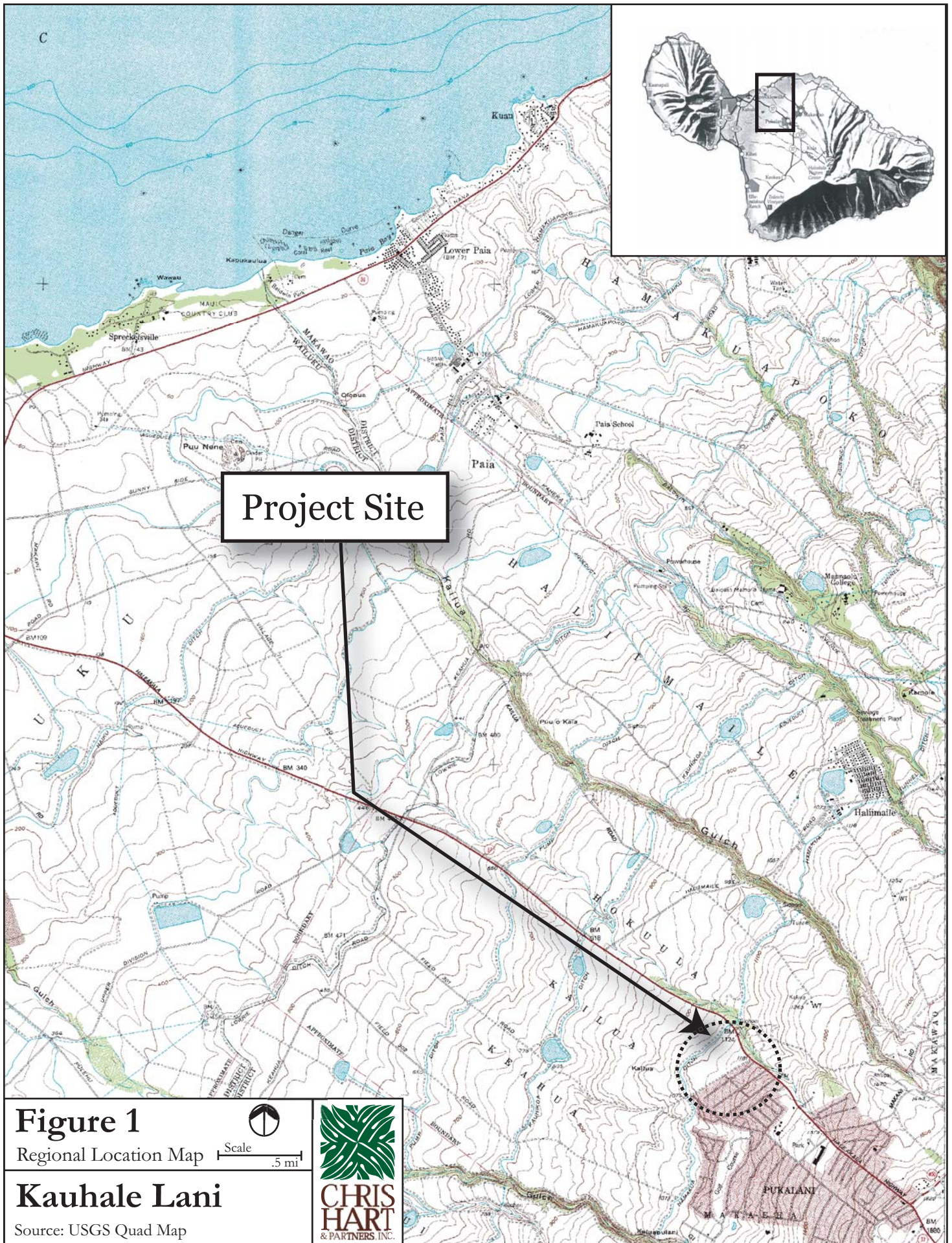
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# Figures



**Figure 1**

Regional Location Map



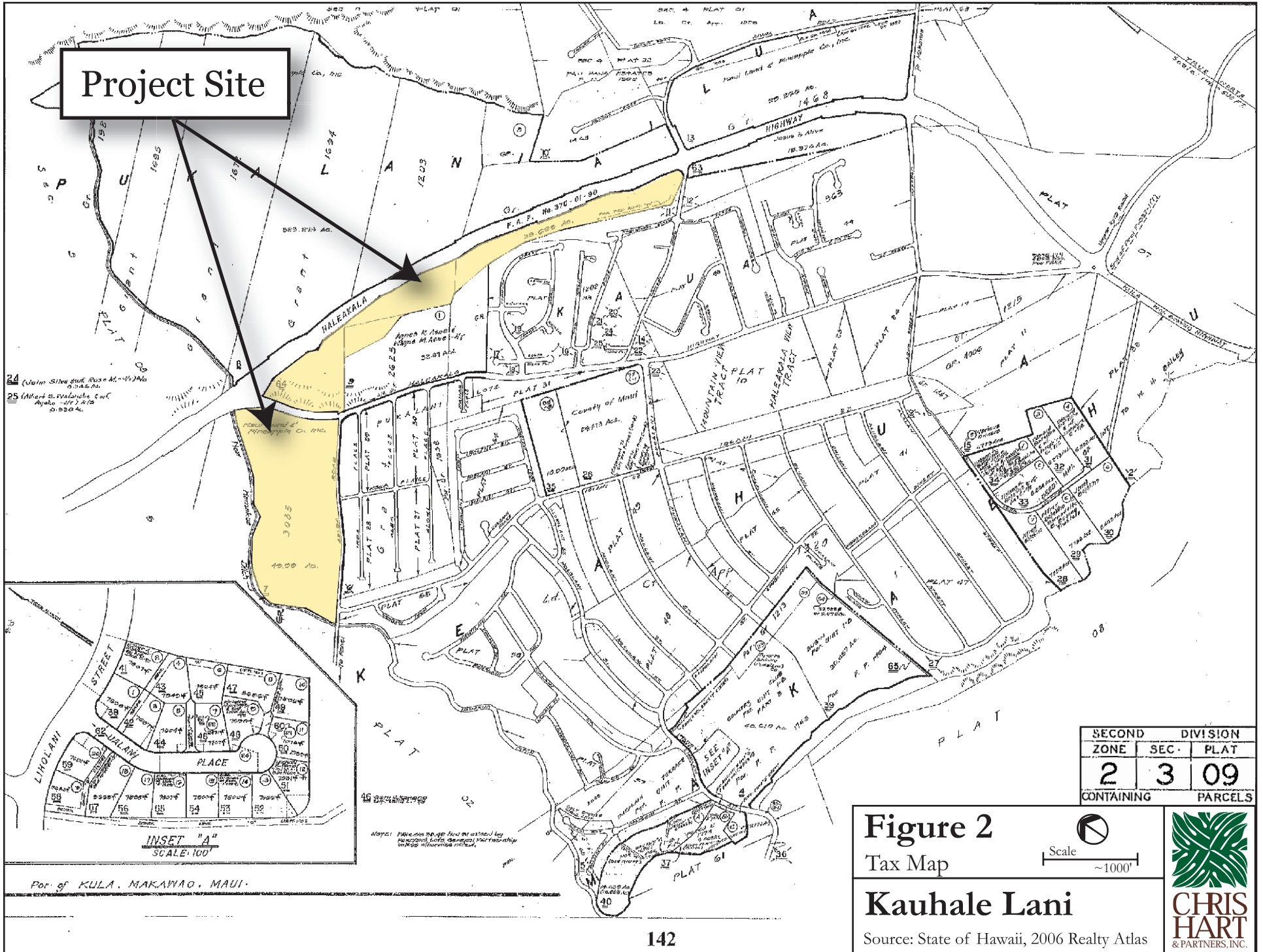
**Kauhale Lani**

Source: USGS Quad Map



**CHRIS  
HART**  
& PARTNERS, INC.

**Project Site**



SECOND DIVISION	
ZONE	SEC. PLAT
2	3 09
CONTAINING PARCELS	

**Figure 2**

Tax Map



**Kauhale Lani**

Source: State of Hawaii, 2006 Realty Atlas



**CHRIS HART & PARTNERS, INC.**



Southern (Mauka) border adjacent to Koea Place:  
North View



Southern (Mauka) border adjacent to Koea Place:  
Southwest View

**Figure 3a-b**  
Site Photos

**Kauhale Lani**

Source: CH&P





Beside the Mauka Border, Facing Southwest  
Corner of Property



From Southwest Corner of Property Facing  
Northeast, Toward Haleakala  
Highway

**Figure 3c-d**

Site Photos

**Kauhale Lani**

Source: CH&P



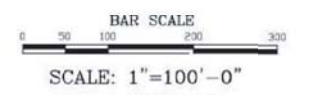


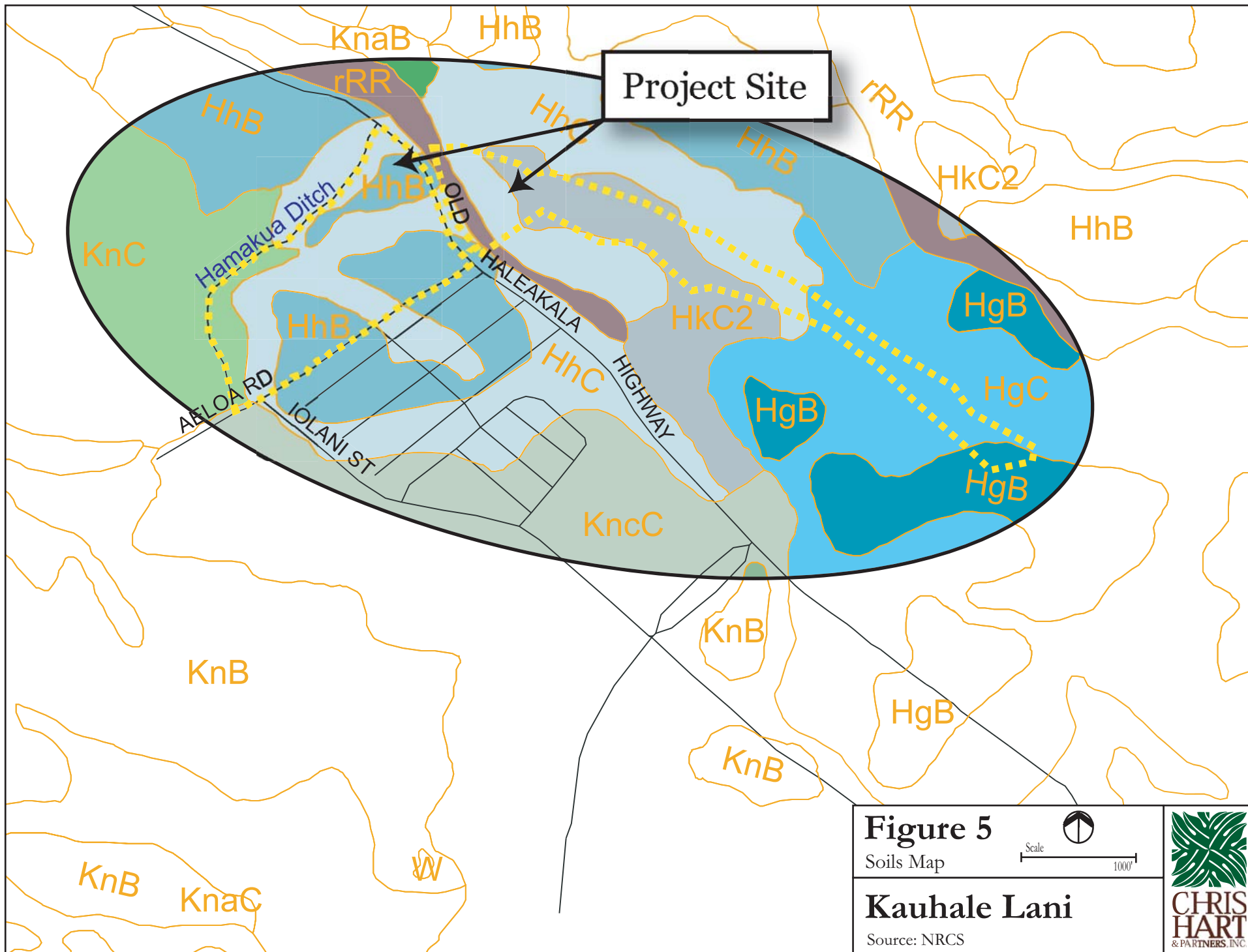
**Figure 4**

Site Plan

**Kauhale Lani**

Source: CH&P





**Figure 5**

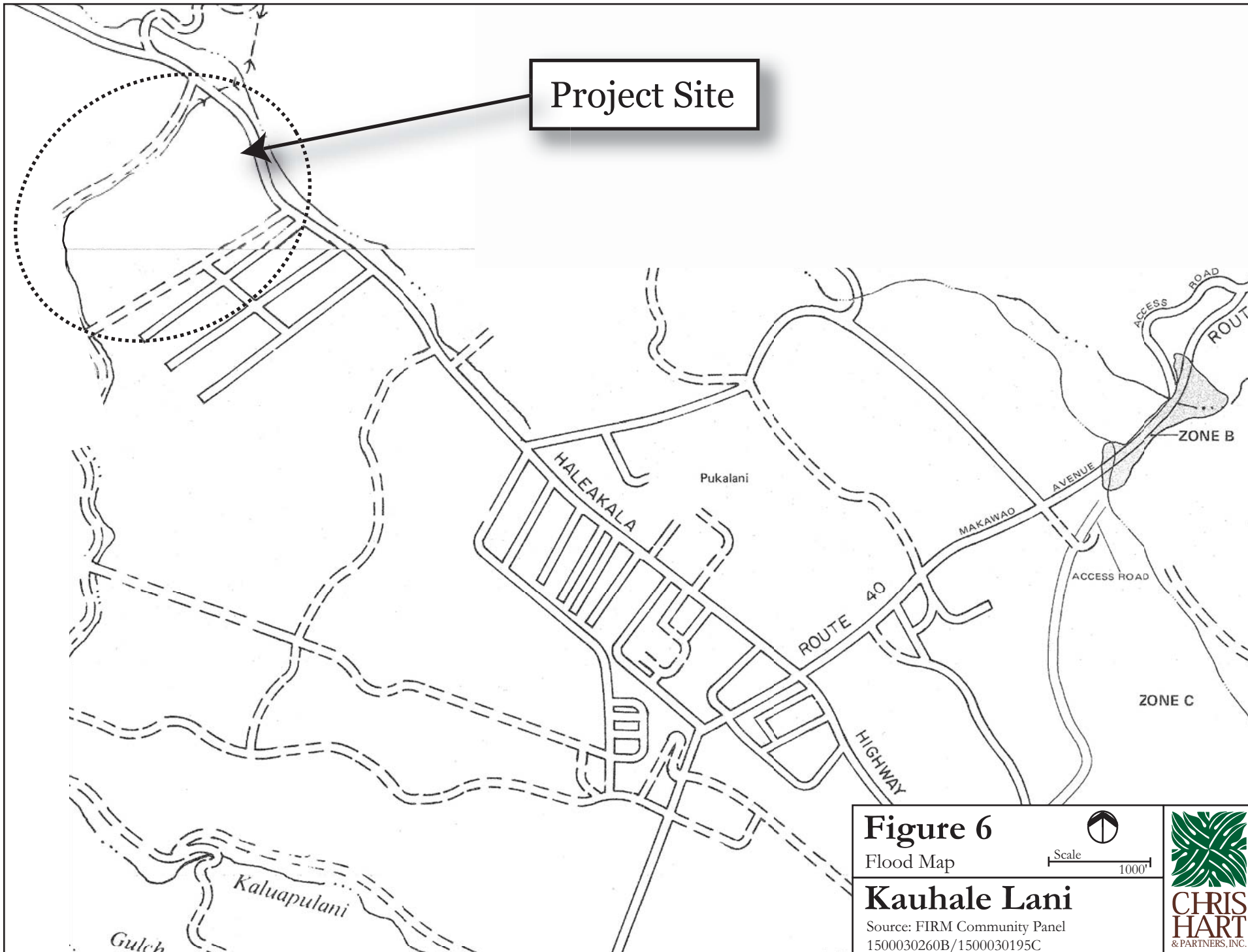
Soils Map



**Kauhale Lani**

Source: NRCS





Project Site

**Figure 6**  
 Flood Map

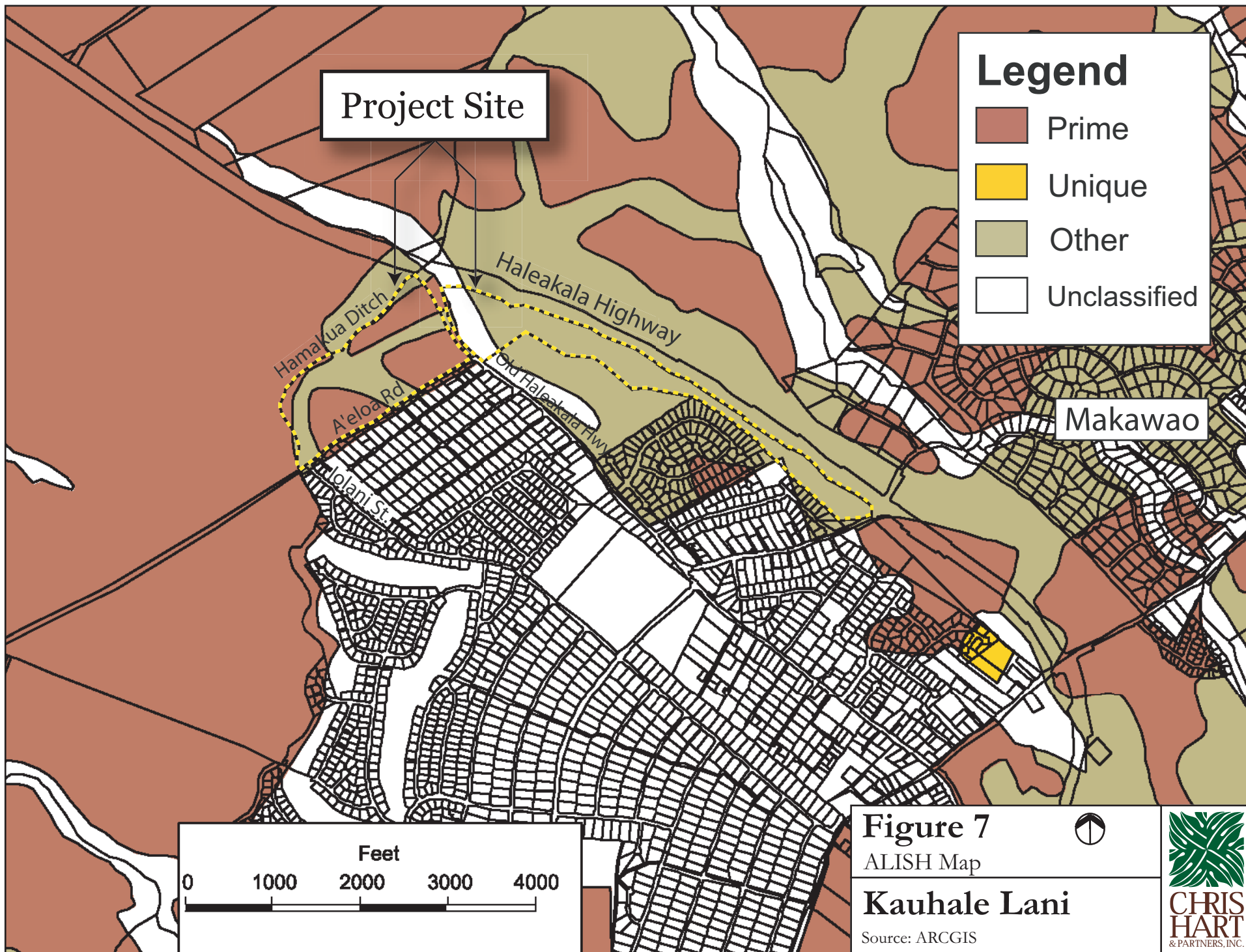


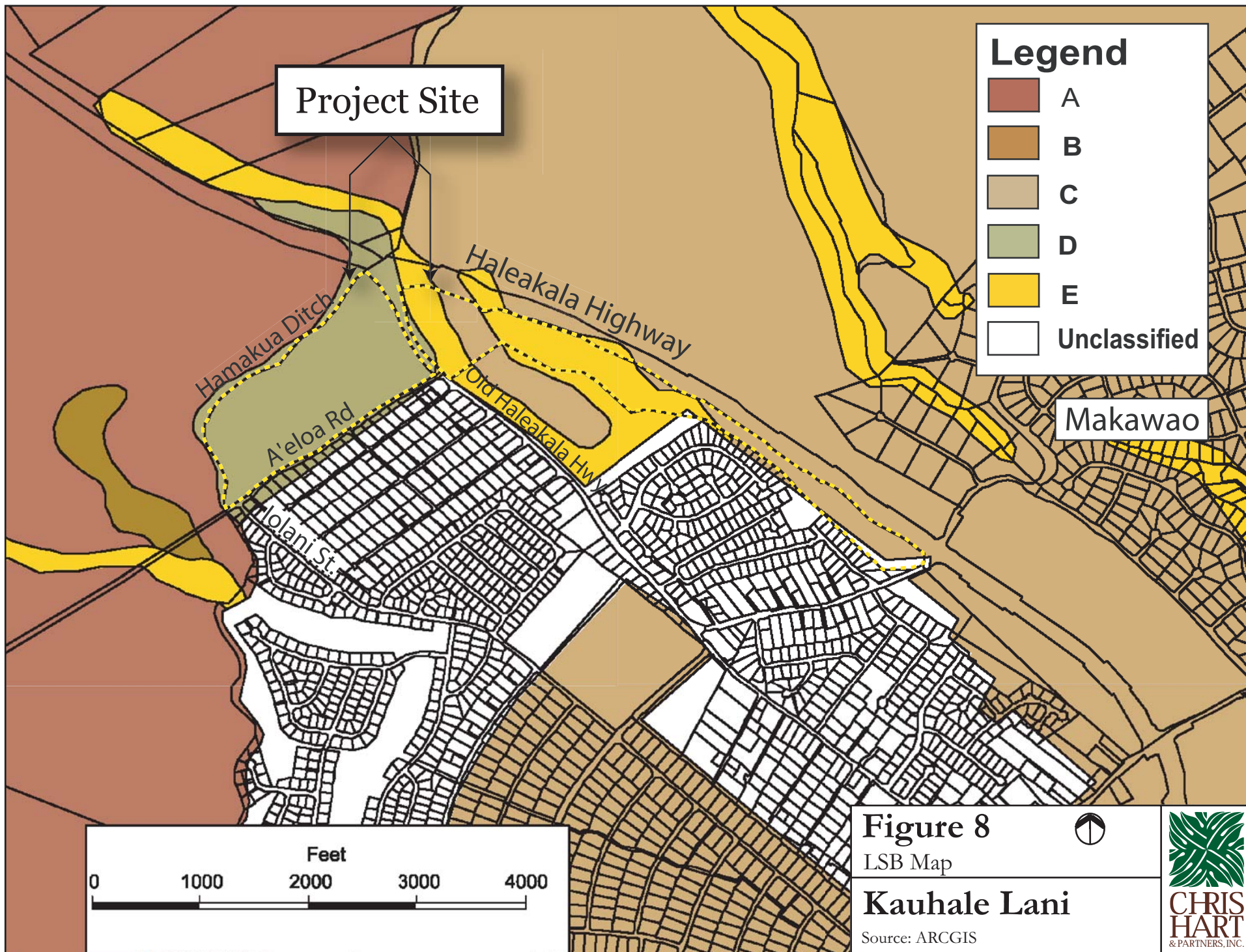
Scale  
 1000'

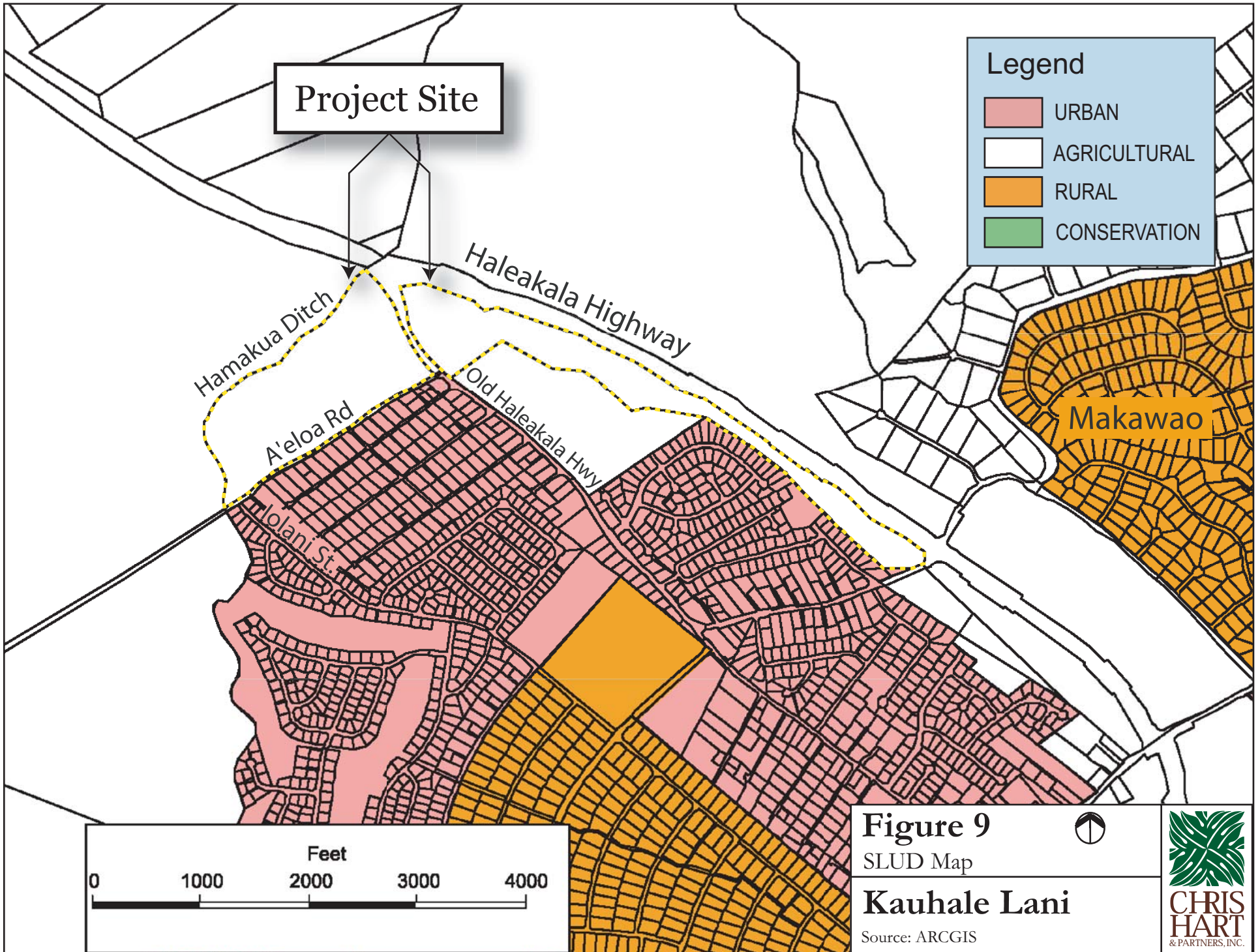
**Kauhale Lani**  
 Source: FIRM Community Panel  
 1500030260B/1500030195C

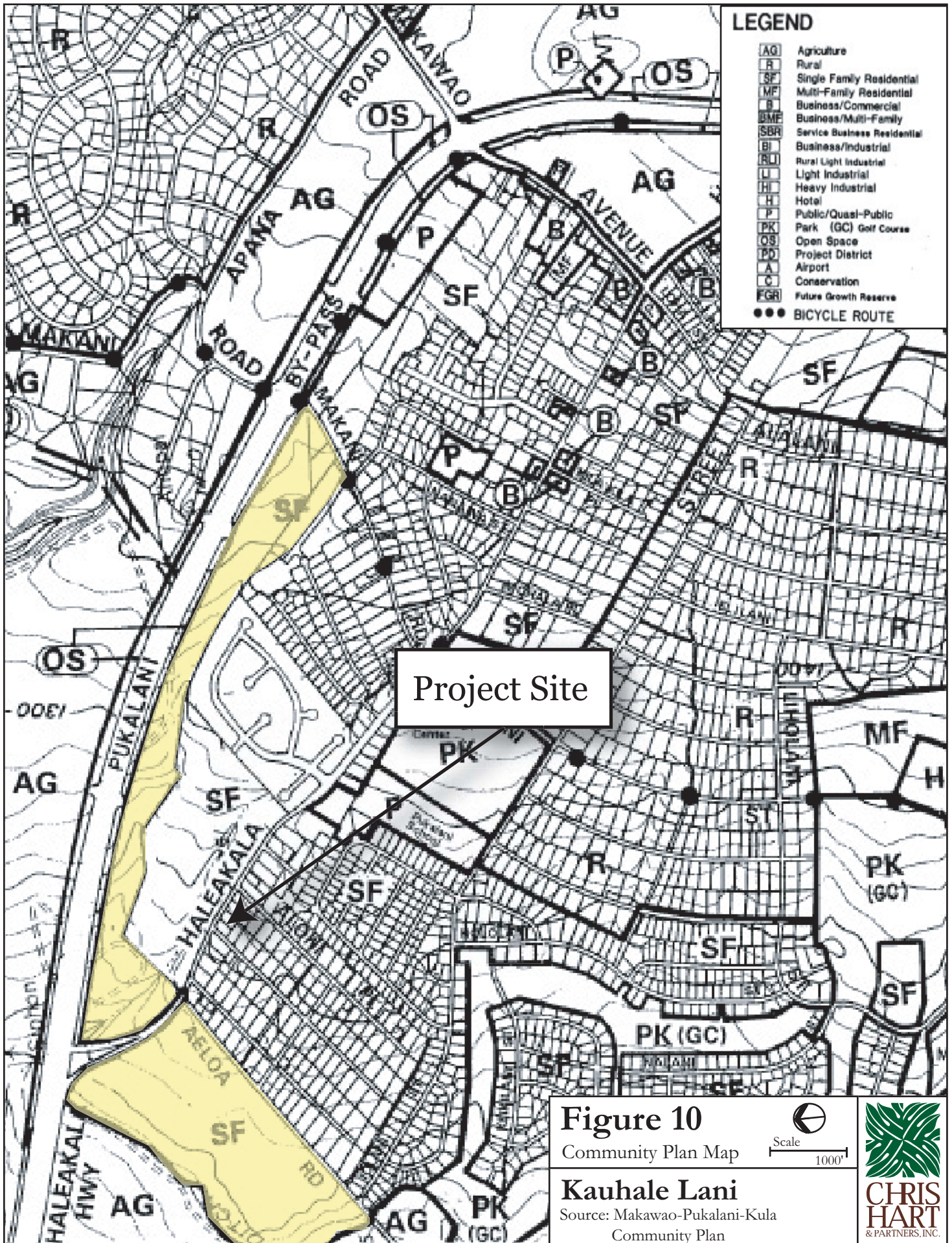


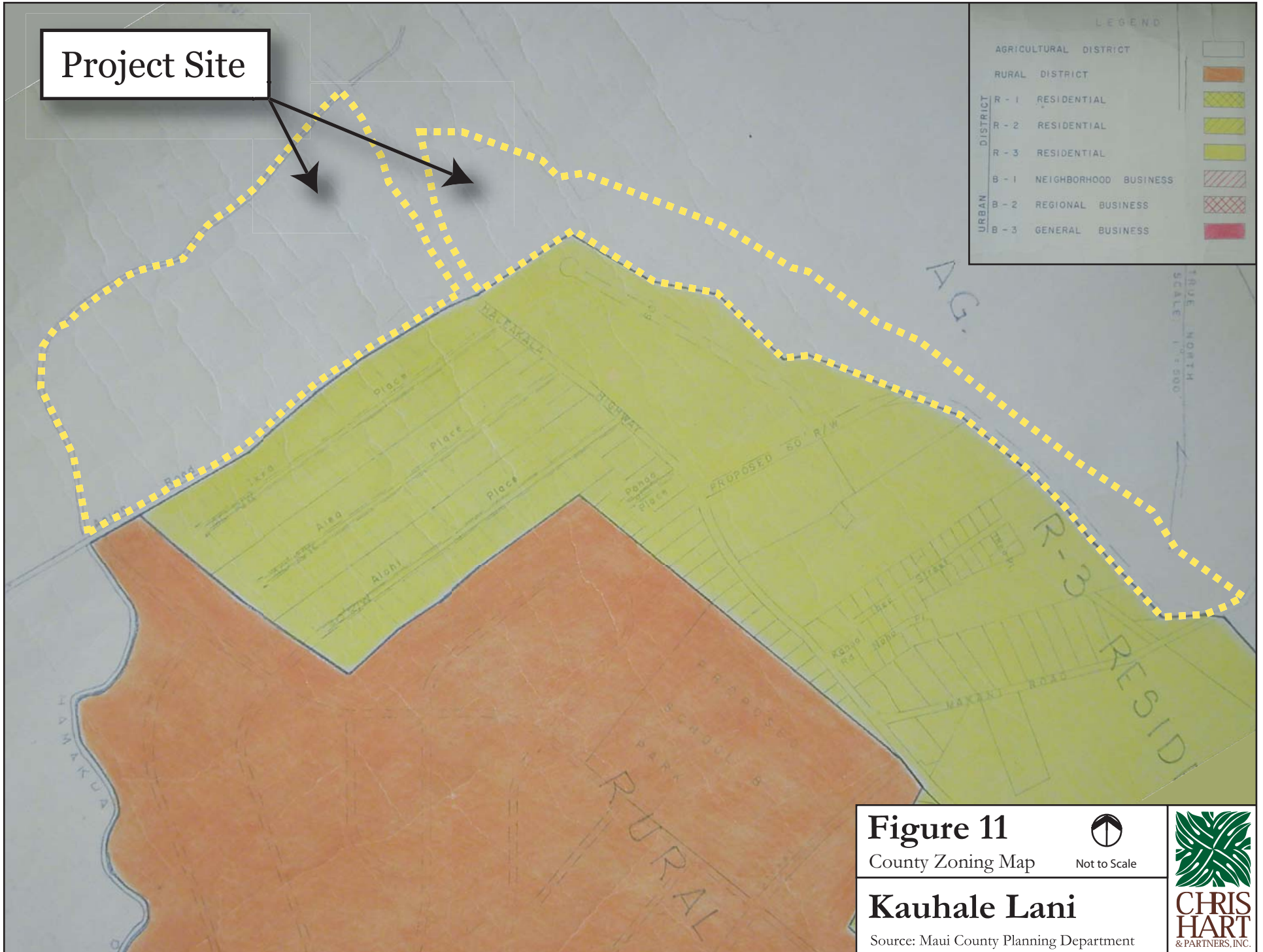












**Project Site**

LEGEND	
AGRICULTURAL DISTRICT	[Light Grey Box]
RURAL DISTRICT	[Orange Box]
R - 1 RESIDENTIAL	[Dark Green Box]
R - 2 RESIDENTIAL	[Yellow-Green Box]
R - 3 RESIDENTIAL	[Light Green Box]
B - 1 NEIGHBORHOOD BUSINESS	[Red/White Diagonal Lines Box]
B - 2 REGIONAL BUSINESS	[Blue/White Diagonal Lines Box]
B - 3 GENERAL BUSINESS	[Red Box]

**Figure 11**  
County Zoning Map



**Kauhale Lani**  
Source: Maui County Planning Department



**Appendix A:  
Botanical Resources  
Assessment Study**

BOTANICAL RESOURCES ASSESSMENT STUDY  
PUKALANI MAKAI  
MAKAWAO DISTRICT, MAUI

BOTANICAL RESOURCES ASSESSMENT STUDY  
PUKALANI MAKAI  
MAKAWAO DISTRICT, MAUI

INTRODUCTION

The proposed Pukalani Makai project site is comprised of two parcels totaling approximately 89 acres. The larger, rectangular-shaped, ±50-acre parcel (TMK: 2-3-09: 7) is bound by Haleakala Highway to the north, sugar cane fields and the Hamakua Ditch to the west and south, and a residential development to the east. This parcel is under active pineapple cultivation and is identified as "Field 280". The second parcel (TMK: 2-9-09: 64), about 39 acres in size, is an elongated piece that borders Pukalani Bypass Highway. The vegetation consists primarily of overgrown pineapple fields. Where it borders Haleakala Highway, there is a large planting of Eucalyptus trees and a small gully.

The soils on the majority of the project site belong to the Hali'imaile series (Foote et al. 1972). These are well-drained, dark reddish brown, silty clay soils found on the uplands of Maui. The actively cultivated pineapple field as well as the overgrown fields occur on this soil type. The area with the Eucalyptus planting and small gully is mapped as "rRR", rough broken land, on the soil maps (Foote et al. 1972).

Field studies to assess the botanical resources on the Pukalani Makai project site were conducted on 22 April 2004 by a team of two botanists. The primary objectives of the field studies were to:

- 1) prepare a general description of the vegetation on the project site;
- 2) search for threatened and endangered species as well as species of concern; and
- 3) identify areas of potential environmental problems or concerns and propose appropriate mitigation measures.

by

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Prepared for: MAUI LAND & PINEAPPLE COMPANY, INC.

May 2004

## SURVEY METHODS

Prior to undertaking the field studies, a search was made of the pertinent literature to familiarize the principal investigator with other botanical studies conducted in the general area. The TMK map as well as aerial photos were examined to determine vegetation cover patterns, terrain characteristics, access, boundaries, and reference points. The ±50-acre parcel was recently plowed and the perimeter road graded; this perimeter road provided the primary access. The smaller ±39-acre parcel can be accessed from Haleakala Highway and a dirt road follows along the lower boundary of the overgrown pineapple fields.

A walk-through survey method was used. Notes were made on plant associations and distribution, disturbances, substrate types, topography, drainage, exposure, etc. The less disturbed area with the Eucalyptus plantings and small gully were more intensively surveyed as this portion of the project site was more likely to harbor native plants.

## DESCRIPTION OF THE VEGETATION

The plant names used in this report follow Wagner et al. (1990) and Wagner and Herbst (1999). The few recent name changes are those reported in the Hawaii Biological Survey series (Evenhuis and Eldredge, eds. 1999-2002).

A description of the vegetation types found on each of the parcels is presented below.

### ±50-Acre Parcel

This parcel, identified as "Field 280", was recently plowed and will be planted (T. Shepard, pers. comm., Maui Pineapple Company, Ltd.). A few rock piles are scattered through the plowed field; these support a cover of green panicgrass (Panicum maximum var. trichoglume) and sourgrass (Digitaria insularis).

A band of weedy vegetation, 3 to 4 ft. tall, is found along the perimeter of the parcel. Along Haleakala Highway, green panicgrass and Natal reedtop grass (Melinis repens) are abundant. Other weedy species which occur here in smaller numbers include Spanish needle (Bidens pilosa), fireweed (Senecio madagascariensis), spiny amaranth (Amaranthus spinosus), pua'ele (Emilia fosbergii), Crassocephalum crepidioides, and Cuba jute (Sida rhombifolia). Smaller, scattered patches of goosegrass (Eleusine indica), sourgrass, swollen fingergrass (Chloris barbata), Brachiaria subquadrinpara, and crabgrass (Digitaria sp.) are common. Two native species, popolo (Solanum americanum) and 'uhatoa (Waltheria indica), are found here. A row of oleander shrubs (Nerium oleander) is planted alongside the highway.

Along the ditch, the weedy vegetation is periodically treated with herbicide and so in most places it is low, 1 to 2 ft. tall, and open. Spanish needle and sowthistle (Sonchus oleraceus) are abundant in some places, while crabgrass and spiny amaranth are abundant in other places. A pile of large boulders is found along the ditch. In this area, there is a small thicket of koa haole shrubs (Leucaena leucocephala) and dense mats of California grass (Brachiaria mutica). Semi-woody shrubs and subshrubs found here are castor bean (Ricinus communis), hairy abutilon (Abutilon grandifolium), and 'ilima (Sida fallax). Besides 'ilima, the other native species observed in this area is koali 'awa (Ipomoea indica), a member of the morning glory family.

The band of weedy vegetation adjacent to the residential area is similar to that found along the highway, but also includes cheeseweed (Malva parviflora), apple of Peru (Nicandra physalodes), Jimson weed (Datura stramonium), California grass, lion's ear (Leonotis nepetifolia), prickly lettuce (Lactuca scariola), and a yellow-flowered morning glory (Ipomoea ochracea). A few landscape plantings from the adjacent yards spill over onto the parcel; these include New Zealand spinach (Tetragonia tetragonioides), aloe (Aloe vera), guava (Psidium guajava), etc.



#### ±39-Acre Parcel

Most of the vegetation on this parcel consists of overgrown pineapple fields. The pineapple fields on the eastern half of the parcel appear to have been abandoned fairly recently so the rows of pineapple plants are not as overgrown and the weedy assemblage of species, mostly Natal redtop grass and sourgrass, occur along the edge of the fields and on the dirt roads. On the western half of the parcel, the old fields are open and grassy with sourgrass, Natal redtop, Guinea grass (*Panicum maximum*), and green panicgrass abundant. Sourbush shrubs (*Pluchea carolinensis*), 5 to 7 ft. tall, are scattered throughout the old fields. Other weedy species found here include spiny amaranth, golden crown-beard (*Verbesina encelioides*), castor bean, lion's ear, pualele, Spanish needle, and Cuba jute. Fireweed is locally abundant on the old roads. A few remnant clumps of pineapple plants occur here and there among the old field vegetation. In some places along the highway, there is a narrow band of Guinea grass and a few koa haole shrubs with koali 'awa vines growing on them.

The planting of various *Eucalyptus* species, 40 to 70 ft. tall, bordering Haleakala Highway also contains a few trees of silk oak (*Grevillea robusta*) and Chinaberry (*Helia azedarach*). Koa haole and Christmas berry (*Schinus terebinthifolius*) shrubs form scattered, small thickets under the tree canopy. Ground cover consists of scattered clumps of Guinea grass, along with a few weedy plants of maile hohono (*Ageratum conyzoides*), Spanish needle, burbush (*Triumfetta* sp.), and Jamaica vervain (*Stachytarpheta jamaicensis*). However, areas with bare soil and leaf and branch litter are common. Axis deer tracks and scats are occasionally encountered.

A few native species are quite common in this forested area. Shrubs of 'a'ali'i (*Dodonaea viscosa*) and 'akia (*Wikstroemia oahuensis*), 3 to 8 ft. tall, are common to occasional. 'Uhaloa and 'ilima are found along the edge of the tree planting. Vines of *Sicyos hispidus*, a member of the cucumber or squash family, are found on the edge of the tree planting facing the highway. This species of *Sicyos* is easily identified by its fuzzy fruits.

The small gully found between the *Eucalyptus* planting and the overgrown pineapple fields supports abundant patches of Napier or elephant grass (*Pennisetum purpureum*) as well as dense clumps of Guinea grass. *Neotonia wightii*, a member of the pea family, is locally abundant in some places, forming tangled mats over the grasses and scattered koa haole shrubs.

#### DISCUSSION AND RECOMMENDATIONS

Pineapple fields (actively cultivated, overgrown, or recently abandoned) cover the majority of the two parcels which make up the project site. Weedy species commonly associated with agricultural lands are usually found as a narrow band along the edges of the fields where they border roads, ditches, and other uncultivated areas. A botanical survey of the nearby pineapple fields for the proposed Upcountry Maui Town Center project (Char 2001) recorded similar findings.

A large planting of various *Eucalyptus* species as well as a few trees of silk oak and Chinaberry borders Haleakala Highway on the ±39-acre parcel. The native 'a'ali'i and 'akia shrubs and *Sicyos hispidus* vine are commonly encountered in this forested area. The small gully supports abundant patches of Napier grass and Guinea grass.

None of the plants found during the field studies is a threatened and endangered species or a species of concern (U.S. Fish and Wildlife Service 1999a, 1999b; Wagner et al. 1999). Seven native species were observed on the project site. Five are indigenous, that is, they are native to the Hawaiian Islands and elsewhere. These are popolo (*Solanum americanum*), 'uhaloa (*Waltheria indica*), koali 'awa (*Ipomoea indica*), 'ilima (*Sida fallax*), and 'a'ali'i (*Dodonaea viscosa*). The 'akia (*Wikstroemia oahuensis*) and *Sicyos* are endemic, that is, they are native only to the Hawaiian Islands.

Given these findings, the proposed development of the project site is not

expected to have a significant negative impact on the botanical resources. However, it is recommended that the area with the Eucalyptus planting and small gully be kept in open space as the topography is rough and broken, and the erosion hazard is of some concern.

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# **Appendix B: Faunal Survey**

**AVIFAUNAL AND FERAL MAMMAL FIELD SURVEY OF  
PUKALANI MAKAI TMK 2-3-09:7 and TMK 2-9-09:64, MAUI**

**Prepared for:  
PBR Hawaii  
And  
Kapalua Land Company, Ltd.**

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**7 May 2004**

**RECEIVED  
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## **INTRODUCTION**

This report presents the findings of a two day (1,2, May 2004) field survey of Pukalani Makai property TMK 2-3-09:7 (50 acres) and TMK 2-9-09:64 (39 acres) in Maui. In addition to the field data this report also gives pertinent published and unpublished sources of birds and mammals to provide a broader view of the potential species known in this region of Maui. The two objectives of the field survey were to:

- 1- Document the birds and mammals presently found on or near the property.
- 2- Examine all habitats on the site and nearby lands.

## **SITE DESCRIPTION**

This site contained a variety of habitats. A portion of the land was recently plowed and contained no vegetation. Old pineapple fields along with grass, brush and scattered eucalyptus trees cover the remaining area. No wetland habitat or native forest occurs on the property. Agricultural fields and residential property surround this site.

## **METHODS OF THE FIELD SURVEY**

The survey was conducted by walking the site. Observations were made during early morning, late afternoon and early evening hours. All habitats on the property were investigated. All birds seen and heard were tallied. Data on mammals were obtained by visual observations only. No trapping of mammals was conducted. The duration and nature of the field survey did not warrant trapping. One evening (1 May) was devoted to searching for the presence of owls and the endangered Hawaiian Hoary Bat (*Lasiurus cinereus semotus*). A Pettersson Elektronik AB Ultrasound Detector D-100 was used to listen for echolocating bats. The weather during the survey was generally fair with some cloud cover late in the day. The winds were variable.

## **RESULTS OF THE FIELD SURVEY**

### **Native Land Birds:**

No native land birds were recorded on the survey. The only likely species that might be expected to forage in this area is the Hawaiian Owl or Pueo (*Asio flammeus sandwichensis*). This species is listed by the State of Hawaii as endangered on Oahu but not elsewhere in the state. They forage in grassland, agricultural fields and forests (Pratt et al. 1987, Hawaii Audubon Society 1993).

**Native Waterbirds:**

No native waterbirds were seen and none were expected due to the absence of wetland habitat.

**Seabirds:**

No seabirds were recorded on the survey. None would be expected at this site due to the presence of ground predators and human disturbance. Some species may fly over the property between their mountain nesting areas and the sea.

**Migratory Birds:**

No migratory birds were observed on the survey. At this time of year the majority of the migrants have departed for their arctic breeding grounds. A few may “over-summer” in Hawaii if they fail to gain sufficient weight to migrate or they are injured. The most common migratory shorebird in Hawaii is the Pacific Golden-Plover (*Pluvialis fulva*). They forage on lawns and in cleared agricultural fields. It is possible that between August and the end of April plover may occur on or near this area in the appropriate habitat. These birds are not endangered. They have been extensively studied both here in Hawaii and on their breeding grounds in western Alaska (Johnson et al. 1981, 1989, 1993, 2001a, 2001b).

### **Introduced (Alien) Birds:**

Fourteen species of alien birds were tallied on the survey. Table One gives the names of these species. None of the alien birds are listed as endangered. The array of birds at this location is typical of this region on Maui (Bruner 1991, 1993, 1994, 1998, 2003).

### **Mammals:**

Two feral (?) cats (*Felis catus*) were seen on the survey. Given the proximity of nearby homes it is possible these cats were pets. No other mammals were recorded. It is likely that rats (*Rattus spp.*), Small Indian Mongoose (*Herpestes auropunctatus*), and Mice (*Mus musculus*) occur in this area. No endangered Hawaiian Hoary Bats (*Lasiurus cinereus semotus*) were detected on the night survey conducted on 1 May using the ultrasound detector. This finding was not unexpected given the low numbers of bats reported to occur on Maui (Tomich 1986, Kepler and Scott 1990, Duval and Duvall 1991). This species forages in a wide variety of habitats including: forests, agricultural lands, and urban areas. They are most abundant on Kauai and the Big Island. Jacobs (1991, 1993) and Reynolds et al. (1998) give information on the occurrence of this species on the Big Island.



## CONCLUSIONS

The purpose of this report was to present the findings of a bird and feral mammal survey at this site. The absence of native land birds, native waterbirds, migratory birds, and seabirds was not totally unexpected given the location of the property, the available habitats, and the time of year. The array of alien birds was typical of this region. Mammal observations were also not unusual although mongoose and rats are typically recorded on a survey of this type. The absence of the Hawaiian Hoary Bat was likewise not unexpected given their abundance on Maui. This species could forage in this area and could even roost in the trees at this location.

### TABLE ONE

Introduced (alien) birds recorded on the survey of Pukalani Makai TMK 2-3-09:7 and TMK 2-9-09:64, Maui.

COMMON NAME	SCIENTIFIC NAME
Cattle Egret	<i>Bulbucus ibis</i>
Gray Francolin	<i>Francolinus pondicerianus</i>
Black Francolin	<i>Francolinus francolinus</i>
Red Junglefowl	<i>Gallus fallus</i>
Spotted Dove	<i>Streptopelia chinensis</i>
Zebra Dove	<i>Geopelia striata</i>
Japanese White-eye	<i>Zosterops japonicus</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Common Myna	<i>Acridotheres tristis</i>
Red-crested Cardinal	<i>Paroaria coronata</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
House Finch	<i>Carpodacus mexicanus</i>
Nutmeg Mannikin	<i>Lonchura punctulata</i>
Chestnut Mannikin	<i>Lonchura atricapilla</i>

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**Appendix C:  
Air Quality Study**

**AIR QUALITY STUDY  
FOR THE PROPOSED  
KAUHALE LANI COMMUNITY**

**PUKALANI, MAUI, HAWAII**

**Prepared for:**

**Maui Land & Pineapple Company, Inc.**

**May 2005**



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## 1.0 SUMMARY

Maui Land & Pineapple Company, Inc. is proposing to develop the Kauhale Lani community on 89 acres of vacant land located in the Pukalani area on Maui. Kauhale Lani will consist of 165 residential units, a community park, and other associated community facilities. Development and full occupancy of Kauhale Lani is expected to be completed by 2010. This study examines the potential short- and long-term air quality impacts that could occur as a result of construction and use of the proposed facilities and suggests mitigative measures to reduce any potential air quality impacts where possible and appropriate.

Both federal and state standards have been established to maintain ambient air quality. At the present time, seven parameters are regulated including: particulate matter, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone and lead. Hawaii air quality standards are comparable to the national standards except those for nitrogen dioxide and carbon monoxide which are more stringent than the national standards.

Regional and local climate together with the amount and type of human activity generally dictate the air quality of a given location. The climate of the Pukalani area is very much affected by its mauka situation on the slopes of Haleakala. Winds are often breezy trade winds from the north or northeast. Temperatures in the Pukalani area are relatively cool due to the upcountry elevation with an average daily temperature range of about 60°F to 75°F. Average annual rainfall in the area amounts to about 43 inches.



No ambient air quality data for the Pukalani area has been reported by the state Department of Health. However, except for periodic impacts from distant volcanic emissions (vog) and possibly occasional localized impacts from traffic congestion or agricultural activities, the present air quality of the Pukalani area is good.

If Kauhale Lani is given the necessary approvals to proceed, it is inevitable that some short- and long-term impacts on air quality will occur either directly or indirectly as a consequence of Kauhale Lani's construction and use. Short-term impacts from fugitive dust will likely occur during the construction phase. To a lesser extent, exhaust emissions from stationary and mobile construction equipment, from the disruption of traffic, and from workers' vehicles may also affect air quality during the period of construction. State air pollution control regulations require that there be no visible fugitive dust emissions at the property line. Hence, an effective dust control plan must be implemented to ensure compliance with state regulations. Fugitive dust emissions can be controlled to a large extent by watering of active work areas, using wind screens, keeping adjacent paved roads clean, and by covering of open-bodied trucks. Other dust control measures include limiting the area that can be disturbed at any given time and/or mulching or chemically stabilizing inactive areas that have been worked. Paving and landscaping of Kauhale Lani areas early in the construction schedule will also reduce dust emissions. Monitoring dust at Kauhale Lani's boundary during the period of construction could be considered as a means to evaluate the effectiveness of the dust control program. Exhaust emissions can be mitigated by moving construction equipment and workers to and from the site during off-peak traffic hours.

After construction, motor vehicles coming to and from Kauhale Lani will result in a long-term increase in air pollution emissions in the project area. To assess the impact of emissions from these vehicles, an air quality modeling study was undertaken to estimate current ambient concentrations of carbon monoxide at intersections in the project vicinity and to predict future levels both with and without Kauhale Lani. During worst-case conditions, model results indicated that present 1-hour and 8-hour carbon monoxide concentrations are well within both the state and the national ambient air quality standards. In the year 2010 without Kauhale Lani, carbon monoxide concentrations were predicted to remain unchanged or decrease somewhat at two of the three locations studied despite the expected increase in ambient traffic volumes. This is because some older vehicles that emit more air pollution will be retired during the intervening years. Carbon monoxide concentrations were predicted to increase without Kauhale Lani during the morning peak traffic hour at the intersection of Old Haleakala Highway and Pukalani Street due to overcapacity conditions. With Kauhale Lani in the year 2010, the maximum carbon monoxide concentrations were estimated to increase by about 7 percent or less in the project area compared to the without project case, but concentrations should remain within state and federal standards. Implementing mitigation measures for traffic-related air quality impacts is thus unnecessary and unwarranted.

Depending on the demand levels, long-term impacts on air quality are also possible due to indirect emissions associated with a development's electrical power and solid waste disposal requirements. Quantitative estimates of these potential impacts were

not made, but based on the estimated demand levels and emission rates involved, any significant impacts are unlikely. Nevertheless, incorporating energy conservation design features and promoting conservation and recycling programs within the proposed development could serve to further reduce any associated impacts and conserve the island's resources.

## **2.0 INTRODUCTION**

Maui Land & Pineapple Company, Inc. is proposing to develop the Kauhale Lani community on approximately 89 acres of land in the Pukalani area on Maui (see Figure 1 for project location). The proposed development is a master planned community that includes 165 residential units, a neighborhood park, community trails, and other associated community facilities. It is intended to be a pedestrian community that emphasizes walking and biking within the development. The Kauhale Lani site includes a 50-acre parcel of land west of Old Haleakala Highway that will include the residential neighborhood and a 39-acre parcel between Old Haleakala Highway and Haleakala Highway that will be used for the project open space areas. Construction of the community is expected to be completed in phases with full development and occupancy by 2010.

The purpose of this study is to describe existing air quality in the project area and to assess the potential short- and long-term direct and indirect air quality impacts that could result from construction and use of the proposed facilities as planned. Measures to mitigate impacts by the project are suggested where possible and appropriate.

### 3.0 AMBIENT AIR QUALITY STANDARDS

Ambient concentrations of air pollution are regulated by both national and state ambient air quality standards (AAQS). National AAQS are specified in Section 40, Part 50 of the Code of Federal Regulations (CFR), while State of Hawaii AAQS are defined in Chapter 11-59 of the Hawaii Administrative Rules. Table 1 summarizes both the national and the state AAQS that are specified in the cited documents. As indicated in the table, national and state AAQS have been established for particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead. The state has also set a standard for hydrogen sulfide. National AAQS are stated in terms of both primary and secondary standards for most of the regulated air pollutants. National primary standards are designed to protect the public health with an "adequate margin of safety". National secondary standards, on the other hand, define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant". Secondary public welfare impacts may include such effects as decreased visibility, diminished comfort levels, or other potential injury to the natural or man-made environment, e.g., soiling of materials, damage to vegetation or other economic damage. In contrast to the national AAQS, Hawaii State AAQS are given in terms of a single standard that is designed "to protect public health and welfare and to prevent the significant deterioration of air quality".

Each of the regulated air pollutants has the potential to create or exacerbate some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration for prolonged periods of time. The AAQS specify a

maximum allowable concentration for a given air pollutant for one or more averaging times to prevent harmful effects. Averaging times vary from one hour to one year depending on the pollutant and type of exposure necessary to cause adverse effects. In the case of the short-term (i.e., 1- to 24-hour) AAQS, both national and state standards allow a specified number of exceedances each year.

The Hawaii AAQS are in some cases considerably more stringent than the comparable national AAQS. In particular, the Hawaii 1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit. The U.S. Environmental Protection Agency (EPA) is currently working on a plan to phase out the national 1-hour ozone standard in favor of the new (and more stringent) 8-hour standard.

The Hawaii AAQS for sulfur dioxide were relaxed in 1986 to make the state standards essentially the same as the national limits. In 1993, the state also revised its particulate standards to follow those set by the federal government. During 1997, the federal government again revised its standards for particulate, but the new standards were challenged in federal court. A Supreme Court ruling was issued during February 2001, and at this time, it is expected that the new standards for particulate will be implemented by 2005. To date, the Hawaii Department of Health has not updated the state particulate standards. In September 2001, the state vacated the state 1-hour standard for ozone and an 8-hour standard was adopted.

#### 4.0 REGIONAL AND LOCAL CLIMATOLOGY

Regional and local climatology significantly affect the air quality of a given location. Wind, temperature, atmospheric turbulence, mixing height and rainfall all influence air quality. Although the climate of Hawaii is relatively moderate throughout most of the state, significant differences in these parameters may occur from one location to another. Most differences in regional and local climates within the state are caused by the mountainous topography.

The topography of Maui is dominated by the great volcanic masses of Haleakala (10,023 feet) and the West Maui Mountains (5,788 feet). The island consists entirely of the slopes of these mountains and of a connecting isthmus. Haleakala is still considered to be an active volcano and last erupted about 1790. The project site is located along the lower western slope of Haleakala at an elevation of about 1,500 feet.

Maui lies well within the belt of northeasterly trade winds generated by the semi-permanent Pacific high pressure cell to the north and east. The valley between Haleakala and the West Maui Mountains tends to channel the trade winds through the valley making Pukalani and other areas within the valley relatively breezy. Local winds such as land/sea breezes and/or upslope/downslope winds also influence the wind pattern for the area. During the daytime, when the trade winds are weak or absent, winds typically move onshore because of seabreeze and/or upslope effects. At night, winds are often drainage winds that move downslope and out to sea. During winter, occasional strong

winds from the south or southwest occur in association with the passage of winter storm systems.

Air pollution emissions from motor vehicles, the formation of photochemical smog and smoke plume rise all depend in part on air temperature. Colder temperatures tend to result in higher emissions of contaminants from automobiles but lower concentrations of photochemical smog and ground-level concentrations of air pollution from elevated plumes. In Hawaii, the annual and daily variation of temperature depends to a large degree on elevation above sea level, distance inland and exposure to the trade winds. Average temperatures at locations near sea level generally are warmer than those at higher elevations. Areas exposed to the trade winds tend to have the least temperature variation, while inland and leeward areas often have the most. The project site's mauka location results in cooler temperatures compared to coastal locations at lower elevations. In the Makawao area at an elevation of about 2,100 feet, which is a few miles northeast of the project site, average daily minimum and maximum temperatures are 59°F and 72°F, respectively [1]. Temperatures at the project site are slightly warmer due to the lower elevation.

Small scale, random motions in the atmosphere (turbulence) cause air pollutants to be dispersed as a function of distance or time from the point of emission. Turbulence is caused by both mechanical and thermal forces in the atmosphere. It is often measured and described in terms of Pasquill-Gifford stability class. Stability class 1 is the most turbulent and class 6 is the least. Thus, air pollution dissipates the best during stability class 1 conditions and the worst when stability class 6 prevails. In the Pukualani area, stability classes 5 or 6 typically occur during

the nighttime or early morning hours when temperature inversions form due to radiational cooling or to drainage flow from the nearby mountains. Stability classes 1 through 4 occur during the daytime, depending mainly on the amount of cloud cover and incoming solar radiation and the onset and extent of the sea breeze.

Mixing height is defined as the height above the surface through which relatively vigorous vertical mixing occurs. Low mixing heights can result in high ground-level air pollution concentrations because contaminants emitted from or near the surface can become trapped within the mixing layer. In Hawaii, minimum mixing heights tend to be high because of mechanical mixing caused by the trade winds and because of the temperature moderating effect of the surrounding ocean. Low mixing heights may sometimes occur, however, at inland locations and even at times along coastal areas early in the morning following a clear, cool, windless night. Coastal areas also may experience low mixing levels during sea breeze conditions when cooler ocean air rushes in over warmer land. Mixing heights in Hawaii typically are above 3,000 feet (1,000 meters).

Rainfall can have a beneficial affect on the air quality of an area in that it helps to suppress fugitive dust emissions, and it also may "washout" gaseous contaminants that are water soluble. Rainfall in Hawaii is highly variable depending on elevation and on location with respect to the trade wind. The climate of the project area is relatively moderate with respect to precipitation. Historical records from Haleakala Ranch show that this area of Maui averages about 43 inches of precipitation per year with the summer months being the driest [1].



## 5.0 PRESENT AIR QUALITY

Present air quality in the Pukalani area is mostly affected by air pollutants from vehicular, industrial, natural and/or agricultural sources. Table 2 presents an air pollutant emission summary for the island of Maui for calendar year 1993. The emission rates shown in the table pertain to manmade emissions only, i.e., emissions from natural sources are not included. As suggested in the table, most of the manmade particulate and sulfur oxides emissions on Maui originate from point sources, such as power plants and other fuel-burning industries. Nitrogen oxides emissions are roughly equally divided between point sources and area sources (mostly motor vehicle traffic). The majority of carbon monoxide emissions occur from area sources (motor vehicle traffic and sugar cane burning), while hydrocarbons are emitted mainly from point sources.

The largest sources of air pollution in the project area are probably agricultural operations and automobile traffic using local roadways. Emissions from these sources consist primarily of particulate, carbon monoxide and nitrogen oxides.

The State Department of Health operates a network of air quality monitoring stations at various locations around the state, but only very limited data are available for Maui Island. The only air quality data for the project area consists of particulate measurements collected at Paia, which is situated downslope from the Pukalani area about 5 miles to the north. These data are probably only semi-representative of the project area. Table 3

summarizes the data from the Paia monitoring station. Annual second-highest 24-hour particulate concentrations (which are most relevant to the air quality standards) ranged from 45 to 98  $\mu\text{g}/\text{m}^3$  between 1997 and 2001. Average annual concentrations ranged from 17 to 20  $\mu\text{g}/\text{m}^3$ . All values reported were within the state and national AAQS.

Given the limited air pollution sources in the area, it is likely that air pollution concentrations are near natural background levels, except possibly for locations adjacent to agricultural operations or near traffic-congested intersections. Present concentrations of carbon monoxide in the project area are estimated later in this study based on computer modeling of motor vehicle emissions.

## **6.0 SHORT-TERM IMPACTS OF KAUHALE LANI**

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

Fugitive dust emissions may arise from the grading and dirt-moving activities associated with site clearing and preparation work. The emission rate for fugitive dust emissions from construction activities is difficult to estimate accurately. This is because of its elusive nature of emission and because the potential for its generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The EPA [2] has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions at the project site would likely be somewhere near that level, depending on the amount of rainfall that occurs. In any case, State of Hawaii Air Pollution Control Regulations [3] prohibit visible emissions of fugitive dust from construction activities at the property line. Thus, an effective dust control plan for Kauhale Lani's construction phase is essential.

Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in construction areas from becoming significant sources of dust. In dust-prone or dust-sensitive areas, other control measures such as limiting the area that can be disturbed at any given time, applying chemical soil stabilizers, mulching and/or using wind screens may be necessary. Control regulations further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials that could be blown away. Haul trucks tracking dirt onto paved streets from unpaved

areas is often a significant source of dust in construction areas. Some means to alleviate this problem, such as road cleaning or tire washing, may be appropriate. Paving of parking areas and/or establishment of landscaping as early in the construction schedule as possible can also lower the potential for fugitive dust emissions. Monitoring dust at the project property line could be considered to quantify and document the effectiveness of dust control measures.

On-site mobile and stationary construction equipment also will emit air pollutants from engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively high compared to gasoline-powered equipment, but the standard for nitrogen dioxide is set on an annual basis and is not likely to be violated by short-term construction equipment emissions. Carbon monoxide emissions from diesel engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways.

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

## **7.0 LONG-TERM IMPACTS OF KAUHALE LANI**

### **7.1 Roadway Traffic**

After construction is completed, use of the proposed facilities will result in increased motor vehicle traffic in the project area, potentially causing long-term impacts on ambient air quality. Motor vehicles with gasoline-powered engines are significant sources of carbon monoxide. They also emit nitrogen oxides and other contaminants.

Federal air pollution control regulations require that new motor vehicles be equipped with emission control devices that reduce emissions significantly compared to a few years ago. In 1990, the President signed into law the Clean Air Act Amendments. This legislation requires further emission reductions, which have been phased in since 1994. More recently, additional restrictions were signed into law during the Clinton administration, which will begin to take effect during the next decade. The added restrictions on emissions from new motor vehicles will lower average emissions each year as more and more older vehicles leave the state's roadways. It is estimated that carbon monoxide emissions, for example, will go down by an average of about 30 to 40 percent per vehicle during the next 10 years due to the replacement of older vehicles with newer models.

To evaluate the potential long-term indirect ambient air quality impact of increased roadway traffic associated with a project such as this, computerized emission and atmospheric dispersion models can be used to estimate ambient carbon monoxide concentrations along roadways leading to and from Kauhale Lani. Carbon monoxide

is selected for modeling because it is both the most stable and the most abundant of the pollutants generated by motor vehicles. Furthermore, carbon monoxide air pollution is generally considered to be a microscale problem that can be addressed locally to some extent, whereas nitrogen oxides air pollution most often is a regional issue that cannot be addressed by a single new development.

For this project, three scenarios were selected for the carbon monoxide modeling study: (1) year 2005 with present conditions, (2) year 2010 without the project, and (3) year 2010 with the project. Year 2010 is when full development and occupancy is expected to be achieved. To begin the modeling study of the three scenarios, critical receptor areas in the vicinity of the Kauhale Lani site were identified for analysis. Generally speaking, roadway intersections are the primary concern because of traffic congestion and because of the increase in vehicular emissions associated with traffic queuing. For this study, three key intersections identified in the traffic study were selected for air quality analysis. These included the following intersections:

- Old Haleakala Highway at Pukalani Street;
- Old Haleakala Highway at Makani Road;
- Old Haleakala Highway at Haleakala Highway.

The above intersections were selected for analysis based on their close proximity to the project and the expected higher project traffic volumes at these locations. The traffic impact report for Kauhale Lani [4] describes the existing and projected traffic conditions and laneage configurations of these intersections in detail.

The main objective of the modeling study was to estimate maximum 1-hour average carbon monoxide concentrations for each of the three scenarios studied. To evaluate the significance of the estimated concentrations, a comparison of the predicted values for each scenario can be made. Comparison of the estimated values to the national and state AAQS was also used to provide another measure of significance.

Maximum carbon monoxide concentrations typically coincide with peak traffic periods. The traffic impact report evaluated morning and afternoon peak traffic periods. These same periods were evaluated in the air quality impact assessment.

The EPA computer model MOBILE6 [5] was used to calculate vehicular carbon monoxide emissions for each year studied. One of the key inputs to MOBILE6 is vehicle mix. Unless very detailed information is available, national average values are typically assumed, which is what was used for the present study. Based on national average vehicle mix figures, the present vehicle mix in the project area was estimated to be 42.3% light-duty gasoline-powered automobiles, 44.9% light-duty gasoline-powered trucks and vans, 3.6% heavy-duty gasoline-powered vehicles, 0.2% light-duty diesel-powered vehicles, 8.4% heavy-duty diesel-powered trucks and buses, and 0.6% motorcycles. For the future scenarios studied, the vehicle mix was estimated to change slightly with fewer light-duty gasoline-powered automobiles and more light-duty gasoline-powered trucks and vans.

Ambient temperatures of 59 and 68 degrees F were used for morning and afternoon peak-hour emission computations, respectively. These are conservative assumptions since morning/afternoon ambient temperatures will generally be warmer than this, and emission estimates given by MOBILE6 generally have an inverse relationship to the ambient temperature.

After computing vehicular carbon monoxide emissions through the use of MOBILE6, this data was then input into an atmospheric dispersion model. EPA air quality modeling guidelines [6] currently recommend that the computer model CAL3QHC [7] be used to assess carbon monoxide concentrations at roadway intersections, or in areas where its use has previously been established, CALINE4 [8] may be used. Until a few years ago, CALINE4 was used extensively in Hawaii to assess air quality impacts at roadway intersections. In December 1997, the California Department of Transportation recommended that the intersection mode of CALINE4 no longer be used because it was thought the model has become outdated. Studies have shown that CALINE4 may tend to over-predict maximum concentrations in some situations. Therefore, CAL3QHC was used for the subject analysis.

CAL3QHC was developed for the U.S. EPA to simulate vehicular movement, vehicle queuing and atmospheric dispersion of vehicular emissions near roadway intersections. It is designed to predict 1-hour average pollutant concentrations near roadway intersections based on input traffic and emission data, roadway/receptor geometry and meteorological conditions.



Input peak-hour traffic data were obtained from the traffic study cited previously. This included vehicle approach volumes, saturation capacity estimates, intersection laneage and signal timings. All emission factors that were input to CAL3QHC for free-flow traffic on roadways were obtained from MOBILE6 based on assumed free-flow vehicle speeds corresponding to the posted speed limits.

Model roadways were set up to reflect roadway geometry, physical dimensions and operating characteristics. Concentrations predicted by air quality models generally are not considered valid within the roadway-mixing zone. The roadway-mixing zone is usually taken to include 3 meters on either side of the traveled portion of the roadway and the turbulent area within 10 meters of a cross street. Model receptor sites were thus located at the edges of the mixing zones near all intersections that were studied for all three scenarios. This implies that pedestrian sidewalks either already exist or are assumed to exist in the future. All receptor heights were placed at 1.5 meters above ground to simulate levels within the normal human breathing zone.

Input meteorological conditions for this study were defined to provide "worst-case" results. One of the key meteorological inputs is atmospheric stability category. For these analyses, atmospheric stability category 6 was assumed for the morning cases, while atmospheric stability category 4 was assumed for the afternoon cases. These are the most conservative stability categories that are generally used for estimating worst-case pollutant dispersion within suburban areas for these periods. A surface roughness length of 100 cm and a mixing height of 1000 meters were used in all cases. Worst-case wind conditions were

defined as a wind speed of 1 meter per second with a wind direction resulting in the highest predicted concentration. Concentration estimates were calculated at wind directions of every 5 degrees.

Existing background concentrations of carbon monoxide in the project vicinity are believed to be at low levels. Thus, background contributions of carbon monoxide from sources or roadways not directly considered in the analysis were accounted for by adding a background concentration of 0.5 ppm to all predicted concentrations for 2005. Although increased traffic is expected to occur within the Pukalani area within the next several years with or without Kauhale Lani, background carbon monoxide concentrations may not change significantly since individual emissions from motor vehicles are forecast to decrease with time. Hence, a background value of 0.5 ppm was assumed to persist for the future scenarios studied.

#### Predicted Worst-Case 1-Hour Concentrations

Table 4 summarizes the results of the modeling study in the form of the estimated worst-case 1-hour morning and afternoon ambient carbon monoxide concentrations. These results can be compared directly to the state and the national AAQS. Estimated worst-case carbon monoxide concentrations are presented in the table for three scenarios: year 2005 with existing traffic, year 2010 without the project and year 2010 with the project. The locations of these estimated worst-case 1-hour concentrations all occurred at or very near the indicated intersections.

As indicated in the table, the highest estimated 1-hour concentration within the project vicinity for the present (2005) case was 7.4 mg/m<sup>3</sup>. This was projected to occur during the morning peak traffic hour near the intersection of Old Haleakala Highway and Haleakala Highway. Concentrations at other locations and times studied were 6.4 mg/m<sup>3</sup> or lower. All predicted worst-case 1-hour concentrations for the 2005 scenario were well within both the national AAQS of 40 mg/m<sup>3</sup> and the state standard of 10 mg/m<sup>3</sup>.

In the year 2010 without the proposed project, the predicted worst-case concentrations either decreased somewhat or remained unchanged compared to the existing case except at the intersection of Old Haleakala Highway and Pukalani Street during the morning peak hour. This indicates that despite expected increases in traffic volumes emissions from the higher volumes of traffic will in most instances be offset by the decrease in motor vehicle emissions which result from older vehicles being retired during the next several years. Overcapacity conditions during the morning at the intersection of Old Haleakala Highway and Pukalani Street cause that trend to be reversed at this location. For the 2010 without project scenario, the highest worst-case 1-hour concentration was again predicted to occur during the morning at the intersection of Old Haleakala Highway and Pukalani Street. A value of 8.7 mg/m<sup>3</sup> was predicted to occur at this location. Peak-hour worst-case values at the other locations and times studied for the 2010 without project scenario ranged between 2.4 and 7.0 mg/m<sup>3</sup>. All projected worst-case concentrations for this scenario remained within the state and national standards.

The predicted highest 1-hour worst-case concentrations for the 2010 with project scenario ranged from unchanged up to 7 percent

higher compared to the 2010 without project case. The highest worst-case concentration for this scenario, 9.3 mg/m<sup>3</sup>, was predicted to occur during the morning at the intersection of Old Haleakala Highway and Pukalani Street. The highest concentrations at other locations and times studied ranged between 2.5 and 7.1 mg/m<sup>3</sup>. All predicted worst-case 1-hour concentrations for the 2010 with project scenario were well within both the national and the state AAQS.

#### Predicted Worst-Case 8-Hour Concentrations

Worst-case 8-hour carbon monoxide concentrations were estimated by multiplying the worst-case 1-hour values by a persistence factor of 0.5. This accounts for two factors: (1) traffic volumes averaged over eight hours are lower than peak 1-hour values, and (2) meteorological conditions are more variable (and hence more favorable for dispersion) over an 8-hour period than they are for a single hour. Based on monitoring data, 1-hour to 8-hour persistence factors for most locations generally vary from 0.4 to 0.8 with 0.6 being the most typical. One study based on modeling [9] concluded that 1-hour to 8-hour persistence factors could typically be expected to range from 0.4 to 0.5. EPA guidelines [10] recommend using a value of 0.7 unless a locally derived persistence factor is available. Recent monitoring data for locations on Oahu reported by the Department of Health [11] suggest that this factor may range between about 0.2 and 0.6 depending on location and traffic variability. Considering the location of Kauhale Lani and the traffic pattern for the area, a 1-hour to 8-hour persistence factor of 0.5 will likely yield reasonable estimates of worst-case 8-hour concentrations.

The resulting estimated worst-case 8-hour concentrations are indicated in Table 5. For the 2005 scenario, the estimated worst-case 8-hour carbon monoxide concentrations for the three locations studied ranged from 2.2 mg/m<sup>3</sup> at the intersection of Old Haleakala Highway and Makani Road to 3.7 mg/m<sup>3</sup> at Old Haleakala Highway and Haleakala Highway. The estimated worst-case concentrations were well within both the state standard of 5 mg/m<sup>3</sup> and the national limit of 10 mg/m<sup>3</sup>.

For the year 2010 without project scenario, worst-case concentrations ranged between 2.0 and 4.4 mg/m<sup>3</sup>, with the highest concentration at the Old Haleakala Highway and Pukalani Street intersection. Compared to the existing case, the 8-hour worst-case concentration increased substantially at the intersection of Old Haleakala Highway and Pukalani Street but concentrations decreased somewhat at the other two locations studied. Despite the predicted higher concentration at Old Haleakala Highway and Pukalani Street, the predicted concentrations at all locations were within the standards.

For the 2010 with project scenario, the highest worst-case concentrations increased by 5 percent or less compared to the without project case. Concentrations ranged from 2.0 mg/m<sup>3</sup> at Old Haleakala Highway and Makani Road to 4.6 mg/m<sup>3</sup> at Old Haleakala Highway and Pukalani Street. All predicted 8-hour concentrations for this scenario were within both the national and the state AAQS.

## Conservativeness of Estimates

The results of this study reflect several assumptions that were made concerning both traffic movement and worst-case meteorological conditions. One such assumption concerning worst-case meteorological conditions is that a wind speed of 1 meter per second with a steady direction for 1 hour will occur. A steady wind of 1 meter per second blowing from a single direction for an hour is extremely unlikely and may occur only once a year or less. With wind speeds of 2 meters per second, for example, computed carbon monoxide concentrations would be only about half the values given above. The 8-hour estimates are also conservative in that it is unlikely that anyone would occupy the assumed receptor sites (within 3 m of the roadways) for a period of 8 hours.

### **7.2 Electrical Demand**

Kauhale Lani also will cause indirect air pollution emissions from power generating facilities as a consequence of electrical power usage. The peak electrical demand of Kauhale Lani when fully developed is expected to reach about 1.2 megawatts [12]. Assuming the average demand is approximately one-fourth the peak demand, the annual electrical demand of the project will reach approximately 2.6 million kilowatt-hours. Electrical power will most probably be provided mainly by fossil fuel-fired generating facilities, but some of the power may also be derived from solar power, wind power or other sources. In order to meet the electrical power needs, power generating facilities will likely be required to burn more fuel and hence more air pollution will be emitted at these facilities. Given in Table 5 are estimates of the indirect air pollution emissions that would result from Kauhale Lani's electrical demand assuming all power is provided

by burning more fuel oil at local power plants. These values can be compared to the island-wide emission estimates for 1993 given in Table 2. The estimated indirect emissions from the electrical demand amount to less than 1 percent of the present air pollution emissions occurring on Maui even if all power is assumed to be derived from fossil fuel.

### **7.3 Solid Waste Disposal**

Solid waste generated by the proposed development when fully completed and occupied is not expected to exceed about 270 tons per year [13]. Currently, all solid waste on the island is buried at solid waste landfills. Thus, assuming this continues to be the method for solid waste disposal, the only associated air pollution emissions that will occur will be from trucking the waste to the landfill and burying it. These emissions should be relatively minor. If the solid waste was burned to generate power instead buried in a landfill, the emissions shown in Table 6 could result. These would represent much less than 1 percent of the current island-wide emissions.

## **8.0 CONCLUSIONS AND RECOMMENDATIONS**

The major potential short-term air quality impact of Kauhale Lani will occur from the emission of fugitive dust during construction. Uncontrolled fugitive dust emissions from construction activities are estimated to amount to about 1.2 tons per acre per month, depending on rainfall. To control dust, active work areas and any temporary unpaved work roads should be watered at least twice daily on days without rainfall. Use of wind screens and/or limiting the area that is disturbed at any given time will also

help to contain fugitive dust emissions. Wind erosion of inactive areas of the site that have been disturbed could be controlled by mulching or by the use of chemical soil stabilizers. Dirt-hauling trucks should be covered when traveling on roadways to prevent windage. A routine road cleaning and/or tire washing program will also help to reduce fugitive dust emissions that may occur as a result of trucks tracking dirt onto paved roadways in the project area. Paving of parking areas and establishment of landscaping early in the construction schedule will also help to control dust. Monitoring dust at the project boundary during the period of construction could be considered as a means to evaluate the effectiveness of the project dust control program and to adjust the program if necessary.

During construction phases, emissions from engine exhausts (primarily consisting of carbon monoxide and nitrogen oxides) will also occur both from on-site construction equipment and from vehicles used by construction workers and from trucks traveling to and from Kauhale Lani. Increased vehicular emissions due to disruption of traffic by construction equipment and/or commuting construction workers can be alleviated by moving equipment and personnel to the site during off-peak traffic hours.

After Kauhale Lani is completed, any long-term impacts on air quality in the area due to emissions from project-related motor vehicle traffic should be small. Worst-case concentrations of carbon monoxide should remain within both the state and the national ambient air quality standards. Implementing any air quality mitigation measures for long-term traffic-related impacts is unnecessary and unwarranted.



Any long-term impacts on air quality due to indirect emissions from supplying Kauhale Lani with electricity and from the disposal of waste materials generated by Kauhale Lani will likely be small based on the relatively small magnitudes of these emissions. Nevertheless, indirect emissions from Kauhale Lani electrical demand could likely be reduced somewhat by incorporating energy-saving features into design requirements. This might include the use of solar water heaters; designing building space so that window positions maximize indoor light without unduly increasing indoor heat; using landscaping where feasible to provide afternoon shade to cut down on the use of air conditioning; installation of insulation and double-glazed doors to reduce the effects of the sun and heat; providing movable, controlled openings for ventilation at opportune times; and possibly installing automated room occupancy sensors. Solid waste related air pollution could likely be reduced somewhat by the promotion of conservation and recycling programs within the proposed development. This could reduce solid waste volumes, which would in turn reduce any related air pollution emissions proportionately.

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Figure 1 - Kauhale Lani Project Location

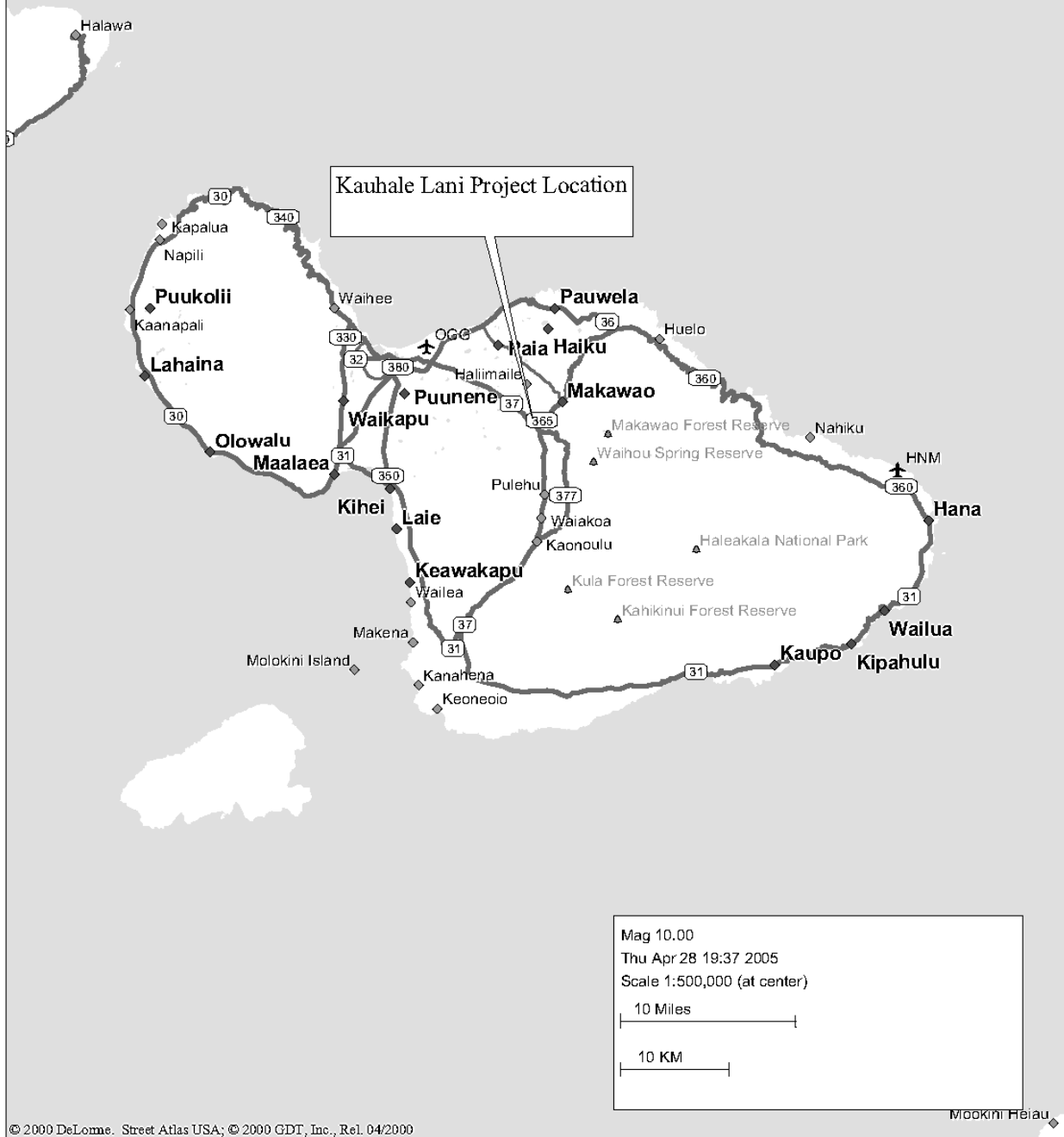


Table 1

SUMMARY OF STATE OF HAWAII AND NATIONAL  
 AMBIENT AIR QUALITY STANDARDS

Pollutant	Units	Averaging Time	Maximum Allowable Concentration		
			National Primary	National Secondary	State of Hawaii
Particulate Matter (<10 microns)	µg/m <sup>3</sup>	Annual 24 Hours	50 <sup>a</sup> 150 <sup>b</sup>	50 <sup>a</sup> 150 <sup>b</sup>	50 150 <sup>c</sup>
Particulate Matter (<2.5 microns)	µg/m <sup>3</sup>	Annual 24 Hours	15 <sup>a</sup> 65 <sup>d</sup>	15 <sup>a</sup> 65 <sup>d</sup>	- -
Sulfur Dioxide	µg/m <sup>3</sup>	Annual 24 Hours 3 Hours	80 365 <sup>c</sup> -	- - 1300 <sup>c</sup>	80 365 <sup>c</sup> 1300 <sup>c</sup>
Nitrogen Dioxide	µg/m <sup>3</sup>	Annual	100	100	70
Carbon Monoxide	mg/m <sup>3</sup>	8 Hours 1 Hour	10 <sup>c</sup> 40 <sup>c</sup>	- -	5 <sup>c</sup> 10 <sup>c</sup>
Ozone	µg/m <sup>3</sup>	8 Hours 1 Hour	157 <sup>e</sup> 235 <sup>f</sup>	157 <sup>e</sup> 235 <sup>f</sup>	157 <sup>e</sup> -
Lead	µg/m <sup>3</sup>	Calendar Quarter	1.5	1.5	1.5
Hydrogen Sulfide	µg/m <sup>3</sup>	1 Hour	-	-	35 <sup>c</sup>

<sup>a</sup> Three-year average of annual arithmetic mean.

<sup>b</sup> 99th percentile value averaged over three years.

<sup>c</sup> Not to be exceeded more than once per year.

<sup>d</sup> 98th percentile value averaged over three years.

<sup>e</sup> Three-year average of fourth-highest daily 8-hour maximum.

<sup>f</sup> Standard is attained when the expected number of exceedances is less than or equal to 1.

**Table 2**  
**AIR POLLUTION EMISSIONS INVENTORY FOR**  
**ISLAND OF MAUI, 1993**

Air Pollutant	Point Sources (tons/year)	Area Sources (tons/year)	Total (tons/year)
Particulate	63,275	7,030	70,305
Sulfur Oxides	6,419	nil	6,419
Nitrogen Oxides	7,312	8,618	15,930
Carbon Monoxide	4,612	20,050	24,662
Hydrocarbons	1,991	234	2,225

Source: Final Report, "Review, Revise and Update of the Hawaii Emissions Inventory Systems for the State of Hawaii", prepared for Hawaii Department of Health by J.L. Shoemaker & Associates, Inc., 1996

Table 3

ANNUAL SUMMARIES OF AIR QUALITY MEASUREMENTS FOR  
MONITORING STATIONS NEAREST KAUHALE LANI

Parameter / Location	1997	1998	1999	2000	2001
<b>Particulate (PM-10) / Paia</b>					
24-Hour Averaging Period:					
No. of Samples	353	354	359	350	337
Highest Concentration ( $\mu\text{g}/\text{m}^3$ )	59	67	131	48	83
2 <sup>nd</sup> Highest Concentration ( $\mu\text{g}/\text{m}^3$ )	54	50	98	45	80
No. of State AAQS Exceedances	0	0	0	0	0
Annual Average Concentration ( $\mu\text{g}/\text{m}^3$ )	20	17	18	18	20

Source: State of Hawaii Department of Health, "Annual Summaries,  
Hawaii Air Quality Data, 1997 - 2001"

**Table 4**

**ESTIMATED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS  
ALONG ROADWAYS NEAR KAUAHALE LANI  
(milligrams per cubic meter)**

Roadway Intersection	Year/Scenario					
	2005/Present		2010/Without Project		2010/With Project	
	AM	PM	AM	PM	AM	PM
Old Haleakala Highway at Pukalani Street	6.4	3.1	8.7	3.0	9.3	3.0
Old Haleakala Highway at Makani Road	4.5	2.5	3.9	2.4	4.1	2.5
Old Haleakala Highway at Haleakala Highway	7.4	4.5	7.0	4.1	7.1	4.1

Hawaii State AAQS: 10  
National AAQS: 40



Table 5

ESTIMATED WORST-CASE 8-HOUR CARBON MONOXIDE CONCENTRATIONS  
 ALONG ROADWAYS NEAR KAUHALE LANI  
 (milligrams per cubic meter)

Roadway Intersection	Year/Scenario		
	2005/Present	2010/Without Project	2010/With Project
Old Haleakala Highway at Pukalani Street	3.2	4.4	4.6
Old Haleakala Highway at Makani Road	2.2	2.0	2.0
Old Haleakala Highway at Haleakala Highway	3.7	3.5	3.6

Hawaii State AAQS: 5  
 National AAQS: 10

Table 6

ESTIMATED INDIRECT AIR POLLUTION EMISSIONS FROM  
KAUHALE LANI ELECTRICAL DEMAND<sup>a</sup>

Air Pollutant	Emission Rate (tons/year)
Particulate	1
Sulfur Dioxide	7
Carbon Monoxide	1
Volatile Organics	<1
Nitrogen Oxides	3

<sup>a</sup>Based on U.S. EPA emission factors for utility boilers [2].  
Assumes project electrical demand of 2.6 million kw-hrs per year.  
Estimated emission rates assume low-sulfur oil used to generate power.

**Table 7**

**ESTIMATED INDIRECT AIR POLLUTION EMISSIONS FROM  
KAUHALE LANI SOLID WASTE DISPOSAL DEMAND<sup>a</sup>**

Air Pollutant	Emission Rate (tons/year)
Particulate	<1
Sulfur Dioxide	<1
Carbon Monoxide	<1
Nitrogen Oxides	1

<sup>a</sup>Based on U.S. EPA emission factors for refuse-derived fuel-fired combustors [2]. Assumes spray dryer/fabric filter for emissions control and solid waste disposal demand of 270 tons per year.

**Appendix D:  
Environmental Noise  
Assessment Study**



D. L. ADAMS ASSOCIATES, LTD.

Consultants in Acoustics and Performing Arts Technologies

**Environmental Noise Assessment Report  
Kauhale Lani Residential Community  
Pukalani, Maui, Hawaii**

May 2005

DLAA Project No. 04-26

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*Prepared for:* Maui Land & Pineapple Company, Ltd.  
Kahului, Maui, Hawaii

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- Appendix A.* Acoustic Terminology

## **1.0 EXECUTIVE SUMMARY**

- 1.1** The Kauhale Lani community is located near Pukalani, Maui, Hawaii. The community includes the development of 165 private residences and outdoor space for community activities.
- 1.2** The dominant noise sources during the project construction phase will probably be earth moving equipment, such as bulldozers and diesel powered trucks. Noise from construction activities will occur on the project site. Noise from construction activities should be short term and must comply with State Department of Health noise regulations.
- 1.3** Vehicular traffic noise impacts on the surround community were evaluated. The results of the noise analyses show noise level increases of less than 1 dB due to the project. The analyses include existing conditions, year 2010 traffic projections without the project, and year 2010 traffic projections with the project. These small increases are not considered significant. Noise impacts from project generated vehicular traffic noise on the surrounding community are not expected.
- 1.4** Based on year 2010 traffic projections with the project, new homes in the Kauhale Lani community that are 350 feet or more from Haleakala Highway comply with the FHWA/HDOT noise criteria without noise mitigation. However, noise mitigation should be considered for new homes within 350 feet of Haleakala Highway. Noise mitigation options could include air-conditioning the impacted homes or building an earth berm or sound barrier wall.
- 1.5** Although the HUD and EPA design goals and guidelines regarding noise are not enforceable regulations, they can be used as useful design guides and design goals. Based on noise measurements taken near the project site and on year 2010 traffic projections with the project, the HUD noise guidelines and the EPA existing noise design goal  $L_{dn} \leq 65$  dBA is satisfied. The EPA further recommends a future design goal  $L_{dn} \leq 55$  dBA. Noise mitigation could be considered for homes within 600 feet of Haleakala Highway to satisfy the EPA future design goal.



## **2.0 PROJECT DESCRIPTION**

The Kauhale Lani is proposed to contain 165 new residential homes on a 50-acre parcel and open space parks on a 39-acre parcel in Pukalani. Old Haleakala Highway divides the two land parcels. Both parcels are located near the “Y” intersection where Old Haleakala branches off from Haleakala Highway.

The 50-acre parcel will contain mostly single family homes and a park and community area. The 39-acre parcel will contain community facilities, including open space, trails, etc.

## **3.0 NOISE STANDARDS**

Various local and federal agencies have established guidelines and standards for assessing environmental noise impacts and set noise limits as a function of land use. A brief description of common acoustic terminology used in these guidelines and standards is presented in Appendix A.

### **3.1 State of Hawaii, Community Noise Control**

The State of Hawaii Community Noise Control Rule [Reference 1] defines three classes of zoning districts and specifies corresponding maximum permissible sound levels due to *stationary* noise sources such as air-conditioning units, exhaust systems, generators, compressors, pumps, etc. The Community Noise Control Rule does not specifically address most *moving* sources, such as vehicular traffic noise, air traffic noise, or rail traffic noise. However, the Community Noise Control Rule does include equipment related to agricultural, construction, and industrial activities, which may not be stationary.

These maximum permissible noise levels are enforced by the State Department of Health (DOH) for any location at or beyond the property line and shall not be exceeded for more than 10% of the time during any 20-minute period. The specified noise limits which apply are a function of the zoning and time of day as shown in Figure 1. With respect to mixed zoning districts, the rule specifies that the primary land use designation shall be used to determine the applicable zoning district class and the maximum permissible sound level. In determining the maximum permissible sound level, the background noise level is taken into account by the DOH.

### **3.2 U.S. Federal Highway Administration (FHWA)**

The FHWA defines four land use categories and assigns corresponding maximum hourly equivalent sound levels,  $L_{eq(h)}$ , for traffic noise exposure [Reference 2], which are listed in Figure 2. For example, Category B, defined as picnic and recreation areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals, has a corresponding maximum exterior  $L_{eq}$  of 67dBA and a maximum interior  $L_{eq}$  of 52 dBA. These limits are viewed as design goals, and all projects meeting these limits are deemed in conformance with FHWA noise standards.

Calculation of traffic noise levels should be conducted using the Federal Highway Administration's Traffic Noise Model, 1978 [Reference 3].

### **3.3 Hawaii Department of Transportation (HDOT)**

The HDOT has adopted FHWA's design goals for traffic noise exposure in its noise analysis and abatement policy [Reference 4]. According to the policy, a traffic noise impact occurs when the predicted traffic noise levels "approach" or exceed FHWA's design goals or when the predicted traffic noise levels "substantially exceed the existing noise levels." The policy also states that "approach" means at least 1 dB less than FHWA's design goals and "substantially exceed the existing noise levels" means an increase of at least 15dB.

### **3.4 U.S. Environmental Protection Agency (EPA)**

The U.S. EPA has identified a range of yearly day-night equivalent sound levels,  $L_{dn}$ , sufficient to protect public health and welfare from the effects of environmental noise [Reference 5]. The EPA has established a goal to reduce exterior environmental noise to an  $L_{dn}$  not exceeding 65 dBA and a future goal to further reduce exterior environmental noise to an  $L_{dn}$  not exceeding 55 dBA. Additionally, the EPA states that these goals are not intended as regulations as it has no authority to regulate noise levels, but rather they are intended to be viewed as levels below which the general population will not be at risk from any of the identified effects of noise.

### **3.5 U.S. Department of Housing and Urban Development (HUD)**

HUD's environmental noise criteria and standards in 24 CFR 51 [Reference 6] were established for determining housing project site acceptability. These standards are based on day-night equivalent sound levels,  $L_{dn}$ , and are not limited to traffic noise exposure. However, for project sites in the vicinity of highways, the  $L_{dn}$  may be estimated to be equal to the design hour  $L_{eq(h)}$ , provided "heavy trucks (vehicles with three or more axles) do not exceed 10 percent of the total traffic flow in vehicles per 24 hours and the traffic flow between 10:00 p.m. and 7:00 a.m. does not exceed 15 percent of the average daily traffic flow in vehicles per 24 hours." For these same conditions,  $L_{dn}$  may also be estimated as 3 dB less than the design hour  $L_{10}$ .

HUD site acceptability criteria rank sites as Acceptable, Normally Unacceptable, or Unacceptable. "Acceptable" sites are those where exterior noise levels do not exceed an  $L_{dn}$  of 65 dBA. Proposed housing projects on "Acceptable" sites do not require additional noise attenuation other than that provided by customary building techniques. "Normally Unacceptable" sites are those where the  $L_{dn}$  is above 65 dBA, but does not exceed 75 dBA. Housing on "Normally Unacceptable" sites requires some form of noise abatement, either at the property line or in the building construction, to ensure the interior noise levels are acceptable. "Unacceptable" sites are those where the  $L_{dn}$  is 75 dBA or higher.

The term “Unacceptable” does not necessarily mean that housing cannot be built on those sites; however, more elaborate sound attenuation will likely be needed.

## **4.0 EXISTING ACOUSTICAL ENVIRONMENT**

Continuous long-term ambient noise level measurements were conducted at one (1) location, as shown in Figure 3. The noise measurements were conducted between December 2, 2004 and December 4, 2004. In addition, short term noise measurements and traffic counts were conducted on December 2, 2004. The purpose of the short-term measurements and traffic counts was to calibrate the traffic noise model prediction software.

### **4.1 Noise Measurement Procedure**

#### Long-Term Noise Measurements

The microphone was mounted on a tripod, approximately 5 feet above grade. A windscreen covered the microphone during the entire measurement period. The sound level meter was secured in a weather resistant case.

Continuous, hourly, equivalent sound levels,  $L_{eq}$ , were recorded during the measurement period. The measurements were taken using a Larson-Davis Laboratories, Model 820, Type-1 Sound Level Meter together with a Larson-Davis, Model 2560 Type-1 Microphone. Calibration was checked before and after the measurements with a Larson-Davis Model CAL200 calibrator. Both the sound level meter and the calibrator have been certified by the manufacturer within the recommended calibration period.

#### Short-Term Noise Measurements

The microphone and sound level meter were mounted on a tripod, approximately 5 feet above grade. A windscreen covered the microphone during the entire measurement period.

An approximate 30-minute equivalent sound level,  $L_{eq}$ , was measured. The measurement was taken using a Larson-Davis Laboratories, Model 824, Type-1 Sound Level Meter together with a Larson-Davis, Model 2541 Type-1 Microphone. Calibration was checked before and after the measurements with a Larson-Davis Model CAL200 calibrator. Both the sound level meter and the calibrator have been certified by the manufacturer within the recommended calibration period.

### **4.2 Noise Measurement Location**

The long-term noise measurement location was positioned along Haleakala Highway approximately 2,200 feet east of the “Y” intersection of Haleakala Highway and Old Haleakala Highway, as shown on Figure 3. The noise measurement location was approximately 110 feet south of the edge of pavement on Haleakala Highway. This noise measurement location was selected as the

“worst case” location for exterior noise levels. The measurement location had a clear line-of-sight with Haleakala Highway.

### **4.3 Noise Measurement Results**

The results from the long-term noise measurements are graphically presented in Figure 4, which shows the measured equivalent sound level,  $L_{eq}$ , and the 90 percent exceedance level,  $L_{90}$ , in A-weighted decibels (dBA) as a function of the measurement date and time.

The sound levels are relatively dynamic and depend significantly on the traffic patterns along Haleakala Highway. The hourly  $L_{eq}$  noise levels generally range from 50 dBA during low traffic times at night to 65 dBA during the daytime high traffic times. The hourly  $L_{90}$  ranges from 35 dBA to 55 dBA. The dominant and secondary noise sources are described below:

#### Noise Sources

Dominant: Vehicular traffic on Haleakala Highway.

Secondary: Vehicular traffic on other roads in the area, an occasional aircraft flyovers, wind, birds, and crickets.

### **4.4 Existing Vehicular Traffic Noise**

Noise levels generated by existing vehicular traffic were calculated using the FHWA Traffic Noise Model (1978) [Reference 3]. The traffic noise analysis is based on the traffic counts provided by the Traffic Consultant [Reference 7]. Existing traffic noise levels were calculated for three locations, Locations 1, 2, and 3, as shown on Figure 3. The results of the existing traffic noise level calculations are shown in Table 1.

## **5.0 POTENTIAL NOISE IMPACTS DUE TO THE PROJECT**

### **5.1 Project Construction Noise**

Development of project areas will involve excavation, grading, and other typical construction activities during construction. The various construction phases of the project may generate significant amounts of noise. The surrounding residences may be impacted by the construction noise due to their proximity to the project. The actual noise levels produced during construction will be a function of the methods employed during each stage of the construction process. Typical ranges of construction equipment noise are shown in Figure 5.

### **5.2 Project Generated Stationary Mechanical Noise & Compliance with State of Hawaii Community Noise Control Rule**

The new residences will incorporate stationary mechanical equipment that is typical for residential housing. Expected mechanical equipment may include air

handling equipment, outdoor condensing units, etc. Noise from this mechanical equipment and other equipment must meet the State noise rules, which stipulate maximum permissible noise limits at the property line. These noise limits are 55 dBA during the daytime hours (7:00 am to 10:00 pm) and 45 dBA during the night time hours (10:00 pm to 7:00 am) for residential areas. For commercial areas, the noise limits are 60 dBA during the day and 50 dBA during the night.

### **5.3 Projection of Project Generated Vehicular Traffic Noise**

A vehicular traffic noise analysis was completed for the existing conditions (see Section 4.4 of this report), future year 2010 projections without the project, and future year 2010 projections with the project. A map of the noise prediction locations is shown in Figure 3. The prediction locations include two positions along Haleakala, mauka and makai of Kauhale Lani, and along Old Haleakala Highway. The results of the traffic noise analysis are shown in Table 1.

All traffic noise predictions and calculations were completed using the FHWA Traffic Noise Model (1978) [Reference 3]. The traffic noise analysis is based on the traffic counts provided by the Traffic Consultant [Reference 7].

### **5.4 Compliance with FHWA/HDOT Land Use Noise Limits**

#### **5.4.1 Vehicular Traffic Noise Impacts on the Surrounding Community**

Noise predictions at Locations 1 and 3 satisfy the FHWA/HDOT noise criteria. Noise predictions at Location 2 also satisfy the FHWA/HDOT noise criteria even though the predicted peak hour noise levels are above 67 dBA. The FHWA/HDOT noise criteria is satisfied because the existing noise levels are already above 67 dBA, and the increase in traffic noise due to the project is less than 1 dB. Therefore, a significant noise impact on the surrounding community due to project generated traffic noise is not expected.

#### **5.4.2 Vehicular Traffic Noise Impacts on the Project**

To evaluate traffic noise impacts on the project, the year 2010 future traffic projections with the project are used. Most of the residences in the Kauhale Lani community will be far enough away from Haleakala Highway to satisfy the FHWA/HDOT maximum noise limit of 67 dBA during peak hour traffic times with no noise mitigation. However, noise mitigation should be considered for homes 350 feet or less from Haleakala Highway to satisfy FHWA/HDOT noise criteria. Figure 6 shows a map of these impacted residential properties.

In addition to residential homes, outdoor playgrounds, ball fields, and recreational areas should also be at least 350 feet from Haleakala Highway to satisfy the FHWA/HDOT noise criteria. The primary recreational area for the Kauhale Lani community is well over 350 feet from Haleakala

Highway. Therefore, the FHWA/HDOT noise criteria is satisfied for the primary recreational areas of the Kauhale Lani community.

## **5.5 Compliance with HUD and EPA Noise Guidelines**

Based on noise measurements taken along Haleakala Highway near the project site and on future year 2010 traffic projections, noise levels at Kauhale Lani project site are within the HUD noise guidelines, which provide a design goal  $L_{dn} \leq 65$  dBA for the exterior noise level. The EPA has an existing design goal  $L_{dn} \leq 65$  dBA and a future design goal  $L_{dn} \leq 55$  dBA for exterior noise levels. Although the new homes in the Kauhale Lani project meet the EPA existing design goal, noise mitigation could be considered to meet the EPA future design goal. Homes within 600 feet of Haleakala Highway may expect to have noise levels that exceed the EPA future design goal.

It is important to note that the HUD and EPA noise guidelines are design goals and not enforceable regulations. The EPA future goal of  $L_{dn} 55$  dBA is often difficult to achieve for many residential projects near busy roads, such as the Kauhale Lani community.

## **6.0 NOISE IMPACT MITIGATION**

### **6.1 Mitigation of Construction Noise**

In cases where construction noise exceeds, or is expected to exceed the State's "maximum permissible" property line noise levels [Reference 1], a permit must be obtained from the State DOH to allow the operation of vehicles, cranes, construction equipment, power tools, etc., which emit noise levels in excess of the "maximum permissible" levels.

In order for the State DOH to issue a construction noise permit, the Contractor must submit a noise permit application to the DOH, which describes the construction activities for the project. Prior to issuing the noise permit, the State DOH may require action by the Contractor to incorporate noise mitigation into the construction plan. The DOH may also require the Contractor to conduct noise monitoring or community meetings inviting the neighboring residents and business owners to discuss construction noise. The Contractor should use reasonable and standard practices to mitigate noise, such as using mufflers on diesel and gasoline engine machines, using properly tuned and balanced machines, etc. However, the State DOH may require additional noise mitigation, such as temporary noise barriers, or time of day usage limits for certain kinds of construction activities.

Specific permit restrictions for construction activities [Reference 1] are:

"No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels ... before 7:00 a.m. and after 6:00 p.m. of the same day, Monday through Friday."

"No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels... before 9:00 a.m. and after 6:00 p.m. on Saturday."

"No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels on Sundays and on holidays."

The use of hoe rams and jack hammers 25 lbs. or larger, high pressure sprayers, chain saws, and pile drivers must be restricted to 9:00 a.m. to 5:30 p.m., Monday through Friday.

The DOH noise permit does not limit the noise *level* generated at the construction site, but rather the *times* at which noisy construction can take place. Therefore, noise mitigation for construction activities should be addressed using project management, such that the time restrictions within the DOH permit are followed.

## **6.2 Mitigation of Project Generated Mechanical Noise**

The design of the new Kauhale Lani residences should give consideration to controlling the noise emanating from stationary mechanical equipment, such as chiller, compressors, air conditioning units, etc. so as to comply with the State Department of Health *Community Noise Control* rules [Reference 1]. Noisy equipment should be located away from neighbors and residential units, as much as is practical. Enclosed mechanical rooms may be required for some equipment.

## **6.3 Mitigation of Vehicular Traffic Noise**

In order to meet the FHWA/HDOT design goals, noise mitigation should be considered for new homes in the Kauhale Lani project built within 350 feet of Haleakala Highway. In addition, new homes built within 600 feet of Haleakala Highway could also be considered to meet the EPA future design goal. The following noise mitigation options could be considered. One of the options listed below should be considered during the design of the new homes.

1. Install air conditioning in the new homes.
2. Construct an earth berm or sound barrier wall to block the line-of-sight between the impacted residences and the highway.

## REFERENCES

1. Chapter 46, *Community Noise Control*, Department of Health, State of Hawaii, Administrative Rules, Title 11, September 23, 1996.
2. *Department of Transportation, Federal Highway Administration Procedures for Abatement of Highway Traffic Noise*, Title 23, CFR, Chapter 1, Subchapter J, Part 772, 38 FR 15953, June 19, 1973; Revised at 47 FR 29654, July 8, 1982.
3. *Federal Highway Administration's Traffic Noise Model*, FHWA-RD-77-108; U.S. Department of Transportation, December 1978.
4. *Noise Analysis and Abatement Policy*, Department of Transportation, Highways Division, State of Hawaii, June 1977.
5. *Toward a National Strategy for Noise Control*, U.S. Environmental Protection Agency, April 1977.
6. *Department of Housing and Urban Development Environmental Criteria and Standards*, Title 24 CFR, Part 51, 44 FR 40860, July 12, 1979, Amended by 49 FR 880, January 6, 1984.
7. *Traffic Impact Analysis Report for Kauhale Lani*, Phillip Rowell and Associates, April 2005.



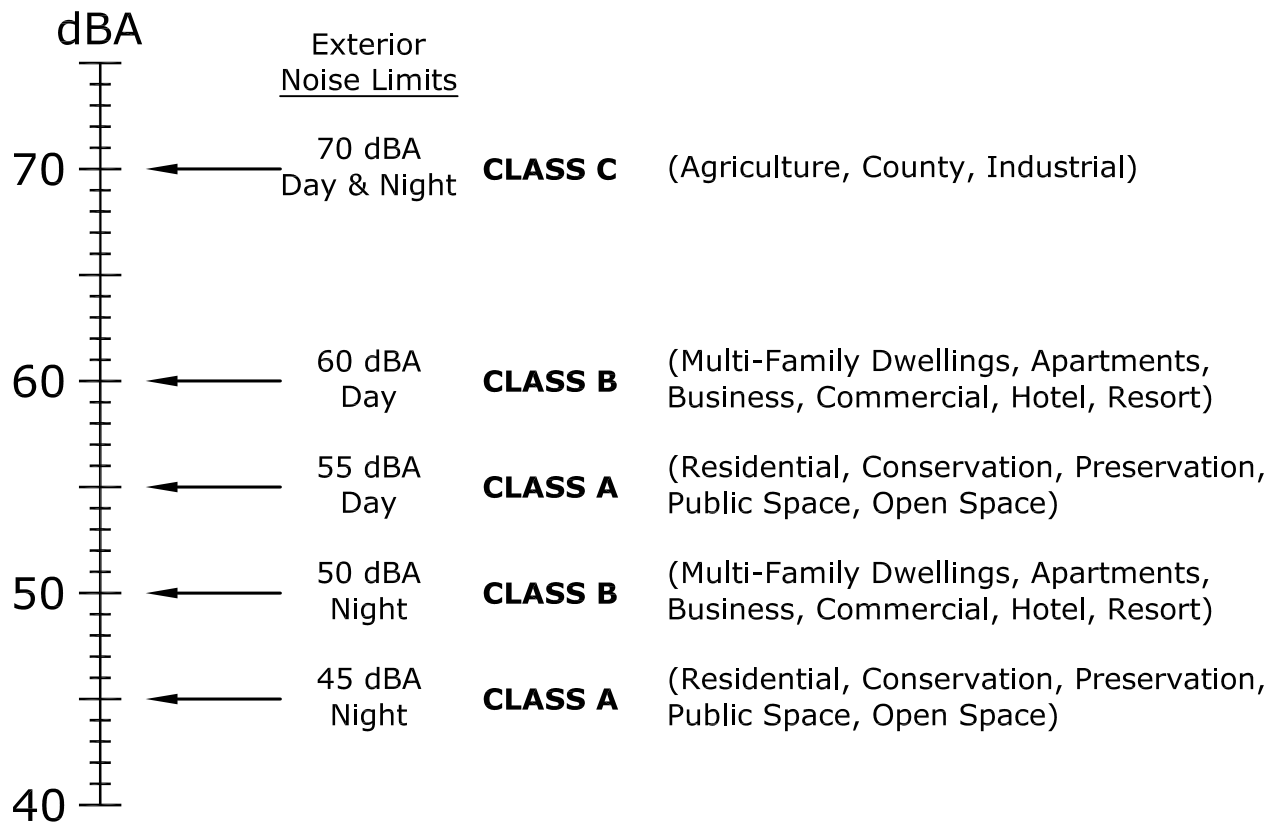
**TABLE 1**  
**Predicted Traffic Noise Levels With and Without the Project and Resulting Increases Due to the Project**


Noise levels shown in the table are based on peak-hour traffic volumes, and are expressed in A-weighted decibels (dBA).

	<b>Location 1* (Old Haleakala Highway)</b>		<b>Location 2* (Haleakala Hwy - Makai)</b>		<b>Location 3* (Haleakala Hwy - Mauka)</b>	
	<b>AM</b>	<b>PM</b>	<b>AM</b>	<b>PM</b>	<b>AM</b>	<b>PM</b>
Existing (Calculated)	64.5	64.9	69.2	69.1	63.3	63.4
Future Without Project (2020)	65.4	65.6	70.2	70.2	63.8	64.8
Future With Project (2020)	65.6	65.8	70.3	70.3	63.8	64.8
Future Increase Without Project (2020)	0.9	0.7	1.0	1.1	0.5	1.4
Future Increase With Project (2020)	1.1	0.9	1.1	1.2	0.5	1.4
<b>Future Increase Due to Project (2020)</b>	<b>0.2</b>	<b>0.2</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>

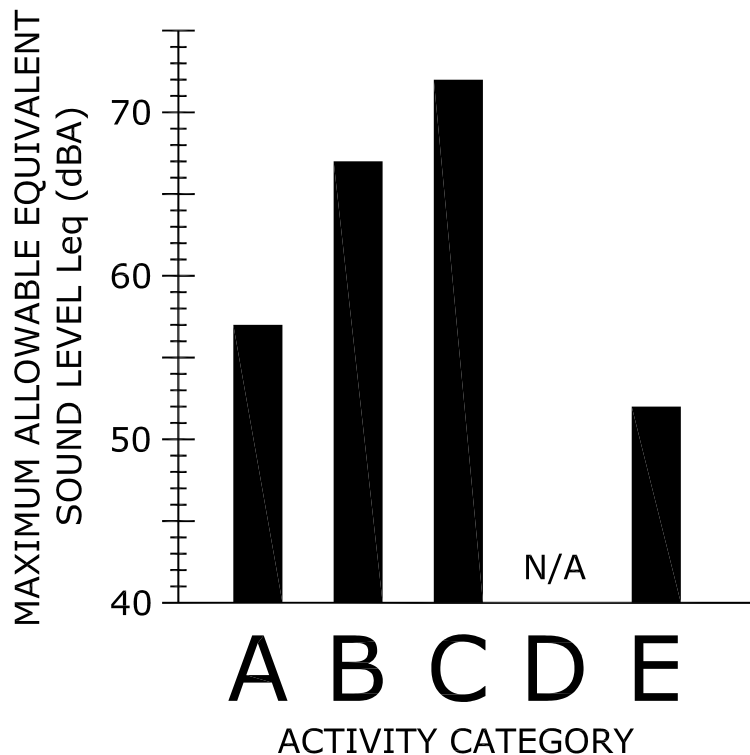
\* Location 1 – 40 feet south of Old Haleakala Highway  
 Location 2 – 150 feet south of Haleakala Highway  
 Location 3 – 350 feet south of Haleakala Highway


<b>Zoning District</b>	<b>Day Hours</b> (7 AM to 10 PM)	<b>Night Hours</b> (10 PM to 7 AM)
<b>CLASS A</b> Residential, Conservation, Preservation, Public Space, Open Space	55 dBA (Exterior)	45 dBA (Exterior)
<b>CLASS B</b> Multi-Family Dwellings, Apartments, Business, Commercial, Hotel, Resort	60 dBA (Exterior)	50 dBA (Exterior)
<b>CLASS C</b> Agriculture, County, Industrial	70 dBA (Exterior)	70 dBA (Exterior)

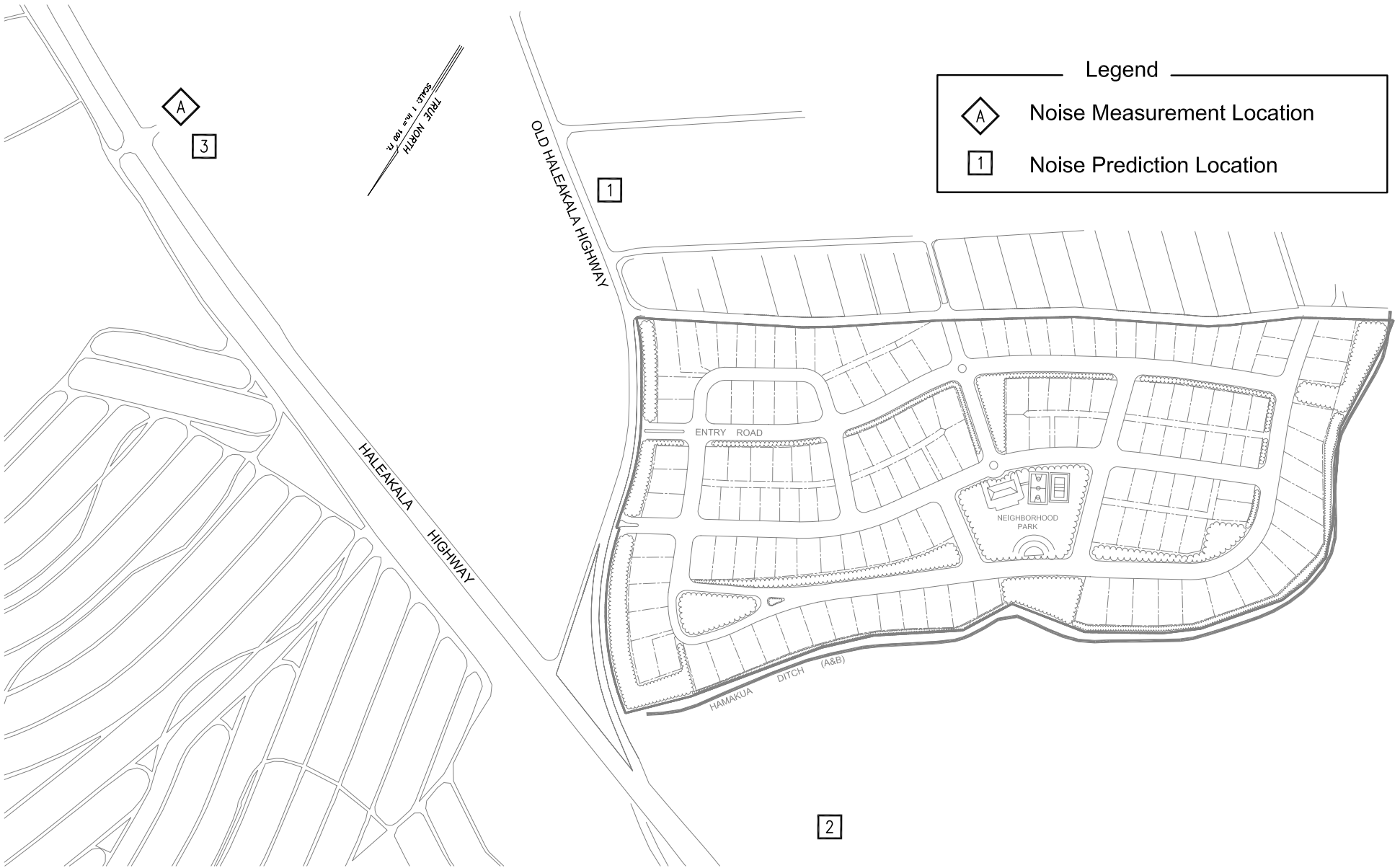


 <b>D. L. ADAMS ASSOCIATES, LTD.</b> 970 N. KALAHOE AVE, A-311 KAILUA, HAWAII 96734 808/254-3318 FAX 808/254-5295	<b>Hawaii Maximum Permissible Sound Levels for Various Zoning Districts</b>			Figure No  <b>1</b>
	Kauhale Lani			
	not to scale			
	Date May 2005	Project No. 04-26	Drawn By TRB	

ACTIVITY CATEGORY	ACTIVITY CATEGORY DESCRIPTION	MAXIMUM EQUIVALENT SOUND LEVEL $L_{eq}(h)$
<b>A</b>	LANDS ON WHICH SERENITY AND QUIET ARE OF EXTRAORDINARY SIGNIFICANCE AND SERVE AN IMPORTANT PUBLIC NEED AND WHERE THE PRESERVATION OF THOSE QUALITIES IS ESSENTIAL IF THE AREA IS TO CONTINUE TO SERVE ITS INTENDED PURPOSE.	57 dBA (EXTERIOR)
<b>B</b>	PICNIC AREAS, RECREATION AREAS, PLAYGROUNDS, ACTIVE SPORT AREAS, PARKS, RESIDENCES, MOTELS, HOTELS, SCHOOLS, CHURCHES, LIBRARIES, AND HOSPITALS.	67 dBA (EXTERIOR)
<b>C</b>	DEVELOPED LANDS, PROPERTIES, OR ACTIVITIES NOT INCLUDED IN ACTIVITY CATEGORIES A OR B ABOVE.	72 dBA (EXTERIOR)
<b>D</b>	UNDEVELOPED LAND	N/A
<b>E</b>	RESIDENCES, MOTELS, HOTELS, PUBLIC MEETING ROOMS, SCHOOLS, CHURCHES, LIBRARIES, HOSPITALS, AND AUDITORIUMS.	52 dBA (INTERIOR)



 <p><b>D. L. ADAMS ASSOCIATES, LTD.</b> 970 N. KALAHOE AVE, A-311 KAILUA, HAWAII 96734 808/254-3318 FAX 808/254-5295</p>	Federal Highways Administration Recommended Equivalent Hourly Sound Levels Based on Land Use			Figure No <b>2</b>
	Kauhale Lani			
	not to scale			
	Date May 2005	Project No. 04-26	Drawn By TRB	



Legend

A	Noise Measurement Location
1	Noise Prediction Location

### Map of Noise Measurement/Prediction Locations

Residences at Kapalua Bay


not to scale

Date  
May 2005

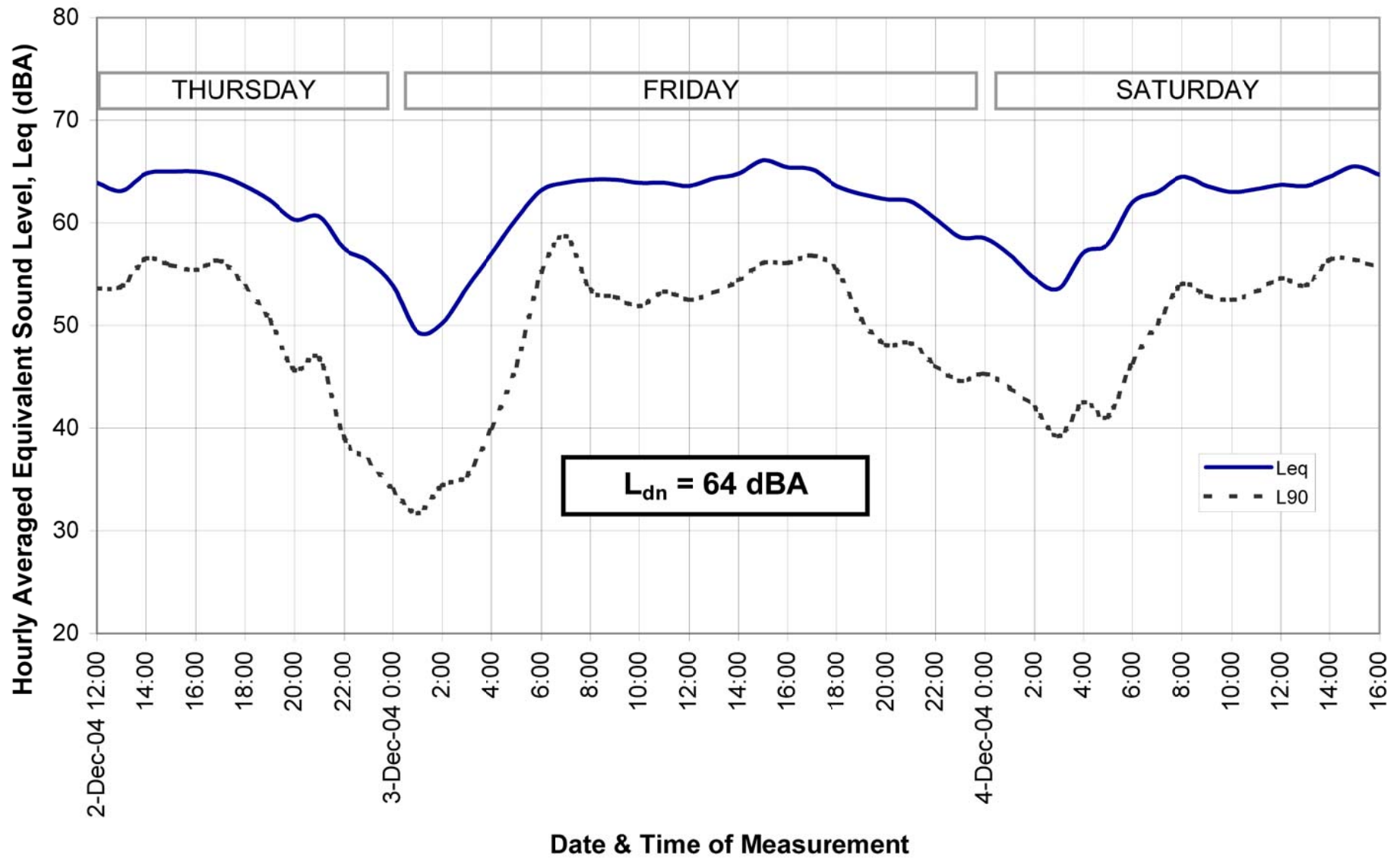
Project No.  
04-84

Drawn By  
TRB


Figure No  
**3**



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### Graph of Long Term Noise Measurements

  
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Kauhale Lani

not to scale

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May 2005

Project No.  
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Figure No

4

NOISE LEVEL IN dBA AT 50 FEET (dBA)

60      70      80      90      100      110

EARTH MOVING	COMPACTORS (ROLLERS)	72-75
	FRONT LOADERS	72-85
	BACKHOES	72-95
	TRACTORS	75-98
	SCRAPERS GRADERS	78-95
	PAVERS	82-85
	TRUCKS	82-95
MATERIAL HANDLING	CONCRETE MIXERS	72-88
	CONCRETE PUMPS	82-85
	CRANES (MOVABLE)	72-85
	CRANES (DERRICK)	82-85
STATIONARY	PUMPS	68-72
	GENERATORS	72-85
	COMPRESSORS	72-85
IMPACT EQUIPMENT	PNEUMATIC WRENCHES	82-85
	JACK HAMMERS AND ROCK DRILLS	82-95
	PILE DRIVERS (PEAKS)	95-105
OTHER	VIBRATORS	68-85
	SAWS	72-85

NOTE: BASED ON LIMITED AVAILABLE DATA SAMPLES

Typical Sound Levels from Construction Equipment

Figure No

5

Kauhale Lani

not to scale

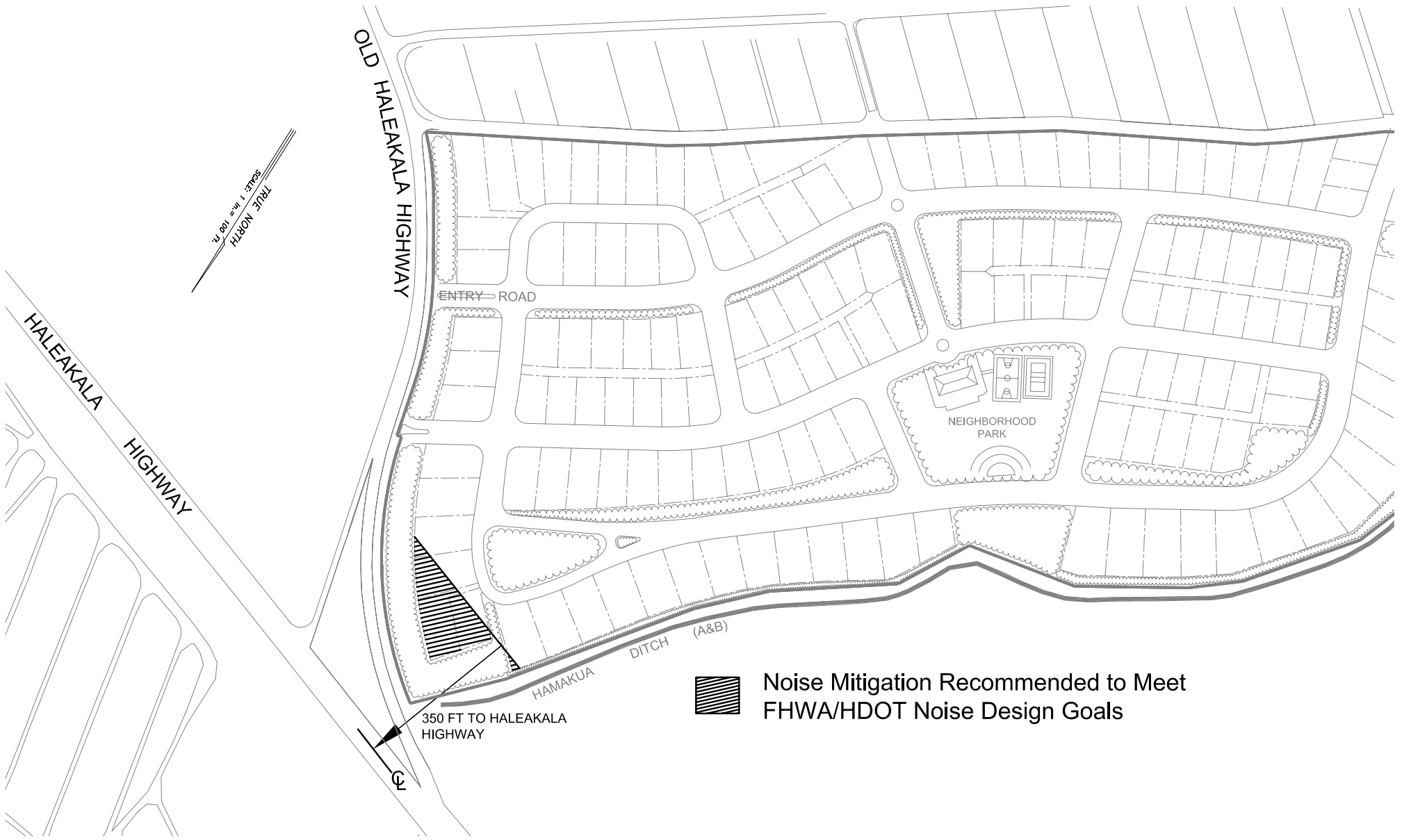
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### Residences Needing Noise Mitigation to Satisfy FHWA/HDOT Criteria

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Kauhale Lani		Figure No  <b>6</b>
not to scale		
Date May 2005	Project No. 04-26	

## **APPENDIX A**

### **Acoustic Terminology**



## Acoustic Terminology

### Sound Pressure Level

Sound, or noise, is the term given to variations in air pressure that are capable of being detected by the human ear. Small fluctuations in atmospheric pressure (sound pressure) constitute the physical property measured with a sound pressure level meter. Because the human ear can detect variations in atmospheric pressure over such a large range of magnitudes, sound pressure is expressed on a logarithmic scale in units called decibels (dB). Noise is defined as “unwanted” sound.

Technically, sound pressure level (SPL) is defined as:

$$\text{SPL} = 20 \log (P/P_{\text{ref}}) \text{ dB}$$

where  $P$  is the sound pressure fluctuation (above or below atmospheric pressure) and  $P_{\text{ref}}$  is the reference pressure,  $20 \mu\text{Pa}$ , which is approximately the lowest sound pressure that can be detected by the human ear. For example:

$$\begin{aligned} \text{If } P &= 20 \mu\text{Pa, then SPL} = 0 \text{ dB} \\ \text{If } P &= 200 \mu\text{Pa, then SPL} = 20 \text{ dB} \\ \text{If } P &= 2000 \mu\text{Pa, then SPL} = 40 \text{ dB} \end{aligned}$$

The sound pressure level that results from a combination of noise sources is not the arithmetic sum of the individual sound sources, but rather the logarithmic sum. For example, two sound levels of 50 dB produce a combined sound level of 53 dB, not 100 dB. Two sound levels of 40 and 50 dB produce a combined level of 50.4 dB.

Human sensitivity to changes in sound pressure level is highly individualized. Sensitivity to sound depends on frequency content, time of occurrence, duration, and psychological factors such as emotions and expectations. However, in general, a change of 1 or 2 dB in the level of sound is difficult for most people to detect. A 3 dB change is commonly taken as the smallest perceptible change and a 6 dB change corresponds to a noticeable change in loudness. A 10 dB increase or decrease in sound level corresponds to an approximate doubling or halving of loudness, respectively.

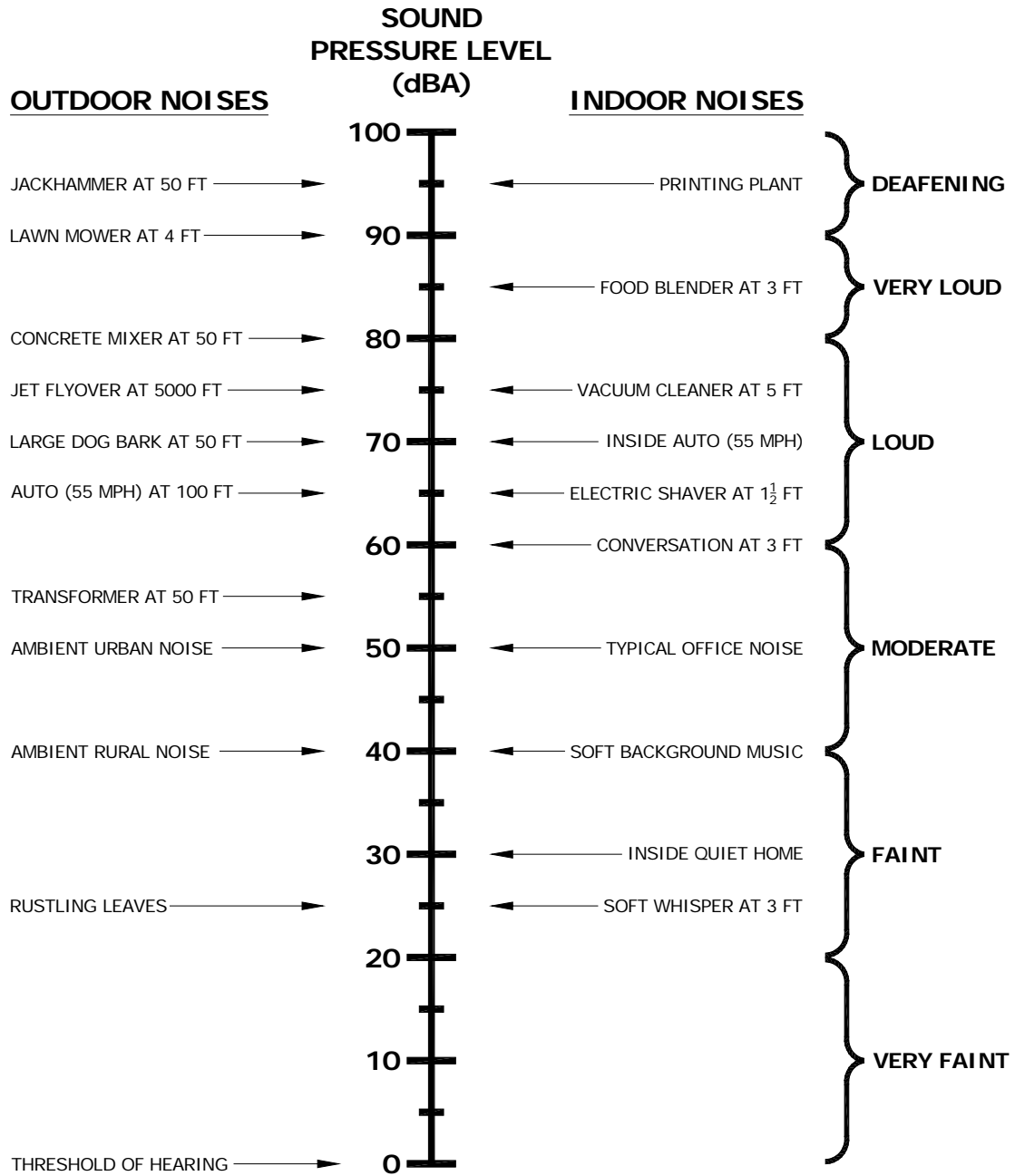
### A-Weighted Sound Level

Studies have shown conclusively that at equal sound pressure levels, people are generally more sensitive to certain higher frequency sounds (such as made by speech, horns, and whistles) than most lower frequency sounds (such as made by motors and engines)<sup>1</sup> at the same level. To address this preferential response to frequency, the A-weighted scale was developed. The A-weighted scale adjusts the sound level in each frequency band in much the same manner that the

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<sup>1</sup> D.W. Robinson and R.S. Dadson, “A Re-Determination of the Equal-Loudness Relations for Pure Tones,” *British Journal of Applied Physics*, vol. 7, pp. 166 - 181, 1956. (Adopted by the International Standards Organization as Recommendation R-226.

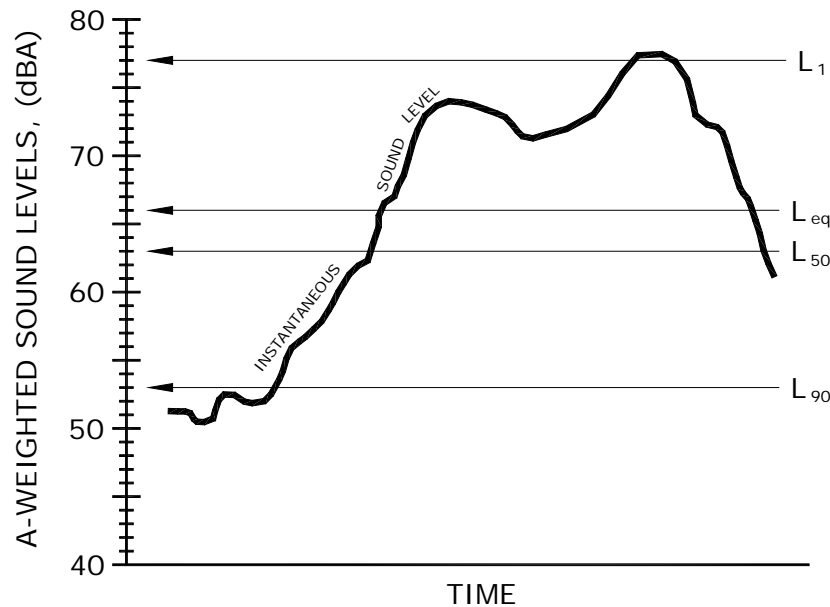
human auditory system does. Thus the A-weighted sound level (read as "dBA") becomes a single number that defines the level of a sound and has some correlation with the sensitivity of the human ear to that sound. Different sounds with the same A-weighted sound level are perceived as being equally loud. The A-weighted noise level is commonly used today in environmental noise analysis and in noise regulations. Typical values of the A-weighted sound level of various noise sources are shown in Figure A-1.



**Figure A-1. Common Outdoor/Indoor Sound Levels**

### Equivalent Sound Level

The Equivalent Sound Level ( $L_{eq}$ ) is a type of average which represents the steady level that, integrated over a time period, would produce the same energy as the actual signal. The actual *instantaneous* noise levels typically fluctuate above and below the measured  $L_{eq}$  during the measurement period. The A-weighted  $L_{eq}$  is a common index for measuring environmental noise. A graphical description of the equivalent sound level is shown in Figure A-2.



**Figure A-2. Example Graph of Equivalent and Statistical Sound Levels**

### Statistical Sound Level

The sound levels of long-term noise producing activities such as traffic movement, aircraft operations, etc., can vary considerably with time. In order to obtain a single number rating of such a noise source, a statistically-based method of expressing sound or noise levels has been developed. It is known as the Exceedence Level,  $L_n$ . The  $L_n$  represents the sound level that is exceeded for  $n\%$  of the measurement time period. For example,  $L_{10} = 60$  dBA indicates that for the duration of the measurement period, the sound level exceeded 60 dBA 10% of the time. Typically, in noise regulations and standards, the specified time period is one hour. Commonly used Exceedence Levels include  $L_{01}$ ,  $L_{10}$ ,  $L_{50}$ , and  $L_{90}$ , which are widely used to assess community and environmental noise. A graphical description of the equivalent sound level is shown in Figure A-2.

### Day-Night Equivalent Sound Level

The Day-Night Equivalent Sound Level,  $L_{dn}$ , is the Equivalent Sound Level,  $L_{eq}$ , measured over a 24-hour period. However, a 10 dB penalty is added to the noise levels recorded between 10 p.m. and 7 a.m. to account for people's higher sensitivity to noise at night when the background noise level is typically lower. The  $L_{dn}$  is a commonly used noise descriptor in assessing land use compatibility, and is widely used by federal and local agencies and standards organizations.

**Appendix E:  
Archaeological  
Inventory Survey**

**ARCHAEOLOGICAL ASSESSMENT  
OF THE KAUAHALE LANI COMMUNITY  
KAILUA AHUPUA'A, MAKAWAO DISTRICT  
ISLAND OF MAUI  
TMK 2-3-09:7 and 64**

for  
Maui Land and Pineapple, Inc.

by  
Jeffrey Pantaleo, M.A.

**FEBRUARY 2005**



**ARCHAEOLOGICAL SERVICES HAWAII, LLC**  
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**ABSTRACT**

Archaeological Service Hawaii, LLC (ASH), of Wailuku, conducted an archaeological assessment at the request of Maui Land and Pineapple, Inc., of the proposed Kauhale Lani Community (TMK 2-3-09:7 and 64). The project area consists of two parcels of land situated in Pukalani, Kailua *ahupua'a*, Makawao District, Maui Island. Parcel 7 is comprised of 49.99 acres, and Parcel 64 is comprised of 38.629 acres. The purpose of this investigation was to determine presence/absence, extent, and significance of cultural remains in the project area.

Historical and archaeological background research was conducted to enhance site predictability and interpretation. Following the surface survey of the parcels, which resulted in no findings, subsurface testing using backhoe trenching was conducted in selected localities. A total of 15 trenches were excavated in Parcel 7, and ten trenches were excavated in Parcel 64. No cultural remains were encountered in any of the trenches. Two to four stratigraphic layers were revealed during trenching, indicating the extent of previous ground disturbance from commercial agricultural activities. Layer I was the till zone from pineapple cultivation, consisting of silt with roots and rootlets and black sheeting and irrigation lines. Underlying the till zone was Layer II, silty clay to clay with minimal rocks and rootlets. Underlying Layer II was Layer III, silty clay to clay. Basalt outcrop was exposed in T5, 7, 8, 9, and 10 in Parcel 7, and T10 in Parcel 64.

Based on the negative results of subsurface testing in both parcels, no further archaeological procedures appear to be warranted prior to commencing construction activities. However, due to the presence of significant sites in the vicinity, archaeological monitoring is recommended during initial construction activities to ensure that any subsurface cultural remains or deposits underlying the till zone are properly documented. Prior to commencing any construction activities, an archaeological monitoring plan shall be prepared for approval by the State Historic Preservation Division (SHPD).

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**INTRODUCTION**

At the request of the landowner, Maui Land & Pineapple, Inc., Archaeological Services Hawaii, LLC (ASH), of Wailuku, conducted an archaeological assessment of the proposed Kauhale Lani Community in Kailua *ahupua`a*, Makawao District, Maui Island. The purpose of this investigation was to determine presence/absence, extent, and significance of cultural remains in the project area. Paul Titchenal, M.A., and Jeffrey Pantaleo, M.A., conducted the fieldwork on November 30, 2004.

**PROJECT AREA**

The project area consists of two parcels of land (TMK 2-3-09:7 and 64) situated in Pukalani, Kailua *ahupua`a*, Makawao District, Maui Island (Fig. 1). Parcel 7, comprised of 49.99 acres, is bounded by Old Haleakala Highway to the north, a residential subdivision to the east, and the New Hamakua Ditch to the west and south. Parcel 64, comprised of 38.629 acres, is bounded by Haleakala Highway to the north, Makani Road to the east, and Old Haleakala Highway to the south and west (Fig. 2).

**ENVIRONMENT**

The project area is situated on the northwestern slope of Haleakala. Topography of Parcel 7, artificially altered by pineapple cultivation, is relatively level with isolated rock clearing mounds (Fig. 3). Topography of Parcel 64, also artificially altered by pineapple cultivation, includes level areas and low ridges (Fig. 4). Extensive modifications including a concrete culvert and channel and access roads were located in the western portion of the Parcel 64 (Fig. 4). Elevation of Parcel 7 ranges from c. 1080 to 1160 feet above mean sea level, and elevation of Parcel 64 ranges from c. 1080 to 1450 feet above mean sea level. Rainfall averages between 20 to 50 inches annually, with most occurring during the months of October to April. Vegetation in Parcel 7 was limited to various grasses and weeds, and Parcel 64 included fallow pineapple (*Ananas comosus*), isolated stands of eucalyptus trees (*E. globulus*), and various grasses and shrubs.

Soils in Parcel 7 included Haliimaile silty clay, 3-7% slopes, and 7-15% slopes. These soils, developed in material weathered from basic igneous rocks, are well-drained and located on gently to strongly sloping terrain. Haliimaile silty clay, 3-7% slopes, occur on smooth uplands. The surface layer is dark reddish-brown silty clay overlying dark reddish-brown silty clay and very dark grayish-brown clay. Permeability is moderately rapid, runoff is slow, and the erosion hazard

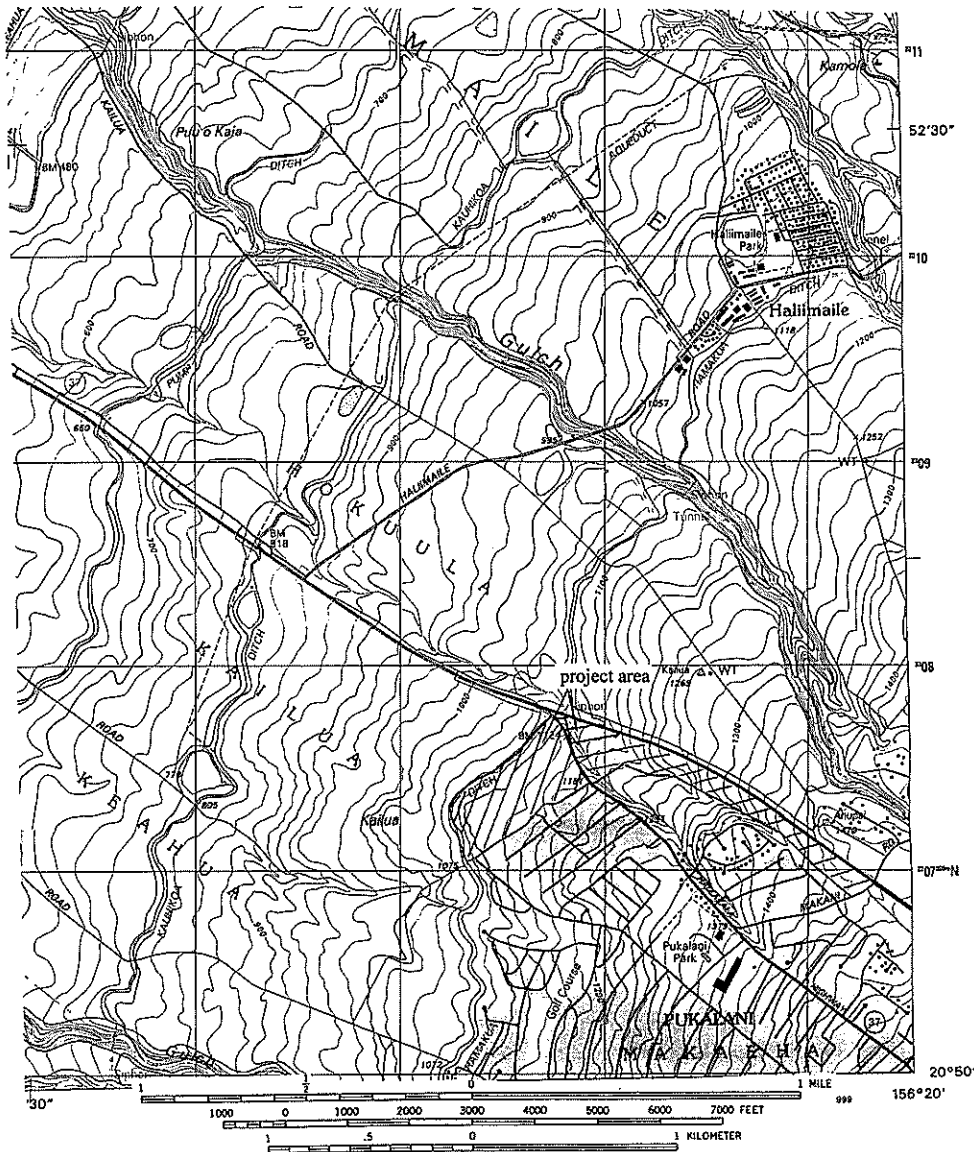


Figure 1. Location of Project Area on U.S.G.S. Kilohana Quad

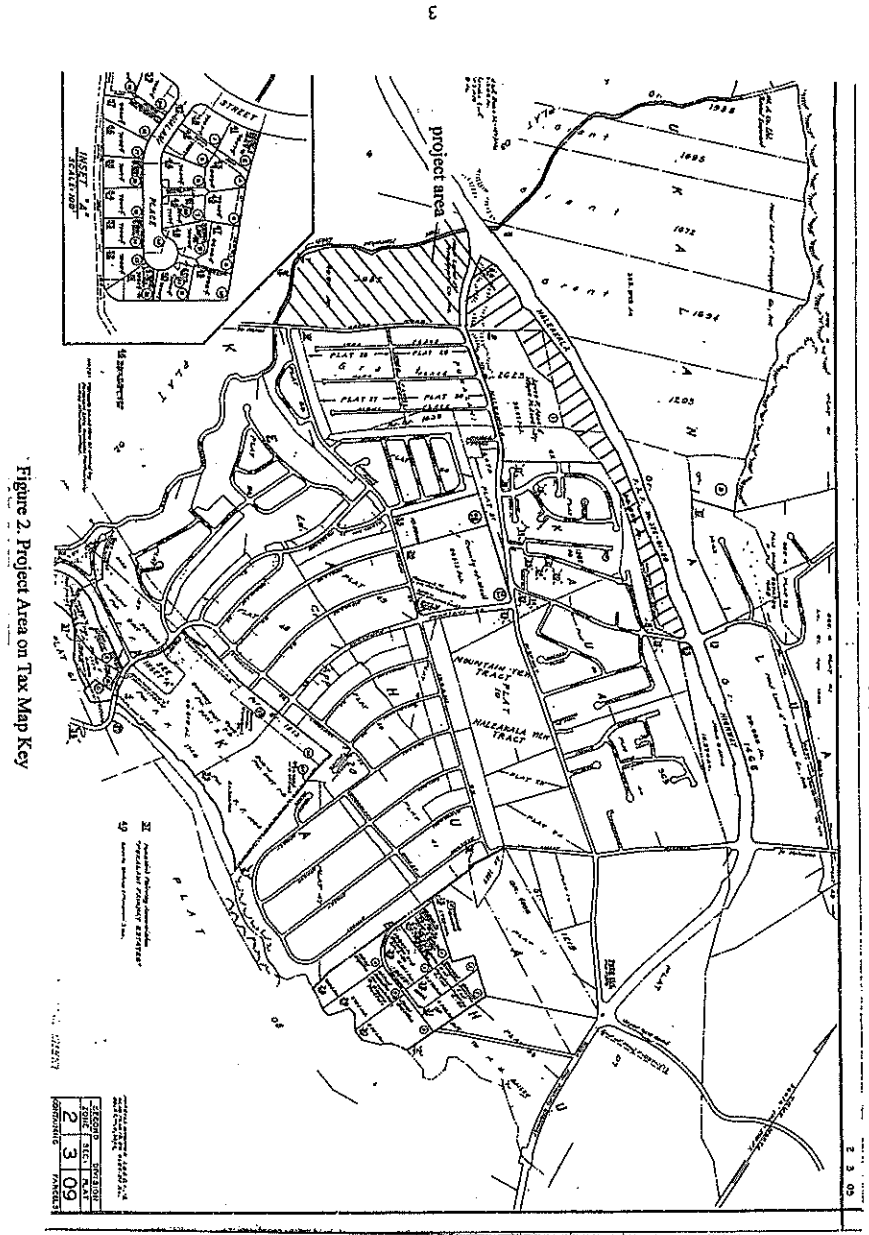


Figure 2. Project Area on Tax Map Key



Figure 3. Top: Overview of Parcel 7, View to Southwest. Bottom: Parcel 7, View to Northwest



Figure 4. Top: Overview of Parcel 64, View to North. Bottom: Concrete Culvert, View to North.



is slight. This soil is used for sugarcane, pineapple, and homesites (Foote et al. 1972:35-36). Haliimaile silty clay, 7-15% slopes, included small, cobbly areas and small, moderately steep areas. Runoff is medium, and the erosion hazard is moderate. This soil is used for sugarcane, pineapple, and homesites.

Soils in Parcel 64 include Haliimaile silty clay, 7-15% slopes, and Haliimaile gravelly silty clay, 7-15% slopes, eroded. Haliimaile gravelly silty clay, 7-15% slopes, eroded, is similar to Haliimaile silty clay, 7-15% slopes, except that in most places about 50% of the original surface and occasionally the subsoil has been lost from erosion. Runoff is medium to rapid, and the erosion hazard is severe. This soil is used for pineapple and pasture.

### HISTORY

Historical research of Kailua *ahupua`a* and the Makawao District was summarized in Wong Smith (Appendix A, in Donham 1990) and Sinoto and Pantaleo (2001). The reader is referred to these studies for detailed information. A brief summary of the history and land use of the subject project area is included here.

The *ahupua`a* of Kailua, the name literally meaning “two seas,” was once part of the old district of Kula (Pukui 1974:69). Kailua is not a typical *ahupua`a* encompassing the uplands to the coast, but is cut off from the sea by Wailuku *ahupua`a* and modern district (Wong Smith 1990). However, since Pukui and Elbert (1986:115) define “kai” as an area near the sea, Kailua *ahupua`a* may have once extended to the ocean (Wong Smith 1990).

According to Wong Smith (1990), not much is known regarding the pre-contact occupation and use of this specific region. Legendary and mythological references are scarce. Seasonal resource exploitation involving the gathering and harvesting of hardwoods like *koa* (*Acacia koa*), other plants, and animals most likely took place.

Background information regarding the individual land divisions are practically non-existent, thus references to Makawao and Kula will be briefly summarized here. For a more detailed historical summary, the reader is directed to Wong Smith (Appendix A in Donham 1990).

Early historic land-use patterns can be considered to reflect that of the late historic period. During the late prehistoric periods, dry land agriculture, including yam and sweet potato, probably flourished. While prehistoric permanent settlements, such as those to the east and south, have not been clearly indicated in the region of the current project area, the Kula region, more to the southeast, is said to have sustained a relatively large pre-contact permanent population. As discussed by Handy and Handy in *Native Planters in Old Hawaii*:

All the country below the west and south slopes of Haleakala, specifically Kula, Honua`ula, Kahikinui, and Kaupo, in old Hawaiian times depended on the sweet potato. The leeward flanks of Haleakala were not as favorable for dry or upland taro culture...however, some upland taro was grown up to an altitude of 3000 feet (1972:276).

Kula was always an arid region, throughout its long, low seashore, vast stony *Kula* lands, and broad uplands. Both on the coast, where fishing was good, and on the lower westward slopes of Haleakala, a considerable population existed. Hawaiian taro was probably not cultivated in Kula, so the fishermen in this section must have depended for vegetable food mainly on *poi* brought from the wetlands of Waikapu and Wailuku to westward across the plain to supplement their usual sweet-potato diet. In recent times, however, Chinese taro has been raised at a considerable elevation. Kula was widely famous for its sweet-potato plantations. *Uala* was the staple of life here (1972:510-511).

Makawao literally means “forest beginning” (Pukui et al. 1974:142). Early accounts of Makawao consist of descriptions of the area or accounts of notable events that took place. The rain of Makawao is mentioned often in poetical sayings as well as in journals of early visitors (Wong Smith in Donham 1990:A-1). The Hawaiian historian Kamakau mentioned the following event that he estimated to have taken place around 1785:

When Kekaulike heard that Alapa`i, the ruling chief of Hawaii was at Kohala on his way to war against Maui, he was afraid and fled to Wailuku in his double war canoe named Ke-aka-milo...and the fleet landed at Kapa`ahu at the pit of `Aihako`ko in Kula [old name for Makawao]. Here on the shore the chiefs prepared a litter for Kekaulike and bore him upland to Haleki`i in Kukahua (1961:69)

By around the 1800s, agriculture in the Kula area underwent a transformation from subsistence to commercial. The arrival of whalers created a demand for fresh produce including vegetables, meat, and fruit. The increase in the number of whaling ships after 1840 caused an increase in demand for fresh produce. Although, at first only sweet potatoes were available, but by the mid-1830s, Irish potatoes were being cultivated. Since they were so well suited to be raised in Kula, it was soon called the “potato district” (Kuykendall 1965:313).

The Irish potato blight and the California gold rush of 1849 started a potato “boom” and an annual yield of 20,000 barrels of commercial Irish potatoes was estimated in the years between 1847 and 1854. The gold rush also created a market for potatoes, other vegetables, and sugar and molasses. The potato boom was short-lived, but sugar cane and pineapple would have a profound effect upon land-use and tenure over a large part of Maui.

Prior to the Mahele of 1848, Makawao was involved in an experimental program of land awards created by King Kamehameha III (Wong Smith 1990). In 1845 and 1846, land in the Makawao District was sold for \$1 per acre with the transactions being registered as grants. About 900-acres, in parcels ranging from 5 to 10 acres, were purchased by native Hawaiians. The homesteaders gained title to their lands. Much of the remaining government lands were leased to *haoles* ranchers. Around this time, immigrant Chinese farmers began leasing lands in Kula, either from the Hawaiian homesteaders or from the ranchers. A sizeable Chinese population flourished in Kula by the mid-1850s.

A portion of Grant 3085 was awarded within Parcel 7. This Grant, consisting of 182.16-acres, was awarded to Mark Preever and Kamakele on March 18, 1871, for \$182.16. Portions of Grants 1088, 1202, 1203, and 2625 were awarded in Parcel 64. Grant 1088, consisting of 53.20-acres, was awarded to Kalawe on December 24, 1852, for \$106.80. Grant 1202, consisting of 76-acres, was awarded to Kawahalama on August 31, 1853, for \$76.00. Grant 1203, consisting of 60-acres, was awarded to Nuole on August 31, 1853, for \$60.00. Grant 2625, consisting of 82-acres, was awarded to Kahili on September 9, 1859, for \$82.00. No land use was indicated in these grants.

Several other grants were awarded in the vicinity, but not directly associated with the project area. Grant 1672, located adjacent to the east of Grant 1694, was awarded to Thomas B. Cummings on April 3, 1853, consisting of 100-acres, for \$100.00. Grant 1695, located adjacent to the east of Grant 1672, was awarded to Robert Bracy on April 17, 1853, consisting of 56.44-acres, for \$56.44. Grant 1988, located adjacent to the east of Grant 1695, was awarded to Charles Barston on April 2, 1856, consisting of 100-acres, for \$100.00.

Maui Land & Pineapple Company has been continuously cultivating pineapple in the area for nearly 70 years. Currently, Parcel 7 includes open land previously cultivated in pineapple, and Parcel 64 includes fallow pineapple fields.

#### PREVIOUS ARCHAEOLOGY

Donham (1990) previously investigated a portion of Parcel 7 in conjunction with an archaeological inventory survey of five potential upcountry Maui high school sites in Haliimaile, Hokuula, Kailua, and Makaeha *ahupua'a*, Makawao District (Fig. 5). School Sites 1 through 5 each measured approximately 35 acres and were cultivated in pineapple. School Site 1 included a portion of the current project area (Parcel 7). A total of four ceramic sherds were identified on the surface of School Site 1. Donham noted that these sherds may be associated with a house formerly located along Haleakala Highway; however, no remains of this house currently exists. Four lithic artifacts, including a basalt flake, an *ulu maika* fragment, a complete basalt adz, an adz fragment, and a ceramic sherd were collected from the surface of School Site 4. A small piece of waterworn coral and *Cellana* shells were observed on the surface of School Site 3, a horseshoe and metal were found in School Site 2, and a complete small adz was identified in School Site 5. No further work was recommended for School Sites 1-3, and 5; however, additional work including land tenure and cartographic sources was recommended for School Site 4.

Pertinent archaeological work conducted in the immediate vicinity of the current project area included Bordner (1980), Connelly (1973), Donham (1992), Fredericksen and Fredericksen (1995, 1999), Kennedy (1991), Pantaleo (2003), Pickett et al. (2003), Sinoto (2001), and Sinoto and Pantaleo (2001)(Fig. 5).

Environmental Impact Statement Corporation (Bordner 1980) conducted a reconnaissance survey of the proposed Makawao Subdivision, located between Apana Road and Kailua Gulch. No surface archaeological sites were identified during this investigation. The project area was formerly used as a plantation camp; however, no remains of this camp were observed. No further work was recommended.

Donham (1992) conducted a field inspection of petroglyphs located near the Kula 200 Subdivision in Makaeha, Makawao District. These petroglyphs, on a vertical rock face along the northern bank of a gulch, were reported to the State Historic Preservation Division by a resident of the Kula 200 Subdivision. A total of 32 separate glyphs, including canoes and paddlers, long canoes with no sails, human figures, and possible lizard figures, were observed on an approximately 20 m long section of the cliff. These petroglyphs were assigned State Site Number 50-50-11-2920. Site 1062, consisting of 87 petroglyphs on the northern rock face in Kaluapulani Gulch, was recorded by Bishop Museum (Connelly 1973).

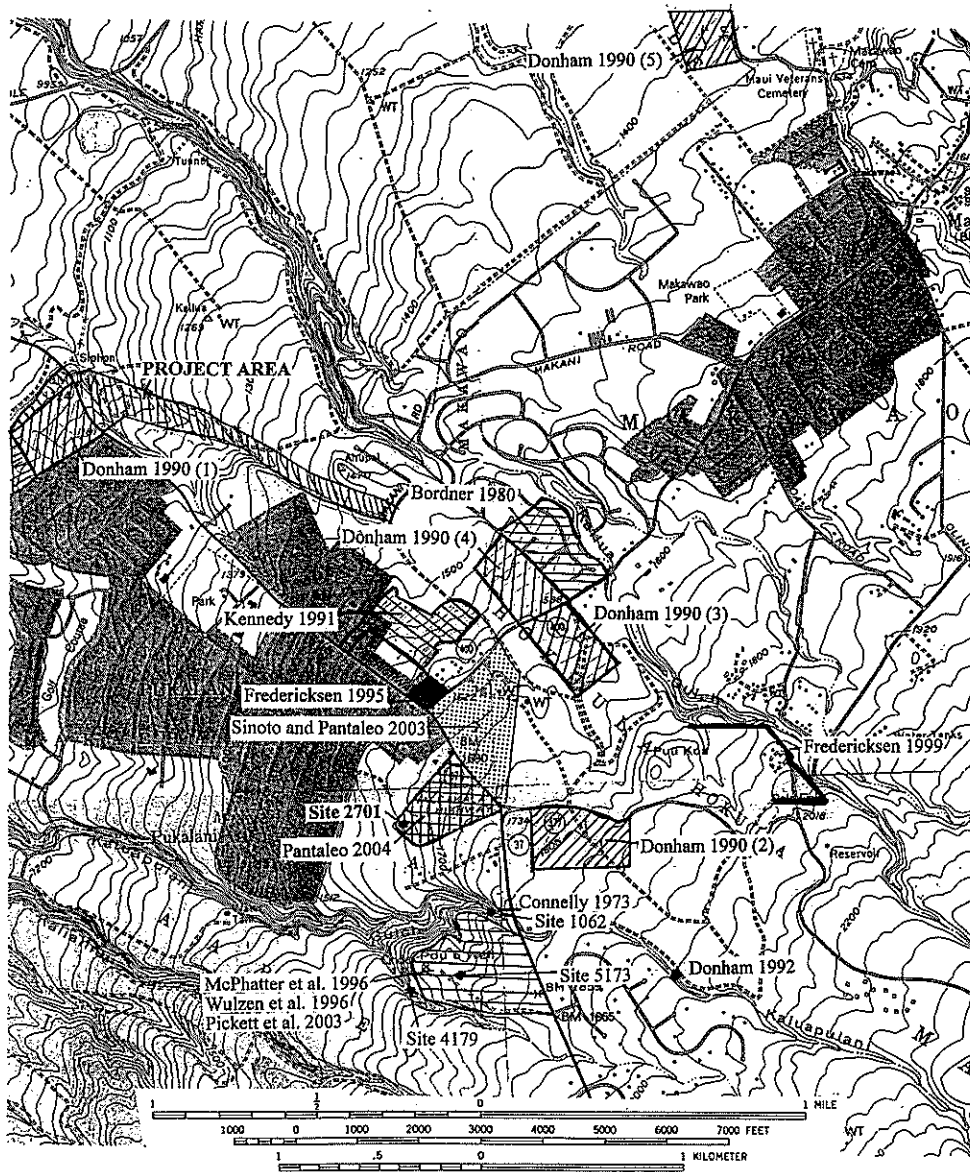


Figure 5. Previous Archaeological Work

Xamaneq Researches conducted an inventory survey on a 1.78-acre parcel of land located in the *ahupua'a* of Hokuula, Makawao District (Fredericksen and Fredericksen 1995). State Site 50-50-05-3929, a rock aggregation, was recorded during the survey. Two manually excavated units and one backhoe trench were excavated at this site. Historic material including metal, bottle glass, plastic and black mulch sheeting, sawn bovine bone, ceramics, kukui nut, water-worn pebbles, and marine shell were recovered from Trench #1 and Test Unit #1. Backhoe Trench #9 was excavated across the rock pile to obtain a stratigraphic profile. A three-layer stratigraphic sequence was revealed during trenching. Layers I and II were mixed with historic material, and Layer III was the basal layer absent of cultural material. A total of 22 backhoe trenches were excavated throughout the parcel. No subsurface cultural remains were encountered in these trenches, and no further archaeological work was recommended at Site 3929.

Xamaneq Researches conducted an archaeological inventory survey for the Kulamalu water tank and waterline improvements in Hokuula *ahupua'a*, Makawao District (Fredericksen and Fredericksen 1999). State Sites 50-50-10-4677 through 4681 were recorded during the investigation. Sites 4677 and 4680 were historic retaining walls; Site 4678 was an excavated cave shelter; Site 4679 was a rock shelter; and Site 4681 is a probable historic grave. All of these sites are located beyond the waterline corridor, and will not be impacted during construction of the waterline and tank. Since these sites will not be impacted by the proposed development, no further work was recommended.

Archaeological Consultants of Hawaii, Inc., conducted an archaeological inventory survey and test results for the proposed Pukalani Highlands property located at Pukalani, *ahupua'a* of Kailua, Maui Island (Kennedy 1991). Sites 2497 through 2499 were recorded during the survey. Site 2497 was a platform, 2498 was a possible *heiau* based on recovered artifacts and coral, and Site 2499 was a rock mound. However, testing was limited to outside these structures to minimize disturbance and preserve its integrity.

Archaeological Services Hawaii, LLC, conducted an archaeological inventory survey of the proposed Kualono residential subdivision in Pukalani, Makawao District, Maui Island (Pantaleo 2003). No archaeological sites were identified during the surface survey. Due to extensive previous disturbances from pineapple cultivation, a total of 26 backhoe trenches were excavated in selected areas throughout the parcel. No subsurface cultural remains or deposits were encountered during testing, and no further work was recommended. However, due to the presence

of Site 2770 adjacent to the proposed development, archaeological monitoring during construction activities was recommended to ensure protection of the site and document any subsurface cultural remains or deposits underlying the till zone.

Archaeological Services Hawaii, LLC (Pickett et al. 2003) conducted monitoring of the Kulamalu Commercial Subdivision in Aapueo *ahupua'a*, Kula, Maui. Site 5173, a Chinese Cemetery consisting of coffin and pit burials, 5 burning episodes, and an animal burial, was recorded.

Aki Sinoto Consulting (Sinoto 2001) conducted a cultural impact assessment for the proposed phased development of the Pukalani Triangle in Makaeha *ahupua'a*, Makawao, Maui (TMK 2-3-07:08). No continuing cultural practices are currently occurring within the project area based on the findings of the archaeological inventory survey (Sinoto and Pantaleo 2001) and oral testimonies; however, five intact structures associated with the Corn Mill Camp (Site 50-50-06-5169) are still present within the project area. It was recommended that landscaping and planting in the project area should use native plants for lei-making and medicinal use, and a museum or interpretive space should be dedicated within one of the buildings associated with Site 5169.

#### SETTLEMENT PATTERN AND SITE EXPECTABILITY

The atypical configuration of Kailua, as well as some of the surrounding *ahupua'a*, in being truncated from access to the sea, would certainly have influenced the types of sites and their distribution. No extensive permanent settlements were indicated within this specific region until the historic period. Until that time, the prevailing land-use pattern was most likely associated with the seasonal exploitation of upland forest resources in the form of assorted plants and animals. Thus, the sites associated with such endeavors would consist of rock-shelters, small temporary habitation structures such as C-shapes, and trails. Although, the *Kula* areas further east and south were known for extensive dry-land agricultural pursuits, the current project area, in terms of elevation appeared to have been peripheral or marginal in productivity for prehistoric agricultural activities. Thus, features related to such activity would be limited in extent and consist of small plots and gardens in selected areas in the vicinity of gulches and drainages, where the terrain was more suitable. The places for religious and ceremonial activities such as *heiau* are found in neighboring *ahupua'a* such as Omaopio, but none have been recorded in Kailua *ahupua'a*. The paucity of prehistoric period sites may also be attributable to the extensive terrain alteration that took place with the advent of large-scale commercial agricultural ventures during the historic period.

By the mid-1800s, much of the upland forests had been cleared for agriculture, both cultivation and cattle grazing. The current project area is devoid of forest trees and consists of secondary growth following large-scale clearing. Thus, the most likely cultural remains to be encountered in the study area would be historic features and artifacts associated with agricultural pursuits. Some 900 acres of homestead grants were awarded in the Makawao District in a pre-Mahele experimental program and some remains associated with such homesteads could be encountered.

#### METHODS

Archaeological and historical literature and documents research was undertaken, not only to gain some insight into the prehistoric and historic background of the project area, but also to enhance the predictability of the nature and extent of potential cultural resources in the subject area. This research was conducted at the State Historic Preservation Division (SHPD) library of the Department of Land and Natural Resources (DLNR) in Kapolei, the Bureau of Conveyances and Land Management Branch of DLNR, the Hawaii State Library in Honolulu.

The surface survey of Parcels 7 and 64 was conducted by walking systematic transects spaced at 5-10 meter intervals when feasible throughout the project area. Results of the surface survey revealed no significant surface cultural manifestations. The ensuing subsurface testing employed a wheeled backhoe with a 24" bucket. Fifteen backhoe trenches were placed in selected localities in Parcel 7 and ten backhoe trenches were placed in Parcel 64 to allow representative sampling of the entire project area.

The location of each trench was plotted onto the project area map. A stratigraphic profile of a representative column on a trench sidewall was recorded for each trench. A color photographic record on APS format was obtained for each trench and soil colors were described in reference to Munsell color designations. Project area overviews were also photographically recorded.

All procedures followed generally accepted archaeological methods and standards. All field notes, maps, and photographs generated in connection with the current project will be curated at Archaeological Services Hawaii, LLC, in Wailuku, Maui.

## RESULTS OF SURVEY

No surface cultural remains were encountered during the surface survey of Parcels 7 and 64. Both parcels exhibited extensive previous disturbances from pineapple cultivation, and recent modifications in Parcel 64 included construction of a concrete culvert and channel and access roads. The New Hamakua Ditch defines the western and southern boundaries of Parcel 7 (Fig. 6). This ditch, constructed of concrete, runs on surplus water from other ditches or for delivery to the fields (Wilcox 1996:121). Localities were selected for backhoe testing for the purpose of sampling the subsurface conditions within the parcels. A total of 15 trenches were excavated in Parcel 7 (Fig. 7), and 10 trenches were excavated in Parcel 64 (Fig. 8). No cultural remains, either prehistoric or historic, were encountered in any of the trenches.

Table 1 presents the dimensions and stratigraphic information for each of the 15 trenches in Parcel 7 and 10 trenches in Parcel 64. Representative stratigraphic columns for T1 through T15 in Parcel 7 are depicted on Figure 9, and T1 through T10 in Parcel 64 are depicted in Figure 10. Figures 11-18 presents photographic overviews of selected trenches.

No subsurface cultural remains or deposits were encountered in any of the trenches. Generally, two to four stratigraphic layers were exposed during trenching in Parcel 7. Layer I was the till zone from pineapple cultivation, consisting of silt with black sheeting and irrigation lines. Underlying the till zone was Layer II, silty clay to clay with minimal rocks and rootlets. Underlying Layer II was Layer III, clay. Basalt outcrop was exposed in T7 and 9.

Two to four stratigraphic layers were also exposed in Parcel 64. Layer I was the till zone from pineapple cultivation, consisting of silt with black sheeting and irrigation lines. The till zone was absent in T9. Layers II and III consisted of clay to silty clay, and basalt outcrop was exposed in T10.

The stratigraphic components of T1-T15 in Parcel 7 are as follows:

**Layer I (T1-15):** till zone consisting of dark brown to very dark brown (10YR 2/2 – 3/3; 7.5YR 2.5/2, 2.5/3, 3/2, 3/3) silt with black sheeting and irrigation lines from pineapple cultivation; abundant roots/rootlets; fine, moist, sticky, non-plastic, non-cultural.



Figure 6. Top: Overview of the New Hamakua Ditch, View to West.  
Bottom: New Hamakua Ditch, View to North.

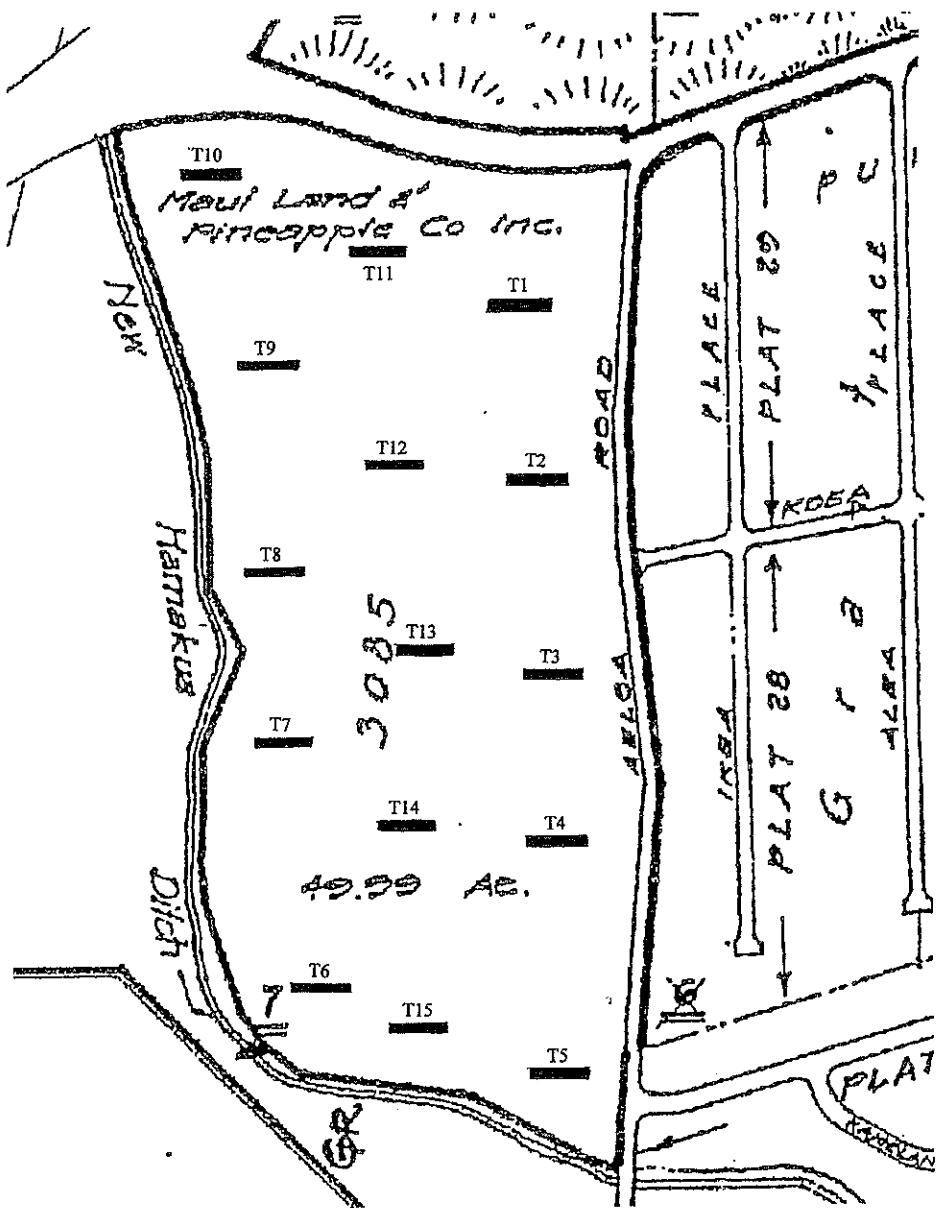


Figure 7. Location of Trenches 1-15 in Parcel 7

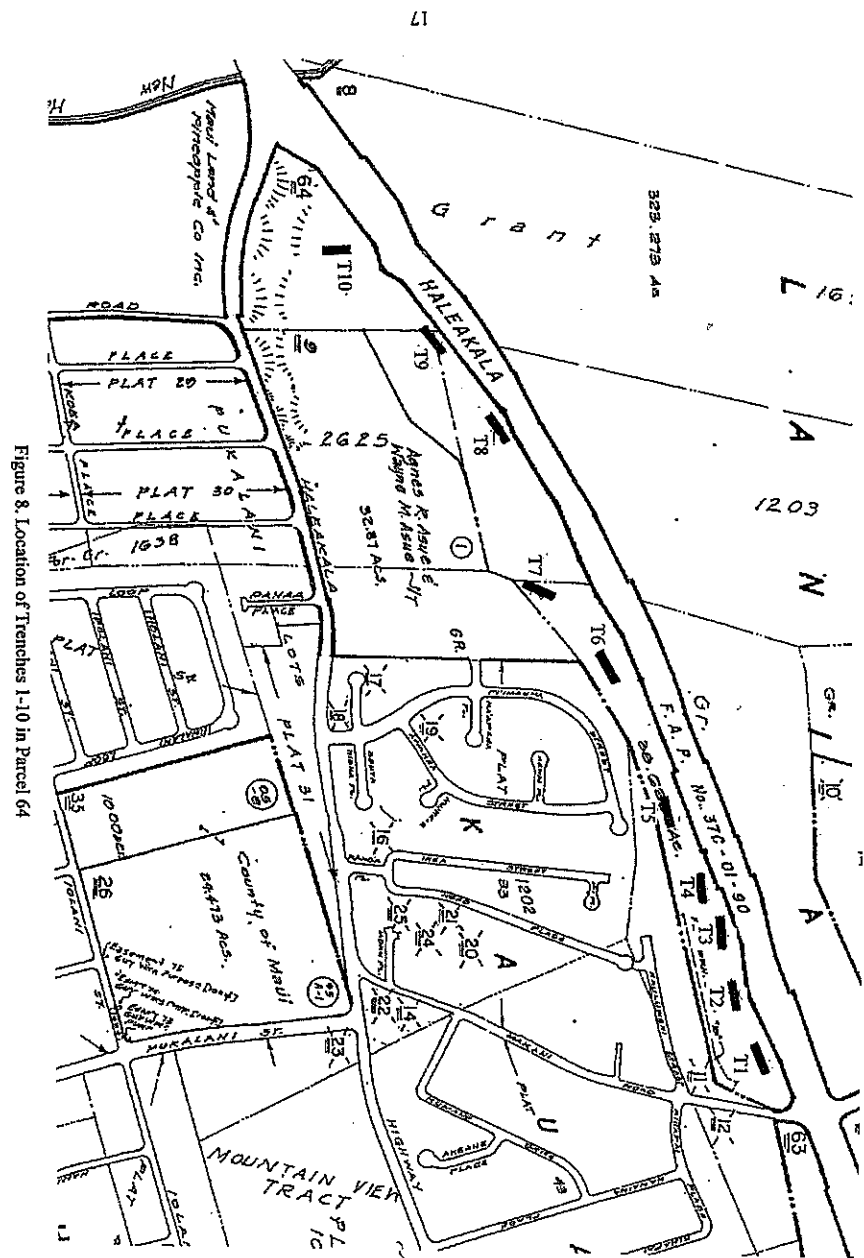


Figure 8. Location of Trenches 1-10 in Parcel 64

Table 1. Dimensions and Stratigraphic Information for T1-15 in Parcel 7 and T1-10 in Parcel 64

PARCEL 7								
T-	Length	Width	Depth	Orient.	Layer I	Layer II	Layer III	Layer IV
1	5.0m	0.8m	2.0m	140/320	till zone	silty clay		
2	6.0m	0.8m	1.8m	140/320	till zone	silty clay		
3	5.0m	0.8m	1.9m	140/320	till zone	silty clay		
4	5.5m	0.8m	1.8m	140/320	till zone	silty clay	clay	
5	5.5m	0.8m	1.7m	140/320	till zone	silty clay	outcrop	
6	5.5m	0.8m	2.0m	130/310	till zone	clay		
7	5.5m	0.8m	1.9m	140/320	till zone	silty clay	clay	outcrop
8	6.0m	0.8m	1.7m	140/320	till zone	clay	outcrop	
9	6.0m	0.8m	1.9m	120/300	till zone	silty clay	clay	outcrop
10	6.0m	0.8m	1.8m	130/310	till zone	clay	outcrop	
11	5.5m	0.8m	1.9m	140/320	till zone	silty clay	clay	
12	5.0m	0.8m	1.8m	120/300	till zone	silty clay		
13	6.0m	0.8m	2.0m	140/320	till zone	silty clay		
14	6.0m	0.8m	1.9m	140/320	till zone	silty clay	clay	
15	6.0m	0.8m	1.8m	140/320	till zone	silty clay		
PARCEL 64								
T-	Length	Width	Depth	Orient.	Layer I	Layer II	Layer III	Layer IV
1	5.0m	0.8m	1.8m	120/300	till zone	silty clay		
2	5.2m	0.8m	1.7m	130/310	till zone	silty clay		
3	5.3m	0.8m	1.8m	130/310	till zone	silty clay	clay	
4	5.0m	0.8m	1.8m	120/300	till zone	silty clay		
5	5.0m	0.8m	1.8m	130/310	till zone	silty clay		
6	5.0m	0.8m	2.0m	100/280	till zone	silty clay		
7	5.0m	0.8m	1.6m	110/290	till zone	outcrop	silty clay	
8	5.5m	0.8m	1.8m	90/270	till zone	clay	silty clay	
9	5.5m	0.8m	2.0m	70/250	silt	clay		
10	5.0m	0.8m	1.8m	40/220	till zone	silty clay	clay	outcrop

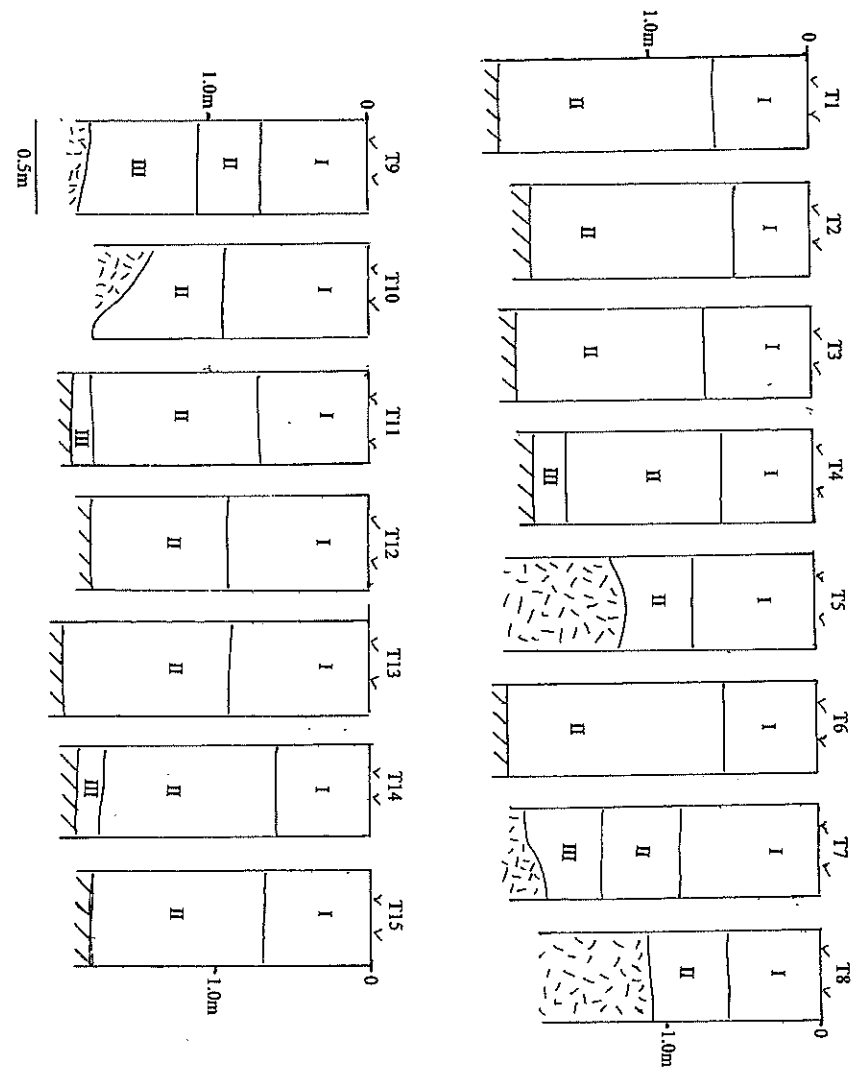


Figure 9. Representative Stratigraphic Columns for T1-15 in Parcel 7

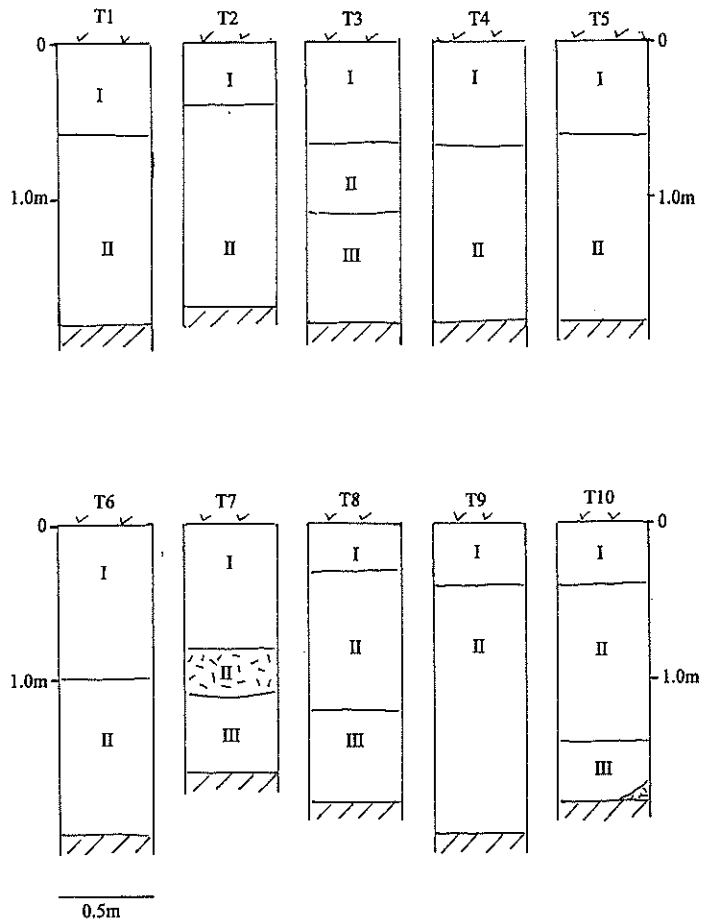


Figure 10. Representative Stratigraphic Columns for T1-10 in Parcel 64

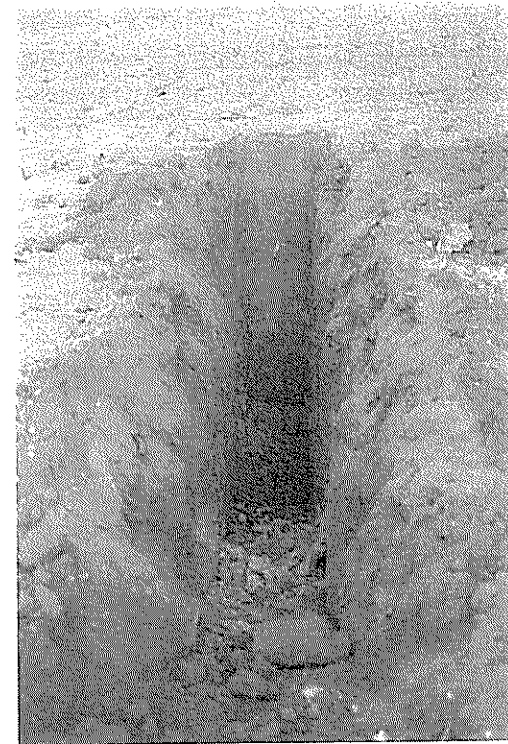


Figure 11. Overview of T5 in Parcel 7, View to Southeast





Figure 12. Overview of T7 in Parcel 7, View to Southeast



Figure 13. Overview of T12 in Parcel 7, View to Southeast



Figure 14. Overview of T2 in Parcel 64, View to Northwest



Figure 15. Overview of T3 in Parcel 64, View to Northwest



Figure 16. Overview of T5 in Parcel 64, View to Northwest



Figure 17. Overview of T8 in Parcel 64, View to West



Figure 18. Overview of T10 in Parcel 64, View to Northeast

**Layer II (T1-7, 10-15):** dark brown to very dark grayish-brown (7.5YR 2.5/2 – 2.5/3 – 3/2 – 3/3) silty clay with moderate amounts of rocks and rootlets; compact, fine, sticky, slightly, plastic; non-cultural.

Layer II in T8 was dark gray (10YR 4/1) clay with pockets of dark yellowish-brown (10YR 4/4) silty clay; fine, compact, sticky, plastic to slightly plastic; non-cultural. Layer II in T9 was very dark gray (10YR 3/1) silty clay with minimal amounts of rocks and rootlets; fine, slightly sticky, slightly plastic; non-cultural.

**Layer III (T4, 7, 9, 11, 14):** brown to very dark brown to dark gray to very dark gray (10YR 3/1, 10YR 4/1, 10YR 4/3) clay; compact, fine, sticky, slightly plastic to plastic, with some rocks; non-cultural.

Layer III in T5, 8, and 10, and Layer IV in T7 and 9 was basalt outcrop.

The stratigraphic components of T1-T10 in Parcel 64 are as follows:

**Layer I (T1-8, 10):** till zone consisting of dark brown to very dark brown (10YR 2/2 – 3/2 – 3/3; 7.5YR 2.5/2 – 3/3) silt with black sheeting and irrigation lines from pineapple cultivation; abundant roots/rootlets; fine, moist, non-sticky, non-plastic, non-cultural.

Layer I in T9 was dark brown (10YR 3/3) silt; crumbly, dry, non-sticky, non-plastic, with abundant roots/rootlets and rocks.

**Layer II (T1-6, 10):** dark brown to very dark brown to very dark gray to very dark grayish-brown (10YR 3/2 – 10YR 3/3; 7.5YR 2.5/2 – 3/1 – 3/2) silty clay with few rocks and rootlets; compact, fine, sticky, slightly plastic, non-cultural.

Layer II in T7 was basalt outcrop. Layer II in T8 was dark brown (7.5YR 3/2) clay with rootlets; sticky, slightly plastic, non-cultural. Layer II in T9 was very dark grayish-brown (10YR 3/2) clay; compact, homogenous, fine, sticky, slightly plastic, non-cultural.

**Layer III** in T3 was very dark brown (7.5YR 2.5/3) clay with few roots; compact, fine, sticky, plastic, non-cultural. Layer III in T7 and 8 was very dark grayish-brown (10YR 3/2) silty clay with few roots; fine, slightly sticky, slightly plastic, slightly compact, non-cultural. Layer III in T10 was dark gray (10YR 4/1) clay; moist, very fine, sticky, slightly plastic, non-cultural.

Layer IV in T10 was basalt outcrop.

## DISCUSSION

No surface or subsurface cultural remains were encountered in both Parcels 7 and 64. The results of the current investigation produced no evidence for sedentary cultural activities during the prehistoric and early historic periods in the subject project area, and the background data search also supported this conclusion.

Fifteen trenches were excavated in Parcel 7, and ten trenches were excavated in Parcel 64. The results of backhoe testing showed that subsurface cultural remains were absent in all exposed stratigraphic layers. Stratigraphic analysis revealed a two to four layer stratigraphic sequence. The surface of both parcels consisted of Layer I, the till zone. Underlying the till zone were several layers of silty clay to compact clay. Basalt outcrop was encountered in T5, 7, 8, 9, and 10 in Parcel 7, and T10 in Parcel 64.

## RECOMMENDATIONS

Based on the negative results of subsurface testing in both parcels, together with evidence for previous disturbances in the subject project area from pineapple cultivation, no further archaeological inventory work is recommended. However, due to the presence of significant sites in the vicinity, archaeological monitoring is recommended during initial construction activities to ensure that any subsurface cultural remains or deposits underlying the till zone are properly documented. Prior to commencing any construction activities, an archaeological monitoring plan shall be prepared for approval by SHPD.

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**Appendix F:  
Cultural Impact  
Assessment Report**

# **KAUHALE LANI**

*(Heavenly Village)*



Sunset at Kauhale Lani, project site. Photo by C. K. Maxwell

**TMK 2-3-09:7**, 49.99 acres, single-family homes in lower Pukalani & **TMK 2-3-09:64**, 38.623 acres, open space with walking path alongside the Haleakalā Bypass Highway.  
Pukalani, Maui, Hawai‘i 96768

## **MITIGATING MEASURES**

“Archaeological monitoring during initial grading”

## **NO IMPACT**

## **F I N A L      R E P O R T**

*Prepared for:*

**KAPALUA LAND COMPANY, LTD.**

1000 Kapalua Drive

Kapalua, Hawai‘i

*Prepared by:*

**CKM Cultural Resources, L.L.C.**

C. K. Maxwell Sr.

157 Alea Place

Pukalani, Maui, Hawai‘i



**KAUHALE LANI**  
*(Heavenly Village)*

**TITLE PAGE**

**TMK 2-3-09:7**, 49.99 acres, single-family homes in lower Pukalani & **TMK 2-3-09:64**, 38.623 acres, open space with walking path alongside the Haleakalā Bypass Highway, Pukalani, Maui, Hawai‘i

**MITIGATING MEASURES**

“Archaeological monitoring during initial grading”

**NO IMPACT**

**F I N A L      R E P O R T**

February 2005

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**KAUHALE LANI**  
*(Heavenly Village)*

TMK 2-3-09:7, 49.99 acres, single-family homes in lower Pukalani & TMK 2-3-09:64, 38.623 acres, open space with walking path alongside the Haleakalā Bypass Highway, Pukalani, Maui, Hawai‘i

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# **KAUHALE LANI**

*(Heavenly Village)*

TMK 2-3-09:7, 49.99 acres, single-family homes in lower Pukalani & TMK 2-3-09:64, 38.623 acres, open space with walking path alongside the Haleakalā Bypass Highway, Pukalani, Maui, Hawai'i

## **ABSTRACT**

This study, in accordance with the guidelines of Office of Environmental Quality Control, describes resources having Hawaiian Cultural Value. It will describe potential impacts from further development, along with measures that could possibly be employed to mitigate those impacts. If any historic and/or prehistoric resources are identified during an archaeological survey, the study will evaluate the resources and assist in the development of a general preservation plan. It will also address the requirements of the Office of Hawaiian Affairs, in regards to cultural impacts. Specifically, the document will address potential effects on the Hawaiian Cultural and Traditional Customary Rights, as described in the legislation known as Act 50, Sessions Laws of Hawai'i, 2002, and meet the requirements of the HRS Chapter 343, which also requires an environmental assessment of cultural resources, in determining the significance of a proposed project. Also, Articles IX and XII of the State Constitution, other state laws, and the courts of the state, require government agencies to promote and preserve cultural beliefs, practices, and resources of Native Hawaiians and other ethnic groups. Furthermore, this study will address whether the development will impede access to any cultural or spiritual sites and how this could be mitigated, if cultural resources are found.

A Hawaiian cultural resource evaluation revealed the locations of the project (named Kauhale Lani – meaning *Heavenly Village*) areas as follows: The first site (TMK 2-3-09:7) is located on the Old Haleakalā<sup>1</sup> Highway, in the Kīhei direction. The makai<sup>2</sup> side (Kahului side) of the project is bordered by the New Hāmākua<sup>3</sup> Ditch, which separates this project from the HC&S Co. cane field. The mauka<sup>4</sup> side of the project runs parallel to Aeloā<sup>5</sup> Rd., which ends in a dead-end street. However, the project boundary continues in the Kīhei<sup>6</sup> direction bordering the homes on Ikea<sup>7</sup> Place and ends just after the beginning of Iolani<sup>8</sup> Street, in Lower Pukalani Terrace. According to information received from a resident who lives mauka of this project site, the area was once a ranch established by the Enos family. After being used for ranch land, pineapple was planted on this project area up until the present time.

The second site in this project is TMK 2-3-09:64, with a total of 38.623 acres. It begins at the intersection of the Haleakalā Highway (new bypass) and the Old Haleakalā Highway intersection, then goes in the mauka direction parallel to the Haleakalā Highway bypass, and ends at Makani<sup>9</sup> Road. It then runs along Makani Road in the Kīhei direction for a hundred yards and stops at Munoz<sup>10</sup> Road. The project site then continues in the makai direction along the back of the housing area, which follows a 10 foot gulley that is unnamed. The developers are planning to leave this area in open space and create a walking path with indigenous and endemic trees and plants.

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<sup>1</sup> Haleakalā – “The House of the Sun”, Mt. Haleakalā, 10,025 feet elevation, approximately 31 miles from this project.

<sup>2</sup> makai – Towards the sea.

<sup>3</sup> Hāmākua –Lit. means “long corner”.

<sup>4</sup> mauka – Towards the mountain: upper side.

<sup>5</sup> A’e Loa – Name for the trade wind.

<sup>6</sup> Kīhei – (cloak), district in South Maui.

<sup>7</sup> ‘ikea – To bring forth life.

<sup>8</sup> Iolani – The high flight of the hawk – referring to royalty.

<sup>9</sup> makani – Wind.

<sup>10</sup> Munoz Road – Named after Frank Munoz who developed this area.

No known Hawaiian cultural or spiritual practices were performed on either of the two properties.

The project area in Maka'eha<sup>11</sup> is located in and around very culturally important areas. It borders the ancient 'ili of 'A'apueo<sup>12</sup>, which is separated by the Kaluapulani gulch. This gulch is located several hundred yards (in the Kihei direction) from the project that is being assessed. Numerous petroglyphs have been recorded in Kaluapulani gulch, and they are considered to be the best in the State Of Hawai'i. Members of the Polynesian Voyaging Society took rubbings from a petroglyph of a double hulled sailing canoe and used it to fashion the sails for the Hōkule'a, the modern sailing canoe that traveled all over the Polynesian Triangle.

I have been through these gulches on many occasions and have found a lot of evidence that the ancient Hawaiian people came to these gulches to make adzes, shape stone implements, pound herbs, and many other reasons that are too numerous to mention. Also, a lot of the native flora still exists in these gulches. In 1963, Mr. John Tavares "discovered" in a cave a ki'i (or image) of the Kamapua'a family in either the Kaluapulani gulch, which is adjacent to Kauhale Lani, or the gulch of Kalialinui, which is located about a mile from this property in the Kihei direction. This image is the only known wooden image from Maui and is presently kept at the Bishop Museum on O'ahu. A replica of this ki'i is on display at the Hale Ho'iki'iki Museum Bailey House in Wailuku.

Note: As much as possible, throughout this report, the spellings of Hawaiian vocabulary and place names have been standardized to present orthography.

---

<sup>11</sup> Maka'eha - translation is "sore eyes".

<sup>12</sup> 'A'apueo - Land of the female owl goddess Pueo.

**KAUHALE LANI**  
*(Heavenly Village)*

TMK 2-3-09:7, 49.99 acres, single-family homes in lower Pukalani & TMK 2-3-09:64, 38.623 acres, open space with walking path alongside the Haleakalā Bypass Highway, Pukalani, Maui, Hawai'i

**OUTLINE**

**I. Introduction**

**a. Scope**

**II. Specific Area of Research**

**a. Maka'eha (Pukalani)**

**b. Clarification of area.**

**c. Surrounding 'ili within Kula**

**III. Maka'eha: The Historical and the Cultural Context**

**a. Lifestyle**

**b. Native vegetation and habitat**

**(1) Native plant growth**

**(2) Wildlife**

**IV. Conclusion**

**V. Bibliography**

# **KAUHALE LANI**

*(Heavenly Village)*

TMK 2-3-09:7, 49.99 acres, single-family homes in lower Pukalani & TMK 2-3-09:64, 38.623 acres, open space with walking path alongside the Haleakalā Bypass Highway, Pukalani, Maui, Hawai'i

## **INTRODUCTION**

### **Scope:**

The scope of this report will be to compile various historical, cultural, and topographical accounts and facts of Maka'eha (Pukalani as it is now called) and its adjacent 'ili<sup>1</sup>. Unfortunately, with only a few exceptions, direct references to Maka'eha are meager. Therefore, the following description of the project area is derived from topographical, cultural, and usage descriptions of the more general areas of Kula. The report will be:

(1) In accordance with O.E.Q.C. guidelines, the study will describe resources having cultural value, and will describe potential impacts from further development along with measures that could be employed to mitigate those impacts. The contractor will coordinate with the archaeologist characterizing the site to evaluate the cultural significance of historic and prehistoric resources identified during an archaeological inventory, and will assist in the development of a general preservation plan for those resources.

---

<sup>1</sup> 'ili - Land section within a specific land division.

(2) It will also include a Traditional Practices Assessment that will meet the assessment requirements of O.E.Q.C. and O.H.A. for cultural impacts. Specifically, the document will address potential effects on Hawai'i's culture, and traditional and customary rights, as described in the legislation known as Act 50, 2000.

### Specific Area of Research:

This project site shall be identified as: (1) TMK 2-3-09:7, 49.99 acres containing single-family homes and a park, and (2) TMK 2-3-09:64, 38.623 acres kept in open space, containing a walking path, planted with indigenous plants and trees. These project areas are located in the ahupua'a of Kula and in the 'ili of Maka'eha (Pukalani).

### Surrounding 'Ili within Kula:

There are many 'ili within the ahupua'a<sup>2</sup> of Kula, which stretches from the shoreline to the peak of the mountain. Maka'eha is located on a high elevated plain of this ahupua'a. And, many other 'ili are either adjacent or perpendicular to Maka'eha, such as 'A'apueo<sup>3</sup> (separated by Kalialinui gulch), Ōma'opio, Keahua, Kailua, and many other 'ili'ili<sup>4</sup>.

Maka'eha: (Lit. sore eyes) Maka'eha is rich with heritage. Much of the upper plains of the Kula region were dry and arid. This had left only a few options for the types of plants that could be cultivated here, and it was the home to one of the best plants that could handle such

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<sup>2</sup> ahupua'a – Ancient land division and its boundaries would contain a pile of rocks with a pigs head on it.

<sup>3</sup> 'A'apueo – An owl god that lived in this land division.

<sup>4</sup> 'ili'ili – Smaller land sections within a specific land division and land section.



arid conditions. This area was the home to King Kihapi'ilani's mala 'uala (Sweet Potato Garden). Maka'eha is now called "Pukalani". It takes its name from a hill in the Makulekailua<sup>5</sup> area, which is called "Pu'ukalani (lit. meaning - "hill to heaven"). Maka'eha or Maka'ehu<sup>6</sup> has a unique position in all of Maui. From its location, there is a panoramic view of much of the island. Like most of its surroundings, Maka'eha is nestled on a ridge and encompassed by gulches and plateaus.

'A'apueo: The 'ili of 'A'apueo has a distinct topographical position. 'A'apueo is situated on a ridge, and therefore, it is largely protected by the two gulches that are on both of its sides. This important feature was the reason why 'A'apueo was a place of great refuge and home to many kahuna who guarded a special heiau with reverence.

A kahuna once lived in 'A'apueo, and his sole responsibility was to protect a heiau that was built on Pu'upane hill, in the Kula ahupua'a. While Kihapi'ilani and his wife stayed at 'A'apueo, they came in contact with this kahuna, who then gave the King and Queen a tour of the ahupua'a.

Pu'upane: (Lit. hill of answers) Pu'upane resides within the district of Kula. This hill was decreed by a ruling chief of Maui to be sacred. No commoner ascended this hill, for it was a heiau<sup>7</sup> for the high chiefs of Maui, stretching from ancient times until Kihapi'ilani's arrival upon the hill of Pu'upane. A certain kahuna<sup>8</sup> lived at 'A'apueo to make certain that no commoner ascended

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<sup>5</sup> Makulekailua (old Kailua), located below what is now Pukalani, above Keahua.

<sup>6</sup> Maka'eha may be called Maka'ehu as those who are kama'aina or local to this area may once have called it so.

<sup>7</sup> heiau - Sacred place of worship of various gods.

<sup>8</sup> kahuna - Spiritual priest. (Lit. keeper of the secret)

Pu'upane, and allowed only those who were sanctified to do so.

Ōma'opio: (Lit. whistling thrush) Ōma'opio has four registered heiau and numerous ahu<sup>9</sup>. Located at Ōma'opio is a heiau named Mo'omuku<sup>10</sup>. This extensive heiau measured some ninety feet by one hundred and eight feet. Another registered heiau is Mahia heiau, located more to the north than Mo'omuku. This heiau is also smaller than Mo'omuku, at thirty-two feet by forty-one feet. Po'ohinahale heiau is located on the opposite side of Mahia heiau. This may also be the same heiau that is called Kaunuopahu, however the only living informant gave the name Po'ohinahale.

Kauhale Lani consists of two parcels. The first parcel will include single-family homes and a park. It is located at the bottom of Pukalani, on the Kīhei side of the Old Haleakalā Highway, heading in the mauka direction. The other parcel is located on the Kīhei side of the Haleakalā Bypass, and starts at the intersection of the Old Haleakalā Highway. This parcel will be kept in open space with a walking path planted with native plants.

The intent of the developer is not to "clutter" Pukalani with wall to wall houses, which stays in tune with the Upcountry Community Plan asking for open space areas wherever possible. As a member of the last C.A.C, we made this a point for developers to follow. Both areas are surrounded by significant ancient Hawaiian archaeological sites, however no known archaeological sites exist on the parcels in question. Also, no evidence was found through research that indicated any Hawaiian cultural practices were performed on either of the parcels.

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<sup>9</sup> ahu - Personal platforms of which commoners and royalty alike created to heed offerings to various gods and guardians.

<sup>10</sup> When translated Mo'omuku means "dissected lizard".

## 'A'apueo: The female deity:

The completion of this report cannot be achieved without the mention of 'A'apueo. In various translations, the term 'A'apueo could mean "the owl's wail". The place name could also reflect the topography of the area, which is encompassed by the 'a'a rock. However, most sources believe the place was named after the female deity, 'A'apueo, who once resided in this area.

## Lifestyle:

The word Kula in Hawaiian translates to "plain". While this may barely describe some of the topographical features of this ahupua'a, much of its landscape is dry and arid. Therefore, farming was limited to plants that were tolerable to cold evenings and hot tempered days. Although the landscape of Kula has changed considerably over the past two to three hundred years, the climate has remained constant. The scene for most of the landscape was farming families.

It was often documented that the people of Kula were incompetent. This was due to the fact that the people of Kula were not accustomed to the ways of the ocean. Families that lived near the ocean, and those who frequented the shores, mocked the people of Kula who lacked experience in the ocean lifestyle. Therefore, those who lacked the experience needed to master the familiarities of the ocean were deemed incompetent.

Today, Kula is a rapidly changing community, being very different from its scene ten years ago. The area is still largely agriculturally zoned. However, the demand for the suburban lifestyle shows its price, at nearly one million dollars for a choice lot. Its hillsides are abundant with wild deer that were introduced within the

last 3 decades, and which is the cause of mass erosion and crop damage to the surrounding areas and farms of Kula.

Many of the culturally significant sights, such as heiau and ahu, are no longer in existence primarily due to the "paniolo" age<sup>11</sup>. During this era, much of the land was cleared for the industrially driven use of cattle ranching. Heiau and ahu were plundered without regard for their significance to the area. As mentioned earlier, the ahupua'a of Kula had many heiau and ahu located in 'ili such as Ōma'opio. During the late 1950's and 1960's, the conceptualized "suburbia" became the dream place to live, and thus began the influx of homes and population to Kula. This left little recovery of what had already been destroyed by the paniolo era. Fifty years ago, a Cultural Impact Statement was not an issue, and neither was the significance of documenting Hawaiian antiquities. This is the reason for the lack of information of such items.

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<sup>11</sup> paniolo age - The era of cowboy influx into the Kula region.

## Native Plant Growth:

The vegetation in the Kula and Maka'eha area do not flourish as generously as other ahupua'a on Maui.

Every aspect of the traditional lifestyle was closely interconnected with the life forms of these islands. The saying, "*He Hawai'i Au*" - I am Hawai'i - reveals this basic truth: the people and their environment are one in the same. All of the needs of the population (which numbered nearly as many as those who inhabit Hawai'i today) were provided for abundantly from the life of the land and ocean, which passed on the stored energy of the sun in multitudes of useful and beautiful forms.

Due to its geographic location, as the most isolated land in the world (5,000 miles from the nearest continent), the Hawaiian archipelago evolved incredibly diverse and unique ecosystems, with myriad species of flora and fauna found nowhere else on the planet.

A well-known tree is the sandalwood (*Santalum freycinetianum*), known in Hawaiian as 'iliahi. The wood was traditionally used to scent kapa<sup>12</sup> cloth. It was sometimes used to make 'ukeke, a musical bow, the only traditional Hawaiian stringed instrument. The leaves and wood of the sandalwood trees were also used for medicinal purposes, often in combination with 'awa<sup>13</sup> and other woods. One type of sandalwood, of the lanaiense variety, occurs near the peak of Kula's boundaries. Recognizable by its red flowers, it is an endangered species. Found only on East Maui and Lāna'i, there are about 100 plants surviving today, with a population found on the southern slope of Kula.

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<sup>12</sup> kapa - bark cloth made from wauke (*Broussonetia papyrifera*) or māmaki bark; formerly clothes of any kind or bedclothes; quilt.

<sup>13</sup> 'awa - the kava (*Piper methysticum*), a shrub, native to the Pacific Islands, the root being the source of a narcotic drink of the same name used in ceremonies, and also used medicinally.

Other medicinal plants from this area include the 'ahina kuahiwi (*Gunnera petaloidea*), also known as the ka'ape'ape or 'ape'ape, and the mau'u la'ili (*Sisyrinchium acre*), a crawling grass (native iris) found on Kula's highest point. The mau'u la'ili is used to treat skin disorders.

The durable wood of the golden-flowered lacy mamane (*Sophora chrysophylla*) and the kolomona tree were utilized to make o'o (digging sticks), house poles, and hōlua<sup>14</sup> sleds.

Most of Kula's landscape is in a fairly dry and arid state, and thus, most plants do not do well in a place like this. However, Kula is gifted with well-balanced dirt, as it is known today for producing the famous "Maui onion".

Due to the dry conditions, kalo (taro) was not a suitable crop to plant. To supplement the need for wet land kalo, the 'uala (sweet potato) was grown as an alternative. Many sources point to the example of Kihapi'ilani's potato patch in Maka'eha. Sweet potato was just as stable and healthy as kalo, yet required less water to fruit, whereas the kalo grew best in fields of fresh running water.

Another plant that may have grown in this area, to supplement the need for kalo, was 'ulu (*Artocarpus incisus* - breadfruit). According to "Native Planters in Old Hawai'i: Their life, lore, and environment," written by E.S. Handy et al. explicates, "...early voyagers noted extensive planting of breadfruit along the southern and leeward coast..." Although this statement singles out the southern and leeward coasts, which are the dryer areas of the island, Kula still made a perfect place for 'ulu to flourish because of its arid plains.

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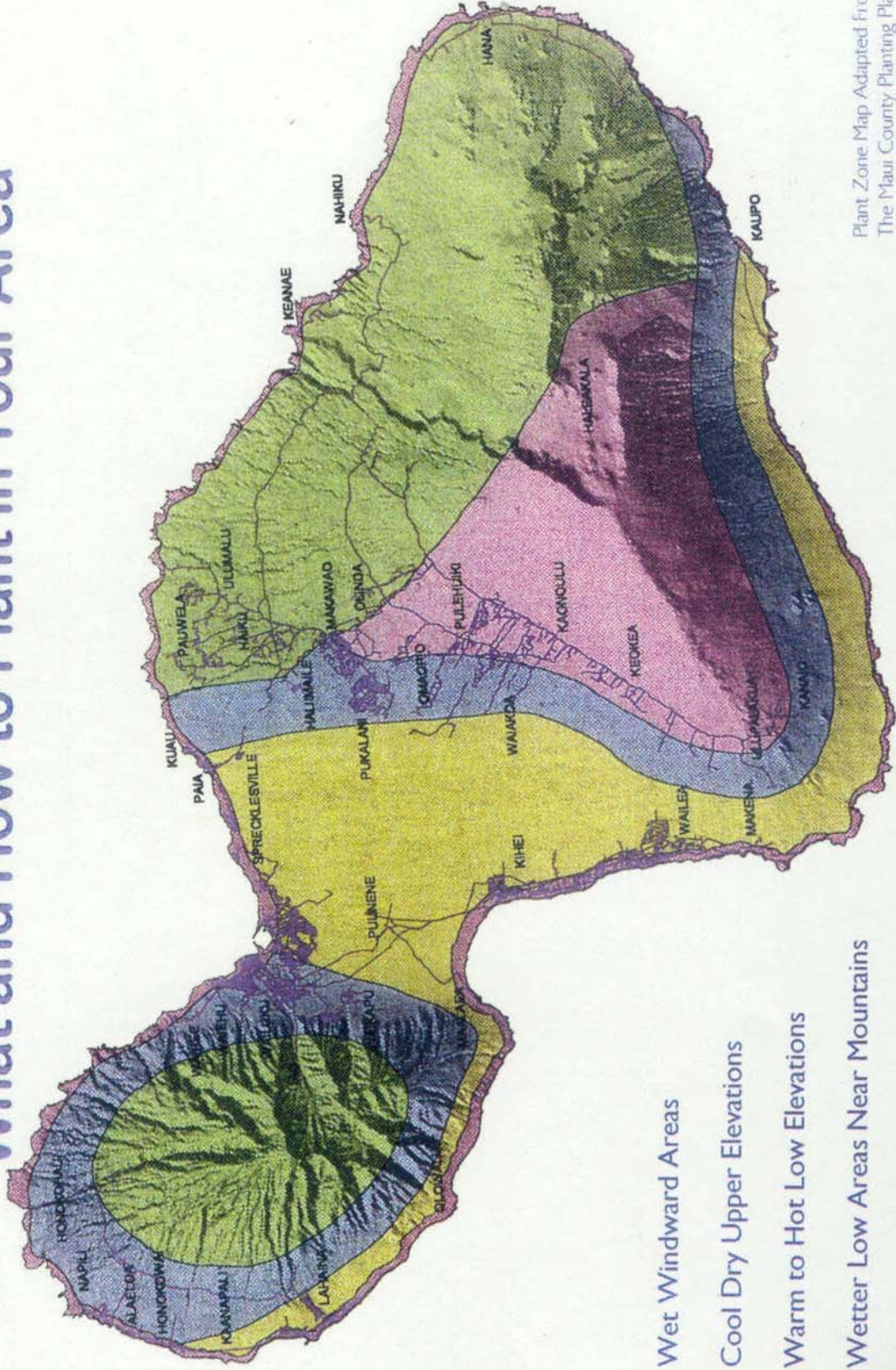
<sup>14</sup> hōlua - sled, especially the ancient sled used on grassy slopes.

Another blossoming plant that has resided in this area is the 'a'ali'i (*Dodonaea viscosa*) bush. This hard wood native shrub is indigenous to the islands. This plant also grows well in dryer climates. Ranging in height from one to thirty feet, this shrub/tree is found growing at elevations of up to 8,000 feet, and in wind-swept open country. It is found today in the gulches and surrounding area of this site.

One essential plant used to construct thatched homes was the pili grass (*Heteropogon contortus*). The Hawaiian people would line the exteriors of their homes with dried clumps of this grass for waterproofing. Pili grass liked to grow in arid and dusty conditions, and thus, was quite common in this area.

# Saving Water in The Yard

## What and How to Plant in Your Area



- 1 Wet Windward Areas
- 2 Cool Dry Upper Elevations
- 3 Warm to Hot Low Elevations
- 4 Wetter Low Areas Near Mountains
- 5 Windward Coastal Salt Spray Zones

Plant Zone Map Adapted From:  
The Maui County Planting Plan

Tips From The Maui County Department of Water Supply  
*By Water All Things Find Life*



## ZONES

The Maui County Planting Plan has compiled a system of 5 zones of plant growth for Maui County. The descriptions of zones and maps for these zones are as follows:

### Zone 1:

Wet areas on the windward side of the island. More than 40 inches of rain per year. Higher than 3,000 feet.

### Zone 2:

Cool, dry areas in higher elevations (above 1,000 feet). 20 to 40 inches of rain per year.

### Zone 3:

Low, drier areas, warm to hot. Less than 20 inches of rain per year. Sea level to 1,000 feet.

### Zone 4:

Lower elevations which are wetter due to proximity of mountains. 1,000 to 3,000 feet.

### Zone 5:

Salt spray zones in coastal areas on the windward side.

These zones are to be used as a general guide to planting for Maui County. In addition to looking at the maps, read the descriptions of the zones and decide which zone best fits your area. Plants can be listed in more than one zone and can be planted in a variety of conditions. For best results, take notes on the rainfall, wind, sun and salt conditions of your site. Use the zones as a general guide for selection and read about the plants to decide which best fits your needs as far as care and or function.

## **Explanation of Plant Zone Map**

# Zone 2

## Zone-specific Native and Polynesian plants for Maui County

TYPE:	F Fern	G Grass	Gr Ground Cover	Sh Shrub	P Palm	S Sedge	Tr Tree	V Vine
Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.		
F	<i>Psilotum nudum</i>	moa, moa kula	1'	1'	sea to 3,000'	Dry to Wet		
F	<i>Sadleria cyatheoides</i>	'ama'u, ama'uma'u						
G	<i>Eragrostis monticola</i>	kalamalo	1'	2'	sea to 3,000'	Dry to Medium		
Gr	<i>Ipomoea tuboides</i>	Hawaiian moon flower, 'uala	1'	10'	sea to 3,000'	Dry to Medium		
Gr	<i>Peperomia leptostachya</i>	'ala'ala-wai-nui	1'	1'	sea to 3,000'	Dry to Medium		
Gr	<i>Plumbago zeylanica</i>	'ilie'e	1'					
Gr - Sh	<i>Hibiscus calyphyllus</i>	ma'o hau hele, Rock's hibiscus	3'	2'	sea to 3,000'	Dry to Medium		
Gr - Sh	<i>Lipochaeta rockii</i>	nehe	2'	2'	sea to 3,000'	Dry to Medium		
Sh	<i>Argemone glauca</i> var. <i>decipiens</i>	pua kala	3'	2'	sea to 3,000'	Dry to Medium		
Sh	<i>Artemisia mauiensis</i> var. <i>diffusa</i>	Maui wormwood, 'ahinahina	2'	3'	1,000' to higher	Dry to Medium		
Sh	<i>Chenopodium oahuense</i>	'aheahea, 'aweoweo	6'		sea to higher	Dry to Medium		
Sh	<i>Dianella sandwicensis</i>	'uki	2'	2'	1,000' to higher	Dry to Medium		
Sh	<i>Lipochaeta lavarum</i>	nehe	3'	3'	sea to 3,000'	Dry to Medium		
Sh	<i>Osteomeles anthyllidifolia</i>	'ulei, eluehe	4'	6'	sea to 3,000'	Dry to Medium		
Sh	<i>Senna gaudichaudii</i>	kolomana	5'	5'	sea to 3,000'	Dry to Medium		
Sh	<i>Styphelia tameiameia</i>	pukiawe	6'	6'	1,000' to higher	Dry to Medium		
Sh	<i>Vitex rotundifolia</i>	pohinahina	3'	4'	sea to 1,000'	Dry to Medium		
Sh - Tr	<i>Myoporium sandwicense</i>	nalo, false sandalwood	10'	10'	sea to higher	Dry to Medium		
Sh - Tr	<i>Nototrichium sandwicense</i>	kulu'i	8'	8'	sea to 3,000'	Dry to Medium		
Sh-Tr	<i>Dodonaea viscosa</i>	'a ali'i	6'	8'	sea to higher	Dry to Medium		
Tr	<i>Acacia koa</i>	koa	50' - 100'	40' - 80'	1,500' to 4,000'	Dry to Medium		
Tr	<i>Charpentiera obovata</i>	wiliwili	15'					
Tr	<i>Erythrina sandwicensis</i>	wiliwili	20'	20'	sea to 1,000'	Dry		
Tr	<i>Metrosideros polymorpha</i> var. <i>macrophylla</i>	ohi'a lehua	25'	25'	sea to 1,000'	Dry to Wet		

## Zone-specific Native and Polynesian plants for Maui County

# Zone 2

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Tr	<i>Nestegis sandwicensis</i>	olopua	15'	15'	1,000' to 3,000'	Dry to Medium
Tr	<i>Pleomele auwahiensis</i>	halapepe	20'			
Tr	<i>Rauwolfia sandwicensis</i>	hao	20'	15'	sea to 3,000'	Dry to Medium
Tr	<i>Santalum ellipticum</i>	coastal sandalwood, 'ili-ahi	8'	8'	sea to 3,000'	Dry to Medium
Tr	<i>Sophora chrysophylla</i>	mamane	15'	15'	1,000' to 3,000'	Medium
V	<i>Alyxia oliviformis</i>	maile	Vine		sea to 6,000'	Medium to Wet

## **PLACES TO BUY NATIVES ON:**

### **Maui:**

- 1. Hoolawa Farms 575-5099**  
P O Box 731  
Haiku HI 96708  
The largest and best collection of natives  
in the state. They will deliver, but it's  
worth the drive to go and see!  
Will propagate upon request
  
- 2. Kula True Value Nursery 878-2551**  
Many natives in stock  
Get most of their plants from Hoolawa Farms  
They take special requests
  
- 3. Kihei Garden and Landscape 244-3804**
  
- 4. Kihana Nursery, Kihei 879-1165**
  
- 5. The Hawaiian Collection 878-1701**  
Specialize in Sandalwood propagation  
Will propagate special requests

## **Places to Buy Native Plants**

## Wildlife:

There is little recorded information about the wildlife in the Kula/Maka'eha region. However, today the area is infested with foreign plants, wild feral, and fowl. This has left much of Kula's natural habitat destroyed.

In Maka'eha, seldom does the native owl take flight. It is the common barn owl, native to North America, which primarily inhabits the region. The common barn owls tend to be more aggressive in nature, which has caused depletion to other native birds and native plant species.

## INTERVIEWS OF INFORMANTS

### STATEMENT OF:

Albert "Ape" Fernandez, Adult/Port./Hawn.  
Retired – Hawaiian Telephone  
2840 Koea Place, Pukalani, Maui, Hawai'i 96768  
(Property overlooks Kauhale Lani)

Interviewed at his residence on November 8, 2004, at 5:30 p.m.  
He related that he moved to his present residence around the mid-1950's. At the time, there were no homes in the area and he was told by his neighbors that there was an old Hawaiian church on the property that he bought. He stated that the only thing he could remember was a large stone pile and didn't know if it was left by the old church. He also remembered that the property in question (Kauhale Lani) was used for ranching by the Enos family. After the ranching, the property was planted with pineapple until the present time. He did not remember any Hawaiian services being conducted on the property.

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### STATEMENT OF:

Robert Bonacorsi, Adult/Cau.  
Fireman – Maui Fire Department  
39 Munoz Road, Pukalani, Maui, Hawai'i 96768

Interviewed at his residence on November 9, 2004, at 11:00 a.m.  
He stated that his residence is located adjacent to the "open space" parcel and he was very happy to hear that it will be kept in open space. After hearing that the property would also include a walking path, he felt that there shouldn't be any problems as long as the people using the path do not come onto his property because he has animals. He suggested that a fence could possibly be placed in the gully to keep people from coming onto his property. He was very favorable to the idea.

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STATEMENT OF:

Lionel "Rachi" Santos, Adult/Port.  
Retired – Haleakalā Ranch  
32 A'ala Road, Makawao, Maui, Hawai'i

Interviewed on November 5, 2004, at 11:15 a.m.

He stated that Mr. Bonacorsi is his son-in-law and he spends a lot of time at their residence. He is a life-long resident of Upcountry Maui, and more so of the Pukalani area. He recalled that when he was a young child all of the property in the Pukalani area was owned by the Ma'alo Estate. He related that one of the great grand children of the Ma'alo Estate, Wayne Asuē, was still living on the property. As far as he could remember, there was always pineapple grown on the open space area. Also, he thought that it was a good idea to keep this area in open space. He could not recall any Hawaiian ceremonies being performed on the properties in question.

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STATEMENT OF:

James Francis DeRego, Adult/Port.  
Retired – County Sanitation Div.  
133 Ikea Place, Pukalani, Maui, Hawai'i 96768

Interviewed at his home on November 5, 2004, at 11:30 a.m.

He related that he has lived in Pukalani for the past 40 years. As far as he could recall, the open space parcel has been planted in pineapple. He thought that it was a good idea to make it open space with a walking path, but felt that some measures must be taken to keep the people from crossing over to his property. He did not know of any Hawaiian ceremonies that might have taken place on this property or at Kauhale Lani.

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**STATEMENT OF:**

Jeff Tarpey, Adult/Cau.

Management - United Airlines

145 Piimauna St., Pukalani, Maui, Hawai'i 96768

Interviewed at his home on November 9, 2004, at 11:05 a.m.

He stated that he moved into the Kua Lono Subdivision about two years ago. His home overlooks the open space parcel and the Bypass Haleakalā Highway. He thought that it would be a great idea to have the subject parcel in open space. Being a new resident to this area, he did not know much of the subject area.

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**STATEMENT OF:**

Wayne Manuel Asuē, Adult/Cau./Hawn.

Fireman - State Of Hawai'i

2605-A Old Haleakalā Highway, Pukalani, Maui, Hawai'i 96768

Interviewed at his home on November 5, 2004, at 2:00 p.m.

He related that his grandfather, Manuel Asuē, owned his property and many of the other properties around the Pukalani area. His property, which is a little over 5 acres, is bordering the parcel slated for open space. He felt that the open space parcel was a good idea. There is an un-named 12 foot gully which separates his property from the parcel. He did not know of any Hawaiian cultural ceremonies that might have been held on the parcel in question and did not remember his father telling him of any.

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**STATEMENT OF:**

James T. Sato, Adult/Jap.  
Retired Owner – Maui Recapping Center  
132 Ikea Place, Pukalani, Maui, Hawai'i 96768

Interviewed at his residence on December 30, 2004, at 10:30 a.m.

He related that he moved to his present residence in 1950. His property borders Kauhale Lani on the mauka side. He remembered that there was an old Hawaiian church where "Ape" Fernandez's home is and recalled that there were burials towards the Kihei side of his home. He personally did not see the burials, but was told by others about their existence. He was not happy with the fact that there is going to be a subdivision fronting his home and preferred that the property remained in pineapple farming. He had nothing further to add.

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**STATEMENT OF:**

Eleanor Bell, Adult/Hawn./Chi.  
Retired – Maui Pineapple Cannery  
39 Aeloa Place, Pukalani, Maui, Hawai'i 96768  
(will soon be moving to 280 Pueo Dr., Kula, Maui)

Interviewed at her home on December 30, 2004, at 11:30 a.m.

She related that she had sold her home on Ikea St. in anticipation of their moving to the Hawaiian Homes Community in Kula. Their lot is not ready, so they are renting at their present residence. She stated that Kauhale Lani was always planted in pineapple, and she felt that the project was a good thing for the community, especially with the "open space" parcel.



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Specializing in Cultural Impact Statements  
(using State of Hawaii O.E.Q.C. methods),  
Blessings, Weddings, Lectures  
and Ho'oponopono

IMINA I KA NA'AUAO E PAHU IA MAKOU IMUA  
(Seeking the knowledge to push us forward)

## INTERVIEW SUMMARY AND CONSENT FORM

JOB NAME: Kauhale Inn,

PERSON INTERVIEWED: Albert "Ape" Fernandez

DATE & TIME OF INTERVIEW: \_\_\_\_\_

INTERVIEWER: CKM CULTURAL RESOURCE L.L.C. - C. K. Maxwell

PURPOSE OF INTERVIEWE: CULTURAL IMPACT ASSESSMENT

I HEREBY GIVE PERMISSION TO CKM CULTURAL RESOURCES L.L.C., TO USE, THE INFORMATION FROM THIS INTERVIEW IN PREPARING A CULTURAL IMPACT ASSESSEMENT REPORT FOR THE SUBJECT PROJECT. I FURTHERE UNDERSTAND THAT I WILL BE GIVEN A COPY OF MY COMMENTS.

Person Interviewed Print name: ALBERT FERNANDEZ  
Signature: Albert Fernandez  
Date: 11-9-04

Kahu Charles Kauluwehi Maxwell, Sr.  
157 Alea Place · Pukalani, Maui, HI 96768  
Phone: (808) 572-8038 · Fax: (808) 572-0602 · Cell: 870-3345  
Email: kale@moolelo.com · Website: www.moolelo.com



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IMINA I KA NA'AUAO E PAHU IA MAKOU IMUA  
(Seeking the knowledge to push us forward)

## INTERVIEW SUMMARY AND CONSENT FORM

JOB NAME: Kauhale Ioni

PERSON INTERVIEWED: Robert Bonacorsi

DATE & TIME OF INTERVIEW: Nov. 9, 2004 11:00am

INTERVIEWER: CKM CULTURAL RESOURCE L.L.C. - C. K. Maxwell

PURPOSE OF INTERVIEW: CULTURAL IMPACT ASSESSMENT

I HEREBY GIVE PERMISSION TO CKM CULTURAL RESOURCES L.L.C., TO USE, THE INFORMATION FROM THIS INTERVIEW IN PREPARING A CULTURAL IMPACT ASSESSEMENT REPORT FOR THE SUBJECT PROJECT. I FURTHERE UNDERSTAND THAT I WILL BE GIVEN A COPY OF MY COMMENTS.

Person Interviewed Print name: Robert Bonacorsi

Signature: Robert Bonacorsi

Date: 11-9-2004

Kahu Charles Kauluwehi Maxwell, Sr.  
157 Alea Place · Pukalani, Maui, HI 96768  
Phone: (808) 572-8038 · Fax: (808) 572-0602 · Cell: 870-3345  
Email: kale@moolelo.com · Website: www.moolelo.com

**Robert Bonacorsi's Consent Form**



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and Ho'oponopono

IMINA I KA NA'AUAI O E PAHU IA MAKOU IMUA  
(Seeking the knowledge to push us forward)

## INTERVIEW SUMMARY AND CONSENT FORM

JOB NAME: fauhale pana

PERSON INTERVIEWED: Lionel "Rachi" Santos

DATE & TIME OF INTERVIEW: 11-9-04 10:45 AM

INTERVIEWER: CKM CULTURAL RESOURCE L.L.C. - C. K. Maxwell

PURPOSE OF INTERVIEW: CULTURAL IMPACT ASSESSMENT

I HEREBY GIVE PERMISSION TO CKM CULTURAL RESOURCES L.L.C., TO USE, THE INFORMATION FROM THIS INTERVIEW IN PREPARING A CULTURAL IMPACT ASSESSEMENT REPORT FOR THE SUBJECT PROJECT. I FURTHERE UNDERSTAND THAT I WILL BE GIVEN A COPY OF MY COMMENTS.

Person Interviewed Print name: Lionel Santos

Signature: Lionel Santos

Date: 11-9-04

Kahu Charles Kauluwehi Maxwell, Sr.  
157 Alea Place · Pukalani, Maui, HI 96768  
Phone: (808) 572-8038 · Fax: (808) 572-0602 · Cell: 870-3345  
Email: kale@moolelo.com · Website: www.moolelo.com

**Lionel "Rachi" Santos' Consent Form**



# CKM CULTURAL RESOURCES, L.L.C.

Specializing in Cultural Impact Statements  
(using State of Hawaii O.E.Q.C. methods),  
Blessings, Weddings, Lectures  
and Ho'oponopono

IMINA I KA NA'AUAO E PAHU IA MAKOU IMUA  
(Seeking the knowledge to push us forward)

## INTERVIEW SUMMARY AND CONSENT FORM

JOB NAME: kuu hale lanii

PERSON INTERVIEWED: James DeRego

DATE & TIME OF INTERVIEW: 11:30 11-11-04

INTERVIEWER: CKM CULTURAL RESOURCE L.L.C. - C. K. Maxwell

PURPOSE OF INTERVIEWE: CULTURAL IMPACT ASSESSMENT

I HEREBY GIVE PERMISSION TO CKM CULTURAL RESOURCES L.L.C., TO  
USE, THE INFORMATION FROM THIS INTERVIEW IN PREPARING A CULTURAL  
IMPACT ASSESSEMENT REPORT FOR THE SUBJECT PROJECT. I FURTHERE  
UNDERSTAND THAT I WILL BE GIVEN A COPY OF MY COMMENTS.

Person Interviewed Print name: \_\_\_\_\_

Signature: James DeRego

Date: 11-11-04

Kahu Charles Kauluwehi Maxwell, Sr.  
157 Alea Place · Pukalani, Maui, HI 96768  
Phone: (808) 572-8038 · Fax: (808) 572-0602 · Cell: 870-3345  
Email: kale@moolelo.com · Website: www.moolelo.com

**James DeRego's Consent Form**



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## INTERVIEW SUMMARY AND CONSENT FORM

JOB NAME: Kauhale Lanii

PERSON INTERVIEWED: Jeff Tarpey

DATE & TIME OF INTERVIEW: 11-13-04

INTERVIEWER: CKM CULTURAL RESOURCE L.L.C. - C. K. Maxwell

PURPOSE OF INTERVIEWE: CULTURAL IMPACT ASSESSMENT

I HEREBY GIVE PERMISSION TO CKM CULTURAL RESOURCES L.L.C., TO  
USE, THE INFORMATION FROM THIS INTERVIEW IN PREPARING A CULTURAL  
IMPACT ASSESSEMENT REPORT FOR THE SUBJECT PROJECT. I FURTHERE  
UNDERSTAND THAT I WILL BE GIVEN A COPY OF MY COMMENTS.

Person Interviewed Print name: Jeff Tarpey

Signature: [Handwritten Signature]

Date: 11-13-04

Kahu Charles Kauluwehi Maxwell, Sr.  
157 Alea Place - Pukalani, Maui, HI 96768  
Phone: (808) 572-8038 · Fax: (808) 572-0602 · Cell: 870-3345  
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### Jeff Tarpey's Consent Form



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## INTERVIEW SUMMARY AND CONSENT FORM

**JOB NAME:** fouhale Puni

**PERSON INTERVIEWED:** Wayne Manuel Asuē

**DATE & TIME OF INTERVIEW:** 11/13/04 10:30 AM.

**INTERVIEWER:** CKM CULTURAL RESOURCE L.L.C. - C. K. Maxwell

**PURPOSE OF INTERVIEW:** CULTURAL IMPACT ASSESSMENT

I HEREBY GIVE PERMISSION TO CKM CULTURAL RESOURCES L.L.C., TO USE, THE INFORMATION FROM THIS INTERVIEW IN PREPARING A CULTURAL IMPACT ASSESSEMENT REPORT FOR THE SUBJECT PROJECT. I FURTHERE UNDERSTAND THAT I WILL BE GIVEN A COPY OF MY COMMENTS.

**Person Interviewed Print name:** Wayne M. Asuē

**Signature:** Wayne M. Asuē

**Date:** Nov. 13, 2004

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### Wayne Manuel Asuē's Consent Form



# CKM CULTURAL RESOURCES, L.L.C.

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## INTERVIEW SUMMARY AND CONSENT FORM

JOB NAME: Kauhale Lanii

PERSON INTERVIEWED: James T. Sato

DATE & TIME OF INTERVIEW: 12-30-04-1030 AM

INTERVIEWER: CKM CULTURAL RESOURCE L.L.C. - C. K. Maxwell

PURPOSE OF INTERVIEW: CULTURAL IMPACT ASSESSMENT

I HEREBY GIVE PERMISSION TO CKM CULTURAL RESOURCES L.L.C., TO USE, THE INFORMATION FROM THIS INTERVIEW IN PREPARING A CULTURAL IMPACT ASSESSEMENT REPORT FOR THE SUBJECT PROJECT. I FURTHERE UNDERSTAND THAT I WILL BE GIVEN A COPY OF MY COMMENTS.

Person Interviewed Print name: JAMES T. SATO  
Signature: [Handwritten Signature]  
Date: 12-30-2004

Kahu Charles Kauluwehi Maxwell, Sr.  
157 Alea Place · Pukalani, Maui, HI 96768  
Phone: (808) 572-8038 · Fax: (808) 572-0602 · Cell: 870-3345  
Email: kale@mooolelo.com · Website: www.mooolelo.com

### James T. Sato's Consent Form





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and Ho'oponopono

IMINA I KA NA'AUAO E PAHU IA MAKOU IMUA  
(Seeking the knowledge to push us forward)

## INTERVIEW SUMMARY AND CONSENT FORM

JOB NAME: Fouhale Tani

PERSON INTERVIEWED: Eleanor Bell

DATE & TIME OF INTERVIEW: 12/30/04 - 11:30 AM

INTERVIEWER: CKM CULTURAL RESOURCE L.L.C. - C. K. Maxwell

PURPOSE OF INTERVIEW: CULTURAL IMPACT ASSESSMENT

I HEREBY GIVE PERMISSION TO CKM CULTURAL RESOURCES L.L.C., TO USE, THE INFORMATION FROM THIS INTERVIEW IN PREPARING A CULTURAL IMPACT ASSESMENT REPORT FOR THE SUBJECT PROJECT. I FURTHER UNDERSTAND THAT I WILL BE GIVEN A COPY OF MY COMMENTS.

Person Interviewed Print name: Eleanor Bell

Signature: Eleanor Bell

Date: 12/30/04

Kahu Charles Kauluwehi Maxwell, Sr.  
157 Alea Place · Pukalani, Maui, HI 96768  
Phone: (808) 572-8038 · Fax: (808) 572-0602 · Cell: 870-3345  
Email: kale@moolelo.com · Website: www.moolelo.com

**Eleanor Bell's Consent Form**

# **KAUHALE LANI**

*(Heavenly Village)*

TMK 2-3-09:7, 49.99 acres, single-family homes in lower Pukalani & TMK 2-3-09:64, 38.623 acres, open space with walking path alongside the Haleakalā Bypass Highway, Pukalani, Maui, Hawai'i

## **CONCLUSION**

Much of the history of Maka'eha, which includes this project area, lacks in quantitative measures. Thus, it is extremely difficult to extract the details of a lifestyle unfamiliar to those of today. The natural habitat is inundated with foreign forest shrubbery and various other plants brought in to "beautify" certain landscapes, such as the cactus (pānini) which thrives in this region today.

Much of Kula's natural and indigenous landscape barely exists. The thinking then, should be to reverse the impact on the land, such as planting shrubs native to the area, desecrate the land as little as possible, and to stop the use of tactics such as those of the "paniolo era". More cautious approaches to certain areas are solutions to the vitality of our Hawai'i.

From all indications, this project will not affect the fauna, flora, or endangered species, because they were already impacted by prior agricultural disturbances which occurred on this project area many years ago.

Because of the prior disturbance, no cultural or archaeological properties were found for preservation on this project site. In the project area, no evidence of past or present use for Hawaiian cultural practices, resources, or beliefs were found in the study area.

That does not mean that this area is free of Hawaiian cultural association. The property is in close proximity to the Kalialinui gulch, which happens to contain the best petroglyphs in the State Of Hawai'i. Members of the Polynesian Voyaging Society took rubbings from a petroglyph of a canoe and used it to fashion the sail for the Hōkule'a (a Hawaiian double-hulled sailing canoe).

An archaeological survey was conducted by Archaeological Services Hawaii L.L.C. Lisa Rotunno Hazuka related that they found nothing in their test trenches to indicate any archaeological findings of Hawaiian habitation or burials. She suggested monitoring during initial grading, and if finds are negative, determination can be made by Dr. Melissa Kirkendall of the Maui Historic Preservation Department of the State Land and Natural Resources Division.

There are no areas of impact from the proposed construction on this site, so mitigation measures are not necessary.

I would declare at this time that, based on my personal knowledge of the property, extensive research conducted of the property, site visits to the property from October thru November 2004, interviews with several long-time residents of the area, and review of the archaeological inventory survey conducted by Archaeological Services Hawaii L.L.C., it is my professional opinion that the proposed development will not have any significant adverse effects to native Hawaiian traditional and customary rights which would require protection under Article XII, Section 7 of the Hawaii State Constitution.

Refer to archaeological report by Archaeological Services Hawaii L.L.C.

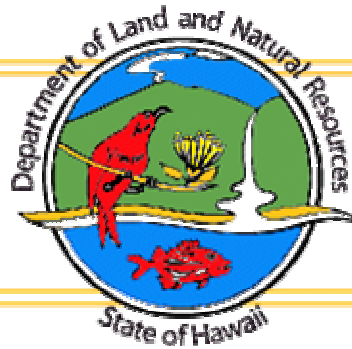
## INTEPRETATION OF PROJECT'S NAME

### KAUHALE LANI

The name "Kauhale" was chosen because its meaning, in a poetic sense, refers to a "village". The homes that will be built represent a "village", with its own park where people could gather as friends and neighbors.

"Lani" was used because it represents part of the chosen area name of Pukalani, which means "pathway to heaven". "Lani" means heaven. Together it is translated to mean "Heavenly Village".

# State Historic Preservation Division



## PROTECTING NATIVE HAWAIIAN BURIALS



**For at least two thousand years, native Hawaiians have placed the earthly remains and spirits of their "kupuna," or ancestors, within the landscapes of Hawai'i.**

When a departing kupuna was laid to rest there was never a doubt that their remains would empower their descendants until they themselves were reduced to earth. Some kupuna were covered by stacked stones while others were buried with no surface markers at all, frequently in sand dunes.

Remains of high chiefs or those kupuna of high honor often were interred at night to conceal their location from jealous rivals who might steal and degrade or otherwise use the spiritual power of the remains for personal gain.

Because of these cultural practices, ancestral bones can be found almost anywhere in Hawai'i today. Burial sites are often accidentally disturbed either by nature (high surf or erosion) or by human activity through projects that involve excavation.

If you discover a burial site: stop activity in the immediate area; leave remains in place; contact the State Department of Land and Natural Resources, [Historic Preservation Division](#) and your County Police Department. Reporting a burial site disturbance is required by law (Hawai'i Revised Statutes, Chapter 6E) and severe penalties could result when SHPD is not notified of such disturbance.

**Let us all continue to give these ancestors the dignity and respect they deserve.  
Become a partner in preserving and protecting Hawaiian burial sites.**

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**View of the project from the Old Haleakalā Highway,  
looking in the makai direction.**



**View from the bottom of the property, looking towards the Kīhei direction (note Hāmākua ditch)**





**Photograph of the New Hāmākua Ditch, taken from the bottom of the property.**



**Looking mauka towards a resident's home on Aeloa Rd.**



**View from property looking towards the intersection of the Old Haleakalā Highway and Haleakalā Highway Bypass.**



**Entrance to the 38.623 acre "open space" parcel from the Old Haleakalā Highway.**



**View of the bottom of the “open space” parcel from the intersection of the Old Haleakalā Highway and new Haleakalā Highway.**



**Photograph taken from the middle of the “open space” parcel, facing the Kīhei direction.**



**The top of the “open space” parcel, at the intersection of Makani Road and Haleakalā Highway.**



**The makai dead-end of Iolani St., on the Haleakalā\Kīhei  
end of Kauhale Lani.**





**Sunset from Kauhale Lani.**

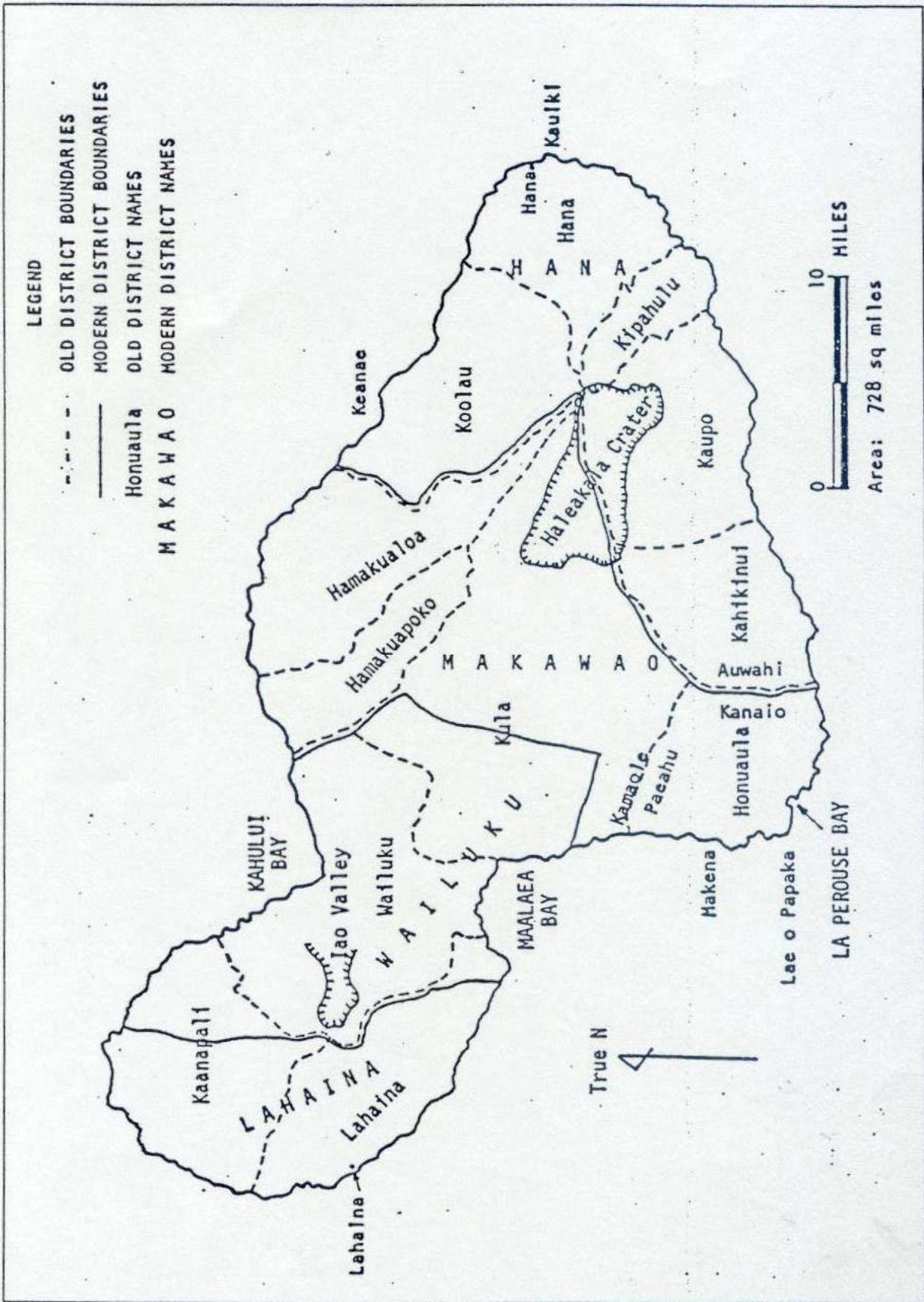
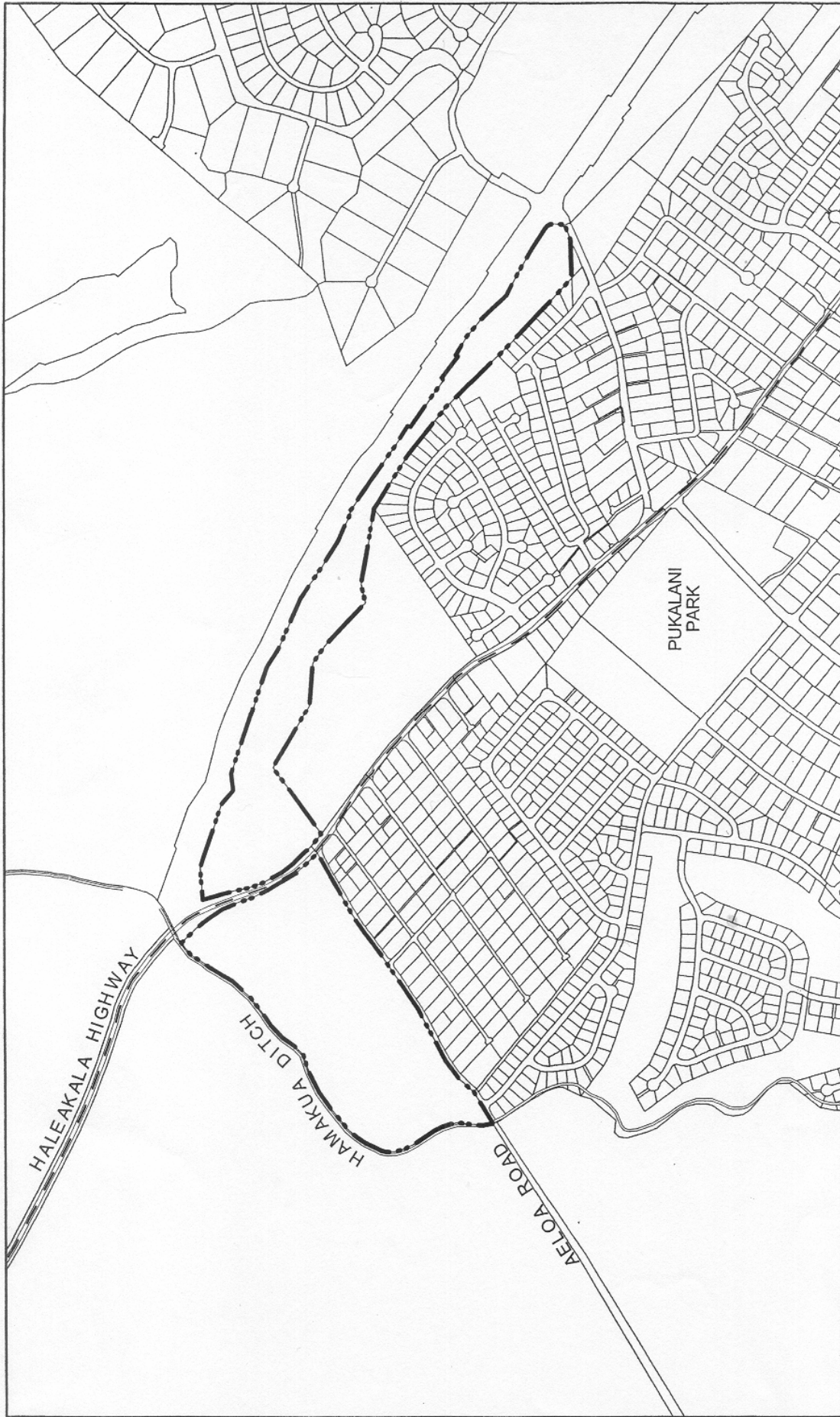


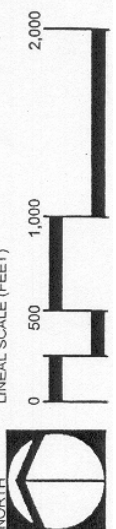
Figure B-1. Ancient and Modern Districts of Maui (from Barrere 1975)

Ancient and Modern Districts of Maui



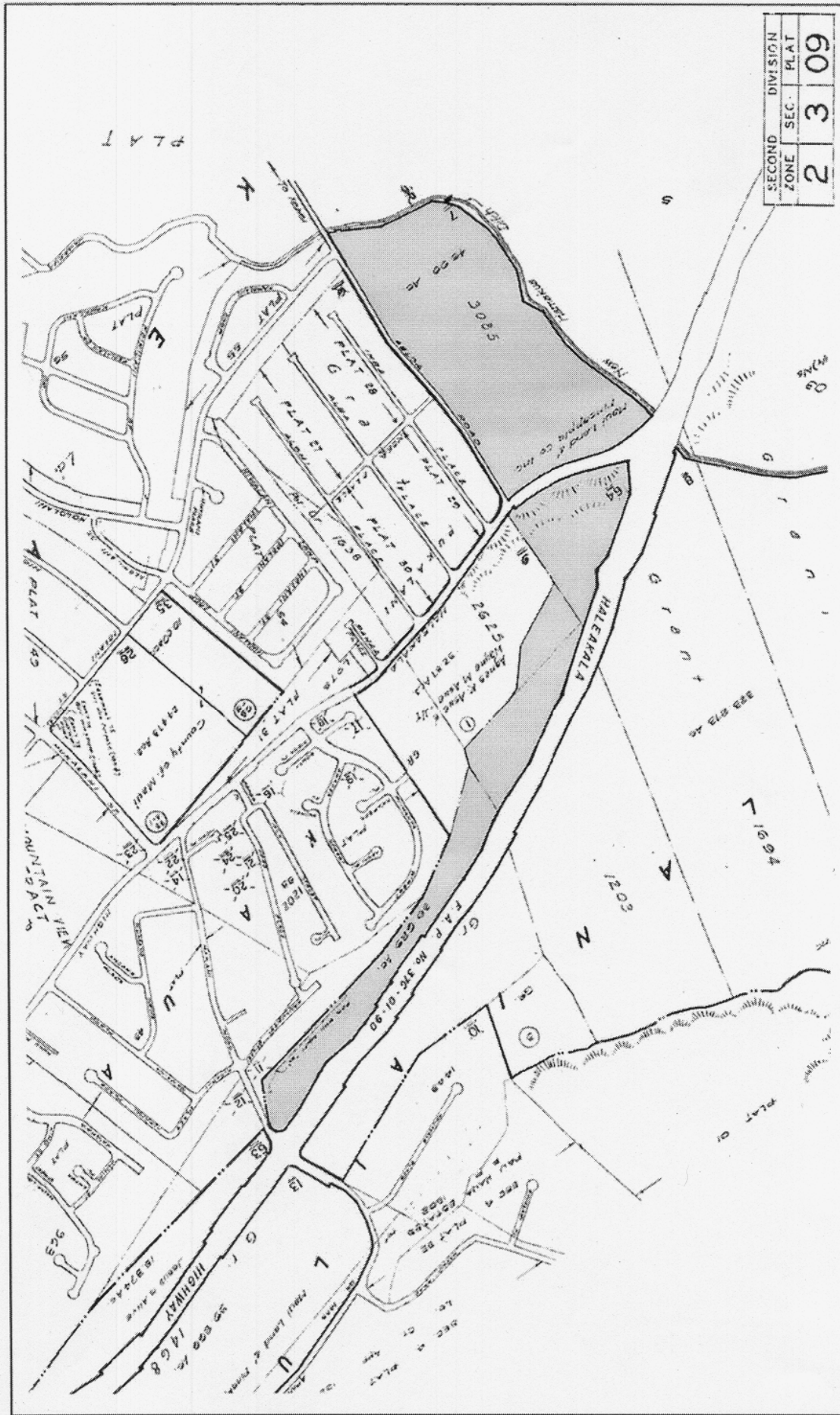
# PUKALANI MAKAI

MAUI LAND & PINEAPPLE COMPANY, INC. ISLAND OF MAUI



Disclaimer:  
This map has been prepared for  
general planning purposes only.


Source:  
Federal Emergency Management Agency  
The State of Hawaii GIS Database



Tax Map Key Map  
**KAUHALE LANI**

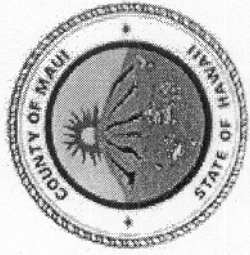
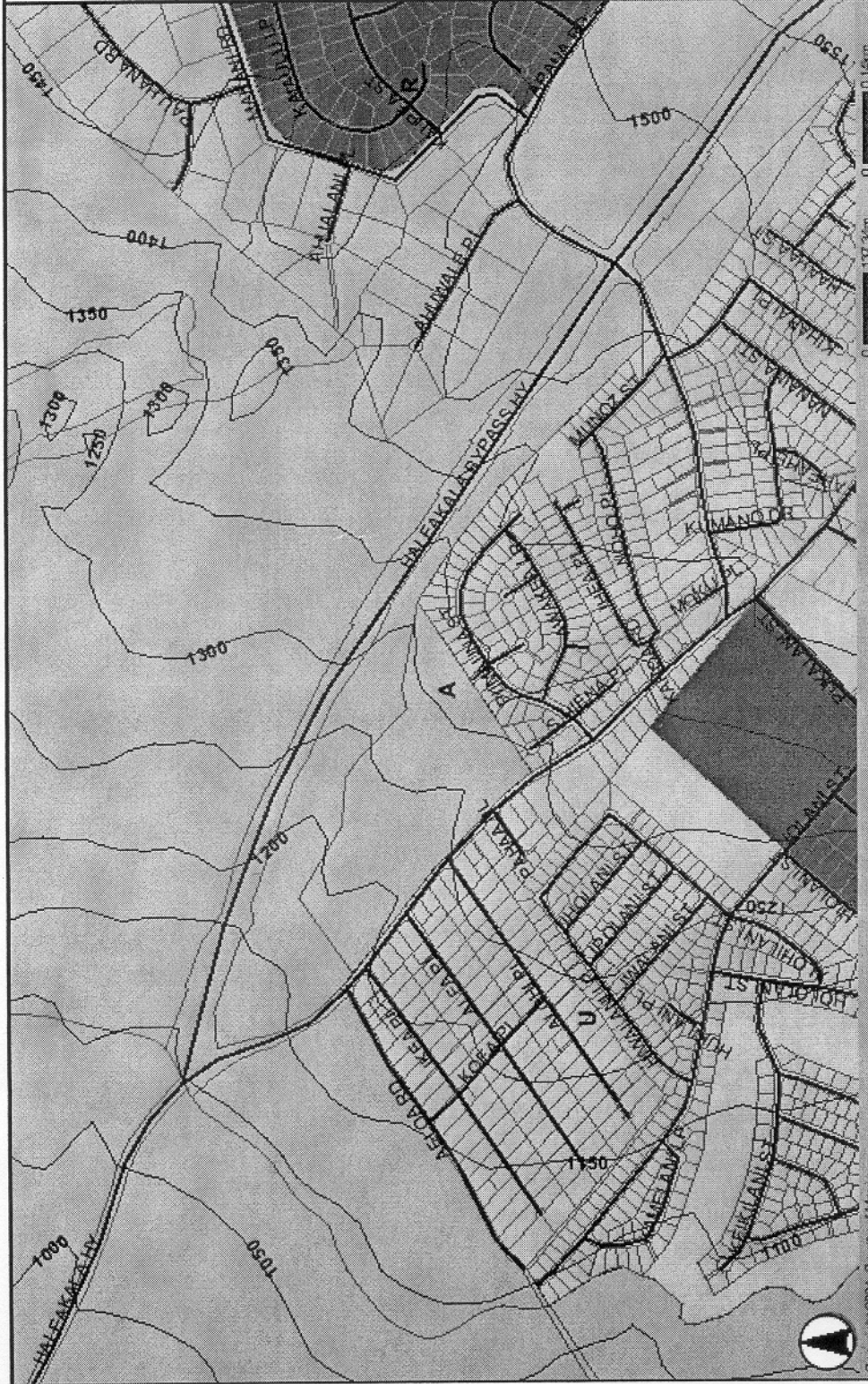
MAUI LAND & PINEAPPLE COMPANY, INC.  
 NORTH LINEAL SCALE (FEET)



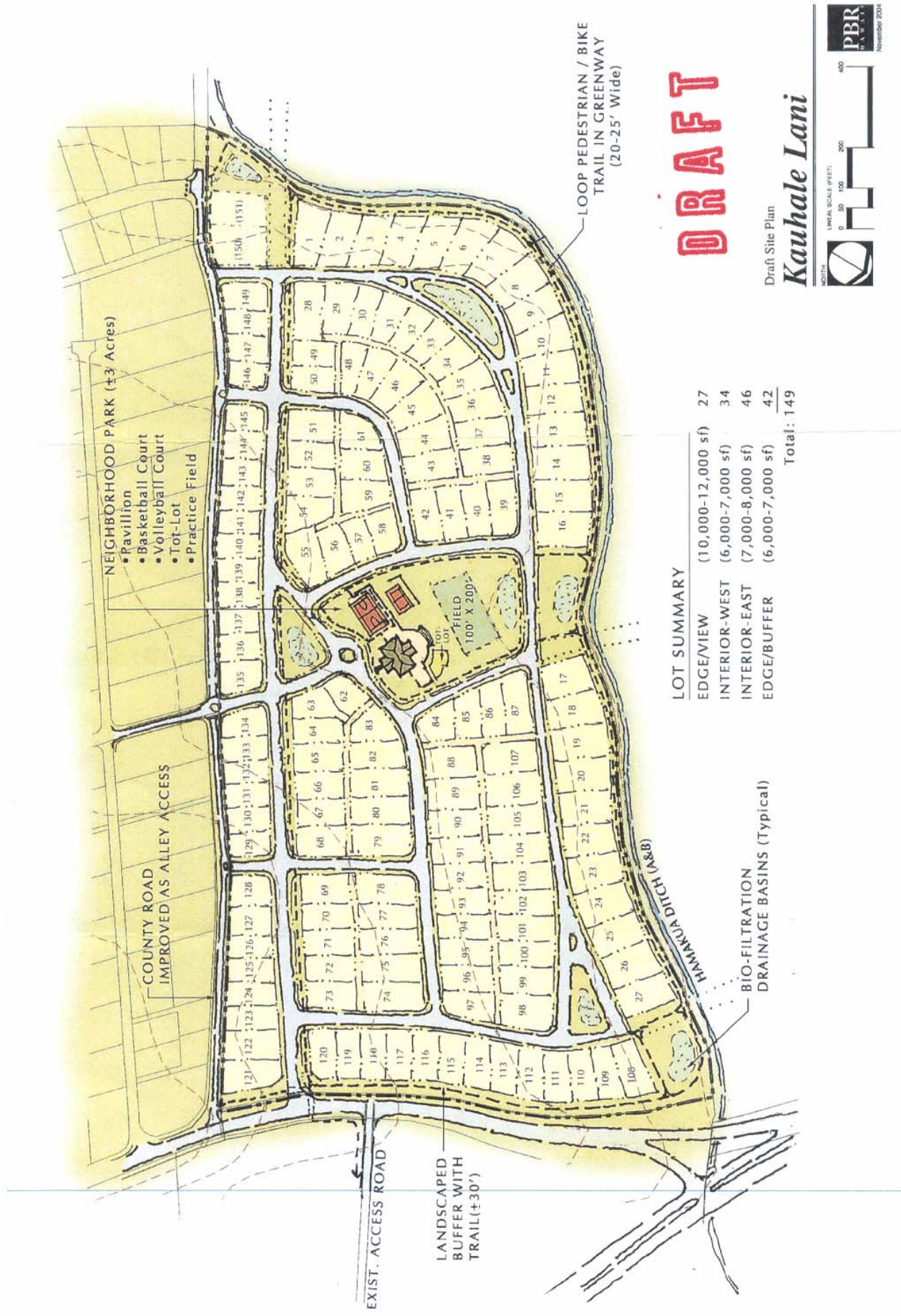
**LEGEND**  
 Kauhale Lani

Source:  
 County of Maui Tax Map Key  
 Disclaimer:  
 This map has been prepared for  
 general planning purposes only.

# Kauhale Lani



Disclaimer: The County of Maui Web Site Map Viewer is provided as a public service and is subject to the provisions of the County of Maui, "Web Site Terms of Use and Access Policy". The County of Maui Web Site Map Viewer is dynamic and will change over time WITHOUT NOTICE. Users of this County of Maui Map Viewer are therefore fully responsible for checking the accuracy, completeness, currency and suitability of the information posted on the County of Maui Web Site Map Viewer for themselves. The posting of information on the County of Maui Web Site Map Viewer does not constitute an endorsement of the information by the County of Maui and the County of Maui does not warrant or guarantee the accuracy of said information. The County of Maui reserves the right to refuse to post any information at any time. In addition, the County of Maui may suspend or discontinue some or all of this public service at any time. For any questions regarding the information, status, or to make corrections to any information, please contact the appropriate Department.



**DRAFT**

Draft Site Plan  
**Kahale Lani**



**LOT SUMMARY**

EDGE/VIEW	(10,000-12,000 sf)	27
INTERIOR-WEST	(6,000-7,000 sf)	34
INTERIOR-EAST	(7,000-8,000 sf)	46
EDGE/BUFFER	(6,000-7,000 sf)	42
		<b>Total: 149</b>

**Appendix G:  
Agricultural Impact  
Assessment**

***KAUHALE LANI RESIDENTIAL SUBDIVISION:  
IMPACT ON AGRICULTURE***

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***DECISION ANALYSTS HAWAII, INC.***



***KAUHALE LANI RESIDENTIAL SUBDIVISION:  
IMPACT ON AGRICULTURE***

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*PREPARED FOR:*

**Pukalani Associates, LLC**

*PREPARED BY:*

**Decision Analysts Hawai'i, Inc.**

**March 2008**

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# **EXECUTIVE SUMMARY**

## **1. PROPOSED DEVELOPMENT**

Pukalani Associates, LLC proposes to develop the Kauhale Lani Residential Subdivision (“the Project”) in Kula, Maui. The Project site covers about 88.6 acres located in two parcels identified as Parcel 7 and Parcel 64 (see Figure 2 at the end of the report). At full development, about 170 single-family residential homes will be provided in Parcel 7 (Figure 3). Lots will range in size from about 6,000 sq. ft. to 12,000 sq. ft.

In addition, the Project will feature a park and open space, equestrian and pedestrian trails, an internal pedestrian/bike path, pedestrian-friendly streets, roads that connect to and help integrate the Project with the adjoining subdivision, and landscaping. The character of the Project will be in keeping with that of Upcountry Maui.

## **2. AGRICULTURAL CONDITIONS**

Up to about 85 acres (96%) of the Project site have soils and agronomic conditions that are suitable for farming, while up to about 30 acres (34%) have higher-quality soils.

## **3. LOCATIONAL ADVANTAGES AND DISADVANTAGES FOR CROP PRODUCTION**

In terms of location, farmers in Kula are well-situated to supply the small Maui Island market. And compared to other farmers in Hawai'i, they can also compete reasonably well in supplying mainland markets, as long as their products have long shelf-lives and so can be shipped by surface vessel.

However, compared to farmers on O'ahu, Kula farmers are at a disadvantage in supplying the Honolulu market. Furthermore, they are at a disadvantage in supplying mainland markets if their products have short shelf-lives and so must be shipped by air. Also, farmers in Kula are at a disadvantage in competing against the low-cost producers who supply mainland markets.

#### **4. SURROUNDING LAND USES**

Parcel 7 is bounded upslope by homes, to the northeast by the Old Haleakala Highway, and downslope and to the west by Hamakua Ditch. The ditch forms a boundary separating this parcel from downslope sugarcane fields.

Parcel 64 lies between Haleakala Highway to the north, and homes and Old Haleakala Highway to the south. Haleakala Highway provides a boundary separating this parcel from pineapple fields to the north.

#### **5. PAST PINEAPPLE OPERATIONS**

Parcels 7 and 64 are former pineapple fields that were cultivated by Maui Pineapple Company, Ltd. (Maui Pine) until 2002, except for a small section of Parcel 64 on which organic pineapple was grown until 2003. Maui Pine fallowed these fields for two reasons: (1) the company downsized its plantation to focus on growing pineapple on its best fields for the fresh pineapple market only, and discontinued growing pineapple for the canned market; and (2) the new Haleakala Highway separated Parcels 7 and 64 from the contiguous core of its Central Maui plantation, thereby transforming these two parcels into agricultural remnants that became inefficient for Maui Pine to farm.

#### **6. IMPACT ON EXISTING ON-SITE AGRICULTURAL OPERATIONS**

Following pineapple, the Project site has not been farmed or used for grazing. Thus, the Project will have no impact on existing on-site agricultural operations since no operations exist.

#### **7. NUISANCE ISSUES RELATED TO NEARBY PLANTATIONS**

##### **a. Potential for Nuisance Problems**

Pineapple is grown on fields to the north of Parcel 64, and sugarcane is grown on fields downslope of Parcel 7. If potential nuisance problems arising from these nearby farm operations are not addressed, residents living close to and downwind from the farm operations may complain about occasional noise, dust, chemical spraying, etc., emanating from normal field operations. In turn, the plantations may need to change their operations in order to address these complaints.

Prevailing tradewinds blow from the northeast. Thus, the Project will be downwind of pineapple fields and upwind of sugarcane fields. As such, only four of the 170 homes in the Project will be close to and downwind from agri-

cultural operations. These are the homes in Parcel 7 that are nearest the intersection of Haleakala Highway and Old Haleakala Highway.

**b. Mitigating Measures**

The planned buffering to reduce traffic noise for Project homes abutting Old Haleakala Highway will also provide a buffer for the agricultural operations that are upwind of the homes. Such buffering could include an earthen berm or wall to block the line-of-sight between the impacted homes and the highway. Additional buffering from pineapple and sugarcane operations will be provided by setbacks from the highways and from Hamakua Ditch, and landscaping as appropriate.

Regarding field operations, the two plantations on the island have already developed procedures to limit nuisance problems that could affect the many homes that are located near and/or downwind of their fields. In particular, both HC&S and Maui Pine monitor weather conditions and forecasts carefully so as to avoid spraying, burning, or other nuisance operations if there is a risk that chemicals, smoke, etc., will be blown into homes.

Before new residents purchase homes and lots, they should be informed that they will be living near farming areas. This point should be highlighted in promotional brochures and spelled out in the sales contracts. Under these circumstances, buyers are more likely to accept that nearby farm operations are part of the ambiance and lifestyle of the community.

In any case, Hawai'i's Right-to-Farm Act gives those farmers who were operating before neighboring properties were developed the right to farm even if they cause a nuisance, provided that the farming activity does not threaten public health or safety.

In view of the above, no additional measures are needed to mitigate potential nuisance issues related to agriculture.

**8. CUMULATIVE IMPACT ON THE GROWTH OF DIVERSIFIED CROPS**

The Project will commit about 88.6 acres of agricultural land to a non-agricultural use, of which up to 85 acres are suitable for farming. If all this land were used to grow a typical vegetable or fruit crop, then it could support about 4 farm jobs.

More realistically, development on this agricultural land—combined with other developments in Hawai'i and on Maui Island—involves the loss of too little agricultural land to significantly affect (1) the availability of land to farmers in Hawai'i, (2) agricultural land rents, (3) the growth of diversified crops, or (4)

potential agricultural employment. This conclusion is based on the finding that, as a result of the major contraction of plantation agriculture, ample land is available statewide for diversified crops, with the available supply far exceeding likely or potential demand.

However, the Project might adversely affect the growth of diversified agriculture in Kula since the market for agricultural land is tighter there than it is in most other areas of the state.

In view of the negligible impact of the Project on the growth of diversified agriculture, mitigation measures for the loss of agricultural land are not recommended.

## **9. OFFSETTING BENEFITS**

The loss of about 88.6 acres of agricultural land will be offset by the benefit of 170 single-family homes that are needed to house Maui residents, along with equestrian and pedestrian trails that will serve the surrounding community.

## **10. CONSISTENCY WITH STATE AND CITY POLICIES**

### **a. Availability of Lands for Agriculture**

The *Hawai'i State Constitution*, the *Hawai'i State Plan*, the *State Agriculture Functional Plan*, the *County of Maui General Plan 1990*, and the County's *Makawao-Pukalani-Kula Community Plan* call directly or implicitly for preserving the economic viability of plantation agriculture and promoting the growth of diversified agriculture. To accomplish this, an adequate supply of agriculturally suitable lands and water must be assured.

With regard to plantation agriculture, the Project site is no longer part of a pineapple plantation since the fields were fallowed in 2002 and 2003 for reasons unrelated to the Project.

With regard to diversified agriculture, the Project will reduce the availability of agricultural land by about 88.6 acres. This small loss of agricultural land will not limit the statewide growth of diversified agriculture since an enormous supply of agricultural land is now available due to the major contraction of plantation agriculture.

However, the Project might adversely affect the growth of diversified agriculture in Kula since the market for agricultural land is tighter there than it is in most other areas of the state.

**b. Conservation of Agricultural Lands**

In addition to the above, State policies call for conserving and protecting prime agricultural lands, including protecting agricultural lands from urban development.

However, these policies—which were written before the major contraction of plantation agriculture in the 1990s—assume implicitly that profitable agricultural activities eventually will be available to utilize all available agricultural lands. This has proven to be a questionable assumption in view of the enormity of the contraction of plantation agriculture, the abundant supply of land that came available for diversified agriculture, and the slow growth in the amount of land being utilized for diversified agriculture.

Furthermore, discussions in the Agriculture portion of the State Functional Plan recognize that redesignation of lands from Agricultural to Urban should be allowed “... upon a demonstrated change in economic or social conditions, and where the requested redesignation will provide greater benefits to the general public than its retention in ...agriculture;” that is, when an “overriding public interest exists.” The enormous contraction in plantation agriculture, resulting in the supply of agricultural land far exceeding demand, constitutes a major change in economic conditions. Moreover, development on the Project site will provide community benefits (i.e., 170 needed homes for Maui residents). Furthermore, the Project is expected to have no significant impact on existing or potential agricultural employment.

**c. Community Plan**

In terms of agriculture, the Project is consistent with the *Makawao-Pukalani-Kula Community Plan* in that the Project site is designated for “Single Family Residential” and not “Agriculture.”



# **KAUHALE LANI RESIDENTIAL SUBDIVISION: IMPACT ON AGRICULTURE**

## **1. INTRODUCTION<sup>[1]</sup>**

Pukalani Associates, LLC proposes to develop the Kauhale Lani Residential Subdivision (“the Project”) in Kula, Maui. Figures 1 and 2 show the location of the Project, and Figure 3 shows the conceptual site plan. All figures are located at the end of this report.

The Project site is within the State Agricultural District (Figure 4). The County of Maui (“County”) *Makawao-Pukalani-Kula Community Plan* designates the site for “Single Family Residential” use (Figure 5). County zoning for the Project site is “Agricultural” (Figure 6). The Project will require a State Land Use District Boundary Amendment from “Agricultural” to “Urban,” a change in County zoning from “Agricultural” to “R-3, Residential,” a County building permit for mass grading, and County Subdivision approval.

This report addresses the impacts of the Project on agriculture. The material below provides the following information: the location of the Project; a description of the Project; the agricultural conditions at the site, along with supporting Figures 7 through 9; potential crops; locational advantages and disadvantages for crop production; surrounding land uses; information on past agricultural operations; the impact on existing on-site agricultural operations; the impact of the Project on the growth of diversified crops, along with supporting Figure 10 which shows the release of land from plantation agriculture and the increased acreage in diversified crops; benefits of the Project that will offset adverse agricultural impacts; and consistency of the Project with State and County agricultural policies.

Two appendices can be found at the end of this report. Appendix A provides a listing of planned and proposed projects on Maui and the amount of agricultural land that would be affected. Appendix B provides a summary of State and County goals, objectives, policies and guidelines related to agricultural lands.

## **2. LOCATION OF THE PROJECT<sup>[1]</sup>**

The Project site is located on the northwestern flank of Mt. Haleakala, next to Haleakala Highway, and abutting and downslope of Pukalani (Figure 1).

The site is also identified by two parcels that are separated by Old Haleakala Highway: (1) TMK 2-3-09:007 (“Parcel 7”) which is the larger rectangular parcel downslope of Pukalani, and (2) TMK 2-3-09:064 (“Parcel 64”) which is the long and narrow parcel between Haleakala Highway and Old Haleakala Highway (Figure 2).

### 3. PROJECT DESCRIPTION<sup>[1]</sup>

The Project site covers about 88.619 acres: about 49.99 acres for Parcel 7 and 38.629 acres for Parcel 64. At full development, about 170 single-family residential homes will be provided in Parcel 7 (Figure 3). Lots will range in size from about 6,000 sq. ft. to 12,000 sq. ft.

In addition, the Project will feature a park and open space, equestrian and pedestrian trails, an internal pedestrian/bike path, pedestrian-friendly streets, roads that connect to and help integrate the Project with the adjoining subdivision, and landscaping. The character of the Project will be in keeping with that of Upcountry Maui.

### 4. AGRICULTURAL CONDITIONS

#### a. Soil Types<sup>[2]</sup>

As shown in Figure 7, the Project site consists of seven soil types. The complete names of the soil types and their slopes are as follows:

- HgB Hali'imaile gravelly silty clay loam, 3 to 7% slopes
- HgC Hali'imaile silty clay loam, 7 to 15% slopes
- HhB Hali'imaile silty clay, 3 to 7% slopes
- HhC Hali'imaile silty clay, 7 to 15% slopes
- HkC2 Hali'imaile gravelly silty clay, 7 to 15% slopes
- KnC Keahua silty clay loam, 7 to 15% slopes
- rRR Rough broken land, very steep

Table 1 shows the estimated acreage of each soil type categorized according to its quality as rated by the Natural Resources Conservation Service (NRCS), formerly known as the Soil Conservation Service. Soil types HhB and HhC comprise about 64.2% of the Project site.

**Table 1. Kauhale Lani:  
Soil Types and NRCS Ratings**

<u>Soil Types</u>	<u>Acres</u>	<u>%</u>	<u>NRCS Ratings<sup>1</sup></u>
Higher-quality			
HgB	0.8	0.9%	Ile
HhB	22.5	25.4%	Ile
Moderate-quality			
HgC	9.5	10.7%	IIIe
HhC	34.4	38.8%	IIIe
KnC	2.8	3.2%	IIIe
HkC2	15.4	17.4%	IVe
Lower-quality			
rRR	3.2	3.6%	VIIe
Total	88.6	100.0%	

1. Assuming all soils are irrigated except KnC and rRR which are not irrigated.

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

## b. Soil Ratings

Three classification systems are commonly used to rate Hawai'i soils: (1) Land Capability Grouping, (2) Agricultural Lands of Importance to the State of Hawai'i, and (3) Overall Productivity Rating.

### Land Capability Grouping (NRCS Rating) <sup>[2]</sup>

The 1972 Land Capability Grouping by the U.S. Department of Agriculture, NRCS rates soils according to eight levels, ranging from the highest classification level I to the lowest VIII.

Table 1 shows that about 23.3 acres (26.3%) of the Project site have soils that are rated Ile. Class II soils have moderate limitations that reduce the choice of

plants or require moderate conservation practices. The subclassification “e” indicates that the soils are subject to erosion.

About 46.7 acres (52.7%) have soils rated IIIe. Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

About 15.4 acres (17.4%) have soils rated IVe. Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both.

About 3.2 acres (3.5%) have soils rated VIIe. Class VII soils have very severe limitations that make them unsuitable for cultivation and restrict their use largely to pasture.

### Agricultural Lands of Importance in the State of Hawai'i (ALISH)<sup>[3]</sup>

ALISH ratings were developed in 1977 by the NRCS, the UH College of Tropical Agriculture and Human Resources, and the State of Hawai'i, Department of Agriculture. This system classifies land into three broad categories: (a) Prime agricultural land which is land that is best suited for the production of crops because of its ability to sustain high yields with relatively little input and with the least damage to the environment; (b) Unique agricultural land which is non-Prime agricultural land used for the production of specific high-value crops; and (c) Other agricultural land which is non-Prime and non-Unique agricultural land important to the production of crops.

About 30 acres (33.9%) of the Project site have soils that are rated Prime; about 52.6 acres (59.4%) are rated Other; and about 6 acres (6.8%) are Unclassified (Figure 8).

### Overall Productivity Rating (LSB Rating)<sup>[4]</sup>

In 1972, the University of Hawai'i (UH) Land Study Bureau (LSB) developed the Overall Productivity Rating, which classifies soils according to five levels, with A representing the class of highest productivity and E the lowest.

None of the acreage at the Project site is rated A or B. About 21.6 acres (24.4%) have soils rated C, about 49 acres (55.3%) are rated D; and the remaining 18 acres (20.3%) are rated E (Figure 9).

### Summary Evaluation of Soil Quality

These soil-rating systems suggest that, at most, about 30 acres (34%) of the Project site are comprised of higher-quality soils (II for the NRCS ratings, Prime

for ALISH, and C for the LSB), and up to about 85 acres (96%) have soils that are suitable for farming (all but the rRR soils). The ALISH map (Figure 8) indicates that the higher-quality soils are located in Parcel 7.

**c. Soil Characteristics<sup>[2,4]</sup>**

Consistent with the above soil ratings, the higher-quality soils exhibit a number of favorable characteristics: they are non-stony and deep (over 30 inches), the texture is fine; they have good machine tillability, and are well-drained.

**d. Elevation<sup>[1]</sup>**

The elevation of Parcel 7 ranges from about 1,088 feet to about 1,186 feet, while Parcel 64 ranges from 1,110 feet to about 1,440 feet.

**e. Slopes<sup>[1,2]</sup>**

Parcel 7 has gentle slopes ranging from about 3 to 8%, while the slopes of Parcel 64 vary but average about 7%. Also, a shallow gulch cuts through Parcel 64.

**f. Climatic Conditions**

Like other areas in Hawai'i, Central Maui has a mild *sem*tropical climate which is due primarily to three factors: (1) Hawai'i's mid-Pacific location near the Tropic of Cancer, (2) the surrounding warm ocean waters that vary little in temperature between the winter and summer seasons, and (3) the prevailing northeasterly tradewinds that bring air having temperatures that are close to those of the surrounding waters.

**Solar Radiation<sup>[5]</sup>**

The area of Kula where the Project site is located receives a moderate amount sunshine, with average daily insolation of about 400 calories per square centimeter.

**Rainfall<sup>[6]</sup>**

Rainfall in the area averages about 30 inches per year. Most of this rainfall occurs during the winter rainy season (October through April), while the summer months (May through September) are hot and dry.

### Temperatures <sup>[6]</sup>

Average temperatures range from the low 50s Fahrenheit in the winter to the mid-80s during the summer.

### Winds and Storms <sup>[6,7]</sup>

The prevailing northeast tradewinds average about 20 miles per hour. In the winter, the island is often affected by Kona weather conditions, ranging from strong southerly winds with heavy rains, to calm and humid, or rainy weather.

#### **g. Irrigation Water**

Most small farms in Kula are irrigated with water supplied by the County. However, the adjoining Hamakua Ditch transports surface water to irrigate nearby sugarcane fields of Hawaiian Commercial & Sugar Co. (HC&S), while nearby pineapple fields are irrigated with groundwater from private wells.

#### **h. Summary**

Up to about 85 acres (96%) of the Project site have soils and agronomic conditions that are suitable for farming, while up to about 30 acres (34%) have higher-quality soils.

### **5. POTENTIAL CROPS** <sup>[8,9]</sup>

Based on the above agronomic conditions, most of the Project site is suitable for crops that are grown commercially in Kula, including various fruits (avocados, bananas, papayas, pineapples, tropical specialty fruits), flowers, herbs, and various vegetables (artichokes, beets, cabbage, corn, lettuce, onions, parsley, and zucchini).

## **6. LOCATIONAL ADVANTAGES AND DISADVANTAGES FOR CROP PRODUCTION**

### **a. Maui Island Market**

Farmers in Kula are well-situated to supply the Maui Island market because of the short trucking distance to Kahului, which is the island's commercial, industrial, distribution and transportation center. From Pukalani, the trucking distance is about 10 miles. While the Maui Island market is significant, it is comparatively small: in 2000, Maui had a *de facto* population of about 156,170 residents and visitors. <sup>[10]</sup>

**b. Honolulu Market**

All farmers on Maui are at a disadvantage in competing against farmers on O'ahu for supplying the Honolulu market due to the interisland shipping costs, delays and extra handling. In comparing barge and air-cargo services, shipping by barge is less expensive and larger loads can be shipped, but the shipments are slow and infrequent. Air service is faster and frequent, but it is far more expensive and capacities are limited. The Hawai'i Superferry, if successful, will increase the speed and frequency of surface shipments, and costs will be lower than air freight. In turn, this will allow Maui farmers to be more competitive in O'ahu produce markets, and vice versa.

In 2000, O'ahu had a *de facto* population of about 927,170 residents and visitors.<sup>[10]</sup> Thus, the Honolulu market is nearly six-times larger than the Maui market.

**c. Mainland Market**

Compared to Hawai'i, the mainland market is enormous: in 2000, the United States had a total population of 281.4 million.<sup>[11]</sup> In supplying this market with products that can be carried by container ship because they have long shelf-lives (e.g., canned fruit), farmers on Maui are competitive with farmers on O'ahu and other islands. Even though freight from Maui must first be barged to Honolulu then transferred onto a container ship, Matson's overseas shipping service includes interisland barge service at no additional fee; except for some minor port charges, Matson charges a common fare for all islands.<sup>[12]</sup>

In the case of fresh products that must be shipped by air to the mainland because of their short shelf-lives, farmers on Maui are at a disadvantage compared to farmers on O'ahu because most mainland air cargo is shipped via the Honolulu International Airport. Compared to farmers on O'ahu, Maui farmers encounter additional costs, delays and handling for interisland air-cargo service and for transferring the fresh products from small interisland aircraft to large overseas aircraft.

However, overseas air-cargo service from Maui has improved somewhat because the current generation of aircraft can depart from the short runway at Kahului with a full load of passengers and a full load of cargo in the hold. This direct service allows farmers on Maui to be more competitive in mainland markets. However, the lift capacity from Maui is limited by the number of direct flights.

In the U.S. mainland market, farmers in Hawai'i must also compete against farmers on the mainland and in Mexico, Central and South America, the Caribbean, Australia, New Zealand, Southeast Asia, etc. Most of the competing farm

areas have lower production and delivery costs than Hawai'i does. Competing against Mexico is particularly difficult given the North America Free Trade Agreement (NAFTA) and Mexico's proximity to major U.S. markets.

#### **d. Summary**

In terms of location, farmers in Kula are well-situated to supply the small Maui Island market. And compared to other farmers in Hawai'i, they can also compete reasonably well in supplying mainland markets, as long as their products have long shelf-lives and so can be shipped by surface vessel.

However, compared to farmers on O'ahu, Kula farmers are at a disadvantage in supplying the Honolulu market. Furthermore, they are at a disadvantage in supplying mainland markets if their products have short shelf-lives and so must be shipped by air. Also, farmers in Kula are at a disadvantage in competing against the low-cost producers who supply mainland markets.

### **7. SURROUNDING LAND USES<sup>[1]</sup>**

Parcel 7 is bounded upslope by homes, to the northeast by the Old Haleakala Highway, and downslope and to the west by Hamakua Ditch (Figure 4). The ditch forms a boundary separating this parcel from downslope sugarcane fields.

Parcel 64 lies between Haleakala Highway to the north, and homes and Old Haleakala Highway to the south (Figure 4). Haleakala Highway provides a boundary separating this parcel from pineapple fields to the north.

### **8. PAST PINEAPPLE OPERATIONS<sup>[1]</sup>**

Parcels 7 and 64 are former pineapple fields that were cultivated by Maui Pineapple Company, Ltd. (Maui Pine) until 2002, except for a small section of Parcel 64 on which organic pineapple was grown until 2003. Maui Pine fal-lowed these fields for two reasons: (1) the company downsized its plantation to focus on growing pineapple on its best fields for the fresh pineapple market only, and discontinued growing pineapple for the canned market; and (2) the new Haleakala Highway separated Parcels 7 and 64 from the contiguous core of its Central Maui plantation, thereby transforming these two parcels into agricultural remnants that became inefficient for Maui Pine to farm.



## **9. IMPACT ON EXISTING ON-SITE AGRICULTURAL OPERATIONS**

Following pineapple, the Project site has not been farmed or used for grazing. Thus, the Project will have no impact on existing on-site agricultural operations since no operations exist.

## **10. NUISANCE ISSUES RELATED TO NEARBY PLANTATIONS**

### **a. Potential for Nuisance Problems<sup>[1,13]</sup>**

As mentioned in Section 7, pineapple is grown on fields to the north of Parcel 64, and sugarcane is grown on fields downslope of Parcel 7. If potential nuisance problems arising from these nearby farm operations are not addressed, residents living close to and downwind from the farm operations may complain about occasional noise, dust, chemical spraying, etc., emanating from normal field operations. In turn, the plantations may need to change their operations in order to address these complaints. Thus, nuisance issues could cause difficulties for both residents and plantation operators.

Prevailing tradewinds blow from the northeast. Thus, the Project will be downwind of pineapple fields and upwind of sugarcane fields. As such, only four of the 170 homes in the Project will be close to and downwind from agricultural operations. These are the homes in Parcel 7 that are nearest the intersection of Haleakala Highway and Old Haleakala Highway (Figure 3).

### **b. Mitigating Measures**

The planned buffering to reduce traffic noise for Project homes abutting Old Haleakala Highway will also provide a buffer for the agricultural operations that are upwind of the homes. Such buffering could include an earthen berm or wall to block the line-of-sight between the impacted homes and the highway. Additional buffering from pineapple and sugarcane operations will be provided by setbacks from the highways and from Hamakua Ditch, and landscaping as appropriate.

Regarding field operations, the two plantations on the island have already developed procedures to limit nuisance problems that could affect the many homes that are located near and/or downwind of their fields. In particular, both HC&S and Maui Pine monitor weather conditions and forecasts carefully so as to avoid spraying, burning, or other nuisance operations if there is a risk that chemicals, smoke, etc., will be blown into homes.

Before new residents purchase homes and lots, they should be informed that they will be living near farming areas. This point should be highlighted in

promotional brochures and spelled out in the sales contracts. Under these circumstances, buyers are more likely to accept that nearby farm operations are part of the ambiance and lifestyle of the community.

In any case, Hawai'i's Right-to-Farm Act gives those farmers who were operating before neighboring properties were developed the right to farm even if they cause a nuisance, provided that the farming activity does not threaten public health or safety.

In view of the above, no additional measures are needed to mitigate potential nuisance issues related to agriculture.

## **11. GROWTH OF DIVERSIFIED CROPS**

The Project will commit 88.6 acres of agricultural land to a non-agricultural use. The impact of this commitment on the growth of diversified crops is addressed below. The material covers (1) the potential acreage required for diversified crops, (2) availability of land for diversified crops, (3) impact of the Project on the growth of diversified crops, and (4) mitigating measures.

### **a. Potential Acreage Required for Diversified Crops**

#### Crops to Replace Imports of Fruits and Vegetables<sup>[14]</sup>

For fruits and vegetables that have a history of profitable production in Hawai'i, potential land requirements in 2010 for 100% import substitution for the Hawai'i and Maui County markets are estimated at 12,700 acres and 1,700 acres, respectively, plus additional acreage for fallowing land between crop plantings. When allowing for competition from imports, these estimates drop to about half. These estimates take into account consumption and production trends, seasonal and annual market shares, yields, and the number of crops per year. Also, these figures are for acreage in crop—not harvested acreage as is typically reported in government publications.

Since Hawai'i farmers already supply a portion of the Hawai'i market, land requirements for increased import substitution are a fraction of the above estimates.

#### Export Crops<sup>[8,10,11]</sup>

The potential market for export crops is far larger than the Hawai'i market. In 2005, the U.S. population was 296.41 million, compared to Hawai'i's resident-plus-visitor population of 1.45 million. To take advantage of this large potential, Hawai'i farmers are exploring various export crops on lands released from

plantation agriculture. Over the next 20+ years, one or more of these crops may prove to be successful and may grow into a major export crop.

However, the history of agricultural efforts in Hawai'i reveals that the successful development of major new export crops requiring large amounts of land is infrequent. For example, over the past 50 years in Hawai'i, farmers have explored numerous possibilities for export crops, but they have developed overseas markets for just one diversified crop that requires more than 10,000 acres (macadamia nuts at 18,300 acres in 2005); one additional crop that requires more than 5,000 acres (coffee at 8,000 acres); and only five additional crops or crop categories that require more than 1,000 acres each (papaya at 2,395 acres, bananas at 1,145 acres, tropical specialty fruits at 1,230 acres, flowers/nursery products at 3,895 acres, and seed crops at 4,220 acres). Tropical specialty fruits include longan, lychee, mango, rambutan, star-fruit, etc.

At 4,220 acres in 2005 and growing at an average rate of 264 additional acres per year, the seed industry is expected to soon become only the third diversified crop that requires more than 5,000 acres. The fourth crop could be nursery and flower products: 3,895 acres and increasing at 235 acres per year.

### Feed Crops<sup>[15]</sup>

If feed crops could be grown in Hawai'i and priced competitively against mainland imports, they could replace some of the grains and hay that is now being imported to the state. Unfortunately, a number of commercial attempts in Hawai'i to grow grains and alfalfa have been unsuccessful. The major problems have been (1) pests, particularly birds that eat the grains before they are harvested; (2) humidity that is too high for drying alfalfa properly; and (3) high production costs compared to those of mainland farms.

### Biofuel Crops

Crops can be grown to produce biomass to fuel a boiler, or as feedstock to produce fuels. Examples of the latter include sugarcane, corn, or sorghum used to produce ethanol. In turn, the ethanol is used to produce E-10 gasohol (90% gasoline and 10% ethanol). Also, palm oil, soybean, sunflower, kukui nut, avocado, coconut, neem and other crops can be grown to produce biodiesel.<sup>[16]</sup>

In Hawai'i, the common practice has been to produce biomass as a by-product of some principal crop. For example, at HC&S on Maui and at Gay & Robinson on Kaua'i, the sugarcane by-product bagasse is burned to help fuel their respective power plants. In addition, the biofuel company Maui Ethanol plans to use the sugarcane by-product, molasses, from the two sugarcane plantations as feedstock to produce ethanol.<sup>[17,18]</sup> Using conventional technology,

the sugar in the molasses will be fermented to produce ethanol, followed by distillation to extract the alcohol.

However, O'ahu Ethanol Corporation plans to build an ethanol plant at Campbell Industrial Park using conventional technology but, at least initially, using imported molasses as the feedstock.<sup>[17,19]</sup> The rated capacity will be 15 million gallons of ethanol per year. For the longer term, this company is exploring the economics of growing sweet sorghum to supply feedstock to its ethanol plant. The sorghum would have to be grown on O'ahu because it would be too expensive to ship the sorghum juice from a Neighbor Island to O'ahu. Sorghum juice is mostly water having a low concentration of sugar compared to molasses. Acreage requirements for a new sorghum biofuel plantation on O'ahu would range from about 6,000 acres for viability to 15,000 acres if juice from sorghum were to replace all imported molasses.<sup>[19]</sup> This acreage comprises a substantial share, if not all, of the estimated 10,900 acres of crop land that is available on O'ahu as of mid-2007. But it is a small share of the 160,000+ acres of crop land available statewide (see Section 11.b).

Also, Imperium Renewables Hawai'i LLC is proposing to build by 2009 a biodiesel refinery on State land at Kalaeloa Harbor; it would produce about 100 million gallons of biodiesel annually.<sup>[20,21]</sup> Similarly, BlueEarth Maui Biodiesel LLC plans to build a similar refinery on Maui that would produce about 120 million gallons annually by 2011. Both will use imported palm oil from Malaysia and other countries as their feed stock, but would refine locally produced vegetable oil if available.

A number of substantial difficulties must be overcome in order to develop one or more biofuel plantations to supply feedstock for ethanol or biodiesel production, including:

— Long-term Leases

In many areas of the state, it will be difficult to lease the large amount of land required for a biofuel plantation at low lease rents for the 30 or so years required to capitalize the investment in a new plantation. Over time, other farmers and other users of land are likely to make higher offers to landowners of lease rents or land purchases. In view of this potential for landowners, the current market value of available farm lands is likely to be higher if landowners do not commit long-term to rents that are low enough to be affordable to a biofuel plantation.

— Capital

Substantial investment capital will be required to cover the cost of improvements and equipment such as: a mill to extract the juice from a biofuel crop; a generating plant to provide power;

improvements and upgrades to irrigation systems that are in disrepair; trucks and equipment to harvest and haul harvested plants to the mill, and haul the extracted juice to an ethanol plant or the vegetable oil to a refinery, etc.

— Short-term Profitability

Annual revenues from selling the ethanol plus direct subsidies are estimated by the consultant at about \$2,430 per acre (based on an estimated 900 gallons per acre per year of ethanol at about \$2.70 per gallon). Even with subsidies, this is low compared to revenues from other crops in Hawai'i. Per-acre returns from biodiesel crops are even less.

Furthermore, the cost of importing molasses or palm oil for feedstock, or importing ethanol may prove to be less expensive than growing a biofuel crop in Hawai'i. For similar crops (such as feed crops), importing has proven to be less expensive than growing and processing crops locally. Also, the U.S. Department of Agriculture has found sorghum to be an expensive feedstock for producing ethanol—about 3.7 times more expensive than corn and 63% more expensive than molasses.<sup>[22]</sup>

As ethanol production increases on the mainland and in Hawai'i, there is a risk that the combined Federal and State subsidies for ethanol (over \$2 per gallon) could be reduced, thereby compromising the profitability of a biofuel crop.

— Long-term Profitability

Over the long-term, emerging technology that is in the early stages of commercialization holds promise for a cheaper source of feedstock for ethanol than does growing a biofuel crop on a plantation.<sup>[23]</sup> Instead of producing ethanol using sugars from conventional sources (e.g., molasses, sugarcane, grains, fruits, etc.), the sugar would come from “cellulosic” sources whereby sugar that is locked in complex carbohydrates of plants is separated into fermentable sugars. Feedstock would include agricultural wastes, yard clippings, discarded paper, wood waste, etc.—i.e., the green waste that is now used for composting. This new technology promises (1) much higher ethanol yields per ton of biomass because the entire plant can be used as feedstock, and (2) lower costs—particularly if there are no growing costs when waste product is used, and if the operator is paid a fee to dispose of municipal and agricultural waste. Eventually, this less expensive source of feedstock could result in unprofitable biofuel planta-

tions. In Hawai'i, this new technology is being explored by Clear-Fuels Technology Inc.

O'ahu's municipal waste could produce an estimated 160 million gallons of ethanol compared to the current annual consumption of about 400 million gallons of gasoline.

The above difficulties and risks suggest that the probability of successfully developing and sustaining a biofuel plantation in Hawai'i is low. The more likely scenario is that ethanol will be produced as a by-product of sugar and, over the long-term, it will be produced from green waste.

### Recent Crop-acreage Trends<sup>[8]</sup>

For all diversified crops (i.e., all crops other than sugarcane and pineapple, including crops to replace imports and crops for export) statewide land requirements grew as shown in Figure 10, with the annual growth by selected periods summarized as follows:<sup>1,2</sup>

- 1963 to 1979: about 839 acres per year.
- 1979 to 1983: about 3,450 acres per year.<sup>1</sup>
- 1983 to 2000: about 310 acres per year.<sup>2</sup>
- 2000 to 2005: about 160 acres per year.

As the above illustrates, growth in acreage of diversified crops has slowed over time. This was most likely due to the fact that, as plantations contracted, the most promising diversified agricultural opportunities were exploited early, and Hawai'i gradually lost much of its agricultural expertise.

Regarding major export crops and crop categories, acreage increased for four of them from 2000 to 2005: coffee up an average of 20 acres per year; tropical specialty fruits up 54 acres per year, flowers/nursery products up 235 acres per year, and seed crops up 264 acres per year. During this same period, acreage declined for three of the major export crops: macadamia nuts down an average of 20 acres per year, papaya down 90 acres per year, and bananas down 113 acres per year. The net change was an average increase of 350 acres per year.

1. In Figure 10, the rapid growth in diversified-crop acreage that occurred during the 1979-to-1983 period largely reflected (1) growth in macadamia-nut acreage which continued until about 1986 when tax-shelter advantages were terminated, and (2) a temporary increase in feed-crop acreage that declined after 1983 and offset the acreage gains in macadamia nuts. The growth in feed-crop acreage may have reflected the situation addressed in Footnote 2.
2. In Figure 10, the temporary bump in diversified-crop acreage that occurred in the late 1990s reflected the fact that some former sugarcane fields were planted with grasses for future cattle grazing. After cattle grazing began in 2000, much of this acreage was recategorized by NASDA from crop land to grazing land.

Regarding crops grown for the Hawai'i market, acreage declined by an average of 190 acres per year from 2000 to 2005.

In summary, the major growth in acreage for diversified crops from 2000 to 2005 came from just two crop categories: seed crops and flowers/nursery products.

These trends are consistent with advances in economic development, transportation and overseas trade. In essence, communities increase their standard of living by increasing their economic specialization and their trade with other communities.

#### Factors Limiting the Growth of Diversified Crops<sup>[14]</sup>

A great many crops can be grown in Hawai'i's year-round subtropical climate, and a number of them can be grown profitably in volumes that require a few hundred acres. However, the modest growth in land requirements for diversified crops reflects the fact that few crops can be grown profitably on a large scale. The primary factors that have limited the growth of diversified agriculture in Hawai'i are given below.

- Hawai'i's subtropical climate is not well-suited to the commercial production of major crops that grow better in the temperate mainland climates.
- For certain crops, special hybrids adapted to Hawai'i's subtropical climate are yet to be developed.
- Local varieties of many vegetables and fruits are not perfect substitutes for all imports (e.g., premium-priced sweet Maui onions versus inexpensive storage onions).
- Crop pests are more prevalent and more expensive to control in Hawai'i than they are on the mainland where the cold winters kill many pests.
- Fruit-fly infestations prevent exports of many crops, or require expensive treatment.
- Most soils in Hawai'i have low nutrient levels and therefore require high expenditures for fertilizer.
- Hawai'i suffers from high farm-labor costs, largely because the agriculture industry must compete against the visitor industry and related industries for its labor.
- Compared to many other farm areas that supply U.S. markets, the cost of shipping agricultural supplies and equipment to Hawai'i is high, as is the cost of exporting produce from Hawai'i to mainland

markets. High shipping costs are due to Hawai'i's remote location and to Federal regulations that require use of American-built ships and U.S. crews between U.S. ports.

- For a number of crops, consumption volumes in Hawai'i are too small to support large, efficient farms (i.e., the volumes are too small to realize economies of scale).
- For crops that are profitable in Hawai'i, over-production must be avoided in order to maintain profitable price levels (i.e., weekly production should be kept below 100% of the Hawai'i market).
- Trends towards food suppliers purchasing produce that is certified as safe and towards buying from a single supplier of many food items favor large farms.
- Hawai'i farmers must compete against highly efficient mainland and foreign farms which, in a number of cases, can deliver produce to Hawai'i more cheaply than it can be produced locally. This is due to economies of scale and, in comparison to Hawai'i, low costs for land, labor, supplies, fertilizer, pest control, equipment, etc.
- Some crops can be profitable in the winter when competition is limited, but not in the summer when low-cost imports of fruits and vegetables are available from California, other states, and Mexico.

#### **b. Statewide Availability of Land for Diversified Crops**

Statewide, a vast amount of land has been released from plantation agriculture: about 251,800 acres between 1968 and 2005, resulting in an average release of over 6,800 acres per year over a 37-year period (see Figure 10).<sup>[8,24]</sup> The 2006 Del Monte closure in Kunia increased this figure by another 4,400 acres, resulting in a total release of at least 256,200 acres from plantation agriculture between 1968 and 2007.<sup>[25,26]</sup> Over the 1968-to-2005 period, the demand for land for diversified crops increased by about 26,300 acres (about 10% of the land released from plantation agriculture).

As the above figures indicate, the acreage released from plantation agriculture has far outpaced the demand for land for diversified crops. The net decrease in diversified crop land amounts to about 229,900 acres. While some of the released land has been converted or is scheduled to be converted to urban uses and tree plantations, an estimated 160,000+ acres remain available for diversified crops.<sup>[26]</sup> Because of the increased availability of agricultural land, a number of landowners report lower per-acre agricultural land rents on O'ahu and the Neighbor Islands compared to rents charged before the major contraction in plantation agriculture.<sup>[27]</sup>



If the Hawai'i Superferry is successful, cultivating crops on the Neighbor Islands for the Honolulu market, and vice versa, may become more economically feasible. For a full load carried in a large pick-up truck, the one-way fare will be about 7¢ per pound.<sup>[28]</sup> However, for some perishable crops, the ferry service may not be sufficiently frequent and/or delivery times may not be sufficiently rapid.

The above indicates that ample land is available in Hawai'i to accommodate the growth of diversified crops, whether demand is based on potential or recent trends. In other words, the limiting factor to the growth of diversified crops is *not* the *land supply*, but rather the *size of the market* for crops that can be grown *profitably* in Hawai'i.

**c. Maui Island Availability of Land for Diversified Crops**

The above findings also apply to Maui. Since 1977, the contraction and eventual closure of Wailuku Sugar Co. and Pioneer Mill released about 11,200 acres from sugarcane production. In addition, the contraction of pineapple operations released about 5,000 acres since 1993.

During the 1980s, about 4,700 acres of sugarcane land in Central Maui were made available for other uses. Some of this land was developed; some was planted in macadamia nuts which continued until 1999; some was planted in pineapple; some was transferred to Hawaiian Commercial & Sugar Co. (HC&S); and some remains fallow.

During the 1990s, the reduction in sugarcane acreage occurred in West Maui, including about 6,000+ acres released in 2000. Similarly, most of the recent reduction in pineapple acreage occurred in West Maui, including about 3,200 acres that were released in 2003. Some of this former plantation land in West Maui was developed and some was converted to other crops, but most of it remains fallow or is used for grazing cattle.

In summary, considerable land remains available on Maui for diversified agriculture, although most of it is in West Maui.

**d. Potential Loss of Crop Land on Maui to Development<sup>[10,29,30]</sup>**

Based on information provided by the Maui County Planning Department, Appendix A, provides a summary of 205 major residential, resort, commercial, and industrial development projects on Maui Island that will (1) increase the number of residential and visitor units, or (2) involve agricultural land. The listing—which reflects known projects as of July 2007—excludes projects having fewer than six dwelling units, and subdivisions having fewer than four lots.

The projects are organized by District, entitlements, then alphabetically. Entitlements are defined as follows:

- Committed projects include (1) those having 201G approval, (2) those having Project District zoning, (3) Department of Hawaiian Home Lands (DHHL) projects, (4) approved agricultural subdivisions, and (5) other projects for which the land is zoned for development.
- Designated projects include those having (1) urban Community Plan designation, and (2) Project District zoning but no Phase 2 approval.
- Proposed projects include those lacking urban Community Plan designations.

To the extent that information was provided and is relevant, the information on each project listed in Appendix A includes:

- Its entitlements.
- The number of homes (single-family and multi-family homes), the number of visitor units (hotel rooms and time-share units), and the total number of units.
- Its total area (if provided and needed only for projects that involve agricultural land), along with the average acreage per unit (i.e., the reciprocal of the density, which applies only to projects that have residential or visitor units).
- The acreage that is within the State Agricultural District, along with an acreage adjustment (explained below).

If all of the committed, designated and proposed residential and resort projects on Maui Island were approved, built and sold, they would supply about 51,600 homes, including about 37,200 single-family homes and 14,400 multi-family homes (see the last page of Appendix A).

Economic projections prepared by the Maui County Planning Department (June 2006) for the Maui County General Plan 2030 forecast that the number of homes on Maui Island will increase from about 49,870 in 2005 to about 84,350 in 2030, resulting in an increase of about 34,480 homes over this 25-year period. Over time, the pace of development is expected to follow a linear trend, but will fluctuate above and below the average of about 1,380 new homes per year (34,480 homes ÷ 25 years). At the projected demand of about 1,380 new homes per year, the potential supply of homes listed in Appendix A could be absorbed in about 37 years (a total of 51,600 homes ÷ 1,380 homes per year).

About half of the projects listed in Appendix A would affect about 22,500 acres on Maui Island that are now in the State Agricultural District (see the last page of Appendix A). Although this accounting includes some agricultural subdivisions where most of the land will be lost to homes, it also includes other

agricultural subdivisions where most of the land will remain available for agriculture. In practice, an estimated 13,250 acres in the State Agricultural District would be lost to agriculture if all of these projects were approved and built (see the last page of Appendix A). This estimate is based on the assumption that agricultural subdivisions having at least 2.5 acres per home will leave most of the land available for a current or future agricultural use.

The estimated 13,250 acres of agricultural land include prime agricultural land, low-quality land that is suitable for grazing but not farming, and gulch land. It represents about 5% of the 244,090 acres on Maui Island that are in the State Agricultural District.

In summary, the eventual development over a period of about 37 years of all the committed, designated and proposed projects listed in Appendix A would leave about 230,840 acres on Maui Island available for agricultural use (244,090 acres – 13,250 acres).

**e. Impact on the Growth of Diversified Crops (Cumulative Impact)**

The Project will commit about 88.6 acres of agricultural land to a non-agricultural use, of which up to 85 acres are suitable for farming. If all this land were used to grow a typical vegetable or fruit crop, then it could support about 4 farm jobs (based on about 40% of the land in crop and about 12.5 jobs per 100 acres in crop).

More realistically, development on this agricultural land—combined with other developments in Hawai'i and on Maui Island—involves the loss of too little agricultural land to significantly affect (1) the availability of land to farmers in Hawai'i, (2) agricultural land rents, (3) the growth of diversified crops, or (4) potential agricultural employment. This conclusion is based on the above finding that ample land is available for diversified crops, with the available supply far exceeding likely or potential demand.

However, the Project might adversely affect the growth of diversified agriculture in Kula since the market for agricultural land is tighter there than it is in most other areas of the state.

**f. Mitigating Measures**

In view of the negligible impact of the Project on the growth of diversified agriculture, mitigation measures for the loss of agricultural land are not recommended.

## 12. OFFSETTING BENEFITS

The loss of about 88.6 acres of agricultural land will be offset by the benefit of 170 single-family homes that are needed to house Maui residents, along with equestrian and pedestrian trails that will serve the surrounding community.

## 13. CONSISTENCY WITH STATE AND COUNTY POLICIES<sup>[31]</sup>

### a. Availability of Lands for Agriculture

The *Hawai'i State Constitution*, the *Hawai'i State Plan*, the *State Agriculture Functional Plan*, the *County of Maui General Plan 1990*, and the County's *Makawao-Pukalani-Kula Community Plan* call directly or implicitly for preserving the economic viability of plantation agriculture and promoting the growth of diversified agriculture. To accomplish this, an adequate supply of agriculturally suitable lands and water must be assured.

With regard to plantation agriculture, the Project site is no longer part of a pineapple plantation since the fields were fallowed in 2002 and 2003 for reasons unrelated to the Project.

With regard to diversified agriculture, the Project will reduce the availability of agricultural land by about 88.6 acres. This small loss of agricultural land will not limit the statewide growth of diversified agriculture since an enormous supply of agricultural land is now available due to the major contraction of plantation agriculture (see Figure 10).

However, the Project might adversely affect the growth of diversified agriculture in Kula since the market for agricultural land is tighter there than it is in most other areas of the state.

### b. Conservation of Agricultural Lands

In addition to the above, State policies call for conserving and protecting prime agricultural lands, including protecting agricultural lands from urban development.

However, these policies—which were written before the major contraction of plantation agriculture in the 1990s—assume implicitly that profitable agricultural activities eventually will be available to utilize all available agricultural lands. This has proven to be a questionable assumption in view of the enormity of the contraction of plantation agriculture, the abundant supply of land that came available for diversified agriculture, and the slow growth in the amount of land being utilized for diversified agriculture (see Section 11 and Figure 10).

Furthermore, discussions in the Agriculture portion of the *State Functional Plan* recognize that redesignation of lands from Agricultural to Urban should be allowed "... upon a demonstrated change in economic or social conditions, and where the requested redesignation will provide greater benefits to the general public than its retention in ... agriculture;" that is, when an "overriding public interest exists." The enormous contraction in plantation agriculture, resulting in the supply of agricultural land far exceeding demand, constitutes a major change in economic conditions. Moreover, development on the Project site will provide community benefits (i.e., 170 needed homes for Maui residents). Furthermore, the Project is expected to have no significant impact on existing or potential agricultural employment.

### c. Community Plan

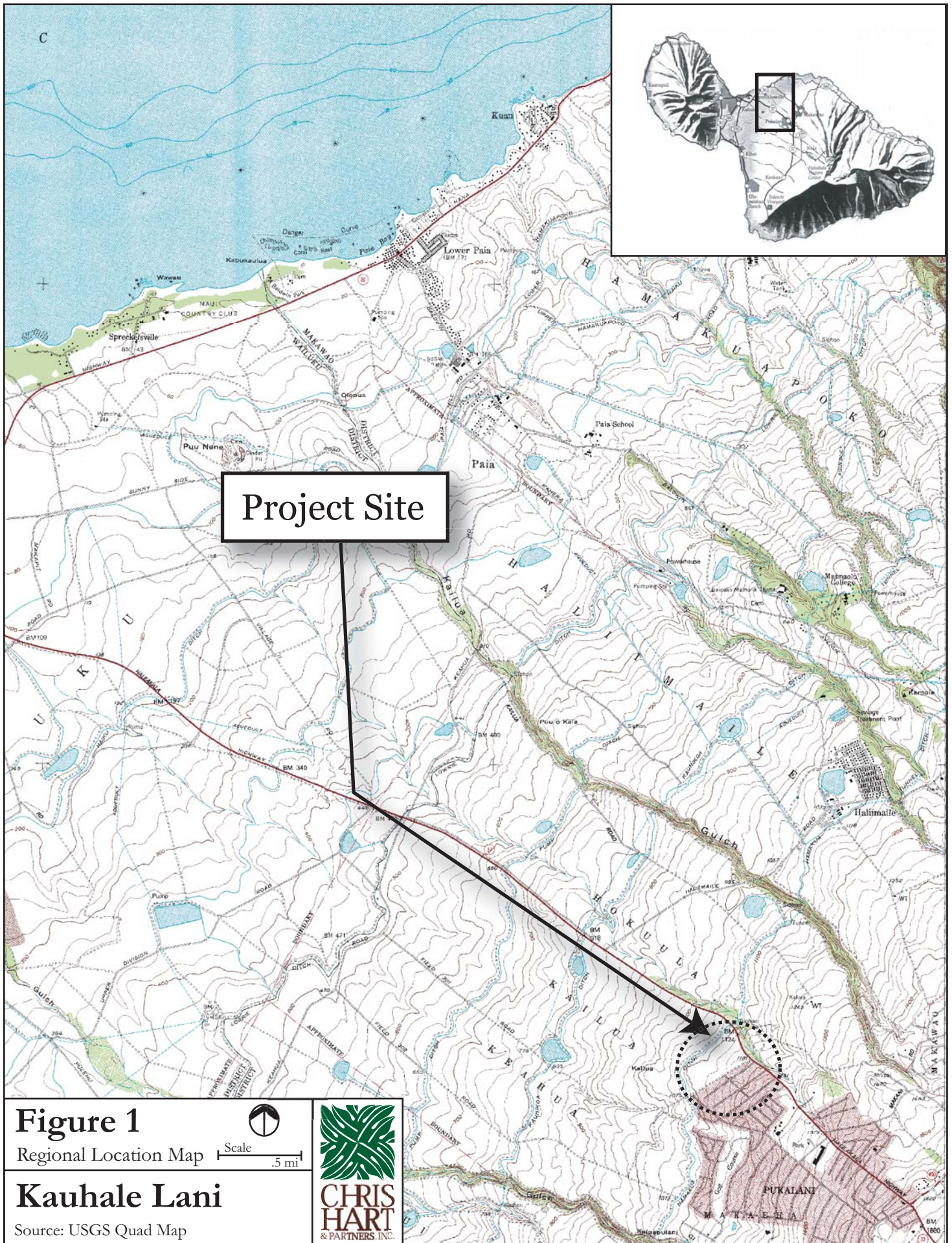
In terms of agriculture, the Project is consistent with the *Makawao-Pukalani-Kula Community Plan* in that the Project site is designated for "Single Family Residential" and not "Agriculture" (Figure 5).

## 14. REFERENCES

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- [27] Discussions with major landowners. 2006 and 2007.
- [28] Hawai'i Superferry. 2008.
- [29] Maui County Planning Department. Socio-Economic Forecast: *The Economic Projections for the Maui County General Plan 2030*. June 2006.
- [30] Appendix A. Maui Island Development Projects: July 2007.
- [31] Appendix B. "Selected State and County Goals, Objectives, Policies and Guidelines Related to Agricultural Lands."

## ***FIGURES***



**Figure 1**

Regional Location Map



**Kauhale Lani**

Source: USGS Quad Map



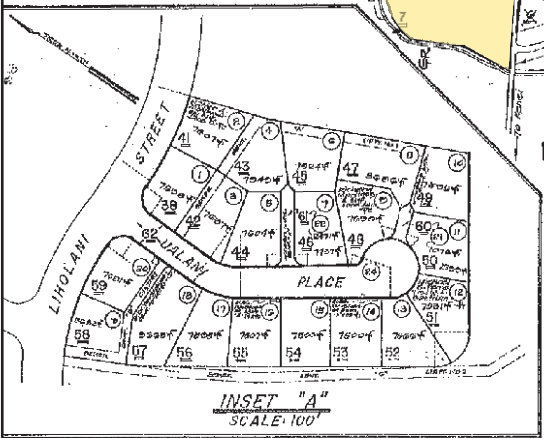
**CHRIS  
HART**  
& PARTNERS, INC.



**Project Site**

**Parcel 64**

**Parcel 7**



Part of KULA, MAKAWAO, MAUI.

Notes: This map is for information only. It is not intended to be used as a legal document. For more information, please contact the County of Maui.

SECOND DIVISION	
ZONE	SEC. PLAT
2	3 09
CONTAINING PARCELS	

**Figure 2**

Tax Map



**Kauhale Lani**

Source: State of Hawaii, 2006 Realty Atlas





**Figure 3**

Site Plan

**Kauhale Lani**

Source: CH&P

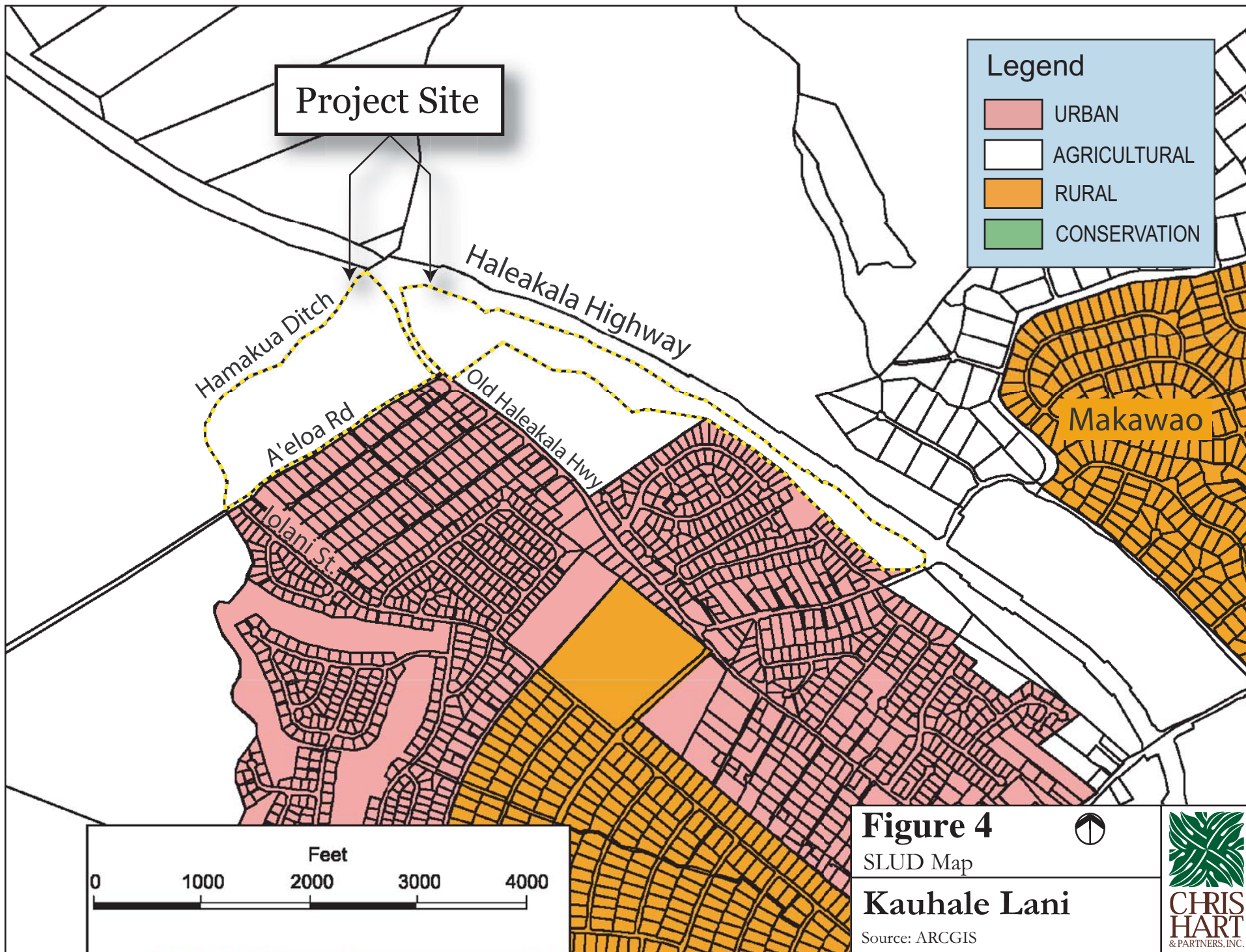


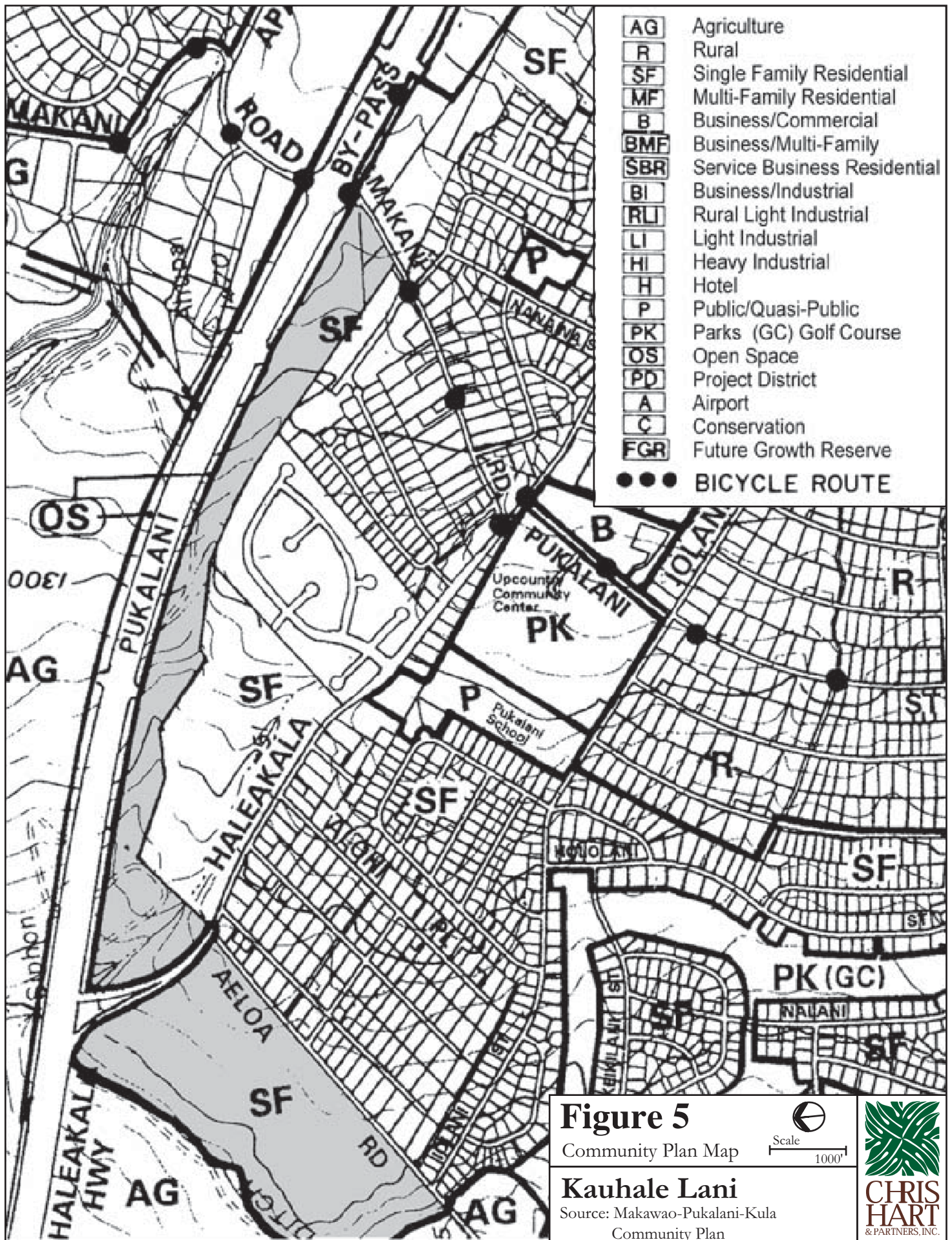
**CHRIS  
HART**  
& PARTNERS, INC.



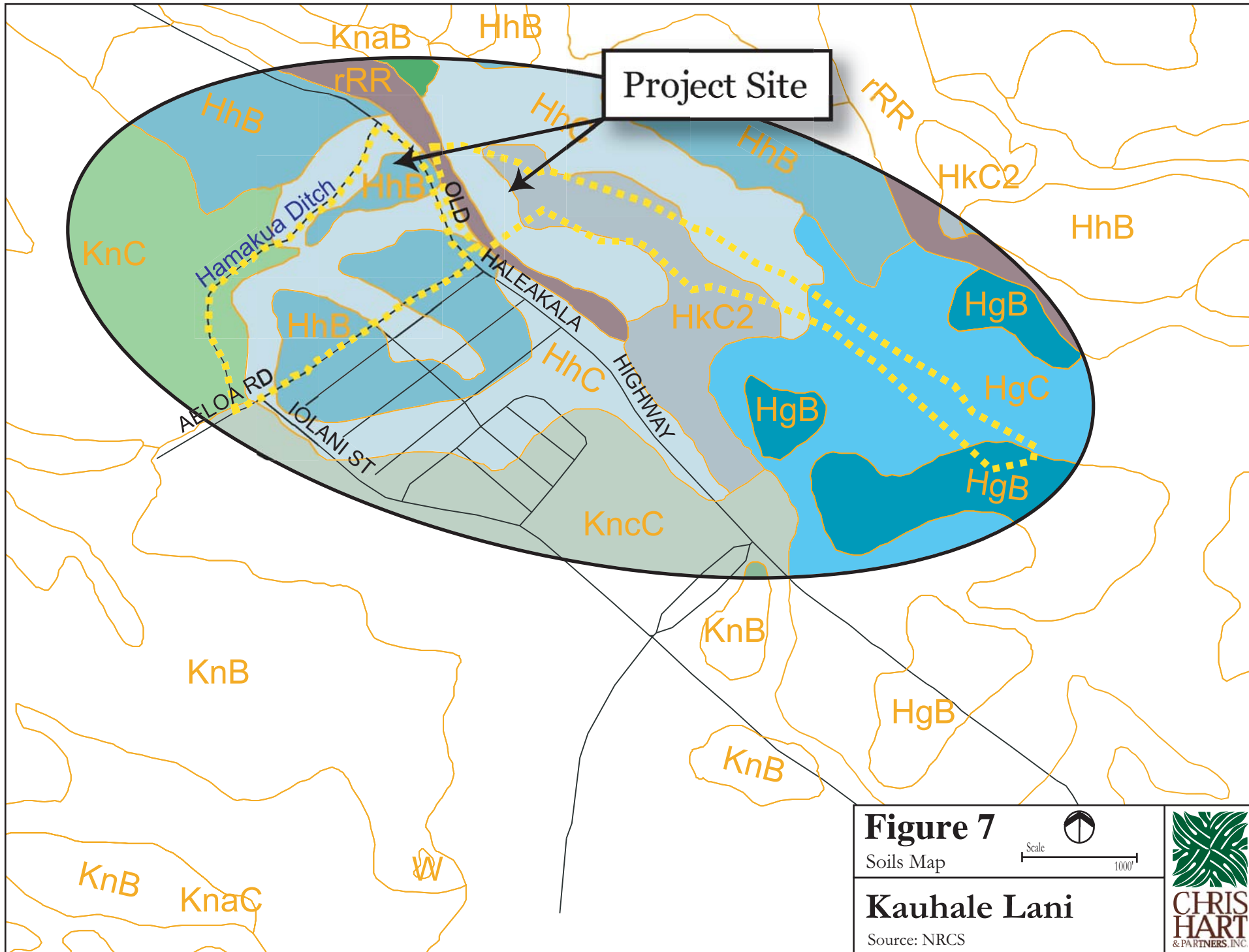
BAR SCALE  
0 50 100 200 300

SCALE: 1"=100'-0"









**Figure 7**

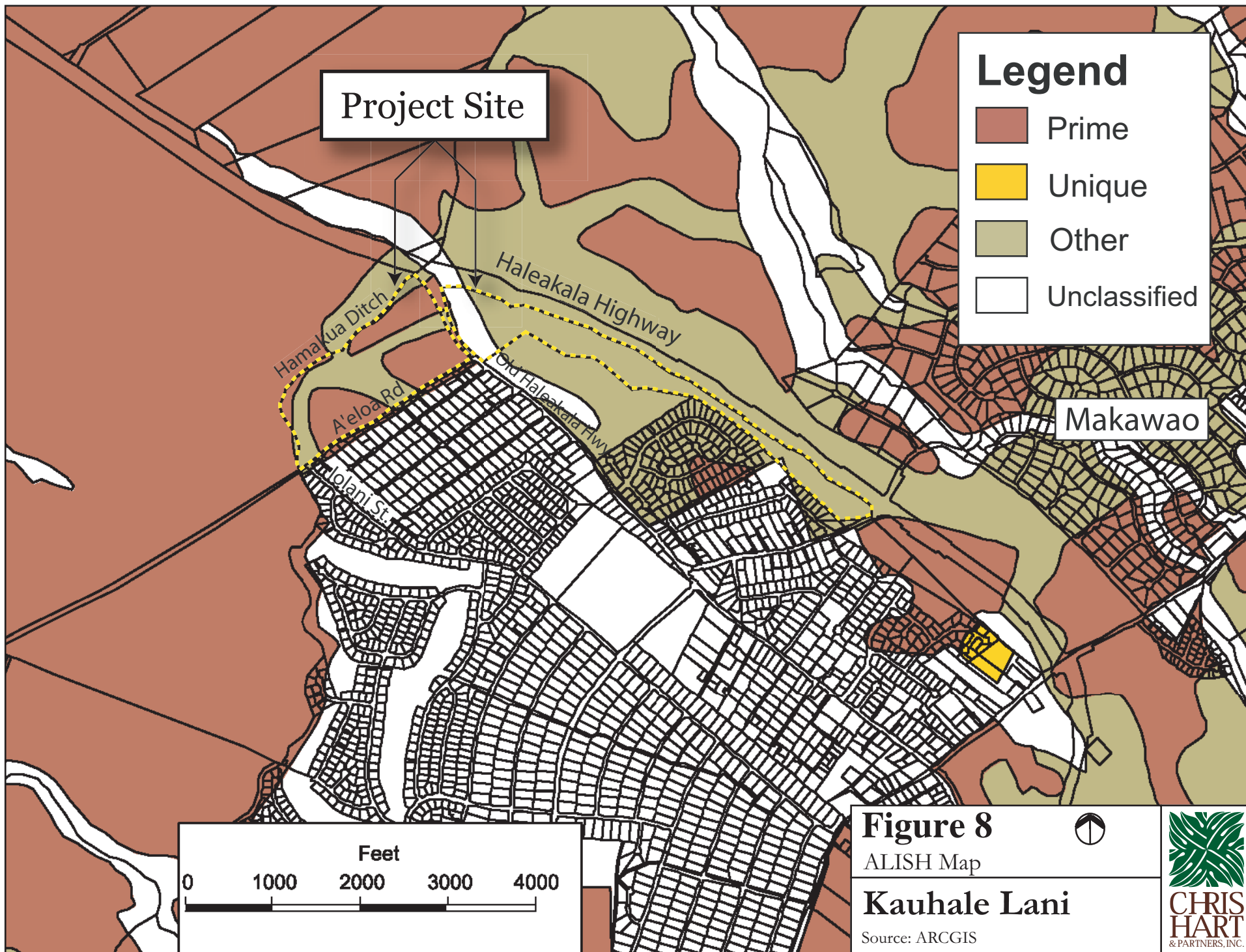
Soils Map

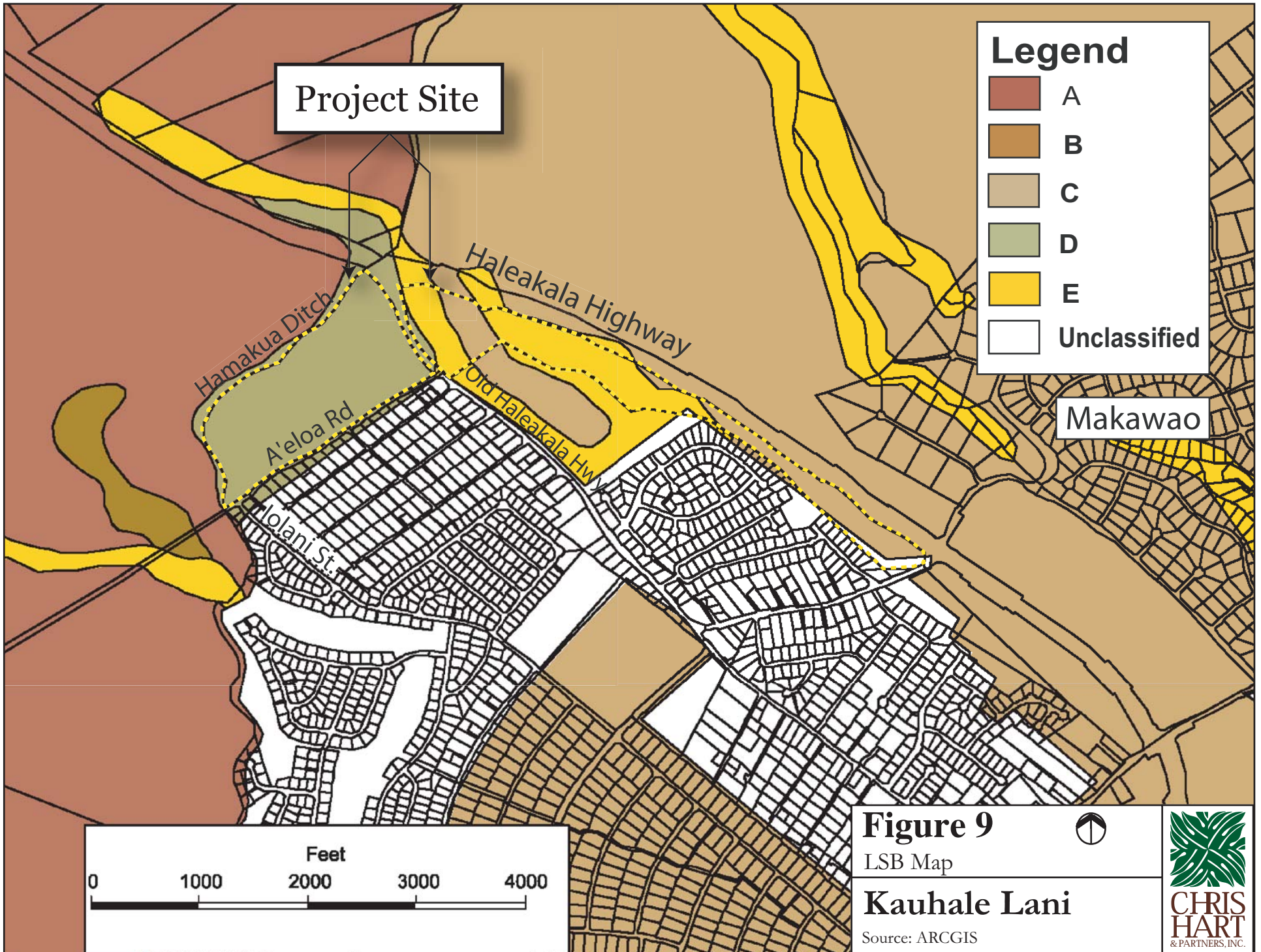


**Kauhale Lani**

Source: NRCS





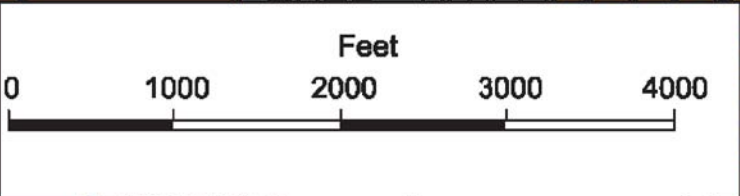


Project Site

**Legend**

- A
- B
- C
- D
- E
- Unclassified

Makawao



**Figure 9**

LSB Map

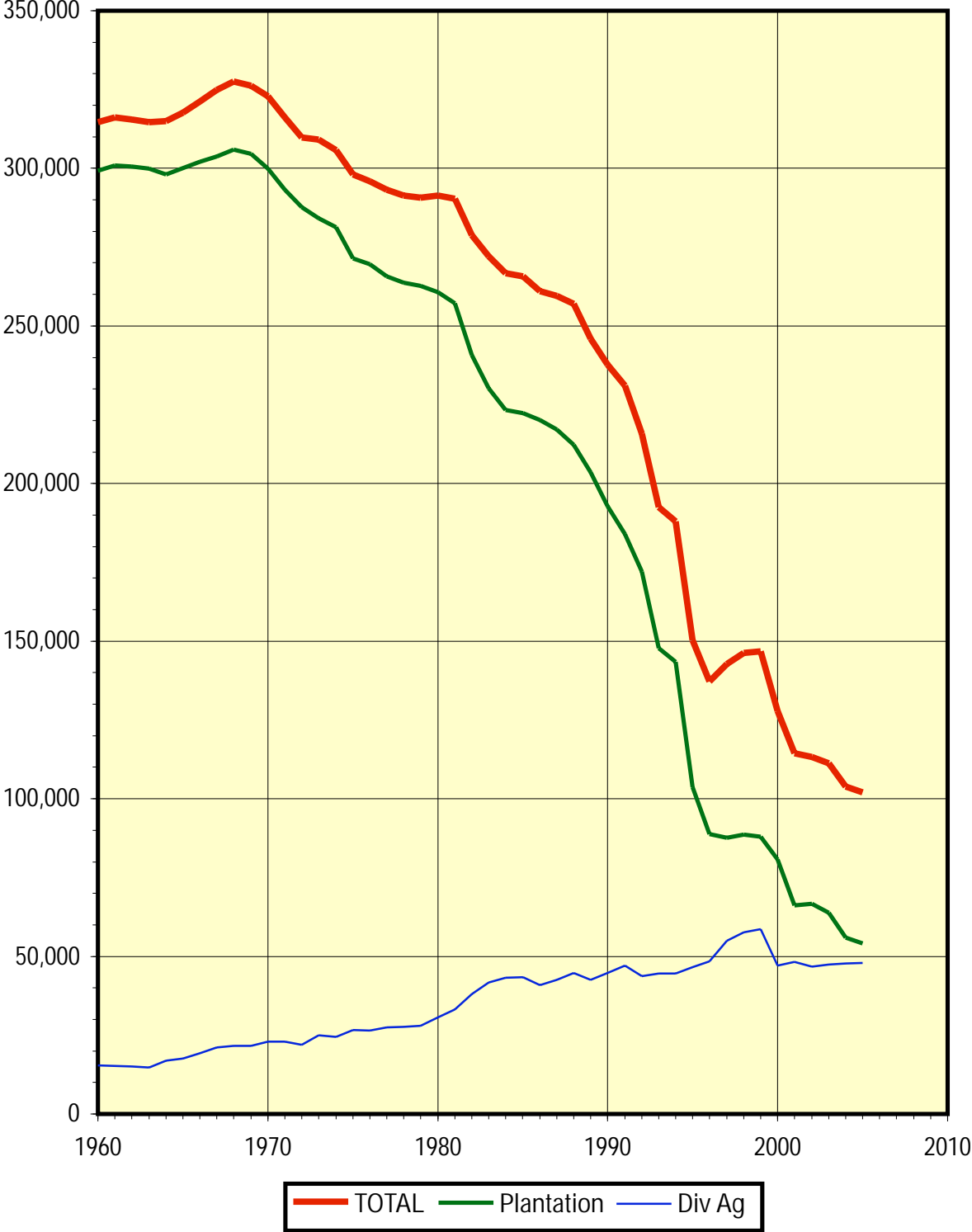
**Kauhale Lani**

Source: ARCGIS





Figure 11. Statewide Acreage in Crop: 1960 to 2005



## ***APPENDICES***

Appendix A. Maui Island Development Projects: July 2007

Project Location and Name	Entitlements	Homes or Units				Project Area		State Ag District	
		Single-family Homes	Multi-family Homes	Hotel & Time-share Units	Total	Total Project Area (acres)	Acres per Unit	Total (acres)	Adjusted (acres)
<u>West Maui</u>									
Ho'onanea	Committed		100		100	5	0.63	-	-
Honolua Ridge: Ph. 1&2	Committed	50			50	441	0.63	-	-
Intrawest Honua Kai (North Beach Lot 4)	Committed		700		700	n.e.	n.e.	-	-
Ka'anapali Coffee Farms	Committed	67			67	336	5.01	336	-
Ka'anapali Ocean Resort Villas (N.B. Lot 2)	Committed			516	516	11	0.02	-	-
Kaanapali Residences - Landtech: Parcel 10-H	Committed	18			18	n.e.	n.e.	-	-
Kapalua Affordable Units	Committed		42		42	6	0.14	-	-
Kapalua Bay	Committed			155	155	n.e.	n.e.	-	-
Kapalua Mauka Residential	Committed	690			690	n.e.	n.e.	-	-
Lanikeha Ka'anapali	Committed	132			132	110	0.83	-	-
Launiupoko: Mahanalua Nui: 1	Committed	131			131	438	3.34	438	-
Makila Farms Large Lots	Committed	38			38	458	12.05	458	-
Makila Plantation: Ph. 1 & 2	Committed	47			47	465	9.89	465	-
Makila Ridge: Large Lots	Committed	11			11	520	47.27	520	-
Marriott Maui Ocean Club Sequel Towers	Committed			148	148	n.e.	n.e.	-	-
Na Hale O Waiee: Ph. 2	Committed		26		26	5	0.19	5	5
Napili Kihune Homes	Committed	10			10	n.e.	n.e.	-	-
Opukea	Committed		114		114	4	0.04	-	-
Plantation Inn	Committed			14	14	n.e.	n.e.	-	-
Royal Lahaina Resort Revitalization	Committed			455	455	n.e.	n.e.	-	-
SunStone	Committed	5			5	n.e.	n.e.	-	-
Ukumehame Homes	Committed	44			44	280	6.36	280	-
Villages of Leialii	Committed	357			357	n.e.	n.e.	-	-
West Maui Breakers	Committed		90		90	n.e.	n.e.	-	-
Westin: (North Beach Lot 1)	Committed			177	177	14	0.08	-	-
Hyatt Regency Maui: Timeshare Project	Designated			131	131	n.e.	n.e.	-	-
Ka'anapali Ocean Resort Villas	Designated			390	390	16	0.04	-	-
Pu'ukoli'i Village Mauka	Designated	292	648		940	241	0.26	-	-
Ka'anapali 2020 Residences	Proposed	910	960		1,870	2,004	1.07	1,695	1,695
Kahoma Employee Housing	Proposed	60	12		72	17	0.24	17	17
Kahoma Lots	Proposed	300			300	876	2.92	874	-
Kamehameha Schools Ku'ia Residential Infill	Proposed	900			900	211	0.23	211	211
Makila Farms Residences	Proposed	2,000			2,000	n.e.	n.e.	755	755
Napilihau Mauka Residences	Proposed	10			10	n.e.	n.e.	-	-
Olowalu Mauka & Makai Plan	Proposed	1,500			1,500	631	0.42	609	609
Pineapple Ridge	Proposed	24			24	9	0.38	-	-
Pulelehua	Proposed	533	349		882	309	0.35	309	309
Waiee Villages	Proposed	401	464		865	193	0.22	184	184
<b>Total West Maui</b>		<b>8,530</b>	<b>3,505</b>	<b>1,986</b>	<b>14,021</b>	<b>7,600</b>		<b>7,156</b>	<b>3,785</b>

Appendix A. Maui Island Development Projects: July 2007

Project Location and Name	Entitlements	Homes or Units				Project Area		State Ag District	
		Single-family Homes	Multi-family Homes	Hotel & Time-share Units	Total	Total Project Area (acres)	Acres per Unit	Total (acres)	Adjusted (acres)
<u>North Maui</u>									
Kahui Pono Subdivision III	Committed	3			3	4	1.33	4	4
Krauss Subdivision	Committed	4			4	9	2.25	9	9
Maliko Bay Homes	Committed	8			8	45	5.63	45	-
Maliko Ranch Lots	Committed	3			3	10	3.33	10	-
Masaaki Doi Subdivision	Committed	3			3	36	12.00	33	-
Pe'ahi Farms at Opana Point	Committed	16			16	270	16.88	270	-
Pe'ahi Hui Lands	Committed	3			3	1	0.33	1	1
Pu'uomalei Rural Subdivision	Committed	3			3	n.e.	n.e.	-	-
Ross Subdivision	Committed	5			5	11	2.20	11	11
Wagner Subdivision	Committed	3			3	5	1.67	5	5
Pa'ia School Community Project District 1	Designated	330			330	n.e.	n.e.	-	-
Hamakuapoko Rural Res. A&B	Proposed	650			650	486	0.75	486	486
Kauhikoa Lots	Proposed	6			6	3	0.50	3	3
Kuau Residential A&B	Proposed	140			140	67	0.48	-	-
Pa'ia Rural Residences A&B	Proposed	525			525	360	0.69	360	360
<b>Total North Maui</b>		<b>1,702</b>	<b>-</b>	<b>-</b>	<b>1,702</b>	<b>1,307</b>		<b>1,237</b>	<b>879</b>

Appendix A. Maui Island Development Projects: July 2007

Project Location and Name	Entitlements	Homes or Units				Project Area		State Ag District	
		Single-family Homes	Multi-family Homes	Hotel & Time-share Units	Total	Total Project Area (acres)	Acres per Unit	Total (acres)	Adjusted (acres)
<u>Central Maui</u>									
'Aina o Kane Condos	Committed		100		100	2	n.e.	-	-
Cliffs at Kahakuloa	Committed	15			15	50	3.33	50	-
E Paepae Ka Pukoa: Spreckelsville	Committed	16			16	45	2.81	-	-
Hale Mua	Committed	466	-		466	238	0.51	117	117
Imi View Condos	Committed		28		28	1	0.04	-	-
Kahululi Town Center Redevelopment	Committed		442		442	n.e.	n.e.	-	-
Kehalani Project District 3	Committed	1,403	829		2,232	n.e.	n.e.	-	-
Malahi Ag Subdivision	Committed	10			10	72	7.20	69	-
Maluhia Country Ranches	Committed	48			48	450	9.38	450	-
Marriott Courtyard Hotel: Kahalua Airport	Committed			140	140	n.e.	n.e.	-	-
Maui Lani: Master Plan PD 1	Committed	3,163	502		3,665	1,085	0.30	76	76
Maui Palms Expansion	Committed			136	136	5	0.04	-	-
Na Mala O Waihee Homes	Committed	5			5	11	2.20	11	11
Pi'ihana Project District 2	Committed	95	440		535	73	0.14	5	5
Waiehu Aina	Committed	17			17	279	16.41	261	-
Waihee Mauka Ag Subdivision	Committed	16			16	113	7.06	113	-
Waihee Valley Large Lot Subdivision	Committed	24			24	373	15.54	373	-
Waikapu Gardens	Committed	410			410	95	0.23	95	95
Waikapu Ranch Ag Lots	Committed	8			8	46	5.75	46	-
Wailuku Country Estates	Committed	184			184	452	2.46	449	449
Waiolani Elua	Committed	25			25	n.e.	n.e.	-	-
Waiolani Mauka	Committed	104			104	n.e.	n.e.	-	-
Waiolani Pikaki	Committed	38			38	n.e.	n.e.	-	-
Winn 4-lot	Committed	4			4	152	38.00	152	-
Hale Ho'omanu Mental Health Kokua	Designated		6		6	n.e.	n.e.	-	-
Meo B.E.S.T. House	Designated		12		12	n.e.	n.e.	-	-
Waikapu Mauka Rural Lots	Designated	300			300	288	0.96	288	288
Central Maui Senior Housing	Proposed		40		40	n.e.	n.e.	-	-
Hale Kilinahe Project	Proposed	80			80	15	0.19	15	15
Kikuchi Residential at Wai'ale	Proposed	500			500	154	0.31	154	154
Pu'unani Residences	Proposed	310	240		550	210	0.38	210	210
Pu'unene Village A&B	Proposed	1,200			1,200	245	0.20	245	245
Spreckelsville Mauka A&B	Proposed	380			380	228	0.60	228	228
Valley Isle Fellowship Condos	Proposed		100		100	10	0.10	10	10
Wai'ale	Proposed	1,065	2,715		3,780	847	0.22	846	846
<b>Total Central Maui</b>		<b>9,886</b>	<b>5,454</b>	<b>276</b>	<b>15,616</b>	<b>5,539</b>		<b>4,263</b>	<b>2,749</b>

Appendix A. Maui Island Development Projects: July 2007

Project Location and Name	Entitlements	Homes or Units				Project Area		State Ag District	
		Single-family Homes	Multi-family Homes	Hotel & Time-share Units	Total	Total Project Area (acres)	Acres per Unit	Total (acres)	Adjusted (acres)
<u>South Maui</u>									
Alii Village Homes	Committed	27			27	n.e.	n.e.	-	-
Chambers Apartments	Committed		18		18	n.e.	n.e.	-	-
Cove Beach Villas	Committed		32		32	n.e.	n.e.	-	-
Garcia Makena Residences	Committed	10			10	5	0.50	5	5
Hale Mahaolu Ehiku	Committed		114		114	n.e.	n.e.	-	-
Hoollei Wailea MF-9	Committed		120		120	n.e.	n.e.	-	-
Hokulani Golf Villas	Committed	182	58		240	n.e.	n.e.	-	-
Honu Ala Hele	Committed	62			62	n.e.	n.e.	-	-
Hoohani Subdivision	Committed	28			28	n.e.	n.e.	-	-
Ilili Condos	Committed		4		4	n.e.	n.e.	-	-
Kai Ani Village	Committed		99		99	n.e.	n.e.	-	-
Kai Makani	Committed		112		112	n.e.	n.e.	-	-
Kai Malu Wailea Master	Committed		150		150	n.e.	n.e.	-	-
Kalama Heights: Ph 2	Committed		80		80	n.e.	n.e.	-	-
Kalama Hills	Committed	12			12	n.e.	n.e.	-	-
Kamali'i Alayna Estates	Committed	92			92	n.e.	n.e.	-	-
Kanani Wailea	Committed	38			38	n.e.	n.e.	-	-
Ke Ali'i Homes	Committed	95			95	n.e.	n.e.	-	-
Ke Ali'i Ocean Villas	Committed	14	144		158	n.e.	n.e.	-	-
Kenolio Leilani Subdiv	Committed	7			7	n.e.	n.e.	-	-
Kenolio Place	Committed	12			12	n.e.	n.e.	-	-
Kihei Hanalei Condominiums	Committed		4		4	n.e.	n.e.	-	-
Kihei Kauhale	Committed	26			26	n.e.	n.e.	-	-
Kilohana Hema	Committed	31			31	n.e.	n.e.	-	-
Landry Apts.	Committed		18		18	n.e.	n.e.	-	-
Liloa Village	Committed	65			65	n.e.	n.e.	-	-
Makena Condos	Committed		436		436	239	0.55	-	-
Maluaka Makena Condos	Committed		71		71	11	0.15	-	-
Maluhia at Wailea	Committed		15		15	n.e.	n.e.	-	-
Maui Lu Timeshare	Committed		388	400	788	n.e.	n.e.	-	-
MF-21 Subdiv Lots	Committed	7			7	22	3.14	22	-
Moana Estates	Committed	90			90	n.e.	n.e.	-	-
Naupaka Courtyard	Committed		78		78	9	0.12	-	-
One Palaua Bay PD 8	Committed	17			17	n.e.	n.e.	-	-
Osterstock Lots	Committed	7			7	n.e.	n.e.	-	-
Papaanui Lots	Committed	7			7	5	0.71	3	3
Paradise Ridge Estates	Committed		32		32	n.e.	n.e.	-	-
Wailaka Village Apts	Committed		18		18	1	0.06	-	-
Wailea Baccarat (Renaissance)	Committed			193	193	16	0.08	-	-
Wailea Beach Villas	Committed		105		105	n.e.	n.e.	-	-
Wailea MF-10	Committed		50		50	n.e.	n.e.	-	-
Wailea MF-11 Lots	Committed	12			12	n.e.	n.e.	-	-
Wailea MF-19 Lots	Committed	9			9	22	2.44	-	-

Appendix A. Maui Island Development Projects: July 2007

Project Location and Name	Entitlements	Homes or Units				Project Area		State Ag District	
		Single-family Homes	Multi-family Homes	Hotel & Time-share Units	Total	Total Project Area (acres)	Acres per Unit	Total (acres)	Adjusted (acres)
Wailea Villas (MF-4) (Papali)	Committed	25			25	n.e.	n.e.	-	-
Hale Pama Condos	Designated		6		6	n.e.	n.e.	-	-
Honua'ula Master Plan, PD 9	Designated	560	840		1,400	584	0.42	584	584
Ka Ono Ulu Villas, Phase V	Designated	18			18	9	0.50	-	-
Kaiwahine Lots	Designated	47			47	10	0.21	10	10
Kilohana Mauka	Designated	73			73	n.e.	n.e.	-	-
Kilohana Waena	Designated	31			31	n.e.	n.e.	-	-
Ma'alaea Mauka Residential Project District 12	Designated	1,150			1,150	257	0.22	262	262
Ma'alaea Village A&B Project District 11	Designated	2,000			2,000	808	0.40	765	765
Makena Residences	Designated	669			669	607	0.91	-	-
Makena Resort Hotel	Designated			545	545	718	1.32	31	31
Ohukai Village (designated)	Designated	768	160		928	230	0.25	230	230
One Wailea Dev.	Designated	20			20	24	1.20	-	-
Ka'ono'ulu Village	Proposed	1,522	895		2,417	651	0.27	651	651
Kalani Condos Makena	Proposed		4		4	1	0.25	1	1
Kamaole Heights	Proposed		98	24	122	n.e.	n.e.	-	-
Kamaole Mauka Village	Proposed	364			364	540	1.48	540	540
Kamaole Village	Proposed	1,216	400		1,616	295	0.18	295	295
Kihei Kaiwahine Res. A&B	Proposed	600			600	114	0.19	114	114
Kulanihakoi Residences	Proposed		231		231	39	0.17	39	39
Maui Palisades	Proposed	300			300	146	0.49	146	146
Nellie's on Maui	Proposed			4	4	1	0.25	-	-
Ohukai Village (proposed)	Proposed	70	56		126	64	0.51	64	64
Waiakoa Homes A&B	Proposed	1,700			1,700	260	0.15	260	260
Waiohuli Village	Proposed	616	512		1,128	355	0.31	355	355
<b>Total South Maui</b>		<b>12,599</b>	<b>5,348</b>	<b>1,166</b>	<b>19,113</b>	<b>6,043</b>		<b>4,377</b>	<b>4,355</b>

Appendix A. Maui Island Development Projects: July 2007

Project Location and Name	Entitlements	Homes or Units				Project Area		State Ag District	
		Single-family Homes	Multi-family Homes	Hotel & Time-share Units	Total	Total Project Area (acres)	Acres per Unit	Total (acres)	Adjusted (acres)
<u>Upcountry Maui</u>									
A.L. & P. Phillips Subdivision	Committed	3			3	11	3.67	11	-
Abner Delima Subdivision	Committed	3			3	6	2.00	6	6
Bayong Subdivision	Committed	3			3	8	2.67	8	-
Blackburn Subdivision	Committed	5			5	n.e.	n.e.	-	-
Cameron Kaluanui Subdivision	Committed	3			3	n.e.	n.e.	-	-
DeRego Subdivision	Committed	7			7	59	8.43	59	-
Erehwon Estates Subdivision	Committed	7			7	40	5.71	40	-
Freitas Subdivision	Committed	4			4	3	0.75	-	-
Grove Ranch Lots	Committed	9			9	50	5.56	50	-
Haleakala Homesteads A	Committed	3			3	7	2.33	7	7
Haleakala Homesteads B	Committed	12			12	83	6.92	83	-
Hali imaille Approved Residential	Committed	148			148	69	0.47	8	8
Jacaranda Hill	Committed	3			3	2	0.67	2	2
Joan Feiteira Subdivision	Committed	3			3	24	8.00	24	-
Kealahou 1 & 2 Homesteads	Committed	7			7	16	2.29	7	7
Keokea/Waiohuli Subdivision DHHL	Committed	406			406	445	1.10	445	445
Kulamalu Mauka Res.	Committed	14			14	n.e.	n.e.	-	-
Kulamanu Estates Phase 1	Committed	40			40	n.e.	n.e.	-	-
Kulamanu Estates Phase 2 Jacaranda Grove	Committed	13			13	n.e.	n.e.	-	-
Kulumanu Ridge Ridge at Kulumanu	Committed	57			57	n.e.	n.e.	-	-
Maha Village Subdivision	Committed	24			24	n.e.	n.e.	-	-
Mary Decambra Subdivision	Committed	3			3	n.e.	n.e.	-	-
Mau-Wikoli Subdivision	Committed	3			3	7	2.33	7	7
Piihola Farms Subd.	Committed	10			10	23	2.30	23	23
Stice Subdivision	Committed	3			3	n.e.	n.e.	-	-
Waiakoa Ranch lots	Committed	86			86	1,800	20.93	1,800	-
Waiohuli Hikina Subdivision (Kula Res 1,2) DHHL	Committed	36			36	261	7.25	261	-
Waiohuli Lot 134 (Kula Res 1,2) DHHL	Committed	4			4	200	50.00	200	-
Waiohuli Uka Subdivision (Kula Res 1,2) DHHL	Committed	56			56	192	3.43	192	-
Wilfred "Hoopai" Phillips Subd	Committed	3			3	2	0.67	2	2
Kauhale Lani Subdivision	Designated	170			170	89	0.50	89	89
Kula Lodge: Project District 1	Designated			15	15	n.e.	n.e.	-	-
Silversword Inn: Project Disitric 2	Designated			12	12	n.e.	n.e.	-	-
Hali imaille Expansion A&B400	Proposed	1,200			1,200	353	0.29	351	351
Hali imaille Expansion ML&P 348	Proposed	1,500			1,500	441	0.29	421	421
Kualono by Hanohano	Proposed	49			49	14	0.29	14	14
Kula Ridge Affordable Homes	Proposed	116			116	48	0.41	48	48
Kula Ridge Mauka, Ag Subdivision	Proposed	25			25	273	10.92	273	-
Kula Senior Housing	Proposed		36		36	n.e.	n.e.	-	-
<b>Total Upcountry Maui</b>		<b>4,038</b>	<b>36</b>	<b>27</b>	<b>4,101</b>	<b>4,526</b>		<b>4,431</b>	<b>1,430</b>



Appendix A. Maui Island Development Projects: July 2007

Project Location and Name	Entitlements	Homes or Units				Project Area		State Ag District	
		Single-family Homes	Multi-family Homes	Hotel & Time-share Units	Total	Total Project Area (acres)	Acres per Unit	Total (acres)	Adjusted (acres)
<u>East Maui</u>									
Hamoia Beach Subdivision	Committed	3			3	2	0.67	1	1
Hana Com. Health Ctr. Exp.	Committed		21		21	n.e.	n.a.	-	-
Hana Ranch Affordable Housing	Committed	288			288	38	0.13	38	38
Hana Ranch Store	Committed				-	39	n.a.	3	3
Hana Substation Subdivision	Committed	3			3	25	8.33	20	-
Honomalee Subdivision	Committed	8			8	42	5.25	42	-
Nahiku Farm Lots Subdivision	Committed	26			26	184	7.08	184	-
Wakiu Hana Homes: DHHL	Committed	102			102	724	7.10	724	-
Garden of Eden Arboretum	Proposed	3			3	30	10.00	30	-
Halani Gardens 2 Self Help Housing Corp	Proposed	14			14	6	0.43	6	6
<b>Total East Maui</b>		<b>447</b>	<b>21</b>	<b>-</b>	<b>468</b>	<b>1,090</b>		<b>1,048</b>	<b>48</b>
<b>TOTAL MAUI ISLAND</b>		<b>37,202</b>	<b>14,364</b>	<b>3,455</b>	<b>55,021</b>	<b>26,105</b>		<b>22,512</b>	<b>13,246</b>

n.e.: not estimated (i.e., acreages were not estimated for projects that do not involve agricultural land)

n.a.: not applicable (i.e., units per acre were not calculated for industrial and commercial projects)

Source: Maui County Planning Department. November 2007.

**APPENDIX B**  
**SELECTED STATE AND COUNTY GOALS,**  
**OBJECTIVES, POLICIES AND GUIDELINES**  
**RELATED TO AGRICULTURAL LANDS**

**1. HAWAII STATE CONSTITUTION** (Article XI, Section 3):

...to conserve and protect agricultural lands, promote diversified agriculture, increase agricultural self-sufficiency and assure the availability of agriculturally suitable lands...

**2. HAWAII STATE PLAN** (Chapter 226, Hawaii Revised Statutes, as amended):<sup>[1,2]</sup>

**Section 226-7 Objectives and policies for the economy--agriculture.**

- (a) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:
  - (1) Viability in Hawaii's sugar and pineapple industries.
  - (2) Growth and development of diversified agriculture throughout the State.
  - (3) An agriculture industry that continues to constitute a dynamic and essential component of Hawaii's strategic, economic, and social well-being.
- (b) To achieve the agricultural objectives, it shall be the policy of the State to:
  - (2) Encourage agriculture by making best use of natural resources.
  - (10) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.
  - (16) Facilitate the transition of agricultural lands in economically nonfeasible agricultural production to economically viable agricultural uses.

**Section 226-103 Economic priority guidelines.**

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

- (d) Priority guidelines to promote the growth and development of diversified agriculture and aquaculture:
  - (1) Identify, conserve, and protect agricultural and aquacultural lands of importance and initiate affirmative and comprehensive programs to promote economically productive agricultural and aquacultural uses of such lands.
  - (10) Support the continuation of land currently in use for diversified agriculture.

**Section 226-104 Population growth and land resources priority guidelines.**

- (b) Priority guidelines for regional growth distribution and land resource utilization:
  - (2) Make available marginal or non-essential agricultural lands for appropriate urban uses while maintaining agricultural lands of importance in the agricultural district.

**Section 226-106 Affordable Housing**

Priority guidelines for the provision of affordable housing:

- (1) Seek to use marginal or nonessential agricultural land and public land to meet housing needs of low- and moderate-income and gap-group households.

**3. AGRICULTURAL STATE FUNCTIONAL PLAN (1991)<sup>[3]</sup>**

(Functional plans are guidelines for implementing the State Plan. They are approved by the Governor, but not adopted by the State Legislature.)

Objective H: Achievement of Productive Agricultural Use of Lands Most Suitable and Needed for Agriculture.

Policy H(2): Conserve and protect important agricultural lands in accordance with the Hawaii State Constitution.

Action H(2)(a): Propose enactment of standards and criteria to identify, conserve, and protect important agricultural lands and lands in agricultural use.

Action H(2)(c): Administer land use district boundary amendments, permitted land uses, infrastructure standards, and other planning and regulatory functions on important agricultural lands and lands in agricultural use, so as to ensure the availability of agriculturally suitable lands and promote diversified agriculture.

#### **4. COUNTY OF MAUI GENERAL PLAN 1990<sup>[4]</sup>**

##### **Theme No. 1: PROTECT MAUI COUNTY'S AGRICULTURAL LAND AND RURAL IDENTITY**

Amendments to the General Plan will preserve agricultural lands for the continuing pursuits of both land intensive and labor intensive agricultural pursuits. This action will also achieve preservation of an open space resource.

##### **I. POPULATION, LAND USE, THE ENVIRONMENT AND CULTURAL RESOURCES**

##### **B. LAND USE**

##### **Objective**

3. To preserve lands that are well suited for agricultural pursuits.

##### **Policies**

- a. Protect prime agricultural lands from competing nonagricultural land uses.
- b. Promote the use of agricultural lands for diversified agricultural pursuits by providing public incentives and encouraging private initiative.
- c. Support the right to farm consistent with the identification of productive agricultural lands.
- d. Discourage the conversion, through zoning or other means, of productive or potentially productive agricultural lands to nonagricultural uses, including but not limited to golf courses and residential subdivisions.
- e. Provide adequate irrigation water and access to agricultural lands.

##### **II. ECONOMIC ACTIVITY**

##### **C. AGRICULTURE**

##### **Objective**

1. To foster growth and diversification of agriculture and aquaculture throughout Maui County.

##### **Policies**

- a. Support programs to maintain the viability of the sugar and pineapple industry.
- b. Support and promote programs to maintain the viability of diversified agriculture, specialty crops, forestry and aquaculture.

**Objective**

2. To maximize the use and yield of productive agricultural land throughout the County.

**Policies**

- a. Ensure the availability of land that is well suited for agricultural production.
- b. Encourage the development of agricultural parks throughout Maui County.
- f. Support "right-to-farm" provisions in the event potential conflicts arise from adjacent residential uses.
- g. Discourage establishment of pseudo-agricultural subdivisions.

**5. COUNTY OF MAUI, MAKAWAO-PUKALANI-KULA COMMUNITY PLAN<sup>[5]</sup>**

**B. Goals, Objectives and Policies**

**ECONOMIC ACTIVITY**

**Objectives and Policies**

1. Provide for the preservation and enhancement of agricultural lands and operations, emphasizing the importance of promoting diversified agriculture to the region's economic base and lifestyle.
3. Protect existing agricultural operations from urban encroachment.
9. Encourage the continuation of sugar, pineapple, cattle ranching, and diversified agriculture as major agricultural activities in the region and at the same time encourage the pursuit of alternative agricultural industries.

**Implementing Actions**

9. Encourage the continuation of sugar, pineapple, cattle ranching, and diversified agriculture as major agricultural activities in the region and at the same time encourage the pursuit of alternative agricultural industries.

**LAND USE**

**Objectives and Policies**

1. Recognize the value of open space, including agricultural lands and view planes to preserve the region's rural character.
2. Establish land use patterns which recognize the "Right to Farm," in order to minimize conflicts between existing agricultural operations and urban-related activities.
3. Discourage speculation in agricultural lands.

4. Encourage land use patterns which will: support the long-term viability of agriculture.
5. Encourage and support the development of land use performance and subdivision standards such as cluster development which will encourage viable farm operations and discourage estate subdivisions on agricultural lands such as Kula 200 or Kula Glen.
6. Encourage new residential developments in areas which are contiguous extensions of, or infills within the established residential pattern, and which do not adversely affect agricultural uses.
9. Encourage the use of mechanisms such as land trusts and farm trusts to preserve open space and agricultural activity.
11. Make available agricultural lands for those who wish to farm.
16. Recognize the four (4) semi-urban centers of Makawao Town, Pukalani, Hali'imaile and Waiakoa Village. Within them, support the following land use and circulation patterns:
  - c. Within Hali'imaile: Existing agricultural operations and baseyard.
  - d. Within and surrounding Waiakoa: Agricultural uses and open space.

#### ENVIRONMENT

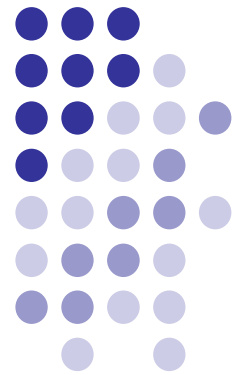
1. Preserve environmental resources by maintaining important agricultural lands as an integral part of the open space setting in each community.
2. Recognize agricultural lands as an essential ingredient to the Upcountry atmosphere. Criteria for determining such lands may include:
  - Land Study Bureau productivity ratings for agricultural lands.
  - Lands presently in cultivation.
  - Agricultural Lands of Importance to the State of Hawaii (ALISH).

#### **6. REFERENCES**

- [1] State of Hawaii, Office of State Planning, Office of the Governor. *The Hawaii State Plan, 1991*. Honolulu, Hawaii. 1991.
- [2] Act 25, S.B. No. 1158, April 15, 1993.
- [3] Hawaii Department of Agriculture. *The Hawaii State Plan: Agriculture, State Functional Plan*. Honolulu, Hawaii. 1991.
- [4] County of Maui. *The General Plan of the County of Maui, 1990 Update*. Adopted by Ordinance No. 2039, as amended by Ordinance No. 2234. April 23, 1993
- [5] County of Maui. *Makawao-Pukalani-Kula Community Plan*. Maui County Council. July 1996.

**Appendix H:  
Phase I, Environmental  
Site Assessment**

July 30, 2008



**PHASE I  
ENVIRONMENTAL SITE ASSESSMENT**

**TMK 223009007**

Intersection of Old and New Haleakala Highways  
Pukalani, Hawaii 96788

Partner Project No. 079898

Prepared for

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**c/o CHING YUEN, ESQ., & MORIKAWA**  
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## EXECUTIVE SUMMARY

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in general accordance with the scope of work and limitations of ASTM Standard Practice E1527-05, the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) and set forth by William W.L. Yuen, Esq. for the property located at the southwest intersections of Old and New Haleakala Highways, TMK 223009007 in Pukalani, County of Maui, Hawaii (the “subject property”). The Phase I Environmental Site Assessment is designed to provide William W.L. Yuen, Esq. and his client with an assessment concerning environmental conditions (limited to those issues identified in the report) as they exist at the subject property.

### *Property Description*

The subject property is located at the southwest intersections of Old and New Haleakala Highways and bounded by the Aeloa Road right-of-way to the south and the New Hamakua Ditch to the west and northwest. The property is located in a mixed agricultural and residential area of Pukalani. Please refer to the table below for further description of the subject property:

Address:	N/A
Tax Map Key (TMK):	223009007
Nature of Use :	Vacant, fallow land
Number of Buildings:	None
Land Acreage (Ac):	49.99 Ac
Current Tenants:	None; however, the property is currently owned by Pukalani Associates, LLC

Currently, no structures, parking improvements, or landscaping areas are developed on the subject property.

The immediately surrounding properties consist of Old Haleakala Highway to the north and northeast, beyond which are sugar cane fields to the north; a vacant fallow parcel to the northeast; and a natural attenuating gulch (unnamed) to the east; the developed portion of Aeloa Road is to the south, beyond which are single-family residential dwellings. Hamakua Ditch, an irrigation waterway, borders the west-northwest edges of the property, beyond which are sugar cane fields.

According to historical sources and a previous report reviewed (PBR Hawaii, 2005), the subject property was formerly developed as a pineapple plantation from as early as the 1920s to circa 2003 and was most recently operated by Maui Pineapple Company, Ltd. (Maui Pineapple Co.). From 2003 to present, the subject property has been vacant fallow land.

According to the United States Geological Society (USGS) National Water Information System and topographic map interpretation, the depth and direction of groundwater in the vicinity of the subject property is inferred to be present at approximately 37 feet below ground surface (bgs) and flow to the northwest.

### ***Findings***

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substance or petroleum product 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 term REC includes hazardous substances and petroleum products even under conditions that might be in compliance with laws. The term is not intended to include "de minimis" conditions that do not present a threat to human health and/or the environment and that would not be subject to an enforcement action if brought to the attention of appropriate governmental agencies. The following was identified during the course of this investigation:

- The subject property was formerly developed as a pineapple plantation from as early as the 1920s to circa 2003; and vacant fallow land from circa 2003 to present. According to information provided by William W.L. Yuen, Esq. (representative of the subject property owner), the historic tenant, Maui Pineapple Co., utilized various fertilizers, pesticides, fungicides, herbicides, and plant growth regulators in association with the former agricultural use of the property. The quantities used onsite and frequency of application of these products is not known and was not provided by the previous owner, Maui Land & Pineapple Company, Inc. (Maui Land & Pine). Based on the former agricultural use of the subject property, there is a potential that residual concentrations of agricultural chemicals remain in the soil.

A *historical recognized environmental condition (HREC)* refers to an environmental condition which would have been considered a REC in the past, but which may or may not be considered a REC currently. The following was identified during the course of this investigation:

- Partner did not identify any historical recognized environmental conditions during the course of this investigation.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, require discussion. The following was identified during the course of this investigation:

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, require discussion. The following was identified during the course of this investigation:

- During the onsite reconnaissance, Partner observed two (2) presumed PVC pipes extending approximately 3 to 4 feet above the ground surface within the center of the parcel. No

indications of easements were noted in the review of the preliminary title for the subject property parcel. Partner attempted to contact the Gas Company to determine the potential presence of any underground natural gas lines that may be present within the area. No response was received as of this writing. No additional information pertaining to nature of use of these features was available for review during the course of this investigation, including information provided by the current owner representatives. It is possible that these pipes are remnant features left from the previous occupancy and used for irrigation purposes of the land and are therefore not expected to represent a significant concern.

### ***Conclusions, Opinions, and Recommendations***

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-05 of the southwest intersections of Old and New Haleakala Highways, TMK 223009007 in Pukalani, County of Maui, Hawaii (the “subject property”). Any exceptions to or deletions from this practice are described in Section 1.4 of this report. This assessment has revealed evidence of recognized environmental conditions in connection with the subject property. Based on the former agricultural use of the subject property, there is a potential that residual concentrations of agricultural chemicals remain in the soil. These materials are likely limited to the near surface soils. Site redevelopment and grading activities will serve as a mitigating factor as these soils will be mixed with fill material. Based on the future redevelopment for residential use, it would be prudent to conduct soils sampling and testing in order to confirm the absence or presence of historical fertilizer or pesticides in reportable concentrations.

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**FIGURES**

**Figure 1-** Site Location Map

**Figure 2-** Site Plan

**Figure 3-** Aerial Photographs

**APPENDICES**

**Appendix A-** Site Photographs

**Appendix B-** References

**Appendix C-** Regulatory Database Report

**Appendix D-** Qualifications

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## 1.0 INTRODUCTION

Partner has performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM Standard Practice E1527-05 and AAI for the property located at the southwest intersections of Old and New Haleakala Highways, TMK 223009007 in Pukalani, County of Maui, Hawaii. Any exceptions to, or deletions from, this scope of work are described in the report.

### 1.1 Purpose

The purpose of this Phase I Environmental Site Assessment (“ESA”) is to identify existing or potential Recognized Environmental Conditions (as defined by ASTM Standard E-1527-05) affecting the subject property that: 1) constitute or result in a material violation or a potential material violation of any applicable environmental law; 2) impose any material constraints on the operation of the subject property or require a material change in the use thereof; 3) require clean-up, remedial action or other response with respect to Hazardous Substances or Petroleum Products on or affecting the subject property under any applicable environmental law; 4) may affect the value of the subject property, and; 5) may require specific actions to be performed with regard to such conditions and circumstances. The information contained in the ESA Report will be used by Client to: 1) evaluate its legal and financial liabilities for transactions related to foreclosure, purchase, sale, loan origination, loan workout or seller financing, 2) evaluate the subject property’s overall development potential, the associated market value and the impact of applicable laws that restrict financial and other types of assistance for the future development of the subject property, and/or; 3) determine whether specific actions are required to be performed prior to the foreclosure, purchase, sale, loan origination, loan workout or seller financing of the subject property.

This ESA was performed to permit the *User* to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) liability (hereinafter, the “*landowner liability protections*,” or “*LLPs*”). ASTM Standard E-1527-05 constitutes “*all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice” as defined at 42 U.S.C. §9601(35)(B).

### 1.2 Scope of Work

The scope of work for this ESA is in general accordance with the requirements of ASTM Standard E 1527-05. This assessment included: 1) a property and adjacent site reconnaissance; 2) interviews with key personnel; 3) a review of historical sources; 4) a review of regulatory agency records; and 5) a review of a regulatory database report provided by a third-party vendor.

If requested by Client, this report may also include the identification, discussion of, and/or limited sampling of asbestos-containing materials (ACMs), lead-based paint (LBP), mold, and/or radon.

### **1.3 Limitations**

Partner warrants that the findings and conclusions contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work. These methodologies are described as representing good commercial and customary practice for conducting an ESA of a property for the purpose of identifying recognized environmental conditions. There is a possibility that even with the proper application of these methodologies there may exist on the subject property conditions that could not be identified within the scope of the assessment or which were not reasonably identifiable from the available information. Partner believes that the information obtained from the record review and the interviews concerning the site is reliable. However, Partner cannot and does not warrant or guarantee that the information provided by these other sources is accurate or complete. The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. The conclusions presented in the report are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed-upon services or the time and budgeting restraints imposed by the Client. No other warranties are implied or expressed.

Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This report is subject to the limitations of historical documentation, availability, and accuracy of pertinent records, and the personal recollections of those persons contacted.

This practice does not address requirements of any state or local laws or of any federal laws other than the all appropriate inquiry provisions of the LLPs. Further, this report does not intend to address all of the safety concerns, if any, associated with the subject property.

Environmental concerns, which are beyond the scope of a Phase I ESA as defined by ASTM include the following: asbestos-containing materials, lead-based paint, radon, and lead in drinking water. These issues may affect environmental risk at the subject property and may warrant discussion and/or assessment; however, are considered non-scope issues. If specifically requested by the Client, these non-scope issues are discussed in Section 6.3.

### **1.4 User Reliance**

All reports, both verbal and written, are for the sole use and benefit of William W.L. Yuen, Esq. and his client. This report has no other purpose and may not be relied upon by any other person or entity without the written consent of Partner.



## 1.5 Limiting Conditions

The findings and conclusions contain all of the limitations inherent in these methodologies that are referred to in ASTM E1527-05.

Specific limitations and exceptions to this ESA are more specifically set forth below:

- Interviews with past owners (including Maui Land & Pine), operators and occupants were not reasonably ascertainable and thus constitute a data gap.
- Pursuant to ASTM Standard E1527 06 Section 7.1.4.2, information that is obtainable within a reasonable time frame is information that will be provided by the source within 20 calendar days of receiving a public information request. Based on the expected response time of over 20 calendar days for the Maui County Department of Environmental Health and Maui Fire Prevention, records from these agencies are not considered reasonably ascertainable. However, based on other historical sources reviewed, this limitation is not expected to alter the overall findings of this report.
- Due to the size of the subject property parcel, Partner performed a site inspection of the property utilizing a field technique of traversing the site in an attempt to provide an overlapping field of view. Due to the size of the property and vegetation present onsite, isolated areas of the site may not have been accessible for direct observation during Partner's inspection. This limitation is not expected to alter the findings of this report.

Due to time constraints associated with this report, the Client has requested the report despite the above-listed limitations.

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## 2.0 SITE DESCRIPTION

### 2.1 Site Location and Legal Description

The subject property is located at the southwest intersections of Old and New Haleakala Highways and bounded by the Aeloa Road right-of-way to the south and the New Hamakua Ditch to the west and northwest. The property is located in a mixed agricultural and residential area of Pukalani. Please refer to the table below for further description of the subject property:

Address:	N/A
Tax Map Key (TMK):	223009007
Nature of Use :	Vacant, fallow land
Number of Buildings:	None
Land Acreage (Ac):	49.99 Ac
Current Tenants:	None; however, the property is currently owned by Pukalani Associates, LLC

Currently, no structures, parking improvements, or landscaping areas are developed on the subject property.

The immediately surrounding properties consist of Old Haleakala Highway to the northeast, beyond which is a vacant fallow parcel to the northeast and a natural attenuating gulch (unnamed) to the east; the developed portion of Aeloa Road is to the south, beyond which are single-family residential dwellings. Hamakua Ditch, an irrigation waterway, borders the west-northwest edges of the property, beyond which are sugar cane fields.

The subject property was not identified in the regulatory database report as further discussed in Section 4.2.

Please refer to Figure 1: Site Location Map, Figure 2: Site Plan, and Appendix A: Site Photographs.

### 2.2 Current Property Use

The subject property was formerly used agriculturally for the cultivation of pineapples from the early 1920s until circa 2003. Currently, the subject property is vacant, undeveloped fallow land. Areas of debris which included old appliances, tires, and rubbish were observed strewn about the property. No staining or evidence of dumping of hazardous materials was noted during the site walk.

## 2.3 Current Use of Adjoining Properties

The subject property is located in a mixed agricultural and residential area of Pukalani. During the vicinity reconnaissance, Partner observed the following land use on properties in the immediate vicinity of the subject property:

### *Immediately surrounding properties*

Direction	Adjacent Property
North-Northeast	Old Haleakala Highway, beyond which are sugar cane fields to the north; a vacant fallow parcel to the northeast; and a natural attenuating gulch (unnamed) to the east
South	Aeloa Road, beyond which are single-family residential dwellings
East	Old Haleakala Highway, beyond which is a vacant fallow parcel
West and Northwest	Hamakua Ditch, an irrigation waterway, borders the west-northwest edges of the property, beyond which are sugar cane fields

The adjacent sites were not identified in the regulatory database as is further discussed in Section 4.2.

## 2.4 Physical Setting Sources

### 2.4.1 Topography

The United States Geological Survey (USGS), Paia Quadrangle 7.5 minute series topographic map was reviewed for this ESA. According to the contour lines on the topographic map, the subject property is located between approximately 1,075 and 1,181 feet above mean sea level (MSL). The contour lines in the area of the subject property indicate the area is sloping moderately to the northwest.

Please refer to Figure 1: Site Location Map.

### 2.4.2 Hydrology

According to the United States Geological Society (USGS) National Water Information System and topographic map interpretation, the depth and direction of groundwater in the vicinity of the subject property is inferred to be present at approximately 37 feet below ground surface (bgs) and flow to the northwest. The nearest surface water in the vicinity of the subject property is the Hamakua Ditch located adjacent to the west and northwest of the subject property. No settling ponds, lagoons, surface impoundments, wetlands or natural catch basins were observed at the subject property during this investigation.

### 2.4.3 Soils/Geology

According to United States Department of Agricultural (USDA) Soil Conservation Service website, the subject property is located in an area with soils of the Haliimaile series. Haliimaile series, silty clay 3 to 7 percent slopes soils are characterized as dark reddish-brown silty clay and very dark grayish brown clay. They tend to be well drained soils on uplands in the island of

Maui which were developed in material weathered from basic igneous rock. They tend to be gently to strongly sloping and on elevations which range from 500 to 2,000 feet. These soils are typically used for sugarcane, pineapple, and home sites with natural vegetation consisting of guava, indigo, koa haole, and yellow foxtail.

Haliimaile series, silty clay 7 to 15 percent slopes soils are characterized as dark reddish-brown silty clay and very dark grayish brown clay. These soils have medium runoff with a moderate erosion hazards and are used for sugarcane, pineapple, and home sites.

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### 3.0 HISTORICAL USE INFORMATION

Partner obtained historical use information about the subject property from a variety of sources. A chronological listing of the historical data found is summarized in the table below:

#### *Historical Use Information*

<b>Period/Date</b>	<b>Source</b>	<b>Description/Use</b>
1920s -2003	Aerial Photographs, onsite interviews, and previous reports	The subject property is developed for the cultivation of pineapples.
2003-2008	Onsite Interviews, previous reports, Site Reconnaissance	The subject property is undeveloped fallow land.

The subject property was formerly developed as a pineapple plantation from as early as the 1920s to circa 2003; and vacant fallow land from circa 2003 to present. According to information provided by William W.L. Yuen, Esq. (representative of the subject property owner), the historic tenant, Maui Pineapple Co., utilized various fertilizers, pesticides, fungicides, herbicides, and plant growth regulators in association with the former agricultural use of the property. The quantities used onsite and frequency of application of these products is not known and was not provided by the previous owner, Maui Land & Pine. Based on the former agricultural use of the subject property, there is a potential that residual concentrations of agricultural chemicals remain in the soil.

#### 3.1 Aerial Photograph Review

On July 21, 2008, Partner reviewed available aerial photographs of the subject property and surrounding area for indications of previous uses. The aerial photographs are discussed below:

**Date:** 1955 **Scale:** 1:1,000

The subject property and surrounding properties to then north, west, southwest, and east appear to be developed for agricultural use. Aeloa Street is visible to the south, beyond which appears to be developed with structures for residential use and small agricultural fields. An irrigation ditch is visible to the west and northwest of the subject property. Old Haleakala Highway is visible to the north-northeast of the subject property.

**Date:** 1964 **Scale:** 1:3,300

No significant changes were observed regarding the subject property and surrounding properties.

**Date:** 1996 **Scale:** 1:1,330

No significant changes were observed regarding the subject property and surrounding properties.

**Date:** 2005 **Scale:** N/A\*

The subject property appears to be vacant graded fallow land. Surrounding properties to the northwest and west appear to be graded fallow land. Old Haleakala highway is visible to the northeast, beyond which appears to be vacant fallow land. Haleakala Highway is visible to the north, beyond which appears to be developed for agricultural use. Structures for residential use are visible to the south-southeast of the subject property.

\*Copies of selected aerial photographs are included as Figure 3 of this report, with the exception of the 2005 aerial photograph which is included as Figure 2.

### **3.2 Sanborn Fire Insurance Maps**

Sanborn maps were originally created in the late 1800s and early 1900s for assessing fire insurance liability in urbanized areas of the United States. These maps include detailed town and building information.

A search was made of Seattle Public Library's collection of Sanborn Fire Insurance maps on July 14, 2008.

Sanborn map coverage was not available for the subject property.

### **3.3 City Directories**

City directories have been produced for most urban and some rural areas since the late 1800s. The directories are generally not comprehensive and may contain gaps in time periods. Due to the lack of structures currently and/or historically on the subject property and lack of physical addresses associated with the property, historical city directories were not researched for inclusion into this report.

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## **4.0 REGULATORY RECORDS REVIEW**

### **4.1 Regulatory Agencies**

Partner contacted local agencies, such as environmental health departments, fire departments and building departments in order to determine any current and/or historic hazardous materials usage, storage and/or releases of hazardous substances on the subject property. Additionally, Partner researched information on the presence of activity and use limitations (AULs) at these agencies. As defined by ASTM E1527-05, AULs are the legal or physical restrictions or limitations on the use of, or access to, a site or facility: 1) to reduce or eliminate potential exposure to hazardous substances or petroleum products in the soil or groundwater on the subject property; or 2) to prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment. These legal or physical restrictions, which may include institutional and/or engineering controls (IC/ECs), are intended to prevent adverse impacts to individuals or populations that may be exposed to hazardous substances and petroleum products in the soil or groundwater on the property.

#### **4.1.1 Health Department**

Partner requested records from the Maui County Department of Environmental Health (MCDEH) on July 21, 2008 for the subject property. These records may contain evidence indicating current and/or historical hazardous materials usage, storage or releases as well as the presence of underground storage tanks.

Due to the time constraints associated with this report, Partner was not able to obtain records from the Maui County Department of Environmental Health. However, based on the detailed information gathered from other historical sources, such as the aerial photographs, the absence of this information is not expected to alter the findings of this investigation. If issues of an environmental concern are identified upon review of these records, an addendum to this report will be issued.

#### **4.1.2 Fire Department**

Partner requested records from the Maui County Department of Fire Prevention (MCDFP) on July 21, 2008 for the subject property. These records may contain evidence indicating current and/or historical hazardous materials usage, storage or releases as well as the presence of underground storage tanks.

Due to the time constraints associated with this report, Partner was not able to obtain records from the Maui County Department of Fire Prevention. However, based on the detailed information gathered from other historical sources, such as the aerial photographs, the absence of this information is not expected to alter the findings of this investigation. If issues of an

environmental concern are identified upon review of these records, an addendum to this report will be issued.

#### ***4.1.3 Department of Health – Air Division***

Partner contacted the State of Hawaii Department of Health – Air Division (MDOH – Air Division) on July 25, 2008 for information regarding any Permits to Operate (PTO), Notices of Violation (NOV), or Notices to Comply (NTC) records for the subject property related to air emission equipment, which may include dry cleaning machines and underground storage tanks.

No PTOs, NOV, NTCs or the presence of AULs were on file for the subject property with the MDOH – Air Division.

#### ***4.1.4 Building Department***

Partner contacted the County of Maui Building and Permitting Office (MBP) on July 14, 2008 for information regarding historical tenants and property use of the subject property. The MBP indicated that building records are stored in an online database. Based on the historical use of the property for agricultural use, no building records were on file for the subject property.

#### ***4.1.5 Planning Department***

Partner contacted the County of Maui Planning Department (MPD) on July 25, 2008 for information on the subject property in order to identify AULs associated with the subject property.

No AULs were found for the subject property at the MPD.

### **4.2 Mapped Database Records Search**

Information from standard federal, state, county, and city environmental record sources was provided by Track Info Services Environmental FirstSearch. Data from governmental agency lists are updated and integrated into one database, which is updated as these data are released. The information contained in this report was compiled from publicly available sources and the locations of the sites are plotted utilizing a geographic information system, which geocodes the site addresses. The accuracy of the geocoded locations is approximately +/-300 feet. Please refer to the radius map for a complete listing (Appendix C).

The subject property was not identified in the regulatory database report.

The adjacent properties were not identified in the regulatory database report.

#### ***Federal NPL***

The National Priorities List (NPL) is the Environmental Protection Agency (EPA) database of uncontrolled or abandoned hazardous waste sites identified for priority remedial actions under the Superfund Program.



No NPL sites are located within 1 ½ miles of the subject property.

***Federal CERCLIS List***

The Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) list is a compilation of sites that the EPA has investigated or is currently investigating for a release or threatened release of hazardous substances.

No CERCLIS sites are listed within one-mile of the subject property.

***Federal CERCLIS-NFRAP Sites List***

The CERCLIS No Further Remedial Action Planned (NFRAP) List is a compilation of sites that the EPA has investigated, and has determined that the facility does not pose a threat to human health or the environment, under the CERCLA framework.

No CERCLIS-NFRAP sites are listed within a 1 ½ miles of the subject property.

***Federal RCRA CORRACTS Facilities List***

The RCRA CORRACTS database is the EPA's list of TSD facilities subject to corrective action under RCRA.

No RCRA CORRACTS facilities are listed within 1 ½ miles of the subject property.

***Federal Resource Conservation and Recovery Act (RCRA) TSD Facilities List***

The RCRA Treatment, Storage and Disposal (TSD) database is a compilation by the EPA of reporting facilities that treat, store or dispose of hazardous waste.

No RCRA TSD sites are listed within one mile of the subject property.

***Federal RCRA Generator List***

The EPA Resource Conservation and Recovery Act (RCRA) Program RCRA program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Generators database is a compilation by the EPA of reporting facilities that generate hazardous waste.

No RCRA Generator facilities are listed within ½ mile of the subject property.

***Federal Institutional Controls/Engineering Controls (IC/EC)***

The Federal IC/EC database is designed to assist the EPA in collecting, tracking, and updating information, as well as reporting on the major activities and accomplishments of the various Brownfield grant programs. The IC/EC sites are superfund sites that have either engineering or an institutional control in place. The data includes the control and the media contaminated.

No Federal IC/EC sites were found within one mile of the subject property.

#### ***Federal Emergency Notification System (ERNS)***

The Emergency Response Notification System (ERNS) is a national database used to collect information or reported release of oil or hazardous substances.

No ERNS sites were listed within a ¼ mile of the subject property.

#### ***Tribal Lands***

The Tribal Lands database consists of areas with boundaries established by treaty, statute, and/or executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are Federally-administered lands within a reservation which may or may not be considered part of the reservation.

No Tribal Land sites were found within 1 ½-miles of the subject property.

#### ***State Hazardous Waste Site (SHWS)***

The State of Hawaii Department of Health maintains a list of facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate State CERCLIS-equivalent list (SCL) of sites that could be actually or potentially contaminated and presenting a possible threat to human health and the environment.

One (1) SHWS are listed within one mile of the subject property. This site is located more than a ¾ mile radius from the subject property. Based on the current regulatory status, relative distance, and inferred direction of groundwater flow, this site is not expected to represent a significant environmental concern.

#### ***State Spills Sites (SPILLS)***

The State of Hawaii Department of Health maintains reports of sites that have records of spills, leaks, investigations and cleanups.

No SPILLS sites were listed within a ¼ mile of the subject property.

#### ***Solid Waste/Landfill Facilities (SWLF)***

A database of SWLF is prepared by State of Hawaii Department of Health.

No SWLF facilities are listed within one- mile of the subject property.

#### ***State/Tribal Leaking Underground Storage Tank List (LUST)***

The Hawaii Underground Storage Tank Program compiles lists of all leaks of hazardous substances from underground storage tanks.

One (1) LUST site is listed within one- mile of the subject property. This site is located more than a ¼ mile radius from the subject property. Based on the relative distance, and the current regulatory oversight, this site is not expected to represent a significant environmental concern.

***State/Tribal Underground Storage Tank/Aboveground Storage Tank List (UST/AST)***

The Hawaii Underground Storage Tank Program compiles a list of UST and AST locations.

No registered UST/AST facilities are listed within ½ mile of the subject property.

***State/Tribal VCP sites***

The State of Hawaii Department of Health maintains a list of sites participating in the Voluntary Response Program (VRP). The purpose of this program is to streamline the cleanup process in a way that will encourage prospective developers, lenders, and purchasers to voluntary cleanup properties.

No State/Tribal VCP sites were found within one-mile of the subject property.

***State/Tribal Brownfield sites***

The State of Hawaii Department of Health maintains information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems.

No State/Tribal Brownfield sites were found within one-mile of the subject property.

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## **5.0 USER PROVIDED INFORMATION AND INTERVIEWS**

Pursuant to ASTM E1527-05, Partner requested the following site information from William W.L. Yuen, Esq., attorney and representative of the subject property owner (User of this report).

### **5.1 Interviews**

#### ***5.1.1 Interview with Owner***

William W.L. Yuen, Esq., representative of the subject property owner Pukalani Associates, LLC, was not aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

According to Mr. Yuen, the subject property was historically used for the cultivation of pineapple from the early 1920s until circa 2003 when onsite agricultural operations ceased. Since 2003, the site has remained vacant fallow land which is overgrown with native vegetation. To the best of his knowledge, the site is not improved with any structures or features of concern. No underground storage tanks, above ground storage tanks, or hazardous materials are currently stored onsite. Additionally, no addresses are associated with the subject property. Typically, the plantations were identified by field numbers, which were for internal purposes only and completed by the former owners, Maui Land & Pine, at the time. Mr. Yuen stated that Pukalani Associates, LLC purchased the subject property parcel from Maui Land and Pine in 2005.

#### ***5.1.2 Interview with Report User***

Pukalani Associates, LLC, report user, was not aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

#### ***5.1.3 Interview with Key Site Manager***

Ms. Sharon Wright, land consultant, was not aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental

entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

#### ***5.1.4 Interviews with Past Owners, Operators and Occupants***

Interviews with past owners, operators and occupants were not reasonably ascertainable and thus constitute a data gap. Based on information obtained from other historical sources (as discussed in Section 3.0), this data gap is not expected to alter the findings of this investigation. Partner requested information pertaining to the former operations onsite from the previous owner/operator of the subject property, Maui Pineapple Co. and Maui Land & Pine. However, Maui Land & Pine refused to provide any information pertaining to the former onsite operations.

#### ***5.1.5 Interview with Others***

As the subject property is not an abandoned property as defined in ASTM 1527-05, interview with others were not performed.

### **5.2 User Provided Information**

#### ***5.2.1 Title Records***

Partner was provided preliminary title records from the User regarding the subject property. According to the title records generated by Title Guaranty of Hawaii, Inc., no environmental liens are associated with the subject property.

#### ***5.2.2 Environmental Liens or Activity and Use Limitation***

Partner requested information from the User regarding knowledge of environmental liens and activity and use limitations (AULs) for the subject property. The User was not aware of any environmental liens associated with the Property. In addition, the User had no knowledge of any use or activity limitations.

#### ***5.2.3 Specialized Knowledge***

Partner inquired with the User regarding any specialized knowledge of environmental conditions associated with the subject property. The User was not aware of any environmental conditions associated with the subject property.

#### ***5.2.4 Commonly Known or Reasonably Ascertainable Information***

Partner inquired with the User regarding any commonly known or *reasonably ascertainable* information within the local community about the subject property that is material to *recognized environmental conditions* in connection with the subject property. According to William W.L. Yuen, Esq. Attorney and representative of the subject property owner, the site was previously cultivated for pineapple from at least the 1920s with operations ceasing in 2003. A previous draft environmental assessment of the subject property prepared in 2005, indicates that Maui Land & Pine disclosed the use of fertilizers, pesticides, fungicides, herbicides, and plant growth

regulators onsite at the time in which operations ceased. No indication of the strength, quantity, duration of use, or frequency of application was noted or disclosed. Additionally, historical products used were not disclosed.

### ***5.2.5 Valuation Reduction for Environmental Issues***

Partner inquired with the User regarding any knowledge of reductions in property value due to environmental issues. The User was not aware of any valuation reductions associated with the subject property.

### ***5.2.6 Previous Reports and Other Provided Documentation***

The following information was provided to Partner by William W.L. Yuen, Esq. for review during the course of this investigation.

#### ***Portions of Draft Environmental Assessment, PBR Hawaii (2005)***

According to the pages provided of a previous *Draft Environmental Assessment* report, the subject property was formerly cultivated as a pineapple plantation from as early as the 1920s to circa 2003. From 2003 to present, the subject property has been vacant fallow land. According to the report, the site is located on the windward slopes of Haleakala, a dormant volcano and best situated for agricultural and residential use. Historically, as part of the onsite operations as a pineapple plantation, Maui Pineapple Co., utilized fertilizers; pesticides such as Telone II Soil Fumigant (1,3 dichloropropene), NemaCur 3 (Fenamiphos), Diazinon 50W (Diazinon); and fungicides, herbicides, and plant growth regulators which included: Ethrel 4 or Ethephon 2, Ethylene gas, Karmex DF or Direx L (Diuron), Hyvar X (Bromacil), phosguard (phosphorous acid), and Round-up (glyphosate). The quantities used onsite or frequency of applications of these products are not known and were not provided by the previous owner. The subject property is located within flood zone C. No further information is provided within the report.

---

## **6.0 SITE RECONNAISSANCE**

The subject property was inspected by Ms. Rachel Herrera of Partner on July 18, 2008. The weather at the time of the site visit was sunny and clear. Ms. Sharon Wright, land consultant provided site access.

Most areas of the subject property were accessible at the time of the site inspection. However, due to the size of the subject property parcel, Partner performed a site inspection of the property utilizing a field technique of traversing the site in an attempt to provide an overlapping field of view. Due to the size of the property and vegetation present onsite, isolated areas of the site may not have been accessible for direct observation during Partner's inspection. This limitation is not expected to alter the findings of this report.

The subject property is currently vacant, undeveloped fallow land. No potential environmental concerns were identified during the onsite reconnaissance.

### **6.1 General Site Characteristics**

#### ***6.1.1 Solid Waste Disposal***

No solid waste is generated at the subject property due to the vacant fallow nature of the parcel.

#### ***6.1.2 Sewage Discharge and Disposal***

No features requiring the need for sanitary discharges on the subject property are currently present onsite

#### ***6.1.3 Surface Water Drainage***

Surface water drainage at the subject property is via sheet flow to the irrigation ditch located along the western and northwestern edges of the subject property.

#### ***6.1.4 Source of Heating and Cooling***

Due to the lack of structures, no heating or cooling systems are present onsite.

#### ***6.1.5 Wells and Cisterns***

No aboveground evidence of wells or cisterns was observed during the site reconnaissance.

#### ***6.1.6 Wastewater***

Domestic wastewater generated at the subject property is disposed via the sanitary sewer. No industrial process is currently performed at the subject property.

### **6.1.7 Septic Systems**

No septic systems were observed on the subject property.

### **6.1.8 Additional Site Observations**

During the onsite reconnaissance, Partner observed two (2) presumed PVC pipes extending approximately 3 to 4 feet above the ground surface within the center of the parcel. No indications of easements were noted in the review of the preliminary title for the subject property parcel. Partner attempted to contact the Gas Company to determine the potential presence of any natural underground gas lines that may be present within the area. No response was received as of this writing. No additional information pertaining to nature of use of these features was available for review during the course of this investigation, including information provided by the current owner representatives. It is possible that these pipes are remnant features left from the previous occupancy and used for irrigation purposes of the land and are therefore not expected to represent a significant concern.

Additionally, Partner observed the presence of the Hamakua Ditch, an irrigation ditch located along the western and northwestern edges of the subject property. The ditch appears to be lined and used to provide irrigation water, historically to the adjacent properties to the northwest and west. Based on the nature of use, the presence of the irrigation ditch is not expected to represent a significant environmental concern. **Note: Hamakua Ditch was used exclusively by adjoining owner.**

## **6.2 Potential Environmental Hazards**

### **6.2.1 Hazardous Materials and Petroleum Products Used or Stored at the Site**

No hazardous materials or petroleum products were observed on the subject property.

### **6.2.2 Aboveground & Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs/USTs)**

No evidence of ASTs or USTs was observed during the site reconnaissance.

### **6.2.3 Evidence of Releases**

No spills, stains or other indications that a surficial release has occurred at the subject property were observed.

### **6.2.4 Polychlorinated Biphenyls (PCBs)**

No potential PCB-containing equipment was observed on the subject property during Partner's reconnaissance.



### ***6.2.5 Strong, Pungent or Noxious Odors***

No strong, pungent or noxious odors were evident during the site reconnaissance.

### ***6.2.6 Pools of Liquid***

No pools of liquid were observed on the subject property.

### ***6.2.7 Drains, Sumps and Clarifiers***

No drains, sumps or clarifiers were observed on the subject property.

### ***6.2.8 Pits, Ponds and Lagoons***

No pits, ponds and lagoons were observed on the subject property.

### ***6.2.9 Stressed Vegetation***

No stressed vegetation was observed on the subject property.

### ***6.2.10 Additional Potential Environmental Hazards***

No additional potential environmental hazards were observed.

## **6.3 Non-ASTM Services**

### ***6.3.1 Asbestos-Containing Materials (ACMs)***

Due to the lack of structures on the subject property, no asbestos containing materials are present onsite.

### ***6.3.2 Lead-Based Paint***

Due to the lack of structures on the subject property, no lead based paint is present onsite.

### ***6.3.3 Radon***

Radon is a colorless, odorless, naturally occurring, radioactive, inert, gaseous element formed by radioactive decay of radium (Ra) atoms. The US EPA has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, Zone 1 being those areas with the average predicted indoor radon concentration in residential dwellings exceeding the EPA Action limit of 4.0 picoCuries per Liter (pCi/L). It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the EPA recommends site specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures.

Radon sampling was not conducted as part of this investigation. Review of the EPA Map of Radon Zones places the subject property in Zone 3, where average predicted radon levels are less than 2.0 pCi/L.

#### **6.3.4 *Lead in Drinking Water***

The subject property is currently not connected to the County water supply. Future water supplies will be provided by the County of Maui Department of Water Supply – Makawao System. According to the 2006 Water Quality Monitoring Results for West Maui, the lead levels in the drinking water supplied to the area of the subject property is within state and federal standards.

#### **6.4 Adjacent Property Reconnaissance**

The adjacent property reconnaissance consisted of observing the adjacent properties from the subject property premises. No items of environmental concern were identified on the adjacent properties during the site inspection.

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## 7.0 FINDINGS AND CONCLUSIONS

### *Findings*

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substance or petroleum product 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 term REC includes hazardous substances and petroleum products even under conditions that might be in compliance with laws. The term is not intended to include "de minimis" conditions that do not present a threat to human health and/or the environment and that would not be subject to an enforcement action if brought to the attention of appropriate governmental agencies. The following was identified during the course of this investigation:

- The subject property was formerly developed as a pineapple plantation from as early as the 1920s to circa 2003; and vacant fallow land from circa 2003 to present. According to information provided by William W.L. Yuen, Esq. (representative of the subject property owner), the historic tenant, Maui Pineapple Co., utilized various fertilizers, pesticides, fungicides, herbicides, and plant growth regulators in association with the former agricultural use of the property. The quantities used onsite and frequency of application of these products is not known and was not provided by the previous owner, Maui Land & Pineapple Company, Inc. (Maui Land & Pine). Based on the former agricultural use of the subject property, there is a potential that residual concentrations of agricultural chemicals remain in the soil.

A *historical recognized environmental condition (HREC)* refers to an environmental condition which would have been considered a REC in the past, but which may or may not be considered a REC currently. The following was identified during the course of this investigation:

- Partner did not identify any historical recognized environmental conditions during the course of this investigation.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, require discussion. The following was identified during the course of this investigation:

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, require discussion. The following was identified during the course of this investigation:

- During the onsite reconnaissance, Partner observed two (2) presumed PVC pipes extending approximately 3 to 4 feet above the ground surface within the center of the parcel. No

indications of easements were noted in the review of the preliminary title for the subject property parcel. Partner attempted to contact the Gas Company to determine the potential presence of any underground natural gas lines that may be present within the area. No response was received as of this writing. No additional information pertaining to nature of use of these features was available for review during the course of this investigation, including information provided by the current owner representatives. It is possible that these pipes are remnant features left from the previous occupancy and used for irrigation purposes of the land and are therefore not expected to represent a significant concern.

### ***Conclusions, Opinions, and Recommendations***

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-05 of the southwest intersections of Old and New Haleakala Highways, TMK 223009007 in Pukalani, County of Maui, Hawaii (the “subject property”). Any exceptions to or deletions from this practice are described in Section 1.4 of this report. This assessment has revealed evidence of recognized environmental conditions in connection with the subject property. Based on the former agricultural use of the subject property, there is a potential that residual concentrations of agricultural chemicals remain in the soil. These materials are likely limited to the near surface soils. Site redevelopment and grading activities will serve as a mitigating factor as these soils will be mixed with fill material. Based on the future redevelopment for residential use, it would be prudent to conduct soils sampling and testing in order to confirm the absence or presence of historical fertilizer or pesticides in reportable concentrations.

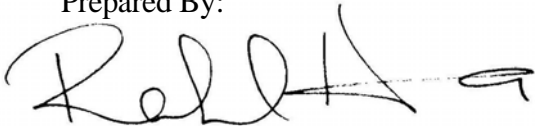
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## 8.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

Partner has performed a Phase I Environmental Site Assessment on the property at Intersection of Old and New Haleakala Highways in Pukalani, County of Maui, Hawaii in general conformance with the scope and limitations of the protocol and the limitations stated earlier in this report. Exceptions to or deletions from this protocol are discussed earlier in this report.

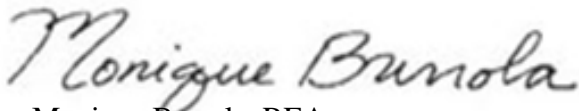
By signing below, Partner declares that, to the best of our professional knowledge and belief, the undersigned meet the definition of an *Environmental Professional* as defined in §312.10 of 40 CFR 312 and have the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the subject *property*.

Prepared By:



Rachel Herrera  
Environmental Scientist

Reviewed By:



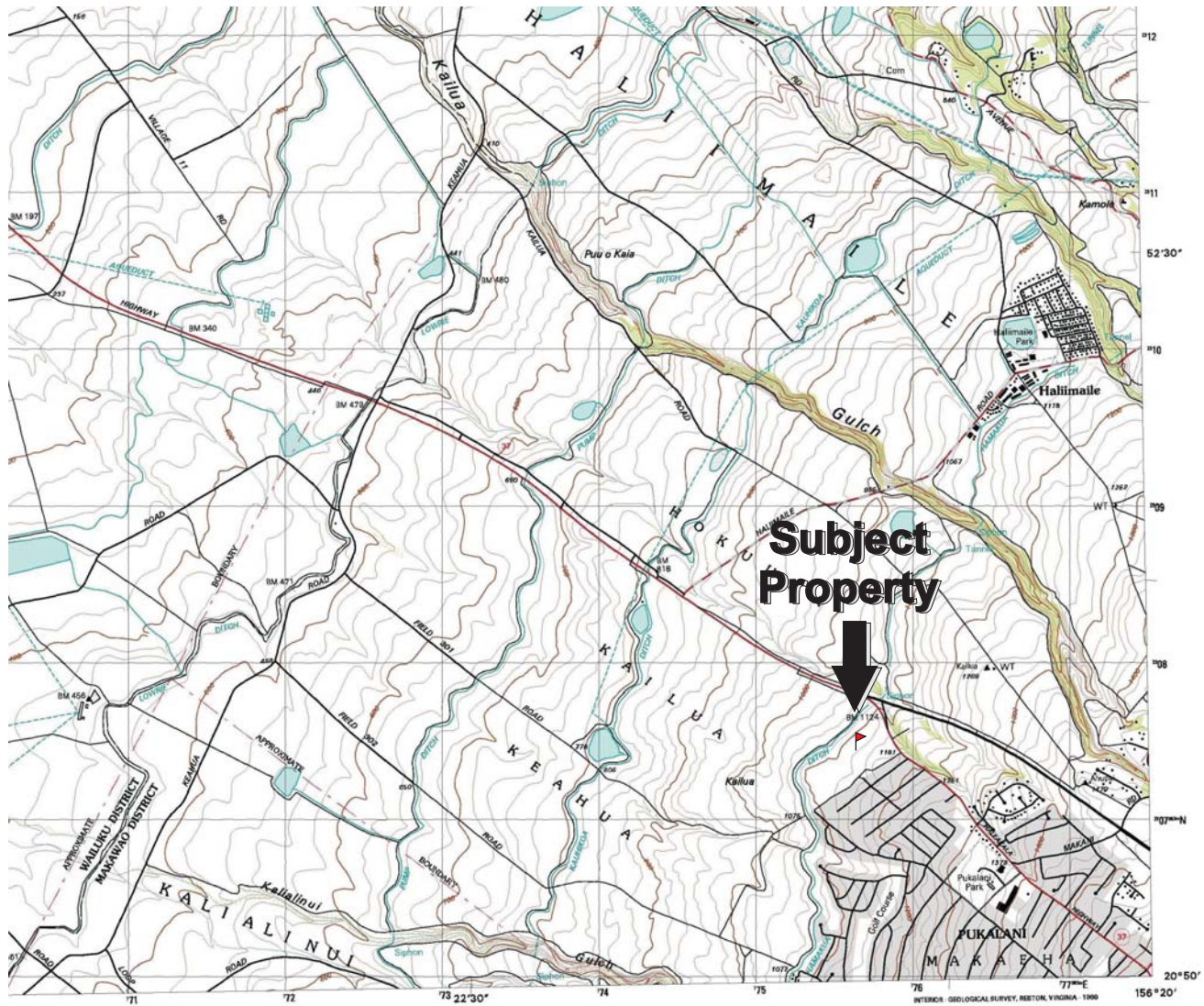
Monique Burrola, REA  
Senior Author



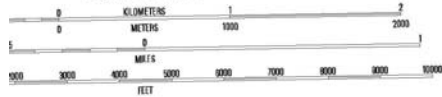
## **FIGURES**

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- 1- Site Location Map**
- 2- Site Plan**
- 3- Aerial Photographs**



SCALE 1:24 000



CONTOUR INTERVAL 20 FEET  
 DATUM IS MEAN SEA LEVEL  
 CONVERT FROM FEET TO METERS, MULTIPLY BY 0.3048  
 THE MEAN RANGE OF TIDE IS APPROXIMATELY 2 FEET

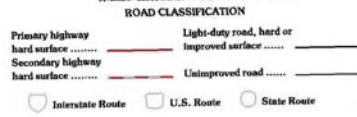
THIS MAP COMPLES WITH NATIONAL MAP ACCURACY STANDARDS  
 GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225  
 DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST



QUADRANGLE LOCATION

1	2	3	1 Kahalaia
			2
			3
4		5	4 Waialeale
			5 Hahaione
			6 Maunaloa
			7 Pua O Kala
6	7	8	8 Kilaheua

ADJOINING 7.5' QUADRANGLE NAMES



PAIA, HI  
 1997

NIMA 5719 IV NW-SERIES W833  
 NIMA 5719 IV SW-SERIES W833



FIGURE 1: SITE LOCATION MAP

Site Address:

Intersection of Old and New  
 Haleakala Highways  
 Pukalani, Hawaii 96788



USGS Paia  
 Quadrangle  
 Created: 1997;

**PARTNER**  
 Engineering and Science, Inc.  
 2101 Rosecrans Avenue, Suite 4270  
 El Segundo, California 90245  
 Job Number: 079898



**FIGURE 2: SITE PLAN**

Site Address:  
 Intersection of Old and New  
 Haleakala Higways  
 Pukalani, Hawaii 96788

**KEY:**

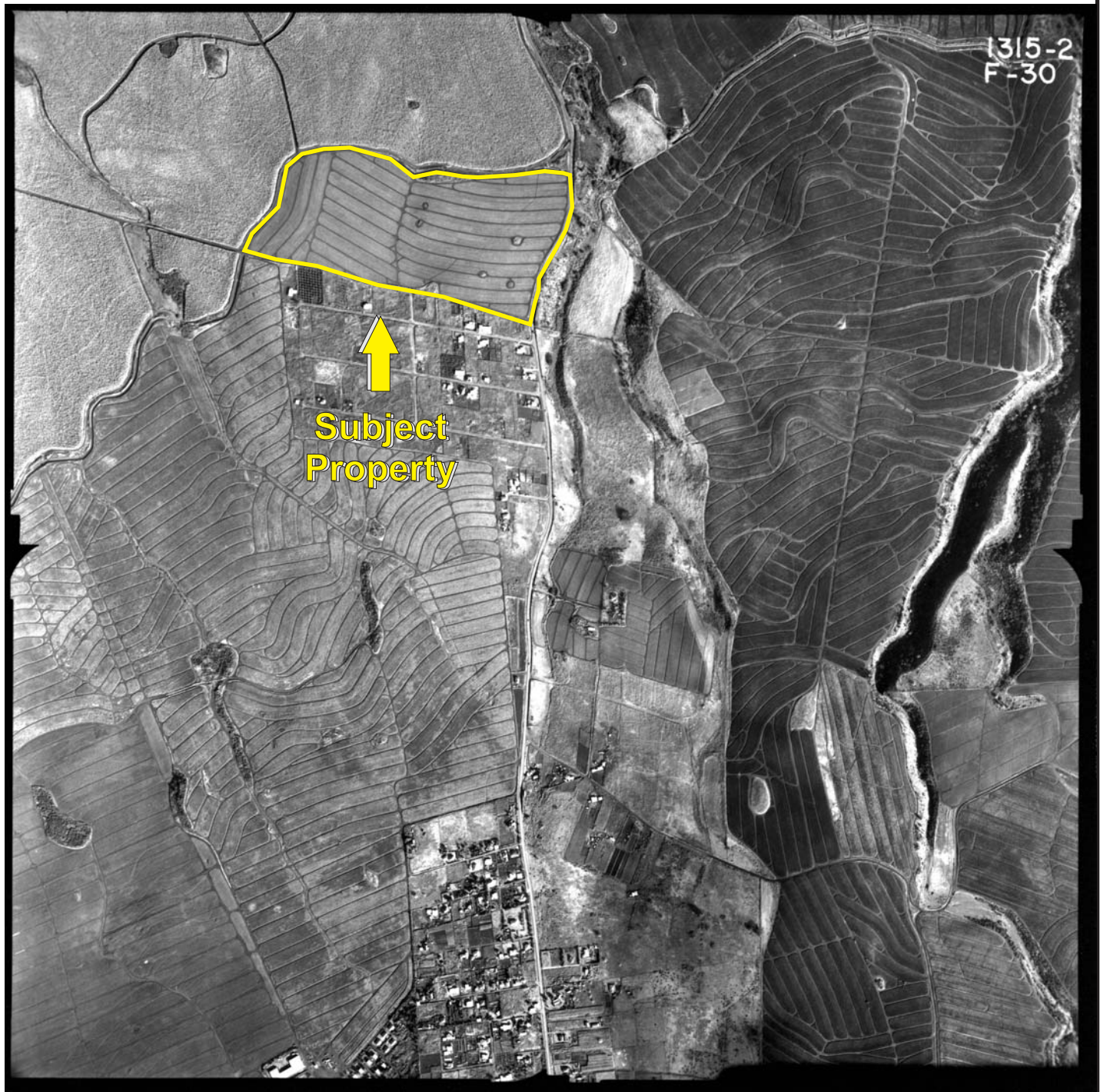
Subject Site 



**GROUNDWATER FLOW**  


**PARTNER**  
 Engineering and Science, Inc.  
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 El Segundo, California 90245  
 Job Number: 079898





### FIGURE 3: AERIALS

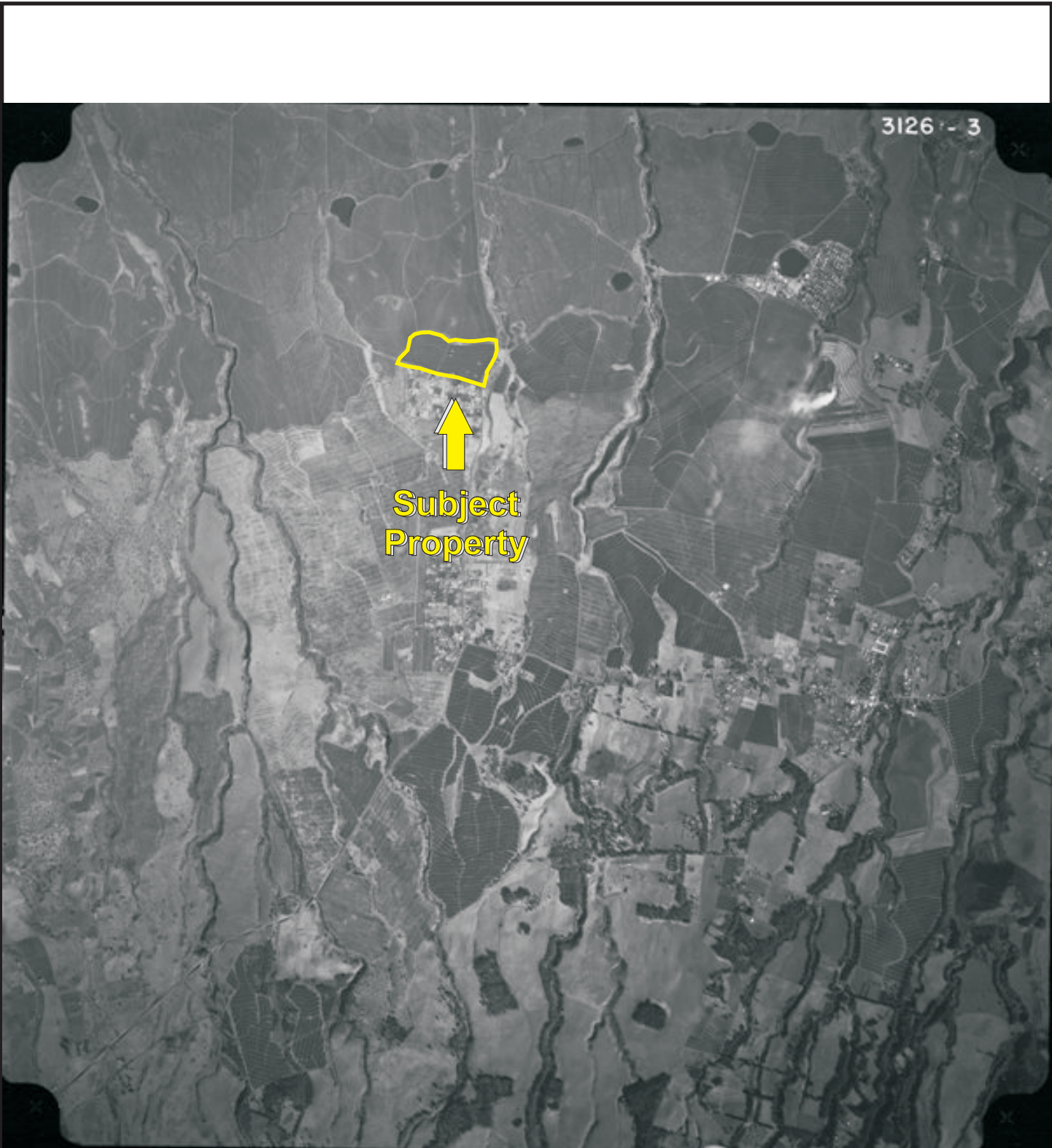
Site Address:

Intersection of Old and New  
Haleakala Higways  
Pukalani, Hawaii 96788



Date: 1955

**PARTNER**  
Engineering and Science, Inc.  
2101 Rosecrans Avenue, Suite 4270  
El Segundo, California 90245  
Job Number: 079898



### FIGURE 3: AERIALS

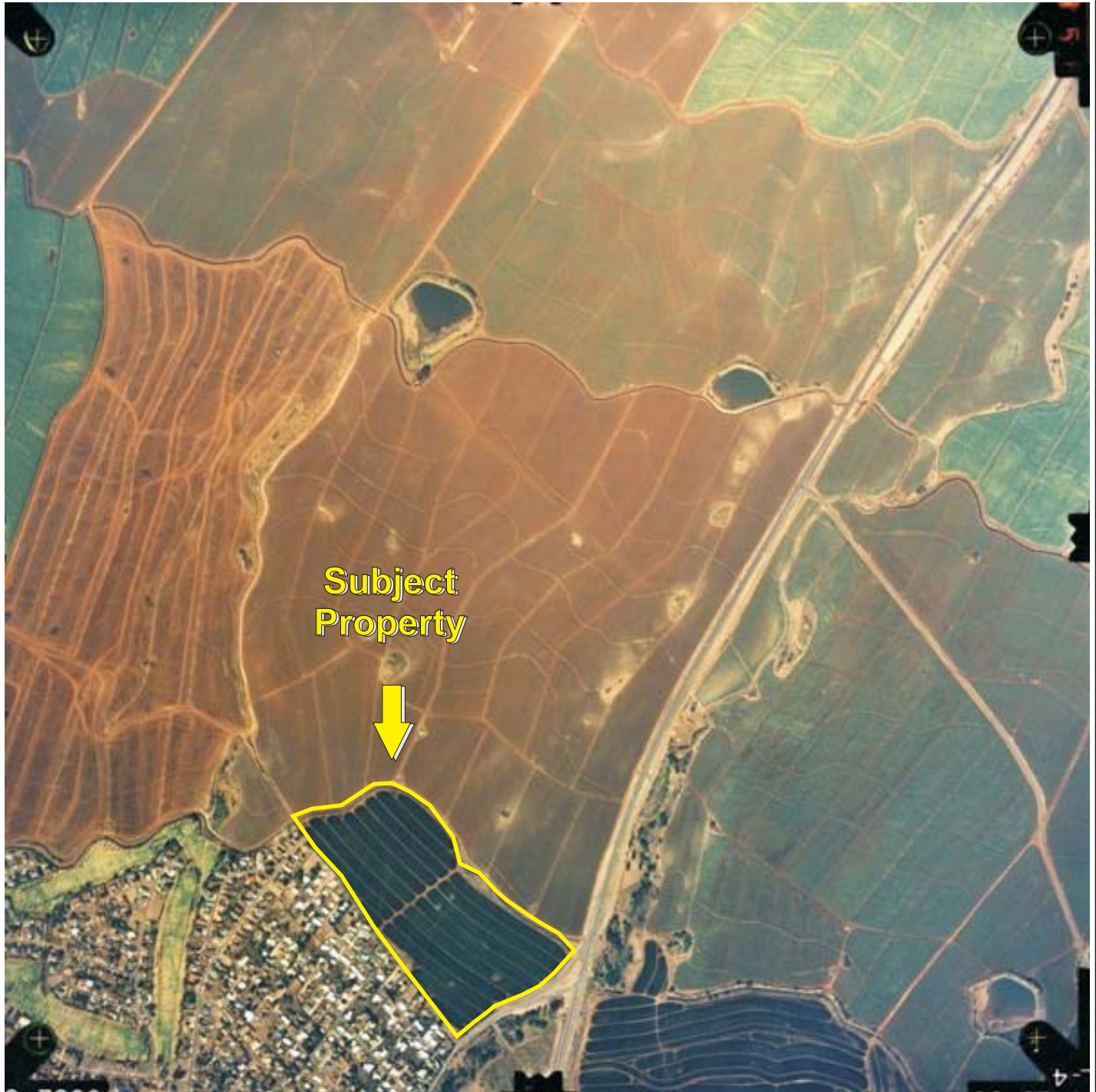
Site Address:

Intersection of Old and New  
Haleakala Highways  
Pukalani, Hawaii 96788



Date: 1964

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Engineering and Science, Inc.  
2101 Rosecrans Avenue, Suite 4270  
El Segundo, California 90245  
Job Number: 079898



### FIGURE 3: AERIALS

Site Address:  
Intersection of Old and New  
Haleakala Higways  
Pukalani, Hawaii 96788



Date: 1996/1997

**PARTNER**  
Engineering and Science, Inc.  
2101 Rosecrans Avenue, Suite 4270  
El Segundo, California 90245  
Job Number: 079898

## **APPENDIX A: PHOTOGRAPHS**

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1. View of the access trail observed along the eastern edge of the subject property facing southeast.



2. View of the property facing north from the eastern portion.



3. View of the subject property facing northwest.



4. Additional view of the property facing west.



5. View of the property from the center of the property facing southwest.



6. View of the subject property facing south. Adjacent residential structures are visible in the background.

## SITE PHOTOGRAPHS

Site Address:

Intersection of Old and New Halea-  
kala Highways  
Pukalani, Hawaii 96788

**PARTNER**  
Engineering and Science, Inc.

2101 Rosecrans Avenue, Suite 4270  
El Segundo, California 90245

Job Number: 079898



7. View of the piping observed within the center of the parcel.



8. Additional view of the subject property facing south.



9. View of the adjacent irrigation ditch located along the northwestern and western edges of the property.



10. Additional view of the irrigation ditch and adjacent sugar cane fields.



11. View of the adjacent sugar cane fields facing northwest.



12. View of the subject property along the irrigation ditch facing north-northeast.

## SITE PHOTOGRAPHS

Site Address:

Intersection of Old and New Haleakala Highways  
Pukalani, Hawaii 96788

**PARTNER**  
Engineering and Science, Inc.

2101 Rosecrans Avenue, Suite 4270  
El Segundo, California 90245

Job Number: 079898



13. Typical view of the subject property.



14. Additional view of the subject property facing west.



15. View of the subject property from the northern edge facing south.



16. View of the subject property from the southwestern edge facing northeast.



17. View from the southwestern edge facing west.



18. View of the subject property from the southwestern edge facing northwest.

## SITE PHOTOGRAPHS

Site Address:

Intersection of Old and New Halea-  
kala Highways  
Pukalani, Hawaii 96788

**PARTNER**  
Engineering and Science, Inc.

2101 Rosecrans Avenue, Suite 4270  
El Segundo, California 90245

Job Number: 079898

## **APPENDIX B: REFERENCES**

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## STATUS REPORT

Maximum liability limited to  
\$2,500.00

This report (and any revisions thereto) is issued solely for the convenience of the titleholder, the titleholder's agent, counsel, purchaser or mortgagee, or the person ordering it.

---

## SCHEDULE A

Title Guaranty of Hawaii, Incorporated, hereby reports that, subject to those matters set forth in Schedule "B" hereof, the title to the estate or interest to the land described in Schedule "C" hereof is vested in:

MAUI LAND & PINEAPPLE COMPANY, INC.,  
a Hawaii corporation,  
as Fee Owner

This report is dated as of January 7, 2005 at 8:00 a.m.

Inquiries concerning this report  
should be directed to  
COLLEEN UAHINUI.  
Email [cuahinui@tghawaii.com](mailto:cuahinui@tghawaii.com)  
Fax (808) 533-5854  
Telephone (808) 533-5834.  
Refer to Order No. 200454369.

**SCHEDULE B  
EXCEPTIONS**

1. Any and all Real Property Taxes that may be due and owing.

Tax Key: (2) 2-3-009-007      Area Assessed: 49.990 acres

-Note:- Attention is invited to the fact that the premises covered herein may be subject to possible rollback or retroactive property taxes.

2. Reservation in favor of the State of Hawaii of all mineral and metallic mines.
3. Any and all existing roadways, trails, easements, rights-of-way, flumes and irrigation ditches.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments or any other matters which a correct survey or archaeological study would disclose.

-Note:- A current survey, with metes and bounds description, should be made of said premises.

5. Claims arising out of customary and traditional rights and practices, including without limitation those exercised for subsistence, cultural, religious, access or gathering purposes, as provided for in the Hawaii Constitution or the Hawaii Revised Statutes.

**END OF SCHEDULE B**

## SCHEDULE C

All of that certain parcel of land (being portion of the land(s) described in and covered by Royal Patent Grant Number 3085 to Mark Preevere and Kamakele) situate, lying and being at Kailua, District of Kula, Island and County of Maui, State of Hawaii, bearing Tax Key designation (2) 2-3-009-007, and containing an area of 49.990 acres, more or less.

BEING THE PREMISES ACQUIRED BY DEED

GRANTOR : HALEAKALA PINEAPPLE COMPANY, LIMITED

GRANTEE : MAUI PINEAPPLE COMPANY, LIMITED

DATED : May 3, 1932

RECORDED : Liber 1161 Page 262

END OF SCHEDULE C

## GENERAL NOTES

1. Filed with the Department of Commerce and Consumer Affairs of the State of Hawaii (Business Registration), is the corporate name change of MAUI PINEAPPLE COMPANY, LIMITED to MAUI LAND & PINEAPPLE COMPANY, INC., by instrument dated September 12, 1969, recorded in Liber 6682 at Page 237.

## GUIDELINES FOR THE ISSUANCE OF INSURANCE

- A. Taxes shown in Schedule B are as of the date such information is available from the taxing authority. Evidence of payment of all taxes and assessments subsequent to such date must be provided prior to recordation.
  - B. Evidence of authority regarding the execution of all documents pertaining to the transaction is required prior to recordation. This includes corporate resolutions, copies of partnership agreements, powers of attorney and trust instruments.
  - C. If an entity (corporation, partnership, limited liability company, etc.) is not registered in Hawaii, evidence of its formation and existence under the laws where such entity is formed must be presented prior to recordation.
  - D. If the transaction involves a construction loan, the following is required:
    - (1) a letter confirming that there is no construction prior to recordation; or
    - (2) if there is such construction, appropriate indemnity agreements, financial statements and other relevant information from the owner, developer, general contractor and major sub-contractors must be submitted to the Title Company for approval at least one week prior to the anticipated date of recordation.
- Forms are available upon request from Title Guaranty of Hawaii.
- E. Chapter 669, Hawaii Revised Statutes, sets forth acceptable tolerances for discrepancies in structures or improvements relative to private property boundaries for various classes of real property. If your survey map shows a position discrepancy that falls within the tolerances of Chapter 669, call your title officer as affirmative coverage may be available to insured lenders.
  - F. The right is reserved to make additional exceptions and/or requirements upon examination of all documents submitted in connection with this transaction.
  - G. If a policy of title insurance is issued, it will exclude from coverage all matters set forth in Schedule B of this report and in the printed Exclusions from Coverage contained in an ALTA policy or in the Hawaii Standard Owner's Policy, as applicable. Different forms may have different exclusions and should be reviewed. Copies of the policy forms are available upon request from Title Guaranty of Hawaii or on our website at [www.tghawaii.com](http://www.tghawaii.com).

DATE PRINTED: 1/12/2005

STATEMENT OF ASSESSED VALUES AND REAL PROPERTY TAXES DUE

NAME OF OWNER: MAUI LAND & PINEAPPLE CO  
LEASED TO :

TAX MAP KEY

DIVISION ZONE SECTION PLAT PARCEL HPR NO.  
(2) 2 3 009 007 0000

CLASS: 5 AREA ASSESSED: 49.990 AC

ASSESSED VALUES FOR CURRENT YEAR TAXES: 2004

This certifies that the records of this division show the assessed values and taxes on the property designated by Tax Key shown above are as follows:

BUILDING	\$	0
EXEMPTION	\$	0
NET VALUE	\$	0
LAND	\$	27,600
EXEMPTION	\$	0
NET VALUE	\$	27,600
TOTAL NET VALUE	\$	27,600

Installment (1 - due 8/20; 2 - due 2/20)

Tax Year	Installment	Tax Amount	Penalty Amount	Interest Amount	Other Amount	Total Amount	
2004	2	68.03				68.03	PENDING
2004	1	68.04				68.04	PENDING
2003	2	68.03				68.03	PAID
2003	1	68.04				68.04	PAID
2002	2	68.03				68.03	PAID
2002	1	68.04				68.04	PAID
2001	2	68.03				68.03	PAID
2001	1	68.04				68.04	PAID
2000	2	69.55				69.55	PAID
2000	1	69.55				69.55	PAID
1999	2	69.55				69.55	PAID
1999	1	69.55				69.55	PAID
Total Amount Due:						136.07	

Penalty and Interest Computed to: 7/02/2004

## 3.0 DESCRIPTION OF THE ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATIVE MEASURES

This section describes the existing conditions of the physical or natural environment, the potential impacts of the Kauhale Lani community on the environment, and mitigative measures to minimize impacts.

### 3.1 PHYSICAL CHARACTERISTICS

#### 3.1.1 Climate

The climate of the Pukalani region is generally mild, with warm days and cool evenings. Kauhale Lani's *mauka* location results in cooler temperatures compared to coastal locations at lower elevations. Average daily temperatures in Pukalani range between 60 and 75 degrees Fahrenheit. The Pukalani area receives a moderate amount of rainfall; historical records from Haleakalā Ranch show that this area averages about 43 inches of rain per year, with the summer months being the driest. Prevailing winds in the area are northeast tradewinds that reach speeds of 10 to 20 miles per hour. These tradewinds can be slightly stronger during the spring and summer months. During winter months, occasional strong winds from the south or southwest can occur.

#### *Potential Impacts and Mitigation Measures*

Kauhale Lani is not expected to have an effect on climatic conditions. As such, no mitigative measures are proposed.

#### 3.1.2 Geology and Topography

Geologically, the island of Maui is characterized as East and West Maui, with East Maui dominated by Haleakalā Volcano. Kauhale Lani is located on the windward slopes of Haleakalā, a dormant volcano which last erupted around 1790. Haleakalā was formed through three distinct periods of volcanism. The Honomanu Series formed the primitive shield of Haleakalā during the Tertiary Period. In the Pleistocene Epoch these lavas were completely overlain by the Kula Series, which is composed of hawaiite with lesser amounts of alkalic olivine basalt and ankaramite. The Kula lavas are primarily composed of thick a'a flows with some pāhoehoe present near the vents. Following a lengthy period of erosion, a third series of eruptions and flows, named the Hāna Volcanic Series covered much of the Kula lavas. However, because the north rift zone of the Kula series did not reopen during the third period of volcanism, the Hāna series is absent from the entire northwestern section of East Maui, where Kauhale Lani is located (Macdonald, Abbott, and Peterson 1983).

The neighborhood site (50-acre parcel) is gently sloping with elevations ranging from approximately 1,088 feet up to 1,186 feet. The slope of the open space site (39-acre parcel) varies more, with elevations between 1,110 feet and 1,440 feet.

# KAUHALE LANI

## Draft Environmental Assessment

### *Potential Impacts and Mitigative Measures*

No significant impacts on the geology and topography are anticipated as a result of developing the community. The roadways and homesites have been carefully designed and planned to minimize the need for extensive grading and conform to the natural contours of the land. However, some grading will be necessary for roads and house pads.

A National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water Activities will be required from the State of Hawai'i Department of Health (DOH). During site preparation, storm runoff from the community site will be controlled in compliance with the County's "Soil Erosion and Sediment Control Standards". Typical mitigation measures include appropriately stockpiling materials on-site to prevent runoff and building over or establishing landscaping as early as possible on disturbed soils to minimize length of exposure.

### **3.1.3 Soils**

Three soil suitability studies have been prepared for lands in Hawai'i. These are the U.S. Department of Agriculture (USDA) Soil Conservation Service (now called the Natural Resources Conservation Service) *Soil Survey*, the University of Hawai'i Land Study Bureau *Detailed Land Classification*, and the State of Hawai'i Department of Agriculture *Agricultural Lands of Importance to the State of Hawai'i* (ALISH). The principal focus of these studies has been to describe the physical attributes of Hawai'i's lands and the relative productivity of different land types for agricultural production purposes.

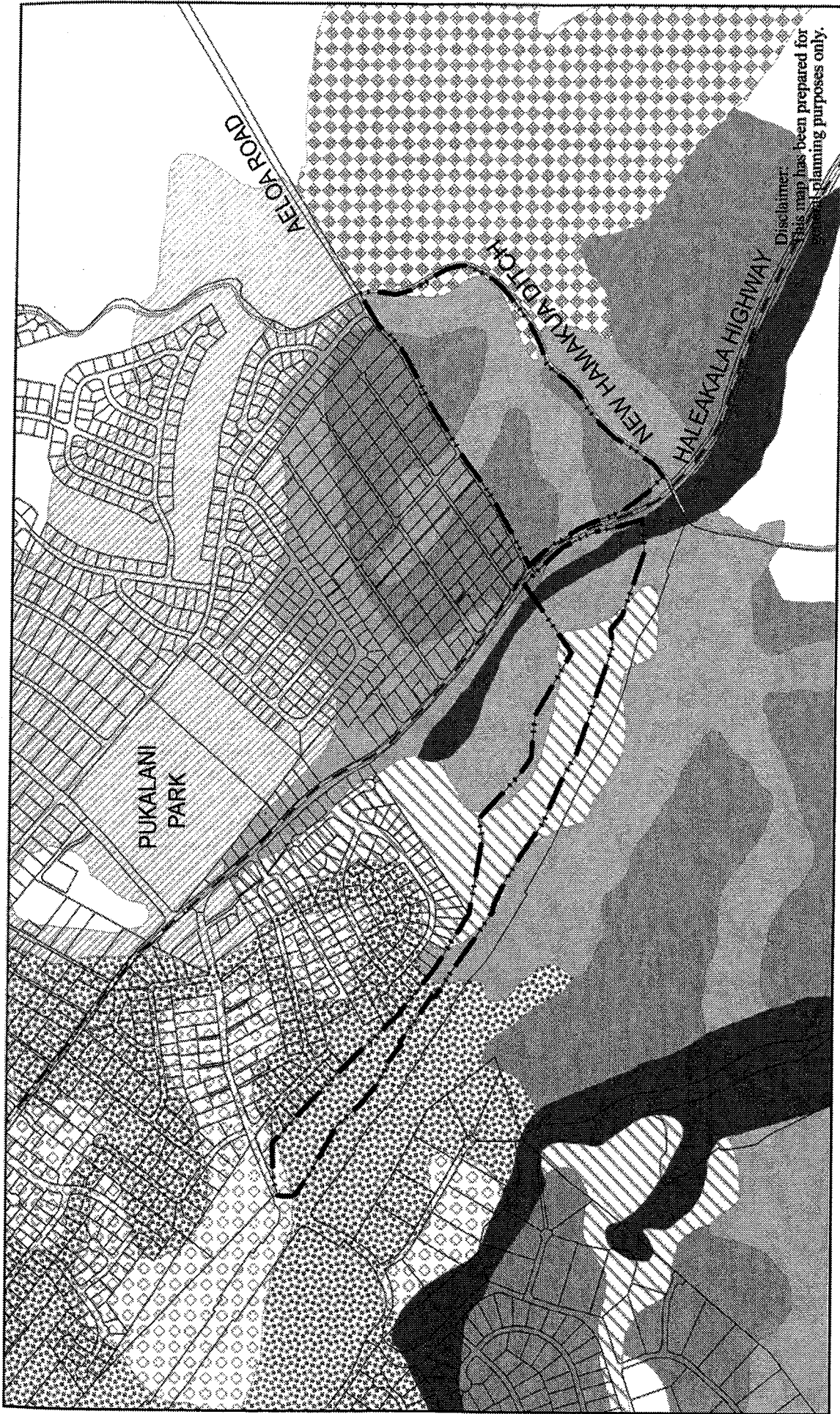
**Natural Resources Conservation Service (NRCS).** According to the *United States Department of Agriculture Soil Conservation Service, Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, 1972*, the soils of Kauhale Lani include: Hāli'imaile Silty Clay, 3-7% slopes; Hāli'imaile Silty Clay, 7-15% slopes; Rough Broken Land; Hāli'imaile Gravelly Silty Clay, 7-15% slopes, eroded; Hāli'imaile Silty Clay Loam, 3-7% slopes; Hāli'imaile Silty Clay Loam, 7-15% slopes; and Keāhua Silty Clay Loam, 7-15% slopes (see Figure 5). Under the Soil Conservation Service's Land Capability Grouping, soil types are rated according to eight levels, ranging from the highest classification level, I, to the lowest level, VIII. Lower case letters following the classification level indicate specific subclasses. A brief description of these soils, along with their Land Capability Grouping rating follows.

Hāli'imaile Silty Clay (HhB), 3-7 percent slopes. On these soils, permeability is moderately rapid, runoff is slow, and the erosion hazard is slight. This soil has subangular blocky and angular blocky structure. The soil is strongly acid in the surface layer and strongly acid to medium acid in the subsoil. This soil is used for sugarcane, pineapple, and homesites.

Approximately 22.8 acres (25 percent) of Kauhale Lani contain HhB soils. HhB soils are rated IIe, irrigated or nonirrigated. Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices. Subclass IIe soils are subject to moderate erosion if they are cultivated and not protected.

Hāli'imaile Silty Clay (HhC), 7-15 percent slopes. On this soil, runoff is medium and the erosion hazard is moderate. The soils include cobbly areas and small, moderately steep areas. This soil is used for sugarcane, pineapple, and homesites.








**LEGEND**

**Soil Classifications**

- HhB: Halimaile Silty Clay, 3-7% Slopes IIe
- HhC: Halimaile Silty Clay, 7-15% Slopes IIIe
- rRR: Rough Broken Land
- HkC2: Halimaile Gravelly Silty Clay, 7-15% Slopes, Eroded
- HgB: Halimaile Silty Clay Loam, 3-7% Slopes
- HgC: Halimaile Silty Clay Loam, 7-15% Slopes

-  KnC: Keahua Silty Clay Loam, 7-15% Slopes
-  KnCC: Keahua Silty Clay, 7-15% Slopes
-  Kauhale Lani Boundary

Source:  
Natural Resources Conservation Service  
The State of Hawaii GIS Database

Figure 5

**Soil Conservation Service Survey**

**KAUHALE LANI**

MAUI LAND & PINENEAPLE COMPANY, INC.  
ISLAND OF MAUI



**KAUHALE LANI**  
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Approximately 34.8 acres (39 percent) of Kauhale Lani contain HhC soils. HhC soils are rated IIIe, irrigated or nonirrigated. Subclass IIIe soils have severe limitations that reduce the choice of plants, require special conservation practices, or both. They are subject to severe erosion if they are cultivated and not protected.

Rough Broken Land (rRR). Rough Broken Land consists of very steep land broken by numerous intermittent drainage channels. In most places, this land type is not stony, runoff is rapid, and geologic erosion is active. This soil type is used primarily for watershed and wildlife habitat. In places it is used also for pasture and woodland.

Approximately 3.2 acres (3.5 percent) of Kauhale Lani contain rRR soils. These soils capability classification is VIIe, nonirrigated. Subclass VIIe soils are very severely limited by risk of erosion.

Hāli'imaile Gravelly Silty Clay (HkC2), 7-15 percent slopes, eroded. This soil has a profile like that of Hāli'imaile Silty Clay, 3 to 7 percent slopes, except that in most places about 50 percent of the original surface layer has been lost through erosion. Runoff is medium to rapid, and the erosion hazard is severe. This soil is used for pineapple and pasture.

Approximately 15.6 acres (17.5 percent) of Kauhale Lani contain HkC2 soils. HkC2 soils are classified as IVe, irrigated or nonirrigated. Subclass IVe soils are subject to severe erosion if they are cultivated and not protected.

Hāli'imaile Silty Clay Loam (HgB), 3-7 percent slopes. This soil has a profile like that of Hāli'imaile Silty Clay, 3 to 7 percent, except for the texture of the surface layer. Runoff is medium, and the erosion hazard is moderate. This soil is used for pineapple, pasture, and homesites.

Approximately 0.8 acres (1 percent) of Kauhale Lani contain HgB soils. HgB soils are classified as IIe, whether irrigated or nonirrigated. Subclass IIe soils are subject to moderate erosion if they are cultivated and not protected.

Hāli'imaile Silty Clay Loam (HgC), 7-15 percent slopes. This soil has a profile like that of Hāli'imaile Silty Clay, 3 to 7 percent, except for the texture of the surface layer. Runoff is medium, and the erosion hazard is moderate. This soil is used for pineapple, pasture, and homesites.

Approximately 9.6 acres (11 percent) of Kauhale Lani contain HgC soils. The capability classification of HgC soils is IIIe, irrigated or nonirrigated. Subclass IIIe soils are subject to severe erosion if they are cultivated and not protected.

Keāhua Silty Clay Loam (KnC), 7-15 percent slopes. The Keāhua Series consists of well-drained soils developed in material weathered from basic igneous rock. On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. This soil is used for sugarcane and pasture. Small acreages are used for pineapple and truck crops.

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KnC soil covers approximately 2.8 acres (3 percent) of Kauhale Lani. This soil is classified as IIIe if irrigated, IVe if nonirrigated. Subclass III e soils are subject to severe erosion if they are cultivated and not protected.

**Detailed Land Classification.** The University of Hawai'i Land Study Bureau document titled *Detailed Land Classification, Islands of Kauai, Oahu, Maui, Molokai, and Lanai* classifies the land of Kauhale Lani as Fair (C), Poor (D), and Very Poor (E) (see Figure 6). Approximately 21.6 acres are classified as C21, 18 acres as E96, and 49 acres as D44. For non urban areas the Detailed Land Classification classifies land based on a five-class productivity rating system using the letters A, B, C, D, and E, where A represents the highest class of productivity and E the lowest. The characteristics of the specific land types of Kauhale Lani are detailed in Table 3 below.

**Table 3. Detailed Land Classification for Kauhale Lani**

	<b>C21</b>	<b>E96</b>	<b>D44</b>
<b>Machine Tilability</b>	Well-suited	Not suited	Well-suited
<b>Stoniness</b>	Nonstony	Nonstony to rocky	Nonstony
<b>Depth (inches)</b>	Deep, over 30	Variable	Deep, over 30
<b>Slope (%)</b>	0-10, predominantly 5	36-80, predominantly 45	0-10, predominantly 8
<b>Texture</b>	Fine	Moderately fine to medium	Fine
<b>Drainage</b>	Well-drained	Well-drained	Well-drained
<b>Mean Annual Rainfall (inches)</b>	30 to 40	40 to 60	20 to 35
<b>Elevation (feet)</b>	100 to 1200	100 to 5000	0 to 1200
<b>Color</b>	Dark reddish brown	Dark brown to dark reddish brown	Dark reddish brown
<b>Soil Series</b>	Kahana, Haliimaile	Rough broken lands, C zones	Lahaina, Keahua
<b>Major Existing Uses</b>	Pineapple, sugar cane	Grazing, forest	Pineapple, sugar cane
<b>District</b>	Lahaina, Makawao	Lahaina, Wailuku, Hana, Makawao	Lahaina, Makawao

**Agricultural Lands of Importance to the State of Hawai'i.** The State of Hawai'i Department of Agriculture's *Agricultural Lands of Importance to the State of Hawai'i (ALISH)* system of defining agricultural suitability classifies the soils of Kauhale Lani as Prime Agricultural Land, Other Agricultural Land, and "not classified" (see Figure 7).

Prime Agricultural Land is land best suited for the production of food, feed, forage, and fiber crops. When treated and managed, including water management, according to modern farming methods, the land has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops. Approximately 30 acres of the 50-acre parcel are classified as Prime Agricultural Land.

Other Agriculture Land is land other than Prime or Unique Agricultural Land that is also of statewide or local importance for the production of food, feed, fiber, and forage crops. The lands in this classification are important to agriculture in Hawai'i yet they exhibit properties, such as seasonal wetness, erosion, limited rooting zone, slope, flooding, or drought, that exclude them

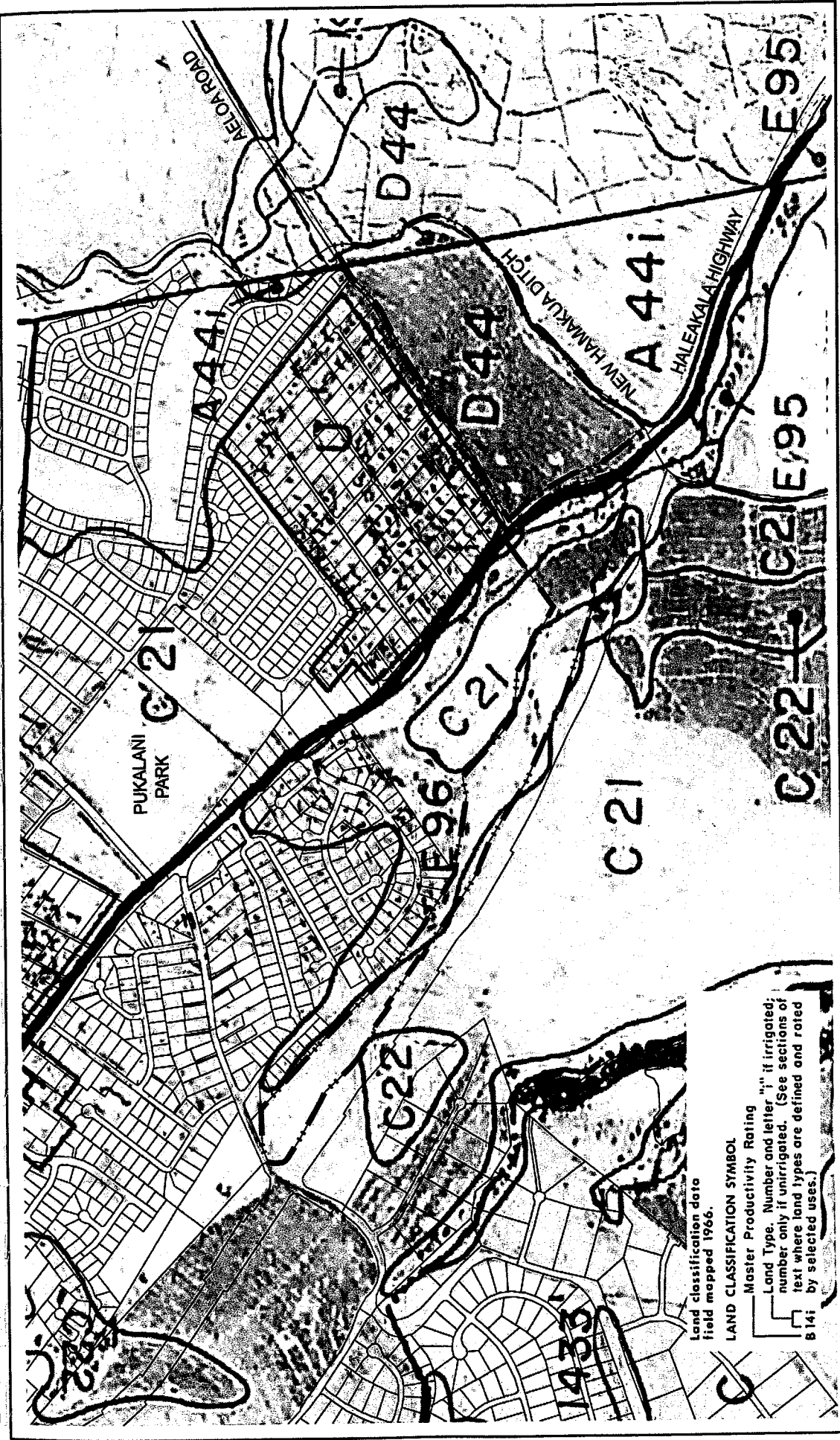


Figure 6  
 Detailed Land Classification  
**KAUHALE LANI**  
 MAUI LAND & PINEAPPLE COMPANY, INC.  
 NORTH  
 LINEAL SCALE (FEET)  
 0 1,000 2,000 4,000  
 ISLAND OF MAUI  
**PBR**  
 HAWAII

Source:  
 Land Study Bureau;  
 The State of Hawaii GIS Database

Disclaimer:  
 This map has been prepared for  
 general planning purposes only.

- LEGEND**
- ▲ Kauhale Lani Boundary
  - A: Excellent
  - B: Good
  - C: Fair
  - D: Poor
  - E: Very Poor
  - U: Urban

Land classification data  
 field mapped 1966.

**LAND CLASSIFICATION SYMBOL**

Master Productivity Rating  
 Land Type, Number and letter "i" if irrigated;  
 number only if unirrigated. (See sections of  
 text where land types are defined and rated  
 B141 by selected uses.)

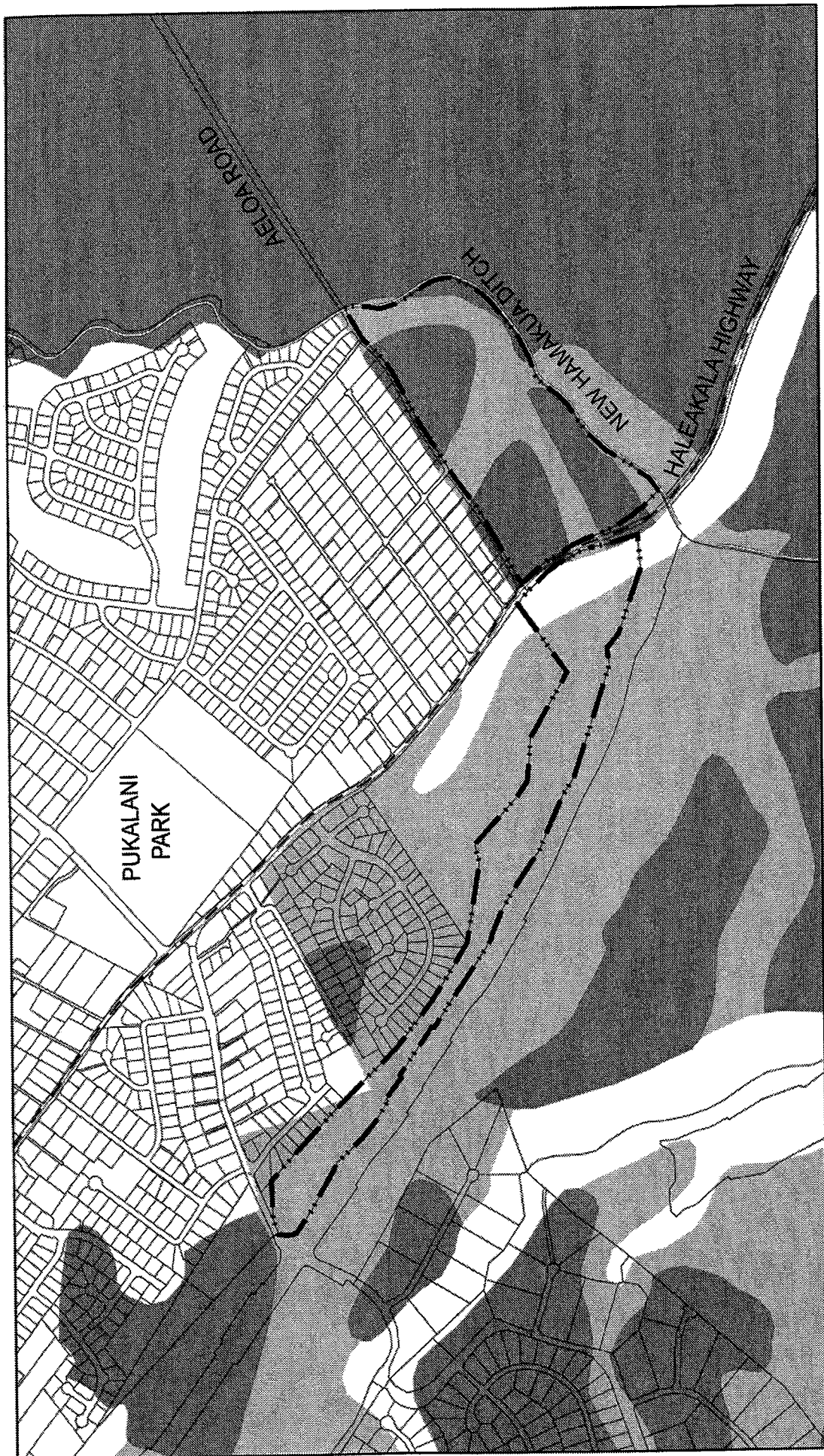
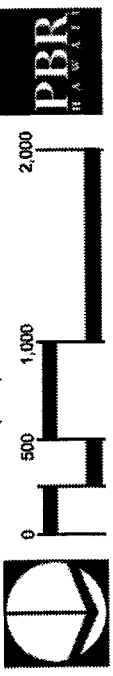


Figure 7

Agricultural Lands of Importance to the State of Hawaii (ALISH)

**KAUHALE LANI**

MAUI LAND & PINEAPPLE COMPANY, INC. ISLAND OF MAUI  
 NORTH LINEAL SCALE (FEET)



**LEGEND**

ALISH Types

- Prime ALISH Land
- Other ALISH Land
- Not Classified

Kauahale Lani Boundary

Source:  
 The State of Hawaii GIS Database

Disclaimer:  
 This map has been prepared for  
 general planning purposes only.

## KAUHALE LANI Draft Environmental Assessment

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from the Prime or Unique Agricultural Land classifications. When properly managed, these lands can be farmed satisfactorily and produce fair to good crop yields by applying greater inputs of fertilizer and other soil amendments, providing drainage improvements, implementing erosion control practices, and providing flood protection. The remaining 20 acres of the 50-acre parcel and approximately 32.6 acres of the 39-acre parcel are classified as Other Agricultural Land, for a total of 52.6 acres. The remaining 6 acres of the 39-acre parcel are not classified.

### *Potential Impacts and Mitigation Measures*

The 50-acre parcel of the Kauhale Lani site is dominated by Hāli'imaile Silty Clay, 3-7 percent slopes (HhB) and 7-15 percent slopes (HhC). In its natural state, this land is not irrigated. The non-irrigated capability classification of the 50-acre parcel has a subclass rating of IIIe, which indicates severe limitations and erosion potential when cultivated and not protected. Without irrigation, these lands are naturally unsuitable for agriculture. Therefore, the change in land use from agricultural to residential will not have a significant impact on the inventory of valuable agricultural lands. Maui Pineapple Company, Ltd. (MPC) (a subsidiary of ML&P) is currently using its existing pineapple fields more efficiently and has increased pineapple production without expanding its number of fields. This increase in productivity will balance the loss of agricultural land. Kauhale Lani will not have a negative impact on ML&P's agricultural operations.

The 39-acre parcel is not cultivated due to its topography and soil types. Upon completion of the Kauhale Lani community, adequate landscaping will be implemented to minimize erosion.

Impacts to the soils include the potential for soil erosion and the generation of dust during construction. Clearing and grubbing activities will temporarily disturb the soil retention values of the existing vegetation and expose soils to erosion forces. Some wind erosion of soils could occur without a proper watering and re-vegetation program. Heavy rainfall could also cause erosion of soils within disturbed areas of land.

To the extent possible, improvements will conform to the contours of the land, further limiting the need for extensive grading of the site. In addition, graded areas will be limited to specific areas for short periods of time.

Measures taken to control erosion during the site development period will include:

- Minimizing the time of construction;
- Retaining existing ground cover as long as possible;
- Constructing drainage control features early;
- Using temporary area sprinklers in non-active construction areas when ground cover is removed;
- Providing a water truck on-site during the construction period to provide for immediate sprinkling as needed;
- Using temporary berms and cut-off ditches, where needed, for control of erosion;
- Watering graded areas when construction activity for each day has ceased;
- Grassing or planting all cut and fill slopes immediately after grading work has been completed; and

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- Installing silt screens where appropriate.

All construction activities will comply with all applicable Federal, State, and County regulations and rules for erosion control. Before issuance of a grading permit by the County of Maui, the final erosion control plan and best management practices required for the NPDES permit will be completed. All construction activities will also comply with the provisions of Chapter 11-60 HAR, Section 11-60.1-33, Fugitive Dust.

After construction, the establishment of permanent landscaping will provide long-term erosion control.

### **3.1.4 Agricultural Impact**

#### ***Existing Conditions***

Both the 50-acre and the 39-acre Kauhale Lani community parcels are former pineapple fields Maui Pineapple Company, Ltd. (MPC) ended pineapple cultivation on these parcels in 2002. The fields have been fallow since then, with the exception of a small section of the 39-acre parcel, on which MPV cultivated organic pineapple until 2003.

Both parcels are inefficient to farm as part of MPC operations since the Pukalani Bypass separated these parcels from other contiguous, more suitable MPC pineapple fields. As MPC downsizes its operations to focus on the fresh fruit market, it is focusing on the best and most efficient land to farm. MPC is keeping its best land in cultivation and exploring options to cultivate pineapple on other more suitable lands.

#### ***Potential Impacts and Mitigative Measures***

Creation of Kauhale Lani will require that the approximately 89 acres of land previously used for pineapple cultivation be permanently withdrawn from agricultural use. This will amount to about one percent of the approximately 5,800 acres currently in pineapple cultivation by Maui Pineapple Company, Ltd. Kauhale Lani will not lead to a decrease in ML&P's agricultural viability.

In conformance with the *Makawao-Pukalani-Kula Community Plan*, Kauhale Lani will provide for the carefully considered expansion of Pukalani within a defined area, while preserving the surrounding agricultural land and open space that is so valuable to the character of the region. The New Hāmākua Ditch provides a natural boundary to the edge of Pukalani. By limiting residential uses to an appropriate area, Kauhale Lani allows for needed housing while respecting and acknowledging the value of agricultural land and open spaces.

ML&P maintains a long-term commitment to agriculture. Strengthening its agricultural operations is one of the company's foremost goals. While focusing on the market demand for fresh whole pineapple, MPC still produces pineapple for canning. However, the shift toward fresh pineapple production has allowed MPC to compete against other producers.

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In addition to its pineapple operations, ML&P is exploring a wide array of diversified agricultural opportunities and conducting field trials on new crops.

To further diversify agriculture, ML&P is expanding their agricultural base via a new entity called Maui Agricultural Partners. Maui Agricultural Partners will support a diverse community of farming partnerships to enable the sharing of knowledge, infrastructure, and costs. The goal of Maui Agricultural Partners is to become a “grower of growers” through entrepreneurial programs allowing Maui farmers to develop the talent base necessary to grow Maui’s diversified agriculture industry. As a partner, ML&P is committed to a long-term stake in sustaining farming operations as evidenced by its investment of land and technical and financial resources.

Removing the 89 acres of land slated for Kauhale Lani will not have a negative impact on ML&P’s agricultural operations.

Regarding potential nuisance complaints from Kauhale Lani residents about ongoing neighboring sugar cultivation operations, ML&P will notify all prospective buyers and lessees that the Hawai’i Right to Farm Act (Chapter 165, HRS) limits the circumstances under which pre-existing farm activities may be deemed a nuisance.

### 3.1.5 Identification of Chemicals and Fertilizers

#### *Existing Conditions*

Maui Pineapple Company, Ltd. (MPC) formerly cultivated pineapple on the Kauhale Lani site. As part of its agricultural operations, MPC uses fertilizers, pesticides, fungicides, herbicides, and plant growth regulators in compliance with all product labeling and applicable government regulations.

**Fertilizers.** MPC uses the following fertilizers—which provide nutrients essential for plant growth—as part of its pineapple operations: UAN-32 (Urea-Ammonium nitrate), urea, potassium sulfate, potassium chloride, Treble Super Phosphate, rock phosphate, lime, magnesium sulfate, iron sulfate, and zinc sulfate.

**Pesticides.** MPC uses the following pesticides—to control nematodes, ants, or, other insects—as part of its pineapple operations: Telone II Soil Fumigant (1, 3 dichloropropene), Namacur 3 (Fenamiphos), Vydate (Oxamyl), Thiodan (Endosulfan), Amdro Pro Fire Ant Bait (Hydramethylnon), and Diazinon 50W (Diazinon).

**Fungicides, Herbicides, and Plant Growth Regulators.** MPC uses the following fungicides, herbicides, and plant growth regulators—to regulate plant growth, induce flowering, control weeds, or control disease—as part of its pineapple operations: Ethrel 4 or Ethepon 2 (Ethepon), Ethylene gas (Ethylene), Karmex DF or Direx L (Diuron), Evik (Ametryne), Hyvar X (Bromacil), Aliette (Fosetyl-Al), Phosguard (Phosphorous acid), Tilt (Propiconazole), Herbimax, Assure II Herbicide (Qualifop-ethyl), Velpar (Hexazinone), and Round-up (Glyphosate).



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***Potential Impacts and Mitigative Measures***

The creation of the Kauhale Lani community is expected to significantly reduce the amount of fertilizers, pesticides, fungicides, herbicides, and plant growth regulators used on the site relative to the former agricultural uses.

Overfertilization of Kauhale Lani landscaping will be avoided to ensure that the community does not contribute additional nutrients entering the ground. Common nitrogen/phosphorus/ potash mixed fertilizers are anticipated to be applied to lawn areas, groundcover, shrubs, and trees. With proper irrigation management practices, leaching and runoff of fertilizers should be negligible.

Within Kauhale Lani, the use of herbicides will generally be limited to the initial landscaping period on the site. Anticipated application of pesticides will be used as a treatment rather than a preventative measure. As a treatment, application will be limited. In addition, plant selection will be based on hardiness, drought tolerance, pest resistance, as well as aesthetic concerns.

**3.1.6 Natural Hazards**

***Existing Conditions***

Natural hazards impacting the Hawaiian Islands include hurricanes, tsunamis, volcanic eruptions, earthquakes, and flooding.

Devastating hurricanes have impacted Hawai'i twice since 1980: Hurricane 'Iwa in 1982 and Hurricane 'Iniki in 1992. While it is difficult to predict these natural occurrences, it is reasonable to assume that future events could be likely given the recent record.

Tsunamis are large, rapidly moving ocean waves triggered by a major disturbance of the ocean floor, which is usually caused by an earthquake but sometimes can be produced by a submarine landslide or a volcanic eruption. About 50 tsunamis have been reported in the Hawaiian Islands since the early 1800s. Seven caused major damage, and two of these were locally generated. The Kauhale Lani community is outside of the Civil Defense Tsunami Evacuation Zone.

Volcanic hazards in the Pukalani area are considered minimal due to the dormant status of Haleakalā Volcano, which last erupted in 1790 (MacDonald, Abbott, and Peterson 1983).

In Hawai'i, most earthquakes are linked to volcanic activity, unlike other areas where a shift in tectonic plates is the cause of an earthquake. Each year, thousands of earthquakes occur in Hawai'i, the vast majority of them so small they are detectable only with highly sensitive instruments. However, moderate and disastrous earthquakes have rocked the islands.

The 1938 Maui Earthquake, with a magnitude of 6.7-6.9 on the Richter Scale and an epicenter six miles north of Maui, created landslides and forced the closure of the road to Hāna. Damaged water pipes and ground fractures also were reported in Lahaina.

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Flood hazards are primarily identified by the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA), National Flood Insurance Program. According to the FIRM, Kauhale Lani community is located in Zone C, areas of minimal flooding (Figure 8).

### *Potential Impacts and Mitigation Measures*

Kauhale Lani will not exacerbate any hazardous conditions. All structures will be constructed for protection from earthquakes and the destructive winds and torrential rainfall of tropical hurricanes in accordance with the Building Code adopted by the County of Maui.

#### **3.1.7 Flora**

##### *Existing Conditions*

No threatened, endangered, or species of concern were observed on the Kauhale Lani site during a botanical field survey conducted in May 2004 (Char 2004). Former pineapple fields (fallow since 2002) covered the majority of the two parcels that make up the Kauhale Lani community site. Weedy species commonly associated with agricultural lands are usually found as a narrow band along the edges of fields that border roads, ditches, and other uncultivated areas. Further descriptions of the various botanical resources are summarized below. Appendix B contains the complete botanical survey.

**50-acre Parcel.** The 50-acre parcel was fallow at the time of the field survey. A few rock piles are scattered through the parcel, which support a cover of green panicgrass (*Panicum maximum* var. *trichoglume*) and sourgrass (*Digitaria insularis*). Flora found along the perimeter of this parcel consists mainly of weedy species including green panicgrass, Natal redtop grass (*Melinis repens*), Spanish needle (*Bidens pilosa*), fireweed (*Senecio madagascariensis*), spiny amaranth (*Amaranthus spinosus*), pualele (*Emilia fosbergii*), Crassocephalum crepidioides, Cuba jute (*Sida rhombifolia*), goosegrass (*Eleusine indica*), sourgrass, swollen fingergrass (*Chloris barbata*), Brachiaria subquadripara, and crabgrass (*Digitaria* sp.). A row of oleander shrubs (*Nerium oleander*) is planted alongside the highway. Additionally, two native species, popolo (*Solanum americanum*) and 'uhaloa (*Waltheria indica*), were found.

Along the ditch, the weedy vegetation found includes: Spanish needle, sowthistle (*Sonchus oleraceus*), crabgrass, spiny amaranth, koa haole shrubs (*Leucaena leucocephala*), California grass (*Brachiaria mutica*), castor bean (*Ricinus communis*), hairy abutilon (*Abutilon grandifolium*), 'ilima (*Sida fallax*), and koali 'awa (*Ipomoea indica*).

The band of weedy vegetation adjacent to the residential area is similar to that found along the highway, but also includes cheeseweed (*Malva parviflora*), apple of Peru (*Nicandra physalodes*), Jimson weed (*Datura stramonium*), California grass, lion's ear (*Leonotis nepetifolia*), prickly lettuce (*Lactuca serriola*), and a yellow-flowered morning glory (*Ipomoea ochracea*). A few landscape plantings from the adjacent yards spill over onto the parcel; these include New Zealand spinach (*Tetragonia tetragonioides*), aloe (*Aloe vera*), and guava (*Psidium guajava*).

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**39-acre Parcel.** Flora on the 39-acre parcel consists mainly of overgrown pineapple fields. The pineapple fields on the eastern half of the parcel appear to have been more recently abandoned since the rows of pineapple plants are not as overgrown and the weedy assemblage of species, mostly Natal redtop grass and sourgrass, occur along the edge of the fields and on the dirt roads.

On the western half of the parcel, the old fields are open and grassy with a few remnant clumps of pineapple plants. Additional botanical resources found on the western half of this parcel include sourgrass, Natal redtop, Guinea grass (*Panicum maximum*), green panicgrass, sourbush shrubs (*Pluchea carolinensis*), spiny amaranth, golden crown-beard (*Verbesina encelioides*), castor bean, lion's ear, pualele, Spanish needle, Cuba jute, Fireweed, and a few koa haole shrubs with koali 'awa vines growing on them.

On this parcel there is a planting of various Eucalyptus species, 40 to 70 feet tall, bordering Haleakalā Highway and also a few trees of silk oak (*Grevillea robusta*) and Chinaberry (*Melia azedarach*). Koa haole and Christmas berry (*Schinus terebinthifolius*) shrubs form scattered, small thickets under the tree canopy. Ground cover consists of scattered clumps of Guinea grass, along with a few weedy plants of maile hohono (*Ageratum conyzoides*), Spanish needle, burbush (*Triumfetta sp.*), and Jamaica vervain (*Stachytarpheta jamaicensis*). However, areas with bare soil and leaf and branch litter are common. Axis deer tracks and scats are occasionally encountered. A few native species are quite common in this forested area. Shrubs of 'a'ali'i (*Dodonaea viscosa*) and 'ākia (*Wikstroemia oahuensis*), three to eight feet tall, are common to occasional. 'Uhaloa and 'ilima are found along the edge of the tree planting. Vines of *Sicyos hispidus*, a member of the cucumber or squash family, are found on the edge of the tree planting facing the highway. This species of *Sicyos* is easily identified by its fuzzy fruits.

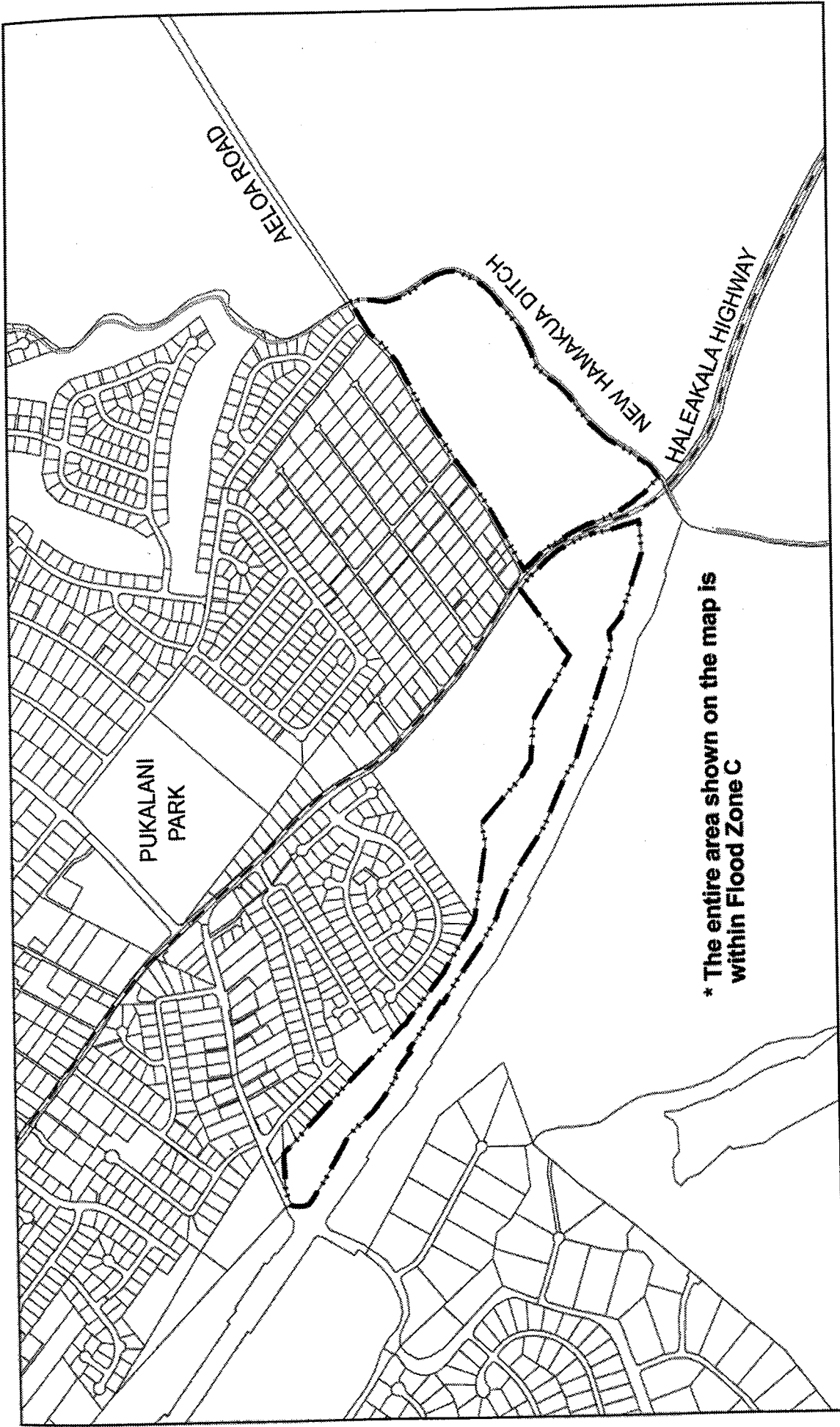
The small gully found between the Eucalyptus planting and the overgrown pineapple fields supports abundant patches of Napier or elephant grass (*Pennisetum purpureum*) as well as dense clumps of Guinea grass. *Neonotonia wightii*, a member of the pea family, is locally abundant in some places, forming tangled mats over the grasses and scattered koa haole shrubs.

There were seven native species observed on the site. Of the seven native species, five are indigenous, that is, they are native to the Hawaiian Islands and elsewhere and two are endemic that is, they are native only to the Hawaiian Islands. The native species found include: popolo (*Solanum americanum*), 'uhaloa (*Waltheria indica*), koali 'awa (*Ipomoea indica*), 'ilima (*Sida fallax*), and 'a'ali'i (*Dodonaea viscosa*). The endemic species include: 'ākia (*Wikstroemia oahuensis*) and *Sicyos*.

### ***Potential Impacts and Mitigative Measures***

Kauhale Lani is not expected to have a significant negative impact on botanical resources since no threatened, endangered, or species of concern are known to occur on the site. If feasible, the Eucalyptus trees on the 39-acre parcel will be retained and kept in open space as the topography is rough and broken, and the erosion hazard is of some concern.

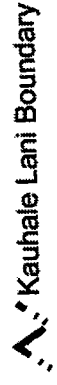
Kauhale Lani will include new landscaping appropriate to the residential setting. Design standards for the community will include a unified streetscape planting theme and program to ensure the appropriate use of landscaping and compliance with the Maui County Planting Plan.



\* The entire area shown on the map is within Flood Zone C

**LEGEND**

- Flood Zone
- C: Areas of Minimal Flooding



Source: Federal Emergency Management Agency  
 Flood Insurance Rate Map 150003 0260B

Disclaimer:  
 This map has been prepared for general planning purposes only.

Figure 8  
 Flood Insurance Rate Map (FIRM)

**KAUHALE LANI**

MAUI LAND & PINEAPPLE COMPANY, INC.  
 ISLAND OF MAUI



PHASE I ENVIRONMENTAL SITE ASSESSMENT QUESTIONNAIRE

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The following questionnaire is required by the new ASTM Standard E 1527-05, which adheres to the new All Appropriate Inquiries (AAI) Rule (United States Environmental Protection Agency) (40 CFR 312).

As defined by ASTM, the User of the report is the "party seeking to use Practice E 1527 to complete an environmental site assessment of the property. A user may include, without limitation, a potential purchaser of property, a potential tenant of property, an owner of property, a lender, or a property manager."

**PUKALANI PROPERTY**

**Old Halaekala Highway, Pukalani, Maui, Hawaii**

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**1. Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25)**

Are you aware of any environmental cleanup liens against the Subject Property that are filed or recorded under federal, tribal, state or local law?

None to our knowledge.

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**2. Activity and land use limitations that are in place on the site or that have been filed or records in a registry (40 CFR 312.26)**

Are you aware of any activity and land use limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the Subject Property and/or have been filed or recorded in a registry under federal, tribal, state or local law?

None. See attached preliminary reports prepared by Title Guaranty of Hawaii, Inc. prior to sale for both properties (Maui Tax Map Key Nos. 2-3-09:07 and 64).

---

**3. Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28)**

As the User of this report, do you have any specialized knowledge or experience related to the Subject Property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the Subject Property or adjoining property?

None. Current owner Pukalani Associates, LLC ("Pukalani") intends to develop both

properties for a residential subdivision and outdoor recreational facilities. Prior owner Maui Land & Pineapple Co., Inc.'s ("MLP") subsidiary Maui Pineapple Company, Ltd. ("MPC") cultivated pineapple on both properties.

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**4. Relationship of the purchase price to the fair market value of the Subject Property if it were not contaminated (40 CFR 312.29)**

Does the purchase price being paid for the Subject Property reasonably reflect the fair market value of the Subject Property? If so, why?

Yes to our knowledge.

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**5. Commonly known or reasonably ascertainable information about the Subject Property (40 CFR 312.30)**

Are you aware of commonly known or reasonably ascertainable information about the Subject Property that would help the environmental professional to identify conditions indicative of release or threatened release?

---

a. Do you know the past uses of the Subject Property?

Yes, MPC cultivated pineapple on both properties since at least the 1920's. Cultivation on Maui Tax Map Key No. 2-3-09:64 ceased in the mid 1990's following construction of the New Haleakala Highway. Cultivation on Maui Tax Map Key No. 2-3-09:07 ceased in 2002.

---

b. Do you know of specific chemicals that are present or once were present at the Subject Property?

In a Draft Environmental Assessment for the properties prepared in May 2005, MLP disclosed that as part of its agricultural operations, MPC used fertilizers, pesticides, fungicides, herbicides, and plant growth regulators in compliance with all product labeling and applicable government regulations. The following were used at the time MPC ceased cultivation:

**Fertilizers.** MPC used the following fertilizers—which provide nutrients essential for plant growth—as part of its pineapple operations: UAN-32 (Urea-Ammonium nitrate), urea, potassium sulfate, potassium chloride, Treble Super Phosphate, rock phosphate, lime, magnesium sulfate, iron sulfate, and zinc sulfate.

**Pesticides.** MPC used the following pesticides to control nematodes, ants, or, other insects as part of its pineapple operations: Telone II Soil Fumigant (1, 3 dichloropropene), Nematicur 3

(Fenamiphos), Vydate (Oxamyl), Thiodan (Endosulfan), Amdro Pro Fire Ant Bait (Hydramethylnon), and Diazinon 50W (Diazinon).

**Fungicides, Herbicides, and Plant Growth Regulators.** MPC used the following fungicides, herbicides, and plant growth regulators-to regulate plant growth, induce flowering, control weeds, or control disease-as part of its pineapple operations: Ethrel 4 or Ethephon 2 (Ethephon), Ethylene gas (Ethylene), Karmex DF or Direx L (Diuron), Evik (Ametryne), Hyvar X (Bromacil), Aliette (Fosetyl-Al), Phosguard (Phosphorous acid), Tilt (Propiconazole), Herbimax, Assure II Herbicide (Qualifop-ethyl), Velpar (Hexazinone), and Round-up (Glyphosate).

Neither MLP nor MPC has disclosed any fertilizers, pesticides, fungicides or herbicides that were previously used on these properties, but which had been discontinued prior to the time MPC discontinued cultivation.

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c. Are you aware of any spills or other chemical releases that have taken place at the Subject Property?

None to our knowledge.

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d. Do you have any prior knowledge that the Subject Property was developed as a gas station, dry cleaner, manufacturing/industrial facility in the past?

No, properties have always been in agricultural use.

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e. Are you aware of historical use of hazardous materials or petroleum products used or present on the Subject Property?

None to our knowledge.

---

f. Do you know if the property is currently or was formerly equipped with underground storage tanks (USTs) or septic tanks?

No.

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- g. Do you know of any past, threatened or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substance or petroleum products involving the Subject Property by any owner or occupant of the Subject Property?

No specific knowledge regarding the properties. However Pukalani is generally aware that pineapple plantations in Hawaii have historically discontinued using pesticides that may have resulted in contamination. On Maui this historic usage resulted in litigation involving the manufacturers of such pesticides.

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**6. The degree of obviousness of the presence or likely presence of contamination at the Subject Property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31)**

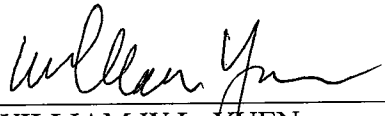
As the User of this report, are there any obvious indicators that point to the presence or likely presence of contamination at the Subject Property based on your knowledge and experience related to the Subject Property?

None to our knowledge.

---

PUKALANI ASSOCIATES, LLC, a Hawaii  
limited liability company,

By: CHING, YUEN & MORIKAWA

By:   
WILLIAM W.L. YUEN,  
Attorney at Law, a Law Corporation  
Its Attorney

e-mail: [billyuen@cymlaw.com](mailto:billyuen@cymlaw.com)  
Telephone: (808) 524-8880



## **APPENDIX C: DATABASE**

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*TRACK ► INFO SERVICES, LLC*

# **Environmental FirstSearch™ Report**

Target Property:

**OLD HALEAKALA HWY**

**PUKALANI HI 96788**

Job Number: 079898

**PREPARED FOR:**

Partner Engineering & Science  
2101 Rosecrans Ave., Suite 4270  
El Segundo, CA 90245

07-14-08



*Tel: (866) 664-9981*

*Fax: (818) 249-4227*

# Environmental FirstSearch Search Summary Report

**Target Site:** OLD HALEAKALA HWY  
PUKALANI HI 96788

## FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	04-07-08	1.50	0	0	0	0	0	0	0
NPL Delisted	Y	04-07-08	1.00	0	0	0	0	0	0	0
CERCLIS	Y	04-22-08	1.00	0	0	0	0	0	0	0
NFRAP	Y	04-22-08	1.00	0	0	0	0	0	0	0
RCRA COR ACT	Y	04-01-08	1.50	0	0	0	0	0	0	0
RCRA TSD	Y	04-01-08	1.00	0	0	0	0	0	0	0
RCRA GEN	Y	04-01-08	0.75	0	0	0	0	0	0	0
RCRA NLR	Y	04-01-08	0.25	0	0	0	-	-	0	0
Federal IC / EC	Y	04-01-08	1.00	0	0	0	0	0	0	0
ERNS	Y	04-22-08	0.25	0	0	0	-	-	0	0
Tribal Lands	Y	12-01-05	1.50	0	0	0	0	0	0	0
State/Tribal Sites	Y	07-24-06	1.50	0	0	0	0	1	0	1
State Spills 90	Y	NA	0.25	0	0	0	-	-	0	0
State/Tribal SWL	Y	NA	1.00	0	0	0	0	0	0	0
State/Tribal LUST	Y	07-28-06	1.00	0	0	0	0	1	1	2
State/Tribal UST/AST	Y	08-04-06	0.75	0	0	0	0	0	1	1
State/Tribal EC	Y	NA	1.00	0	0	0	0	0	0	0
State/Tribal IC	Y	07-24-06	0.75	0	0	0	0	0	0	0
State/Tribal VCP	Y	07-24-06	1.00	0	0	0	0	0	0	0
State/Tribal Brownfields	Y	07-24-06	1.00	0	0	0	0	0	0	0
State Other	Y	01-01-07	0.75	0	0	0	0	0	0	0
- TOTALS -				0	0	0	0	2	2	4

### Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

### Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

***Environmental FirstSearch  
Site Information Report***

**Request Date:** 07-14-08  
**Requestor Name:** Kate Ginther  
**Standard:** AAI

**Search Type:** COORD  
**Job Number:** 079898  
**Filtered Report**

**Target Site:** OLD HALEAKALA HWY  
PUKALANI HI 96788

*Demographics*

<b>Sites:</b> 4	<b>Non-Geocoded:</b> 2	<b>Population:</b> NA
<b>Radon:</b> 0.2 - 1 PCIL		

*Site Location*

	Degrees (Decimal)	Degrees (Min/Sec)	UTMs
<b>Longitude:</b>	-156.351935	-156:21:7	<b>Easting:</b> 775559.64
<b>Latitude:</b>	20.851471	20:51:5	<b>Northing:</b> 2307841.124
			<b>Zone:</b> 4

*Comment*

**Comment:**AAI

*Additional Requests/Services*

**Adjacent ZIP Codes:** 0 Mile(s)

**Services:**

ZIP Code	City Name	ST	Dist/Dir	Sel

	Requested?	Date
Sanborns	No	
Aerial Photographs	Yes	07-14-08
Historical Topos	No	
City Directories	No	
Title Search/Env Liens	No	
Municipal Reports	No	
Online Topos	No	

***Environmental FirstSearch  
Sites Summary Report***

**Target Property:** OLD HALEAKALA HWY  
PUKALANI HI 96788

**JOB:** 079898  
AAI

**TOTAL:** 4                    **GEOCODED:** 2                    **NON GEOCODED:** 2                    **SELECTED:** 0

<b>Page No.</b>	<b>DB Type</b>	<b>Site Name/ID/Status</b>	<b>Address</b>	<b>Dist/Dir</b>	<b>Map ID</b>
1	LUST	PUKALANI MINIT STOP 9-503350/SITE CLEANUP COMPLET	3310 A HALEAKALA HWY PUKALANI HI 96788	0.87 SE	1
1	STATE	MAUI PINEAPPLE CO LTD HALIIMAILE R HIST_465/ONGOING	870 HALIIMAILE RD Haliimaile HI 96768	1.26 NE	2

***Environmental FirstSearch  
Sites Summary Report***

**Target Property:** OLD HALEAKALA HWY  
PUKALANI HI 96788

**JOB:** 079898  
AAI

**TOTAL:** 4                    **GEOCODED:** 2                    **NON GEOCODED:** 2                    **SELECTED:** 0

<b>Page No.</b>	<b>DB Type</b>	<b>Site Name/ID/Status</b>	<b>Address</b>	<b>Dist/Dir</b>	<b>Map ID</b>
2	LUST	PUKALANI TERRACE LANDCO BASEYARD 9-500374/SITE CLEANUP COMPLET	LIHOLANI ST ALONG KAAKAKAI PUKALANI HI 96788	NON GC	
3	UST	PUKALANI TERRACE LANDCO BASEYARD 9-500374/PERMANENTLY OUT OF U	LIHOLANI ST ALONG KAAKAKAI PUKALANI HI 96788	NON GC	

## Environmental FirstSearch Site Detail Report

**Target Property:** OLD HALEAKALA HWY  
PUKALANI HI 96788

**JOB:** 079898  
AAI

### LUST

**SEARCH ID:** 2                                  **DIST/DIR:** 0.87 SE                                  **MAP ID:** 1

<b>NAME:</b> PUKALANI MINIT STOP	<b>REV:</b> 02/11/05
<b>ADDRESS:</b> 3310 A HALEAKALA HWY PUKALANI HI 96788	<b>ID1:</b> 9-503350
<b>CONTACT:</b>	<b>ID2:</b>
	<b>STATUS:</b> SITE CLEANUP COMPLETED
	<b>PHONE:</b>

<b>Event ID Number:</b>	990231
<b>Facility ID Number:</b>	9-503350
<b>Status Date:</b>	11/16/1999
<b>Status:</b>	Site Cleanup Completed
<b>Project Officer</b>	Ruiz

### STATE

**SEARCH ID:** 1                                  **DIST/DIR:** 1.26 NE                                  **MAP ID:** 2

<b>NAME:</b> MAUI PINEAPPLE CO LTD HALIIMAILE ROAD	<b>REV:</b> 07/24/06
<b>ADDRESS:</b> 870 HALIIMAILE RD HALIIMAILE HI 96768	<b>ID1:</b> HIST_465
<b>CONTACT:</b>	<b>ID2:</b>
	<b>STATUS:</b> ONGOING
	<b>PHONE:</b>

<b>Filed Under:</b>	Maui Land and Pineapple Company Inc.
<b>Unit:</b>	Maui Land and Pineapple Co
<b>Federal ID:</b>	HID027449560
<b>Agreement Program:</b>	State Site
<b>Funding:</b>	
<b>Sitelist Name:</b>	Maui Land and Pineapple Co
<b>Supplemental Location:</b>	
<b>Activity Type:</b>	Ranking
<b>Comments:</b>	
<b>IC:</b>	
<b>Status:</b>	Ongoing
<b>Assignment Date:</b>	5/20/2004
<b>Activity Lead:</b>	Melody Calisay
<b>Restricted Use:</b>	
<b>End Date:</b>	
<b>End Fill:</b>	7/24/2006
<b>Result Fill:</b>	Ongoing

***Environmental FirstSearch  
Site Detail Report***

**Target Property:** OLD HALEAKALA HWY  
PUKALANI HI 96788

**JOB:** 079898  
AAI

LUST

**SEARCH ID:** 4

**DIST/DIR:** NON GC

**MAP ID:**

**NAME:** PUKALANI TERRACE LANDCO BASEYARD  
**ADDRESS:** LIHOLANI ST ALONG KAAKAKAI  
PUKALANI HI 96788

**REV:** 02/11/05  
**ID1:** 9-500374  
**ID2:**  
**STATUS:** SITE CLEANUP COMPLETED  
**PHONE:**

**CONTACT:**

**Event ID Number:** 930046  
**Facility ID Number:** 9-500374  
**Status Date:** 3/20/2001  
**Status:** *Site Cleanup Completed*  
**Project Officer:** Ruiz

**Event ID Number:** 980095  
**Facility ID Number:** 9-500374  
**Status Date:** 3/20/2001  
**Status:** *Site Cleanup Completed*  
**Project Officer:** Ruiz



**Environmental FirstSearch  
Site Detail Report**

**Target Property:** OLD HALEAKALA HWY  
PUKALANI HI 96788

**JOB:** 079898  
AAI

UST

**SEARCH ID:** 3

**DIST/DIR:** NON GC

**MAP ID:**

**NAME:** PUKALANI TERRACE LANDCO BASEYARD  
**ADDRESS:** LIHOLANI ST ALONG KAAKAKAI  
PUKALANI HI 96788

**REV:** 08/01/05  
**ID1:** 9-500374  
**ID2:**  
**STATUS:** PERMANENTLY OUT OF USE  
**PHONE:**

**CONTACT:**

<b>Tank ID Number:</b>	R-1
<b>Tank Status Description:</b>	Permanently Out of Use
<b>Tank Capacity:</b>	2200
<b>Substance Description:</b>	Gasoline
<b>Construction Material:</b>	Asphalt Coated or Bare Steel
<b>Date Installed:</b>	08/15/79
<b>Date Closed</b>	04/08/98
<b>Owner Name:</b>	SPORTS SHINKO (PUKALANI) CO., LTD 360 PUKALANI ST Pukalani HI 96788
<b>Tank ID Number:</b>	R-2
<b>Tank Status Description:</b>	Permanently Out of Use
<b>Tank Capacity:</b>	2200
<b>Substance Description:</b>	Diesel
<b>Construction Material:</b>	Asphalt Coated or Bare Steel
<b>Date Installed:</b>	08/15/79
<b>Date Closed</b>	04/09/98
<b>Owner Name:</b>	SPORTS SHINKO (PUKALANI) CO., LTD 360 PUKALANI ST Pukalani HI 96788

## Environmental FirstSearch Descriptions

**NPL: EPA NATIONAL PRIORITY LIST** - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.

A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

FINAL - Currently on the Final NPL

PROPOSED - Proposed for NPL

**NPL DELISTED: EPA NATIONAL PRIORITY LIST Subset** - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

DELISTED - Deleted from the Final NPL

**CERCLIS: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)**- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.

PART OF NPL- Site is part of NPL site

DELETED - Deleted from the Final NPL

FINAL - Currently on the Final NPL

NOT PROPOSED - Not on the NPL

NOT VALID - Not Valid Site or Incident

PROPOSED - Proposed for NPL

REMOVED - Removed from Proposed NPL

SCAN PLAN - Pre-proposal Site

WITHDRAWN - Withdrawn

**NFRAP: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES** - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

NFRAP – No Further Remedial Action Plan

P - Site is part of NPL site

D - Deleted from the Final NPL

F - Currently on the Final NPL

N - Not on the NPL

O - Not Valid Site or Incident

P - Proposed for NPL

R - Removed from Proposed NPL

S - Pre-proposal Site

W – Withdrawn

**RCRA COR ACT: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES** - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

RCRAInfo facilities that have reported violations and subject to corrective actions.

**RCRA TSD: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM**

**TREATMENT, STORAGE, and DISPOSAL FACILITIES.** - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that treat, store, dispose, or incinerate hazardous waste.

**RCRA GEN: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS** - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984. Facilities that generate or transport hazardous waste or meet other RCRA requirements.

LGN - Large Quantity Generators

SGN - Small Quantity Generators

VGN – Conditionally Exempt Generator.

Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.

**RCRA NLR: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES** - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities not currently classified by the EPA but are still included in the RCRAInfo database. Reasons for non classification:

Failure to report in a timely matter.

No longer in business.

No longer in business at the listed address.

No longer generating hazardous waste materials in quantities which require reporting.

**Federal IC / EC: EPA BROWNFIELD MANAGEMENT SYSTEM (BMS)** - database designed to assist EPA in collecting, tracking, and updating information, as well as reporting on the major activities and accomplishments of the various Brownfield grant Programs.

**FEDERAL ENGINEERING AND INSTITUTIONAL CONTROLS-** Superfund sites that have either an engineering or an institutional control. The data includes the control and the media contaminated.

**ERNS: EPA/NRC EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS)** - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

**Tribal Lands: DOI/BIA INDIAN LANDS OF THE UNITED STATES** - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are Federally-administered lands within a reservation which may or may not be considered part of the reservation.

**State/Tribal LUST: HI DOH LEAKING UNDERGROUND STORAGE TANKS-**The Hawaii Department of Health's inventory of sites with leaking underground storage tanks.

**State/Tribal IC: HI DOH INSTITUTIONAL CONTROLS LISTING-**The Hawaii Department of Health's Office of Hazard Evaluation and Emergency Response (HEER) inventory of sites with institutional controls.

**State/Tribal VCP:** *HI DOH* VOLUNTARY RESPONSE PROGRAM LISTING-The Hawaii Department of Health's Office of Hazard Evaluation and Emergency Response (HEER) inventory of sites participating in the state's Voluntary Response Program.

**State/Tribal Sites:** *HI DOH* STATE RESPONSE LISTING-The Hawaii Department of Health's Office of Hazard Evaluation and Emergency Response (HEER) inventory of facilities, sites, or areas in which HEER has an interest, has investigated, or may investigate under HRS 128D (includes CERCLIS sites).

**State/Tribal Brownfields:** *HI DOH* STATE BROWNFIELDS LISTING-The Hawaii Department of Health's Office of Hazard Evaluation and Emergency Response (HEER) inventory of brownfields sites.

**State/Tribal UST/AST:** *HI DOH* UNDERGROUND STORAGE TANKS- The Hawaii Department of Health's inventory of underground storage tanks.

**RADON:** *NTIS* NATIONAL RADON DATABASE - EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

**State Other:** *US DOJ* NATIONAL CLANDESTINE LABORATORY REGISTER - Database of addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the U.S. Department of Justice ("the Department"), and the Department has not verified the entry and does not guarantee its accuracy. All sites that are included in this data set will have an id that starts with NCLR.

## Environmental FirstSearch Database Sources

**NPL: EPA** Environmental Protection Agency

*Updated quarterly*

**NPL DELISTED: EPA** Environmental Protection Agency

*Updated quarterly*

**CERCLIS: EPA** Environmental Protection Agency

*Updated quarterly*

**NFRAP: EPA** Environmental Protection Agency.

*Updated quarterly*

**RCRA COR ACT: EPA** Environmental Protection Agency.

*Updated quarterly*

**RCRA TSD: EPA** Environmental Protection Agency.

*Updated quarterly*

**RCRA GEN: EPA** Environmental Protection Agency.

*Updated quarterly*

**RCRA NLR: EPA** Environmental Protection Agency

*Updated quarterly*

**Federal IC / EC: EPA** Environmental Protection Agency

*Updated quarterly*

**ERNS: EPA/NRC** Environmental Protection Agency

*Updated semi-annually*

**Tribal Lands: DOI/BIA** United States Department of the Interior

*Updated annually*

**State/Tribal LUST: HI DOH** The Hawaii Department of Health, Solid and Hazardous Waste Branch

*Updated biannually*

**State/Tribal IC:** *HI DOH* Office of Hazard Evaluation and Emergency Response, Hawaii State Department of Health

*Updated biannually*

**State/Tribal VCP:** *HI DOH* Office of Hazard Evaluation and Emergency Response, Hawaii State Department of Health

*Updated biannually*

**State/Tribal Sites:** *HI DOH* Office of Hazard Evaluation and Emergency Response, Hawaii State Department of Health

*Updated biannually*

**State/Tribal Brownfields:** *HI DOH* Office of Hazard Evaluation and Emergency Response, Hawaii State Department of Health

*Updated biannually*

**State/Tribal UST/AST:** *HI DOH* The Hawaii Department of Health, Solid and Hazardous Waste Branch

*Updated biannually*

**RADON:** *NTIS* Environmental Protection Agency, National Technical Information Services

*Updated periodically*

**State Other:** *US DOJ* U.S. Department of Justice

*Updated when available*

***Environmental FirstSearch***  
***Street Name Report for Streets within .25 Mile(s) of Target Property***

**Target Property:** OLD HALEAKALA HWY  
PUKALANI HI 96788

**JOB:** 079898  
AAI

<b>Street Name</b>	<b>Dist/Dir</b>	<b>Street Name</b>	<b>Dist/Dir</b>
Aeloa Rd	0.15 SE		
Alea Pl	0.24 SE		
Haleakala Hwy	0.23 NW		
Ikea Pl	0.17 SE		
Kula Hwy	0.02 NE		
Old Haleakala Hwy	0.03 SW		

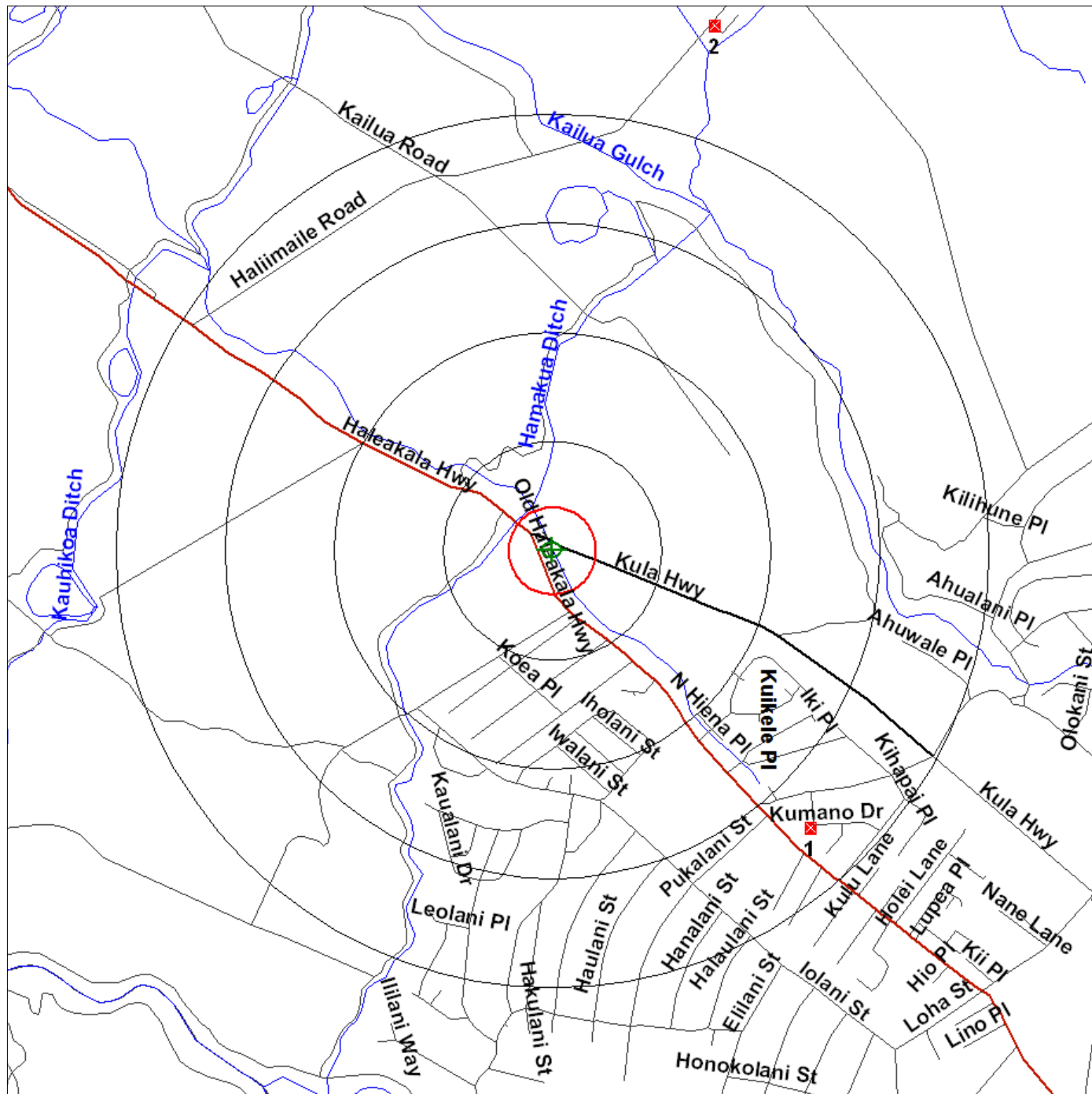


# Environmental FirstSearch








1 Mile Radius  
Single Map:



## OLD HALEAKALA HWY, PUKALANI HI 96788



Source: U.S. Census TIGER Files

- Target Site (Latitude: 20.851471 Longitude: -156.351935) ..... 
- Identified Site, Multiple Sites, Receptor .....   
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste ..... 
- Triballand ..... 
- Railroads ..... 
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius





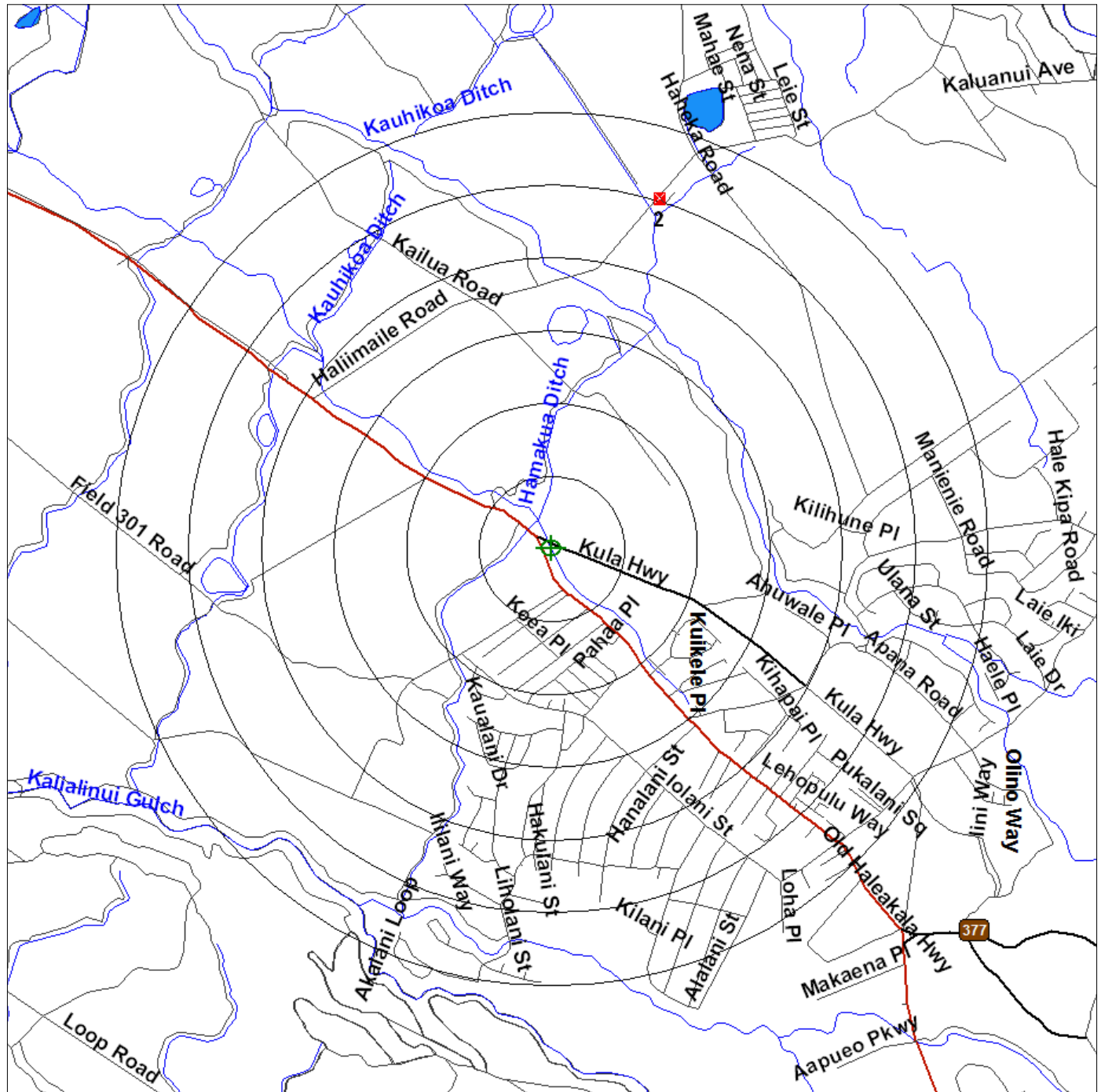
# Environmental FirstSearch

1.5 Mile Radius

AAI: NPL, RCRA COR, STATE

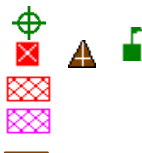


## OLD HALEAKALA HWY, PUKALANI HI 96788



Source: U.S. Census TIGER Files

- Target Site (Latitude: 20.851471 Longitude: -156.351935) .....
- Identified Site, Multiple Sites, Receptor .....
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste .....
- Triballand.....
- Railroads .....
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius



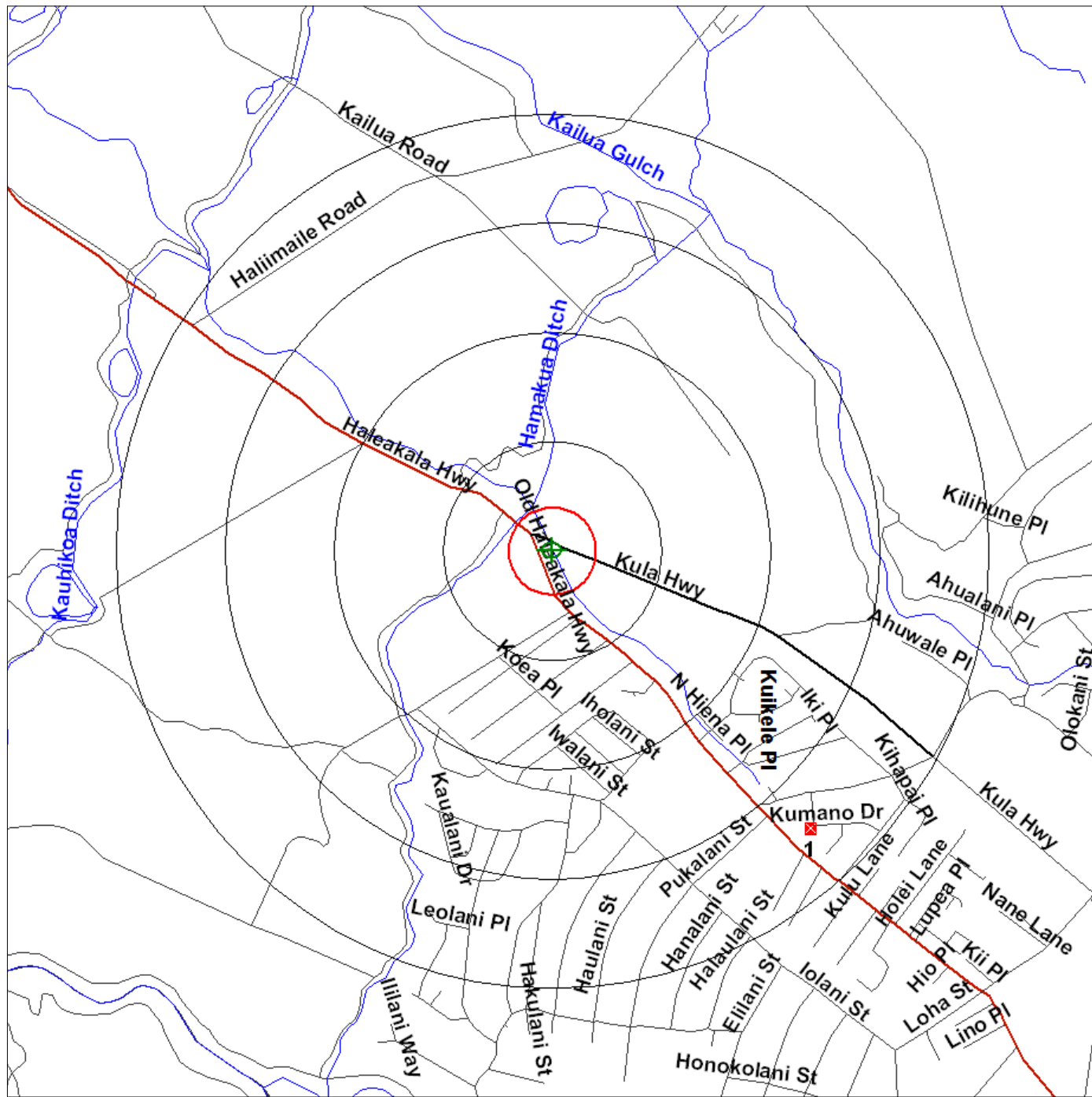


# Environmental FirstSearch








1 Mile Radius  
AAI: Multiple Databases



## OLD HALEAKALA HWY, PUKALANI HI 96788



Source: U.S. Census TIGER Files

- Target Site (Latitude: 20.851471 Longitude: -156.351935) ..... 
- Identified Site, Multiple Sites, Receptor .....   
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste ..... 
- Triballand ..... 
- Railroads ..... 
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius



# Environmental FirstSearch

.75 Mile Radius

AAI: RCRA GEN, UST, OTHER



## OLD HALEAKALA HWY, PUKALANI HI 96788



Source: U.S. Census TIGER Files

- Target Site (Latitude: 20.851471 Longitude: -156.351935) .....
- Identified Site, Multiple Sites, Receptor .....
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste .....
- Triballand.....
- Railroads .....
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius





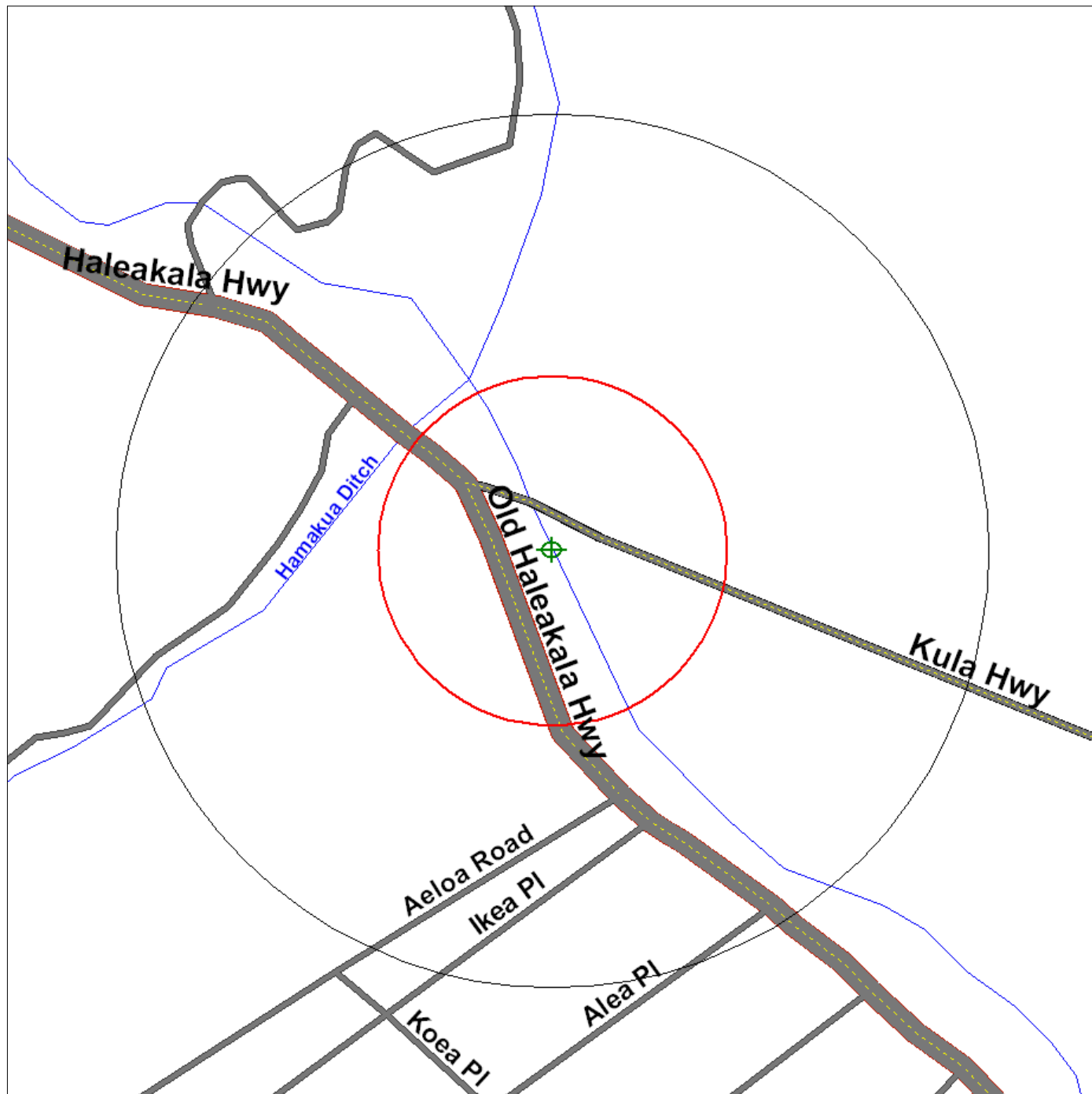
# Environmental FirstSearch

.25 Mile Radius

AAI: SPILLS90, ERNS, RCRANLR



## OLD HALEAKALA HWY, PUKALANI HI 96788



Source: U.S. Census TIGER Files

Target Site (Latitude: 20.851471 Longitude: -156.351935) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste .....

Triballand.....

Railroads .....

Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius



## **APPENDIX D: QUALIFICATIONS**

---

## Rachel Herrera

Environmental Scientist

### *Education*

Bachelor of Science in Health Science, California State University, San Bernardino  
Emphasis in Environmental Health

### *Registrations*

EPA Accredited Asbestos Inspector

Ms. Herrera has three years work experience in the environmental science industry. She has project experience in Phase I Environmental Site Assessments (ESAs), Environmental Transaction Screens, radon screening, asbestos inspections, and lead-based paint inspections. She is familiar with all aspects of Due Diligence Property Assessments and the needs and requirements of a varied number of reporting standards, including the standard ASTM, EPA's All Appropriate Inquiry (AAI), Fannie Mae DUS, and customized client formats.

Project experience for Ms. Herrera includes:

- Completed hundreds of Phase I Environmental Site Assessments and Environmental Transaction Screens on multi-family properties, commercial office buildings, retail shopping centers, gasoline service stations, hotels, dry cleaning plants, auto repair and auto body shops, industrial warehouse buildings, aerospace manufacturers, plating facilities, and various manufacturing operations throughout the U.S.
- Conducted radon testing at several residential properties throughout Southern California
- Conducted asbestos and lead-based paint sampling at several residential and commercial properties throughout Southern California

Ms. Herrera has technical experience working for the following financial institutions:

- Washington Mutual Bank
- Citibank North America
- California Bank and Trust
- Union Bank of California
- East West Bank
- Comerica Bank
- United Commercial Bank
- Countrywide Commercial Real Estate
- Morgan Stanley Mortgage Capital, Inc.
- Lehman Brothers
- City National Bank

# Monique Burrola, REA

Principal Consultant

**PARTNER**

## *Education*

Environmental Science, cum laude, University of Southern California

Emphasis in Biology

Wrigley Institute for Environmental Studies Research Program, Catalina Island

## *Registrations*

California Registered Environmental Assessor (REA I – 08218)

EPA Accredited Asbestos Inspector

Ms. Burrola has six years experience in the environmental service industry. Ms. Burrola's background in environmental science and direct experience in environmental consulting, allows her to offer the most effective means of regulatory compliance.

Ms. Burrola has project experience in Phase I Environmental Site Assessments (ESAs), Environmental Transaction Screens, radon screening, asbestos inspections, and lead-based paint inspections. Ms. Burrola is familiar with all aspects of Due Diligence Property Assessments and the needs and requirements of a varied number of reporting standards, including the standard ASTM, EPA's All Appropriate Inquiry (AAI), Fannie Mae DUS, Freddie Mac, HUD and customized client formats.

For the past five years, Ms. Burrola has performed and supervised over 1,000 Phase I Environmental Site Assessments and Environmental Transaction Screens for lenders and buyers. As a senior member of the Due Diligence staff, Ms. Burrola provides senior review expertise to ensure ASTM compliance and satisfaction of client requirements for Phase I Environmental Site Assessments and Environmental Transaction Screens. Partner's review process provides for customization of reports to client needs, as well as strict conformance to ASTM standards. Ms. Burrola's day to day responsibilities include project management/oversight, staff supervision, employee training, report review, and client management.

Project experience for Ms. Burrola includes:

- Completed hundreds of Phase I Environmental Site Assessments and Environmental Transaction Screens on multi-family properties, commercial office buildings, retail shopping centers, gasoline service stations, hotels, dry cleaning plants, auto repair and auto body shops, industrial warehouse buildings, aerospace manufacturers, plating facilities, and various manufacturing operations throughout the U.S.
- Reviewed and evaluated hundreds of third-party Phase I, Phase II and Phase III reports
- Managed portfolio projects involving properties throughout the United States, including large apartment complexes and shopping malls

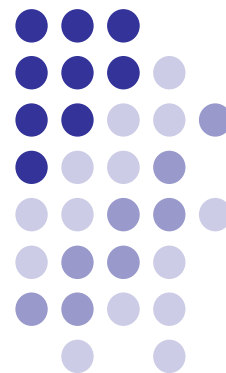
- Managed a portfolio of over 100 residential and commercial sites for the City of Ontario redevelopment project
- Performed and supervised environmental due diligence of a portfolio of high-rise office buildings in Southern California
- Assisted on several Phase II investigations of gasoline service stations, dry cleaning facilities and industrial sites
- Conducted several asbestos and lead-based paint inspections of commercial and residential properties
- Performed water sampling on several residential properties to detect the presence of lead in water
- Conducted radon testing at several residential properties throughout Southern California and Nevada
- Participated in a continuous portfolio of gas station assessments throughout the U.S. for a single nationwide client
- Managed the storage and disposal of hazardous waste at a metal fabrication plant, an aerospace manufacturing facility and a community college campus
- Performed environmental and financial audits of Solid Waste Landfills and Treatment, Storage and Disposal Facilities
- Conducted various safety trainings to entire company staffs

Additionally, Ms. Burrola has a working experience in the environmental permitting process, which has included the implementation and employee training of Storm Water Pollution Prevention Plans (SWPPP), Injury Illness Prevention Plans (IIPP), Hazardous Materials Business Plans (HMBPs), Business Emergency Plans (BEPs), and Hazardous Materials Inventory Statements (HMIS).

Ms. Burrola has technical experience working for the following financial institutions:

- Washington Mutual Bank
- Citigroup Global Markets
- Citibank North America
- California Bank and Trust
- Union Bank of California
- East West Bank
- Comerica Bank
- United Commercial Bank
- Countrywide Commercial Real Estate
- Morgan Stanley Mortgage Capital, Inc.
- Lehman Brothers
- City National Bank





July 31, 2008

**PHASE I  
ENVIRONMENTAL SITE ASSESSMENT**

**TMK 223009064**

Intersection of Old and New Haleakala Highways  
Pukalani, Hawaii 96788

Partner Project No. 079995

Prepared for

**WILLIAM W. L. YUEN, ESQ., AAL, ALC**  
**C/O CHING YUEN, ESQ., & MORIKAWA**  
1001 Bishop Street  
ASB Tower, Suite 2700  
Honolulu, Hawaii 96813

Prepared By

**PARTNER**  
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El Segundo, California 90245  
(800) 419-4923



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## EXECUTIVE SUMMARY

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in general accordance with the scope of work and limitations of ASTM Standard Practice E1527-05, the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) and set forth by William W.L. Yuen, Esq. for the property located at the southeast intersections of Old and New Haleakala Highways, TMK 223009064 in Pukalani, County of Maui, Hawaii (the “subject property”). The Phase I Environmental Site Assessment is designed to provide William W.L. Yuen, Esq., and his client with an assessment concerning environmental conditions (limited to those issues identified in the report) as they exist at the subject property.

### *Property Description*

The subject property is located at the southeast intersections of Old and New Haleakala Highways. The property is located in a mixed agricultural and residential area of Pukalani. Please refer to the table below for further description of the subject property:

Address:	N/A
Tax Map Key (TMK):	223009064
Nature of Use :	Vacant, fallow land
Number of Buildings:	None
Land Acreage (Ac):	39.0 Ac
Current Tenants:	None; however, the property is currently owned by Pukalani Associates, LLC

Currently, no structures, parking improvements, or landscaping areas are developed on the subject property.

The immediately surrounding properties consist of Haleakala Highway which borders the property along the north, northeastern, and eastern edges of the property, beyond which are sugar cane fields to the northwest and north and vacant graded land to the east; a vegetated lot is to the southeast; a natural attenuating gulch (unnamed) and vacant land is to the south-southwest; beyond which are single-family residential dwellings. Old Haleakala Highway is to the west, beyond which is a vacant fallow lot.

According to historical sources and a previous report reviewed (PBR Hawaii, 2005), the subject property was formerly a part of a larger parcel which was developed as a pineapple plantation from as early as the 1920s to circa the mid 1990s and was most recently operated by Maui Pineapple Company, Ltd. (Maui Pineapple Co.). During the mid 1990s, the former larger parcel was taken out of service as a pineapple plantation to make way for the expansion of the New Haleakala Highway. The current subject property parcel is a remnant resulting from the former

expansion and has been fallow land since the mid 1990s to present and unofficially used by local residents for recreational activities.

According to the United States Geological Society (USGS) National Water Information System and topographic map interpretation, the depth and direction of groundwater in the vicinity of the subject property is inferred to be present at approximately 37 feet below ground surface (bgs) and flow to the northwest.

### ***Findings***

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substance or petroleum product 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 term REC includes hazardous substances and petroleum products even under conditions that might be in compliance with laws. The term is not intended to include "de minimis" conditions that do not present a threat to human health and/or the environment and that would not be subject to an enforcement action if brought to the attention of appropriate governmental agencies. The following was identified during the course of this investigation:

- The subject property was formerly developed as a pineapple plantation from as early as the 1920s to circa the mid 1990s; and vacant fallow land from circa the mid 1990s to present. According to information provided by William W.L. Yuen, Esq., (representative of the subject property owner), the historic tenant, Maui Pineapple Co., utilized various fertilizers, pesticides, fungicides, herbicides, and plant growth regulators in association with the former agricultural use of the property. The quantities used onsite and frequency of application of these products is not known and was not provided by the previous owner, Maui Land and Pineapple Company, Inc. (Maui Land & Pine). Based on the former agricultural use of the subject property, there is a potential that residual concentrations of agricultural chemicals remain in the soil.

A *historical recognized environmental condition (HREC)* refers to an environmental condition which would have been considered a REC in the past, but which may or may not be considered a REC currently. The following was identified during the course of this investigation:

- Partner did not identify any historical recognized environmental conditions during the course of this investigation.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, require discussion. The following was identified during the course of this investigation:

- Partner did not identify any environmental issues during the course of this investigation.

### *Conclusions, Opinions, and Recommendations*

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-05 of the southeast intersections of Old and New Haleakala Highways, TMK 223009064 in Pukalani, County of Maui, Hawaii (the “subject property”). Any exceptions to or deletions from this practice are described in Section 1.4 of this report. Based on the former use of the subject property, Partner cannot rule out the potential that residual concentrations of agricultural chemicals remain in the soil. These materials are likely limited to the near surface soils. Site redevelopment and grading activities will serve as a potential mitigating factor as these soils will be mixed with fill material. To proceed with an abundance of cautions, it would be prudent to conduct soil sampling and testing to confirm the absence or presence of historical fertilizer or pesticides in soil in reportable concentrations.

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**FIGURES**

**Figure 1-** Site Location Map

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**Figure 3-** Aerial Photographs

**APPENDICES**

**Appendix A-** Site Photographs

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## 1.0 INTRODUCTION

Partner has performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM Standard Practice E1527-05 and AAI for the property located at the southeast intersections of Old and New Haleakala Highways, TMK 223009064 in Pukalani, County of Maui, Hawaii. Any exceptions to, or deletions from, this scope of work are described in the report.

### 1.1 Purpose

The purpose of this Phase I Environmental Site Assessment (“ESA”) is to identify existing or potential Recognized Environmental Conditions (as defined by ASTM Standard E-1527-05) affecting the subject property that: 1) constitute or result in a material violation or a potential material violation of any applicable environmental law; 2) impose any material constraints on the operation of the subject property or require a material change in the use thereof; 3) require clean-up, remedial action or other response with respect to Hazardous Substances or Petroleum Products on or affecting the subject property under any applicable environmental law; 4) may affect the value of the subject property, and; 5) may require specific actions to be performed with regard to such conditions and circumstances. The information contained in the ESA Report will be used by Client to: 1) evaluate its legal and financial liabilities for transactions related to foreclosure, purchase, sale, loan origination, loan workout or seller financing, 2) evaluate the subject property’s overall development potential, the associated market value and the impact of applicable laws that restrict financial and other types of assistance for the future development of the subject property, and/or; 3) determine whether specific actions are required to be performed prior to the foreclosure, purchase, sale, loan origination, loan workout or seller financing of the subject property.

This ESA was performed to permit the *User* to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) liability (hereinafter, the “*landowner liability protections*,” or “*LLPs*”). ASTM Standard E-1527-05 constitutes “*all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice” as defined at 42 U.S.C. §9601(35)(B).

### 1.2 Scope of Work

The scope of work for this ESA is in general accordance with the requirements of ASTM Standard E 1527-05. This assessment included: 1) a property and adjacent site reconnaissance; 2) interviews with key personnel; 3) a review of historical sources; 4) a review of regulatory agency records; and 5) a review of a regulatory database report provided by a third-party vendor.



If requested by Client, this report may also include the identification, discussion of, and/or limited sampling of asbestos-containing materials (ACMs), lead-based paint (LBP), mold, and/or radon.

### **1.3 Limitations**

Partner warrants that the findings and conclusions contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work. These methodologies are described as representing good commercial and customary practice for conducting an ESA of a property for the purpose of identifying recognized environmental conditions. There is a possibility that even with the proper application of these methodologies there may exist on the subject property conditions that could not be identified within the scope of the assessment or which were not reasonably identifiable from the available information. Partner believes that the information obtained from the record review and the interviews concerning the site is reliable. However, Partner cannot and does not warrant or guarantee that the information provided by these other sources is accurate or complete. The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. The conclusions presented in the report are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed-upon services or the time and budgeting restraints imposed by the Client. No other warranties are implied or expressed.

Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This report is subject to the limitations of historical documentation, availability, and accuracy of pertinent records, and the personal recollections of those persons contacted.

This practice does not address requirements of any state or local laws or of any federal laws other than the all appropriate inquiry provisions of the LLPs. Further, this report does not intend to address all of the safety concerns, if any, associated with the subject property.

Environmental concerns, which are beyond the scope of a Phase I ESA as defined by ASTM include the following: asbestos-containing materials, lead-based paint, radon, and lead in drinking water. These issues may affect environmental risk at the subject property and may warrant discussion and/or assessment; however, are considered non-scope issues. If specifically requested by the Client, these non-scope issues are discussed in Section 6.3.

### **1.4 User Reliance**

All reports, both verbal and written, are for the sole use and benefit of Mr. William W.L. Yuen, Esq., and his client. This report has no other purpose and may not be relied upon by any other person or entity client without the written consent of Partner.

## 1.5 Limiting Conditions

The findings and conclusions contain all of the limitations inherent in these methodologies that are referred to in ASTM E1527-05.

Specific limitations and exceptions to this ESA are more specifically set forth below:

- Interviews with past owners (including Maui Land & Pine), operators and occupants were not reasonably ascertainable and thus constitute a data gap.
- Pursuant to ASTM Standard E1527 06 Section 7.1.4.2, information that is obtainable within a reasonable time frame is information that will be provided by the source within 20 calendar days of receiving a public information request. Based on the expected response time of over 20 calendar days for the Maui County Department of Environmental Health and Maui Fire Prevention, records from these agencies are not considered reasonably ascertainable. However, based on other historical sources reviewed, this limitation is not expected to alter the overall findings of this report.
- Due to the size of the subject property parcel, Partner performed a site inspection of the property utilizing a field technique of traversing the site in an attempt to provide an overlapping field of view. Due to the size of the property and vegetation present onsite, isolated areas of the site may not have been accessible for direct observation during Partner's inspection. This limitation is not expected to alter the findings of this report.

Due to time constraints associated with this report, the Client has requested the report despite the above-listed limitations.

---

## 2.0 SITE DESCRIPTION

### 2.1 Site Location and Legal Description

The subject property is located at the southeast intersections of Old and New Haleakala Highways. The property is located in a mixed agricultural and residential area of Pukalani. Please refer to the table below for further description of the subject property:

Address:	N/A
Tax Map Key (TMK):	223009064
Nature of Use :	Vacant, fallow land
Number of Buildings:	None
Land Acreage (Ac):	39.0 Ac
Current Tenants:	None; however, the property is currently owned by Pukalani Associates, LLC

Currently, no structures, parking improvements, or landscaping areas are developed on the subject property.

The subject property was not identified in the regulatory database report as further discussed in Section 4.2.

Please refer to Figure 1: Site Location Map, Figure 2: Site Plan, and Appendix A: Site Photographs.

### 2.2 Current Property Use

The subject property was formerly used agriculturally for the cultivation of pineapples from the early 1920s until circa the mid 1990s. Currently, the subject property is vacant, undeveloped fallow land with a drainage ditch/area along the northwestern and western edges of the property and unofficially used by local residences for recreational activities.

### 2.3 Current Use of Adjoining Properties

The subject property is located in a mixed agricultural and residential area of Pukalani. During the vicinity reconnaissance, Partner observed the following land use on properties in the immediate vicinity of the subject property:

#### *Immediately surrounding properties*

Direction	Adjacent Property
North-Northeast	Old Haleakala Highway which borders the property along the northwestern edge and becomes the New Haleakala Highway along the northeastern, and

	eastern edges of the property, beyond which are sugar cane fields to the northwest and north and vacant graded land to the east
South	A natural attenuating gulch (unnamed) and vacant land is to the south-southwest; beyond which are single-family residential dwellings
Southwest	A vegetated lot
East	Haleakala Highway, beyond which is vacant graded land
West	Old Haleakala Highway is to the west, beyond which is a vacant fallow lot

The adjacent sites were not identified in the regulatory database as is further discussed in Section 4.2.

## 2.4 Physical Setting Sources

### 2.4.1 Topography

The United States Geological Survey (USGS), Paia Quadrangle 7.5 minute series topographic map was reviewed for this ESA. According to the contour lines on the topographic map, the subject property is located between approximately 1,110 and 1,440 feet above mean sea level (MSL). The contour lines in the area of the subject property indicate the area is sloping moderately to the northwest.

Please refer to Figure 1: Site Location Map.

### 2.4.2 Hydrology

According to the United States Geological Society (USGS) National Water Information System and topographic map interpretation, the depth and direction of groundwater in the vicinity of the subject property is inferred to be present at approximately 37 feet below ground surface (bgs) and flow to the northwest. The nearest surface water in the vicinity of the subject property is the Hamakua Ditch located to the west of the subject property. No settling ponds, lagoons, surface impoundments, wetlands or natural catch basins were observed at the subject property during this investigation.

### 2.4.3 Soils/Geology

According to United States Department of Agricultural (USDA) Soil Conservation Service website, the subject property is located in an area with soils of the Haliimaile series. Haliimaile series, silty clay 3 to 7 percent slopes soils are characterized as dark reddish-brown silty clay and very dark grayish brown clay. They tend to be well drained soils on uplands in the island of Maui which were developed in material weathered from basic igneous rock. They tend to be gently to strongly sloping and on elevations which range from 500 to 2,000 feet. These soils are typically used for sugarcane, pineapple, and home sites with natural vegetation consisting of guava, indigo, koa haole, and yellow foxtail.

Haliimaile series, silty clay 7 to 15 percent slopes soils are characterized as dark reddish-brown silty clay and very dark grayish brown clay. These soils have medium runoff with a moderate erosion hazards and are used for sugarcane, pineapple, and home sites. Haliimaile gravelly silty

clay, 7 to 15 percent slopes are similar to the 3 to 7 percent slopes except that an average of 50 percent of the original surface layer is lost through erosion. Runoff tends to medium to rapid and erosion hazard is severe.

---

### 3.0 HISTORICAL USE INFORMATION

Partner obtained historical use information about the subject property from a variety of sources. A chronological listing of the historical data found is summarized in the table below:

#### *Historical Use Information*

Period/Date	Source	Description/Use
1920s –mid 1990s	Aerial Photographs, Onsite Interviews, and Previous Reports	The subject property is developed for the cultivation of pineapples.
Mid 1990s- 2008	Onsite Interviews, Previous Reports, Site Reconnaissance	The subject property is undeveloped fallow land and unofficially used by local residents for recreational activities.

The subject property was formerly developed as a pineapple plantation from as early as the 1920s to circa the mid 1990s; and vacant fallow land from circa the mid 1990s to present. According to information provided by William W.L. Yuen, Esq., (representative of the subject property owner), the historic tenant, Maui Pineapple Co., utilized various fertilizers, pesticides, fungicides, herbicides, and plant growth regulators in association with the former agricultural use of the property. The quantities used onsite and frequency of application of these products is not known and was not provided by the previous owner, Maui Land and Pine. Based on the former agricultural use of the subject property, there is a potential that residual concentrations of agricultural chemicals remain in the soil.

#### 3.1 Aerial Photograph Review

On July 21, 2008, Partner reviewed available aerial photographs of the subject property and surrounding area for indications of previous uses. The aerial photographs are discussed below:

**Date:** 1955 **Scale:** 1:1,000

The southern and eastern portions of the subject property and surrounding properties to the northwest, north, northeast, southeast, and southwest east appear to be developed for agricultural use. A natural attenuating gulch or waterway is visible running north-south through the western portion with portions of vegetated land throughout the northern portion of the subject property. Old Haleakala Highway is visible to the west of the subject property.

**Date:** 1964 **Scale:** 1:3,300

No significant changes were observed regarding the subject property and surrounding properties.

**Date:** 1996/1997 **Scale:** 1:1,330

The subject property appears to be vacant fallow land. Surrounding properties to the north, northeast, east, and southeast appear to be relatively unchanged. Fallow land is visible to the south of the southern edge and to the southwest of the northern portion of the property. Structures for

residential use are visible to the west of the southern portion of the subject property. Old Haleakala Highway is visible to the west, beyond which are structures for residential use to the southwest and a parcel for agricultural use to the west.

**Date:** 2005

**Scale:** N/A\*

The subject property and surrounding properties appear to be relatively unchanged. Old Haleakala highway is visible to the west, beyond which appears to be vacant fallow land. Haleakala Highway is visible along the north, northeastern, and eastern edges, beyond which appears to be developed for agricultural use.

\*Copies of selected aerial photographs are included as Figure 3 of this report, with the exception of the 2005 aerial photograph which is included as Figure 2.

### **3.2 Sanborn Fire Insurance Maps**

Sanborn maps were originally created in the late 1800s and early 1900s for assessing fire insurance liability in urbanized areas of the United States. These maps include detailed town and building information.

A search was made of Seattle Public Library's collection of Sanborn Fire Insurance maps on July 14, 2008.

Sanborn map coverage was not available for the subject property.

### **3.3 City Directories**

City directories have been produced for most urban and some rural areas since the late 1800s. The directories are generally not comprehensive and may contain gaps in time periods. Due to the lack of structures currently and/or historically on the subject property and lack of physical addresses associated with the property, historical city directories were not researched for inclusion into this report.

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## **4.0 REGULATORY RECORDS REVIEW**

### **4.1 Regulatory Agencies**

Partner contacted local agencies, such as environmental health departments, fire departments and building departments in order to determine any current and/or historic hazardous materials usage, storage and/or releases of hazardous substances on the subject property. Additionally, Partner researched information on the presence of activity and use limitations (AULs) at these agencies. As defined by ASTM E1527-05, AULs are the legal or physical restrictions or limitations on the use of, or access to, a site or facility: 1) to reduce or eliminate potential exposure to hazardous substances or petroleum products in the soil or groundwater on the subject property; or 2) to prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment. These legal or physical restrictions, which may include institutional and/or engineering controls (IC/ECs), are intended to prevent adverse impacts to individuals or populations that may be exposed to hazardous substances and petroleum products in the soil or groundwater on the property.

#### **4.1.1 Health Department**

Partner requested records from the Maui County Department of Environmental Health (MCDEH) on July 21, 2008 for the subject property. These records may contain evidence indicating current and/or historical hazardous materials usage, storage or releases as well as the presence of underground storage tanks.

Due to the time constraints associated with this report, Partner was not able to obtain records from the Maui County Department of Environmental Health. However, based on the detailed information gathered from other historical sources, such as the aerial photographs, the absence of this information is not expected to alter the findings of this investigation. If issues of an environmental concern are identified upon review of these records, an addendum to this report will be issued.

#### **4.1.2 Fire Department**

Partner requested records from the Maui County Department of Fire Prevention (MCDFP) on July 21, 2008 for the subject property. These records may contain evidence indicating current and/or historical hazardous materials usage, storage or releases as well as the presence of underground storage tanks.

Due to the time constraints associated with this report, Partner was not able to obtain records from the Maui County Department of Fire Prevention. However, based on the detailed information gathered from other historical sources, such as the aerial photographs, the absence of this information is not expected to alter the findings of this investigation. If issues of an



environmental concern are identified upon review of these records, an addendum to this report will be issued.

#### ***4.1.3 Department of Health – Air Division***

Partner contacted the State of Hawaii Department of Health – Air Division (MDOH – Air Division) on July 25, 2008 for information regarding any Permits to Operate (PTO), Notices of Violation (NOV), or Notices to Comply (NTC) records for the subject property related to air emission equipment, which may include dry cleaning machines and underground storage tanks.

No PTOs, NOV, NTCs or the presence of AULs were on file for the subject property with the MDOH – Air Division.

#### ***4.1.4 Building Department***

Partner contacted the County of Maui Building and Permitting Office (MBP) on July 14, 2008 for information regarding historical tenants and property use of the subject property. The MBP indicated that building records are stored in an online database. Based on the historical use of the property for agricultural use, no building records were on file for the subject property.

#### ***4.1.5 Planning Department***

Partner contacted the County of Maui Planning Department (MPD) on July 25, 2008 for information on the subject property in order to identify AULs associated with the subject property.

No AULs were found for the subject property at the MPD.

### **4.2 Mapped Database Records Search**

Information from standard federal, state, county, and city environmental record sources was provided by Track Info Services Environmental FirstSearch. Data from governmental agency lists are updated and integrated into one database, which is updated as these data are released. The information contained in this report was compiled from publicly available sources and the locations of the sites are plotted utilizing a geographic information system, which geocodes the site addresses. The accuracy of the geocoded locations is approximately +/-300 feet. Please refer to the radius map for a complete listing (Appendix C).

The subject property was not identified in the regulatory database report.

The adjacent properties were not identified in the regulatory database report.

#### ***Federal NPL***

The National Priorities List (NPL) is the Environmental Protection Agency (EPA) database of uncontrolled or abandoned hazardous waste sites identified for priority remedial actions under the Superfund Program.

No NPL sites are located within 1 ½ miles of the subject property.

***Federal CERCLIS List***

The Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) list is a compilation of sites that the EPA has investigated or is currently investigating for a release or threatened release of hazardous substances.

No CERCLIS sites are listed within one-mile of the subject property.

***Federal CERCLIS-NFRAP Sites List***

The CERCLIS No Further Remedial Action Planned (NFRAP) List is a compilation of sites that the EPA has investigated, and has determined that the facility does not pose a threat to human health or the environment, under the CERCLA framework.

No CERCLIS-NFRAP sites are listed within a 1 ½ miles of the subject property.

***Federal RCRA CORRACTS Facilities List***

The RCRA CORRACTS database is the EPA's list of TSD facilities subject to corrective action under RCRA.

No RCRA CORRACTS facilities are listed within 1 ½ miles of the subject property.

***Federal Resource Conservation and Recovery Act (RCRA) TSD Facilities List***

The RCRA Treatment, Storage and Disposal (TSD) database is a compilation by the EPA of reporting facilities that treat, store or dispose of hazardous waste.

No RCRA TSD sites are listed within one mile of the subject property.

***Federal RCRA Generator List***

The EPA Resource Conservation and Recovery Act (RCRA) Program RCRA program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Generators database is a compilation by the EPA of reporting facilities that generate hazardous waste.

No RCRA Generator facilities are listed within ½ mile of the subject property.

***Federal Institutional Controls/Engineering Controls (IC/EC)***

The Federal IC/EC database is designed to assist the EPA in collecting, tracking, and updating information, as well as reporting on the major activities and accomplishments of the various Brownfield grant programs. The IC/EC sites are superfund sites that have either engineering or an institutional control in place. The data includes the control and the media contaminated.

No Federal IC/EC sites were found within one mile of the subject property.

### ***Federal Emergency Notification System (ERNS)***

The Emergency Response Notification System (ERNS) is a national database used to collect information or reported release of oil or hazardous substances.

No ERNS sites were listed within a ¼ mile of the subject property.

### ***Tribal Lands***

The Tribal Lands database consists of areas with boundaries established by treaty, statute, and/or executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are Federally-administered lands within a reservation which may or may not be considered part of the reservation.

No Tribal Land sites were found within 1 ½-miles of the subject property.

### ***State Hazardous Waste Site (SHWS)***

The State of Hawaii Department of Health maintains a list of facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate State CERCLIS-equivalent list (SCL) of sites that could be actually or potentially contaminated and presenting a possible threat to human health and the environment.

One (1) SHWS are listed within one mile of the subject property. This site is located more than a ¾ mile radius from the subject property. Based on the current regulatory status, relative distance, and inferred direction of groundwater flow, this site is not expected to represent a significant environmental concern.

### ***State Spills Sites (SPILLS)***

The State of Hawaii Department of Health maintains reports of sites that have records of spills, leaks, investigations and cleanups.

No SPILLS sites were listed within a ¼ mile of the subject property.

### ***Solid Waste/Landfill Facilities (SWLF)***

A database of SWLF is prepared by State of Hawaii Department of Health.

No SWLF facilities are listed within one- mile of the subject property.

### ***State/Tribal Leaking Underground Storage Tank List (LUST)***

The Hawaii Underground Storage Tank Program compiles lists of all leaks of hazardous substances from underground storage tanks.

One (1) LUST site is listed within one- mile of the subject property. This site is located more than a ¼ mile radius from the subject property. Based on the relative distance, and the current regulatory oversight, this site is not expected to represent a significant environmental concern.

***State/Tribal Underground Storage Tank/Aboveground Storage Tank List (UST/AST)***

The Hawaii Underground Storage Tank Program compiles a list of UST and AST locations.

No registered UST/AST facilities are listed within ½ mile of the subject property.

***State/Tribal VCP sites***

The State of Hawaii Department of Health maintains a list of sites participating in the Voluntary Response Program (VRP). The purpose of this program is to streamline the cleanup process in a way that will encourage prospective developers, lenders, and purchasers to voluntary cleanup properties.

No State/Tribal VCP sites were found within one-mile of the subject property.

***State/Tribal Brownfield sites***

The State of Hawaii Department of Health maintains information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems.

No State/Tribal Brownfield sites were found within one-mile of the subject property.

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## **5.0 USER PROVIDED INFORMATION AND INTERVIEWS**

Pursuant to ASTM E1527-05, Partner requested the following site information from William W.L. Yuen, Esq., attorney and representative of the subject property owner (User of this report).

### **5.1 Interviews**

#### ***5.1.1 Interview with Owner***

William W.L. Yuen, Esq., representative of the subject property owner Pukalani Associates, LLC, was not aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

According to William W.L. Yuen, Esq., the subject property was historically used for the cultivation of pineapple from the early 1920s until the mid 1990s when onsite agricultural operations ceased to allow the expansion of the Haleakala Highway. Since the mid 1990s, the site has remained vacant fallow land which is overgrown with native vegetation. To the best of his knowledge, the site is not improved with any structures or features of concern. No underground storage tanks, above ground storage tanks, or hazardous materials are currently stored onsite. Additionally, no addresses are associated with the subject property. Typically, the plantations were identified by field numbers, which were for internal purposes only and completed by the former owners, Maui Land & Pine, at the time. William W.L. Yuen, Esq. stated that Pukalani Associates, LLC purchased the subject property parcel from Maui Land and Pine in 2005.

#### ***5.1.2 Interview with Report User***

Pukalani Associates, LLC, report user, was not aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

#### ***5.1.3 Interview with Key Site Manager***

Ms. Sharon Wright, land consultant, was not aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or

petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

#### ***5.1.4 Interviews with Past Owners, Operators and Occupants***

Interviews with past owners, operators and occupants were not reasonably ascertainable and thus constitute a data gap. Based on information obtained from other historical sources (as discussed in Section 3.0), this data gap is not expected to alter the findings of this investigation. Partner requested information pertaining to the former operations onsite from the previous owner/operator of the subject property, Maui Pineapple Co. and Maui Land & Pine. However, Maui Land and Pine refused to provide any information pertaining to the former onsite operations.

#### ***5.1.5 Interview with Others***

As the subject property is not an abandoned property as defined in ASTM 1527-05, interview with others were not performed.

### **5.2 User Provided Information**

#### ***5.2.1 Title Records***

Partner was provided preliminary title records from the User regarding the subject property. According to the title records generated by Title Guaranty of Hawaii, Inc., no environmental liens are associated with the subject property. A perpetual easement is in place for the right of way of utilities and a restricted vehicular access from the Haleakala Highway was also put into place as of July 10, 1991.

#### ***5.2.2 Environmental Liens or Activity and Use Limitation***

Partner requested information from the User regarding knowledge of environmental liens and activity and use limitations (AULs) for the subject property. The User was not aware of any environmental liens associated with the Property. In addition, the User had no knowledge of any use or activity limitations.

#### ***5.2.3 Specialized Knowledge***

Partner inquired with the User regarding any specialized knowledge of environmental conditions associated with the subject property. The User was not aware of any environmental conditions associated with the subject property.

#### ***5.2.4 Commonly Known or Reasonably Ascertainable Information***

Partner inquired with the User regarding any commonly known or *reasonably ascertainable* information within the local community about the subject property that is material to *recognized environmental conditions* in connection with the subject property. According to William W.L.

Yuen, Esq. Attorney and representative of the subject property owner, the site was previously cultivated for pineapple from at least the 1920s with operations ceasing in the mid 1990s. A previous draft environmental assessment of the subject property prepared in 2005 indicates that Maui Land & Pine disclosed the use of fertilizers, pesticides, fungicides, herbicides, and plant growth regulators onsite at the time in which operations ceased. No indication of the strength, quantity, duration of use, or frequency of application was noted or disclosed. Additionally, historical products used were not disclosed.

#### ***5.2.5 Valuation Reduction for Environmental Issues***

Partner inquired with the User regarding any knowledge of reductions in property value due to environmental issues. The User was not aware of any valuation reductions associated with the subject property.

#### ***5.2.6 Previous Reports and Other Provided Documentation***

The following information was provided to Partner by William W.L. Yuen, Esq. for review during the course of this investigation.

##### *Portions of Draft Environmental Assessment, PBR Hawaii (2005)*

According to the pages provided of a previous *Draft Environmental Assessment* report, the subject property was formerly cultivated as a pineapple plantation from as early as the 1920s to the mid 1990s. From the mid 1990s to present, the subject property has been vacant fallow land. According to the report, the site is located on the windward slopes of Haleakala, a dormant volcano and best situated for agricultural and residential use. Historically, as part of the onsite operations as a pineapple plantation, Maui Pineapple Co., utilized fertilizers; pesticides such as Telone II Soil Fumigant (1,3 dichloropropene), Nematicur 3 (Fenamiphos), Diazinon 50W (Diazinon); and fungicides, herbicides, and plant growth regulators which included: Ethrel 4 or Ethephon 2, Ethylene gas, Karmex DF or Direx L (Diuron), Hyvar X (Bromacil), phosguard (phosphorous acid), and Round-up (glyphosate). The quantities used onsite or frequency of applications of these products is not known and was not provided by the previous owner. The subject property is located within flood zone C. No further information is provided within the report.

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## **6.0 SITE RECONNAISSANCE**

The subject property was inspected by Ms. Rachel Herrera of Partner on July 18, 2008. The weather at the time of the site visit was sunny and clear. Ms. Sharon Wright, land consultant provided site access.

Most areas of the subject property were accessible at the time of the site inspection. However, due to the size of the subject property parcel, Partner performed a site inspection of the property utilizing a field technique of traversing the site in an attempt to provide an overlapping field of view. Due to the size of the property and vegetation present onsite, isolated areas of the site may not have been accessible for direct observation during Partner's inspection. This limitation is not expected to alter the findings of this report.

The subject property is currently vacant, undeveloped fallow land. No potential environmental concerns were identified during the onsite reconnaissance.

### **6.1 General Site Characteristics**

#### ***6.1.1 Solid Waste Disposal***

No solid waste is generated at the subject property due to the vacant fallow nature of the parcel.

#### ***6.1.2 Sewage Discharge and Disposal***

No features requiring the need for sanitary discharges on the subject property are currently present onsite

#### ***6.1.3 Surface Water Drainage***

Surface water drainage at the subject property is via sheet flow to the drainage area located along the western and northwestern edges of the subject property.

#### ***6.1.4 Source of Heating and Cooling***

Due to the lack of structures, no heating or cooling systems are present onsite.

#### ***6.1.5 Wells and Cisterns***

No aboveground evidence of wells or cisterns was observed during the site reconnaissance.

#### ***6.1.6 Wastewater***

Due to the lack of structures, no domestic wastewater is generated at the subject property. No industrial process is currently performed at the subject property.



### **6.1.7 Septic Systems**

No septic systems were observed on the subject property.

### **6.1.8 Additional Site Observations**

During the onsite reconnaissance, Partner observed the presence of a drainage area located along the western and northwestern portions of the subject property. The western area appears to be naturally attenuating from an adjacent gulch located to the south of the northern portion of the property. The water runoff from along Haleakala Highway (including adjacent properties) along the northern portion of the property feeds into drains observed along the edges of the property and discharges to the drainage area.

## **6.2 Potential Environmental Hazards**

### **6.2.1 Hazardous Materials and Petroleum Products Used or Stored at the Site**

No hazardous materials or petroleum products were observed on the subject property.

### **6.2.2 Aboveground & Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs/USTs)**

No evidence of ASTs or USTs was observed during the site reconnaissance.

### **6.2.3 Evidence of Releases**

No spills, stains or other indications that a surficial release has occurred at the subject property were observed.

### **6.2.4 Polychlorinated Biphenyls (PCBs)**

No potential PCB-containing equipment was observed on the subject property during Partner's reconnaissance.

### **6.2.5 Strong, Pungent or Noxious Odors**

No strong, pungent or noxious odors were evident during the site reconnaissance.

### **6.2.6 Pools of Liquid**

No pools of liquid were observed on the subject property.

### **6.2.7 Drains, Sumps and Clarifiers**

No drains, sumps or clarifiers were observed on the subject property.

### ***6.2.8 Pits, Ponds and Lagoons***

No pits, ponds and lagoons were observed on the subject property.

### ***6.2.9 Stressed Vegetation***

No stressed vegetation was observed on the subject property.

### ***6.2.10 Additional Potential Environmental Hazards***

No additional potential environmental hazards were observed.

## **6.3 Non-ASTM Services**

### ***6.3.1 Asbestos-Containing Materials (ACMs)***

Due to the lack of structures on the subject property, no asbestos containing materials are present onsite.

### ***6.3.2 Lead-Based Paint***

Due to the lack of structures on the subject property, no lead based paint is present onsite.

### ***6.3.3 Radon***

Radon is a colorless, odorless, naturally occurring, radioactive, inert, gaseous element formed by radioactive decay of radium (Ra) atoms. The US EPA has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, Zone 1 being those areas with the average predicted indoor radon concentration in residential dwellings exceeding the EPA Action limit of 4.0 picoCuries per Liter (pCi/L). It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the EPA recommends site specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures.

Radon sampling was not conducted as part of this investigation. Review of the EPA Map of Radon Zones places the subject property in Zone 3, where average predicted radon levels are less than 2.0 pCi/L.

### ***6.3.4 Lead in Drinking Water***

The subject property is currently not connected to the County water supply. Future water supplies will be provided by the County of Maui Department of Water Supply – Makawao System. According to the 2006 Water Quality Monitoring Results for West Maui, the lead levels in the drinking water supplied to the area of the subject property is within state and federal standards.

#### **6.4 Adjacent Property Reconnaissance**

The adjacent property reconnaissance consisted of observing the adjacent properties from the subject property premises. No items of environmental concern were identified on the adjacent properties during the site inspection.

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## 7.0 FINDINGS AND CONCLUSIONS

### *Findings*

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substance or petroleum product 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 term REC includes hazardous substances and petroleum products even under conditions that might be in compliance with laws. The term is not intended to include "de minimis" conditions that do not present a threat to human health and/or the environment and that would not be subject to an enforcement action if brought to the attention of appropriate governmental agencies. The following was identified during the course of this investigation:

- The subject property was formerly developed as a pineapple plantation from as early as the 1920s to circa the mid 1990s; and vacant fallow land from circa the mid 1990s to present. According to information provided by William W.L. Yuen, Esq., (representative of the subject property owner), the historic tenant, Maui Pineapple Co., utilized various fertilizers, pesticides, fungicides, herbicides, and plant growth regulators in association with the former agricultural use of the property. The quantities used onsite and frequency of application of these products is not known and was not provided by the previous owner, Maui Land and Pineapple Company, Inc. (Maui Land & Pine). Based on the former agricultural use of the subject property, there is a potential that residual concentrations of agricultural chemicals remain in the soil.

A *historical recognized environmental condition (HREC)* refers to an environmental condition which would have been considered a REC in the past, but which may or may not be considered a REC currently. The following was identified during the course of this investigation:

- Partner did not identify any historical recognized environmental conditions during the course of this investigation.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, require discussion. The following was identified during the course of this investigation:

- Partner did not identify any environmental issues during the course of this investigation.

### *Conclusions, Opinions, and Recommendations*

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-05 of the southeast intersections of Old and New

Haleakala Highways, TMK 223009064 in Pukalani, County of Maui, Hawaii (the “subject property”). Any exceptions to or deletions from this practice are described in Section 1.4 of this report. Based on the former use of the subject property, Partner cannot rule out the potential that residual concentrations of agricultural chemicals remain in the soil. These materials are likely limited to the near surface soils. Site redevelopment and grading activities will serve as a potential mitigating factor as these soils will be mixed with fill material. To proceed with an abundance of cautions, it would be prudent to conduct soil sampling and testing to confirm the absence or presence of historical fertilizer or pesticides in soil in reportable concentrations.

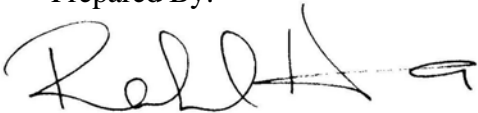
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## 8.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

Partner has performed a Phase I Environmental Site Assessment on the property at Intersection of Old and New Haleakala Highways in Pukalani, County of Maui, Hawaii in general conformance with the scope and limitations of the protocol and the limitations stated earlier in this report. Exceptions to or deletions from this protocol are discussed earlier in this report.

By signing below, Partner declares that, to the best of our professional knowledge and belief, the undersigned meet the definition of an *Environmental Professional* as defined in §312.10 of 40 CFR 312 and have the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the subject *property*.

Prepared By:



Rachel Herrera  
Environmental Scientist

Reviewed By:



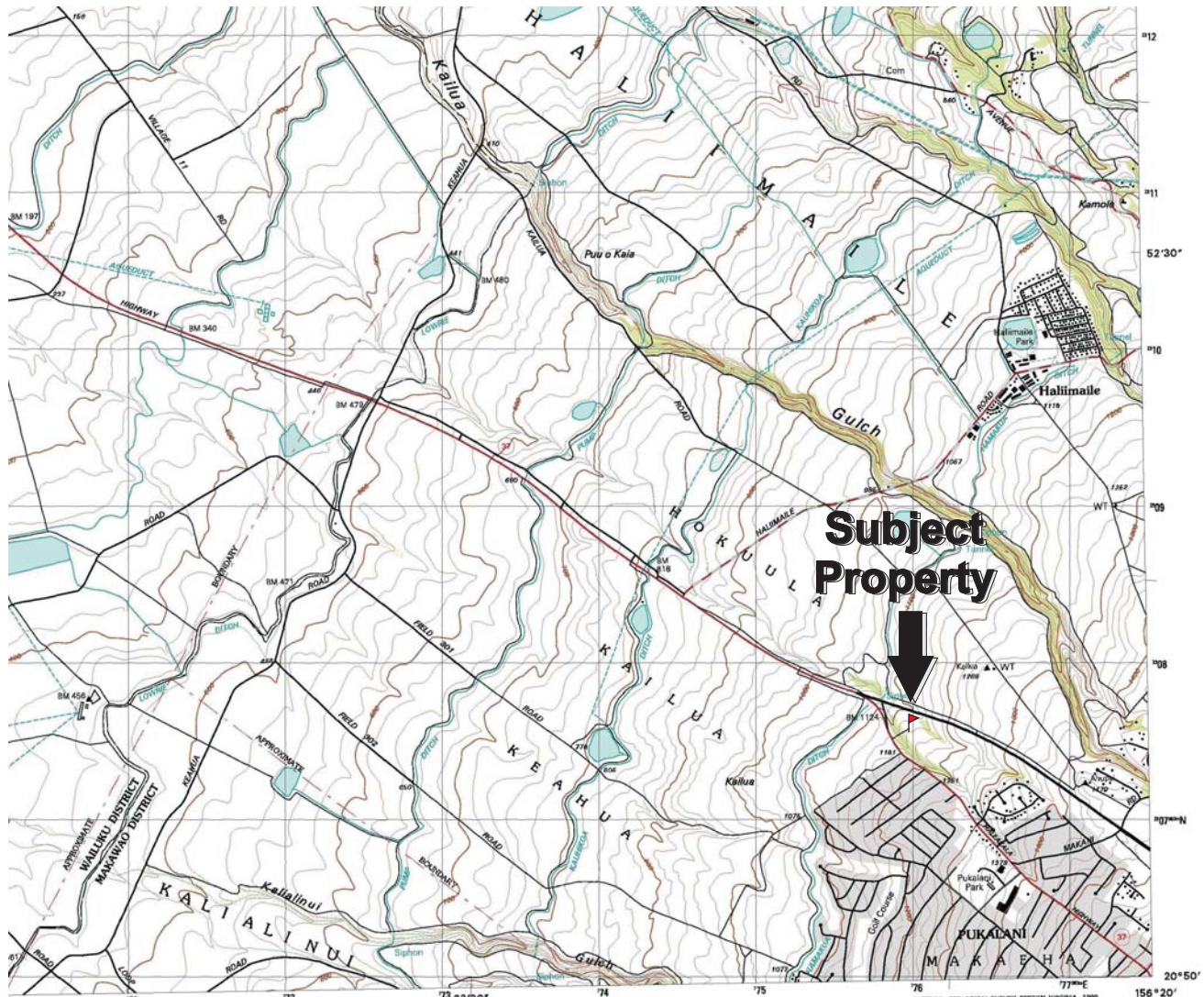
Monique Burrola, REA  
Senior Author



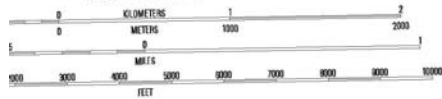
## **FIGURES**

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- 1- Site Location Map**
- 2- Site Plan**
- 3- Aerial Photographs**



SCALE 1:24 000



CONTOUR INTERVAL 20 FEET  
 DATUM IS MEAN SEA LEVEL  
 CONVERT FROM FEET TO METERS, MULTIPLY BY 0.3048  
 THE MEAN RANGE OF TIDE IS APPROXIMATELY 2 FEET

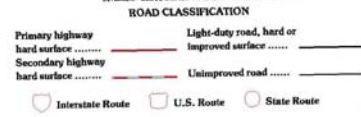
THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS  
 GEOLOGICAL SURVEY, P.O. BOX 25286, DENVER, COLORADO 80225  
 DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST



QUADRANGLE LOCATION

1	2	3	1 Kahalaia
			2
			3
4		5	4 Waialeale
			5 Hahaione
			6 Maunaloa
			7 Pua O Kuli
6	7	8	8 Kilauea

ADJOINING 7.5' QUADRANGLE NAMES



PAIA, HI  
 1997

NIMA 5719 IV NW-SERIES W833  
 NIMA 5719 IV SW-SERIES W833



FIGURE 1: SITE LOCATION MAP

Site Address:

Intersection of Old and New  
 Haleakala Highways  
 Pukalani, Hawaii 96788



USGS Paia  
 Quadrangle  
 Created: 1997;

**PARTNER**  
 Engineering and Science, Inc.  
 2101 Rosecrans Avenue, Suite 4270  
 El Segundo, California 90245  
 Job Number: 079995





**FIGURE 2: SITE PLAN**

Site Address:  
 Intersection of Old and New  
 Haleakala Highways  
 Pukalani, Hawaii 96788

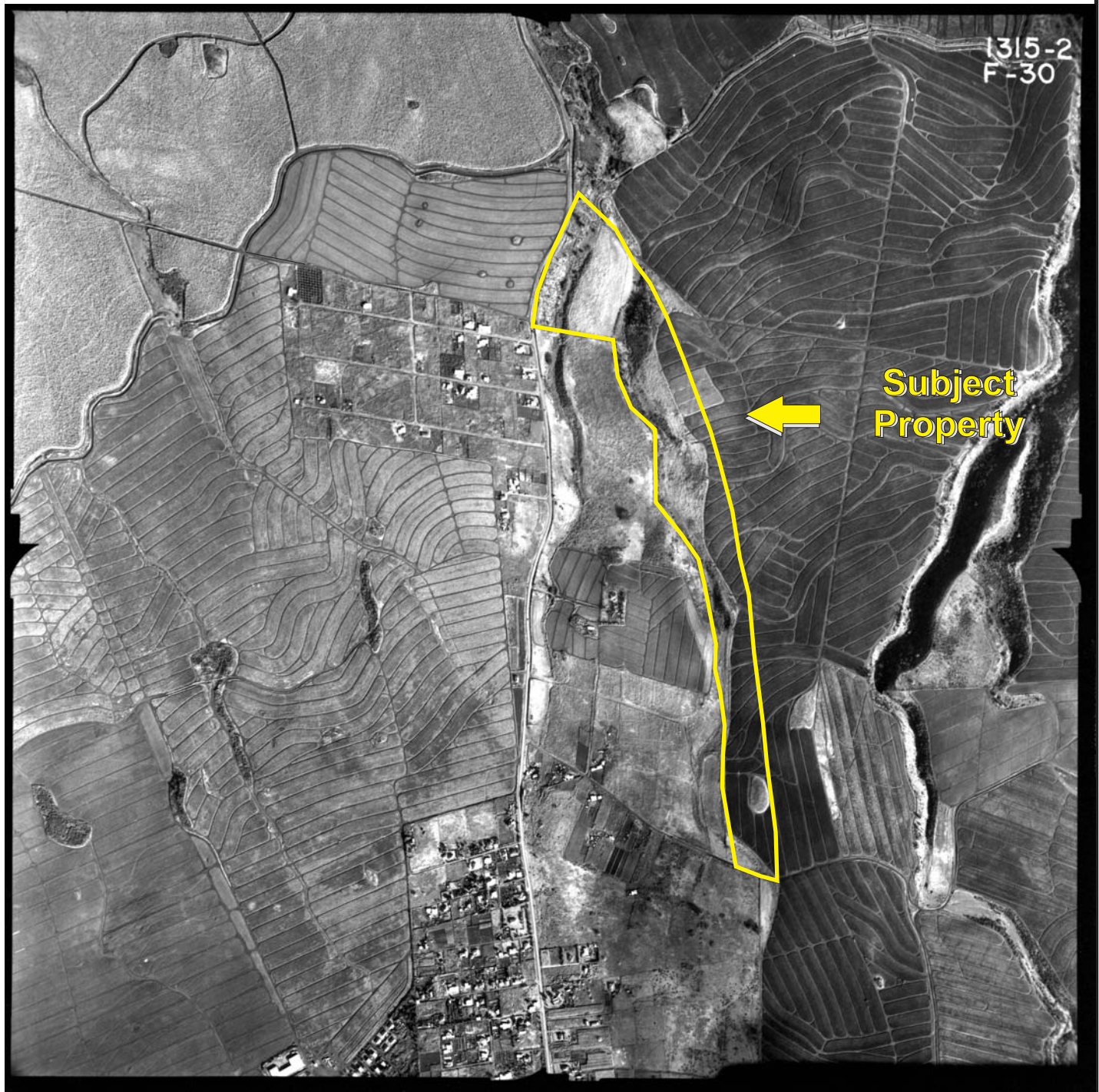
**KEY:**

Subject Site 



**GROUNDWATER FLOW**  


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 2101 Rosecrans Avenue, Suite 4270  
 El Segundo, California 90245  
 Job Number: 079995



### FIGURE 3: AERIALS

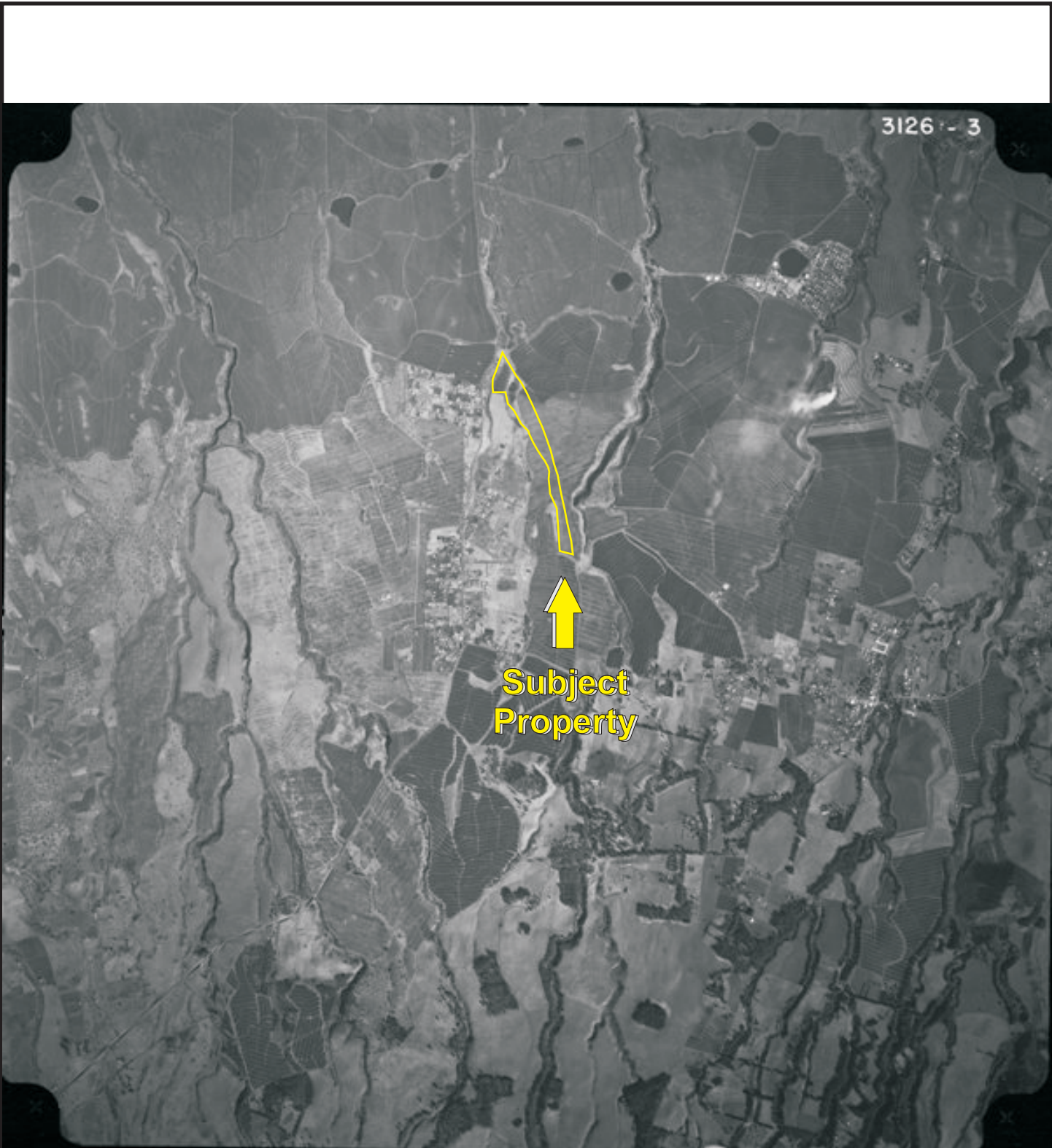
Site Address:

Intersection of Old and New  
Haleakala Higways  
Pukalani, Hawaii 96788



Date: 1955

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El Segundo, California 90245  
Job Number: 079995



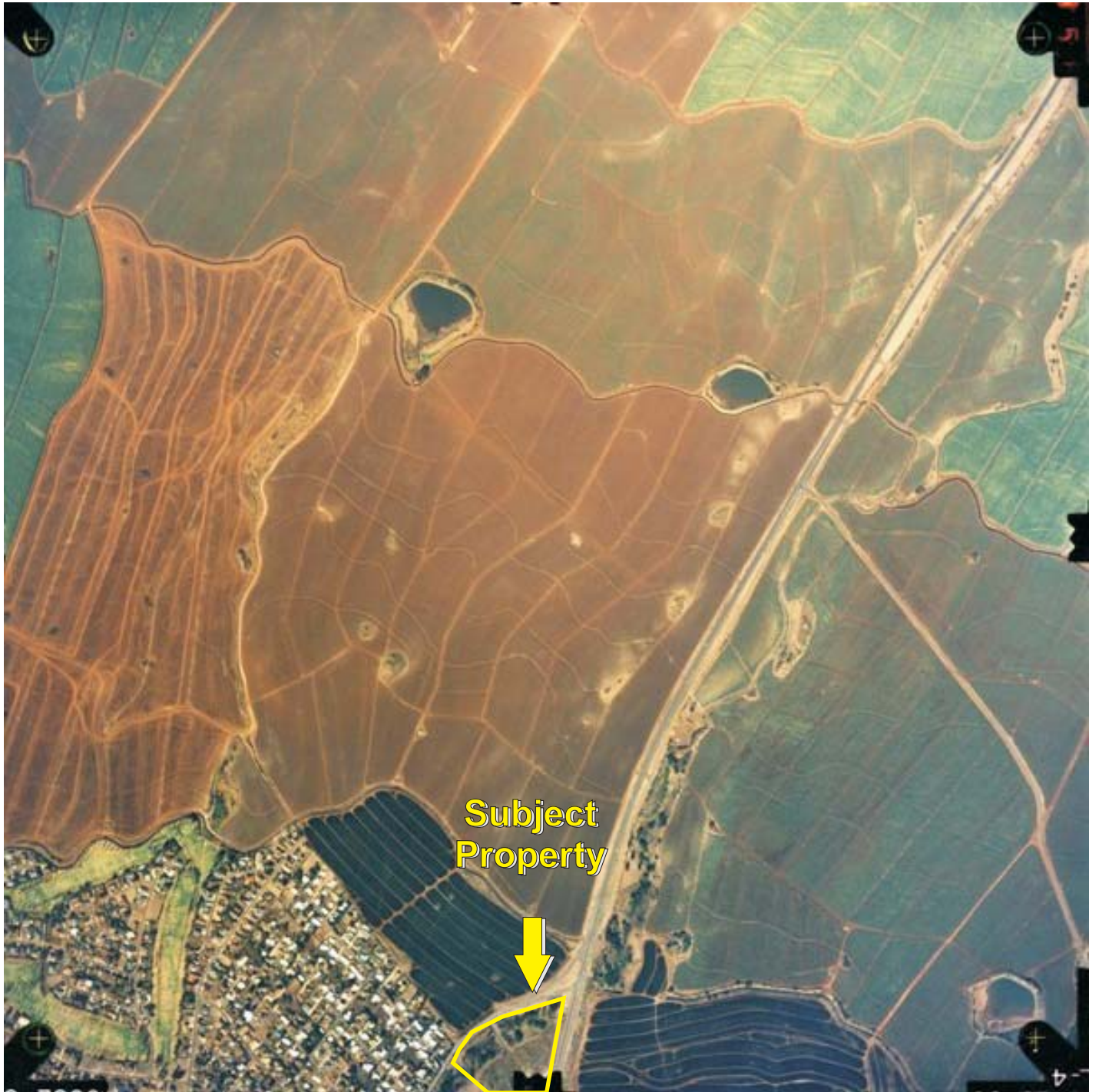
**FIGURE 3: AERIALS**

Site Address:  
Intersection of Old and New  
Haleakala Highways  
Pukalani, Hawaii 96788



Date: 1964

**PARTNER**  
Engineering and Science, Inc.  
2101 Rosecrans Avenue, Suite 4270  
El Segundo, California 90245  
Job Number: 079995



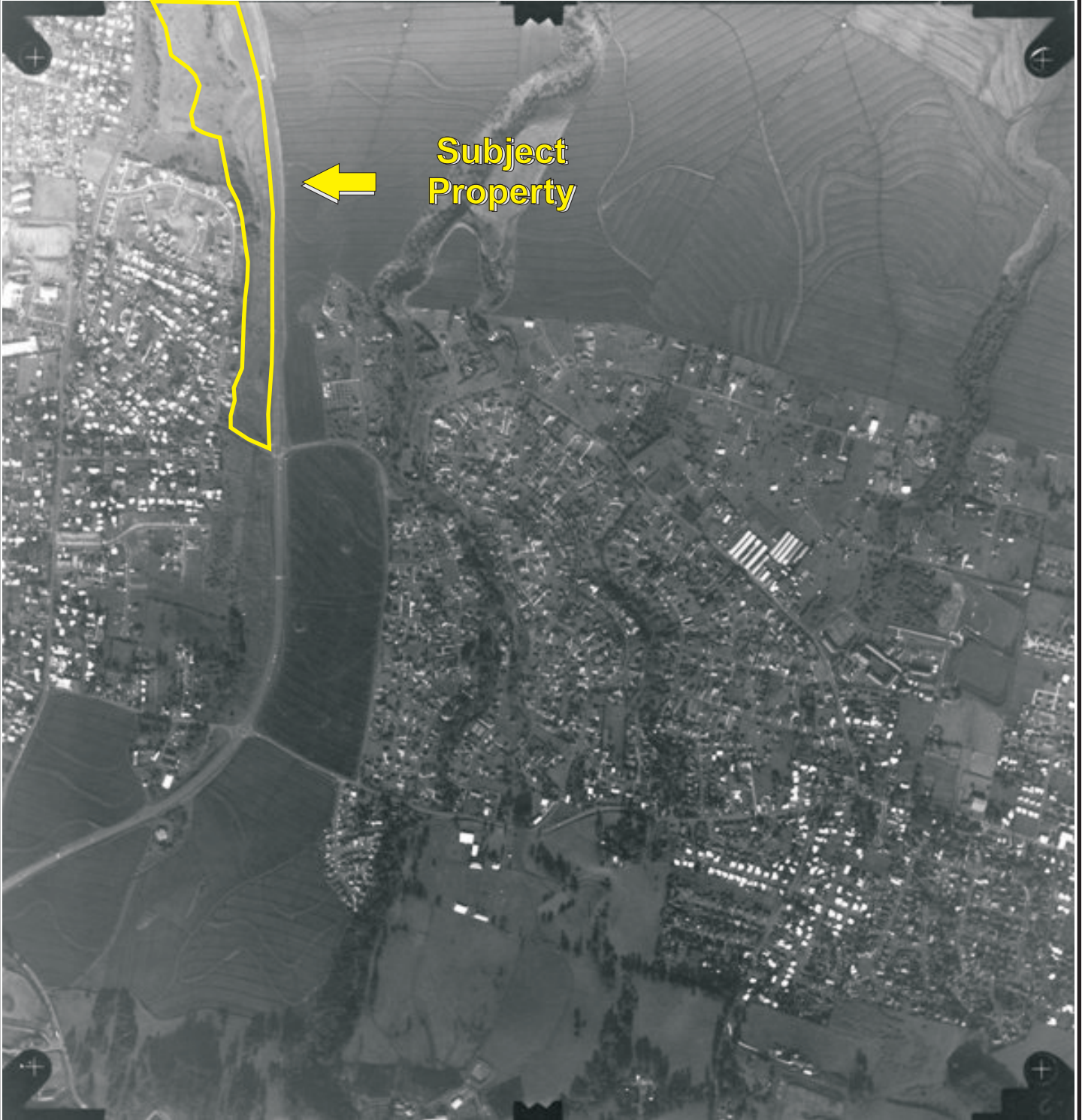
### FIGURE 3: AERIALS

Site Address:  
Intersection of Old and New  
Haleakala Higways  
Pukalani, Hawaii 96788



Date: 1996/1997

**PARTNER**  
Engineering and Science, Inc.  
2101 Rosecrans Avenue, Suite 4270  
El Segundo, California 90245  
Job Number: 079995



### FIGURE 3: AERIALS

Site Address:

Intersection of Old and New  
Haleakala Higways  
Pukalani, Hawaii 96788



Date: 1996/1997

**PARTNER**  
Engineering and Science, Inc.  
2101 Rosecrans Avenue, Suite 4270  
El Segundo, California 90245  
Job Number: 079995

## **APPENDIX A: PHOTOGRAPHS**

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1. View of the access road from Old Haleakala Highway along the western edge of the property.



2. View of the northern portion of the property.



3. View of the drainage area located along the western portion of the property.



4. Additional view of the drainage area and highway facing north.



5. View of the northwestern corner and convergence of drainage areas.



6. Typical view of the subject property ground coverage during the site inspection.

## SITE PHOTOGRAPHS

Site Address:

Intersections of Old and New Haleakala  
Highways  
Pukalani, Hawaii 96788

**PARTNER**  
Engineering and Science, Inc.

2101 Rosecrans Avenue, Suite 4270  
El Segundo, California 90245

Job Number: 079995



7. View of the subject property and elevation changes.



8. View of the subject property and adjacent highway.



9. view of the subject property facing east-southeast.



10. View of an access trail observed along the southwestern edge of the property.



11. View of the southern portion of the property.



12. View of the subject property from the highway.

## SITE PHOTOGRAPHS

Site Address:

Intersections of Old and New Haleakala  
Highways  
Pukalani, Hawaii 96788

**PARTNER**  
Engineering and Science, Inc.

2101 Rosecrans Avenue, Suite 4270  
El Segundo, California 90245

Job Number: 079995





13. View of a drainage wall observed along the northern portion of the subject property.



14. View of the northern portion of the property from Haleakala Highway.



15. View of an access area from Haleakala Highway facing south.



16. Additional view of the subject property and adjacent properties to the south.



17. View from Haleakala Highway facing northwest.



18. View of the subject property from Haleakala Highway facing south.

## SITE PHOTOGRAPHS

Site Address:

Intersections of Old and New Haleakala  
Highways  
Pukalani, Hawaii 96788

**PARTNER**  
Engineering and Science, Inc.

2101 Rosecrans Avenue, Suite 4270  
El Segundo, California 90245

Job Number: 079995

## **APPENDIX B: REFERENCES**

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**STATUS REPORT**

Maximum liability limited to  
\$2,500.00

This report (and any revisions thereto) is issued solely for the convenience of the titleholder, the titleholder's agent, counsel, purchaser or mortgagee, or the person ordering it.

-----  
**SCHEDULE A**

Title Guaranty of Hawaii, Incorporated, hereby reports that, subject to those matters set forth in Schedule "B" hereof, the title to the estate or interest to the land described in Schedule "C" hereof is vested in:

MAUI LAND & PINEAPPLE COMPANY, INC.,  
a Hawaii corporation,  
as Fee Owner

This report is dated as of January 14, 2005 at 8:00 a.m.

Inquiries concerning this report  
should be directed to  
COLLEEN UAHINUI.  
Email cuahinui@tghawaii.com  
Fax (808) 533-5854  
Telephone (808) 533-5834.  
Refer to Order No. 200454374.

**SCHEDULE B  
EXCEPTIONS**

1. Real Property Taxes, Second Installment, Fiscal Year July 1, 2004  
- June 30, 2005. (see tax statement attached)

Tax Key: (2) 2-3-009-064      Area Assessed: 38.629 acres

-Note:- Attention is invited to the fact that the premises covered herein may be subject to possible rollback or retroactive property taxes.

2. Reservation in favor of the State of Hawaii of all mineral and metallic mines.
  
3. LEASE in favor of MAUI ELECTRIC COMPANY, LIMITED and HAWAIIAN TELEPHONE COMPANY dated October 9, 1961, recorded in Liber 4162 at Page 301; leasing and demising rights-of-way, each twenty-five (25) feet in width over, across and under all lands owned and held by MAUI PINEAPPLE COMPANY, LIMITED, a Hawaii corporation, situate in the Island and County of Maui, State of Hawaii, for a term of thirty-five (35) years from the date hereof, and thereafter from year to year until terminated.
  
4. Restricted rights of vehicular access into and from HALEAKALA HIGHWAY PROJECT NO. 37C-01-90 as shown on NOTICE OF PENDENCY OF ACTION dated July 10, 1991, filed in the Circuit Court of the Second Circuit, State of Hawaii, in Civil No. 91-0437(2) on July 12, 1991, and recorded in the Bureau of Conveyances as Document No. 91-130846 on September 25, 1991.

-Note:- There is no FINAL ORDER OF CONDEMNATION of record at this time.

SCHEDULE B CONTINUED

5. GRANT

TO : MAUI ELECTRIC COMPANY, LIMITED, a Hawaii corporation, and GTE HAWAIIAN TELEPHONE COMPANY INCORPORATED, a Hawaii corporation, now known as VERIZON HAWAII, INC.

DATED : February 11, 1992

RECORDED : Document No. 92-037157

GRANTING : perpetual right and easement for utility purposes as shown on map attached thereto

6. GRANT

TO : PUKALANI HIGHLANDS PARTNERS, a Hawaii limited partnership

DATED : January 11, 1995

RECORDED : Document No. 95-010276

GRANTING : perpetual, non-exclusive drainage easement, in gross, which may be transferred to the County of Maui, but which shall not be transferred or assignable to any other person or entity without the prior written consent of the Grantor, etc., to provide for the drainage of surface water from the Project Land through the Off-Site Drainage System

EASEMENT "D"

A drainage easement in favor of the County of Maui and assigns, over and across portions of T.M.K. 2-3-09:08 and T.M.K. 2-3-33:17 (being also over and across portions of Grant 1088 to Kalawe and Grant 1468 to Daniel D. T. Conde) at Kailua, Kauau (Kula), Makawao, Maui, Hawaii, and being more particularly described as follows:

Beginning at the most southerly corner of this easement, being also the most southerly corner of T.M.K. 2-3-33:17, the coordinates of said point of beginning referred to Government Survey Triangulation Station "PUU O KOHA" being 6,710.37 feet north and 11,027.71 feet east and running by azimuths measured clockwise from true South:

1. 132° 41' 108.36 feet over and across a portion of Grant 1468 to Daniel D. T. Conde;

SCHEDULE B CONTINUED

2.	132°	41'		597.50	feet over and across a portion of Grant 1088 to Kalawe, being also along Lots 9, 8, 7, 6, 5, 4, 3, and 2 of Pukalani Place Extension - Unit IV;
3.	135°	34'		236.17	feet over and across a portion of Grant 1088 to Kalawe, being also along Lots 2, 1, and 18 of Pukalani Place Extension - Unit IV;
4.	225°	34'		15.00	feet over and across a portion of Grant 1088 to Kalawe;
5.	315°	34'		235.79	feet over and across same;
6.	312°	41'		457.84	feet over and across same;
7.	297°	41'		139.12	feet over and across same;
8.	268°	30'	30"	52.97	feet over and across same;
9.	358°	30'	30"	40.00	feet over and across same;
10.	88°	30'	30"	63.47	feet along Grant 1468 to Daniel D. T. Conde;
11.	312°	41'		99.61	feet over and across a portion of Grant 1468 to Daniel D. T. Conde;
12.	66°	43'		16.42	feet along the northerly side of Makani Road to the point of beginning and containing an area of 19,920 square feet, more or less.

SCHEDULE B CONTINUED

7. Claims arising out of customary and traditional rights and practices, including without limitation those exercised for subsistence, cultural, religious, access or gathering purposes, as provided for in the Hawaii Constitution or the Hawaii Revised Statutes.
  
8. Discrepancies, conflicts in boundary lines, shortage in area, encroachments or any other matters which a correct survey or archaeological study would disclose.

-Note:- A current survey, with metes and bounds description, should be made of said premises.

**END OF SCHEDULE B**

**SCHEDULE C**

All of that certain parcel of land (being portions of the land(s) described in and covered by Royal Patent Grant Number 1694 to Samuel R. Stone, Royal Patent Grant Number 1203 to Nuole, Royal Patent Grant Number 1088 to Kalawe, and Royal Patent Grant Number 2625 to Kahili) situate, lying and being at Kailua and Pukalani, Kula, District of Makawao, Island and County of Maui, State of Hawaii, bearing Tax Key designation (2) 2-3-009-064, and containing an area of 38.629 acres, more or less.

**BEING THE PREMISES ACQUIRED BY DEED**

GRANTOR : HALEAKALA PINEAPPLE COMPANY, LIMITED, a Hawaii corporation

GRANTEE : MAUI PINEAPPLE COMPANY, LIMITED, a Hawaii corporation

DATED : May 3, 1932

RECORDED : Liber 1161 Page 262

**END OF SCHEDULE C**



## GENERAL NOTES

1. Filed with the Department of Commerce and Consumer Affairs of the State of Hawaii (Business Registration), is the corporate name change of MAUI PINEAPPLE COMPANY, LIMITED to MAUI LAND & PINEAPPLE COMPANY, INC. by instrument dated September 12, 1969, recorded in Liber 6682 at Page 237.

## GUIDELINES FOR THE ISSUANCE OF INSURANCE

- A. Taxes shown in Schedule B are as of the date such information is available from the taxing authority. Evidence of payment of all taxes and assessments subsequent to such date must be provided prior to recordation.
  - B. Evidence of authority regarding the execution of all documents pertaining to the transaction is required prior to recordation. This includes corporate resolutions, copies of partnership agreements, powers of attorney and trust instruments.
  - C. If an entity (corporation, partnership, limited liability company, etc.) is not registered in Hawaii, evidence of its formation and existence under the laws where such entity is formed must be presented prior to recordation.
  - D. If the transaction involves a construction loan, the following is required:
    - (1) a letter confirming that there is no construction prior to recordation; or
    - (2) if there is such construction, appropriate indemnity agreements, financial statements and other relevant information from the owner, developer, general contractor and major sub-contractors must be submitted to the Title Company for approval at least one week prior to the anticipated date of recordation.
- Forms are available upon request from Title Guaranty of Hawaii.
- E. Chapter 669, Hawaii Revised Statutes, sets forth acceptable tolerances for discrepancies in structures or improvements relative to private property boundaries for various classes of real property. If your survey map shows a position discrepancy that falls within the tolerances of Chapter 669, call your title officer as affirmative coverage may be available to insured lenders.
  - F. The right is reserved to make additional exceptions and/or requirements upon examination of all documents submitted in connection with this transaction.
  - G. If a policy of title insurance is issued, it will exclude from coverage all matters set forth in Schedule B of this report and in the printed Exclusions from Coverage contained in an ALTA policy or in the Hawaii Standard Owner's Policy, as applicable. Different forms may have different exclusions and should be reviewed. Copies of the policy forms are available upon request from Title Guaranty of Hawaii or on our website at [www.tghawaii.com](http://www.tghawaii.com).

DATE PRINTED: 1/21/2005

STATEMENT OF ASSESSED VALUES AND REAL PROPERTY TAXES DUE

NAME OF OWNER: MAUI LAND & PINEAPPLE CO  
LEASED TO :

TAX MAP KEY

DIVISION ZONE SECTION PLAT PARCEL HPR NO.  
(2) 2 3 009 064 0000

CLASS: 5 AREA ASSESSED: 38.629 AC

ASSESSED VALUES FOR CURRENT YEAR TAXES: 2004

This certifies that the records of this division show the assessed values and taxes on the property designated by Tax Key shown above are as follows:

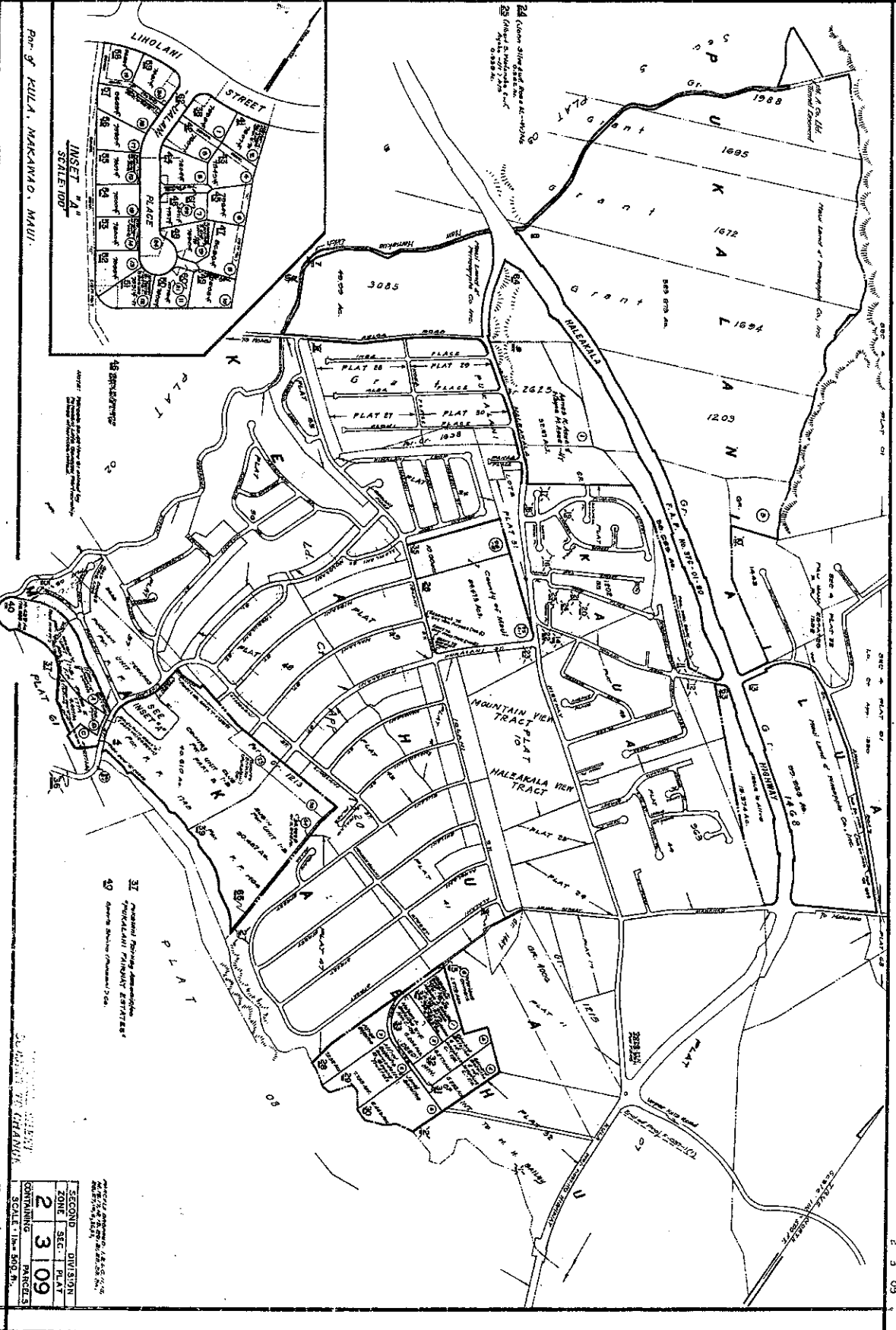
BUILDING	\$	0
EXEMPTION	\$	0
NET VALUE	\$	0
LAND	\$	21,700
EXEMPTION	\$	0
NET VALUE	\$	21,700
TOTAL NET VALUE	\$	21,700

Installment (1 - due 8/20; 2 - due 2/20)

Tax Year	Installment	Tax Amount	Penalty Amount	Interest Amount	Other Amount	Total Amount	
2004	2	53.49				53.49	PENDING
2004	1	53.49				53.49	PAID
2003	2	53.49				53.49	PAID
2003	1	53.49				53.49	PAID
2002	2	53.49				53.49	PAID
2002	1	53.49				53.49	PAID
2001	2	53.49				53.49	PAID
2001	1	53.49				53.49	PAID
2000	2	54.68				54.68	PAID
2000	1	54.69				54.69	PAID
1999	2	54.68				54.68	PAID
1999	1	54.69				54.69	PAID
Total Amount Due:						53.49	

Penalty and Interest Computed to: 12/31/2004

Day No. 1988  
 of H.A. L.D.J.G.  
 Source: Top. Map Bureau



Part of KULA, MAUI, HAWAII.

INSET "A"  
 SCALE 1:100

SECOND	DIVISION
ZONE	SEC.
2	3
CONTAINING	PLAT
SCALE 1" = 500.00'	09

PRINTED

Title Guaranty of Hawaii, Inc.'s Statement of Privacy Policy  
July 1, 2001

This Statement is provided to you as a customer of Title Guaranty of Hawaii, Inc. It applies to transactions involving individuals who are purchasing our services for primarily personal, family or household purposes. We realize that you may be receiving multiple disclosures from affiliates of ours and others, as well. We apologize in advance for this sometimes unavoidable duplication.

Title Guaranty of Hawaii, Inc. is an independently owned title insurance agent with more than 100 years of experience in searching Hawaiian land titles. We are an authorized title insurance agent for Chicago Title Insurance Company, Ticor Title Insurance Company, Security Union Title Insurance Company, and First American Title Insurance Company. Under the Gramm-Leach-Bliley Act, title insurance companies are required to provide certain disclosures regarding their privacy policies and practices. In compliance with federal and state law, we are providing you with this notice.

Chicago Title Insurance Company, Ticor Title Insurance Company, and Security Union Title Insurance Company are affiliates of Fidelity National Financial, Inc., and have issued the following Privacy Statement:

We recognize and respect the privacy expectations of today's consumers and the requirements of applicable federal and state privacy laws. We believe that making you aware of how we use your non-public personal information ("Personal Information"), and to whom it is disclosed, will form the basis for a relationship of trust between us and the public that we serve. This Privacy Statement provides that explanation. We reserve the right to change this Privacy Statement from time to time consistent with applicable privacy laws.

In the course of our business, we may collect Personal Information about you from the following sources:

- \* From applications or other forms we receive from you or your authorized representative;
- \* From your transactions with, or from the services being performed by, us, our affiliates, or others;

- \* From our internet web sites;
- \* From the public records maintained by governmental entities that we either obtain directly from those entities, or from our affiliates or others; and
- \* From consumer or other reporting agencies.

#### Our Policies Regarding the Protection of the Confidentiality and Security of Your Personal Information

We maintain physical, electronic and procedural safeguards to protect your Personal Information from unauthorized access or intrusion. We limit access to the Personal Information only to those employees who need such access in connection with providing products or services to you or for other legitimate business purposes.

#### Our Policies and Practices Regarding the Sharing of Your Personal Information

We may share your Personal Information with our affiliates, such as insurance companies, agents, and other real estate settlement service providers. We also may disclose your Personal Information:

- \* to agents, brokers or representatives to provide you with services you have requested;
- \* to third-party contractors or service providers who provide services or perform marketing or other functions on our behalf; and
- \* to others with whom we enter into joint marketing agreements for products or services that we believe you may find of interest.

In addition, we will disclose your Personal Information when you direct or give us permission, when we are required by law to do so, or when we suspect fraudulent or criminal activities. We also may disclose your Personal Information when otherwise permitted by applicable privacy laws such as, for example, when disclosure is needed to enforce our rights arising out of any agreement, transaction or relationship with you.

One of the important responsibilities of some of our affiliated companies is to record documents in the public domain. Such documents may contain your Personal Information.

#### Right to Access Your Personal Information and Ability To Correct Errors Or Request Changes Or Deletion

Certain states afford you the right to access your Personal Information and, under certain circumstances, to find out to whom your Personal Information has been disclosed. Also, certain states afford you the right to request correction, amendment or deletion of your Personal Information. We reserve the right, where permitted by law, to charge a reasonable fee to cover the costs incurred in responding to such requests.

All requests must be made in writing to the following address:

Privacy Compliance Officer  
Fidelity National Financial, Inc.  
4050 Calle Real, Suite 220  
Santa Barbara, CA 93110

#### Multiple Products or Services

If we provide you with more than one financial product or service, you may receive more than one privacy notice from us. We apologize for any inconvenience this may cause you.

First American Title Insurance Company is an affiliate of First American Corporation, and has issued the following Privacy Notice:

#### We Are Committed to Safeguarding Customer Information

In order to better serve your needs now and in the future, we may ask you to provide us with certain information. We understand that you may be concerned about what we will do with such information - particularly any personal or financial information. We agree that you have a right to know how we will utilize the personal information you provide to us. Therefore, together with our parent company, The First American Corporation, we have adopted this Privacy Policy to govern the use and handling of your personal information.

## Applicability

This Privacy Policy governs our use of the information which you provide to us. It does not govern the manner in which we may use information we have obtained from any other source, such as information obtained from a public record or from another person or entity. First American has also adopted broader guidelines that govern our use of personal information regardless of its source. First American calls these guidelines its Fair Information Values, a copy of which can be found on our website at [www.firstam.com](http://www.firstam.com).

## Types of Information

Depending upon which of our services you are utilizing, the types of nonpublic personal information that we may collect include:

- \* Information we receive from you on applications, forms and in other communications to us, whether in writing, in person, by telephone or any other means;
- \* Information about your transactions with us, our affiliated companies, or others; and
- \* Information we receive from a consumer reporting agency.

## Use of Information

We request information from you for our own legitimate business purposes and not for the benefit of any nonaffiliated party. Therefore, we will not release your information to nonaffiliated parties except: (1) as necessary for us to provide the product or service you have requested of us; or (2) as permitted by law. We may, however, store such information indefinitely, including the period after which any customer relationship has ceased. Such information may be used for any internal purpose, such as quality control efforts or customer analysis. We may also provide all of the types of nonpublic personal information listed above to one or more of our affiliated companies. Such affiliated companies include financial service providers, such as title insurers, property and casualty insurers, and trust and investment advisory companies, or companies involved in real estate services, such as appraisal companies, home warranty companies, and escrow companies. Furthermore, we may also provide all the information we collect, as described above, to companies that perform marketing services on our behalf, on behalf of our affiliated companies, or to other financial institutions with whom we or our affiliated companies have joint marketing agreements.



## Former Customers

Even if you are no longer our customer, our Privacy Policy will continue to apply to you.

## Confidentiality and Security

We will use our best efforts to ensure that no unauthorized parties have access to any of your information. We restrict access to nonpublic personal information about you to those individuals and entities who need to know that information to provide products or services to you. We will use our best efforts to train and oversee our employees and agents to ensure that your information will be handled responsibly and in accordance with this Privacy Policy and First American's Fair Information Values. We currently maintain physical, electronic, and procedural safeguards that comply with federal regulations to guard your nonpublic personal information.

Thank you for your time and attention to this important matter.

## 3.0 DESCRIPTION OF THE ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATIVE MEASURES

This section describes the existing conditions of the physical or natural environment, the potential impacts of the Kauhale Lani community on the environment, and mitigative measures to minimize impacts.

### 3.1 PHYSICAL CHARACTERISTICS

#### 3.1.1 Climate

The climate of the Pukalani region is generally mild, with warm days and cool evenings. Kauhale Lani's *mauka* location results in cooler temperatures compared to coastal locations at lower elevations. Average daily temperatures in Pukalani range between 60 and 75 degrees Fahrenheit. The Pukalani area receives a moderate amount of rainfall; historical records from Haleakalā Ranch show that this area averages about 43 inches of rain per year, with the summer months being the driest. Prevailing winds in the area are northeast tradewinds that reach speeds of 10 to 20 miles per hour. These tradewinds can be slightly stronger during the spring and summer months. During winter months, occasional strong winds from the south or southwest can occur.

#### *Potential Impacts and Mitigation Measures*

Kauhale Lani is not expected to have an effect on climatic conditions. As such, no mitigative measures are proposed.

#### 3.1.2 Geology and Topography

Geologically, the island of Maui is characterized as East and West Maui, with East Maui dominated by Haleakalā Volcano. Kauhale Lani is located on the windward slopes of Haleakalā, a dormant volcano which last erupted around 1790. Haleakalā was formed through three distinct periods of volcanism. The Honomanu Series formed the primitive shield of Haleakalā during the Tertiary Period. In the Pleistocene Epoch these lavas were completely overlain by the Kula Series, which is composed of hawaiite with lesser amounts of alkalic olivine basalt and ankaramite. The Kula lavas are primarily composed of thick a'a flows with some pāhoehoe present near the vents. Following a lengthy period of erosion, a third series of eruptions and flows, named the Hāna Volcanic Series covered much of the Kula lavas. However, because the north rift zone of the Kula series did not reopen during the third period of volcanism, the Hāna series is absent from the entire northwestern section of East Maui, where Kauhale Lani is located (Macdonald, Abbott, and Peterson 1983).

The neighborhood site (50-acre parcel) is gently sloping with elevations ranging from approximately 1,088 feet up to 1,186 feet. The slope of the open space site (39-acre parcel) varies more, with elevations between 1,110 feet and 1,440 feet.

# KAUHALE LANI

## Draft Environmental Assessment

### *Potential Impacts and Mitigative Measures*

No significant impacts on the geology and topography are anticipated as a result of developing the community. The roadways and homesites have been carefully designed and planned to minimize the need for extensive grading and conform to the natural contours of the land. However, some grading will be necessary for roads and house pads.

A National Pollutant Discharge Elimination System (NPDES) permit for Construction Storm Water Activities will be required from the State of Hawai'i Department of Health (DOH). During site preparation, storm runoff from the community site will be controlled in compliance with the County's "Soil Erosion and Sediment Control Standards". Typical mitigation measures include appropriately stockpiling materials on-site to prevent runoff and building over or establishing landscaping as early as possible on disturbed soils to minimize length of exposure.

### **3.1.3 Soils**

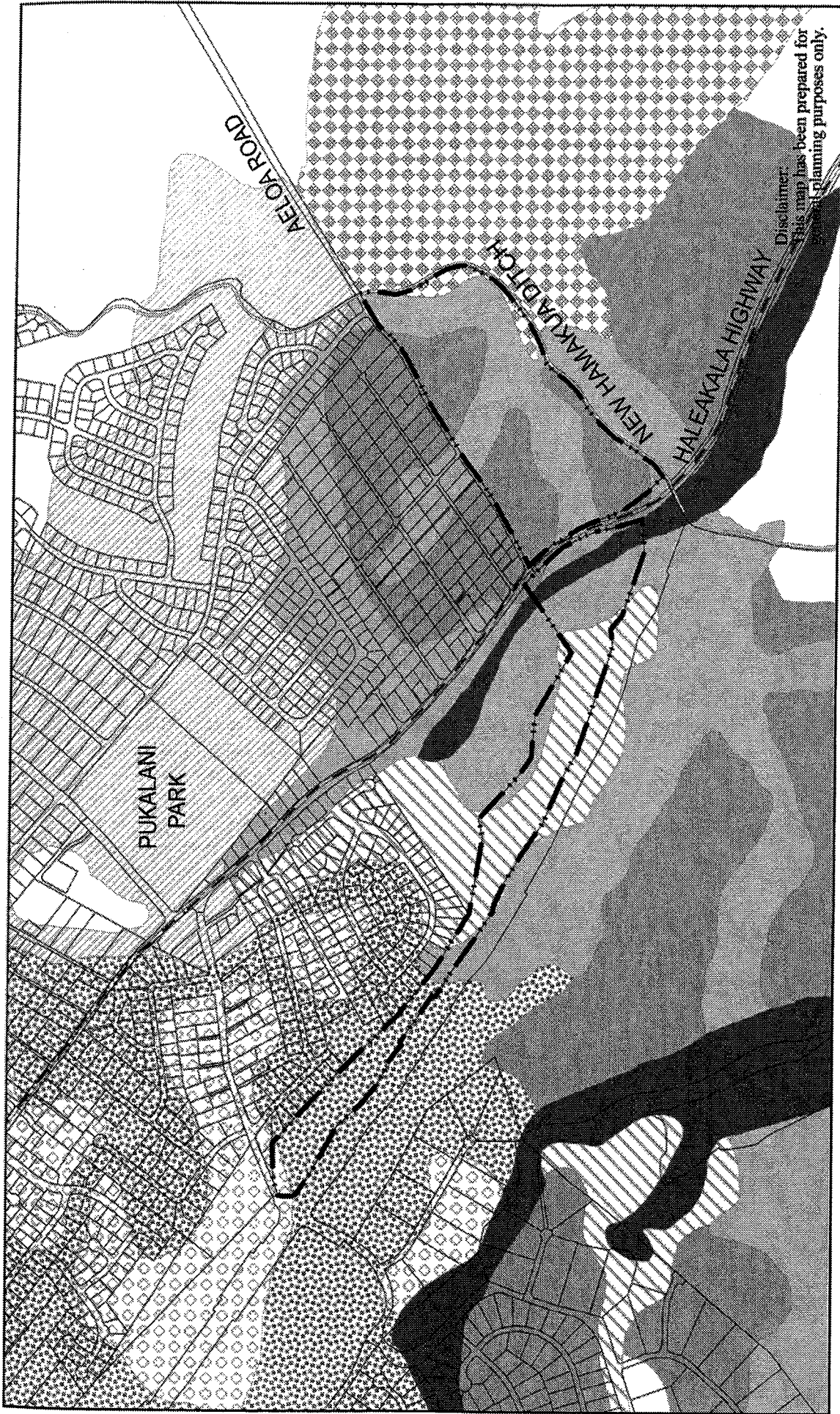
Three soil suitability studies have been prepared for lands in Hawai'i. These are the U.S. Department of Agriculture (USDA) Soil Conservation Service (now called the Natural Resources Conservation Service) *Soil Survey*, the University of Hawai'i Land Study Bureau *Detailed Land Classification*, and the State of Hawai'i Department of Agriculture *Agricultural Lands of Importance to the State of Hawai'i* (ALISH). The principal focus of these studies has been to describe the physical attributes of Hawai'i's lands and the relative productivity of different land types for agricultural production purposes.

**Natural Resources Conservation Service (NRCS).** According to the *United States Department of Agriculture Soil Conservation Service, Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, 1972*, the soils of Kauhale Lani include: Hāli'imaile Silty Clay, 3-7% slopes; Hāli'imaile Silty Clay, 7-15% slopes; Rough Broken Land; Hāli'imaile Gravelly Silty Clay, 7-15% slopes, eroded; Hāli'imaile Silty Clay Loam, 3-7% slopes; Hāli'imaile Silty Clay Loam, 7-15% slopes; and Keāhua Silty Clay Loam, 7-15% slopes (see Figure 5). Under the Soil Conservation Service's Land Capability Grouping, soil types are rated according to eight levels, ranging from the highest classification level, I, to the lowest level, VIII. Lower case letters following the classification level indicate specific subclasses. A brief description of these soils, along with their Land Capability Grouping rating follows.

Hāli'imaile Silty Clay (HhB), 3-7 percent slopes. On these soils, permeability is moderately rapid, runoff is slow, and the erosion hazard is slight. This soil has subangular blocky and angular blocky structure. The soil is strongly acid in the surface layer and strongly acid to medium acid in the subsoil. This soil is used for sugarcane, pineapple, and homesites.

Approximately 22.8 acres (25 percent) of Kauhale Lani contain HhB soils. HhB soils are rated IIe, irrigated or nonirrigated. Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices. Subclass IIe soils are subject to moderate erosion if they are cultivated and not protected.

Hāli'imaile Silty Clay (HhC), 7-15 percent slopes. On this soil, runoff is medium and the erosion hazard is moderate. The soils include cobbly areas and small, moderately steep areas. This soil is used for sugarcane, pineapple, and homesites.



Disclaimert  
 This map has been prepared for  
 planning purposes only.

**LEGEND**

**Soil Classifications**

- HhB: Halimaile Silty Clay, 3-7% Slopes IIe
- HhC: Halimaile Silty Clay, 7-15% Slopes IIIe
- rRR: Rough Broken Land
- HkC2: Halimaile Gravelly Silty Clay  
7-15% Slopes, Eroded
- HgB: Halimaile Silty Clay Loam, 3-7% Slopes
- HgC: Halimaile Silty Clay Loam, 7-15% Slopes

- KnC: Keahua Silty Clay Loam, 7-15% Slopes
- KnCC: Keahua Silty Clay, 7-15% Slopes
- Kauhale Lani Boundary

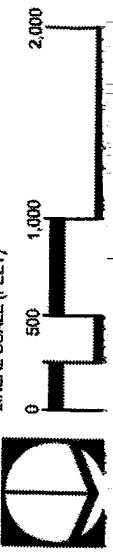
Source:  
 Natural Resources Conservation Service  
 The State of Hawaii GIS Database

Figure 5

**Soil Conservation Service Survey**

**KAUHALE LANI**

MAUI LAND & PINEAPPLE COMPANY, INC.  
 ISLAND OF MAUI



**KAUHALE LANI**  
**Draft Environmental Assessment**

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Approximately 34.8 acres (39 percent) of Kauhale Lani contain HhC soils. HhC soils are rated IIIe, irrigated or nonirrigated. Subclass IIIe soils have severe limitations that reduce the choice of plants, require special conservation practices, or both. They are subject to severe erosion if they are cultivated and not protected.

Rough Broken Land (rRR). Rough Broken Land consists of very steep land broken by numerous intermittent drainage channels. In most places, this land type is not stony, runoff is rapid, and geologic erosion is active. This soil type is used primarily for watershed and wildlife habitat. In places it is used also for pasture and woodland.

Approximately 3.2 acres (3.5 percent) of Kauhale Lani contain rRR soils. These soils capability classification is VIIe, nonirrigated. Subclass VIIe soils are very severely limited by risk of erosion.

Hāli'imaile Gravelly Silty Clay (HkC2), 7-15 percent slopes, eroded. This soil has a profile like that of Hāli'imaile Silty Clay, 3 to 7 percent slopes, except that in most places about 50 percent of the original surface layer has been lost through erosion. Runoff is medium to rapid, and the erosion hazard is severe. This soil is used for pineapple and pasture.

Approximately 15.6 acres (17.5 percent) of Kauhale Lani contain HkC2 soils. HkC2 soils are classified as IVe, irrigated or nonirrigated. Subclass IVe soils are subject to severe erosion if they are cultivated and not protected.

Hāli'imaile Silty Clay Loam (HgB), 3-7 percent slopes. This soil has a profile like that of Hāli'imaile Silty Clay, 3 to 7 percent, except for the texture of the surface layer. Runoff is medium, and the erosion hazard is moderate. This soil is used for pineapple, pasture, and homesites.

Approximately 0.8 acres (1 percent) of Kauhale Lani contain HgB soils. HgB soils are classified as IIe, whether irrigated or nonirrigated. Subclass IIe soils are subject to moderate erosion if they are cultivated and not protected.

Hāli'imaile Silty Clay Loam (HgC), 7-15 percent slopes. This soil has a profile like that of Hāli'imaile Silty Clay, 3 to 7 percent, except for the texture of the surface layer. Runoff is medium, and the erosion hazard is moderate. This soil is used for pineapple, pasture, and homesites.

Approximately 9.6 acres (11 percent) of Kauhale Lani contain HgC soils. The capability classification of HgC soils is IIIe, irrigated or nonirrigated. Subclass IIIe soils are subject to severe erosion if they are cultivated and not protected.

Keāhua Silty Clay Loam (KnC), 7-15 percent slopes. The Keāhua Series consists of well-drained soils developed in material weathered from basic igneous rock. On this soil, runoff is slow to medium and the erosion hazard is slight to moderate. This soil is used for sugarcane and pasture. Small acreages are used for pineapple and truck crops.

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KnC soil covers approximately 2.8 acres (3 percent) of Kauhale Lani. This soil is classified as IIIe if irrigated, IVe if nonirrigated. Subclass III e soils are subject to severe erosion if they are cultivated and not protected.

**Detailed Land Classification.** The University of Hawai'i Land Study Bureau document titled *Detailed Land Classification, Islands of Kauai, Oahu, Maui, Molokai, and Lanai* classifies the land of Kauhale Lani as Fair (C), Poor (D), and Very Poor (E) (see Figure 6). Approximately 21.6 acres are classified as C21, 18 acres as E96, and 49 acres as D44. For non urban areas the Detailed Land Classification classifies land based on a five-class productivity rating system using the letters A, B, C, D, and E, where A represents the highest class of productivity and E the lowest. The characteristics of the specific land types of Kauhale Lani are detailed in Table 3 below.

**Table 3. Detailed Land Classification for Kauhale Lani**

	<b>C21</b>	<b>E96</b>	<b>D44</b>
<b>Machine Tilability</b>	Well-suited	Not suited	Well-suited
<b>Stoniness</b>	Nonstony	Nonstony to rocky	Nonstony
<b>Depth (inches)</b>	Deep, over 30	Variable	Deep, over 30
<b>Slope (%)</b>	0-10, predominantly 5	36-80, predominantly 45	0-10, predominantly 8
<b>Texture</b>	Fine	Moderately fine to medium	Fine
<b>Drainage</b>	Well-drained	Well-drained	Well-drained
<b>Mean Annual Rainfall (inches)</b>	30 to 40	40 to 60	20 to 35
<b>Elevation (feet)</b>	100 to 1200	100 to 5000	0 to 1200
<b>Color</b>	Dark reddish brown	Dark brown to dark reddish brown	Dark reddish brown
<b>Soil Series</b>	Kahana, Haliimaile	Rough broken lands, C zones	Lahaina, Keahua
<b>Major Existing Uses</b>	Pineapple, sugar cane	Grazing, forest	Pineapple, sugar cane
<b>District</b>	Lahaina, Makawao	Lahaina, Wailuku, Hana, Makawao	Lahaina, Makawao

**Agricultural Lands of Importance to the State of Hawai'i.** The State of Hawai'i Department of Agriculture's *Agricultural Lands of Importance to the State of Hawai'i (ALISH)* system of defining agricultural suitability classifies the soils of Kauhale Lani as Prime Agricultural Land, Other Agricultural Land, and "not classified" (see Figure 7).

Prime Agricultural Land is land best suited for the production of food, feed, forage, and fiber crops. When treated and managed, including water management, according to modern farming methods, the land has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops. Approximately 30 acres of the 50-acre parcel are classified as Prime Agricultural Land.

Other Agriculture Land is land other than Prime or Unique Agricultural Land that is also of statewide or local importance for the production of food, feed, fiber, and forage crops. The lands in this classification are important to agriculture in Hawai'i yet they exhibit properties, such as seasonal wetness, erosion, limited rooting zone, slope, flooding, or drought, that exclude them

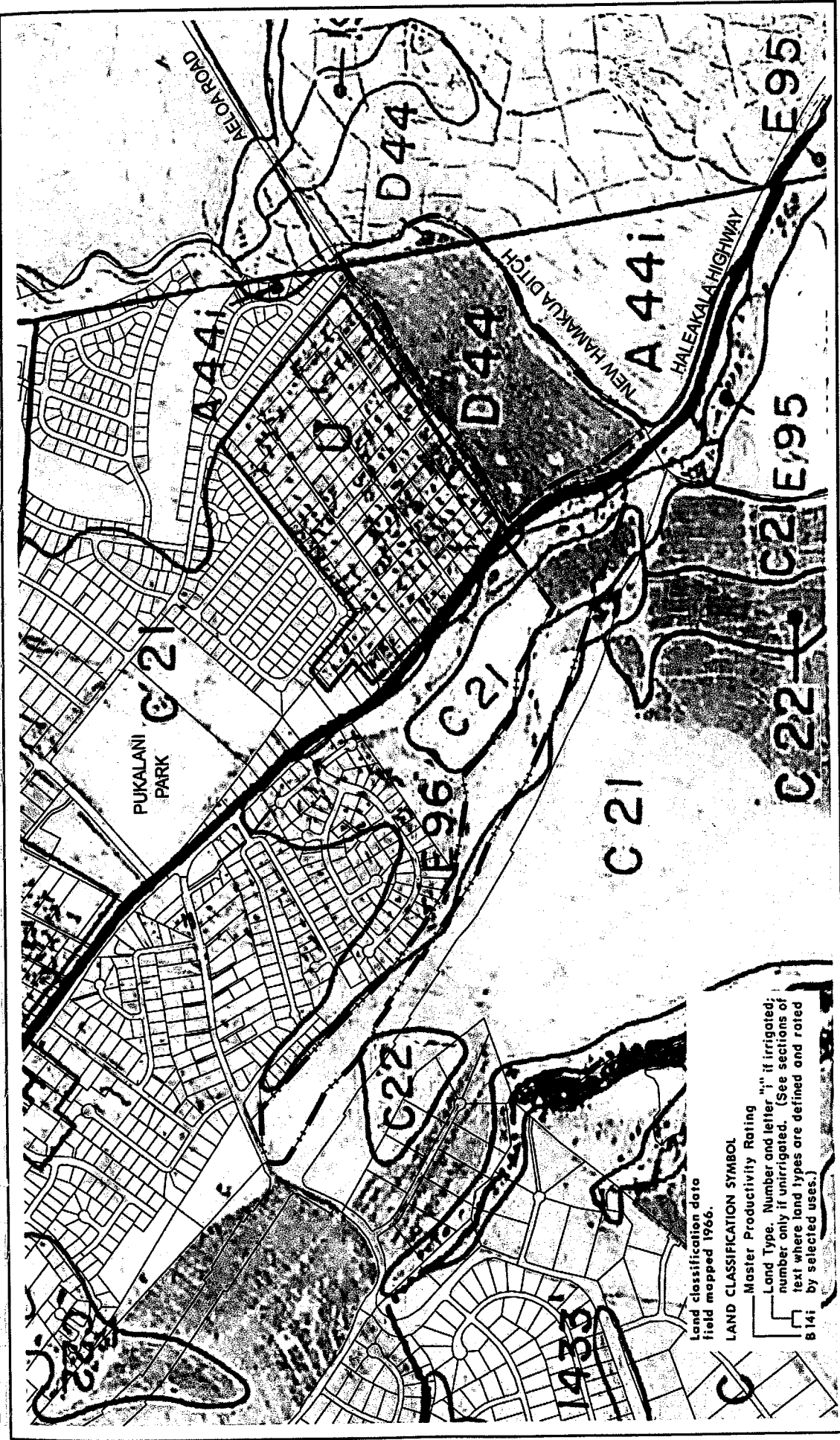


Figure 6  
 Detailed Land Classification  
**KAUHALE LANI**  
 MAUI LAND & PINEAPPLE COMPANY, INC.  
 NORTH  
 LINEAL SCALE (FEET)  
 0 1,000 2,000 4,000  
 ISLAND OF MAUI  
 PBR  
 HAWAII

Source:  
 Land Study Bureau,  
 The State of Hawaii GIS Database

Disclaimer:  
 This map has been prepared for  
 general planning purposes only.

- LEGEND**
- ▲ Kauhale Lani Boundary
  - A: Excellent
  - B: Good
  - C: Fair
  - D: Poor
  - E: Very Poor
  - U: Urban

Land classification data  
 field mapped 1966.

**LAND CLASSIFICATION SYMBOL**

Master Productivity Rating  
 Land Type, Number and letter "i" if irrigated;  
 number only if unirrigated. (See sections of  
 text where land types are defined and rated  
 B141 by selected uses.)

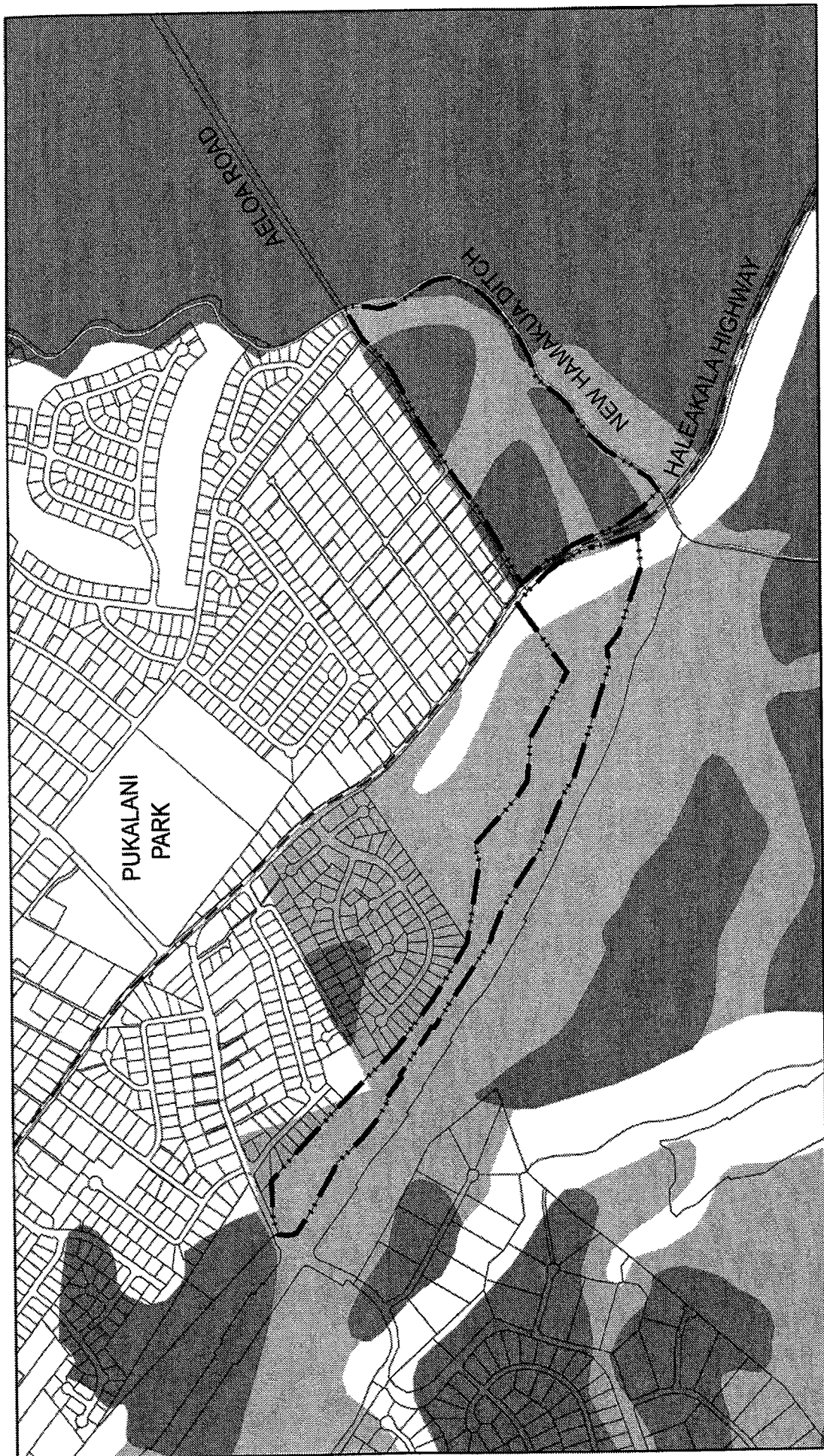


Figure 7  
 Agricultural Lands of Importance  
 to the State of Hawaii (ALISH)

**LEGEND**

ALISH Types

- Prime ALISH Land
- Other ALISH Land
- Not Classified

Kauahale Lani Boundary

Source:  
 The State of Hawaii GIS Database

MAUI LAND & PINEAPPLE COMPANY, INC.  
 NORTH

ISLAND OF MAUI

**KAUHALE LANI**

LINEAL SCALE (FEET)

0 500 1,000 2,000

**PBR**  
 HAWAII

Disclaimer:  
 This map has been prepared for  
 general planning purposes only.



## KAUHALE LANI Draft Environmental Assessment

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from the Prime or Unique Agricultural Land classifications. When properly managed, these lands can be farmed satisfactorily and produce fair to good crop yields by applying greater inputs of fertilizer and other soil amendments, providing drainage improvements, implementing erosion control practices, and providing flood protection. The remaining 20 acres of the 50-acre parcel and approximately 32.6 acres of the 39-acre parcel are classified as Other Agricultural Land, for a total of 52.6 acres. The remaining 6 acres of the 39-acre parcel are not classified.

### *Potential Impacts and Mitigation Measures*

The 50-acre parcel of the Kauhale Lani site is dominated by Hāli'imaile Silty Clay, 3-7 percent slopes (HhB) and 7-15 percent slopes (HhC). In its natural state, this land is not irrigated. The non-irrigated capability classification of the 50-acre parcel has a subclass rating of IIIe, which indicates severe limitations and erosion potential when cultivated and not protected. Without irrigation, these lands are naturally unsuitable for agriculture. Therefore, the change in land use from agricultural to residential will not have a significant impact on the inventory of valuable agricultural lands. Maui Pineapple Company, Ltd. (MPC) (a subsidiary of ML&P) is currently using its existing pineapple fields more efficiently and has increased pineapple production without expanding its number of fields. This increase in productivity will balance the loss of agricultural land. Kauhale Lani will not have a negative impact on ML&P's agricultural operations.

The 39-acre parcel is not cultivated due to its topography and soil types. Upon completion of the Kauhale Lani community, adequate landscaping will be implemented to minimize erosion.

Impacts to the soils include the potential for soil erosion and the generation of dust during construction. Clearing and grubbing activities will temporarily disturb the soil retention values of the existing vegetation and expose soils to erosion forces. Some wind erosion of soils could occur without a proper watering and re-vegetation program. Heavy rainfall could also cause erosion of soils within disturbed areas of land.

To the extent possible, improvements will conform to the contours of the land, further limiting the need for extensive grading of the site. In addition, graded areas will be limited to specific areas for short periods of time.

Measures taken to control erosion during the site development period will include:

- Minimizing the time of construction;
- Retaining existing ground cover as long as possible;
- Constructing drainage control features early;
- Using temporary area sprinklers in non-active construction areas when ground cover is removed;
- Providing a water truck on-site during the construction period to provide for immediate sprinkling as needed;
- Using temporary berms and cut-off ditches, where needed, for control of erosion;
- Watering graded areas when construction activity for each day has ceased;
- Grassing or planting all cut and fill slopes immediately after grading work has been completed; and

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- Installing silt screens where appropriate.

All construction activities will comply with all applicable Federal, State, and County regulations and rules for erosion control. Before issuance of a grading permit by the County of Maui, the final erosion control plan and best management practices required for the NPDES permit will be completed. All construction activities will also comply with the provisions of Chapter 11-60 HAR, Section 11-60.1-33, Fugitive Dust.

After construction, the establishment of permanent landscaping will provide long-term erosion control.

### **3.1.4 Agricultural Impact**

#### ***Existing Conditions***

Both the 50-acre and the 39-acre Kauhale Lani community parcels are former pineapple fields Maui Pineapple Company, Ltd. (MPC) ended pineapple cultivation on these parcels in 2002. The fields have been fallow since then, with the exception of a small section of the 39-acre parcel, on which MPV cultivated organic pineapple until 2003.

Both parcels are inefficient to farm as part of MPC operations since the Pukalani Bypass separated these parcels from other contiguous, more suitable MPC pineapple fields. As MPC downsizes its operations to focus on the fresh fruit market, it is focusing on the best and most efficient land to farm. MPC is keeping its best land in cultivation and exploring options to cultivate pineapple on other more suitable lands.

#### ***Potential Impacts and Mitigative Measures***

Creation of Kauhale Lani will require that the approximately 89 acres of land previously used for pineapple cultivation be permanently withdrawn from agricultural use. This will amount to about one percent of the approximately 5,800 acres currently in pineapple cultivation by Maui Pineapple Company, Ltd. Kauhale Lani will not lead to a decrease in ML&P's agricultural viability.

In conformance with the *Makawao-Pukalani-Kula Community Plan*, Kauhale Lani will provide for the carefully considered expansion of Pukalani within a defined area, while preserving the surrounding agricultural land and open space that is so valuable to the character of the region. The New Hāmākua Ditch provides a natural boundary to the edge of Pukalani. By limiting residential uses to an appropriate area, Kauhale Lani allows for needed housing while respecting and acknowledging the value of agricultural land and open spaces.

ML&P maintains a long-term commitment to agriculture. Strengthening its agricultural operations is one of the company's foremost goals. While focusing on the market demand for fresh whole pineapple, MPC still produces pineapple for canning. However, the shift toward fresh pineapple production has allowed MPC to compete against other producers.

## KAUHALE LANI Draft Environmental Assessment

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In addition to its pineapple operations, ML&P is exploring a wide array of diversified agricultural opportunities and conducting field trials on new crops.

To further diversify agriculture, ML&P is expanding their agricultural base via a new entity called Maui Agricultural Partners. Maui Agricultural Partners will support a diverse community of farming partnerships to enable the sharing of knowledge, infrastructure, and costs. The goal of Maui Agricultural Partners is to become a “grower of growers” through entrepreneurial programs allowing Maui farmers to develop the talent base necessary to grow Maui’s diversified agriculture industry. As a partner, ML&P is committed to a long-term stake in sustaining farming operations as evidenced by its investment of land and technical and financial resources.

Removing the 89 acres of land slated for Kauhale Lani will not have a negative impact on ML&P’s agricultural operations.

Regarding potential nuisance complaints from Kauhale Lani residents about ongoing neighboring sugar cultivation operations, ML&P will notify all prospective buyers and lessees that the Hawai’i Right to Farm Act (Chapter 165, HRS) limits the circumstances under which pre-existing farm activities may be deemed a nuisance.

### 3.1.5 Identification of Chemicals and Fertilizers

#### *Existing Conditions*

Maui Pineapple Company, Ltd. (MPC) formerly cultivated pineapple on the Kauhale Lani site. As part of its agricultural operations, MPC uses fertilizers, pesticides, fungicides, herbicides, and plant growth regulators in compliance with all product labeling and applicable government regulations.

**Fertilizers.** MPC uses the following fertilizers—which provide nutrients essential for plant growth—as part of its pineapple operations: UAN-32 (Urea-Ammonium nitrate), urea, potassium sulfate, potassium chloride, Treble Super Phosphate, rock phosphate, lime, magnesium sulfate, iron sulfate, and zinc sulfate.

**Pesticides.** MPC uses the following pesticides—to control nematodes, ants, or, other insects—as part of its pineapple operations: Telone II Soil Fumigant (1, 3 dichloropropene), Namacur 3 (Fenamiphos), Vydate (Oxamyl), Thiodan (Endosulfan), Amdro Pro Fire Ant Bait (Hydramethylnon), and Diazinon 50W (Diazinon).

**Fungicides, Herbicides, and Plant Growth Regulators.** MPC uses the following fungicides, herbicides, and plant growth regulators—to regulate plant growth, induce flowering, control weeds, or control disease—as part of its pineapple operations: Ethrel 4 or Ethepon 2 (Ethepon), Ethylene gas (Ethylene), Karmex DF or Direx L (Diuron), Evik (Ametryne), Hyvar X (Bromacil), Aliette (Fosetyl-Al), Phosguard (Phosphorous acid), Tilt (Propiconazole), Herbimax, Assure II Herbicide (Qualifop-ethyl), Velpar (Hexazinone), and Round-up (Glyphosate).

**KAUHALE LANI**  
**Draft Environmental Assessment**

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***Potential Impacts and Mitigative Measures***

The creation of the Kauhale Lani community is expected to significantly reduce the amount of fertilizers, pesticides, fungicides, herbicides, and plant growth regulators used on the site relative to the former agricultural uses.

Overfertilization of Kauhale Lani landscaping will be avoided to ensure that the community does not contribute additional nutrients entering the ground. Common nitrogen/phosphorus/ potash mixed fertilizers are anticipated to be applied to lawn areas, groundcover, shrubs, and trees. With proper irrigation management practices, leaching and runoff of fertilizers should be negligible.

Within Kauhale Lani, the use of herbicides will generally be limited to the initial landscaping period on the site. Anticipated application of pesticides will be used as a treatment rather than a preventative measure. As a treatment, application will be limited. In addition, plant selection will be based on hardiness, drought tolerance, pest resistance, as well as aesthetic concerns.

**3.1.6 Natural Hazards**

***Existing Conditions***

Natural hazards impacting the Hawaiian Islands include hurricanes, tsunamis, volcanic eruptions, earthquakes, and flooding.

Devastating hurricanes have impacted Hawai'i twice since 1980: Hurricane 'Iwa in 1982 and Hurricane 'Iniki in 1992. While it is difficult to predict these natural occurrences, it is reasonable to assume that future events could be likely given the recent record.

Tsunamis are large, rapidly moving ocean waves triggered by a major disturbance of the ocean floor, which is usually caused by an earthquake but sometimes can be produced by a submarine landslide or a volcanic eruption. About 50 tsunamis have been reported in the Hawaiian Islands since the early 1800s. Seven caused major damage, and two of these were locally generated. The Kauhale Lani community is outside of the Civil Defense Tsunami Evacuation Zone.

Volcanic hazards in the Pukalani area are considered minimal due to the dormant status of Haleakalā Volcano, which last erupted in 1790 (MacDonald, Abbott, and Peterson 1983).

In Hawai'i, most earthquakes are linked to volcanic activity, unlike other areas where a shift in tectonic plates is the cause of an earthquake. Each year, thousands of earthquakes occur in Hawai'i, the vast majority of them so small they are detectable only with highly sensitive instruments. However, moderate and disastrous earthquakes have rocked the islands.

The 1938 Maui Earthquake, with a magnitude of 6.7-6.9 on the Richter Scale and an epicenter six miles north of Maui, created landslides and forced the closure of the road to Hāna. Damaged water pipes and ground fractures also were reported in Lahaina.

## KAUHALE LANI Draft Environmental Assessment

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Flood hazards are primarily identified by the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency (FEMA), National Flood Insurance Program. According to the FIRM, Kauhale Lani community is located in Zone C, areas of minimal flooding (Figure 8).

### *Potential Impacts and Mitigation Measures*

Kauhale Lani will not exacerbate any hazardous conditions. All structures will be constructed for protection from earthquakes and the destructive winds and torrential rainfall of tropical hurricanes in accordance with the Building Code adopted by the County of Maui.

#### **3.1.7 Flora**

##### *Existing Conditions*

No threatened, endangered, or species of concern were observed on the Kauhale Lani site during a botanical field survey conducted in May 2004 (Char 2004). Former pineapple fields (fallow since 2002) covered the majority of the two parcels that make up the Kauhale Lani community site. Weedy species commonly associated with agricultural lands are usually found as a narrow band along the edges of fields that border roads, ditches, and other uncultivated areas. Further descriptions of the various botanical resources are summarized below. Appendix B contains the complete botanical survey.

**50-acre Parcel.** The 50-acre parcel was fallow at the time of the field survey. A few rock piles are scattered through the parcel, which support a cover of green panicgrass (*Panicum maximum var. trichoglume*) and sourgrass (*Digitaria insularis*). Flora found along the perimeter of this parcel consists mainly of weedy species including green panicgrass, Natal reedtop grass (*Melinis repens*), Spanish needle (*Bidens pilosa*), fireweed (*Senecio madagascariensis*), spiny amaranth (*Amaranthus spinosus*), pualele (*Emilia fosbergii*), Crassocephalum crepidioides, Cuba jute (*Sida rhombifolia*), goosegrass (*Eleusine indica*), sourgrass, swollen fingergrass (*Chloris barbata*), Brachiaria subquadripara, and crabgrass (*Digitaria sp.*). A row of oleander shrubs (*Nerium oleander*) is planted alongside the highway. Additionally, two native species, popolo (*Solanum americanum*) and 'uhaloa (*Waltheria indica*), were found.

Along the ditch, the weedy vegetation found includes: Spanish needle, sowthistle (*Sonchus oleraceus*), crabgrass, spiny amaranth, koa haole shrubs (*Leucaena leucocephala*), California grass (*Brachiaria mutica*), castor bean (*Ricinus communis*), hairy abutilon (*Abutilon grandifolium*), 'ilima (*Sida fallax*), and koali 'awa (*Ipomoea indica*).

The band of weedy vegetation adjacent to the residential area is similar to that found along the highway, but also includes cheeseweed (*Malva parviflora*), apple of Peru (*Nicandra physalodes*), Jimson weed (*Datura stramonium*), California grass, lion's ear (*Leonotis nepetifolia*), prickly lettuce (*Lactuca serriola*), and a yellow-flowered morning glory (*Ipomoea ochracea*). A few landscape plantings from the adjacent yards spill over onto the parcel; these include New Zealand spinach (*Tetragonia tetragonioides*), aloe (*Aloe vera*), and guava (*Psidium guajava*).

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**39-acre Parcel.** Flora on the 39-acre parcel consists mainly of overgrown pineapple fields. The pineapple fields on the eastern half of the parcel appear to have been more recently abandoned since the rows of pineapple plants are not as overgrown and the weedy assemblage of species, mostly Natal redtop grass and sourgrass, occur along the edge of the fields and on the dirt roads.

On the western half of the parcel, the old fields are open and grassy with a few remnant clumps of pineapple plants. Additional botanical resources found on the western half of this parcel include sourgrass, Natal redtop, Guinea grass (*Panicum maximum*), green panicgrass, sourbush shrubs (*Pluchea carolinensis*), spiny amaranth, golden crown-beard (*Verbesina encelioides*), castor bean, lion's ear, pualele, Spanish needle, Cuba jute, Fireweed, and a few koa haole shrubs with koali 'awa vines growing on them.

On this parcel there is a planting of various Eucalyptus species, 40 to 70 feet tall, bordering Haleakalā Highway and also a few trees of silk oak (*Grevillea robusta*) and Chinaberry (*Melia azedarach*). Koa haole and Christmas berry (*Schinus terebinthifolius*) shrubs form scattered, small thickets under the tree canopy. Ground cover consists of scattered clumps of Guinea grass, along with a few weedy plants of maile hohono (*Ageratum conyzoides*), Spanish needle, burbush (*Triumfetta sp.*), and Jamaica vervain (*Stachytarpheta jamaicensis*). However, areas with bare soil and leaf and branch litter are common. Axis deer tracks and scats are occasionally encountered. A few native species are quite common in this forested area. Shrubs of 'a'ali'i (*Dodonaea viscosa*) and 'ākia (*Wikstroemia oahuensis*), three to eight feet tall, are common to occasional. 'Uhaloa and 'ilima are found along the edge of the tree planting. Vines of *Sicyos hispidus*, a member of the cucumber or squash family, are found on the edge of the tree planting facing the highway. This species of *Sicyos* is easily identified by its fuzzy fruits.

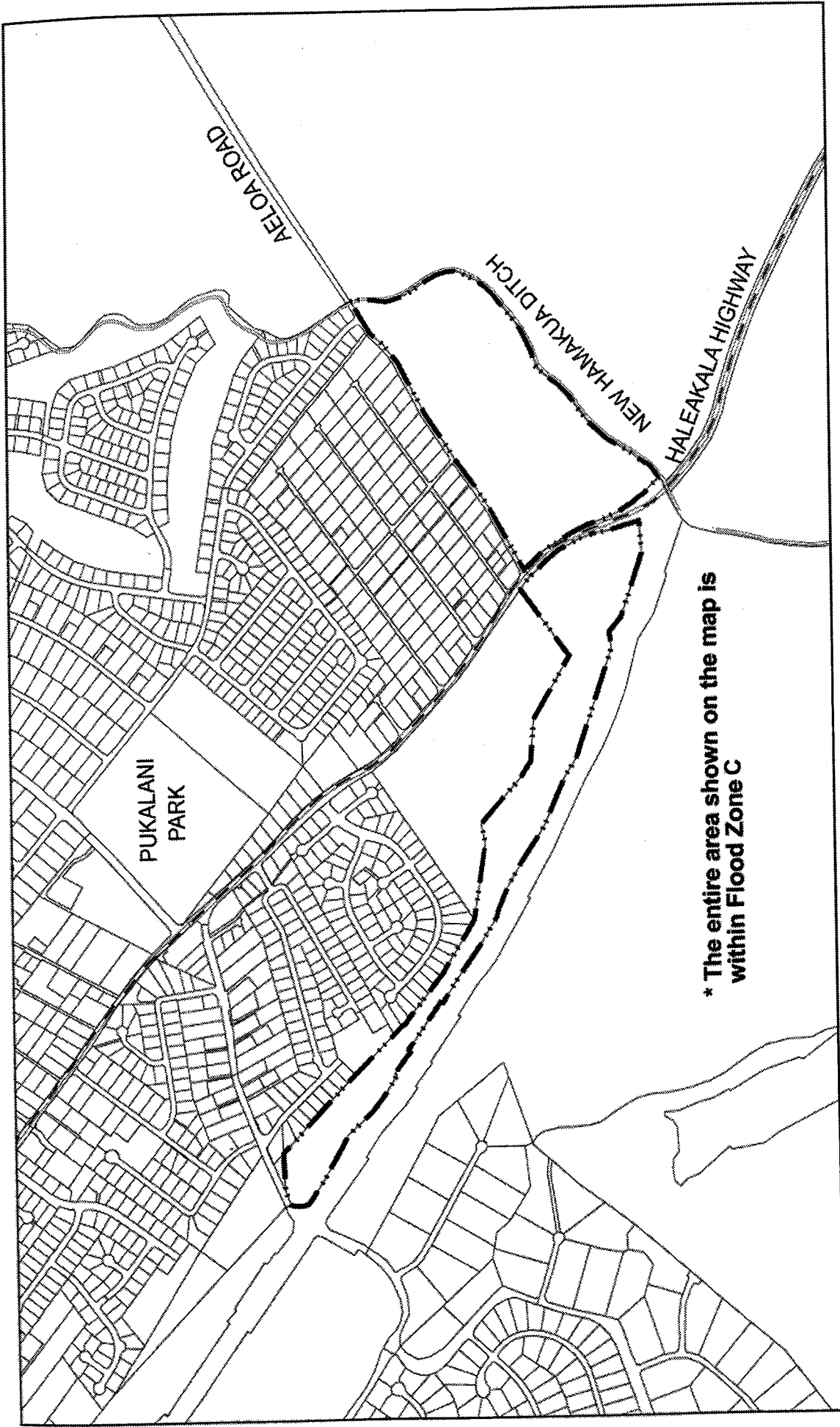
The small gully found between the Eucalyptus planting and the overgrown pineapple fields supports abundant patches of Napier or elephant grass (*Pennisetum purpureum*) as well as dense clumps of Guinea grass. *Neonotonia wightii*, a member of the pea family, is locally abundant in some places, forming tangled mats over the grasses and scattered koa haole shrubs.

There were seven native species observed on the site. Of the seven native species, five are indigenous, that is, they are native to the Hawaiian Islands and elsewhere and two are endemic that is, they are native only to the Hawaiian Islands. The native species found include: popolo (*Solanum americanum*), 'uhaloa (*Waltheria indica*), koali 'awa (*Ipomoea indica*), 'ilima (*Sida fallax*), and 'a'ali'i (*Dodonaea viscosa*). The endemic species include: 'ākia (*Wikstroemia oahuensis*) and *Sicyos*.

### ***Potential Impacts and Mitigative Measures***

Kauhale Lani is not expected to have a significant negative impact on botanical resources since no threatened, endangered, or species of concern are known to occur on the site. If feasible, the Eucalyptus trees on the 39-acre parcel will be retained and kept in open space as the topography is rough and broken, and the erosion hazard is of some concern.

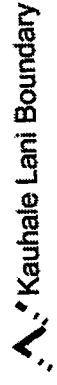
Kauhale Lani will include new landscaping appropriate to the residential setting. Design standards for the community will include a unified streetscape planting theme and program to ensure the appropriate use of landscaping and compliance with the Maui County Planting Plan.



\* The entire area shown on the map is within Flood Zone C

**LEGEND**

- Flood Zone
- C: Areas of Minimal Flooding



Source: Federal Emergency Management Agency  
 Flood Insurance Rate Map 150003 0260B

Disclaimer:  
 This map has been prepared for general planning purposes only.

Figure 8  
 Flood Insurance Rate Map (FIRM)

**KAUHALE LANI**

MAUI LAND & PINEAPPLE COMPANY, INC.  
 ISLAND OF MAUI



PHASE I ENVIRONMENTAL SITE ASSESSMENT QUESTIONNAIRE

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The following questionnaire is required by the new ASTM Standard E 1527-05, which adheres to the new All Appropriate Inquiries (AAI) Rule (United States Environmental Protection Agency) (40 CFR 312).

As defined by ASTM, the User of the report is the "party seeking to use Practice E 1527 to complete an environmental site assessment of the property. A user may include, without limitation, a potential purchaser of property, a potential tenant of property, an owner of property, a lender, or a property manager."

**PUKALANI PROPERTY**

**Old Halaekala Highway, Pukalani, Maui, Hawaii**

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**1. Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25)**

Are you aware of any environmental cleanup liens against the Subject Property that are filed or recorded under federal, tribal, state or local law?

None to our knowledge.

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**2. Activity and land use limitations that are in place on the site or that have been filed or records in a registry (40 CFR 312.26)**

Are you aware of any activity and land use limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the Subject Property and/or have been filed or recorded in a registry under federal, tribal, state or local law?

None. See attached preliminary reports prepared by Title Guaranty of Hawaii, Inc. prior to sale for both properties (Maui Tax Map Key Nos. 2-3-09:07 and 64).

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**3. Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28)**

As the User of this report, do you have any specialized knowledge or experience related to the Subject Property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the Subject Property or adjoining property?

None. Current owner Pukalani Associates, LLC ("Pukalani") intends to develop both



properties for a residential subdivision and outdoor recreational facilities. Prior owner Maui Land & Pineapple Co., Inc.'s ("MLP") subsidiary Maui Pineapple Company, Ltd. ("MPC") cultivated pineapple on both properties.

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**4. Relationship of the purchase price to the fair market value of the Subject Property if it were not contaminated (40 CFR 312.29)**

Does the purchase price being paid for the Subject Property reasonably reflect the fair market value of the Subject Property? If so, why?

Yes to our knowledge.

---

**5. Commonly known or reasonably ascertainable information about the Subject Property (40 CFR 312.30)**

Are you aware of commonly known or reasonably ascertainable information about the Subject Property that would help the environmental professional to identify conditions indicative of release or threatened release?

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a. Do you know the past uses of the Subject Property?

Yes, MPC cultivated pineapple on both properties since at least the 1920's. Cultivation on Maui Tax Map Key No. 2-3-09:64 ceased in the mid 1990's following construction of the New Haleakala Highway. Cultivation on Maui Tax Map Key No. 2-3-09:07 ceased in 2002.

---

b. Do you know of specific chemicals that are present or once were present at the Subject Property?

In a Draft Environmental Assessment for the properties prepared in May 2005, MLP disclosed that as part of its agricultural operations, MPC used fertilizers, pesticides, fungicides, herbicides, and plant growth regulators in compliance with all product labeling and applicable government regulations. The following were used at the time MPC ceased cultivation:

**Fertilizers.** MPC used the following fertilizers—which provide nutrients essential for plant growth—as part of its pineapple operations: UAN-32 (Urea-Ammonium nitrate), urea, potassium sulfate, potassium chloride, Treble Super Phosphate, rock phosphate, lime, magnesium sulfate, iron sulfate, and zinc sulfate.

**Pesticides.** MPC used the following pesticides to control nematodes, ants, or, other insects as part of its pineapple operations: Telone II Soil Fumigant (1, 3 dichloropropene), Namacur 3

(Fenamiphos), Vydate (Oxamyl), Thiodan (Endosulfan), Amdro Pro Fire Ant Bait (Hydramethylnon), and Diazinon 50W (Diazinon).

**Fungicides, Herbicides, and Plant Growth Regulators.** MPC used the following fungicides, herbicides, and plant growth regulators-to regulate plant growth, induce flowering, control weeds, or control disease-as part of its pineapple operations: Ethrel 4 or Ethepon 2 (Ethepon), Ethylene gas (Ethylene), Karmex DF or Direx L (Diuron), Evik (Ametryne), Hyvar X (Bromacil), Aliette (Fosetyl-Al), Phosguard (Phosphorous acid), Tilt (Propiconazole), Herbimax, Assure II Herbicide (Qualifop-ethyl), Velpar (Hexazinone), and Round-up (Glyphosate).

Neither MLP nor MPC has disclosed any fertilizers, pesticides, fungicides or herbicides that were previously used on these properties, but which had been discontinued prior to the time MPC discontinued cultivation.

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c. Are you aware of any spills or other chemical releases that have taken place at the Subject Property?

None to our knowledge.

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d. Do you have any prior knowledge that the Subject Property was developed as a gas station, dry cleaner, manufacturing/industrial facility in the past?

No, properties have always been in agricultural use.

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e. Are you aware of historical use of hazardous materials or petroleum products used or present on the Subject Property?

None to our knowledge.

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f. Do you know if the property is currently or was formerly equipped with underground storage tanks (USTs) or septic tanks?

No.

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- g. Do you know of any past, threatened or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substance or petroleum products involving the Subject Property by any owner or occupant of the Subject Property?

No specific knowledge regarding the properties. However Pukalani is generally aware that pineapple plantations in Hawaii have historically discontinued using pesticides that may have resulted in contamination. On Maui this historic usage resulted in litigation involving the manufacturers of such pesticides.

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**6. The degree of obviousness of the presence or likely presence of contamination at the Subject Property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31)**

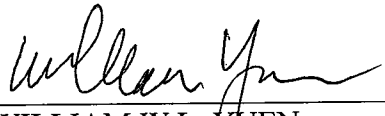
As the User of this report, are there any obvious indicators that point to the presence or likely presence of contamination at the Subject Property based on your knowledge and experience related to the Subject Property?

None to our knowledge.

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PUKALANI ASSOCIATES, LLC, a Hawaii  
limited liability company,

By: CHING, YUEN & MORIKAWA

By:   
WILLIAM W.L. YUEN,  
Attorney at Law, a Law Corporation  
Its Attorney

e-mail: [billyuen@cymlaw.com](mailto:billyuen@cymlaw.com)  
Telephone: (808) 524-8880

## **APPENDIX C: DATABASE**

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*TRACK ► INFO SERVICES, LLC*

# **Environmental FirstSearch™ Report**

Target Property:

**OLD HALEAKALA HWY**

**PUKALANI HI 96788**

Job Number: 079898

**PREPARED FOR:**

Partner Engineering & Science  
2101 Rosecrans Ave., Suite 4270  
El Segundo, CA 90245

07-14-08



*Tel: (866) 664-9981*

*Fax: (818) 249-4227*

# Environmental FirstSearch Search Summary Report

**Target Site:** OLD HALEAKALA HWY  
PUKALANI HI 96788

## FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	04-07-08	1.50	0	0	0	0	0	0	0
NPL Delisted	Y	04-07-08	1.00	0	0	0	0	0	0	0
CERCLIS	Y	04-22-08	1.00	0	0	0	0	0	0	0
NFRAP	Y	04-22-08	1.00	0	0	0	0	0	0	0
RCRA COR ACT	Y	04-01-08	1.50	0	0	0	0	0	0	0
RCRA TSD	Y	04-01-08	1.00	0	0	0	0	0	0	0
RCRA GEN	Y	04-01-08	0.75	0	0	0	0	0	0	0
RCRA NLR	Y	04-01-08	0.25	0	0	0	-	-	0	0
Federal IC / EC	Y	04-01-08	1.00	0	0	0	0	0	0	0
ERNS	Y	04-22-08	0.25	0	0	0	-	-	0	0
Tribal Lands	Y	12-01-05	1.50	0	0	0	0	0	0	0
State/Tribal Sites	Y	07-24-06	1.50	0	0	0	0	1	0	1
State Spills 90	Y	NA	0.25	0	0	0	-	-	0	0
State/Tribal SWL	Y	NA	1.00	0	0	0	0	0	0	0
State/Tribal LUST	Y	07-28-06	1.00	0	0	0	0	1	1	2
State/Tribal UST/AST	Y	08-04-06	0.75	0	0	0	0	0	1	1
State/Tribal EC	Y	NA	1.00	0	0	0	0	0	0	0
State/Tribal IC	Y	07-24-06	0.75	0	0	0	0	0	0	0
State/Tribal VCP	Y	07-24-06	1.00	0	0	0	0	0	0	0
State/Tribal Brownfields	Y	07-24-06	1.00	0	0	0	0	0	0	0
State Other	Y	01-01-07	0.75	0	0	0	0	0	0	0
- TOTALS -				0	0	0	0	2	2	4

### Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

### Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

***Environmental FirstSearch  
Site Information Report***

**Request Date:** 07-14-08  
**Requestor Name:** Kate Ginther  
**Standard:** AAI

**Search Type:** COORD  
**Job Number:** 079898  
**Filtered Report**

**Target Site:** OLD HALEAKALA HWY  
 PUKALANI HI 96788

*Demographics*

<b>Sites:</b> 4	<b>Non-Geocoded:</b> 2	<b>Population:</b> NA
<b>Radon:</b> 0.2 - 1 PCIL		

*Site Location*

	Degrees (Decimal)	Degrees (Min/Sec)	UTMs
<b>Longitude:</b>	-156.351935	-156:21:7	<b>Easting:</b> 775559.64
<b>Latitude:</b>	20.851471	20:51:5	<b>Northing:</b> 2307841.124
			<b>Zone:</b> 4

*Comment*

**Comment:**AAI

*Additional Requests/Services*

<b>Adjacent ZIP Codes:</b> 0 Mile(s)	<b>Services:</b>
--------------------------------------	------------------

ZIP Code	City Name	ST	Dist/Dir	Sel	Requested?	Date
					Sanborns	No
					Aerial Photographs	Yes 07-14-08
					Historical Topos	No
					City Directories	No
					Title Search/Env Liens	No
					Municipal Reports	No
					Online Topos	No

***Environmental FirstSearch  
Sites Summary Report***

**Target Property:** OLD HALEAKALA HWY  
PUKALANI HI 96788

**JOB:** 079898  
AAI

**TOTAL:** 4                    **GEOCODED:** 2                    **NON GEOCODED:** 2                    **SELECTED:** 0

<b>Page No.</b>	<b>DB Type</b>	<b>Site Name/ID/Status</b>	<b>Address</b>	<b>Dist/Dir</b>	<b>Map ID</b>
1	LUST	PUKALANI MINIT STOP 9-503350/SITE CLEANUP COMPLET	3310 A HALEAKALA HWY PUKALANI HI 96788	0.87 SE	1
1	STATE	MAUI PINEAPPLE CO LTD HALIIMAILE R HIST_465/ONGOING	870 HALIIMAILE RD Haliimaile HI 96768	1.26 NE	2



***Environmental FirstSearch  
Sites Summary Report***

**Target Property:** OLD HALEAKALA HWY  
PUKALANI HI 96788

**JOB:** 079898  
AAI

**TOTAL:** 4                    **GEOCODED:** 2                    **NON GEOCODED:** 2                    **SELECTED:** 0

<b>Page No.</b>	<b>DB Type</b>	<b>Site Name/ID/Status</b>	<b>Address</b>	<b>Dist/Dir</b>	<b>Map ID</b>
2	LUST	PUKALANI TERRACE LANDCO BASEYARD 9-500374/SITE CLEANUP COMPLET	LIHOLANI ST ALONG KAAKAKAI PUKALANI HI 96788	NON GC	
3	UST	PUKALANI TERRACE LANDCO BASEYARD 9-500374/PERMANENTLY OUT OF U	LIHOLANI ST ALONG KAAKAKAI PUKALANI HI 96788	NON GC	





**Environmental FirstSearch  
Site Detail Report**

**Target Property:** OLD HALEAKALA HWY  
PUKALANI HI 96788

**JOB:** 079898  
AAI

UST

**SEARCH ID:** 3

**DIST/DIR:** NON GC

**MAP ID:**

**NAME:** PUKALANI TERRACE LANDCO BASEYARD  
**ADDRESS:** LIHOLANI ST ALONG KAAKAKAI  
PUKALANI HI 96788

**REV:** 08/01/05  
**ID1:** 9-500374  
**ID2:**  
**STATUS:** PERMANENTLY OUT OF USE  
**PHONE:**

**CONTACT:**

<b>Tank ID Number:</b>	R-1
<b>Tank Status Description:</b>	Permanently Out of Use
<b>Tank Capacity:</b>	2200
<b>Substance Description:</b>	Gasoline
<b>Construction Material:</b>	Asphalt Coated or Bare Steel
<b>Date Installed:</b>	08/15/79
<b>Date Closed</b>	04/08/98
<b>Owner Name:</b>	SPORTS SHINKO (PUKALANI) CO., LTD 360 PUKALANI ST Pukalani HI 96788
<b>Tank ID Number:</b>	R-2
<b>Tank Status Description:</b>	Permanently Out of Use
<b>Tank Capacity:</b>	2200
<b>Substance Description:</b>	Diesel
<b>Construction Material:</b>	Asphalt Coated or Bare Steel
<b>Date Installed:</b>	08/15/79
<b>Date Closed</b>	04/09/98
<b>Owner Name:</b>	SPORTS SHINKO (PUKALANI) CO., LTD 360 PUKALANI ST Pukalani HI 96788

## Environmental FirstSearch Descriptions

**NPL: EPA NATIONAL PRIORITY LIST** - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.

A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

FINAL - Currently on the Final NPL

PROPOSED - Proposed for NPL

**NPL DELISTED: EPA NATIONAL PRIORITY LIST Subset** - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

DELISTED - Deleted from the Final NPL

**CERCLIS: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)**- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.

PART OF NPL- Site is part of NPL site

DELETED - Deleted from the Final NPL

FINAL - Currently on the Final NPL

NOT PROPOSED - Not on the NPL

NOT VALID - Not Valid Site or Incident

PROPOSED - Proposed for NPL

REMOVED - Removed from Proposed NPL

SCAN PLAN - Pre-proposal Site

WITHDRAWN - Withdrawn

**NFRAP: EPA COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES** - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

NFRAP – No Further Remedial Action Plan

P - Site is part of NPL site

D - Deleted from the Final NPL

F - Currently on the Final NPL

N - Not on the NPL

O - Not Valid Site or Incident

P - Proposed for NPL

R - Removed from Proposed NPL

S - Pre-proposal Site

W – Withdrawn

**RCRA COR ACT: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES** - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

RCRAInfo facilities that have reported violations and subject to corrective actions.

**RCRA TSD: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM**

**TREATMENT, STORAGE, and DISPOSAL FACILITIES.** - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities that treat, store, dispose, or incinerate hazardous waste.

**RCRA GEN: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS** - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984. Facilities that generate or transport hazardous waste or meet other RCRA requirements.

LGN - Large Quantity Generators

SGN - Small Quantity Generators

VGN – Conditionally Exempt Generator.

Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.

**RCRA NLR: EPA RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES** - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.

Facilities not currently classified by the EPA but are still included in the RCRAInfo database. Reasons for non classification:

Failure to report in a timely matter.

No longer in business.

No longer in business at the listed address.

No longer generating hazardous waste materials in quantities which require reporting.

**Federal IC / EC: EPA BROWNFIELD MANAGEMENT SYSTEM (BMS)** - database designed to assist EPA in collecting, tracking, and updating information, as well as reporting on the major activities and accomplishments of the various Brownfield grant Programs.

**FEDERAL ENGINEERING AND INSTITUTIONAL CONTROLS-** Superfund sites that have either an engineering or an institutional control. The data includes the control and the media contaminated.

**ERNS: EPA/NRC EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS)** - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

**Tribal Lands: DOI/BIA INDIAN LANDS OF THE UNITED STATES** - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are Federally-administered lands within a reservation which may or may not be considered part of the reservation.

**State/Tribal LUST: HI DOH LEAKING UNDERGROUND STORAGE TANKS-**The Hawaii Department of Health's inventory of sites with leaking underground storage tanks.

**State/Tribal IC: HI DOH INSTITUTIONAL CONTROLS LISTING-**The Hawaii Department of Health's Office of Hazard Evaluation and Emergency Response (HEER) inventory of sites with institutional controls.

**State/Tribal VCP:** *HI DOH* VOLUNTARY RESPONSE PROGRAM LISTING-The Hawaii Department of Health's Office of Hazard Evaluation and Emergency Response (HEER) inventory of sites participating in the state's Voluntary Response Program.

**State/Tribal Sites:** *HI DOH* STATE RESPONSE LISTING-The Hawaii Department of Health's Office of Hazard Evaluation and Emergency Response (HEER) inventory of facilities, sites, or areas in which HEER has an interest, has investigated, or may investigate under HRS 128D (includes CERCLIS sites).

**State/Tribal Brownfields:** *HI DOH* STATE BROWNFIELDS LISTING-The Hawaii Department of Health's Office of Hazard Evaluation and Emergency Response (HEER) inventory of brownfields sites.

**State/Tribal UST/AST:** *HI DOH* UNDERGROUND STORAGE TANKS- The Hawaii Department of Health's inventory of underground storage tanks.

**RADON:** *NTIS* NATIONAL RADON DATABASE - EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

**State Other:** *US DOJ* NATIONAL CLANDESTINE LABORATORY REGISTER - Database of addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the U.S. Department of Justice ("the Department"), and the Department has not verified the entry and does not guarantee its accuracy. All sites that are included in this data set will have an id that starts with NCLR.

## Environmental FirstSearch Database Sources

**NPL: EPA** Environmental Protection Agency

*Updated quarterly*

**NPL DELISTED: EPA** Environmental Protection Agency

*Updated quarterly*

**CERCLIS: EPA** Environmental Protection Agency

*Updated quarterly*

**NFRAP: EPA** Environmental Protection Agency.

*Updated quarterly*

**RCRA COR ACT: EPA** Environmental Protection Agency.

*Updated quarterly*

**RCRA TSD: EPA** Environmental Protection Agency.

*Updated quarterly*

**RCRA GEN: EPA** Environmental Protection Agency.

*Updated quarterly*

**RCRA NLR: EPA** Environmental Protection Agency

*Updated quarterly*

**Federal IC / EC: EPA** Environmental Protection Agency

*Updated quarterly*

**ERNS: EPA/NRC** Environmental Protection Agency

*Updated semi-annually*

**Tribal Lands: DOI/BIA** United States Department of the Interior

*Updated annually*

**State/Tribal LUST: HI DOH** The Hawaii Department of Health, Solid and Hazardous Waste Branch



*Updated biannually*

**State/Tribal IC:** *HI DOH* Office of Hazard Evaluation and Emergency Response, Hawaii State Department of Health

*Updated biannually*

**State/Tribal VCP:** *HI DOH* Office of Hazard Evaluation and Emergency Response, Hawaii State Department of Health

*Updated biannually*

**State/Tribal Sites:** *HI DOH* Office of Hazard Evaluation and Emergency Response, Hawaii State Department of Health

*Updated biannually*

**State/Tribal Brownfields:** *HI DOH* Office of Hazard Evaluation and Emergency Response, Hawaii State Department of Health

*Updated biannually*

**State/Tribal UST/AST:** *HI DOH* The Hawaii Department of Health, Solid and Hazardous Waste Branch

*Updated biannually*

**RADON:** *NTIS* Environmental Protection Agency, National Technical Information Services

*Updated periodically*

**State Other:** *US DOJ* U.S. Department of Justice

*Updated when available*

***Environmental FirstSearch***  
***Street Name Report for Streets within .25 Mile(s) of Target Property***

**Target Property:** OLD HALEAKALA HWY  
PUKALANI HI 96788

**JOB:** 079898  
AAI

<b>Street Name</b>	<b>Dist/Dir</b>	<b>Street Name</b>	<b>Dist/Dir</b>
Aeloa Rd	0.15 SE		
Alea Pl	0.24 SE		
Haleakala Hwy	0.23 NW		
Ikea Pl	0.17 SE		
Kula Hwy	0.02 NE		
Old Haleakala Hwy	0.03 SW		

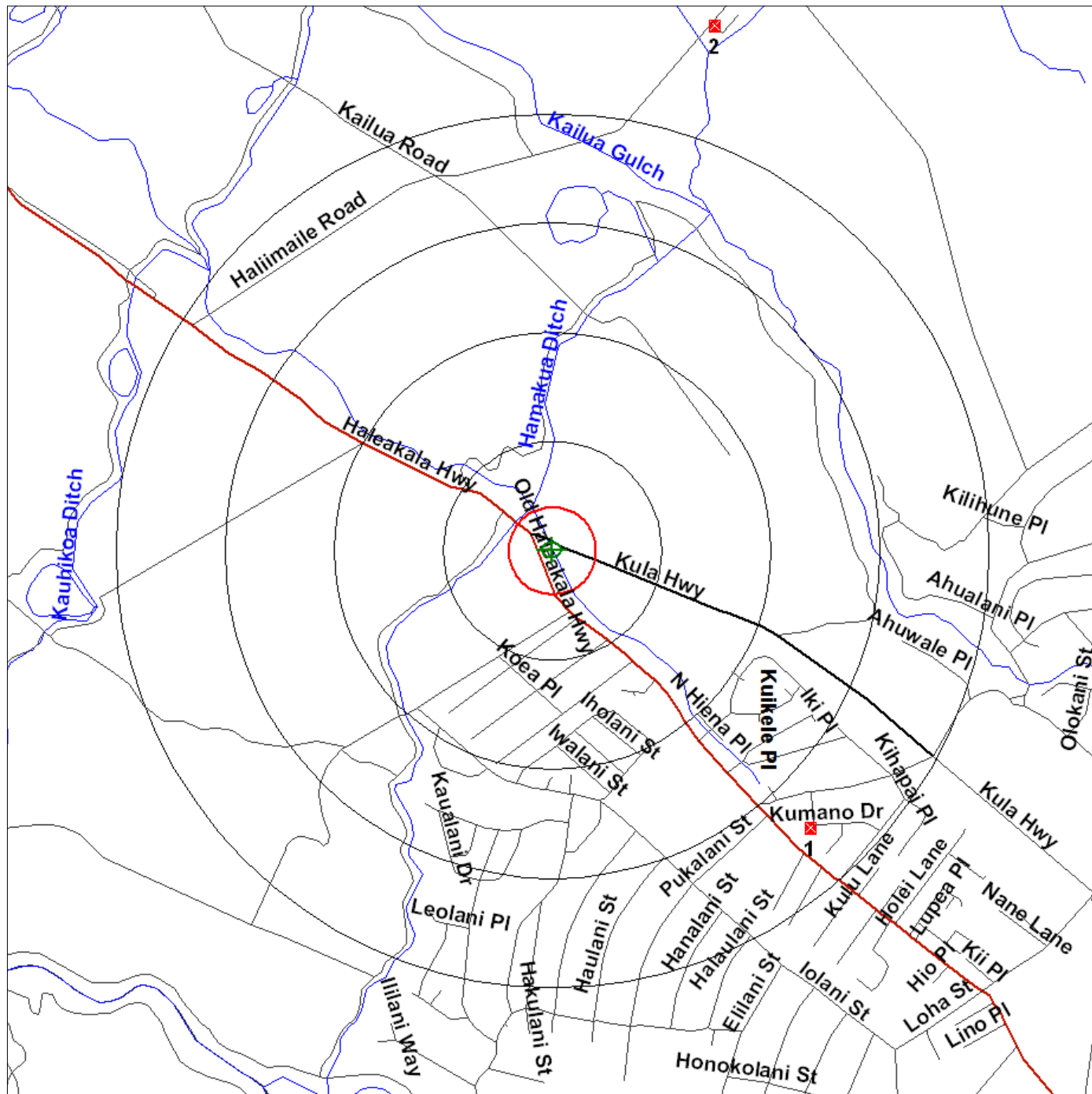


# Environmental FirstSearch








1 Mile Radius  
Single Map:



## OLD HALEAKALA HWY, PUKALANI HI 96788



Source: U.S. Census TIGER Files

- Target Site (Latitude: 20.851471 Longitude: -156.351935) ..... 
- Identified Site, Multiple Sites, Receptor .....   
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste ..... 
- Triballand ..... 
- Railroads ..... 
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

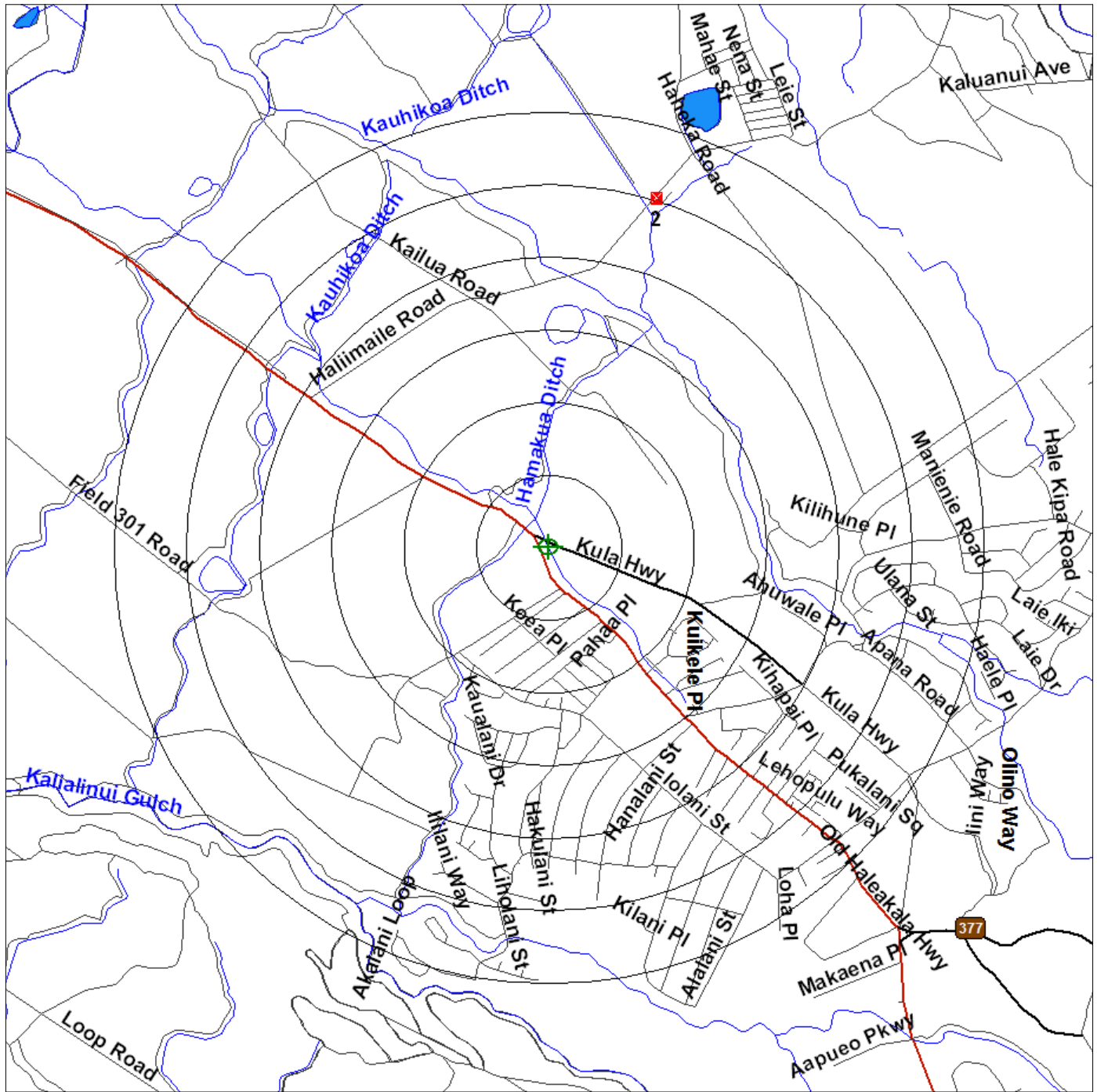


# Environmental FirstSearch

1.5 Mile Radius  
AAI: NPL, RCRAOR, STATE

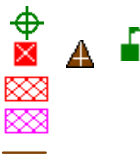


## OLD HALEAKALA HWY, PUKALANI HI 96788



Source: U.S. Census TIGER Files

- Target Site (Latitude: 20.851471 Longitude: -156.351935) .....
- Identified Site, Multiple Sites, Receptor .....
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste .....
- Triballand.....
- Railroads .....
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius



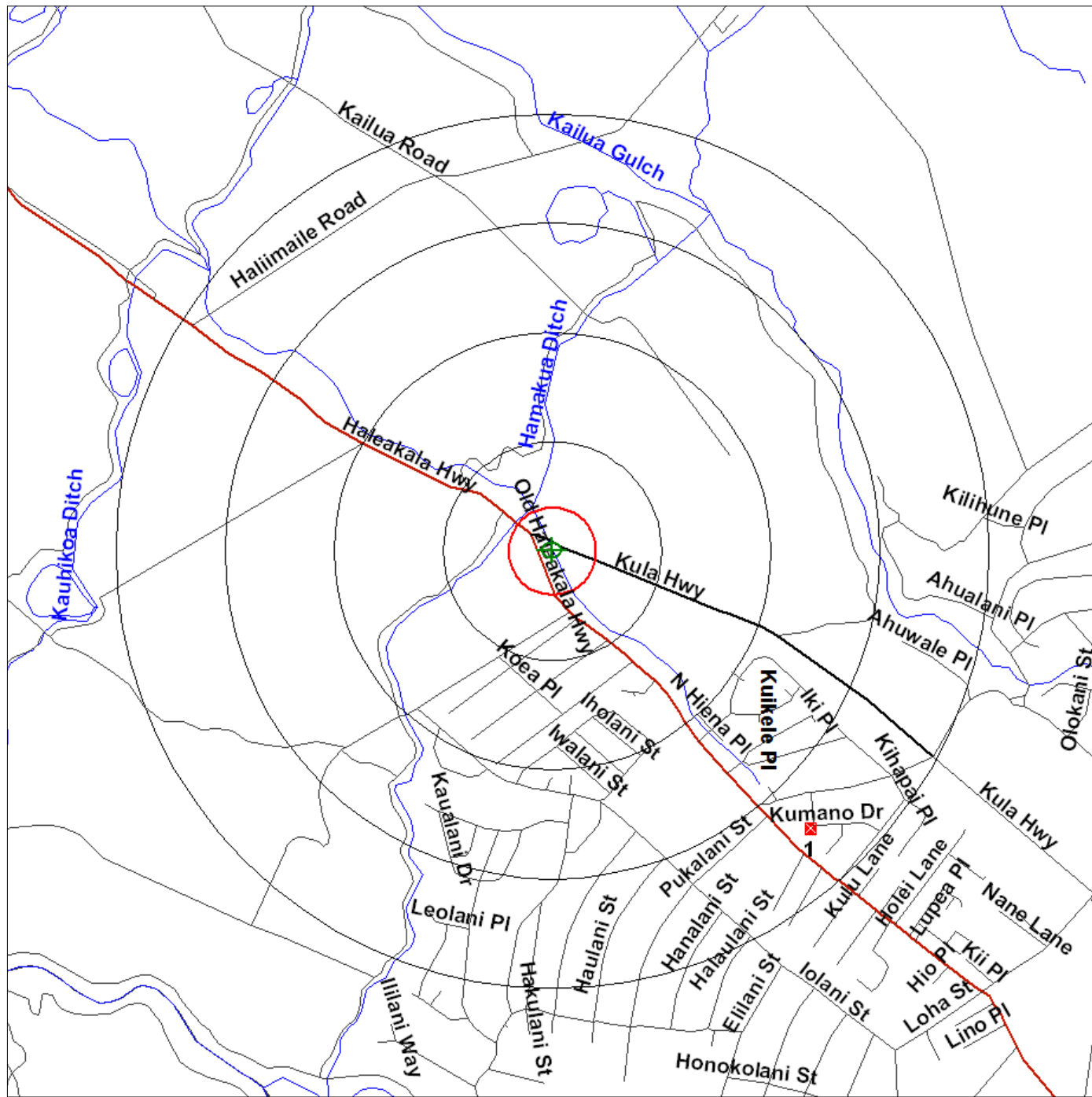


# Environmental FirstSearch








1 Mile Radius  
AAI: Multiple Databases



## OLD HALEAKALA HWY, PUKALANI HI 96788



Source: U.S. Census TIGER Files

- Target Site (Latitude: 20.851471 Longitude: -156.351935) ..... 
- Identified Site, Multiple Sites, Receptor .....   
- NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste ..... 
- Triballand ..... 
- Railroads ..... 
- Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius



# Environmental FirstSearch

.75 Mile Radius

AAI: RCRA GEN, UST, OTHER



## OLD HALEAKALA HWY, PUKALANI HI 96788



Source: U.S. Census TIGER Files

Target Site (Latitude: 20.851471 Longitude: -156.351935) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste .....

Triballand.....

Railroads .....

Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius





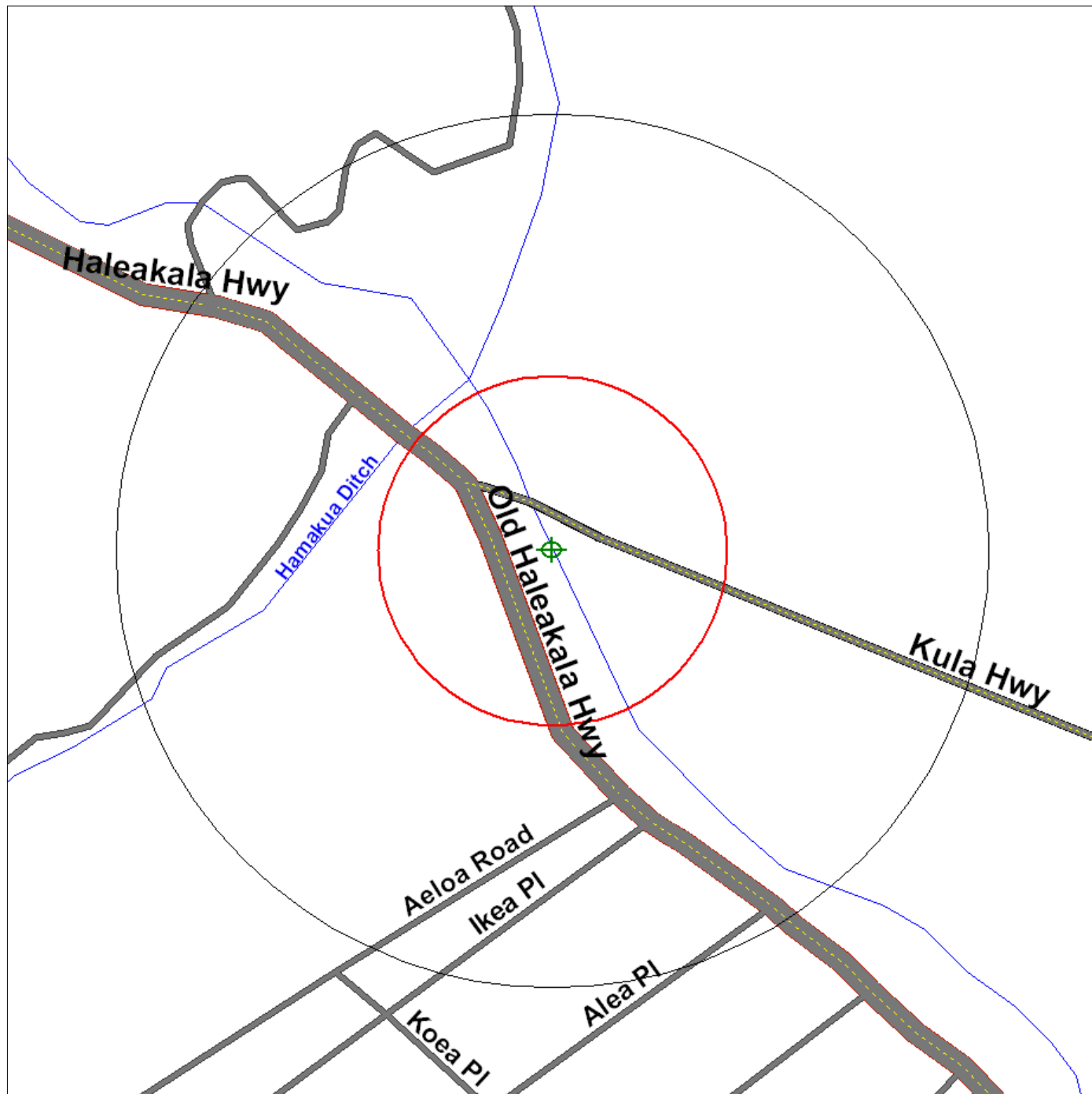
# Environmental FirstSearch

.25 Mile Radius

AAI: SPILLS90, ERNS, RCRANLR



## OLD HALEAKALA HWY, PUKALANI HI 96788



Source: U.S. Census TIGER Files

Target Site (Latitude: 20.851471 Longitude: -156.351935) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste .....

Triballand.....

Railroads .....

Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius



## **APPENDIX D: QUALIFICATIONS**

---



## **Rachel Herrera** Environmental Scientist

### ***Education***

Bachelor of Science in Health Science, California State University, San Bernardino  
Emphasis in Environmental Health

### ***Registrations***

EPA Accredited Asbestos Inspector

Ms. Herrera has three years work experience in the environmental science industry. She has project experience in Phase I Environmental Site Assessments (ESAs), Environmental Transaction Screens, radon screening, asbestos inspections, and lead-based paint inspections. She is familiar with all aspects of Due Diligence Property Assessments and the needs and requirements of a varied number of reporting standards, including the standard ASTM, EPA's All Appropriate Inquiry (AAI), Fannie Mae DUS, and customized client formats.

Project experience for Ms. Herrera includes:

- Completed hundreds of Phase I Environmental Site Assessments and Environmental Transaction Screens on multi-family properties, commercial office buildings, retail shopping centers, gasoline service stations, hotels, dry cleaning plants, auto repair and auto body shops, industrial warehouse buildings, aerospace manufacturers, plating facilities, and various manufacturing operations throughout the U.S.
- Conducted radon testing at several residential properties throughout Southern California
- Conducted asbestos and lead-based paint sampling at several residential and commercial properties throughout Southern California

Ms. Herrera has technical experience working for the following financial institutions:

- Washington Mutual Bank
- Citibank North America
- California Bank and Trust
- Union Bank of California
- East West Bank
- Comerica Bank
- United Commercial Bank
- Countrywide Commercial Real Estate
- Morgan Stanley Mortgage Capital, Inc.
- Lehman Brothers
- City National Bank

# Monique Burrola, REA

Principal Consultant

**PARTNER**

## *Education*

Environmental Science, cum laude, University of Southern California  
Emphasis in Biology

Wrigley Institute for Environmental Studies Research Program, Catalina Island

## *Registrations*

California Registered Environmental Assessor (REA I – 08218)

EPA Accredited Asbestos Inspector

Ms. Burrola has six years experience in the environmental service industry. Ms. Burrola's background in environmental science and direct experience in environmental consulting, allows her to offer the most effective means of regulatory compliance.

Ms. Burrola has project experience in Phase I Environmental Site Assessments (ESAs), Environmental Transaction Screens, radon screening, asbestos inspections, and lead-based paint inspections. Ms. Burrola is familiar with all aspects of Due Diligence Property Assessments and the needs and requirements of a varied number of reporting standards, including the standard ASTM, EPA's All Appropriate Inquiry (AAI), Fannie Mae DUS, Freddie Mac, HUD and customized client formats.

For the past five years, Ms. Burrola has performed and supervised over 1,000 Phase I Environmental Site Assessments and Environmental Transaction Screens for lenders and buyers. As a senior member of the Due Diligence staff, Ms. Burrola provides senior review expertise to ensure ASTM compliance and satisfaction of client requirements for Phase I Environmental Site Assessments and Environmental Transaction Screens. Partner's review process provides for customization of reports to client needs, as well as strict conformance to ASTM standards. Ms. Burrola's day to day responsibilities include project management/oversight, staff supervision, employee training, report review, and client management.

Project experience for Ms. Burrola includes:

- Completed hundreds of Phase I Environmental Site Assessments and Environmental Transaction Screens on multi-family properties, commercial office buildings, retail shopping centers, gasoline service stations, hotels, dry cleaning plants, auto repair and auto body shops, industrial warehouse buildings, aerospace manufacturers, plating facilities, and various manufacturing operations throughout the U.S.
- Reviewed and evaluated hundreds of third-party Phase I, Phase II and Phase III reports
- Managed portfolio projects involving properties throughout the United States, including large apartment complexes and shopping malls

- Managed a portfolio of over 100 residential and commercial sites for the City of Ontario redevelopment project
- Performed and supervised environmental due diligence of a portfolio of high-rise office buildings in Southern California
- Assisted on several Phase II investigations of gasoline service stations, dry cleaning facilities and industrial sites
- Conducted several asbestos and lead-based paint inspections of commercial and residential properties
- Performed water sampling on several residential properties to detect the presence of lead in water
- Conducted radon testing at several residential properties throughout Southern California and Nevada
- Participated in a continuous portfolio of gas station assessments throughout the U.S. for a single nationwide client
- Managed the storage and disposal of hazardous waste at a metal fabrication plant, an aerospace manufacturing facility and a community college campus
- Performed environmental and financial audits of Solid Waste Landfills and Treatment, Storage and Disposal Facilities
- Conducted various safety trainings to entire company staffs

Additionally, Ms. Burrola has a working experience in the environmental permitting process, which has included the implementation and employee training of Storm Water Pollution Prevention Plans (SWPPP), Injury Illness Prevention Plans (IIPP), Hazardous Materials Business Plans (HMBPs), Business Emergency Plans (BEPs), and Hazardous Materials Inventory Statements (HMIS).

Ms. Burrola has technical experience working for the following financial institutions:

- Washington Mutual Bank
- Citigroup Global Markets
- Citibank North America
- California Bank and Trust
- Union Bank of California
- East West Bank
- Comerica Bank
- United Commercial Bank
- Countrywide Commercial Real Estate
- Morgan Stanley Mortgage Capital, Inc.
- Lehman Brothers
- City National Bank

# **Appendix I: Market Study**

**Market Study,  
Economic Impact Analysis  
and  
Public Costs/Benefits Assessment  
of the Proposed**

**KAUHALE LANI SUBDIVISION**

**To be Located at  
Pukalani, Maui, Hawaii**



August 1, 2008 \*

Ms. Sharon Wright  
Michael Wright & Associates  
Wells Street Professional Center  
2145 Wells Street, Suite 305  
Wailuku, Hawaii 96793

**Market Study and Economic Impact Analysis  
of the Proposed Kauhale Lani  
Pukalani, Maui, Hawaii**

Dear Ms. Wright:

At your request, we have completed a defined-scope market study and economic assessment of the Kauhale Lani master plan, an 82.86-acre residential community proposed for the near-rectangular site stretching westerly from Haleakala Highway, at the makai entrance to Pukalani Town, Upcountry, Maui, Hawaii. The project will include 170 single-family home sites, as well as open space, potential park lands, and landscaped roadways.

The subject property, identified on State of Hawaii Tax Maps as Second Division Tax Map Key 2-3-09, Parcels 7 and 64, is a gently to moderately sloping site located between the existing community and Hamakua Ditch, with extensive frontage on both sides of old Haleakala Highway, approximately eight miles upslope from Kahului Airport. It is a natural urban in-fill area within the expanding suburban village.

The focus of our assignment was embodied in six tasks:

1. To quantify the demand for competitive residential inventory (single-family homes and lots) in the Upcountry market area encompassing the subject using demographic, economic and other analytical techniques.
2. To identify the existing and proposed level of inventory of single-family oriented product in the upcountry market area, and their marketing and absorption characteristics.

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VALUATION AND  
MARKET STUDIES

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\* Original draft publication date was December 19, 2007. This final report reflects only revisions to acreage, allocations and total lots. No other updating was completed.

3. To assess the appropriateness of the subject holding for the proposed subdivision master plan and ascertain whether it has sufficient attributes to obtain a competitive share in the regional sector.
4. To estimate the speed of absorption for the lots in the subject project.
5. To estimate the direct and indirect, on and off-site benefits flowing to the local economy as a result of undertaking the subject subdivision and finished home construction, including capital investment, job and wage creation, contractor/supplier profits, and owner/guest discretionary expenditures.
6. To quantify the impact of the project on the public purse over time in regards to revenues generated (real property, income, excise and accommodations taxes) relative to costs of providing governmental services.

The function of our assignment was to provide market data, analyze supply/demand factors, estimate anticipated level of market success the subject inventory can expect to achieve, and provide insight into public and private economic outcomes associated with Kauhale Lani for use in the entitlement petitioning process and other land use regulatory submittals.

The pertinent results from our study are contained in the following summary report, focusing on tabular presentation with brief narrative conclusions.

In completing this assignment, we visited the subject property, environs, and competitive projects in the study area; interviewed knowledgeable developers, brokers and other parties regarding current sales and market conditions; utilized published and on-line databases; reviewed governmental land use designations, entitlements and policies in the region; and, identified proposed competitive developments and their attributes.

We have also reviewed and cited where appropriate the various models and reports released this year by the county planning department as part of the on-going general plan updating process.

This study was prepared for 3D Investments and Michael Wright & Associates, with Sharon Wright as its representative and the primary client contact. The purpose of this assignment was to provide market analysis and economic conclusions regarding the proposed subject development for use in land use entitlement petitions for the property, and for internal planning purposes. The effective date of the study is December 1, 2007.

All conclusions presented herein are subject to the identified limiting conditions, assumptions and certifications of The Hallstrom Group, Inc., in addition to any others set forth in the text or tables. All work has been completed in conformance with the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute, and the Uniform Standards of Professional Appraisal Practice (USPAP).

Based on our investigation and analysis we conclude:

- The Maui residential market has cooled off substantially since reaching record heights in 2005, the peak of an extended up-cycle marked by rapid absorption and escalating prices for the limited product available. Despite the downturn, there is virtually no unsold, overhanging inventory as almost all recently developed competitive product in the primary region has been absorbed. There continues to be wide interest in the area.

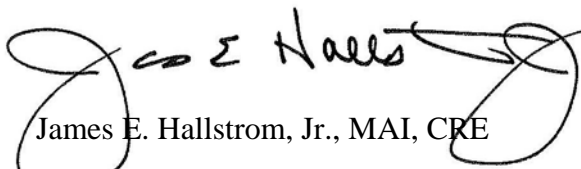
Ms. Sharon Wright  
August 1, 2008  
Page 3

- An estimated 5,294 dwelling units (mid-point estimate) will be required in the study area during the next 23 years, an increase of 60 percent above the existing regional inventory. Approximately 91 percent, or more than 4,860 of the units would need to be single-family product. And fewer than 55 percent of this number (2,638 house lots) are currently proposed apart from the subject, with many projects presently on hold.
- The property is well-suited for the proposed development and the master plan will achieve market acceptance by providing high quality, centrally located, home site purchase opportunities for resident buyers.
- Complete market absorption of the 170 single-family lots/homes will require about five years from the commencement of presale offerings.
- The construction of Kauhale Lani and its on-going use will create some 775 "worker years" of employment on Maui during the first decade of its construction and use, with wages of circa \$39.2 million. On a stabilized basis, home and unit maintenance will support about 15 full-time equivalent on-site jobs and contribute to another 6 off-site, with total wages of \$711,000 annually.
- The average daily de facto population of the project is projected at 564 persons, 87 percent, or 490 of which will be full-time residents, with annual discretionary expenditures of \$15.9 million per year. The project will infuse \$133.8 million in development capital into the island economy, and \$2.0 million annually in home maintenance and repair/renovation sales into local Maui businesses.
- The State of Hawaii will receive \$18.4 million in primary tax receipts during the first decade of subject development and use, and a stabilized amount of \$2.6 million annually. The county of Maui will receive \$4.8 million during the first ten years of the project, and \$691,145 per year thereafter, minimum.
- We do not anticipate the introduction of the Kauhale Lani inventory will impact assessed real property values in the area, as the product is just a newer addition of similar type and quality to the existing nearby residential development.

We appreciate the opportunity to be of service in regards to this holding. Please contact us if further detail or discussion in the matter covered herein is required.

Respectfully submitted,

THE HALLSTROM GROUP, INC

  
James E. Hallstrom, Jr., MAI, CRE  
/as





**Market Study,  
Economic Impact Analysis  
and  
Public Costs/Benefits Assessment  
of the Proposed**

**KAUHALE LANI SUBDIVISION**

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**As of  
December 2007**

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## **ASSIGNMENT AND SUMMARY OF CONCLUSIONS**

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### **Assignment**

Kauhale Lani will be a single-family residential community containing 170 single-family home sites, ranging in size from 7,500 to 12,000-plus square feet, and park lands/open spaces, on an 83-acre tract within Pukalani Village.

The purpose of our assignment was to analyze the proposed subject project in light of competitive, regional, prevailing and forecast economic/market conditions in order to answer five foundational study questions:

1. Is there sufficient market demand to absorb the 170 lots/homes of the Kauhale Lani master plan during a reasonable exposure period given competing developments and statewide/regional economic trends?
2. From a market perspective, will the subject project be a favorable use of the site relative to governmental land planning objectives, accepted master plan design characteristics, and the area environs?
3. What will be the general/specific and direct/indirect economic impacts on Maui resulting from the undertaking of the subject development through capital investments, jobs, wages, business revenues and profits, de facto population, and resident/guest discretionary expenditures?
4. What will be the impact on the state and county "public purse" from the project in regards to costs of services required versus increased tax/fee receipts?

These issues were addressed through a comprehensive research and inquiry process utilizing data from market investigation, governmental agencies, various Hawaii-based media, industry spokespersons/sources, on-line databases, and published public and private documents. We have also reviewed the recently published socio-economic data and models prepared for the on-going update of the

Maui General Plan to assure relative consistency between our perspectives and their findings.

The pertinent results of our assignment are highlighted in this narrative report. Our study findings are divided into seven chapters as follows:

**Study Conclusions**

**The Subject Property and Proposed Development**

**Environs – Maui, Upcountry, and the Pukalani Community**

**The Upcountry Residential Market**

**Subject Site Appropriateness and Absorption Conclusions**

**Economic Impact Analysis**

**Public Cost/Benefit Assessment**

For this analysis, we have been provided with Kauhale Lani conceptual master plans, project descriptions, construction budgets, timetables and other analytical data prepared by the owner/developer, Michael Wright & Associates, and development team members. Additional source information regarding the subject was taken from the files of our past studies regarding the subject holding.

**Study Conclusions**

Based on our inspection of the subject site, its environs and analysis of the historic and forecast Upcountry/Pukalani real estate market, we have reached the following conclusions about the proposed Kauhale Lani project:

**The Upcountry  
Residential Market**

Historically, the Upcountry residential sector has been dominated by single family development, ranging from smaller plantation-style subdivisions (as at Hailiimaile) to bulk acreage ranch and agricultural lots (in Olinda and Kula). Prices cover a similar spectrum, from entry level homes to upscale farms. The low density "country" ambience and housing alternatives have been major attractions of the region.

As a result of the increasing urbanization of the island, limited housing opportunities in Wailuku/Kahului, and the relative proximity of Upcountry to Maui economic centers, the study region is evolving into a bedroom community offering a variety of unit types typical of suburban development. The movement has gained inertia in recent years as the ease of commute has been enhanced through the expansion of the Haleakala Highway and completion of the Pukalani Bypass.

Escalating residential densities are a by-product of Upcountry modernization; an effort to provide greater supply within a high demand area having limited infrastructure and zoned land resources. The average size of house lots in the region has decreased in recent years, and multifamily units are slowly entering the market.

The study region has experienced subdued development recently; limited to less than 200 new home sites in the last six years. However, more than 2,600 additional units/lots have been proposed for the long term<sup>(1)</sup>, and the Upcountry is acknowledged by government agencies and private interests as a meaningful suburban growth node.

Based on our analysis, the actualization of a healthy and stable housing market in the study area will require the construction of between 3,738 and 6,851 additional housing units in the Upcountry area by the Year 2030. The mid-point demand would be for 5,294 units, or 60 percent more than the in-place inventory.

About 46 percent of the regional units required through 2030 should be priced below a current level of \$450,000, which would be generally affordable to the "low" to "low gap group" income households; 25 percent of demand will be between price limits of \$450,000 to \$650,000 (lower market category); 17 percent of demand will be oriented towards homes having prices of \$650,000 to \$1,000,000 (moderate to upper market pricing); and, 12 percent will seek properties having a price above \$1,000,000 (high end).

Although offered as lots, the subject inventory will be oriented towards the 29 percent of purchasers seeking homes at moderate and above price levels (more than \$650,000).

Single family lots will remain the focus of Upcountry development, although we expect it will decline from the current level of comprising some 88 percent of the sector to 70 percent by 2030. The drop-off is a function of the increasing number of multifamily units expected as the region further urbanizes and the strongly emerging trend towards building "spec" and "tract" homes seen throughout neighbor island communities.

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(1) The non-subject proposed lot/unit count includes 502 DHHL homes not available to the general public and 1,500 at Haliimaile which are only preliminarily proposed at this time.

The total mid-point demand for multi-family development over the next two-plus decades is estimated at 435 units. For single-family types the demand will be for 882 houses and 3,978 building lots.

Including Kauhale Lani, there are 10 major projects (10 lots or more) approved or proposed in the general study area at this time. The projects will provide a total of 2,572 house lots and/or finished homes.

Therefore, announced/pending/approved supply will fall short of projected mid-point demand by 2,288 single-family housing units during the 23 year modeling period. Or, on a comparative basis, proposed supply will be less than half of moderate market requirements.

The Upcountry area single family residential real estate market, like most sectors throughout the state, is currently in the midst of cyclical marked downturn following the completion of major up-cycle from the late 1990s through 2005. After peaking at record-setting levels, sales volumes are currently well off over the last two years, market times are becoming longer, appreciation has ceased, and realtors report mixed interest levels. However, due to the continuing high desirability of the upcountry area coupled with limited inventory available in the region, recovery of the sector is expected over the next several years.

We uncovered no indicators in our research and interviews which demonstrated anything other than the subject area being in the midst of a long-term expansion trend. We conclude that despite the current slowdown, there will be strong market support for the proposed Kauhale Lani project during its projected 2010 onward sales period.

**Subject Appropriateness and Absorption Estimates**

The 83-acre interior subject parcel, a rectangular-shaped holding fronting the Old Haleakala Highway, is a highly appropriate and favorably competitive location for the proposed Kauhale Lani residential project. We conclude the physical, functional, scope, and amenity characteristics of the property are desirable from a market perspective, and enhance the salability of the finished single-family lots/homes inventory.

Primary contributing factors to this conclusion include:

- The subject property is an urban expansion site for the Pukalani community, having extensive Old Haleakala Highway frontage, abutting existing home site development, and

otherwise defined by Hamakua Ditch (the southerly boundary of the town).

- Pukalani is an expanding suburban village which will be a focal point of Upcountry development over the coming decades.
- The proposed project represents the highest and best use potential of the property at this time, and is consistent with existing residential uses in the immediate neighborhood.
- The parcel is of sufficient size, shape, access and terrain to support a competitive, leading-edge, residential project.

We have quantified absorption rates using three techniques, all of which point to a reasonable sell-out period of three to seven years for the 170 subject home sites, with a mid-point projection of just under five years.

The gross analysis method indicates there are insufficient competitive lots apart from the subject to meet demand regardless of other factors. The residual method demonstrates that the proposed competing developments could all achieve a reasonable absorption level and there would still be remaining demand available to the subject product. And the market shares method indicates the Kauhale Lani product would be absorbed in a timely manner based on its competitive penetration in the market.

**Economic Impact of  
the Subject  
Development**

The project will generate some \$139.6 million in direct, new capital investment<sup>(2)</sup> and spending into the Maui economy during a seven-year planning and construction period. This will create an estimated \$19.5 million in profits for local contractors and suppliers. On a stabilized basis after completion, some 21 full-time equivalent maintenance/renovation workers and other on- and off-site positions will earn \$711,000 in wages each year<sup>(3)</sup>.

A total of 554 worker/years of direct on-site employment will be created during the 10-year construction and operation study timeframe, along with an additional 222 worker/years in associated and indirect

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(2) All dollar amounts contained in this report are based on constant, uninflated year-end 2007 dollars.

(3) The long-term employment associated with subject maintenance will not be new jobs, but additional client opportunities for existing Maui businesses.



off-site employment. The total wages paid during the initial decade of development and use will be \$39.2 million, peaking in year 9 of the project.

At completion, the full-time resident population at the subject is estimated to reach 490 persons, with approximately 37 publicly schooled children. Second-home owners and guests are expected to add a daily average of 74 persons to the community, resulting in a de facto population of 564 persons for the project. The discretionary expenditures by these individuals in the Maui economy is expected to reach \$15.9 million annually at build-out. The total household income of full-time residents is forecast to reach a stabilized level of \$20.9 million per year.

The expenditure of employee wages, business profits, and resident/guest discretionary funds into the Maui market will enhance hundreds of additional off-site, secondary/indirect jobs on the island, and generate several million dollars in additional wages.

The total direct, local economic impact to Maui (dollars flowing into the island market) is estimated to be \$140.1 million during the initial decade construction and operation study period, and stabilize at \$18.7 million annually thereafter. As these dollars move through the island market, they will have a multiplier effect increasing the economic impact of Kauhale Lani to Maui during its first 10 years to some \$280.3 million.

**Public Cost/Benefit of  
the Subject  
Development**

The county of Maui will receive \$4.75 million in real property tax receipts from the project over the 10-year study projection period, and an estimated \$691,145 per year thereafter<sup>(4)</sup>. The actual specific county government operating costs associated with serving the subject will be an estimated \$346,000 per year. Using a per capita basis which is the more conservative analytical perspective, county expenses will total \$4.8 million for the initial decade timeframe, and be some \$1.06 million on a stabilized basis. On an actual cost basis, the county will enjoy a net revenue benefit (taxes less costs), \$345,145 annually. However, on under per capita assessment, the county will show a negative, totaling \$46,193 during the first 10 years of construction and use, and \$366,021 each year after build-out.

---

(4) This is a conservative estimate which assumes the majority of home owners will seek and receive a homeowners exemption and that its current level (\$2.00 per \$1,000 assessed value) will not change. The actual taxes collected could end up being much higher in accordance with any change in homeowner tax rates over time.

The State of Hawaii will show a positive net revenue benefit from Kauhale Lani on an actual cost basis, and a slight negative from a per capita perspective. The total gross tax revenues during the 10-year modeling period will reach \$18.4 million from income and gross excise taxes, and will stabilize at \$2.6 million annually following build-out. State costs associated with the project on an actual basis are estimated at \$507,000 per year, and on a per capita basis will be \$12.2 million during the projection timeframe and \$2.7 million per year subsequently. The state will experience a net profit of \$6.1 million in the 10 years and a stabilized shortfall of \$127,593 annually after build-out under the per capita scenario. And a positive benefit estimated at \$2.1 million on an actual basis.

## **THE SUBJECT PROPERTY AND PROPOSED DEVELOPMENT**

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### **Land**

The 82.86-acre subject tract is a generally rectangular-shaped holding stretching along both frontages of Old Haleakala Highway at the down slope entrance to Pukalani Village, on the lower northerly flanks of Haleakala approximately eight miles from Kahului Airport. The property, identified on State of Hawaii Tax Maps as Second Division, Tax Map Key 2-3-9, Parcels 7 and 64, is at circa 3,000 feet above sea level, just mauka of the Hamakua Ditch.

The 32.87 acres lying east of Old Haleakala Highway will be left as open space for passive park use, and possible future inclusion into a larger regional park facility. The 49.99 acres on the west side of the highway will support the proposed subdivision and is the focus of our description of the subject property.

The subdivision site varies in depth, east/west from the road frontage, between 2,100 and 2,400 feet, and in width, north/south, from 800 to 1,200 feet. The slope is gentle to moderate and generally consistent, with nominally undulating topography. The highway frontage of the parcel ranges from at to slightly above the road grade (it is cut in places).

The property is in the Agricultural District on State Land Use Maps, and is shown as agriculture use on the Maui County general plan and

zoning maps. These classifications will require change before the proposed subdivision may be built.

Primary access to the site is available from Old Haleakala Highway which forms the easterly boundary of the building tract. The roadway is two-lane, macadam surfaced, and extends from Hana Highway near the shoreline upslope through Pukalani and on to the mountain summit. The opening of the Pukalani Bypass, realignment of the highway, which veers off from the old highway just down slope from the subject, now carries the bulk of vehicles in the region; the old highway is mainly used now by village residents and other Pukalani destination-bound traffic.

Secondary access into the subdivision parcel is also available via Kokea Place and Iolani Street from the neighborhood to mauka of the site. Both roadways currently "dead end" at the subject's upslope boundary.

The view panoramas from the property are exceptional, with a vista encompassing the Central Maui isthmus, West Maui Mountains and vast reaches of the Pacific Ocean. The scenes are available from most points on the subject site, unobstructed by development lower down the mountainside. Mauka views to the upper slopes of Haleakala are limited by terrain, trees and buildings.

The property, a now-fallow pineapple field, is currently overgrown with grasses and small shrubs. We are aware of no archeological sites on the holding or environmental issues which would impede residential development.

The tract is surrounded on three sides by both productive (sugar cane) feral agricultural lands to the north, east and west. Mauka is an existing residential/agricultural subdivision.

## **Proposed Development**

Kauhale Lani will be a residential community containing 170 home sites ranging in size from 7,500 to 12,000 square feet. A large generally undeveloped 33-acre passive park/open space area will be available for residents across Old Haleakala Highway, along with a one-acre park/open space at the center of the subdivision. The development will also have a landscaped entry and drives, open spaces and detention ponds.

The master plan is intended to provide a range of purchase options and prices, with larger more expensive view lots along the "edges" of the project, and smaller lesser priced lots comprising the interior. A copy of the current subdivision design is shown on the following page.

The project will be accessed via Aeloa Road which will extend westward from Old Haleakala Highway along the mauka (southerly) boundary of the project to the gateway of the subdivision which will be at about the mid-point of the holding, an extension of the existing Koea Place. This central spine roadway will lead "down" (makai or northerly) from Aeloa past the park to the makai area of the site. Three tiers of access roads extend outward from the central entryway to the individual lots, creating a series of distinct pods each containing up to 25 lots. For the most part, the residential components will be double-loaded off of the interior roadways.

Iolani Street will also be extended from the subdivision to mauka into the subject community, becoming the lower elevation roadway through the project.

The larger lots will be along the exterior tier of the project, with smaller parcels forming the interior.

While the exterior home sites will all enjoy panoramic views, the gradual/moderate makai slope of the site may limit general views from interior lots, particularly as the home construction on down slope lots creates obstructions. However, there will be ocean and/or mountain scenes available from selected lots in the central and mauka areas of the project.

Overall, the proposed subject development embodies modern residential planning concepts and contains the fundamental characteristics necessary for its product to be competitive in the regional market.

It is our understanding the affordable housing obligations associated with the development of Kauhale Lani will be satisfied via a 70-unit joint venture project to be located off-site. We do not anticipate the subject inventory will meaningfully impact assessed real property values in the area as the product is just a newer addition of similar type and quality to the existing nearby residential development.



## ENVIRONS

Maui, the second largest island in the Hawaiian chain, lies midway between Oahu and Hawaii. The island is often called the "Valley Island," because of its valley-like central isthmus stretching between two mountain masses. The island measures 25 miles from north to south, a maximum 38 miles from east to west, and contains 728 total square miles. The western shores of the island of Maui include approximately 20 miles of clean, accessible, sandy beaches.

The Kauhale Lani holding is located in the southerly central highlands of the volcanic-created island on the northerly flank of Haleakala, approximately eight miles from the county seat, interisland airport and harbor facilities at Wailuku/Kahului. The area is generally referred to as "Upcountry".

The region historically was used for sugar cane and pineapple cultivation and ranching, with most holdings devoted to agriculture, small villages or rural home sites. Over the past three decades, the area has evolved into a suburban community, providing quality housing and lifestyle opportunities. The primary draws of the area to local residents are its desirable cool climate, excellent view

panoramas, ease of access to central Maui employment, commercial and public facilities, and a unique modern, rural/suburban ambience.

Wailuku, the historical hub of island business, is the seat of government for Maui County, which includes the major islands of Maui, Molokai, Lanai, and Kahoolawe. Adjacent is Kahului, the headquarters for HC&S, the world's largest sugar plantation, and the site of the primary transshipment facilities at Kahului Harbor and Kahului Airport. The Wailuku/Kahului central windward area of the island is the focus for Maui industrial activity, and the employment and resident population centers of the county outside the destination resorts. Sugar production has traditionally been the island's base industry; however, with the closure of Wailuku Mill and Pioneer Mill (Lahaina), alternative agricultural, commercial, and residential opportunities for the land are being pursued, with the tourism-oriented businesses of the leeward side of the island (West and South Maui) coming to dominate the economy and job market.

Currently, the island has a resident population of some 130,000 persons, more than double the 1980 total of 62,823, and equating to a compounded annual growth rate of 2.8 percent over the past 27 years. Outside the Wailuku/Kahului urban enclave, Kihei and Lahaina are the largest settlements, both of which have undergone dramatic growth in recent decades due to tourism economics and land use demands.

State and county population projections call for an increasing population for the county over the next two-plus decades, reaching upwards of 186,254 full-time residents by 2030. This would represent an expansion of 43.3 percent and a growth rate of 1.65 percent compounded annually. Most of this growth is forecast to occur in the three "major" *Community Plan* regions of the island--West Maui, Wailuku-Kahului, and Kihei-Makena.

Attracted by a thriving tourism plant, some 40,000-plus non-residents additionally populate the island each day. The capital expenditures associated with the development and operation of visitor-oriented facilities and services now comprise more than 60 percent of the total island economy, and has a ripple effect throughout all governmental and private finances.

Notwithstanding a few minor stagnant periods focused in several submarkets during the early 1980s, from 1991 through 1994 and in 2006-2007, the Maui economy has generally "boomed" over the last

two decades, growing at a long-term rate which places it among the more vibrant regions in the country. As Oahu before it, the island has successfully been transformed from a simple agrarian-based structure to a diversified service model founded on a widely recognized and well-established tourism industry.

Vast potentially habitable areas of the island and significant water resources have been devoted to sugar cane cultivation. Until the 1980s, the long-term viability of the sugar industry was unquestioned, and the business remained a major employer and tax payer. As a result, cane land was re-classified for alternative (urban) uses only after lengthy public agency reviews and negotiation with unions.

The impact of this policy, in the face of unmet resident housing needs and off-island capital driven, visitor-oriented land use demands, was large-scale appreciation in real estate prices (due to limited supply) and major dysfunction in the residential sector since the early 1970s.

The county has had one of the lowest unemployment rates in the nation, ranging from 1.8 to 7.6 percent over the last 20 years, and one of the highest incidence of multi-job workers. Only at the depths of the recession in 1992-1994 (when the unemployment rate rose to a record 7.6 percent) has the figure been above six percent during the last 15 years. As of the study date, unemployment stood at 3.1 percent, or effective full employment.

The evident movement from "rapid" to "slow" growth stances in the community in the past several years is the latest continuation of a periodic cycle dating back to the "discovery" of Maui by tourists in the early 1970s. Since that time, economic considerations have driven the conflict.

In heated economic periods (such as the late 1970s, late 1980s and earlier this decade), rapid development, low unemployment, and large in-migration fuels slow growth sentiment. Conversely, during recessionary episodes, as the job market weakens and capital investment wanes, the community has shown greater support for further and expedited growth.

Overall, we remain optimistic as to the extended prospects for the Maui economy and resident population base, with a generally sustained growth forecast (though moderate by historic standards).

The investment value represented by the existing resort, industrial, commercial and residential components of the real estate market is many billions of dollars, and serves as a strong foundation for the island's economy far exceeding the other neighbor islands and most tropical resort locales around the world. Base historical indicators support long-term conclusions favoring a vital and growing Maui economy. Further, Maui has a superior natural appearance and attraction which portends well for future growth.

## **Regional Description - Upcountry**

The focus of our study is the "Upcountry" area of Maui, a vast region on the lower northwesterly slopes of Haleakala, overlooking the central valley of the island, containing the communities of Pukalani, Makawao, Kula, Hailiimaile, and Olinda. The first two villages, comprising the majority of population and urban/suburban land uses in the area, are located approximately four miles apart, between the 1000 and 1800 foot elevation levels. The others are smaller outlying communities, stretching from the 700 foot to 3500 foot elevations, based mainly on rural housing and agricultural uses with limited supporting commercial types.

The area is generally defined by Hailiimaile Road (downslope), the lower boundary of the Haleakala National Park (upslope), the easterly edge of Makawao Town, and the westerly extent of the Kula community. Primary access is provided by Haleakala Highway, a three-laned, modern high-speed thoroughfare, which extends from the Hana Highway up-mountain through the heart of the region. The roadway has been significantly upgraded, and a bypass constructed around Pukalani, during the past decade. Several secondary roads also lead down from Upcountry, most notably Baldwin Avenue in Makawao. While access into/out of the area has been improved, traffic congestion remains a community concern; although, a proposed Kula-Makena road would mitigate the issue by providing direct access to the South Maui resort areas.

A full-range of public utility systems service Upcountry, including electricity, water, telephone and cable television. Sanitary sewers are limited to the more urbanized neighborhoods. Emergency services are available in Pukalani and Makawao, and there are numerous public and private school facilities in the area. Water supply is an on-going issue due to limited source development relative to population growth, and on-going drought conditions.



Historically, the region has been agriculturally-oriented, with ranching, sugar and pineapple being the primary activities. Over the past three decades, the region (specifically Kula) has also become known for its floral and other diversified crops. Yet, because of its favorable climate, superior views, limited housing opportunities on the island and relative proximity to Central Maui, there has been significant urbanization pressure during the past 20 years.

According to the year 2000 United States Census, the study area had approximately 14,602 persons, up 20.4 percent from 1990 and nearly double the total of 1980. As of year-end 2007, the estimated resident population of upcountry is 23,800 persons.

The region is trending towards typical suburban status, with lowering household sizes (in persons), increasing income levels, and an escalating average age. Additionally, an estimated 1.7 million tourists pass-through/visit the area each year.

While the character of the region remains founded on agricultural uses and a rural environment which area residents desire to retain, there are increasing demands for urban uses being created by an expanding population and economic base, particularly in Pukalani and Makawao. As the number of residents increases, so will the demand for neighborhood-serving development offering a greater ease of access to local consumers along with proximate job and business opportunities.

**Neighborhood  
Description --  
Pukalani**

The subject property lies on the northerly or downslope edge of Pukalani Town, one of several urban villages located in the Makawao District of Maui County. This expanding community is situated on the slopes of Haleakala approximately eight miles from Wailuku, and is essentially comprised of residential (urbanized) areas extending along both sides of Old Haleakala Highway between Aeloa Road and the Kula Highway. The urbanized pod of the town is virtually surrounded by extensive agricultural, cultivation and ranchlands.

The topography is generally gently to moderately sloping, with the cultivated fields and grasslands scored by steep sided gulches and bluff formations. Economic activity within this area has primarily been tied to agriculture, although the region is undergoing a transition from agrarian to service-based uses as seen throughout the neighbor islands. Pineapple continues to be the principle production crop; however, its long-term status in the area is unknown. There are numerous "truck" farms cultivating a variety of produce (notably

onions) and ornamental flowers in the area. Cattle ranching is also common.

Realistically, agriculture is becoming a secondary land use in the district, which is evolving into a series of suburban (or bedroom) communities housing workers employed elsewhere on Maui.

Pukalani's existing residential development is primarily comprised of residential and agricultural subdivisions containing more than 2,700 square feet to one-half acre single-family lots. Among the major projects are Mountain View, Pukalani Lots, Haleakala View, Kua'aina, Ho'olako and Kulamalu. The community's commercial (retail and service) facilities are located in strip developments fronting Haleakala Highway and Makawao Avenue.

Recreational uses include the Pukalani Park and Community Center, and the Pukalani Country Club Golf Course. Educational institutions within Pukalani include a new high school and a single elementary school, other private and public schools are within close proximity, including Makawao Elementary, Haiku Elementary, Kula Elementary, Paia Elementary, Kalama Intermediate School, St. Joseph School, and Seabury Hall.

## **THE UPCOUNTRY RESIDENTIAL MARKET**

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Our analysis of the Upcountry residential market is divided between two perspectives:

- Macro Analysis -- Assessing the overall, long-term demand and supply trends in the competitive sector; and
- Micro Analysis -- Focusing on the current demand/supply levels in the subject segment.

The study opens with a brief overview of residential development in the study area followed by an analysis quantifying the demand for additional housing units in Upcountry based on population, buyer demographic, and real estate trends. Existing and proposed inventory supply is then identified in regards to number of units, development timing and product type. To the extent mid to long-term demand

exceeds supply in the study area, the general (or macro) climate for the proposed subject development is favorable.

The second part of the study reviews current market activity in the region, including the status of the market cycle, availability of inventory, pricing and appreciation levels, and exposure time required for sale. This aids in determining whether sufficient near to mid-term demand exists relative to potential supply to support a new project and successfully absorb the initial phases. If the market cycle is up at the time the subject inventory is to be offered, and inventory continues to be somewhat limited, the micro conditions will be favorable for Kauhale Lani during its sales period.

Historically, the Upcountry residential sector has been dominated by single family development, ranging from smaller plantation-style subdivisions (as at Hailiimaile) to bulk acreage ranch and agricultural lots (in Olinda and Kula). Prices cover a similar spectrum, from entry level homes to upscale farms. The generally low density "country" ambience and housing alternatives have been major attractions of the region.

As a result of the increasing urbanization of the island, limited housing opportunities in Wailuku/Kahului, and the relative proximity of Upcountry to Maui economic centers, the study region is evolving into a bedroom community offering a variety of unit types typical of suburban development. The movement has gained inertia in recent years as the ease of commute has been enhanced through the expansion of the Haleakala Highway and completion of the Pukalani Bypass. As a result, several commercial and public-oriented developments are being designed to address the emerging retail, service and medical needs associated with this on-going transformation.

Escalating residential densities are a by-product of Upcountry modernization; an effort to provide greater supply within a high demand area having limited infrastructure and zoned land resources. The average size of house lots in the region has decreased meaningfully in recent years, and multifamily units are slowly entering the market. Given the maturation of the community, its desirable lifestyle, proximity attributes, and cost factors, we believe there is accepted recognition that certain areas in the region (notably near Pukalani and Makawao) will be improved with more intense residential product in coming years.

Despite strong evidence of demand, the study region has experienced subdued development in recent years; limited to less than 200 new home sites in the last six years. However, more than 2,600 additional units/lots have been proposed, and the Upcountry is acknowledged by government agencies and private interests as a meaningful suburban growth area. And, though envisioned as having lesser development than in the primary urban zones on the island (Wailuku/Kahului, Kihei, West Maui), the study area is expected to service larger populations of residents on the island over the coming decades resulting from:

- Providing a quality, less intense, more rural-like lifestyle;
- A scarcity of alternative, entitled acceptable development areas throughout the island;
- Proximity to good, services, and support uses in Central Maui;
- Relative ease of access to employment centers and other areas of the island (which will be enhanced by construction of Upcountry/Makena road);
- A cool, generally dry climate considered highly desirable by many residents, offering excellent gardening/farming opportunities; and
- Superior view panoramas.

Over the past two decades, the supply of housing units in Upcountry has failed to keep pace with resident demand segments, as the development on the island has been focused in the Central Maui, Kihei and destination resort communities. These areas offer entitled lands, existing intense urban environments, and greater potential returns.

However, there is a need to spread the housing inventory loads throughout the central areas of the island within infrastructure-serviced nodes, as well as provide the location alternatives desired by the market. Even in the current down market cycle, the supply of inventory does not service all the potential demand in the community.

## Macro Analysis

Projecting the probable mid to long-term regional demand for the residential units in the study area is a three-step process:

1. Quantification of Upcountry Housing Unit Demand -- Estimating the need for additional housing units in the study area based on population, demographic, vacancy and income characteristics.
2. Identification of Current and Proposed Projects -- Overview of recent/in-sales and proposed/potential residential development in the study area units in regards to unit types and sales activity.
3. Indicated Conclusions -- Correlation of quantified market demand and supply indicators.

We have assumed the subject lots would be priced at general market levels consistent with other new lot/housing product in the study area, and attract a typical spectrum of buyers. It is our understanding the developer has met affordable housing criteria established/negotiated with state and county planning agencies via the commitment of \$8.2 million towards building affordable units elsewhere in the community, or undertaking such construction themselves. To the extent any below-market, affordable-priced units are offered on-site, the expected rate of absorption would increase given the island-wide shortage of such product.

### Quantification of Upcountry Housing Unit Demand

We have projected the demand for residential units in the identified Upcountry area using standardized formulae employing population forecasts, household size trends, and other market-based factors as follows:

$$RP/AHS = TRUR \times (1 + (VA + NRPA)) = TMUD$$

Where:

- RP** is the Resident Population
- AHS** is the Average Household Size
- TRUR** is the Total Resident Units Required
- VA** is a Vacancy Allowance
- NRPA** is a Non-Resident Purchaser Allowance
- TMUD** is a Total Market Unit Demand

Each of the variables in the formula is based on historic statistics compiled by the Federal Home Loan Bank, U.S. Census Bureau, State of Hawaii DBEDT, County of Maui Planning Department, other recognized governmental sources, and researched market data.

These past and current indicators were translated into estimates based on temperate trending interpretations. Our emphasis was on letting the data "speak for itself" through our projections, as opposed to making large-scale adjustments for subjectively anticipated lifestyle or market evolutions.

In this regard, our forecasts are representative of moderate future housing requirements, and could be understated if some movements continue as strongly as in recent years; such as the trend towards smaller household sizes and an increasing influx of non-resident purchasers into the market.

The "Total Market Unit Demand" conclusions resulting from equation application are intended to quantify the total number of residential housing units of all types which will be needed in the study region over a 23-year projection period (2007 through 2030) in order to manifest a reasonably stable market with all purchaser/tenant demand segments served.

Currently, the Upcountry housing market continues to be in a moderately undersupplied condition despite the recent market decline. Governmental policy has been to seek alleviation of the unit shortage, while maintaining local character, by permitting selected residential development of centrally-located, vacant, feral or nominal agricultural lands at as rapid a pace as the infrastructure and community will bear.

The factors comprising our housing demand equation can be summarized as follows:

Resident Population (RP) -- This variable utilizes population and distribution forecasts made by the state, county and ourselves for the island and/or study area. Specifically, we have employed the projections made by the Maui Planning Department in their June 2006 report "*Socio Economic Forecast: The Economic Projections for the Maui County General Plan 2030*" (GP 2030) which has been adopted by the county for use in its periodic general Plan updating process.

The GP 2030 models forecast a resident population of between 30,800 ("baseline" model) and 36,201 persons ("historical trend run" model) in the Makawao-Pukalani-Kula study area by 2030; an increase of some 30 to 50 percent and 7,080 to 12,401 persons over the current estimate of 23,800. The projected expansion in resident counts is equivalent to a compounded annual growth rate range of 1.19 to 1.92 percent.

These county-based population projections served as the foundation of our housing demand modeling scenarios. The "baseline" estimates served as minimum projections (Scenario One) and the "historical trend run" figures as maximum projections. By correlating the two scenarios we arrived at a mid-point which is cited throughout the remainder of the market study.

Average Household Size (AHS) -- This factor was calculated using the data as provided by the above-cited sources and census figures. The 2000 US census indicators for the study area were at 2.81 persons per resident household, moderately below the island-wide figure of 2.9 persons. Currently, the Upcountry AHS is estimated at 2.76 persons.

The GP 2030 forecasts average household sizes in Upcountry will trend downward over the study period, declining to between 2.59 and 2.65 persons by 2030. This is in keeping with national statistics. Most Hawaii-oriented sociologists contend the movement to smaller household sizes will continue into the future; forecasting longer life-spans, the influx of single persons attracted to the climate and employment opportunities, and the tendency towards fewer children.

However, we believe the AHS of the study area will not necessarily decline as swiftly as the GP 2030 trending suggests during the model time frame (down 0.29 percent compounded annually in the baseline analysis), but will hold closer to steady as more, larger single family homes are built in Upcountry attracting growing Maui households.

We project the average household size level in the study area will stabilize by the Year 2030 at about 2.66 persons, a decline of 0.17 percent compounded per year. These estimates were used in both our scenario models. We note, the use of smaller

the average household estimated provided via GP 2030 would increase the indicated demand for housing units in Upcountry beyond our conclusions.

Total Resident Units Required (TRUR) -- This figure is arrived at by dividing the subject area resident population (RP) by the average household size (AHS). It is indicative of the minimum number of residences which would be required to meet basic market needs, assuming there were no vacant units, none uninhabitable due to on-going repair or deleterious conditions, and none occupied by non-resident persons.

For a market to be considered stable (and nominally operative) with acceptable appreciation rates and quality lifestyle opportunities, allowances for such factors must be made.

Vacancy Allowance (VA) -- Governmental agencies are on record during the past 25 years calling Maui one of the tightest residential markets in the nation, expressing fears of a deteriorating economy and community structure unless major steps are taken over the long-term to address the shortage. The undersupply condition is a primary reason Maui housing prices are on average among the highest of any locale in the country.

According to HUD, the Urban Institute, and other sources, a "healthy" market has a minimum vacancy level of five to six-plus percent of the total number of units in the inventory. This allows for uninhabitable units, units under repair, seasonal fluctuations, a transitional housing margin, a degree of mobility potential, and the ability to service periodic unanticipated population increases. A "slack" in unit occupancy also serves as a margin to cushion against hyper-appreciation during strong demand periods.

Given the history of the Maui housing market and its inability to keep an acceptable vacancy pool available, we believe it will be exceptionally difficult for the desirable vacancy allowance of more than five percent to be achieved on the island during the foreseeable future.

In our "minimum" demand models we have used a nominal vacancy rate allowance of 3.0 percent of the total residential unit demand. In the "maximum" scenario formula, we have



tested a more desirable vacancy rate allowance of five percent of the Total Resident Units Required figure.

Non-Resident Purchaser Allowance (NRPA) -- While some non-resident purchasers of non-resort housing units are investors who seek to rent them to residents to cover debt service obligations, an increasing number are buying Hawaii residential units for personal (family and friends) second-home use, business reasons, or other non full-time residential use.

These units are not available to meet resident housing demands and are effectively withdrawn from the inventory pool. An allowance must be made for these residences in the general community, which are not to be confused with those specifically intended for tourist-oriented transient rentals (i.e., within a condominium/hotel project in a resort-classified area).

On the neighbor islands and in Waikiki, there are many units in complexes or subdivisions designed for general residential use, which often sit vacant the vast majority of the time.

Our research indicates most projects in neighbor island vacation (non-resort) communities such as Kailua-Kona, Kihei and Poipu have upwards of 30 percent non-resident, investor-owned units/homes. In some in-resort developments (particularly Hualalai, Mauna Kea Beach, Mauna Lani, and Kapalua), up to 90-plus percent of selected complexes are so held.

Most neighbor island subdivisions and multifamily projects, no matter where they are located, have some level of non-resident ownership/use. This is particularly true in newer developments which are highly attractive to off-island buyers informed via the internet. Further, Maui has an increasing number of oft-returning visitors who are comfortable away from the beachside communities and drawn to alternative "more local" areas.

The impact of these buyers on the market must be taken into consideration when projecting a region's housing unit needs, given the widespread interest in Hawaii real estate and typically greater financial resources of non-resident buyers.

Failure to adequately account for their demand places extreme stress on island towns.

Well removed from the leeward resort communities and most tourist/vacation oriented development, the demand for non-resident units in Upcountry is not as significant as in South, West and even Central Maui. However, the excellent views, good climate and easy access to most Maui amenities, does attract some non-resident purchasers to the area, focused on upper-end homes and units near the golf-course.

Historically, the NRPA in Upcountry was low (less than five percent), but the ratio has been higher within recent projects, and with more on-going intrusion into older existing subdivisions. Non-resident now comprise a meaningful portion of the target market for the area. Over the long-term we expect the trend to continue as resort real estate price appreciation typically outpaces Upcountry values. We contend an appropriate NRPA should be at a minimum of five to ten percent of the total housing inventory in the study area over the coming two decades.

While the GP 2030 projections now include this variable (it was not part of the model in prior general plan update model), it is viewed as a much lesser demand component, comprising less than three percent of demand. We believe this to be an understatement.

We have, therefore, tested a non-resident allowance of five percent of total resident household demand in our minimum projections, and ten percent is the maximum scenario; but still consider this somewhat conservative seeing the major influx of non-purchasers into "residential" developments in Kihei, Kailua-Kona and other traditionally local household areas.

Total Market Unit Demand (TMUD) -- The solution to our demand formula is quantified by adding the Vacancy Allowance (VA) and Non-Resident Purchaser Allowance (NRPA) to the Total Resident Units Required (TRUR) figure. This is the total number of units which will be needed in the study region in order to meet all reasonable market demands.

The application of the housing demand formula to the subject region using the GP 2030-based population forecasts are shown on Table 1.

Extrapolation of 2000 census figures in combination with county building permit and tax data indicates there are currently some 8,800 existing housing units in the study area.

Based on our analysis, the actualization of a healthy and stable housing market in the study area will require the construction of between 3,738 (Scenario One: Minimum) to 6,851 (Scenario Two: Maximum) additional housing units in the Upcountry area by the Year 2030. The mid-point demand would be for 5,294 units, or 40 percent more than the in-place inventory.

The GP 2030 models forecast a need for from 4,196 new units ("baseline") to 6,424 units ("historic trend"), with a mid-point of 5,310; which is virtually identical to our mid-point conclusion.

Selected tables from the GP 2030 support regarding Upcountry population and housing demand trends are contained in addenda Exhibit I.

Conversion of our estimates of gross housing demand into pricing equivalents was completed using available data from the U.S. Census, Maui Board of Realtors, and the U.S. Dept. of HUD.

Table 2 illustrates the striation of Upcountry regional housing requirements through 2030 into probable percentile demand by sales prices at current dollar levels. The figures correlate both historic actual buying trends and theoretical "affordability" quotients derived using government pricing criteria.

Table 3 displays the calculations of housing price affordability for Maui residents based on HUD/State/County and conventional financing guidelines.

Using the governmental criteria, households in the "Low Income" grouping, earning 80 percent or less of the island median income, can afford a sales price, or rental equivalent, of \$240,000 (rounded) or less. "Low to Moderate Income" households, earning 80 to 120 percent of median income, can afford home prices up to \$300,000. And, "Moderate-Gap Group (or "low market") Income" households can afford prices up to \$420,000. Above this level, prices are

TABLE 1

**QUANTIFICATION OF HOUSING UNIT DEMAND FOR THE  
UPCOUNTRY STUDY AREA 2008 to 2030 (1)  
Market Study of Kauhale Lani  
Pukalani, Maui, Hawaii**

	<u>2008</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>	<b>Additional Units Required by 2030 (2)</b>
<b>Scenario One: Minimum Projections Using Planning Department "Baseline" Forecasts</b>							
Resident Population	23,800	24,644	26,098	27,640	29,243	30,880	
Average Household Size	<u>2.76</u>	<u>2.73</u>	<u>2.69</u>	<u>2.66</u>	<u>2.66</u>	<u>2.66</u>	
Total Resident Units Required	8,623	9,027	9,702	10,391	10,994	11,609	
Vacancy Allowance (3 % of resident unit demand)	259	271	291	312	330	348	
Non-Resident Purchaser Allowance (5% of resident unit demand)	431	451	485	520	550	580	
<b>TOTAL MARKET UNIT DEMAND</b>	<b><u>9,313</u></b>	<b><u>9,749</u></b>	<b><u>10,478</u></b>	<b><u>11,222</u></b>	<b><u>11,873</u></b>	<b><u>12,538</u></b>	<b>3,738</b>
<b>Scenario Two: Maximum Projections Using Planning Department "Historical Trend" Forecasts</b>							
Resident Population (3)	23,800	26,752	29,163	31,298	33,725	36,201	
Average Household Size	<u>2.76</u>	<u>2.73</u>	<u>2.69</u>	<u>2.66</u>	<u>2.66</u>	<u>2.66</u>	
Total Resident Units Required	8,623	9,799	10,841	11,766	12,679	13,609	
Vacancy Allowance (5% of resident unit demand)	431	490	542	588	634	680	
Non-Resident Purchaser Allowance (10% of resident unit demand)	862	980	1,084	1,177	1,268	1,361	
<b>TOTAL MARKET UNIT DEMAND</b>	<b><u>9,917</u></b>	<b><u>11,269</u></b>	<b><u>12,467</u></b>	<b><u>13,531</u></b>	<b><u>14,580</u></b>	<b><u>15,651</u></b>	<b>6,851</b>
<b>CONCLUDED HOUSING UNIT DEMAND RANGE</b>							
	<u>Existing</u>	<u>2008-2010</u>	<u>2011-2015</u>	<u>2016-2020</u>	<u>2021-2025</u>	<u>2026-2030</u>	<u>Totals</u>
<b>MINIMUM DEMAND</b>							
Periodic	513	436	729	744	651	665	3,738
Cumulative	513	503	1,343	2,199	2,962	3,738	
Average Annual Demand (4)		168	168	171	152	155	
<b>MAXIMUM DEMAND</b>							
Periodic	1,117	1,352	1,198	1,064	1,049	1,070	6,851
Cumulative	1,117	1,498	2,939	4,246	5,538	6,851	
Average Annual Demand (4)		499	288	261	258	263	
<b>MID-POINT DEMAND</b>							
Periodic	815	894	964	904	850	868	5,294
Cumulative	815	1,001	2,141	3,222	4,250	5,294	
Average Annual Demand (4)		334	228	216	205	209	

- (1) The study region includes the Upcountry Planning Area, and the primary towns of Pukalani, Makawao, Kula.
- (2) There are an estimated 8,800 housing units in the Upcountry study area as of the fourth quarter of 2007
- (3) Population growth equivalent to 1.42 percent compounded annually during projection period
- (4) Existing (or latent) demand is assumed absorbed evenly throughout study period

Source: US Census, County of Maui Planning Dept "Socio-Economic Forecast: Report", Various and The Hallstrom Group, Inc

TABLE 2

**STRATIATED PROJECTIONS OF HOUSING UNIT DEMAND  
BY SELLING PRICE IN UPCOUNTRY MAUI 2008 TO 2030**  
Market Study of Kauhale Lani  
Pukalani, Maui, Hawaii

Period	Periodic Demand (1)					Total Demand 2008-2030
	2008 to 2010	2011 to 2015	2016 to 2020	2021 to 2025	2026 to 2030	
<b>I. Minimum Based on Planning Department "Baseline" Forecasts</b>						
Less Than \$250,000 (1)	151	244	239	207	202	1,042
Percent of Total Demand	30.00%	29.00%	28.00%	27.00%	26.00%	27.88%
\$250,000 to \$450,000 (2)	101	160	154	130	124	668
Percent of Total Demand	20.00%	19.00%	18.00%	17.00%	16.00%	17.88%
\$450,000 to \$650,000	126	210	214	191	194	935
Percent of Total Demand	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
\$650,000 to \$1,000,000	76	134	145	138	147	640
Percent of Total Demand	15.00%	16.00%	17.00%	18.00%	19.00%	17.12%
Over \$1,000,000	50	92	103	99	109	453
Percent of Total Demand	10.00%	11.00%	12.00%	13.00%	14.00%	12.12%
<b>Total Market Demand</b>	<b>504</b>	<b>840</b>	<b>855</b>	<b>765</b>	<b>775</b>	<b>3,739</b>
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
<b>I. Minimum Based on Planning Department "Historical Trends" Forecasts</b>						
	449	418	365	350	355	1,937
Percent of Total Demand	30.00%	29.00%	28.00%	27.00%	27.00%	28.27%
\$250,000 to \$450,000 (2)	299	274	235	220	224	1,252
Percent of Total Demand	20.00%	19.00%	18.00%	17.00%	17.00%	18.27%
\$450,000 to \$650,000	374	360	326	324	329	1,713
Percent of Total Demand	25.00%	25.00%	25.00%	25.00%	25.00%	25.00%
\$650,000 to \$1,000,000	225	230	222	233	237	1,147
Percent of Total Demand	15.00%	16.00%	17.00%	18.00%	18.00%	16.73%
Over \$1,000,000	150	158	157	168	171	804
Percent of Total Demand	10.00%	11.00%	12.00%	13.00%	13.00%	11.73%
<b>Total Market Demand</b>	<b>1,497</b>	<b>1,440</b>	<b>1,305</b>	<b>1,295</b>	<b>1,315</b>	<b>6,852</b>
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Note: The median household income for Maui for 2007 is estimated at \$68,328.

- (1) This price is considered "affordable" for households earning 80% of the median county household income ("Low Income").  
(2) This price is considered "affordable" for households earning from 80% to 140% of county median (includes "Low-Median" to "Gap Group" categories).

Source: SMS, Various and The Hallstrom Group, Inc.

TABLE 3

**ESTIMATE OF HOUSING PRICE AFFORDABILITY FOR MAUI RESIDENTS  
AS OF FOURTH QUARTER 2007  
Market Study of Kauhale Lani  
Pukalani, Maui , Hawaii**

***1. Based on HUD/Maui County Criteria***

<b>Grouping</b>	<b>Low Income</b>	<b>Low-Moderate Income</b>	<b>Moderate-Gap Group Income</b>
<b>Household Income as a Percent of County Median</b>	<b>80% or less</b>	<b>80% to 100%</b>	<b>100% to 140%</b>
Gross Household Monthly Income (1)	\$4,555	\$5,694	\$7,972
Amount Available for Debt Service (2)	\$1,367	\$1,708	\$2,391
Maximum Mortgage Amount (3)	\$228,004	\$284,880	\$398,798
Down payment at 5% of Sales Price	\$12,000	\$14,994	\$20,989
<b>Total Affordable Purchase Price</b>	<b>\$240,004</b>	<b>\$299,874</b>	<b>\$419,787</b>

***2. Based on Conventional Financing Criteria***

<b>Grouping</b>	<b>Low Income</b>	<b>Low-Moderate Income</b>	<b>Moderate-Gap Group Income</b>
Gross Household Monthly Income	\$4,555	\$5,694	\$7,972
Maximum Allowable Housing Expense (4)	\$1,275	\$1,594	\$2,232
Maximum Mortgage Amount (5)	\$207,076	\$258,885	\$362,504
Down payment at 20% of Sales Price (6)	\$51,769	\$64,721	\$90,626
<b>Total Affordable Purchase Price</b>	<b>\$258,845</b>	<b>\$323,606</b>	<b>\$453,130</b>

Note: Total Purchase Price estimate excludes any points associated with financing.

(1) Assuming 2007 median household income for Island of Maui of \$68,328 annually; up an estimated four percent from 2006 County-cited income limits.

(2) Based on Maui County mortgage affordability criteria at 30% of gross income for a three bedroom house, apart from any reserves.

(3) Assuming 6.00% annual interest and 30 year mortgage with 5% down payment..

(4) Conventional financing with maximum monthly mortgage payment at 28% of gross income, apart from any reserves.

(5) Assuming 6.25% annual interest and 30 year mortgage, with 20% down payment.

(6) Conventional financing standard.

Source: State of Hawaii, Maui County and The Hallstrom Group, Inc.

considered to be outside the "affordable" pricing segment and in the "market" price range.

Using conventional financing criteria, the affordable housing prices for the respective groups increases by about 10 percent.

Inherently, a large portion of the demand is generated by lower- to middle-income groups who can have difficulty competing in the high-priced Maui marketplace. Upper-middle and above income households have more meaningful purchase alternatives.

About 46 percent of the regional units required through 2030 should be priced below a current level of \$450,000, which would be generally affordable to the "low" and "low-moderate" and "gap" income groups. Some 25 percent of demand will have price limits between \$450,000 and \$650,000 (the lower-end "market-priced" segment); 17 percent of demand will be oriented towards homes having prices of \$650,000 to \$1,000,000 (moderate to upper-end market pricing); and, 12 percent will seek properties having a price above \$1,000,000 (high end).

Although offered as lots, the subject inventory will be oriented towards the 29 percent of purchasers seeking homes at moderate and above price levels (more than \$650,000).

Given land, subdivision and construction costs, it will be difficult to meet anticipated regional housing demands solely through single family development. Multi-family projects must be pursued in order to keep the Upcountry housing sector in balance.

As shown on Table 4, we forecast that multi-family units will increase meaningfully in overall proportion to single-family homes in new projects over the next 23 years. While still remaining a minor inventory component, this segment will expand owing to increasing urban densification pressures; moving upwards from the current level of circa four percent of market additions to nine percent by 2030.

Single family lots will remain the focus of Upcountry development, although we expect it will decline from the current level of comprising some 88 percent of the sector to 74 percent by 2030. The drop-off is a function of the increasing number of multifamily units and the strongly escalating trend towards mass-built "spec" and "tract" homes seen throughout the neighbor islands, which will inevitably occur in the study area on an expanding basis.

TABLE 4

**DIVISION OF PROJECTED DEMAND BY UNIT TYPE  
FOR HOUSING UNITS IN UPCOUNTRY MAUI 2008 TO 2030**  
Market Study of Kauhale Lani  
Pukalani, Maui, Hawaii

	Periodic Demand (1)					Total Demand 2008-2030	Comments
	2008 to 2010	2011 to 2015	2016 to 2020	2021 to 2025	2026 to 2030		
<b><i>1. Using Minimum Demand Scenario Projections</i></b>							
Single Family Homes	40	126	171	153	155	645	Most homes are "customs" built on individually purchased lots. However "spec" builder homes becoming larger segment over time, and contractors are attempting to purchase blocks of lots in new subdivisions. Given profits associated with building, more finished homes over time.
Percent of Total	8%	15%	20%	20%	20%	17%	
Single Family Lots	444	655	599	536	543	2,775	Historic primary residential development type in Upcountry. Will continue to dominate market during study period, but greater number of "finished" units likely.
Percent of Total	88%	78%	70%	70%	70%	74%	
Multifamily Units	20	59	86	77	78	318	A minor component of the regional inventory, with only circa 100 units built to date. But will become increasing factor as lots become scarce and development more intense (as a Upcountry Town Center) and is only feasible option for many low/moderate and senior households.
Percent of Total	4%	7%	10%	10%	10%	9%	
<b>Total</b>	<b>504</b> 100%	<b>840</b> 100%	<b>855</b> 100%	<b>765</b> 100%	<b>775</b> 100%	<b>3,739</b> 100%	
<b><i>2. Using Maximum Demand Projections</i></b>							
Single Family Homes	120	216	261	259	263	1,119	
Percent of Total	8%	15%	20%	20%	20%	16%	
Single Family Lots	1,317	1,123	914	907	921	5,181	
Percent of Total	88%	78%	70%	70%	70%	76%	
Multifamily Units	60	101	131	130	132	552	
Percent of Total	4%	7%	10%	10%	10%	8%	
<b>Total</b>	<b>1,497</b> 100%	<b>1,440</b> 100%	<b>1,305</b> 100%	<b>1,295</b> 100%	<b>1,315</b> 100%	<b>6,852</b> 100%	
<b><i>Mid-Point</i></b>							
Single Family Homes	80	171	216	206	209	882	
Single Family Lots	880	889	756	721	732	3,978	
Multifamily Units	40	80	108	103	105	435	
<b>Total</b>	<b>1,001</b>	<b>1,140</b>	<b>1,080</b>	<b>1,030</b>	<b>1,045</b>	<b>5,296</b>	

Source: The Hallstrom Group, Inc.



The total mid-point demand for new multi-family development over the next two decades is estimated at 435 units. For new single-family types the demand will be for 882 finished houses and 3,978 building lots.

**Identification of  
Upcountry Single  
Family Residential  
Projects**

*Existing and Recent/  
In-Sales Supply*

Based on extrapolation of 2000 census data, county planning figures, and building permit/tax office data we estimate the total number of habitable housing units in the Upcountry study area as of year-end 2007 is approximately 8,800 units. Of these, approximately 6,000, or 68 percent, were constructed prior to 1970.

As Kauhale Lani will compete in the single family segment of the market, our focus in regards to analysis of supply is similarly oriented toward existing and proposed single family development.

A listing of the most recent Upcountry projects (since 2002) is shown on Table 5. Also shown are two recent subdivisions in Haiku, located just east of the study area, but sharing similar market characteristics.

With the exception of the Cottages at Kulamalu, which is presently marketing finished homes and duplexes, all of the product has been vacant house lots/acreage ranging in size from 10,000 square feet to over five acres; total of 40 finished units and 154 potential home sites. Prior to 2005, all of the subdivisions achieved rapid absorption at continuing escalating prices. However, the most recent offerings have been much slower to achieve absorption in the current down-cycle and have shown softening prices.

Discussions with study area realtors indicate that there are still reasonable levels of interest for new product in Upcountry, regardless of any short-term market stagnation, due to the high desirability of the region among local families and continuing lag of new supply relative to demand. It is just that absorption rates have quieted relative to the recent all-time highs. Most expect recovery within the next two years followed by a return to the traditional market perspective where any new product made available is quickly be absorbed.

TABLE 5

**SUMMARY OF IN-SALES/RECENT MAJOR UPCOUNTRY SINGLE FAMILY RESIDENTIAL DEVELOPMENTS**  
**Market Study of Kauhale Lani**  
**Pukalani, Maui, Hawaii**

<u>Development/Project</u>	<u>No. of Lots/Homes</u>	<u>Average Lot Size</u>	<u>Offering Date</u>	<u>Original Price Range</u>	<u>Status</u>	<u>Absorption</u>
Cottages at Kulamalu Kula	40	Up to 1/4 acre	11/07	\$599,000 to \$679,000	Lottery Held 11/20/2007	Unknown - finished homes/duplexes
Kulmalu Hillside Kula	12	1/2 acre-plus	1/07	Lots for \$375,000	10 sold/reserved	10 month sales period = 1 lots/mo.
Kulamalu Subdivision Pukalani	57	1/2 acre	3/02	\$170,000 to \$200,000	Sold Out	13 month sales period = 4 lots/mo.
Kula Meadows Kula	16	5 acres	10/02	\$410,000 to \$575,000	Sold Out	10 month sales period = 1.6 lots/mo.
The Ridge at Kulamalu Kula	57	1/4 acre	8/03	\$180,000 to \$225,000	Sold Out	4 month sales period = 14 lots/mo.
Kulamalu Hilltop Kula	12	1/4 acre	9/03	\$225,000 to \$300,000	Sold Out	3 month sales period = 4 lots/mo.
<b><u>Nearby Subdivisions</u></b>						
West Kuaiaha Meadows Haiku	16	2 to 5 acres	1/01	\$230,000 to \$310,000	Sold Out	8 month sales period = 2 lots/mo.
Maunaolu Plantation Haiku	39	2 acres	3/02	\$260,000 to \$345,000	Sold Out	13 month sales period = 3 lots/mo.

Source: Hawaii Information Service, Maui Board of Realtors, Various, and The Hallstrom Group, Inc.

*Proposed Supply*

Apart from Kauhale Lani, there are ten major projects (10 lots/units or more) approved or proposed in the general study area at this time. There are an additional 16 minor subdivisions shown on County Planning Department schedules .

These potentially competitive developments are summarized on Table 6. We are aware of no other major single family developments preliminarily proposed, announced or otherwise making headway in the entitlement process at this time. The major multi-family projects being discussed are as a component within the Hailiimaile Village Expansion (upwards of 250 units), the proposed Kula Senior Housing development (36 units), and potentially as a component within an eventual development of the Pukalani Triangle/Upcountry Town Center site (unit counts and model types not yet established).

With the exception of the large Hailiimaile Village Expansion project and the Kula 1800 subdivision, all of the non-subject developments shown moving forward at varying speeds with expectations to have product on the market in the near-term (before 2010). The Village Expansion project is currently on-hold pending master plan revisions and Kula 1800 is encountering stiff resistance in the community.

The cited projects, excluding the subject, will provide a maximum total of some 2,638 competitive house lots and/or finished homes during the 23-year projection period.

A complete listing of proposed Upcountry projects prepared by the Long Range Division of the County Planning Department is contained in addenda Exhibit II. We have made minor revisions in the cited unit counts based on our discussions with developers/owners and eliminating the double-counting of some units.

**Comparison of Demand and Supply Indicators**

The demand for new housing opportunities in the Upcountry study area over the coming 23 years, 2008 through 2030, is estimated at 5,294 total new units (mid-point), of which 4,860 will be oriented toward single family inventory.

Apart from Kauhale Lani, the currently planned level of new single-family product additions during the same time frame will be 2,638 homes/lots, if all pending subdivisions are approved and built to maximum densities; which we consider unlikely.

TABLE 6

**SUMMARY OF MAJOR IN-DEVELOPMENT/PROPOSED MAJOR UPCOUNTRY  
SINGLE FAMILY RESIDENTIAL DEVELOPMENTS  
Market Study of Kauhale Lani  
Pukalani, Maui, Hawaii**

<u>Development/Project</u>	<u>Location</u>	<u>No. of Lots</u>	<u>Comments</u>
Kualono	Pukalani	49	Fully approved. Prices expected at \$300,000-plus. Pre-Sales Delayed.
Village Expansion (near-term)	Hailiimaile	148	Approved. Likely to be offered as finished homes. Sales date is open.
Village Expansion (long-term)	Hailiimaile	1,500 (max.)	Preliminarily proposed. Project is on hold pending revision of master plan. Likely unit count will be less, and include up to 250+ multi family units.
Haleakala Homesteads	Kula	15	Approved. Two increments, with Phase I reserved. Subdivision progress slow.
DHHL Upcountry Projects	Various	502	Infrastructure completed for initial 140 lots & homes, closing to begin in early 2008, remainder to be pursued following Actual density will probably be less.
Maha Village	Kula	24	Approved. All lots were reserved in late 2005, but project now slowed.
Kula 1800 Invst. Partners	Kula	86	Proposed, limited approvals needed, but proving controversial Ag. subdivision.
Kula Ridge	Kula	165	Proposed project with mix of 95 aff. SF homes, 46 mkt. SF, and 24 Ag. Lots.
Kulamalu	Kula	70	Remaining approved inventory in community contained in two projects
Piiholo Farms	Makawao	10	Pending. No reservation data avail.
Misc. Minor Projects	Various	69	Top be contained in 16 small projects as identified by Maui Planning Dept. Some proposed other approved.
<b>Kauhale Lani</b>	<b>Pukalani</b>	<b><u>170</u></b>	<b>Pending. Subject Property.</b>
<b>TOTAL PROPOSED HOMES/LOTS/UNITS</b>		<b>2,808</b>	
Less Multi-family Units		(250)	
Less Subject Lots		(170)	
<b>TOTAL PROPOSED COMPETITIVE SUPPLY</b>		<b><u><u>2,638</u></u></b>	

Note: Excludes the proposed Kula Senior Housing complex, which is to contain 36 living units.

Source: Maui Planning Commission records,, Maui Board of Realtors, Various, and The Hallstrom Group, Inc.

Therefore, the announced/pending/approved inventory will fall short of projected demand by more than 2,222 single family housing "units", or 46 percent of total required supply, during the modeling period. There is substantial, quantifiable market demand in support of the subject subdivision

## **Micro Analysis**

The Upcountry area single family residential real estate market, like most sectors throughout the state, is currently in the midst of slumping market cycle following reaching a upside peak in 2005. The up-cycle activity began in the late 1990s, was set back briefly by 9/11, and reached record levels during each year through mid-decade before retreating in 2006 and further in 2007.

This trending is highly typical of real estate in Hawaii, as evidenced in the cycles of the late 70s/early 80s and late 80s/early 90s, with several years of increasing upward activity reaching a frantic pace in sales and appreciation then slumping dramatically for two to three years before stabilizing and commencing recovery into another upward movement.

In analyzing Upcountry data it is necessary to account for the limited inventory available in the region, which has a tendency to impact the comparison of statistics from year to year.

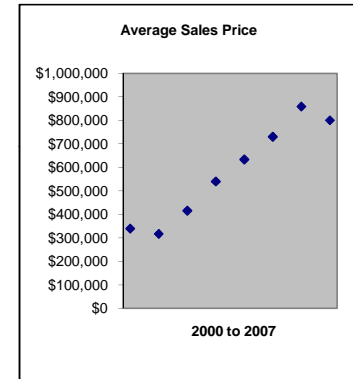
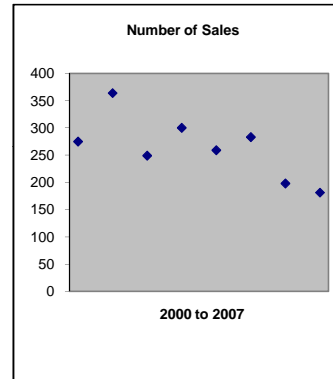
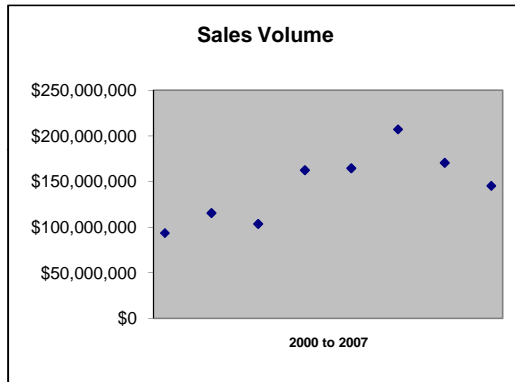
Single family residential market activity data in the study area from 2000 through 2007 are summarized on Table 7. During this period sales volumes more than doubled to \$207.9 million annually in 2005 before declining to a current level of \$145.2 million (based on extrapolation of indicators through October), which is still 50 percent higher than sales in 2000. Average sales prices, despite retreating in 2007 for the first time in seven years, have still more than doubled to \$801,136 since the beginning of the decade, an effective appreciation rate of 13.2 percent compounded annually during the past eight years.

Residential/agricultural lot activity for the same period is displayed on Table 8. The trends are generally similar as for finished homes. However, the lack of consistent supply from year-to-year coupled with the broad range of product (6,000 square foot lots to 100+ acres) plays havoc with the comparability of these indicators over time. Sales volumes plummeted this year after peaking at \$66.2 million in 2006, and have returned to near early decade levels. The current average lot price of \$734,872, while off meaningfully from last year's abnormal

TABLE 7

**SUMMARY OF SUBJECT AREA SINGLE FAMILY RESIDENTIAL MARKET ACTIVITY**  
**Market Study of Kauhale Lani**  
**Pukalani, Maui, Hawaii**

Year	2000	2001	2002	2003	2004	2005	2006	2007
<b>Sales Volume</b>	\$93,528,165	\$115,410,577	\$103,614,680	\$162,157,905	\$164,262,898	\$206,866,450	\$170,226,457	\$145,165,860
Percent Annual Change		23.4%	-10.2%	56.5%	1.3%	25.9%	-17.7%	-14.7%
<b>Number of Sales</b>	275	364	249	300	259	283	198	181
Percent Annual Change		32.4%	-31.6%	20.5%	-13.7%	9.3%	-30.0%	-8.5%
<b>Average Sales Price</b>	\$340,102	\$317,062	\$416,123	\$540,526	\$634,220	\$730,977	\$859,730	\$801,136
Percent Annual Change		-6.8%	31.2%	29.9%	17.3%	15.3%	17.6%	-6.8%



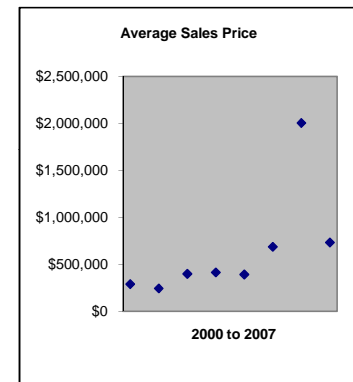
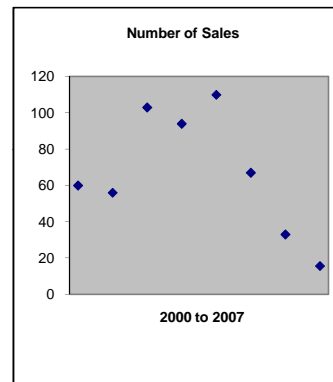
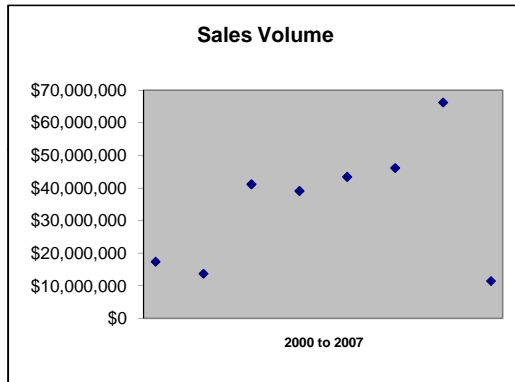
(1) 2007 year-end estimates based on data through May.

Source: Hawaii Information Service, Maui MLS and The Hallstrom Group, Inc.

TABLE 8

**SUMMARY OF SUBJECT AREA VACANT LOT MARKET ACTIVITY**  
**Market Study of Kauhale Lani**  
**Pukalani, Maui, Hawaii**

Year	2000	2001	2002	2003	2004	2005	2006	2007
<b>Sales Volume</b>	\$17,391,000	\$13,716,700	\$41,105,352	\$39,059,500	\$43,382,950	\$46,102,900	\$66,205,500	\$11,464,001
Percent Annual Change		-21.1%	199.7%	-5.0%	11.1%	6.3%	43.6%	-82.7%
<b>Number of Sales</b>	60	56	103	94	110	67	33	16
Percent Annual Change		-6.7%	83.9%	-8.7%	17.0%	-39.1%	-50.7%	-52.7%
<b>Average Sales Price</b>	\$289,850	\$244,941	\$399,081	\$415,527	\$394,390	\$688,103	\$2,006,227	\$734,872
Percent Annual Change		-15.5%	62.9%	4.1%	-5.1%	74.5%	191.6%	-63.4%



(1) 2007 year-end estimates based on data through May.

Source: Hawaii Information Service, Maui MLS and The Hallstrom Group, Inc.

figure, is still up from 2005, and shows a compounded annual appreciation rate of 14.2 percent since 2000.

While there are major short-term concerns in the market, which are projected to continue into 2008-09 before stabilizing and returning to an up-cycle by 2009-10, every historic and forecast indicator points to reasonable to strong market support for the proposed Kauhale Lani project upon its probable offering circa 2010-11.

## **SUBJECT SITE APPROPRIATENESS AND ABSORPTION CONCLUSIONS**

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### **Appropriateness of the Subject Site for the Proposed Use**

The 82.86-acre subject property presents a quality opportunity to meet the existing and projected shortfall in residential real estate in the Upcountry region, specifically addressing the acute community need for local resident housing. It has/is:

- The necessary physical traits (size, shape topography) to support large-scale competitive residential development.
- Ease of access onto the main arterial in the Pukalani community (Old Haleakala Highway via Aeloa road) and nearby access to the newer bypass road.
- Adjacent to and access through the northerly abutting existing suburban development node of Pukalani, in close proximity to the village core.
- Access to nearby existing utility systems.
- An expanding number of long-time regional families with maturing children seeking area housing.
- A natural in-fill location between existing homes and the Hamakua Ditch, the fundamental downslope boundary of Pukalani.
- It is within blocks of the primary existing retail/restaurant/service development in the community.



The proposed Kauhale Lani master plan embodies characteristics that will prove desirable to a wide range of residential purchasers seeking house lots in the subject study area. It maximizes the utilization of urban in-fill/expansion lands by combining residential use-types, permitting varying densities, and implementing planning and architectural guidelines.

## **Subject Absorption Estimates**

Given the evident level of support for the proposed subject inventory as demonstrated by our market study, and that the underlying site is highly appropriate for the envisioned development, it can be concluded the 170 house lots units of Kauhale Lani will achieve reasonable market success upon offering.

This opinion can be demonstrated through summary application of several techniques, as discussed following.

- The Gross Analysis Method. This is both the simplest and most fundamentally insightful method. It is a mere comparison between demand (for additional units) and supply (proposed units) indicators. If there is more potential demand than potential units, it can be asserted there will be sufficient demand to absorb portions or all of the proposed subject units.

As our market analysis demonstrated, the supply of residential units in the Upcountry area will be insufficient to meet forecast regional requirements. The estimated mid-point demand for study area dwelling units over the next 23 years (through 2030) is some 5,294 units; with about 92 percent oriented toward the single family sector, or some 4,860 houses/lots. If all currently proposed single family inventory is built, excluding the subject, the total number would be a maximum of 2,638 home sites; some 2,222 less than demand.

The Upcountry single family sector will be underserved by thousands of lots during the projection period.

This gross analysis indicates the subject units could be absorbed within a several year period, regardless of any additional competitive advantage the inventory may have.

- The Residual Method. In this technique, all of the identified competitive approved/pending single family residential projects in the Upcountry study area are placed on a time-line depicting the sales absorption anticipated by the developers, as evidenced by our market survey, or as can be reasonably assumed through historic activity. To the extent these projects fall short of the forecast periodic demand for units in the study region, or exceed the total demand, an undersupply or oversupply situation respectively exists.

By accounting for the total of the units likely to be built in the competitive market during the projection period, it can be asserted the subject development will "capture" a significant portion of any residual demand. This approach is generally conservative, as it assumes the subject will capture only what is leftover after the other projects garner their anticipated share.

The tabular presentation of this method for the subject lots is shown on Table 9.

Each of the identified sources of competitive additional supply are shown at the top of the table along with the anticipated number of lots we consider likely to be constructed, and their periodic absorption over the projection period timeframe. The total demand forecast is shown at the bottom of the respective table, with the resulting over/under supply totals for each period and the residual demand level for the subject product under several capture rate assumptions.

In no single period is there an oversupply situation. In every period during the 23-year projection time-frame demand will exceed supply without the subject inventory.

Assuming Kauhale Lani begins sales circa 2010, this method indicates the 170 subject lots will require two to six years to be absorbed.

- The Market Shares Method accounts for the probable competitiveness of the subject residential product regardless of the total level of other inventory being offered. In essence, it is an estimate of how much of the total single family residential demand in Upcountry the subject could expect to achieve on an

TABLE 9

**PROJECTION OF SUBJECT UNIT ABSORPTION USING THE RESIDUAL METHOD BASED ON  
TOTAL DEMAND FOR RESIDENTIAL LOTS/HOMES IN THE UPCOUNTRY STUDY AREA**  
Market Study of Kauhale Lani  
Pukalani, Maui Hawaii  
Approved/Announced Units Only, Assuming Mid-Point Demand Trends

Project	TOTAL UNITS	Sales Period					Total
		2008-2010	2011-2015	2016-2020	2021-2025	2026-2030	
<b>Kualono</b>	49	49					49
Market Share Percentage		9%					
<b>Village Expansion</b>	1,648	148	400	400	400	300	1,648
Market Share Percentage		26%	42%	93%	92%	90%	
<b>Haleakala Homesteads</b>	15	15					15
Market Share Percentage		3%					
<b>DHHL Upcountry Projects</b>	502	250	252				
Market Share Percentage		44%	27%				
<b>Mahia Village</b>	24	24					24
Market Share Percentage		4%					
<b>Kula 1800</b>	86		86				86
Market Share Percentage			9%				
<b>Kula Ridge</b>	165	40	125				165
Market Share Percentage		7%	13%				
<b>Kulamalu</b>	70	20	50				70
Market Share Percentage		4%	5%				
<b>Piholo/Other Minor Projects/In-Fill</b>	150	20	30	30	35	35	150
Market Share Percentage		4%	3%	7%	8%	10%	
<b>Totals</b>	<b>2,709</b>	<b>566</b>	<b>943</b>	<b>430</b>	<b>435</b>	<b>335</b>	<b>2,709</b>
<b>Regional SF Lot/Home Demand (mid-pt)</b>	<b>4,863</b>	<b>960</b>	<b>1,060</b>	<b>972</b>	<b>930</b>	<b>941</b>	<b>4,863</b>
<b>Shortage or (Excess) Supply</b>	<b>2,154</b>	<b>394</b>	<b>117</b>	<b>542</b>	<b>495</b>	<b>606</b>	<b>2,154</b>
<b>Potential Residual Subject Demand</b>							
at 100% Capture Rate	2,154	394	117	542	495	606	2,154
at 97.5% Capture Rate	2,100	384	114	528	483	591	2,100
at 95% Capture Rate	2,046	374	111	515	470	576	2,046

Source: Maui County, Developers/Agents, & The Hallstrom Group, Inc.

annual basis in light of locational, pricing, and amenity characteristics.

This "pure competitiveness" technique is generally moderate to optimistic in application and requires some subjective variables, but is perhaps the most appropriate and "classic" approach.

Given the type, location and amenities of the proposed subject product and competitive market, we believe Kauhale Lani could readily achieve an annual market share of 20 to 25 percent of the total competitive demand. This capture rate is reasonable given historic sales standards and the qualities of the limited alternatives.

However, should the market recover more quickly and to a greater degree than presently envisioned, and the supply of competitive inventory lags, the subject could capture a much higher share of the sector and be fully absorbed more rapidly.

Table 10 displays the subject lot market capture absorption forecasts from the minimum and maximum modeling demand perspectives. The sell-out mid-point would equate to an readily achievable 15.7 percent share of total regional single family demand during a mid-point 4.72-year sell-out period. This equates to an average absorption of 36 lots annually (or three lot sales per month).

We consider the stabilized market share rate to be moderate based on the anticipated sales rates of other projects as presented to us through discussion with the developers and review of submitted materials. As shown in the residual method during the anticipated subject sales period of circa 2010 onward, there will be a limited number of projects offering competitive inventory, with most expecting to capture shares at or above the forecast Kauhale Lani share. Just achieving a "fair split" of the demand (regardless of the favorable trait of the subject inventory) will generate capture rates at or above the projected levels.

Based on our analysis, we forecast the 170 single residential subject will be absorbed in circa three to seven years from initial offering, with a mid-point of five years.

TABLE 10

**SUMMARY OF SUBJECT PROJECTED DEMAND LEVELS  
USING THE MARKET SHARES METHOD  
Market Study of Kauhale Lani  
Pukalani, Maui, Hawaii  
Assuming Sales of 184 Subject Lots to Begin in 2010**

<b>Scenario One: Using Minimum Demand Assumptions</b>			
<b>Sales Year</b>	<b>Total Regional Single Family Demand</b>	<b>Effective Subject Share</b>	<b>Indicated Total Subject Absorption</b>
2010	161	10.00%	16
2011	156	14.00%	22
2012	156	18.00%	28
2013	156	22.00%	34
2014	156	22.00%	34
2015	154	23.00%	35
<b>Totals</b>	<b>939</b>	<b>18.11%</b>	<b>170</b>
<b>6.00 Year Absorption</b>			

<b>Scenario Two: Using Maximum Demand Assumptions</b>			
<b>Sales Year</b>	<b>Total Regional Single Family Demand</b>	<b>Effective Subject Share</b>	<b>Indicated Total Subject Absorption</b>
2010	419	12.00%	50
2011	268	16.00%	43
2012	268	20.00%	54
2013	268	8.50%	23
<b>Totals</b>	<b>1,223</b>	<b>13.86%</b>	<b>170</b>
<b>3.43 Year Absorption</b>			

**ANALYSIS MID-POINT**

<b>4.72 Year Absorption</b>	<b>1,081</b>	<b>15.71%</b>	<b>170</b>
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Source: The Hallstrom Group, Inc

These conclusions are based on mid to long-term forecasting models and in consideration of the current down-cycle of the study sector. Certainly, a resurgent up-cycle could more rapidly absorb the subject inventory if the pre-sale program is timed correctly.

## **ECONOMIC IMPACT OF THE PROPOSED DEVELOPMENT**

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The development of the Kauhale Lani will generate significant efforts and expenditures that will favorably impact the Maui economy on both a direct and indirect basis, increasing the level of capital investment, capital growth and capital flow in the region. The project will pump millions of dollars into Upcountry and Central Maui, expanding the economy, widening the tax base and creating stable long-term employment opportunities.

From a direct perspective, the proposed 170-lot residential project will create numerous construction, equipment operator and specialty trade jobs on- and off-site during the planning and emplacement of the infrastructure, and building of the improvements. It is estimated the infrastructure including the park/community center facility will require about 18 months. The completion of the finished homes will take another eight-plus years.<sup>(5)</sup> There will be significant additional employment positions created via the buildings themselves; landscape, service, maintenance, and renovation needs in the course of their use.

Numerous local businesses will enjoy significant profit opportunities arising for contracting companies constructing the improvements, and for local businesses which would supply a substantial portion of the materials needed in the building efforts.

The general island economy also will benefit from the subject development and its employees, which will spend large amounts of wage income in off-site shops, restaurants, and service establishments throughout Maui, and in purchasing goods and services.

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<sup>(5)</sup> Given there are still vacant lots in many older Upcountry subdivisions, it may take many years before the subject is completely built out. We have utilized a ten-year period for reasonable modeling purposes. A longer built-out would not affect stabilized impact levels.

Indirectly, as these wages, profits, and expenditures move through the regional economy, they will have a ripple, or "multiplier," effect--increasing the amount of capital flowing to the entire community as a result of the subject.

Construction, maintenance and other workers earning wages from Kahale Lani and associated off-site efforts will spend the majority of their income on living and entertainment expenses while supporting and patronizing other island businesses, as will the moderate to upper income residents and guests of the community. Much of this spending would then be re-directed by these businesses to other island industries, with significant portions of these secondary profits in turn being put back through the region's economic and tax structure.

These substantial direct and indirect economic impacts associated with the proposed subject project, as quantified in the following sections, are all the result of the capital investment and entrepreneurship necessary to convert a vacant, feral, unused holding into a meaningful residential community. The Maui economy will be meaningfully stimulated by the capital investments and maintenance requirements of the homes and their owners.

### **Capital Investment and Construction Costs**

The subject development will bring an estimated \$139.6 million in direct construction capital into Maui over the ten-year site build-out period utilized for our projections. A breakdown of the basic expense items, their respective costs and expenditure over time is summarized on Table 11. As with all our models, a ten-year total projection timeframe is used depicting the development, absorption and stabilized use of the community over the initial decade.

Also shown are anticipated contractor and supplier profits flowing to local businesses as a result of the project. Infrastructure cost estimates were provided by the develop, with home construction costs estimated by The Hallstrom Group, Inc., based on recent neighbor island residential projects, or as cited on the table.

Infrastructure site work expenses were projected at \$37.6 million total in year-end 2007 dollars, including off-site improvements required, affordable housing commitments, design, and entitlement efforts. The emplacement would require approximately 18 months, concluding by the middle of the second year of the model.

TABLE 11

**CONSTRUCTION COSTS AND CONTRACTOR AND SUPPLIER PROFIT ESTIMATES**  
 Market Study of Kauhale Lani  
 Pukalani, Upcountry Maui Hawaii  
 In Constant Year-End 2007 Dollars

Development Year	1	2	3	4	5	6	7	8	9	10	Totals	
	<b>Infrastructure Emplacement 18 Months (to Mid-Year 2)</b>											
			<b>Lot Sales Five Years (Mid-Year 1 to Mid-Year 6)</b>									
	<b>Begin Pre-Sale (Mid-Year 1)</b>	<b>First Lots Close (Mid 2)</b>	<b>Homes are Built on Lots</b>									
<b>Construction Costs</b>												
Infrastructure/Sitework/Park (1)	\$24,785,084	\$12,768,073									\$37,553,157	
SF Construction -- 184 homes (2)			\$12,000,000	\$13,200,000	\$13,200,000	\$13,200,000	\$13,200,000	\$13,200,000	\$13,200,000	\$10,800,000	\$102,000,000	
<b>TOTAL CONSTRUCTION COSTS</b>	\$24,785,084	\$12,768,073	\$12,000,000	\$13,200,000	\$13,200,000	\$13,200,000	\$13,200,000	\$13,200,000	\$13,200,000	\$10,800,000	\$139,553,157	
<b>CONTRACTOR'S PROFIT</b>	\$2,478,508	\$1,276,807	\$1,200,000	\$1,320,000	\$1,320,000	\$1,320,000	\$1,320,000	\$1,320,000	\$1,320,000	\$1,080,000	\$13,955,316	
<b>SUPPLIER'S PROFIT</b>	\$991,403	\$510,723	\$480,000	\$528,000	\$528,000	\$528,000	\$528,000	\$528,000	\$528,000	\$432,000	\$5,582,126	

(1) Taken from "Kauhale Lani Subdivision Preliminary Budget", September 7, 2007. Includes all on site hard costs, design & entitlement costs, affordable housing commitment, and off-site water system Subdivision infrastructure period estimated at 18 months, commencing at beginning of model and completing by middle of Year 2.  
 (3) Assuming average home construction budget of \$600,000 based on 2,200 square foot house at \$250/SF cost plus \$50,000 site work and landscaping.  
 First homes begin construction early in Year 3 and are finished by year-end.

Source: The Hallstrom Group, Inc.



Building construction costs were estimated at a total of \$102.0 million in current dollars.

The single-family homes were estimated to have a current average construction cost of \$600,000 each, based on a 2,200-square-foot house at \$250 per square foot with an additional \$50,000 per lot in site work and landscaping.

Not included in the totals are indirect costs such as marketing and sales expenses, developer fees, loan interest and other non-real property items. The inclusion of these "soft cost" could result in a total capital investment undertaking of more than \$150 million.

On average, the direct costs of subject development will infuse an anticipated \$14 million annually into the Maui building industry on average over the build-out period. This is the equivalent of a nearly 10 percent boost over recent yearly construction levels. Indirect expenditures could reach an additional \$2 million-plus per year.

## **Employment Opportunities Created**

Based on indicators provided by the construction of comparable sized projects and Hawaii industry averages, we have estimated the demand for on- and off-site, full-time equivalent employment positions associated with laying of initial infrastructure systems, building of the finished homes, and in providing continuing services to the occupied buildings.

The employment opportunities created by the construction of the subject and long-term maintenance, landscaping and renovations will not likely be "new" jobs (requiring new persons to enter the Maui labor pool) but will be enhanced opportunities for construction trade workers, youths reaching employment age, and existing local businesses.

It is assumed the off-site/indirect work created will be steered towards existing Maui supply, equipment providers, and other service companies.

The subject will provide employment opportunities in the construction sector, and supply and building support industries during an estimated ten-year planning, site development and building construction period.

Our employment estimates on are based on full-time equivalent "worker/years," although one worker/year (or circa 2,000 working hours) may be comprised of many employees involved in specialized tasks of a much shorter duration.

Estimates are based on a 10-year modeling period. The associated number of employment opportunities created are displayed on the top of Table 12.

Included in our projections on the table are the full-time equivalent (FTE) off-site and support employment opportunities which will be provided to Maui businesses as a result of the project. Also shown are the total number of maintenance/landscaping workers which will be required to service the project improvements and grounds over time.

The projections are founded on examples provided by various residential developments undertaken on the neighbor islands over the past decade, and via formulae expressing relationships between total worker wages/benefits and construction/operating tasks and costs.

Infrastructure and building construction employment forecasts are taken from discussions with the developer, review of project budgets and ratios of direct costs to job creation (assuming an average wage of \$60,000/year plus benefits equal to 25 percent of wages). Our analysis assumes one worker/year per \$500,000 in construction contract spending for infrastructure, and one worker year per \$250,000 in home construction finish positions.

Operations/maintenance workers associated with the completed homes, including maintenance, landscaping and renovations efforts, were estimated at one full-time equivalent position per 11.3 homes. The average overall pay for these workers is estimated at \$32,000 per year.

Off-site employees were estimated at 40 percent of on-site workers, and are comprised of three groups:

- Numerous off-site building industry positions will also be enhanced by the Kauhale Lani development, including such jobs as administration, office help, material providers, equipment maintenance and specialty tasks. Analysis of Maui County labor trends from 1980 through 2006 demonstrate a

linkage equal to about 20 to 30 percent between the creation of on-site construction positions and direct off-site employment.

- Off-site support businesses, including contractor/retail/counter sales, fuel providers, shipping, storage and professional services will also benefit. A conservative job creation relationship of five to ten percent relative to on-site positions was used (or, one off-site support worker/year for each ten to 20 on-site worker/years).
- Extrapolation of state Department of Business Economic Development and Tourism (DBEDT) data, along with indicators provided by other state agencies and First Hawaiian Bank studies, demonstrate that each Hawaii worker creates demand for services (and related employment) during and directly attributable to the work day at up to a ten percent ratio. These positions include food businesses, providers of tools and trade goods, payroll/financial and insurance businesses, medical requirements and other secondary indirect/off-site employment.

During the 10-year building and use modeling period of the project, the number of worker/years created on- and off-site by the development varies from 36 to 94 positions annually, totaling 775 worker/years over the entire projection timeframe. Of this total, 483 worker/years (an annual average of 48 positions during the ten-year construction period) are direct construction-oriented, 71 are on-going maintenance/operating positions; and 222 are off-site worker requirements.

On a stabilized basis after the modeling timeframe, the project will generate some 21 permanent full-time equivalent and/or enhanced employment opportunities—15 directly related to on-site activities, and 6 indirect positions throughout the island.

The average annual on-site job count during the 10-year subject study period of 54.3 positions represents about a nominal 0.17 percent increase from the total jobs presently available in Maui County (81 additional jobs per year to the average current job count of about 32,500). This number can be readily absorbed by the currently available employment pool.

## **Wage Income Generated**

In accordance with data compiled by the state Department of Labor and Industry Relations and the development team , we have estimated the personal income (in the form of wages) which will flow to Maui workers as a result of the Kauhale Lani project.

The average wage of a full-time infrastructure construction worker is estimated at \$60,000 per year based on DLNR data for late 2007. For finished building construction workers, the average annual pay will also be about \$60,000. Operating and maintenance personnel are forecast to be paid an average of \$32,000 per year on average (about \$16.00 per hour). Off-site building and support industry jobs were estimated to receive an average pay of \$36,000 annually.

Overall project average wages are equal to \$50,545 per worker/year created during the model period, and \$33,879 on a stabilized basis.

Application of these wage estimates to the employment forecasts generates personal income (wage) projections directly resulting from subject development, which were shown at the bottom of Table 12. The wage figures are all presented in constant 2007 dollars, and will undoubtedly escalate over time in accordance with inflationary pressures.

In the first year of development, the "Total Annual Wages Generated" by the subject development effort would be \$3,688,020, increasing to a high of \$4.6 million, as the number of construction workers peak and maintenance positions are created in year 9. After completion of all construction, the on-going maintenance, off-site/indirect and other employment would result in average annual wages of \$711,467 thereafter.

Over the first 10 years of the development and operation period, on- and off-site, direct and indirect worker wages would total \$39.2 million.

## **Development Costs as Profit Income**

While the significant majority of the materials needed to build the subject industrial and commercial structures must be imported to Maui, a portion of the construction costs spent in the development will

flow to local businesses in the form of contractor profits and supplier profits.

Typically, within the industry net contractor profit margins are expected to be at 8 to 20 percent of total construction costs. We have used a conservative ten percent figure. Supplier profits were extrapolated at four percent of total costs; generally supplies/materials equate to 50 to 60 percent of total cost, with a profit margin for the supplier of six to eight percent.

Application of these estimates to the forecast development parameters of the subject project was shown on Table 11.

The total Contractor's Profit ranges from \$1.1 to \$2.5 million per year, with a cumulative profit of \$14 million over the ten-year construction period. The total annual Supplier's Profit ranges from a low of \$432,000 to a high of \$991,403, and equates to \$5.6 million over the development time-frame.

## **Population, Income and Expenditures**

The 170 subject units will be purchased by a variety of local residents, second homeowners and in-migrants. Together these groups and guests will contribute to the Maui economy during the use of the subject units in the form of discretionary expenditures and (for full-time residents) household income levels.

Table 13 displays our population, discretionary expenditures, and household income estimates for the subject project.

For the single-family homes, it was estimated that 90 percent would be used by full-time residences and 10 percent by part-time/second home users. For the full-time component, an average household size of 3.2 persons was assumed. For the part-time users, it was estimated the homes would be occupied 20 percent of the time with an average party size of 3.4 persons.

At built-out, the total stabilized de facto population of the project would be some 564 persons, comprised of 490 full-time residents, 58 second-home owners, and a guest allowance of 17 persons (one per every 10 finished homes).

TABLE 12

**EMPLOYEE JOB COUNT AND WAGE ESTIMATES**  
 Market Study of Kauhale Lani  
 Pukalani, Upcountry Maui Hawaii  
 In Constant Year-End 2007 Dollars

Development Year	1	2	3	4	5	6	7	8	9	10	Total 1 Through 10	Stabilized
<b>Worker Requirements (1)</b>												
Infrastructure/Sitework (2)	50	26									75	
SF Home Construction (3)			48	53	53	53	53	53	53	43	408	
Maintenance/Landscaping (4)			2	4	6	8	10	12	14	15	71	15
Off-Site Employees (5)	20	10	20	23	23	24	25	26	27	23	222	6
<b>TOTAL EMPLOYMENT CREATED</b>	<b>69</b>	<b>36</b>	<b>70</b>	<b>79</b>	<b>82</b>	<b>85</b>	<b>88</b>	<b>91</b>	<b>94</b>	<b>82</b>	<b>775</b>	<b>21</b>

<b>Worker Wages</b>													
Infrastructure/Sitework (6)	\$2,974,210	\$1,532,169										\$4,506,379	
Home & Unit Construction (6)			\$2,880,000	\$3,168,000	\$3,168,000	\$3,168,000	\$3,168,000	\$3,168,000	\$3,168,000	\$2,592,000		\$24,480,000	
Maintenance/Landscaping (7)				\$120,000	\$186,667	\$253,333	\$320,000	\$386,667	\$453,333	\$490,667		\$2,210,667	\$490,667
Off-Site Employees (9)	\$713,810	\$367,721	\$715,200	\$814,320	\$844,320	\$874,320	\$904,320	\$934,320	\$964,320	\$842,880		\$7,975,531	\$220,800
<b>TOTAL ANNUAL WAGES PAID</b>	<b>\$3,688,020</b>	<b>\$1,899,889</b>	<b>\$3,595,200</b>	<b>\$4,102,320</b>	<b>\$4,198,987</b>	<b>\$4,295,653</b>	<b>\$4,392,320</b>	<b>\$4,488,987</b>	<b>\$4,585,653</b>	<b>\$3,925,547</b>		<b>\$39,172,576</b>	<b>\$711,467</b>

- (1) All job counts expressed as "full-time" equivalent positions.
- (2) Estimated at one worker/year per \$500,000 in contract spending.
- (3) Estimated at one worker/year per \$250,000 in contract spending, or 2.4 worker-years for each single family homes.
- (4) Estimated at one worker/year for each 12 houses. Includes workers doing landscaping, repair, and renovation.
- (5) Includes all off-site jobs created by work efforts at the project; direct and indirect. Estimated at 0.4 off-site positions per on-site position.
- (6) Average annual wage of \$60,000/worker year.
- (7) Average annual wage of \$32,000/worker year.
- (8) Average annual wage of \$36,000/worker year.

Source: Various, and The Hallstrom Group, Inc.

TABLE 13

**DE FACTO POPULATION, DISCRETIONARY EXPENDITURES AND RESIDENT HOUSEHOLD INCOME**  
**Market Study of the Proposed Kauhale Lan**  
**Pukalani, Upcountry Maui, Hawai**  
**In Constant Year 2005 Dollars**

Development Year	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>Stabilized 10</u>
<b><u>Cumulative Residential Development</u></b>								
SF Home Construction	<u>20</u>	<u>22</u>	<u>22</u>	<u>22</u>	<u>22</u>	<u>22</u>	<u>22</u>	<u>18</u>
Total Finished Homes	20	42	64	86	108	130	152	170
<b><u>Average Daily Resident/Guest Population</u></b>								
SF Full-Time Residents (1)	58	121	184	248	311	374	438	490
SF Part-Time Residents (2)	7	14	22	29	37	44	52	58
Guests (3)	<u>2</u>	<u>4</u>	<u>6</u>	<u>9</u>	<u>11</u>	<u>13</u>	<u>15</u>	<u>17</u>
Total De Facto Population	66	139	212	286	359	432	505	564
Total Full-Time Resident Population	58	121	184	248	311	374	438	490
Estimated Public School Children (4)	4	9	14	19	24	28	33	37
<b>RESIDENT DISCRETIONARY</b>								
(TAXABLE) EXPENDITURES (5)	\$1,875,441	\$3,938,426	\$6,001,411	\$8,064,395	\$10,127,380	\$12,190,365	\$14,253,350	\$15,941,247
Total Years 3 -10	\$72,392,015							
<b>FULL-TIME RESIDENT INCOME (6)</b>								
Total Years 3 -10	\$2,456,568	\$5,158,793	\$7,861,018	\$10,563,242	\$13,265,467	\$15,967,692	\$18,669,917	\$20,880,828
Total Years 3 -10	\$94,823,525							

(1) 90 percent of homes estimated to be used as full-time residences, with average household size of 3.2 persons.

(2) 10 percent of homes estimated to be used as part-time (second home) residences, occupied 20% of time with average party size of 3.4 persons.

(3) Estimated average guest population (not included in full-time or part-time categories) of 1 guest per 10 finished homes.

(4) Persons enrolled in public schools, estimated using DOE formula for single family homes (for every SF home there is .109 elementary, .040 middle school and .069 high school pupils).

(5) Estimated at 60% of full-time resident household income, and at \$125 per capita daily for part-time residents and guest populations.

(6) Estimated at \$136,476 annually per full-time resident household, twice the 2007 Maui average.

Source: Various, and The Hallstrom Group, Inc

Using the current State of Hawaii Department of Education formula, it is estimated that about 37 members of the full-time resident population (or 7.55 percent) will be juveniles attending public schools. The DOE estimates each new single-family home results in .109 public elementary students, .040 middle school pupils, and .069 high schoolers. The total attendance projection per home built is thus 0.218 public school students. Given the type, ownership and demographics forecast for Kauhale Lani, the effective public school load may be moderately overstated.

The population of the project will place significant discretionary expenditure dollars into the Maui economy. In light of the cost of the finished homes, the residents and other users will be in the moderate to upper household income brackets with substantial available income for such spending. The second/vacation home and guest users will further contribute to the high amount of discretionary funds.

We estimate that full-time resident households will spend about 60 percent of their total income on local discretionary items based on the most recent data. The daily per capita spending by second-home users, and guests in the Maui economy will be on average \$125, which is moderately below what the typical Maui visitor spends daily on non-lodging purchases (commensurate with the subject suburban location and project quality). This pays for all food, entertainment, household goods, locally purchased fixtures and furnishings, utilities, clothing and other daily items.

By build-out, the total resident owner/guest discretionary expenditures made by subject project users in the local market will be at \$15.9 million annually on a stabilized basis, in 2007 dollars. During the 10-year development and operation model period, the total sum of these expenditures will be \$72.4 million.

The total full-time resident income amount was quantified for use in estimating discretionary expenditures and state income taxes to be paid. In order to conventionally qualify for a home with prices likely for the subject product, a household income about twice the island wide average (or \$136,476) per year is minimally necessary. We recognize this amount could range widely upwards, and consider this projection moderate.

On a stabilized basis after build-out, the total annual full-time taxable resident income at the subject would be some \$20.9 million. Some of



the resident and virtually all of the second-home and guest expenditures will be "new" dollars on Maui, providing a true economic expansion.

### **Summary of Direct, Local Economic Impacts**

The various direct, local economic impacts which will flow to the subject region as a result of the subject development are summarized on Table 14.

The wages, profits and discretionary expenditures figures are taken from previously presented tables. The home maintenance, repairs and upgrades revenues were calculated based on an estimated average of \$1,000 per unit monthly beginning in year 4, or \$2.0 million total annually on a stabilized basis.

The annual Total Base Economic Impact increases from \$7.2 million in year 1 of the development effort to a high of \$23.4 million in year 10 (in 2007 dollars). Over the decade long development and operation modeling period, the total is \$140.1 million. Fueled by home maintenance and resident/guest expenditures, the estimated stabilized annual base impact thereafter is \$18.7 million.

These dollars will be spent, then re-spent, on goods and services on the island, diminishing in impact on the local economy with each turnover as a portion flows off Maui for goods, services and financing commitments. First Hawaiian Bank studies have concluded the appropriate economic multiplier rates in Hawaii are from 1.2 to 3.5 times (or 20 to 250 percent) of the base impact amount. Mainland studies (by the Urban Institute and others) tend toward the upper end of this range, and reach multipliers as high as 4.0.

Due to the need to import more than 85-plus percent of supplies/goods used on Maui, the multiplier impact for the island is not as great as for mainland locales, particularly for construction-based expenditures. We have therefore tested multiplier rates at the mid-point of the market spectrum, ranging from 1.5 to 3.5 times.

On a conservative basis, using a relatively low-end multiplier effect ratio of 2.0, the total overall direct impact on the Maui island economy resulting from the Kauhale Lani project would be \$280.3 million over the 10-year projection period. On a stabilized annual basis thereafter, the overall impact would be at \$37.4 million.

TABLE 14

**SUMMARY OF ECONOMIC IMPACTS ASSOCIATED WITH DEVELOPMENT**  
**Market Study of the Proposed Kauhale Lani**  
**Pukalani, Upcountry Maui, Hawaii**  
**In Constant Year 2005 Dollars**

Development Year	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<b>Total Years 1 Through 10</b>	<b>Stabilized</b>
<b>ANNUAL WAGES GENERATED</b>	\$3,688,020	\$1,899,889	\$3,595,200	\$4,102,320	\$4,198,987	\$4,295,653	\$4,392,320	\$4,488,987	\$4,585,653	\$3,925,547	\$39,172,576	\$711,467
<b>CONTRACTOR'S PROFIT</b>	\$2,478,508	\$1,276,807	\$1,200,000	\$1,320,000	\$1,320,000	\$1,320,000	\$1,320,000	\$1,320,000	\$1,320,000	\$1,080,000	\$13,955,316	
<b>SUPPLIER'S PROFIT</b>	\$991,403	\$510,723	\$480,000	\$528,000	\$528,000	\$528,000	\$528,000	\$528,000	\$528,000	\$432,000	\$5,582,126	
<b>HOME MAINTENANCE, REPAIRS AND UPGRADES (1)</b>				\$504,000	\$768,000	\$1,032,000	\$1,296,000	\$1,560,000	\$1,824,000	\$2,040,000	\$9,024,000	\$2,040,000
<b>DISCRETIONARY EXPENDITURES</b>			\$1,875,441	\$3,938,426	\$6,001,411	\$8,064,395	\$10,127,380	\$12,190,365	\$14,253,350	\$15,941,247	\$72,392,015	\$15,941,247
<b>TOTAL BASE ECONOMIC IMPACT</b>	<u>\$7,157,932</u>	<u>\$3,687,420</u>	<u>\$7,150,641</u>	<u>\$10,392,746</u>	<u>\$12,816,397</u>	<u>\$15,240,049</u>	<u>\$17,663,700</u>	<u>\$20,087,352</u>	<u>\$22,511,003</u>	<u>\$23,418,793</u>	<u>\$140,126,033</u>	<u>\$18,692,713</u>
<b>Multiplier Effect Ratio</b>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>	<u>2.0</u>
<b>TOTAL OVERALL IMPACT</b>	<b>\$14,315,864</b>	<b>\$7,374,839</b>	<b>\$14,301,282</b>	<b>\$20,785,491</b>	<b>\$25,632,794</b>	<b>\$30,480,098</b>	<b>\$35,327,401</b>	<b>\$40,174,704</b>	<b>\$45,022,007</b>	<b>\$46,837,587</b>	<b>\$280,252,067</b>	<b>\$37,385,427</b>

(1) Estimated at \$1,000 per unit per month, beginning in Year 4.

Source: Various, and The Hallstrom Group, Inc.

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## **PUBLIC COSTS/BENEFITS ASSESSMENT**

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The purpose of this analysis is to delineate the direct areas in which the proposed subject residential development will potentially impact the sphere of public agency resources, and quantify (where possible) the costs of providing expanded services to the project, versus the economic benefits that accrue to the community through an increase in local and state tax payments.

For most developments, potential direct costs to governmental services and programs include:

- Police Protection
- Fire Protection
- Public Oversight Agencies
- Infrastructure Services
- Recreational Demands
- Educational Needs
- Infrastructure Costs
- Various Other Services and Financial Commitments

However, as a privately built master planned residential community many of these costs will not be increased on the state or county levels as a direct result of the proposed Kauhale Lani. There will be minorly increased educational or recreational needs directly attributable to the subject development; the major off-site public infrastructure items (roadways and primary water/sewer mains) are already in place; and the development will require no specific public subsidies, welfare services, bonding or capital improvements.

Direct tax benefits to the state and county coffers will primarily flow from the project and its operation over time from three major sources:

- Real Property Taxes
- Gross Excise Tax Receipts
- State Income Taxes

Some cost/benefit issues are considered as off-setting, or "a wash," as the cost of the services to the government is theoretically directly reimbursed in the form of user fees. Building permits and utility hook-up fees are two prime examples. Other such items include workers compensation premiums and benefits, utility operations and associated

use billing rates, and business oversight/registration verses licensing fees. These items are excluded from this study.

A concern of this analysis is the integration of the subject project into the overall state and Maui governmental services plan on both an actual and pro rata perspective.

From an actual public service cost perspective to Maui and state agencies, the subject will represent only a fraction of the county and state resort plant and overall urban lands in use. Given the vast number of housing units, resorts, businesses, and agricultural lands on the island, it is difficult to assert that of themselves the subject users will create the need for meaningful expansion of existing public services.

No new schools, parks, highways, recreational facilities, service agencies, hospitals, or other public enterprises will be required specifically because of this project. The impact on the total regional land base will be minimal. Public safety facilities in Pukalani and Makawao are reasonably proximate, generally have the personnel and equipment to service the businesses and buildings in the subdivision, and will expand with overall community growth over the next decade as the project is built.

However, the need for additional services is a cumulative effect, each project, each resident, tourist and, to a lesser degree, business adds a little bit to the community base until increased "need thresholds" are reached.

In regard to some services, the effective actual impact may not be apparent from a cost perspective, merely creating nominally greater demands which can be readily met through existing agencies and facilities without the need for additional workers or funds.

Our analysis of Maui County and state budgets indicate the actual effect of governmental services relating to the subject would not create the need to expand county and state services in and of itself.

As an alternative to actual cost estimates, which are often disparate as they inherently cannot provide for unexpected and/or atypical items, it is most common to project public costs on a per capita allocation.

This approach is generally appropriate for residential developments, as the substantial portion, but not entirety, of public costs and services generally accrue to where a person lives.

Government services are holistic in nature, providing a foundation throughout a community, regardless of actual, specific impact on any given land holding. A resort development or business may not have a need for parks or schools, but they are essential to the patrons and workers and create the climate in which the resort or business operates. Similarly, government administration, capital projects and public welfare items may have no direct relation to a particular project, but provide the economic underpinnings that enhances overall economic success.

In order to meaningfully quantify public costs that may be associated with the subject development, we have therefore looked at the issue from both perspectives, on an actual cost basis and on a per capita allocation basis.

## **Public Costs**

### **Actual Costs**

Maui County will directly incur several areas of cost increases as a result of the Kauhale Lani, primarily in regards to emergency services. Based on analysis of response frequencies, time/cost data, and past discussions with affected agencies, we have made general allowances for these items as summarized below.

Police/Enforcement -- Using a base cost allowance of \$200 per hour for a responding officer (wages and benefits for responding/support/administrative personnel, overhead, capital costs, and amortized equipment), we estimate the annual additional police/enforcement cost to Maui County on a stabilized basis after project build-out will be about \$146,400.

This is comprised of:

- Three miscellaneous calls per week at an average of two total officer hours each. (2 hrs. x \$200/hr. x 3 x 52 = \$62,400)
- Three "minor" incidents/traffic accidents each month requiring on average five hours of officer time. (5 hrs. x \$200 x 3 x 12 = \$36,000)

- One "major" incidents/traffic accident each month requiring on average of 20 hours of officer time. (20 hrs. x \$200 x 12 = \$48,000)

This demand of 732 hours is the equivalent to 36.6 percent of one new officer position (2,000 total hours).

Fire Protection -- Our forecasts are based on a crew cost of \$1,000/hour (four to five firemen, wages, benefits, overhead and amortized equipment). Using this method, we estimate that at build-out, the yearly additional costs at \$132,000 per year.

This is comprised of:

- One "minor" fire/rescue event per month requiring one crew for a total of three hours (response and/or clean-up). (3 hrs. x \$1,000/hr. x 12 = \$36,000)
- One "major" fire/rescue event every two months requiring two crews for a total of eight hours each. (2 crews x 8 hrs. x \$1,000/hr. x 6 = \$96,000)

Emergency Medical Response -- This is based on average cost per response of \$750, with an average of two calls per month. The total cost to the county would be \$18,000 per year on a stabilized basis after build-out. (\$750/response x 2 per month x 12 = \$18,000)

Road Maintenance -- An allowance of \$50,000 per year was made for this item to provide maintenance to Old Haleakala Highway, nearby roads and drainage systems.

The total annual "actual" cost to the county on a stabilized basis at build out of the subject development is estimated at \$346,000. This cost would be reached on an escalating basis over time, beginning in year 3 and increasing as the community is finished and populated.

State of Hawaii costs would include nearby bypass highway frontage work, inspections and other minor oversight duties. An allowance of \$100,000 per year was made for these items, increasing to the stabilized level as the project is built out.

Additionally, using the DOE formula some 37 resident children would enter the public school system. The cost per student in public schools

statewide is presently at about \$11,000 per year, equating to \$407,000 in maximum student costs to the state each year as a result of Kauhale Lani development.

The total state costs on an "actual" stabilized basis would be about \$507,000 annually.

**Per Capita Costs**

An alternative method for determining public costs is through per capita expenditures incurred by the State of Hawaii and Maui County in accordance with the de facto population area of the jurisdiction. This is founded on the principal that each individual on the island equitably benefits from all governmental costs, regardless of type or focus throughout the day, with each new member of the community (whether resident or visitor) creating a proportionate new cost burden in their daily home and working life.

As previously noted, this is the standard method for resort and residential application as the majority of costs are viewed as accruing to the housing or lodging aspects of a persons lifestyle and land use. We have included it as a means of demonstrating the overall public fiscal impact potential of the proposed subject project even when viewed from this maximum potential cost perspective. We consider this approach as setting the absolute upper limit on all public costs (actual, indirect and inferred).

However, not all public costs accrue solely to a persons place of residence. Government services and oversight are also a vital component of the commercial community, and industrial, resort and retail/service land uses must also bear a proportionate share of their operational and consumer-related public expenses.

We have therefore made an allowance that two-thirds of each persons per capita governmental services impact (whether resident or tourist) is attributable to their dwelling place; the other third to the non-residential uses they patronize.

According to the state Department of Budget and Finance database, the state expects to spend a total of \$10.2 billion on services, salaries, infrastructure, capital improvements and financing in fiscal 2008. The total de facto population in the state on an average daily basis at year-end 2007 was about 1,425,000 persons, including residents, tourists, and military personnel.

The per capita expenditure by the state will thus be about \$7,215 for 2008, an increase of about 3.6 percent from the 2007 level of \$6,960 per member of the de facto population in the islands. From 1979 through 2007, state government expenditures increased at a rate of over four percent annually compounded.

The stabilized average de facto population on-site at the subject at build-out will be 564 persons, a figure reached in year 10 of the development model. Using the allocated state cost per de facto "resident" of \$4,762 per year in allocated costs (\$7,215 in total per capita costs times a 66 percent allocation to the dwelling unit), the total annual "costs" to the state purse at stabilization by the project using the per capita allowance method would be \$2.7 million in constant year 2007 dollars.

Analyzed on a similar basis, Maui County's total budget for the local government in fiscal year 2008 is \$573.6 million, which represents an escalation over time of more than four percent compounded annually since 1995.

The current de facto population in Maui County is some 185,000 persons. The resulting de facto per capita county expenditure for this year is therefore \$3,100. Applying the 66 percent allocation attributable to the residential land use for each subject de facto resident, results in a per capita allocated county government cost of \$2,046 per person.

Per capita, Kauhale Lani, at build out, would represent about \$1.1 million annually in costs to the county government on a stabilized basis (564 de facto residents x \$2,046).

Total Public Costs -- On a per capita allowance cost basis, the state and county expenses associated with the subject development would range from \$441,614 in year 3 of the project (the first year of home occupancy) to a stabilized maximum of \$3,753,723 at build-out in year 10 and beyond, in constant 2007 dollars.

On an actual cost basis, which we acknowledge may be an atypical perspective and a minimized accounting of direct expenditures, the total governmental costs at build-out to the state and county would be \$853,000 annually.



**Public Fiscal Benefits**

Real Property Taxes -- Property taxes paid by landowners in the subject project were calculated using the 2007 tax rates for both land and buildings, improved or unimproved.

The assessed values for the improvements were based upon the estimated direct costs for each home, plus an allowance of 25 percent for indirect, financing, profits and other costs which would inure to the structures. The total estimated assessed values of the 170 finished homes upon completion is \$133.5 million.

The assessed values for the land component were estimated at \$10.4 million (83 acres at \$125,000 per acre) for the site in its un-entitled pre-developed state during year 1 of our model. This equates to an underlying assessed land value equal to \$60,926 per proposed unit.

Following subdivision in year 2, the house lots, with a developer-estimated value of \$400,000 each, would be taxed at rate of \$5.35 per \$1,000 until sold and built-upon.

After construction of the finished houses, the properties (land and improvements) were assumed taxed at a rate of \$3.43 per \$1,000 in value. This is a melded assessment rate reflecting a mix of properties under the standard mill rate of \$4.85 for improved residential and those paying the "homeowners" rate of \$2.00 per \$1,000 in assessed value. Maui County's creation of a deeply discounted "homeowners" rate for property owners occupying a principal residence was intended to ameliorate the effect of rapidly increasing property values on local residents. This discounted rate requires other property owners to subsidize a portion of the homeowners' cost of county services. Should fewer subject owners qualify for the discounted homeowners rate, or that rate be changed over time (lessening the discount from standard levels), the proceeds to Maui County could increase substantially.

All real property value of the subject holding is assumed to be vested in the completed "salable" and operating components, with no assessment placed against open spaces, roads, or other systems.

The total real property tax to be paid to Maui County in 2007 dollars ranges from \$55,413 in year 1 of development, to a stabilized level of \$691,145 at build-out in year 10 and beyond. The aggregate real

property taxes paid over the 10-year study time-frame will be \$4.75 million.

State Income Tax -- The state will receive income taxes from three sources:

- the wages of the workers associated with the construction and maintenance of the Kauhale Lani components;
- the household incomes of full-time residents in the community; and
- the corporate profits from contractors and suppliers serving the construction phase of the development, and as generated by on-going maintenance and use.

According to DBEDT data, individual State of Hawaii income tax liability as a ratio to gross income has generally ranged from 5.5 to 6.0 percent during the past decade, with the more current figures tending toward the mid to upper-end of the range. We have employed an effective tax rate reflecting the most current filing years available of 5.82 percent of gross income for individual workers and full-time residents.

The effective tax rate for the corporate income is estimated at 2.25 percent of gross operating profits, based on available DBEDT statistics.

The total income tax revenues to be received by the state are projected at \$251,973 in the first year of construction increasing to a maximum level at year 10 of \$1.5 million annually in constant 2007 dollars.

On a stabilized basis, after build-out, the permanent maintenance workers, off-site workers, and full-time project residents would pay an annual state income tax of \$1.3 million. Over the 10-year modeling period, the cumulative income taxes paid are estimated at \$8.2 million.

We have not included any corporate income or other taxes which will be paid by the developers as a result of their profits from undertaking the subject development, or from the secondary jobs created by the discretionary spending of workers and businesses. Such items have the potential to be substantial contributions to the state coffers.

State Gross Excise Tax -- This 4.166 percent of expenditures tax was applied against:

- the total estimated construction contract costs;
- the total allocated gross sales maintenance, landscaping and renovations operations; and
- the discretionary expenditures of the de facto resident and worker populations of the subject.

The anticipated state excise tax receipts arising from the subject development grow from an estimated \$1.1 million in the first year of development to a peak of \$1.3 million. Over the 10-year study period, the receipts total \$10.2 million and stabilize at circa \$1.3 million per year.

We have not included any excise tax revenues associated with the direct, local "multiplier effect" expenditures on Maui, or those created in the secondary market by the suppliers to the maintenance operating or secondary worker expenditures.

Total Public Benefits (Revenues) -- In constant 2007 dollars, the aggregate annual tax revenues flowing from the subject development at full project build-out range from:

- \$55,413 to \$691,145 per year for Maui County, stabilizing over time at the higher figure, totaling \$4.75 million over the 10-year development projection model;
- \$709,912 to \$2.8 million annually for the State of Hawaii, stabilizing at \$2.6 million per year, and cumulatively at \$18.4 million over the 10-year forecast period; and
- \$1.07 to \$3.49 million per year for total tax receipts (county and state), totaling \$23.13 million for the initial 10 years of the Kauhale Lani community, and stabilizing at \$3.26 million per year.

*Correlation*

Our public cost/benefit assessment model is displayed on Table 15, depicting the correlation of public service costs (per capita allocation basis) with the anticipated tax revenue benefits.

TABLE 15

**PUBLIC COST/BENEFIT SUMMARY TABLE**  
**Market Study of the Proposed Kauhale Lani**  
**Pukalani, Upcountry Maui, Hawaii**  
**In Constant Year 2005 Dollars**

Development Year	1	2	3	4	5	6	7	8	9	10	Total Years 1 Through 10	Stabilized
<b><u>PUBLIC BENEFITS (Revenues)</u></b>												
<b>1. REAL PROPERTY TAXES</b>												
Cumulative Assessed Values (1) (2)												
Improvements			\$15,000,000	\$31,500,000	\$48,000,000	\$64,500,000	\$81,000,000	\$97,500,000	\$117,300,000	\$133,500,000		\$133,500,000
Land	\$10,357,500	\$68,000,000	\$68,000,000	\$68,000,000	\$68,000,000	\$68,000,000	\$68,000,000	\$68,000,000	\$68,000,000	\$68,000,000		\$68,000,000
<b>Total Assessed Value</b>	\$10,357,500	\$68,000,000	\$83,000,000	\$99,500,000	\$116,000,000	\$132,500,000	\$149,000,000	\$165,500,000	\$185,300,000	\$201,500,000		\$201,500,000
<b>TOTAL REAL PROPERTY TAXES</b>	<b>\$55,413</b>	<b>\$363,800</b>	<b>\$399,890</b>	<b>\$439,589</b>	<b>\$479,288</b>	<b>\$518,987</b>	<b>\$558,686</b>	<b>\$598,385</b>	<b>\$649,403</b>	<b>\$691,145</b>	<b>\$4,754,586</b>	<b>\$691,145</b>
<b>2. STATE INCOME TAXES</b>												
Taxable Personal Income	\$3,688,020	\$1,899,889	\$6,051,768	\$9,261,113	\$12,060,004	\$14,858,896	\$17,657,787	\$20,456,679	\$23,255,570	\$24,806,375	\$133,996,101	\$20,880,828
Taxable Corporate Profits	\$1,659,133	\$854,705	\$1,027,544	\$1,358,163	\$1,585,581	\$1,813,000	\$2,040,418	\$2,267,837	\$2,495,255	\$2,513,325	\$17,614,959	\$1,757,325
Personal Taxes Paid	\$214,643	\$110,574	\$352,213	\$538,997	\$701,892	\$864,788	\$1,027,683	\$1,190,579	\$1,353,474	\$1,443,731	\$7,798,573	\$1,215,264
Corporate Taxes Paid	\$37,330	\$19,231	\$23,120	\$30,559	\$35,676	\$40,792	\$45,909	\$51,026	\$56,143	\$56,550	\$396,337	\$56,550
<b>TOTAL STATE INCOME TAXES</b>	<b>\$251,973</b>	<b>\$129,804</b>	<b>\$375,333</b>	<b>\$569,555</b>	<b>\$737,568</b>	<b>\$905,580</b>	<b>\$1,073,593</b>	<b>\$1,241,605</b>	<b>\$1,409,617</b>	<b>\$1,500,281</b>	<b>\$8,194,910</b>	<b>\$1,271,814</b>
<b>3. STATE GROSS EXCISE TAX</b>												
Taxable Transactions												
Construction Contracts	\$24,785,084	\$12,768,073	\$12,000,000	\$13,200,000	\$13,200,000	\$13,200,000	\$13,200,000	\$13,200,000	\$13,200,000	\$10,800,000	\$139,553,157	
Disposable Income Purchases	\$2,212,812	\$1,139,934	\$4,032,561	\$6,399,818	\$8,520,803	\$10,641,787	\$12,762,772	\$14,883,757	\$17,004,742	\$18,296,575	\$95,895,561	\$15,941,247
Home Maintenance				\$504,000	\$768,000	\$1,032,000	\$1,296,000	\$1,560,000	\$1,824,000	\$2,040,000	\$9,024,000	\$2,040,000
Total Taxable Transactions	\$26,997,896	\$13,908,007	\$16,032,561	\$20,103,818	\$22,488,803	\$24,873,787	\$27,258,772	\$29,643,757	\$32,028,742	\$31,136,575	\$244,472,718	\$31,136,575
<b>TOTAL STATE EXCISE TAX</b>	<b>\$1,124,732</b>	<b>\$579,408</b>	<b>\$667,916</b>	<b>\$837,525</b>	<b>\$936,884</b>	<b>\$1,036,242</b>	<b>\$1,135,600</b>	<b>\$1,234,959</b>	<b>\$1,334,317</b>	<b>\$1,297,150</b>	<b>\$10,184,733</b>	<b>\$1,297,150</b>
<b>TOTAL GROSS PUBLIC REVENUES</b>												
To Maui County (Item #1)	\$55,413	\$363,800	\$399,890	\$439,589	\$479,288	\$518,987	\$558,686	\$598,385	\$649,403	\$691,145	\$4,754,586	\$691,145
To State (Items #2 & 3)	\$1,376,706	\$709,212	\$1,043,249	\$1,407,080	\$1,674,451	\$1,941,822	\$2,209,193	\$2,476,564	\$2,743,935	\$2,797,431	\$18,379,643	\$2,568,964
<b>AGGREGATE TAX REVENUES</b>	<b>\$1,432,118</b>	<b>\$1,073,012</b>	<b>\$1,443,139</b>	<b>\$1,846,669</b>	<b>\$2,153,739</b>	<b>\$2,460,809</b>	<b>\$2,767,879</b>	<b>\$3,074,949</b>	<b>\$3,393,338</b>	<b>\$3,488,576</b>	<b>\$23,134,229</b>	<b>\$3,260,109</b>
<b><u>PUBLIC COSTS (Expenses)</u></b>												
By Maui County			\$124,373	\$261,182	\$397,992	\$534,802	\$671,612	\$808,421	\$945,231	\$1,057,166	\$4,800,779	\$1,057,166
By State of Hawaii			\$317,242	\$666,208	\$1,015,174	\$1,364,140	\$1,713,106	\$2,062,073	\$2,411,039	\$2,696,556	\$12,245,539	\$2,696,556
<b>TOTAL PUBLIC COSTS</b>			<b>\$441,614</b>	<b>\$927,390</b>	<b>\$1,413,166</b>	<b>\$1,898,942</b>	<b>\$2,384,718</b>	<b>\$2,870,494</b>	<b>\$3,356,270</b>	<b>\$3,753,723</b>	<b>\$17,046,318</b>	<b>\$3,753,723</b>
<b><u>TOTAL NET PUBLIC BENEFITS</u></b>												
To Maui County	\$55,413	\$363,800	\$275,517	\$178,407	\$81,296	(\$15,815)	(\$112,926)	(\$210,036)	(\$295,828)	(\$366,021)	(\$46,193)	(\$366,021)
To State of Hawaii	\$1,376,706	\$709,212	\$726,007	\$740,872	\$659,277	\$577,682	\$496,087	\$414,491	\$332,896	\$100,874	\$6,134,104	(\$127,593)
<b>AGGREGATE NET BENEFITS</b>	<b>\$1,432,118</b>	<b>\$1,073,012</b>	<b>\$1,001,525</b>	<b>\$919,279</b>	<b>\$740,573</b>	<b>\$561,867</b>	<b>\$383,161</b>	<b>\$204,455</b>	<b>\$37,068</b>	<b>(\$265,147)</b>	<b>\$6,087,911</b>	<b>(\$493,614)</b>

Source: The Hallstrom Group, Inc

Table 16 summarizes our costs/benefits findings on both an actual cost and per capita allowance basis for the subject development.

Under the "actual" costs analysis method, the State of Hawaii and Maui County will enjoy net cash flow benefits from the subject development every year and as stabilized.

However, using the "per capita" approach, and assuming the widespread claim of the Homeowner's real property tax rate/exemption at its current level, the costs to the county of providing comprehensive community services to the Kauhale Lani population will exceed real property tax receipts by year 6 of the model, stabilizing at a negative \$366,021 per year.

The state net costs/benefits correlation on a per capita basis does not move into a negative position until after all construction is completed, at which time, from a stabilized perspective, is at a negative \$127,593 per year.

## **CERTIFICATION**

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The undersigned do hereby certify that, to the best of our knowledge and belief, the statements of fact contained in this report are true and correct. It is further certified that the reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, opinions, and conclusions. We further certify that we have no present or prospective interest in the property that is the subject of this report, and have no personal interest with respect to the parties involved. We have no bias with respect to the property that is the subject of this report or the parties involved with this assignment. Our engagement in this assignment was not contingent upon developing or reporting predetermined results. Our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal. The appraisal analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal

**TABLE 16**

**SUMMARY OF ANNUAL PRIMARY GOVERNMENTAL TAX RECEIPTS AND PUBLIC SERVICE COSTS**  
**Market Study of Kauhale Lani**  
**Pukalani, Upcountry Maui, Hawaii**  
**In Constant Year-End 2007 Dollars**

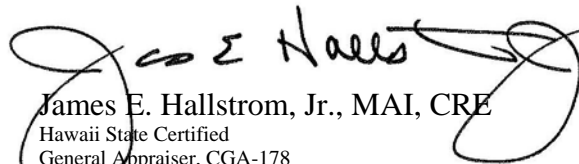
<b>On Stabilized Basis At Build-Out</b>	<b>State of Hawaii</b>								
	<b>Actual Cost Comparison</b>			<b>Per Capita Allocation Comparison</b>					
	<b>Receipts</b>	<b>-</b>	<b>Costs</b>	<b>=</b>	<b>Receipts</b>	<b>-</b>	<b>Costs</b>	<b>=</b>	<b>Net Benefits or (Costs)</b>
Amount per Year	\$2,568,964		(\$507,000)		\$2,568,964		(\$2,696,556)		(\$127,592)

<b>On Stabilized Basis At Build-Out</b>	<b>Maui County</b>								
	<b>Actual Cost Comparison</b>			<b>Per Capita Allocation Comparison</b>					
	<b>Receipts</b>	<b>-</b>	<b>Costs</b>	<b>=</b>	<b>Receipts</b>	<b>-</b>	<b>Costs</b>	<b>=</b>	<b>Net Benefits or (Costs)</b>
Amount per Year	\$691,145		(\$346,000)		\$691,145		(\$1,057,166)		(\$366,021)

Source: The Hallstrom Group, Inc.

Institute, and the Uniform Standards of Professional Appraisal Practice. The use of this report is subject to the requirements of the Appraisal Institute relating to review by duly authorized representatives. The undersigned certify that they have made personal inspections of the property that is the subject of this report. No other persons provided significant real property appraisal assistance other than the undersigned.

The Appraisal Institute conducts programs of continuing education for their designated members. As of the date of this report, James E. Hallstrom, Jr. has completed the requirements of the continuing education program of the Appraisal Institute.

  
James E. Hallstrom, Jr., MAI, CRE  
Hawaii State Certified  
General Appraiser, CGA-178  
Exp. Date December 31, 2009

  
Tom W. Holliday

/as

3674YR01

# **ADDENDA**



**Exhibit 2-N, Cont.**

	Historical		Projected				
	2000	2005	2010	2015	2020	2025	2030
<b>BASELINE FORECAST</b>							
<b>Makawao-Pukalani-Kula</b>							
Resident Population	21,571	23,176	24,644	26,098	27,640	29,243	30,880
Households	7,594	8,331	8,965	9,590	10,266	10,969	11,667
Wage + Salary Jobs	3,061	3,796	4,192	4,594	4,896	5,186	5,493
Total Visitor Units	10	7	7	7	7	7	7
<b>Paia-Haiku</b>							
Resident Population	11,866	12,210	12,525	12,837	13,168	13,512	13,863
Households	4,022	4,180	4,316	4,450	4,595	4,746	4,896
Wage + Salary Jobs	1,702	1,610	1,665	1,720	1,781	1,835	1,890
Total Visitor Units	12	18	18	19	19	20	21
<b>Hana</b>							
Resident Population	1,867	1,998	2,118	2,236	2,362	2,493	2,626
Households	596	656	708	759	814	871	928
Wage + Salary Jobs	672	647	669	690	717	741	762
Total Visitor Units	196	90	90	91	91	92	93
<b>HISTORICAL TREND RUN</b>							
<b>Makawao-Pukalani-Kula</b>							
Resident Population	21,571	23,635	26,752	29,163	31,298	33,725	36,201
Households	7,594	8,542	9,906	10,942	11,877	12,940	13,995
Wage + Salary Jobs	3,039	3,108	3,485	3,555	3,679	3,903	4,105
Total Visitor Units	10	7	8	9	9	10	11
<b>Paia-Haiku</b>							
Resident Population	11,866	13,339	13,662	14,594	15,946	17,173	18,412
Households	4,022	4,699	4,823	5,225	5,819	6,356	6,886
Wage + Salary Jobs	1,680	1,663	1,581	1,771	1,916	1,984	2,080
Total Visitor Units	12	18	19	21	22	24	26
<b>Hana</b>							
Resident Population	1,867	1,952	2,232	2,385	2,494	2,633	2,781
Households	596	635	759	824	872	933	996
Wage + Salary Jobs	692	699	684	697	724	763	801
Total Visitor Units	196	90	95	105	114	123	132

**EXHIBIT R-1: POPULATION BY REGION**

Forecast Variables	Historical 1990	Historical 2000	Projected 2005	2010	2015	2020	2025	2030
<b>Population by Region</b>								
Lahaina	14,574	17,967	19,852	21,577	23,286	25,096	26,979	28,903
Kihei-Makena	15,365	22,870	25,609	28,114	30,597	33,227	35,962	38,757
Wailuku-Kahului	32,816	41,503	46,626	51,312	55,957	60,877	65,995	71,223
Makawao-Pukalani-Kula	18,923	21,571	23,176	24,644	26,098	27,640	29,243	30,880
Paia-Haiku	7,788	11,866	12,210	12,525	12,837	13,168	13,512	13,863
Hana	1,895	1,867	1,998	2,118	2,236	2,362	2,493	2,626
<b>Total</b>	<b>91,361</b>	<b>117,644</b>	<b>129,471</b>	<b>140,289</b>	<b>151,011</b>	<b>162,370</b>	<b>174,184</b>	<b>186,254</b>
<b>Average Annual Rate of Increase, Population</b>								
Lahaina		2.1%	2.0%	1.7%	1.5%	1.5%	1.5%	1.4%
Kihei-Makena		4.1%	2.3%	1.9%	1.7%	1.7%	1.6%	1.5%
Wailuku-Kahului		2.4%	2.4%	1.9%	1.7%	1.7%	1.6%	1.5%
Makawao-Pukalani-Kula		1.3%	1.4%	1.2%	1.2%	1.2%	1.1%	1.1%
Paia-Haiku		4.3%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%
Hana		-0.1%	1.4%	1.2%	1.1%	1.1%	1.1%	1.0%
<b>Total</b>		<b>2.6%</b>	<b>1.9%</b>	<b>1.6%</b>	<b>1.5%</b>	<b>1.5%</b>	<b>1.4%</b>	<b>1.3%</b>
<b>Average Household Size by Region</b>								
Lahaina	2.99	2.98	2.88	2.82	2.78	2.74	2.70	2.67
Kihei-Makena	2.59	2.55	2.51	2.49	2.48	2.46	2.45	2.44
Wailuku-Kahului	3.24	3.17	3.07	2.98	2.91	2.85	2.79	2.75
Makawao-Pukalani-Kula	3.06	2.81	2.78	2.75	2.72	2.69	2.67	2.65
Paia-Haiku	3.01	2.90	2.92	2.90	2.88	2.87	2.85	2.83
Hana	3.22	3.13	3.04	2.99	2.95	2.90	2.86	2.83
<b>Maui Island</b>	<b>3.02</b>	<b>2.90</b>	<b>2.85</b>	<b>2.80</b>	<b>2.76</b>	<b>2.72</b>	<b>2.68</b>	<b>2.66</b>

**NOTES:**

Population by Region = 2000 Population by Region + Population in Incremental Households by Region.

Average Household Size by Region = (Regional Average Household Size, 2000, in Households existing in 2000 + Island Average Household Size for New Households Created after 2000)

**EXHIBIT R-11: HOUSING DEMAND BY REGION**

Forecast Variables	Historical 1990	Historical 2000	Projected 2005	2010	2015	2020	2025	2030
<b>New Resident Demand per Period</b>								
Lahaina			912	784	773	836	868	864
Kihei-Makena			1,324	1,139	1,123	1,214	1,262	1,255
Wailuku-Kahului			2,478	2,130	2,102	2,270	2,361	2,347
Makawao-Pukalani			776	667	658	711	740	735
Paia-Haiku			166	143	142	152	159	157
Hana			64	54	54	58	60	60
Total			5,720	4,917	4,852	5,241	5,450	5,418
<b>Total Resident Demand</b>								
Lahaina	5,124	6,348	7,260	8,044	8,817	9,653	10,521	11,385
Kihei-Makena	6,243	9,417	10,741	11,880	13,003	14,217	15,479	16,734
Wailuku-Kahului	10,647	13,528	16,006	18,136	20,238	22,508	24,869	27,216
Makawao-Pukalani	6,504	7,994	8,770	9,437	10,095	10,806	11,546	12,281
Paia-Haiku	2,726	4,234	4,400	4,543	4,685	4,837	4,996	5,153
Hana	620	627	691	745	799	857	917	977
Total	31,864	42,148	47,868	52,785	57,637	62,878	68,328	73,746
<b>New Non-Resident Demand per Period</b>								
Lahaina			523	523	523	700	700	700
Kihei-Makena			685	685	685	555	555	555
Wailuku-Kahului			382	382	382	119	119	119
Makawao-Pukalani			156	156	156	124	124	124
Paia-Haiku			183	183	183	35	35	35
Hana			72	72	72	1	1	1
Total			2,002	2,002	2,002	1,534	1,534	1,534
<b>Total Non-Resident Demand</b>								
Lahaina			523	1,045	1,568	2,268	2,968	3,668
Kihei-Makena			685	1,371	2,056	2,611	3,165	3,720
Wailuku-Kahului			382	765	1,147	1,266	1,385	1,504
Makawao-Pukalani			156	313	469	593	717	841
Paia-Haiku			183	365	548	583	618	653
Hana			72	145	217	218	219	221
Total			2,002	4,003	6,005	7,538	9,072	10,606
<b>Total Housing Demand</b>								
Lahaina	5,124	6,348	7,783	9,089	10,385	11,921	13,489	15,053
Kihei-Makena	6,243	9,417	11,426	13,251	15,059	16,828	18,644	20,454
Wailuku-Kahului	10,647	13,528	16,388	18,901	21,385	23,774	26,254	28,720
Makawao-Pukalani	6,504	7,994	8,926	9,750	10,564	11,399	12,263	13,122
Paia-Haiku	2,726	4,234	4,583	4,908	5,233	5,420	5,614	5,806
Hana	620	627	763	890	1,016	1,075	1,136	1,198
Total	31,864	42,148	49,870	56,788	63,642	70,416	77,400	84,352
<b>Average Annual Rate of Change, Housing Demand</b>								
Lahaina				3.2%	2.7%	2.8%	2.5%	2.2%
Kihei-Makena				3.0%	2.6%	2.2%	2.1%	1.9%
Wailuku-Kahului				2.9%	2.5%	2.1%	2.0%	1.8%
Makawao-Pukalani				1.8%	1.6%	1.5%	1.5%	1.4%
Paia-Haiku				1.4%	1.3%	0.7%	0.7%	0.7%
Hana				3.1%	2.7%	1.1%	1.1%	1.1%
Total				2.6%	2.3%	2.0%	1.9%	1.7%

**EXHIBIT HL R-3: REGIONAL FORECASTS FOR WAILUKU-KAHULUI**

	2005	2010	2015	2020	2025	2030
<b>Baseline</b>						
Population	46,608	51,331	55,994	60,877	65,995	71,204
Households	15,205	17,229	19,226	21,383	23,625	25,855
Wage and Salary Jobs	27,390	28,553	29,582	30,451	31,477	32,561
Average Visitor Census	1,080	1,147	1,232	1,296	1,369	1,443
Occupied Visitor Units	341	360	386	407	430	453
Total Visitor Units	413	431	461	487	515	544
<b>High</b>						
Population	46,608	53,046	60,114	68,010	76,850	86,679
Households	15,205	17,805	20,640	23,888	27,511	31,474
Wage and Salary Jobs	27,390	30,271	33,315	36,505	40,183	44,268
Average Visitor Census	1,080	1,218	1,359	1,528	1,721	1,942
Occupied Visitor Units	341	383	427	480	540	609
Total Visitor Units	413	461	516	584	658	743
<b>Low</b>						
Population	46,608	50,747	55,014	59,542	64,364	69,449
Households	15,205	17,033	18,889	20,914	23,041	25,217
Wage and Salary Jobs	27,390	27,488	27,471	27,334	27,322	27,332
Average Visitor Census	1,080	1,059	1,028	1,006	985	966
Occupied Visitor Units	341	334	325	317	311	305
Total Visitor Units	413	405	393	385	377	370

NOTES: Regional distributions of the indicators for the Baseline forecast are repeated for the high and low forecast, i.e., no new calculations for special allocations are made for either of the extreme forecasts at the regional level.

**EXHIBIT HL R-4: REGIONAL FORECASTS FOR MAKAWAO-PUKALANI-KULA**

	2005	2010	2015	2020	2025	2030
<b>Baseline</b>						
Population	23,167	24,652	26,116	27,640	29,243	30,872
Households	8,331	8,965	9,590	10,266	10,969	11,667
Wage and Salary Jobs	3,802	4,148	4,541	4,841	5,130	5,434
Average Visitor Census	19	19	20	19	19	19
Occupied Visitor Units	6	6	6	6	6	6
Total Visitor Units	7	7	7	7	7	7
<b>High</b>						
Population	23,167	25,476	28,037	30,878	34,052	37,582
Households	8,331	9,265	10,296	11,469	12,773	14,202
Wage and Salary Jobs	3,802	4,398	5,114	5,804	6,549	7,388
Average Visitor Census	19	21	22	23	24	26
Occupied Visitor Units	6	6	7	7	8	8
Total Visitor Units	7	8	8	9	9	10
<b>Low</b>						
Population	23,167	24,372	25,659	27,033	28,520	30,111
Households	8,331	8,863	9,423	10,041	10,697	11,379
Wage and Salary Jobs	3,802	3,994	4,217	4,346	4,453	4,561
Average Visitor Census	19	18	16	15	14	13
Occupied Visitor Units	6	6	5	5	4	4
Total Visitor Units	7	7	6	6	5	5

NOTES: Regional distributions of the indicators for the Baseline forecast are repeated for the high and low forecast, i.e., no new calculations for special allocations are made for either of the extreme forecasts at the regional level.

## 5: REGIONAL FORECAST BASED ON HISTORICAL TRENDS

### EXHIBIT TREND-1: POPULATION BY REGION

Forecast Variables	Historical 1990	Historical 2000	Projected 2005	2010	2015	2020	2025	2030
Population by Region								
Lahaina	14,574	17,967	19,565	21,748	23,504	25,171	26,997	28,870
Kihei-Makena	15,365	22,870	26,499	29,177	32,358	35,726	39,258	42,741
Wailuku-Kahului	32,816	41,503	44,481	46,718	49,008	51,734	54,397	57,249
Makawao-Pukalani-Kula	18,923	21,571	23,635	26,752	29,163	31,298	33,725	36,201
Paia-Haiku	7,788	11,866	13,339	13,662	14,594	15,946	17,173	18,412
Hana	1,895	1,867	1,952	2,232	2,385	2,494	2,633	2,781
Total	91,361	117,644	129,471	140,289	151,011	162,370	174,184	186,254
Average Annual Rate of Increase, Population								
Lahaina		2.1%	1.7%	2.1%	1.6%	1.4%	1.4%	1.4%
Kihei-Makena		4.1%	3.0%	1.9%	2.1%	2.0%	1.9%	1.7%
Wailuku-Kahului		2.4%	1.4%	1.0%	1.0%	1.1%	1.0%	1.0%
Makawao-Pukalani-Kula		1.3%	1.8%	2.5%	1.7%	1.4%	1.5%	1.4%
Paia-Haiku		4.3%	2.4%	0.5%	1.3%	1.8%	1.5%	1.4%
Hana		-0.1%	0.9%	2.7%	1.3%	0.9%	1.1%	1.1%
Total		2.6%	1.9%	1.6%	1.5%	1.5%	1.4%	1.3%
Average Household Size by Region								
Lahaina	2.99	2.98	2.89	2.82	2.77	2.74	2.70	2.67
Kihei-Makena	2.59	2.55	2.50	2.48	2.46	2.45	2.43	2.42
Wailuku-Kahului	3.24	3.17	3.13	3.08	3.03	2.98	2.94	2.90
Makawao-Pukalani-Kula	3.06	2.81	2.77	2.70	2.67	2.64	2.61	2.59
Paia-Haiku	3.01	2.90	2.84	2.83	2.79	2.74	2.70	2.67
Hana	3.22	3.13	3.07	2.94	2.89	2.86	2.82	2.79
Maui Island	3.02	2.90	2.85	2.80	2.76	2.72	2.68	2.66

NOTES:

Population by Region = 2000 Population by Region + Population in Incremental Households by Region.  
 Average Household Size by Region = (Regional Average Household Size, 2000, in Households existing in 2000  
 + Island Average Household Size for New Households Created after 2000)

**EXHIBIT TREND-8: HOUSEHOLDS BY REGION**

Forecast Variables	Historical 1990	Historical 2000	Projected 2005	→					
				2010	2015	2020	2025	2030	
Total Households (New and Existing)									
Lahaina	4,868	6,031	6,765	7,718	8,473	9,203	10,003	10,801	
Kihei-Makena	5,931	8,946	10,613	11,760	13,130	14,607	16,155	17,639	
Wailuku-Kahului	10,115	12,852	14,220	15,179	16,161	17,357	18,524	19,741	
Makawao-Pukalani-Kula	6,179	7,594	8,542	9,906	10,942	11,877	12,940	13,995	
Paia-Haiku	2,590	4,022	4,699	4,823	5,225	5,819	6,356	6,886	
Hana	589	596	635	759	824	872	933	996	
<b>Total</b>	<b>30,272</b>	<b>40,041</b>	<b>45,474</b>	<b>50,146</b>	<b>54,755</b>	<b>59,734</b>	<b>64,911</b>	<b>70,058</b>	
Cumulative Increase In Households									
Lahaina			734	1,687	2,442	3,172	3,972	4,770	
Kihei-Makena			1,667	2,814	4,184	5,661	7,209	8,693	
Wailuku-Kahului			1,368	2,327	3,309	4,505	5,672	6,889	
Makawao-Pukalani-Kula			948	2,312	3,348	4,283	5,346	6,401	
Paia-Haiku			677	801	1,203	1,797	2,334	2,864	
Hana			39	163	228	276	337	400	
<b>Total</b>			<b>5,433</b>	<b>10,105</b>	<b>14,714</b>	<b>19,693</b>	<b>24,870</b>	<b>30,017</b>	
Average Annual Rate of Change, Households									
Lahaina		2.2%	2.3%	2.7%	1.9%	1.7%	1.7%	1.5%	
Kihei-Makena		4.2%	3.5%	2.1%	2.2%	2.2%	2.0%	1.8%	
Wailuku-Kahului		2.4%	2.0%	1.3%	1.3%	1.4%	1.3%	1.3%	
Makawao-Pukalani-Kula		2.1%	2.4%	3.0%	2.0%	1.7%	1.7%	1.6%	
Paia-Haiku		4.5%	3.2%	0.5%	1.6%	2.2%	1.8%	1.6%	
Hana		0.1%	1.3%	3.6%	1.7%	1.1%	1.4%	1.3%	
<b>Total</b>		<b>2.8%</b>	<b>2.6%</b>	<b>2.0%</b>	<b>1.8%</b>	<b>1.8%</b>	<b>1.7%</b>	<b>1.5%</b>	

**NOTES:**

Total based on maintenance of historical levels and allocation of new households based on the regional share of household increase between 1970 and 2000.

**EXHIBIT TREND-11: HOUSING DEMAND BY REGION**

Forecast Variables	Historical 1990	Historical 2000	Projected 2005	2010	2015	2020	2025	2030
<b>New Resident Demand per Period</b>								
Lahaina			773	1,003	794	769	842	840
Kihei-Makena			1,755	1,207	1,442	1,555	1,630	1,563
Wailuku-Kahului			1,440	1,010	1,034	1,258	1,228	1,281
Makawao-Pukalani			998	1,436	1,090	984	1,119	1,110
Paia-Haiku			712	131	422	625	566	558
Hana			41	130	69	50	64	66
<b>Total</b>			<b>5,719</b>	<b>4,918</b>	<b>4,852</b>	<b>5,241</b>	<b>5,450</b>	<b>5,418</b>
<b>Total Resident Demand</b>								
Lahaina	5,124	6,348	7,121	8,124	8,919	9,687	10,530	11,369
Kihei-Makena	6,243	9,417	11,172	12,379	13,821	15,376	17,005	18,568
Wailuku-Kahului	10,647	13,528	14,968	15,978	17,012	18,270	19,499	20,780
Makawao-Pukalani	6,504	7,994	8,992	10,427	11,518	12,502	13,621	14,731
Paia-Haiku	2,726	4,234	4,946	5,077	5,500	6,125	6,691	7,249
Hana	620	627	668	799	868	918	982	1,048
<b>Total</b>	<b>31,865</b>	<b>42,148</b>	<b>47,867</b>	<b>52,785</b>	<b>57,637</b>	<b>62,878</b>	<b>68,328</b>	<b>73,745</b>
<b>New Non-Resident Demand per Period</b>								
Lahaina			523	523	523	700	700	700
Kihei-Makena			685	685	685	555	555	555
Wailuku-Kahului			382	382	382	119	119	119
Makawao-Pukalani			156	156	156	124	124	124
Paia-Haiku			183	183	183	35	35	35
Hana			72	72	72	1	1	1
<b>Total</b>			<b>2,002</b>	<b>2,002</b>	<b>2,002</b>	<b>1,534</b>	<b>1,534</b>	<b>1,534</b>
<b>Total Non-Resident Demand</b>								
Lahaina			523	1,045	1,568	2,268	2,968	3,668
Kihei-Makena			685	1,371	2,056	2,611	3,165	3,720
Wailuku-Kahului			382	765	1,147	1,266	1,385	1,504
Makawao-Pukalani			156	313	469	593	717	841
Paia-Haiku			183	365	548	583	618	653
Hana			72	145	217	218	219	221
<b>Total</b>			<b>2,002</b>	<b>4,003</b>	<b>6,005</b>	<b>7,538</b>	<b>9,072</b>	<b>10,606</b>
<b>Total Housing Demand</b>								
Lahaina			7,644	9,169	10,486	11,955	13,497	15,037
Kihei-Makena			11,857	13,750	15,877	17,986	20,170	22,287
Wailuku-Kahului			15,351	16,742	18,159	19,536	20,883	22,284
Makawao-Pukalani			9,148	10,740	11,986	13,095	14,338	15,572
Paia-Haiku			5,129	5,443	6,048	6,708	7,309	7,902
Hana			741	944	1,085	1,136	1,201	1,269
<b>Total</b>			<b>49,869</b>	<b>56,788</b>	<b>63,641</b>	<b>70,416</b>	<b>77,400</b>	<b>84,351</b>
<b>Average Annual Rate of Change, Housing Demand</b>								
Lahaina				3.7%	2.7%	2.7%	2.5%	2.2%
Kihei-Makena				3.0%	2.9%	2.5%	2.3%	2.0%
Wailuku-Kahului				1.8%	1.6%	1.5%	1.3%	1.3%
Makawao-Pukalani				3.3%	2.2%	1.8%	1.8%	1.7%
Paia-Haiku				1.2%	2.1%	2.1%	1.7%	1.6%
Hana				5.0%	2.8%	0.9%	1.1%	1.1%
<b>Total</b>				<b>2.6%</b>	<b>2.3%</b>	<b>2.0%</b>	<b>1.9%</b>	<b>1.7%</b>

## Maui Island Development Projects

**Residential Development Project Listing - MAKAWAO - PUKALANI - KULA**

Projects by Community Plan	Entitlements	Unit Types		
		Single Family	Multi-Family	Time Share / Hotel
<b>Maui - Upcountry: Makawao - Pukalani - Kula</b>				
A.L. & P. Phillips Subdivision	Committed	3	0	0
Abner Delima Subdivision	Committed	3	0	0
Bayong Subdivision	Committed	3	0	0
Blackburn Subdivision	Committed	5	0	0
Cameron Kaluanui Subdivision	Committed	3	0	0
DeRego Subdivision	Committed	7	0	0
Erehwon Estates Subdivision	Committed	7	0	0
Freitas Subdivision	Committed	4	0	0
Grove Ranch Lots	Committed	9	0	0
Haleakala Homesteads A	Committed	3	0	0
Haleakala Homesteads B	Committed	12	0	0
Hali`imaile: _Residential	Committed	148	0	0
Jacaranda Hill	Committed	3	0	0
Joan Feiteira Subdivision	Committed	3	0	0
Kealahou 1 & 2 Homesteads	Committed	7	0	0
Keokea/Waiohuli Subdivision DHHL	Committed	406	0	0
Kulamalu Mauka Res.	Committed	14	0	0
Kulamanu Estates Phase 1 Kulamanu	Committed	40	0	0
Kulamanu Estates Phase 2 Jacaranda Grove	Committed	13	0	0
Kulamanu Ridge Ridge at Kulamanu	Committed	57	0	0
Maha Village Subdivision	Committed	24	0	0
Mary Decambra Subdivision	Committed	3	0	0
Mau-Wikoli Subdivision	Committed	3	0	0
Piihola Farms Subd.	Committed	10	0	0
Stice Subdivision	Committed	3	0	0
Waiohuli Hikina Subdivision (Kula Res 1,2) DHHL	Committed	36	0	0
Waiohuli Lot 134 (Kula Res 1,2) DHHL	Committed	4	0	0
Waiohuli Uka Subdivision (Kula Res 1,2) DHHL	Committed	56	0	0
Wilfred "Hoopai" Phillips Subd	Committed	3	0	0
Kula Lodge Project District 1	Designated	0	0	15
Silversword Inn Project District 2	Designated	0	0	12
Kauhale Lani Pukalani Makai	Designated	155	0	0
Kula Ridge Affordable Homes	Proposed	116	0	0
Kula Senior Housing	Proposed	0	36	0
Kualono by Hanohano	Proposed	49	0	0
Hali`imaile Expansion: _A&B400	Proposed	1200	0	0
Hali`imaile Expansion: _ML&P348	Proposed	1500	0	0

**NOTE:** The statistics shown here were compiled from the County of Maui Department of Planning's development projects database. Projects within this database have come to the attention of the Planning Department. There are certain to be other developments being contemplated or planned by private individuals or corporations of which the Planning Department has not been informed. Therefore, these statistics are not a complete summary of the development projects for the county. The Planning Department is not attempting to track housing projects smaller than 6 dwelling units and subdivisions of less than 4 lots. Several of the projects in the database do not have Community Plan and Zoning entitlements that would allow the project to be built at this time. Hence, such projects do not represent "County Policy".

The Planning Department currently is in the process of determining the number of completed and occupied units which are counted inclusively in the total project build-out numbers reflected in this report.





**KAUHALE LANI SUBDIVISION  
PRELIMINARY BUDGET  
9/7/2007**

	DESCRIPTION		PRELIMINARY BUDGET
<b>ACQUISITION COSTS</b>			
<b>SOFT COSTS</b>			
<b>Architectural &amp; Engineering</b>		<b>Consultant</b>	
	Civil Engineering	Austin Tsutsumi & Assoc	\$400,000
	Electrical Engineering	TBD	\$100,000
	Surveying	TBD	\$50,000
	Landscape Architect	CH&P	\$75,000
	Cultural Assessment	TDB	\$6,000
	Archaeological Monitoring	TBD	\$20,000
	Geotechnical Engineering (Soils Report)	TBD	\$20,000
	Geotechnical Monitoring	TBD	\$80,000
	<b>Subtotal</b>		<b>\$751,000</b>
<b>Land Planning &amp; Entitlement (EA Only)</b>		<b>Consultant</b>	
	Planning Consultant	CH&P	\$150,000
	Civil Engineering	Austin Tsutsumi & Assoc	\$43,500
	Surveying - TOPO Map	TBD	\$10,000
	Landscape Architect	CH&P	\$15,000
	Archaeological/Cultural	SCS	\$10,000
	Geotechnical/Soils Report	TBD	\$25,000
	Traffic Consultant	Phillip Rowell	\$20,000
	Marketing	Hallstrom	\$17,000
	Legal - Land Use Amendment	Bill Yuen	\$100,000
	Sewage Treatment Feasibility Study	Austin Tsutsumi & Assoc	\$15,500
	Other Consultants	Various	\$75,000
	Ag Consultant	B.Plaisch	\$20,000
	Management		\$300,000
	Printing & Reimbursables		\$50,000
	<b>Subtotal</b>		<b>\$851,000</b>
<b>Entitlements - External Property Costs</b>			
	Park Assessment	County of Maui	\$1,161,600
	Traffic Impact Fees/Engineering	County of Maui	\$1,056,000
	Sewage Plant Assessment Fee	Pukalani Sewage Treatment	\$2,250,000
	Affordable Housing Requirements	County of Maui	\$8,200,000
	Community Relations/Contributions	Neighborhood Assoc	Incl
	Water System	ML&P Well	\$1,500,000
	<b>Subtotal</b>		<b>\$14,167,600</b>
	<b>Soft Cost Contingency - 10%</b>		<b>\$1,576,960</b>
	<b>SOFT COST - SUBTOTAL</b>		<b>\$17,346,560</b>
<b>HARD COSTS</b>			
<b>Sitework - Onsite</b>			

	General Sitework		TBD	\$5,363,197
	Water System		TBD	\$2,164,850
	Storm Drain System		TBD	\$2,933,000
	Sewer System		TBD	\$1,501,175
	Roadways		TBD	\$1,942,837
	Site Electrical, Phone, Cable TV		TBD	\$1,910,625
	Landscaping			\$461,950
	<b>Subtotal</b>			<b>\$16,277,634</b>
<b>Sitework - Offsite</b>				
	Offsite Road & Utility Improvements		TBD	\$1,408,000
	Offsite Site Electrical Extensions		TBD	\$110,000
	R3 Lots at Open Space		TBD	\$99,000
	<b>Subtotal</b>			<b>\$1,617,000</b>
<b>Other Fees/Permits</b>				
	Utility Company - MECO Proposal		Maui Electric	\$300,000
	Utility Company - Hawn Tel/Cablevision		Hawaiian Telcom	\$100,000
	Permit Fees		County of Maui	\$75,000
	<b>Subtotal</b>			<b>\$475,000</b>
	<b>Hard Cost Contingency - 10%</b>			<b>\$1,836,963</b>
	<b>HARD COST - SUBTOTAL</b>			<b>\$20,206,597</b>
<b>DEVELOPMENT COSTS</b>				
<b>Marketing</b>				
	Marketing			\$300,000
	Brokers Fees			\$4,000,000
	<b>Subtotal</b>			<b>\$4,300,000</b>
<b>Legal &amp; Accounting</b>				
	Acquisition/Due Diligence			\$30,000
	Partnership Formation			\$30,000
	Legal - Entitlement			\$75,000
	Project Development Accounting			\$50,000
	Tax Preparation			\$30,000
	<b>Subtotal</b>			<b>\$215,000</b>
<b>Property Tax/Other Costs</b>				
	Property Tax		County of Maui	\$30,000
	Property Insurance		County of Maui	\$30,000
	<b>Subtotal</b>			<b>\$60,000</b>
	<b>Development Cost Contingency - 10%</b>			<b>\$457,500</b>
	<b>Development Cost - Subtotal</b>			<b>\$5,032,500</b>
	<b>TOTAL COSTS</b>			<b>\$37,553,157</b>

**Michael Wright & Associates, Inc.**  
**Project & Construction Management**

COMMENTS
Allowance
Allowance
Allowance
Allowance- Proposal Requested
Allowance
Allowance
Allowance
Monitoring during Construction
CH&P Proposal = \$91,250
ATA Proposal
Allowance to Finish
CH&P Estimate
Allowance to Finish
Allowance to Finish
Allowance to Finish
Hallstrom Proposal
Bill Yuen Estimate
\$31,000 total - Transfer \$15,500 to Pukalani Triangle
Allowance
Allowance
Allowance
EA Documents
\$6,600 per lot x 176 (20K/lot - West side)
Based on \$6,000 per lot x 176
\$30/gal x 75,000 gal.
Assumed \$120K/lot with Partnering
Donation of 38 acres
50% UTC

MWA Estimate
MWA Estimate
MWA Estimate
MWA Estimate
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## PROFESSIONAL BACKGROUND AND SERVICES

The Hallstrom Group, Inc. is a Honolulu based independent professional organization that provides a wide scope of real estate consulting services throughout the State of Hawaii with particular emphasis on valuation studies. The purpose of the firm is to assist clients in formulating realistic real estate decisions. It provides solutions to complex issues by delivering thoroughly researched, objective analyses in a timely manner. Focusing on specific client problems and needs, and employing a broad range of tools including after-tax cash flow simulations and feasibility analyses, the firm minimizes the financial risks inherent in the real estate decision making process.

The principals and associates of the firm have been professionally trained, are experienced in Hawaiian real estate, and are actively associated with the Appraisal Institute and the Counselors of Real Estate, nationally recognized real estate appraisal and counseling organizations.

The real estate appraisals prepared by The Hallstrom Group accomplish a variety of needs and function to provide professional value opinions for such purposes as mortgage loans, investment decisions, lease negotiations and arbitrations, condemnations, assessment appeals, and the formation of policy decisions. Valuation assignments cover a spectrum of property types including existing and proposed resort and residential developments, industrial properties, high-rise office buildings and condominiums, shopping centers, subdivisions, apartments, residential leased fee conversions, special purpose properties, and vacant acreage, as well as property assemblages and portfolio reviews.

Market studies are research-intensive, analytical tools oriented to provide insight into investment opportunities and development challenges, and range in focus from highest and best use determinations for a specific site or improved property, to an evaluation of multiple (present and future) demand and supply characteristics for long-term, mixed-use projects. Market studies are commissioned for a variety of purposes where timely market information, insightful trends analyses, and perceptive conceptual conclusions or recommendations are critical. Uses include the formation of development strategies, bases for capital commitment decisions, evidence of appropriateness for state and county land use classification petitions, fiscal and social impact evaluations, and the identification of alternative economic use/conversion opportunities.

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## **PROFESSIONAL QUALIFICATIONS OF JAMES E. HALLSTROM, JR., MAI, CRE**

---

<b>Business Background</b>	President	The Hallstrom Group, Inc. Honolulu, Hawaii (1980 - Present)
	Former Principal	Hastings, Martin, Hallstrom and Chew, Ltd., Honolulu, Hawaii (1972-1980)
	Former Real Property Appraiser and Analyst	Administration, Inc., a subsidiary of C. Brewer and Company, Limited Honolulu, Hawaii (1971-1972)
	Former Senior Real Property Appraiser and Analyst	Opitz Realty, Madison, Wisconsin (1969-1971)
<b>National Designations and Memberships</b>	<ul style="list-style-type: none"><li>• CRE Designation (1998) - The Counselors of Real Estate</li><li>• MAI Designation (1976) - American Institute of Real Estate Appraisers</li><li>• SRPA Designation (1975) - Society of Real Estate Appraisers</li></ul>	
		The American Institute of Real Estate Appraisers (AIREA) and the Society of Real Estate Appraisers (SREA) consolidated in 1991, forming the Appraisal Institute (AI).
<b>Education</b>	<ul style="list-style-type: none"><li>• M.S. (Real Estate Appraisal and Investment Analysis) 1971, University of Wisconsin at Madison</li><li>• B.A. (Economics) 1969, Brigham Young University at Provo</li><li>• Numerous specialized real estate studies in connection with qualifying for national professional designations, and uninterrupted Continuing Education.</li><li>• Completed Continuing Education requirements with the Appraisal Institute through 2012.</li></ul>	
<b>Professional Involvement</b>	<ul style="list-style-type: none"><li>• Former President and Officer for Hawaii AIREA and SREA Chapters</li><li>• Instructor for Society of Real Estate Appraisers Course 101, "Introduction to Appraising Real Property" and Course 201, "Principles of Income Property Appraising"</li><li>• Contributing author to the "Hawaii Real Estate Investor"</li><li>• Lecturer at many professional seminars and clinics.</li><li>• Appointed numerous times as an Arbitrator and Mediator.</li></ul>	
<b>Qualified Expert Witness</b>	Federal and State Courts State Land Use and County Hearings Arbitration Proceedings	
<b>State of Hawaii Certification</b>	Certified General Appraiser, License Number CGA-178, Exp. Date December 31, 2009	
<b>Community Service</b>	Active registered member of the Boy Scouts of America; former Director of Le Jardin Academy; former Advisory Board Member of the School of Business, Brigham Young University, Hawaii Campus; Director of Hawaii Reserves, Inc.	
<b>Email Address</b>	JEH@HallstromGroup.com	

## PROFESSIONAL QUALIFICATIONS OF THOMAS W. HOLLIDAY

---

### Business Background

Senior Analyst

The Hallstrom Group, Inc.  
Honolulu, Hawaii  
Since 1980

Former Staff Appraiser

Davis-Baker Appraisal Co.  
Avalon, Santa Catalina Island, California

### Education

- B.A. (Communications/Journalism) 1978 California State University at Fullerton
- SREA Course 201- Principles of Income Property Appraising
- Expert witness testimony before State of Hawaii Land Use Commission and various state and county boards and agencies since 1983.
- Numerous professional seminars and clinics
- Contributing author to Hawaii Real Estate Investor, Honolulu Star Bulletin

On January 1, 1991, the American Institute of Real Estate Appraisers (AIREA) and the Society of Real Estate Appraisers (SREA) consolidated, forming the Appraisal Institute (AI).

### Recent Kauai and Neighbor Island Assignments

- Market Study, Economic Impact Analyses and Public Costs/Benefits Assessments
  - Village at Poipu (Resort/Residential)
  - Ocean Bay Plantation (Resort/Residential)
  - Waipono/Puhi (Mixed-Use Planned Development)
  - Eleele Commercial Expansion (Commercial)
  - Kona Kai Ola (Mixed-Use Resort Community)
  - Waikoloa Highlands (Residential)
  - Waikoloa Heights (Mixed-Use Residential Development)
  - Upcountry Town Center (Mixed-Use Planned Development)
  - Maui Lani (Residential and Industrial Components of Master Planned Community)
  - Maui Business Park, Phase II (Industrial/Commercial)
  - Four Seasons Private Estates and Residences Club (Resort/Residential)
  - Kualono Subdivision (Residential)
  - Kapalua Mauka (Master Planned Community)
  - Hailiimaile (Mixed-Use Master Planned Community)
  - Pulelehua (Master Planned Community)
  - Westin Kaanapali Ocean Villas Expansion (Resort/Timeshare)

## Professional Qualifications of Thomas W. Holliday (continued)

---

- Major Valuation Assignments
  - Coco Palms Resort
  - Grand Hyatt Kauai
  - Islander on the Beach
  - Waimea Plantation Cottages
  - Coconut Beach Resort
  - Keauhou Beach Hotel
  - Sheraton Maui Hotel
  - Outrigger Wailea Resort Hotel
  - Maui Lu Hotel
  - Coconut Grove Condominiums
  - Palauea Bay Holdings
  - Wailea Ranch
  - Maui Coast Hotel
  - Westin Maui Hotel
  - Maui Marriott Hotel
  - Waihee Beach
  - Kapalua Bay Hotel and The Shops at Kapalua

**Email Address**

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**Appendix J:  
Traffic Impact  
Analysis Report**

TRAFFIC IMPACT ANALYSIS REPORT FOR

# THE KAUHALE LANI COMMUNITY

IN PUKALANI, MAUI, HAWAII

Prepared For

**MICHAEL WRIGHT & ASSOCIATES, INC.**

2145 Wells Street, Suite 305  
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Prepared By:

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February 13, 2008

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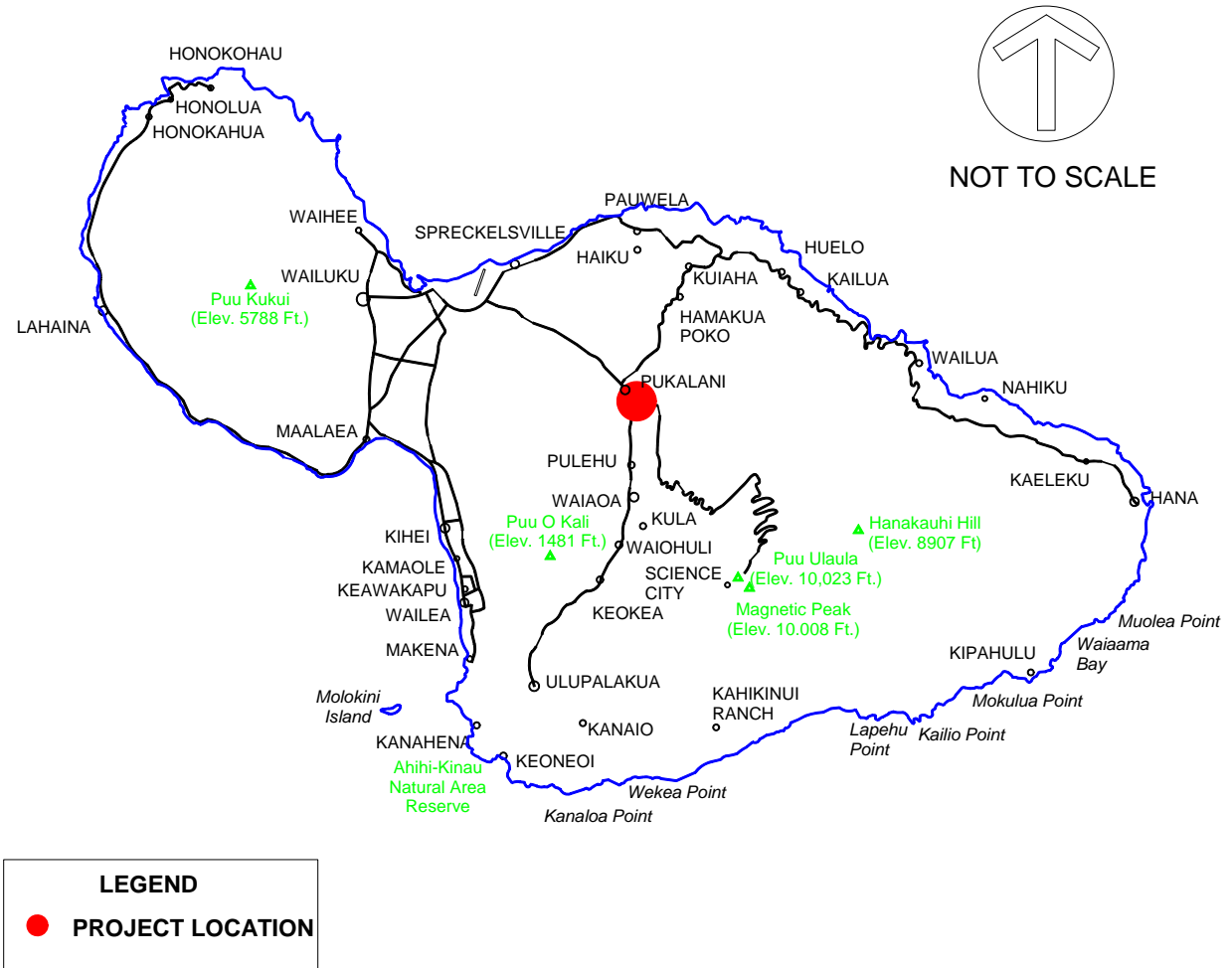
# **1. INTRODUCTION**

---

Phillip Rowell and Associates prepared this Traffic Impact Analysis Report for the proposed Kauhale Lani Community in Pukalani, Maui, Hawaii. This introductory chapter describes the proposed project, purposes of the traffic study, study methodology and order of presentation.

## **Project Location and Description**

1. Kauhale Lani will be located along Old Haleakala Highway and east of Haleakala Highway. The general location on Maui is shown in [Figure 1](#).
2. Kauhale Lani will be a 176 unit single-family residential community. A preliminary subdivision plan is shown as [Appendix A](#). There are three single-family lots along the north side of Haleakala Highway and 173 lots along the south side. Each lot may have one ohana unit. Therefore, this traffic study is based on 176 single-family units plus 176 ohana units.
3. Access to and egress from the south lots will be provided by a new driveway along the south side of Old Haleakala Highway and Aeloa Road. Access to and egress from the north three lots will also be provided by a new separate driveway. Access to these lots is restricted to right turns in and right turns out only.
4. In order to comply with the Community Plan, a connection will be provided between Iolani Street and Aeloa Road as part of the project. This connection will provide an alternate route through Pukalani. Aeloa Road will be improved to provide two travel lanes between Iolani Street and Old Haleakala Highway. This traffic study will estimate the future traffic along Aeloa Road and determine if the intersection of Aeloa Road at Old Haleakala Highway should be controlled by stop signs or traffic signals.



**Figure 1**  
**PROJECT LOCATION MAP**

### **Purpose and Objectives of Study**

1. Determine and describe the traffic characteristics of the project.
2. Quantify and document the traffic related impacts of the proposed project.
3. Identify and evaluate traffic related improvements required to provide adequate access to and egress from the project and to mitigate the project's traffic impacts.

### **Study Area**

The study area includes the intersections listed in [Table 1](#) and shown in the [Figure 2](#).

**Table 1 Study Intersections**

No.	Intersection	Conditions Analyzed		
		Existing	2012 Background	2012 Background Plus Project
1	Haleakala Highway at Kula Highway	X	X	X
2	Old Haleakala Highway at Makawao	X	X	X
3	Avenue Haleakala Highway (Bypass) at Makawao Avenue	X	X	X
4	Pukalani Street at Iolani Street	X	X	X
5	Old Haleakala Highway at Pukalani Street	X	X	X
6	Old Haleakala Highway at Makani Road	X	X	X
7	Haleakala Highway (Bypass) at Makani Road	X	X	X
8	Haleakala Highway (Bypass) at Old Haleakala Highway	X	X	X
9	Old Haleakala Highway at Aeola Road <sup>(1)</sup>			X
10	Old Haleakala Highway at Project Driveway <sup>(1)</sup>			X

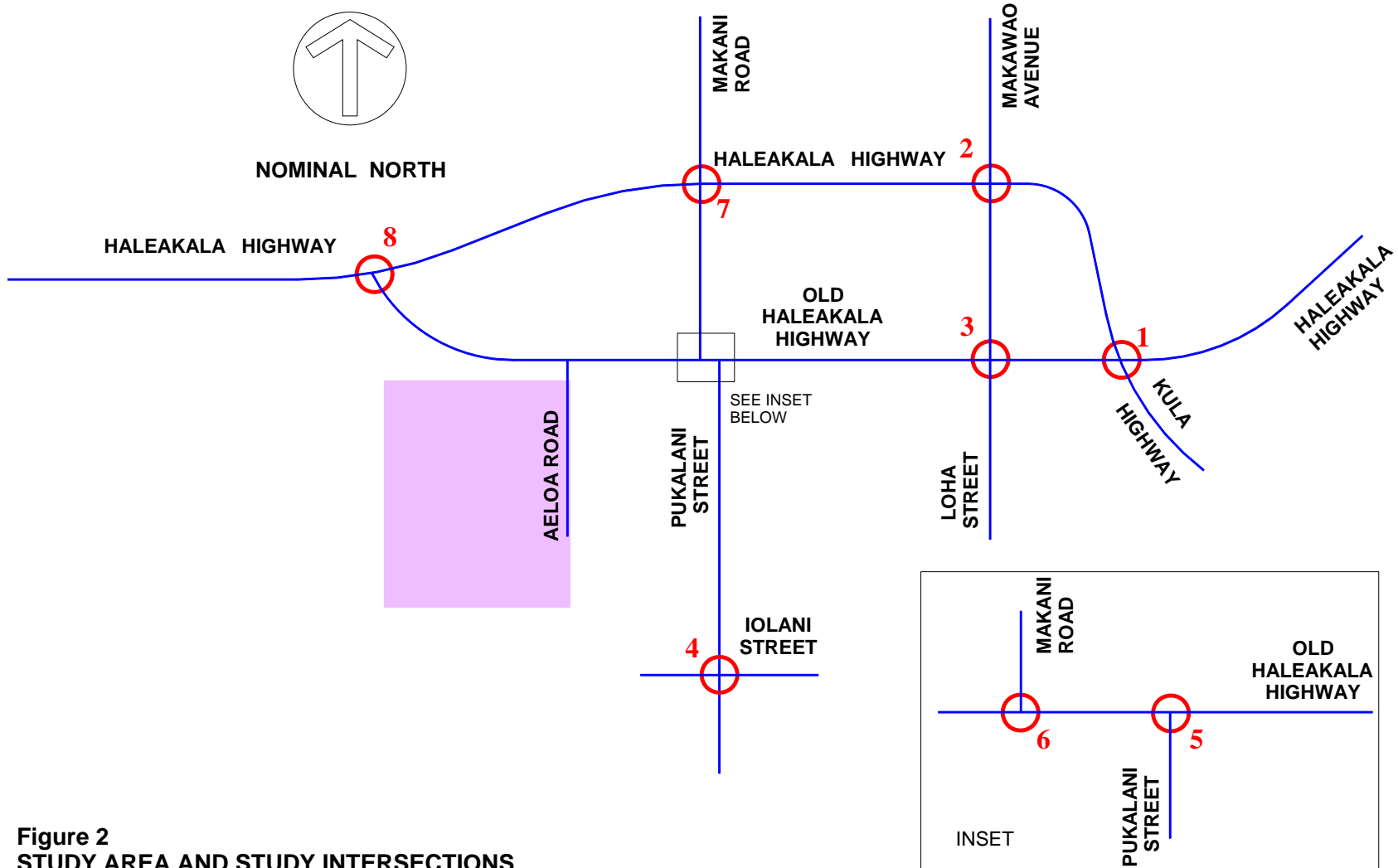
Note:  
 (1) This intersection was analyzed for 2015 conditions with project traffic only. The remaining intersections were analyzed for existing, 2015 background without project and 2015 background plus project conditions.

### **Design Year**

The design, or horizon, year of a project is the future year for which background traffic conditions are estimated. For the projects comparable to Kauhale Lani, the Institute of Transportation Engineers recommends that the anticipated opening or completion year be used as the design year<sup>1</sup>. It is anticipated that the project will be completed within 24 months. Using this standard, the design year for the traffic study should be 2009.

However, there are a number of other development projects within and adjacent to the study area that will probably not be completed within this time frame. In order to consider the traffic generated by these projects and to be consistent with the traffic forecasts in the traffic studies for these projects, it was decided to use 2015 as the design year rather than 2009 noted above.

<sup>1</sup> Institute of Transportation Engineers, *Transportation and Land Development*, 2<sup>nd</sup> Edition, Washington, D.C., 2002, p. 3-13.



**Figure 2**  
**STUDY AREA AND STUDY INTERSECTIONS**



## **Study Methodology**

The following is a summary list of the tasks performed:

1. A site reconnaissance was performed to identify existing roadway cross-sections, intersection lane configurations, traffic control devices, and surrounding land uses.
2. Existing peak-hour traffic volumes for the study intersections were obtained and summarized.
3. Existing levels-of-service of the study intersections were determined using the methodology described in the *Highway Capacity Manual*.
4. A list of related development projects within and adjacent to the study area that will impact traffic conditions at the study intersections was compiled. This list included both development projects and anticipated roadway improvement projects.
5. Future background traffic volumes at the study intersections without traffic generated by Kauhale Lani were estimated.
6. Peak hour traffic that Kauhale Lani will generate was estimated using trip generation analysis procedures recommended by the Institute of Transportation Engineers.
7. Determined if traffic signals were warranted at the intersections of Old Haleakala Highway at Aeloa Road and Old Haleakala Highway at Haleakala Highway.
8. A level-of-service analysis for future traffic conditions with traffic generated by Kauhale Lani was performed.
9. The impacts of traffic generated by Kauhale Lani at the study intersections were quantified and summarized.
10. Locations where Kauhale Lani generated traffic significantly impacts traffic operating conditions were identified.
11. Recommendations, improvements or modifications necessary to mitigate the traffic impacts of Kauhale Lani and to provide adequate access to and egress from the site were formulated.
12. A report documenting the conclusions of the analyses performed and recommendations was prepared.

**Order of Presentation**

Chapter 2 describes existing traffic conditions, the Level-of-Service (LOS) concept and the results of the LOS analysis of existing conditions.

Chapter 3 describes the process used to estimate 2010 background traffic volumes and the resulting background traffic projections. Background conditions are defined as future background traffic conditions without traffic generation by Kauhale Lani.

Chapter 4 describes the methodology used to estimate the traffic characteristics of the proposed project, including 2010 background plus Kauhale Lani traffic projections.

Chapter 5 describes the traffic impacts of Kauhale Lani, identifies potential mitigation measures and summarizes the traffic impact study.

## **2. EXISTING CONDITIONS**

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This chapter presents the existing traffic conditions on the roadways adjacent to Kauhale Lani. The Level-of-Service (LOS) concept and the results of the LOS analysis for existing conditions are also presented. The purpose of this analysis is to establish the base conditions for the determination of the impacts of the project which are described in a subsequent chapter.

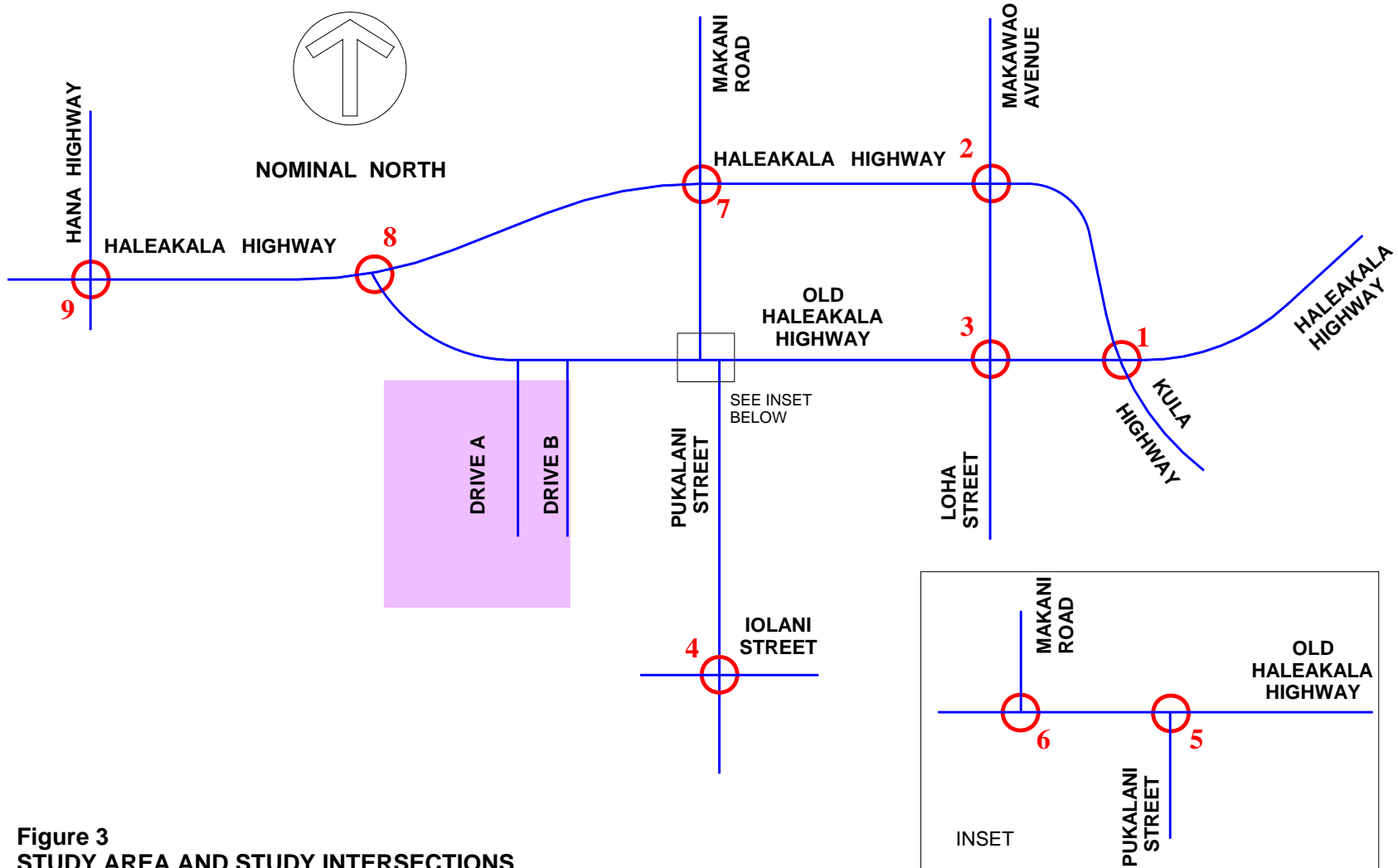
### **Existing Roadway and Traffic Conditions**

The traffic characteristics of the roadways serving the project are summarized in [Table 2](#).

A schematic of the existing roadway network serving the project is shown in [Figure 3](#). Shown are the existing lane configurations and right-of-way controls of the study intersections.

**Table 2 Summary of Existing Roadways**

<u>Roadway</u>	<u>Section</u>	<u>Jurisdiction</u>	<u>Number of Lanes</u>	<u>Divided</u>	<u>Approximate ADT</u>	<u>Posted Speed Limit</u>
Hana Highway	South of Haleakala Highway	State	2	Yes	29,100	55
	North of Haleakala Highway	State	4	No	5,700	55
Haleakala Highway	Hana Highway to Old Haleakala Highway	State	3	No	26,000	55
	Old Haleakala Highway to Makani Road		3	Yes	14,400	45
	Makani Road to Makawao Avenue	State	3	Yes	10,000	45
	Makawao Avenue to Kula Highway		3	Yes	10,700	45
Kula Highway	East of Haleakala Highway	State	2	No	14,400	45
Old Haleakala Highway	Haleakala Highway to Makani Road		2	No	13,000	35
	Makani Road to Makawao Avenue	County	2	No	12,000	35
	Makawao Avenue to Kula Highway		2	No	4,300	35
Pukalani Street	South of Old Haleakala Highway	County	4	No	16,800	20
Makani Road	Haleakala Highway to Haleakala Highway	County	2	No	2,000	30
Makawao Avenue	Old Haleakala Highway to Haleakala Highway	County	2	No	6,700	30



**Figure 3**  
**STUDY AREA AND STUDY INTERSECTIONS**

**Existing Peak Hour Traffic Volumes**

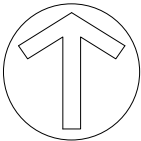
Existing peak hourly traffic volumes of the study intersections were obtained from field surveys conducted during April and May, 2007. The traffic count schedule is shown in [Table 3](#).

**Table 3 Traffic Count Schedule**

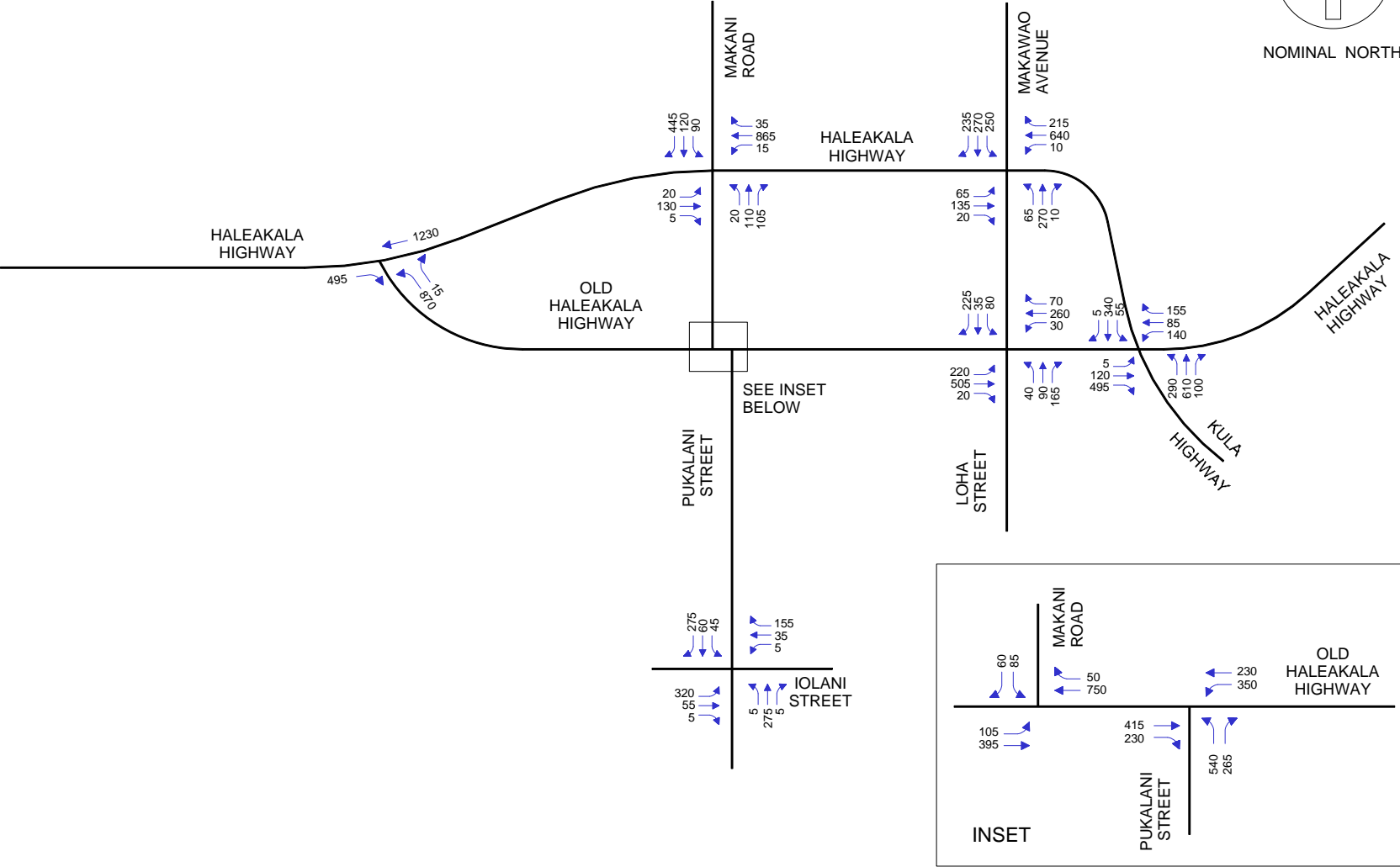
Intersection	AM Counts			PM Counts		
	Day	Date	Hours	Day	Date	Hours
Haleakala Hwy at Kula Highway	Friday	April 27, 2007	6:30 am to 9:00 am	Friday	April 27, 2007	2:00 pm to 5:00 pm
Old Haleakala Hwy at Makawao Av	Thursday	May 17, 2007	6:30 am to 9:00 am	Thursday	May 17, 2007	3:00 pm to 6:00 pm
Haleakala Hwy (Bypass) at Makewao Av	Friday	May 11, 2007	6:30 am to 9:00 am	Friday	May 11, 2007	3:00 pm to 6:00 pm
Pukalani St at Iolani St	Friday	May 18, 2007	6:30 am to 9:00 am	Friday	May 18, 2007	3:00 pm to 6:00 pm
Old Haleakala Hwy at Pukalani St	Monday	May 21, 2007	6:30 am to 9:00 am	Monday	May 21, 2007	3:00 pm to 6:00 pm
Old Haleakala Hwy at Makani Rd	Tuesday	May 22, 2007	6:30 am to 9:00 am	Tuesday	May 22, 2007	3:00 pm to 6:00 pm
Haleakala Hwy (Bypass) at Makani Rd	Thursday	May 17, 2007	6:30 am to 9:00 am	Thursday	May 17, 2007	3:00 pm to 6:00 pm
Haleakala Hwy at Old Haleakala Hwy	Thursday	May 31, 2007	6:30 am to 9:00 am	Thursday	May 31, 2007	3:00 pm to 6:00 pm

The morning and afternoon peak hourly traffic volumes are shown in [Figures 5 and 6](#), respectively.

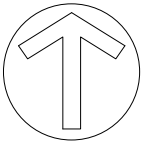
1. The traffic counts include buses, trucks, motorcycles, mopeds and other large vehicles. Bicycles and pedestrians were not counted.
2. Schools were in session during the traffic counts.
3. The traffic volumes shown are the peak hourly volume of each movement, rather than the peak sum of all approach volumes.
4. The traffic volumes of adjacent intersections may not match the volumes shown for an adjacent intersection because the peak hours of the adjacent intersections may not coincide, and there are driveways between the intersections.
5. Pedestrian activity was negligible during the traffic counts.



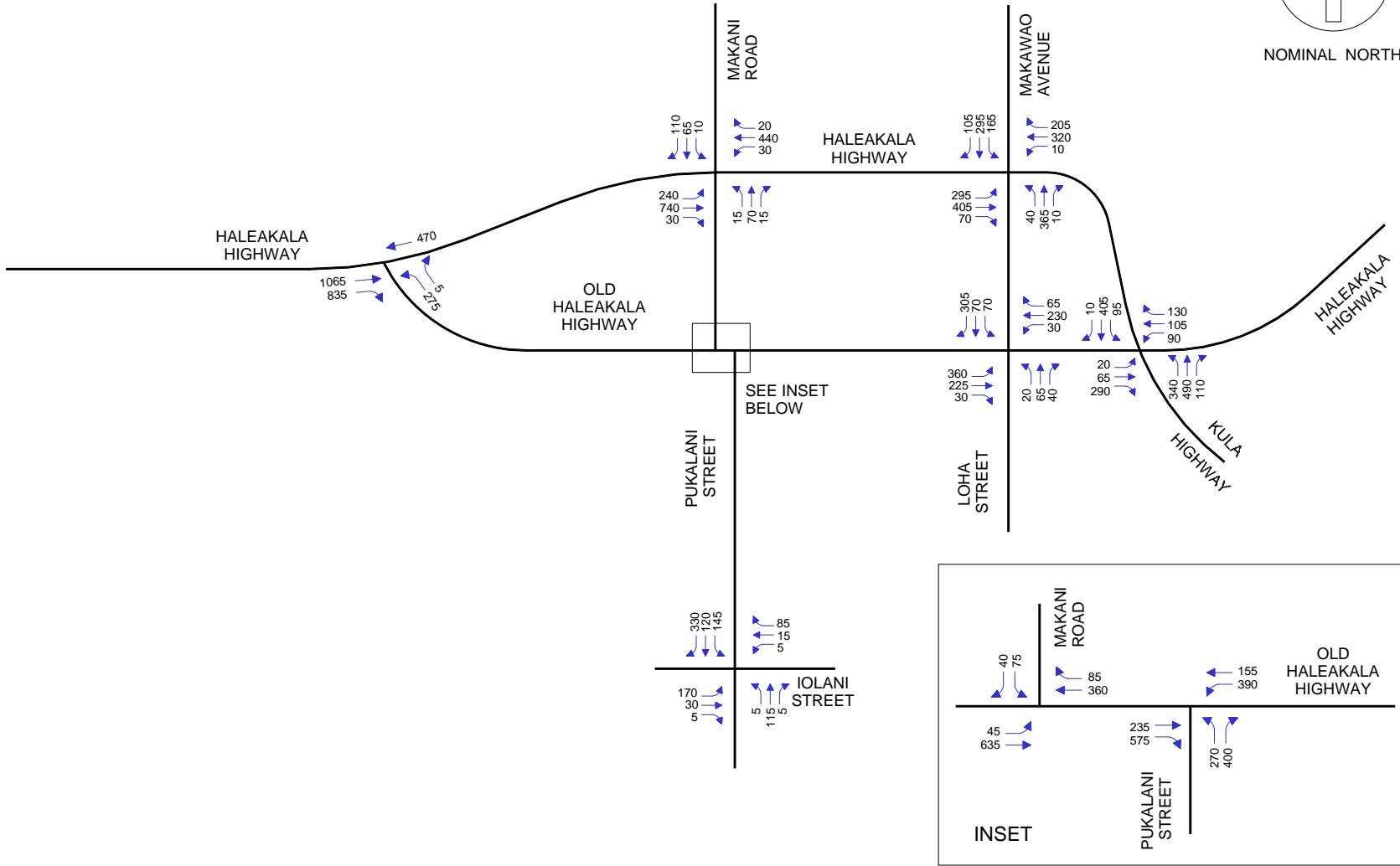
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**Figure 4**  
**EXISTING (2007) AM PEAK HOUR TRAFFIC VOLUMES**



NOMINAL NORTH



**Figure 5**  
**EXISTING (2007) PM PEAK HOUR TRAFFIC VOLUMES**



**Level-of-Service Concept**

*Signalized Intersections*

"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 summarized in [Table 4](#). 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 4 Level-of-Service Definitions for Signalized Intersections<sup>(1)</sup>**

Level of Service	Interpretation	Volume-to-Capacity Ratio <sup>(2)</sup>	Control Delay (Seconds)
A, B	Uncongested operations, all vehicles clear in a single cycle.	0.000-0.700	<10.0
C	Light congestion, occasional backups on critical approaches	0.701-0.800	10.1-20.0
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	20.1-35.0
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	35.1-80.0
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.

### Unsignalized Intersections

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 5](#) summarizes the definitions for Level-of-Service and the corresponding delay.

**Table 5 Level-of-Service Definitions for Unsignalized Intersections<sup>(1)</sup>**

Level-of-Service	Expected Delay to Minor Street Traffic	Control Delay (Seconds)
A	Little or no delay	>10
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.

### Level-of-Service Analysis of Existing Conditions

The results of the level-of-service analysis for the signalized intersections are shown in [Table 6](#). Shown in the table are the volume-to-capacity ratios, average control delays and the levels-of-service for each lane group and the overall intersection.

The results of the level-of-service analysis for unsignalized intersections are also shown in [Table 7](#). The average control delays and levels-of-service are shown for controlled movements only. Volume-to-capacity ratios are not shown for unsignalized intersections. Overall intersection volume-to-capacity ratios, delays and levels-of-service are not calculated for unsignalized intersections.

**Table 6 Existing (2007) Levels-of-Service - Signalized Intersections**

Intersection, Approach and Movement	AM Peak Hour			PM Peak Hour		
	V/C <sup>1</sup>	Delay <sup>2</sup>	LOS <sup>3</sup>	V/C	Delay	LOS
<b>Haleakala Highway at Kula Highway</b>	<b>0.90</b>	<b>28.0</b>	<b>C</b>	<b>0.75</b>	<b>26.9</b>	<b>C</b>
Eastbound Left & Thru	0.32	27.2	C	0.28	27.3	C
Eastbound Right	0.34	27.5	C	0.20	26.7	C
Westbound Left & Thru	0.83	48.0	D	0.71	36.9	D
Westbound Right	0.11	25.6	C	0.09	26.0	C
Northbound Left	0.78	39.3	C	0.86	44.1	D
Northbound Thru & Right	0.77	20.6	C	0.66	16.4	B
Southbound Left	0.42	38.7	D	0.54	36.6	D
Southbound Thru	0.50	21.4	C	0.58	21.6	C
Southbound Right	0.00	15.2	B	0.01	14.1	B
<b>Old Haleakala Highway at Makawao Avenue</b>	<b>0.59</b>	<b>18.5</b>	<b>B</b>	<b>0.71</b>	<b>19.9</b>	<b>B</b>
Eastbound Left	0.76	26.9	C	0.76	19.3	B
Eastbound Thru & Right	0.72	18.3	B	0.29	9.8	A
Westbound Left, Thru & Right	0.76	26.4	C	0.75	29.9	C
Northbound Left, Thru & Right	0.38	11.9	B	0.31	22.1	C
Southbound Left & Thru	0.21	10.8	B	0.18	14.9	B
Southbound Right	0.15	10.8	B	0.46	19.0	B
<b>Haleakala Hwy at Makawao Avenue</b>	<b>0.93</b>	<b>49.7</b>	<b>D</b>	<b>0.86</b>	<b>41.8</b>	<b>D</b>
Eastbound Left	1.00	86.3	F	0.98	77.5	E
Eastbound Thru & Right	0.37	19.4	B	0.36	18.2	B
Westbound Left	0.69	123.7	F	0.69	122.6	F
Westbound Thru	0.86	49.3	D	0.83	45.1	D
Westbound Right	0.14	28.0	C	0.14	26.9	C
Northbound Left	0.10	26.7	C	0.10	25.6	C
Northbound Thru	0.89	55.6	E	0.87	51.3	D
Northbound Right	0.01	25.7	C	0.01	24.6	C
Southbound Left	0.59	35.9	D	0.67	40.2	D
Southbound Left & Thru	1.00	86.3	F	0.75	45.3	D
Southbound Right	0.07	30.0	C	0.07	30.9	C
<b>Old Haleakala Highway at Pukalani Street</b>	<b>0.89</b>	<b>28.9</b>	<b>C</b>	<b>1.05</b>	<b>15.6</b>	<b>B</b>
Eastbound Thru	0.88	36.7	D	0.53	18.7	B
Eastbound Right	0.16	16.5	B	0.40	17.6	B
Westbound Left	0.90	32.8	C	0.70	11.8	B
Westbound Thru	0.26	8.3	A	0.17	6.4	A
Northbound Left	0.94	41.8	D	0.53	19.2	B
Northbound Right	0.18	13.9	B	0.27	15.7	B
<b>Haleakala Highway at Makani Road</b>	<b>0.97</b>	<b>30.0</b>	<b>C</b>	<b>0.57</b>	<b>20.2</b>	<b>C</b>
Eastbound Left	0.48	46.3	D	0.76	37.0	D
Eastbound Thru	0.07	8.9	A	0.45	11.6	B
Eastbound Right	0.00	8.5	A	0.02	8.9	A
Westbound Left	0.52	53.0	D	0.57	47.1	D
Westbound Thru	0.95	35.1	D	0.74	25.3	C
Westbound Right	0.02	9.0	A	0.01	15.7	B
Northbound Left & Thru	0.28	23.2	C	0.18	20.0	C
Northbound Right	0.07	20.8	C	0.01	18.4	B
Southbound Left & Thru	0.51	24.7	C	0.15	19.3	B
Southbound Right	0.76	33.1	C	0.08	18.8	B

NOTES:

- (1) V/C denotes volume-to-capacity ratio.
- (2) Delay in seconds per vehicle.
- (3) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.

**Table 7 Existing (2007) Levels-of-Service - Unsignalized Intersection**

Intersection, Approach and Movement	AM Peak Hour		PM Peak Hour	
	Delay <sup>1</sup>	LOS <sup>2</sup>	Delay	LOS
<b><i>Pukalani Street at Iolani Street</i></b>				
Northbound Left, Thru & Right	8.0	A	8.3	A
Southbound Left & Thru	7.9	A	7.7	A
Westbound Left, Thru & Right	14.1	B	12.0	B
Eastbound Left, Thru & Right	155.1	F	33.5	D
<b><i>Old Haleakala Highway at Makani Road</i></b>				
Eastbound Left	10.4	B	8.5	A
Southbound Left	104.6	F	37.1	E
Southbound Right	16.9	C	11.2	B
<b><i>Haleakala Hwy (Bypass) at Old Haleakala Hwy</i></b>				
Northbound Left	See Note 3		891.4	F
Southbound Right			20.3	C

NOTES:  
(1) Delay in seconds per vehicle.  
(2) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. Level-of-Service is based on delay.  
(3) Delay calculations for the AM peak hour could not be calculated as all movements are free-flowing except the northbound to eastbound right turn, which is a negligible number of vehicles during the AM peak hour.

The conclusions of the Level-of-Service analysis are:

*Signalized Intersections*

1. The results of the level-of-service are consistent with traffic conditions observed during the traffic counts and field reconnaissance.
2. The intersection of Haleakala Highway at Kula Highway operates at Level-of-Service C during the morning peak hour and Level-of-Service C during the afternoon peak hour. There is congestion east of this intersection for a brief period during the morning peak hour as a result of traffic to and from King Kekaulike High School. However, this period of congestion is short and does not have a significant impact of the overall peak hour level-of-service of the intersection.
3. The intersection of Old Haleakala Highway at Makawao Avenue and Loha Street operates at Level-of-Service B during both peak periods. All movements operate at Level-of-Service C, or better, which is an acceptable level-of-service.
4. The intersection of Haleakala Highway at Makawao Avenue operates at Level-of-Service D during the morning and afternoon peak hours. All movements operate at Level-of-Service D, or better, except the eastbound left turn which operates at Level-of-Service F during the morning and Level-of-Service E during the afternoon peak hour, the westbound left turn which operates at Level-of-Service F during both peak hours, and the northbound through movement which operates at Level-of-Service E during the morning peak hour and Level-of-Service D during the afternoon peak hour.
5. The intersection of Old Haleakala Highway and Pukalani Street operates at Level-of-Service C during the morning peak hour and Level-of-Service B during the afternoon peak hour. The afternoon level-of-service, which is based on delay, is not consistent with the volume-to-capacity ratio, which indicates Level-of-Service F. A level-of-service analysis was performed for different lane configurations to determine if this inconsistency could be resolved by improving the intersections. The results indicated reduced delays, but no change in the volume-to-capacity ratio.

6. The intersection of Haleakala Highway at Makani Road operates at Level-of-Service C during both peak periods and all movements operate at Level-of-Service D, or better. This intersection was recently signalized.

*Unsignalized Intersections*

7. At the intersection of Pukalani Street at Iolani Street, the eastbound approach operates at Level-of-Service F during the morning peak hour and Level-of-Service D during the afternoon peak hour. The remaining movements operate at Level-of-Service A or B.
8. At the intersection of Old Haleakala Highway at Makani Road, the southbound left turn operates at Level-of-Service F during the morning peak hour and Level-of-Service E during the afternoon peak hour. All the remaining movements operate at Level-of-Service C, or better. Installation of a left turn refuge lane along Old Haleakala Highway would alleviate the low level-of-service. However, installation of a left turn refuge lane is not viable because of adjacent development and the intersection proximity to the intersection with Pukalani Street.
9. At the intersection of Old Haleakala Highway at Haleakala Highway, all movements are free flowing during the morning peak hour. Therefore, there is no level-of-service to calculate as the analysis calculates the delay and level-of-service of controlled movements only. During the afternoon peak hour, the level-of-service of the northbound left turn is Level-of-Service F and the northbound right turn is Level-of-Service C. We have been informed that when the widening of Haleakala Highway to four lanes is completed, the current coning plan used during the morning peak hour may be discontinued. Therefore, in the future, the morning operation of this intersection will be the same as the afternoon operation.

### 3. BACKGROUND TRAFFIC CONDITIONS

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The purpose of this chapter is to discuss the assumptions and data used to estimate 2010 background traffic conditions. Background traffic conditions are defined as future traffic volumes without the proposed project.

Future traffic growth consists of two components. The first is ambient background growth that is a result of regional growth and cannot be attributed to a specific project. The second component is estimated traffic that will be generated by other development projects in the vicinity of the proposed project.

#### Background Traffic Growth

The *Maui Long Range Transportation Plan*<sup>2</sup> concluded that traffic in Maui would increase an average of 1.6% per year from 1990 to 2020. This growth rate was used to estimate the background growth between 2007 and 2015, which is the design year for this project. The growth factor was calculated to be 1.135 using the following formula:

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

where F = Growth Factor

i = Average annual growth rate, or 0.016

n = Growth period, or 8 years

This growth factor was applied to all traffic movements at the study intersections.

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<sup>2</sup> Kaku Associates, October 1996

## Related Projects

The second component in estimating background traffic volumes is traffic resulting from other proposed projects in the vicinity. Related projects are defined as those projects that are under construction, have been approved for construction, or have been the subject of a traffic study and would significantly impact traffic in the study area. Related projects may be development projects or roadway improvements.

The related development projects identified are listed in [Table 8](#).

**Table 8**      **List of Related Projects**

Kulamalu County Park
Kulamalu Hilltop Subdivision
Kulamalu Mauka Subdivision
Expansion of Kamehameha Schools Maui Campus
Phase 3 of Kulamalu Commercial Subdivision
Institute of Astronomy Advanced Technology and Research Center
Kulamalu Skilled Nursing Facility
Kulamalu Adult Day Care Center
Kula Residence Lots, Unit 1 Subdivision
Kualono Subdivision
DHHL subdivisions at Waiohuli
Maluhia O Ke Kula
Waiakoa Ranch
Tam Yau Estates
Pukalani Triangle

In addition to the development projects, westbound Haleakala Highway is currently being widened from one to two lanes. It is our understanding that when the widening is completed, the coning of the intersection of Haleakala Highway at Old Haleakala Highway will be discontinued. The impact of this is that eastbound traffic can continue along Haleakala Highway or turn right onto northbound Old Haleakala Highway. This will redistribute morning traffic from Old Haleakala Highway to Haleakala Highway, reducing the morning peak hour traffic along Old Haleakala Highway.

Several roadway improvements are associated with the related projects. Since the traffic from the projects is included in the forecasts, the roadway improvements that are part of the projects or required as mitigation are considered in the analysis. These improvements include the following:

1. Makawao Avenue between Old Haleakala Highway and Haleakala Highway (Bypass) is widened from two to four lanes.
2. Westbound Haleakala Highway (Bypass) between Kula Highway and Makani Road is widened from one to two lanes.
3. At the intersection of Kula Highway at Haleakala Highway, a second northbound to westbound left turn lane is provided.

4. At the intersection of Haleakala Highway at Makawao Avenue, a second northbound to westbound left turn lane is provided, a second westbound through lane is provided and a second southbound through lane is provided.
5. At the intersection of Old Haleakala Highway at Makawao Avenue and Loha Street, the eastbound, westbound and southbound approaches are modified to provide separate left, through and right turn lanes and the northbound approach is modified to provide a separate left turn lane and an optional through or left turn lane.

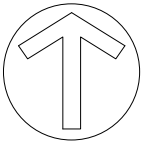
The above improvements are shown graphically in the next chapter in the discussion relative to the assumptions used for the 2015 level-of-service analysis.

Traffic studies for the related projects were obtained and the traffic assignments for the related projects used directly from the reports. Adjustments were made for the roadway improvements. The total traffic assignments of the related projects is summarized in [Figures 6 and 7](#). It should be noted that at several intersections, some 2015 traffic projections are less than 2007 traffic volumes because of the redistribution of traffic as a result of the roadway improvements. The improvement that results in the most significant redistribution of traffic is the anticipated changes at the intersection of Old Haleakala Highway at Haleakala Highway (Bypass).

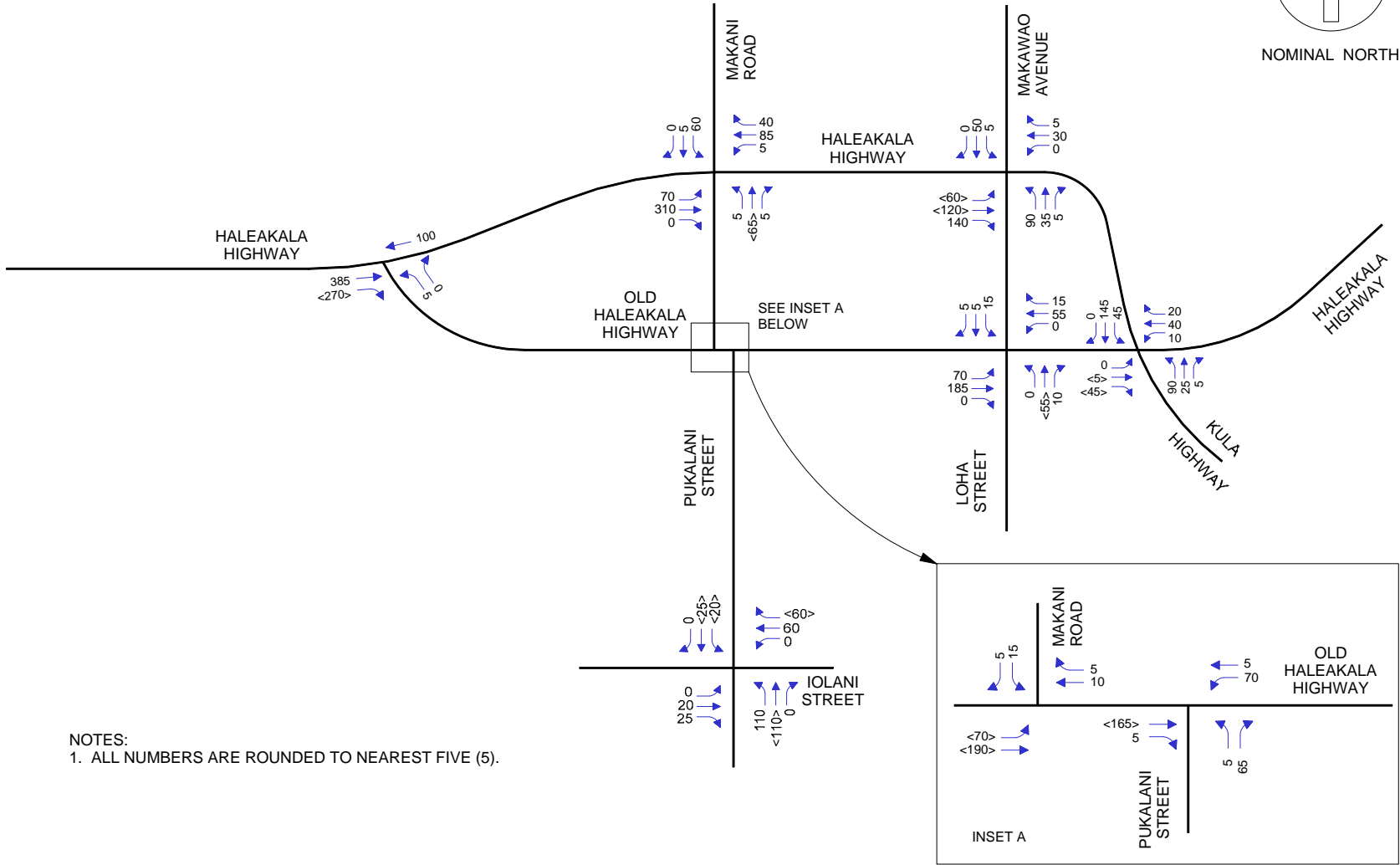
### **2015 Background Traffic Projections**

2015 background traffic projections were calculated by expanding existing traffic volumes by the appropriate growth rates and then superimposing traffic generated by the related project. The resulting 2015 background weekday morning and afternoon peak hourly traffic volumes are shown in [Figures 7 and 8](#), respectively.



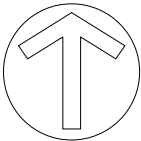


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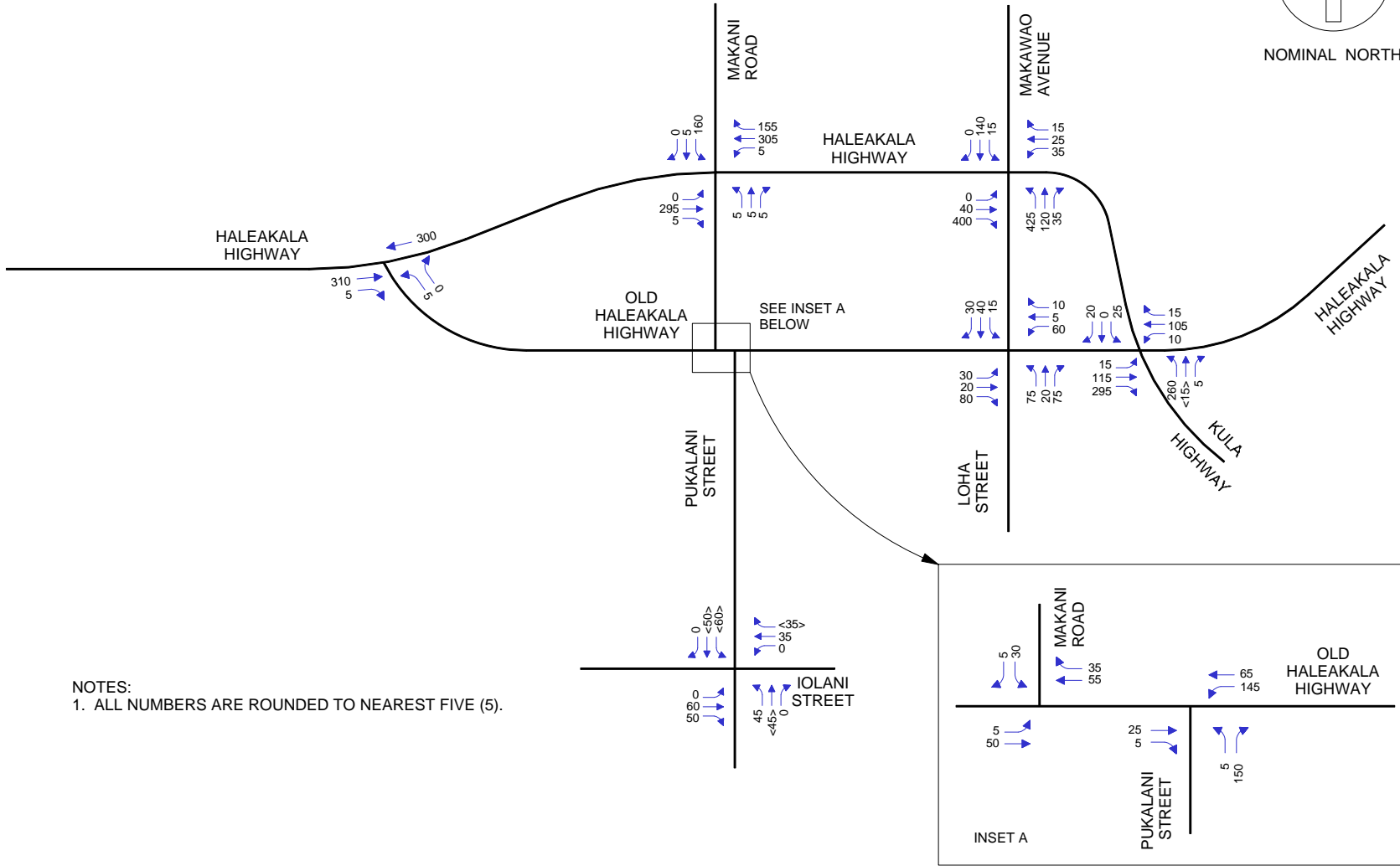


NOTES:  
 1. ALL NUMBERS ARE ROUNDED TO NEAREST FIVE (5).

**Figure 6**  
**RELATED PROJECTS' TRIPS - AM PEAK HOUR**

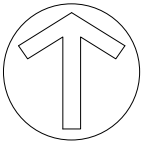


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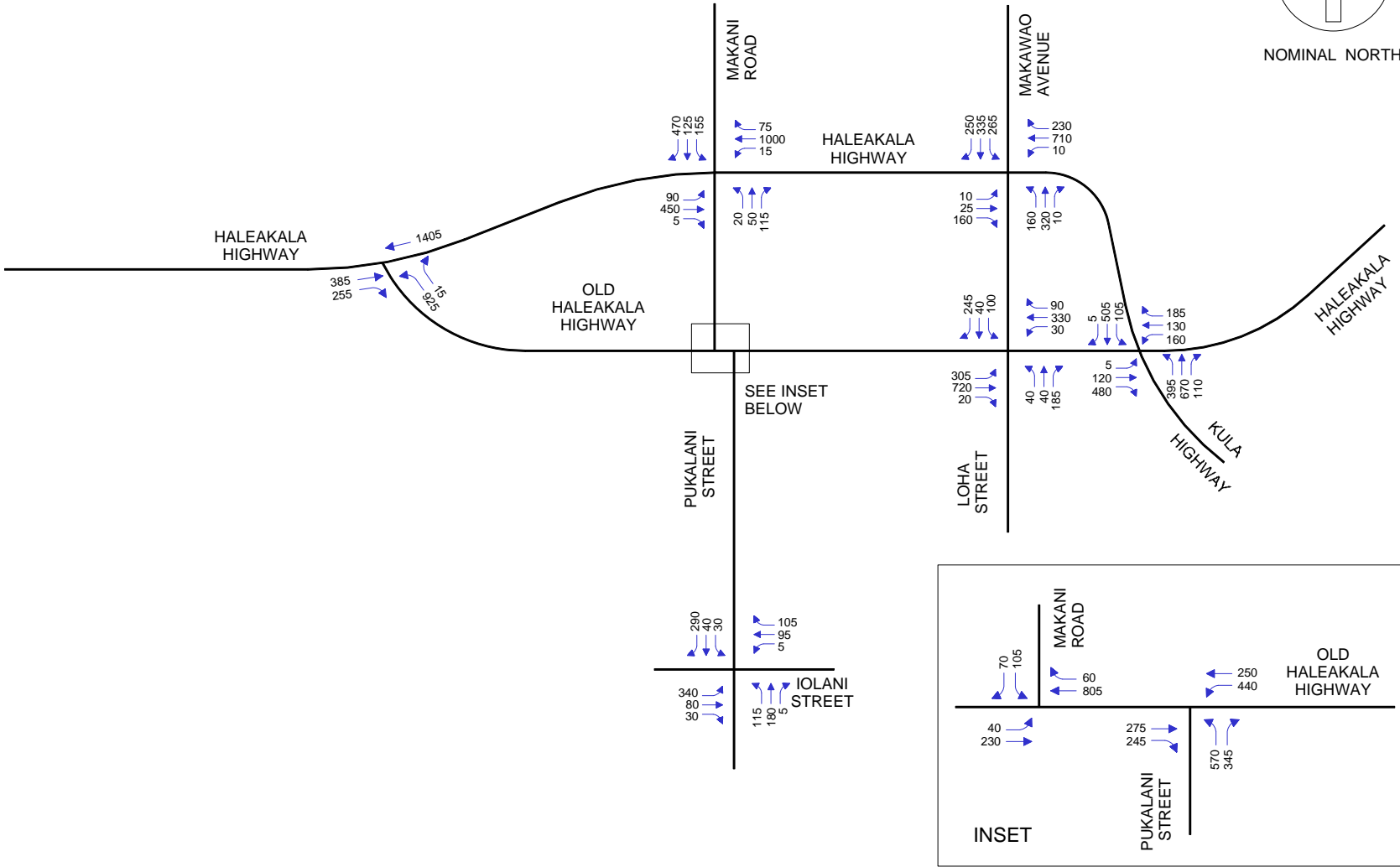


NOTES:  
1. ALL NUMBERS ARE ROUNDED TO NEAREST FIVE (5).

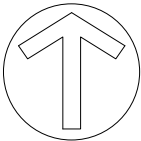
**Figure 7**  
**RELATED PROJECTS' TRIPS - PM PEAK HOUR**



NOMINAL NORTH



**Figure 8**  
**2015 BACKGROUND AM PEAK HOUR TRAFFIC PROJECTIONS**



NOMINAL NORTH

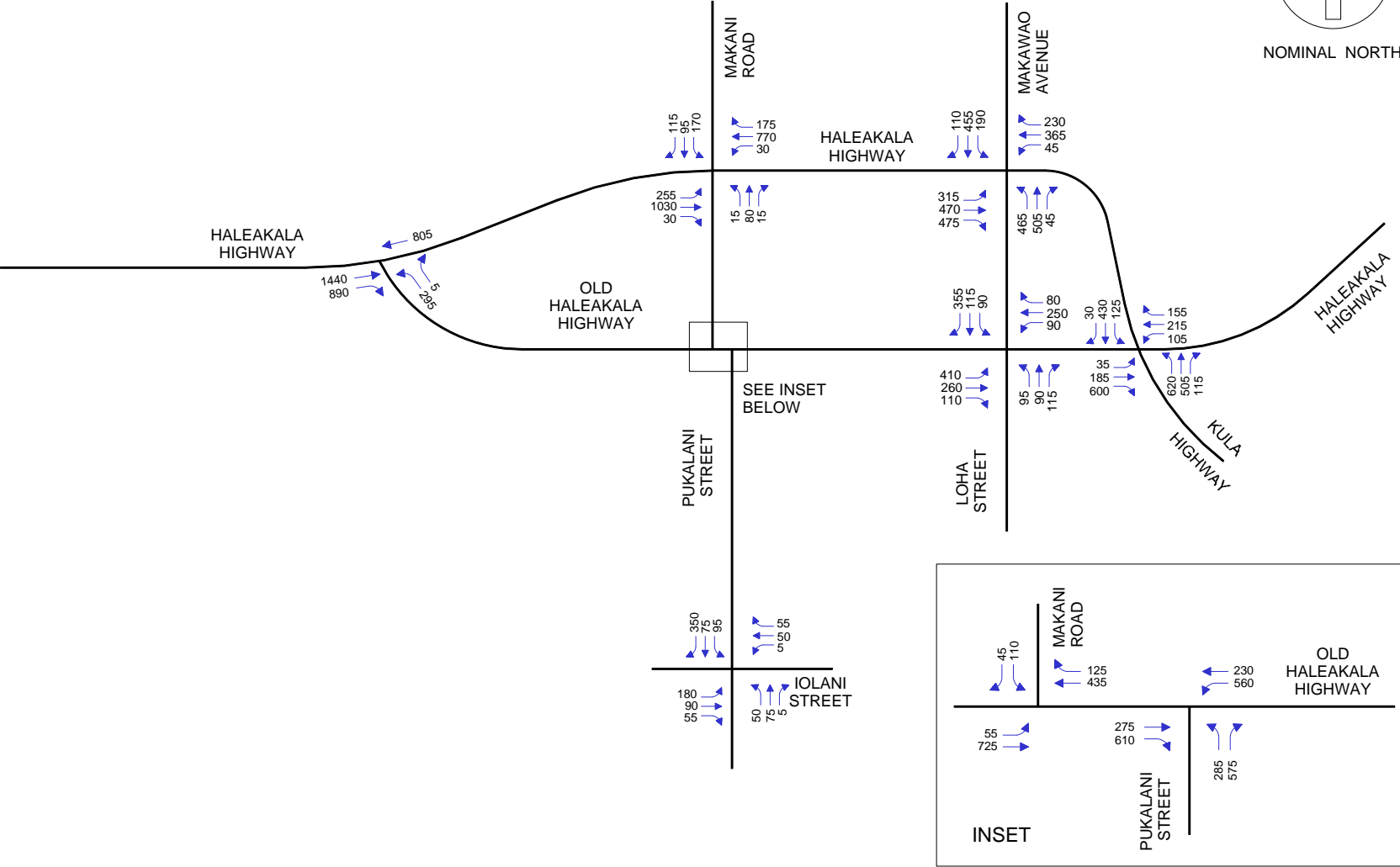


Figure 9  
2015 BACKGROUND PM PEAK HOUR TRAFFIC PROJECTIONS

## **4. PROJECT-RELATED TRAFFIC CHARACTERISTICS**

This chapter discusses the methodology used to identify the traffic-related characteristics of the proposed project. Generally, the process involves the determination of peak-hour trips that would be generated by the proposed project, distribution and assignment of these trips on the approach and departure routes, and finally, determination of the levels-of-service at affected intersections and driveways subsequent to implementation of the project. This chapter presents the generation, distribution and assignment of project generated traffic and the background plus project traffic projections. The results of the level-of-service analysis of background plus project conditions is presented in the following chapter.

### **Project Trip Generation**

Future traffic volumes generated by the project were estimated using the procedures described in the *Trip Generation Handbook*<sup>3</sup> and data provided in *Trip Generation*<sup>4</sup>. This method used 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 project will consist of 176 single-family units. Single-family detached housing is defined by the Institute of Transportation Engineers as follows:

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<sup>3</sup> Institute of Transportation Engineers, *Trip Generation Handbook*, Washington, D.C., 1998, p. 7-12

<sup>4</sup> *Trip Generation*, Institute of Transportation Engineers, Washington, D.C., 2003

*Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.<sup>5</sup>*

In addition to the single-family units, each lot may have one ohana unit. Since there are no trip generation rates for ohana units in *Trip Generation*, trips generated by the ohana units were estimated using trip generation rates for apartments. These rates most likely result in an overestimation of the traffic from these units as some ohana units may be used by family members and some may be rented as apartments. Use of the trip rates for apartments should result in conservative conclusions.

The trip generation analysis is summarized in [Table 9](#). As shown, the proposed project will generate 62 inbound and 171 outbound trips during the morning peak hour. During the afternoon peak hour, the project will generate 187 inbound and 111 outbound trips.

**Table 9 Trip Generation Analysis**

Period & Direction		Single Family Units			Ohana (Apartment) Units			Total Trips
		Trips per Unit or Percent	Units	Trips	Trips per Unit or Percent	Units	Trips	
AM Peak Hour	Total	0.77	176	136	0.55	176	97	233
	Inbound	25%		34	29%		28	62
	Outbound	75%		102	71%		69	171
PM Peak Hour	Total	1.02		180	0.67		118	298
	Inbound	64%		115	61%		72	187
	Outbound	36%		65	39%		46	111

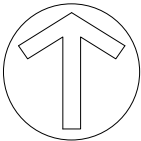
### 2015 Background Plus Project Projections

Background plus project traffic conditions are defined as 2015 background traffic conditions plus project generated traffic. The project generated traffic was distributed and assigned based on the existing approach and departure pattern of traffic along the pertinent sections of Haleakala and Old Haleakala Highways. The morning and afternoon peak hour traffic assignments are shown in [Figures 10 and 11](#), respectively. It should be noted that the three lots along the north side of Old Haleakala Highway will generate only three trips during the peak hour and is therefore insignificant when assigned to the various approaches along Old Haleakala Highway. Access and egress conditions are described in the recommendations.

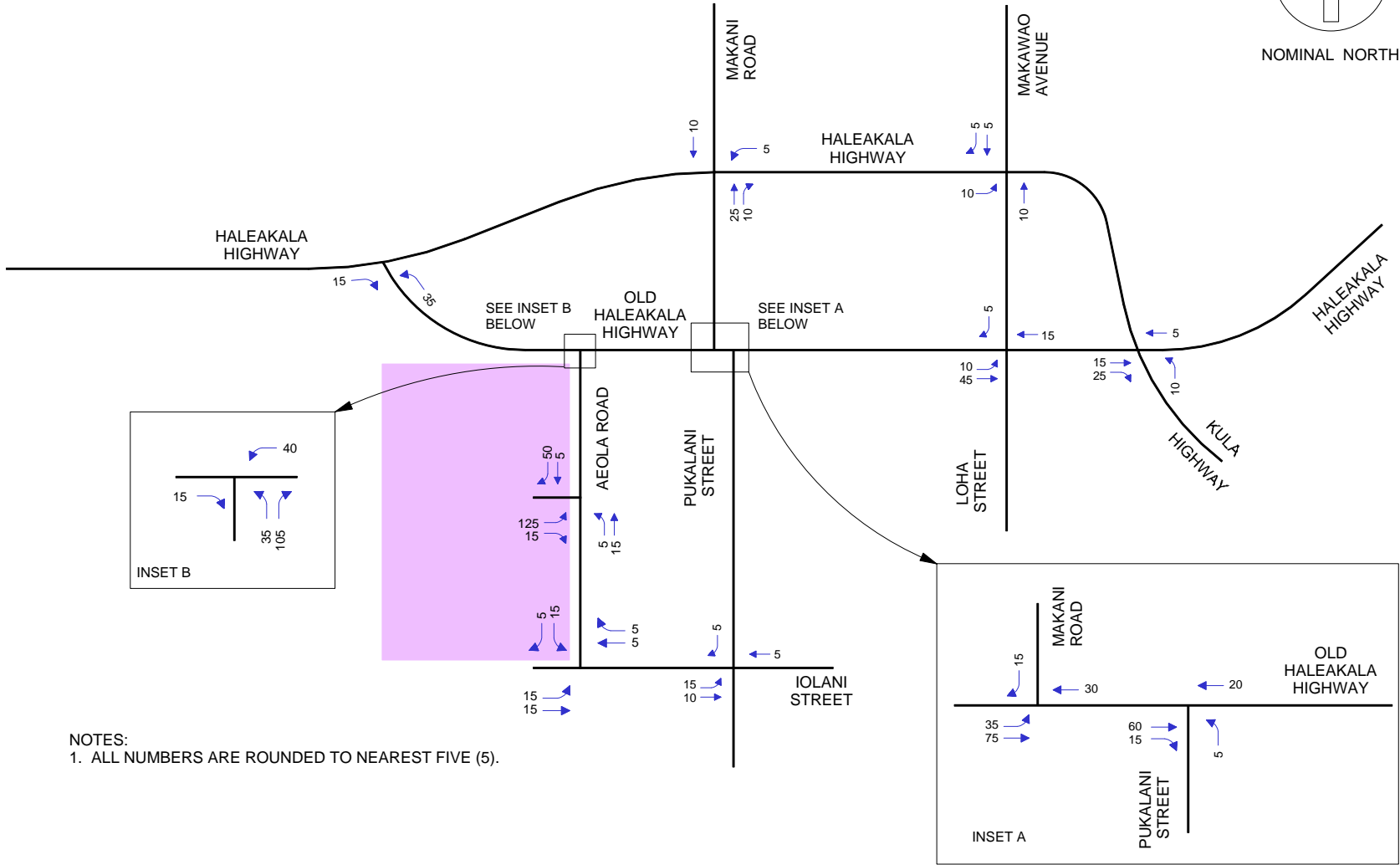
2015 background plus project traffic projections were estimated by superimposing the peak hourly traffic generated by the proposed project on the 2015 background (without project) peak hour traffic projections. This assumes that the peak hourly trips generated by the project coincide with the peak hour of the adjacent street. This represents a worse-case condition. The resulting 2015 background plus project peak hour traffic projections are shown in [Figures 12 and 13](#), respectively.

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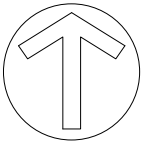
<sup>5</sup> Institute of Transportation Engineers, *Trip Generation*, Washington, D.C., 1997, p. 262



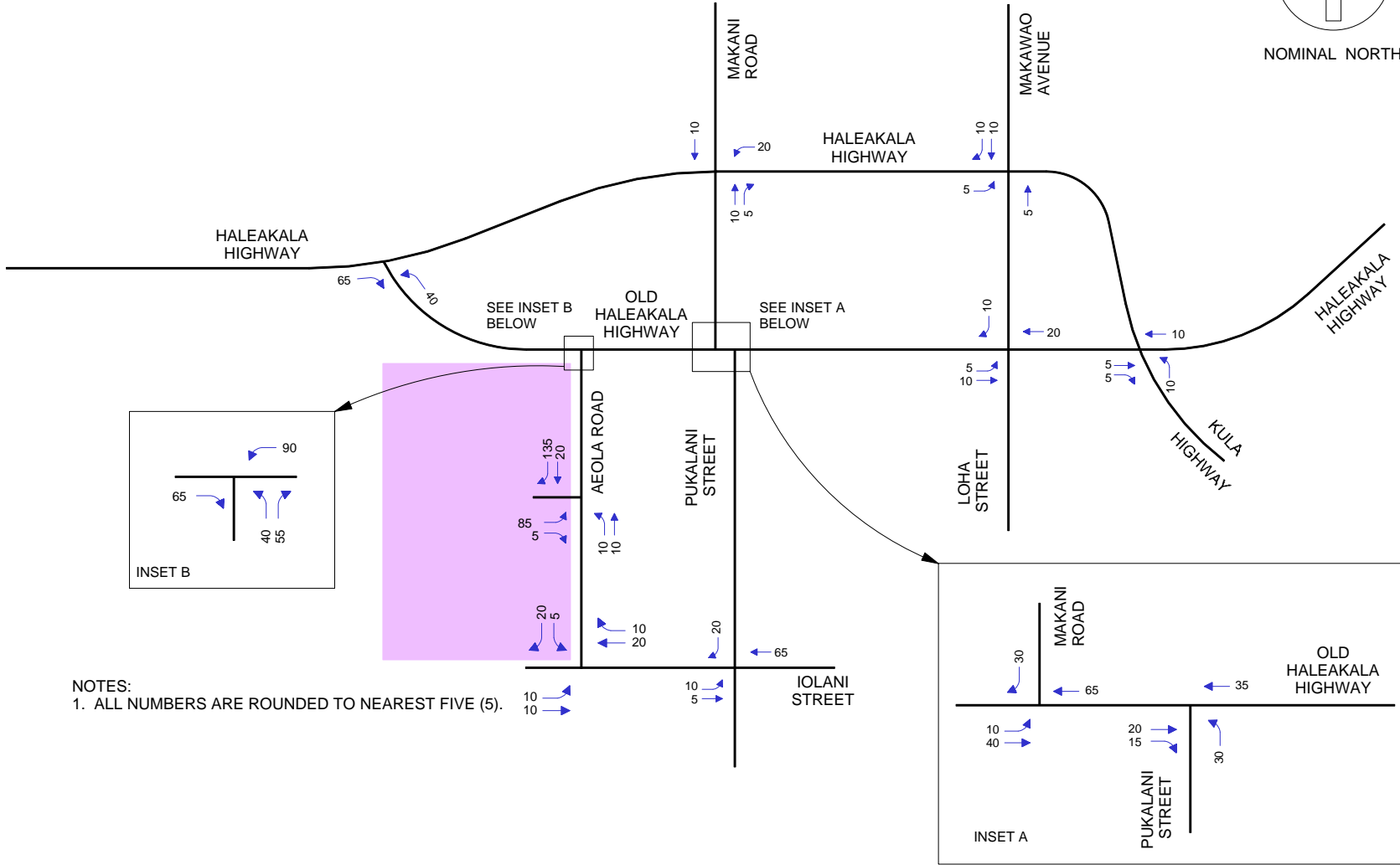
NOMINAL NORTH



**Figure 10**  
**AM PEAK HOUR PROJECT TRIP ASSIGNMENTS**

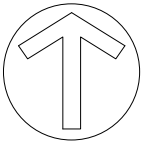


NOMINAL NORTH

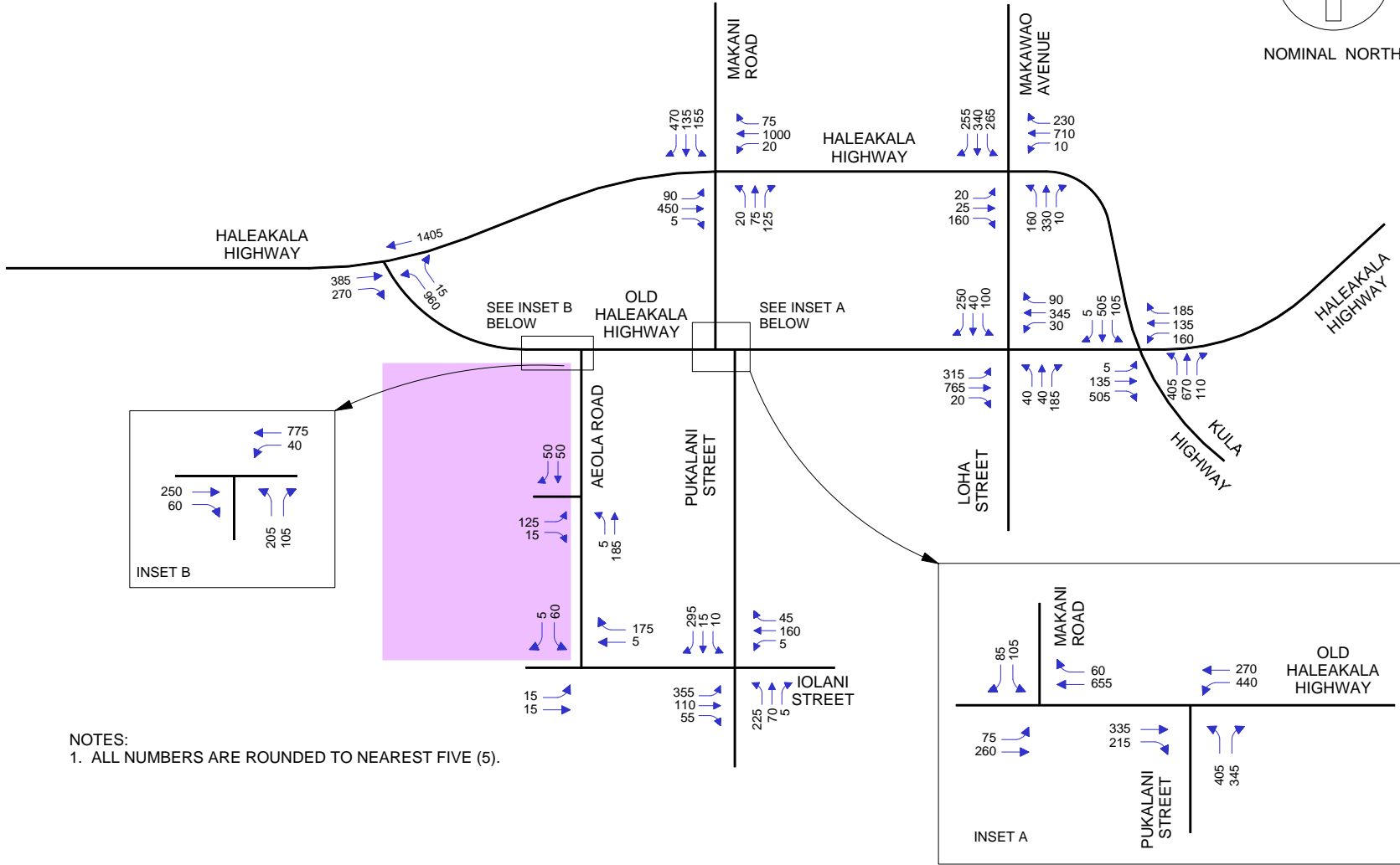


**Figure 11**  
**PM PEAK HOUR PROJECT TRIP ASSIGNMENTS**



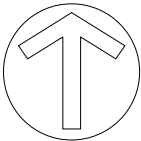


NOMINAL NORTH

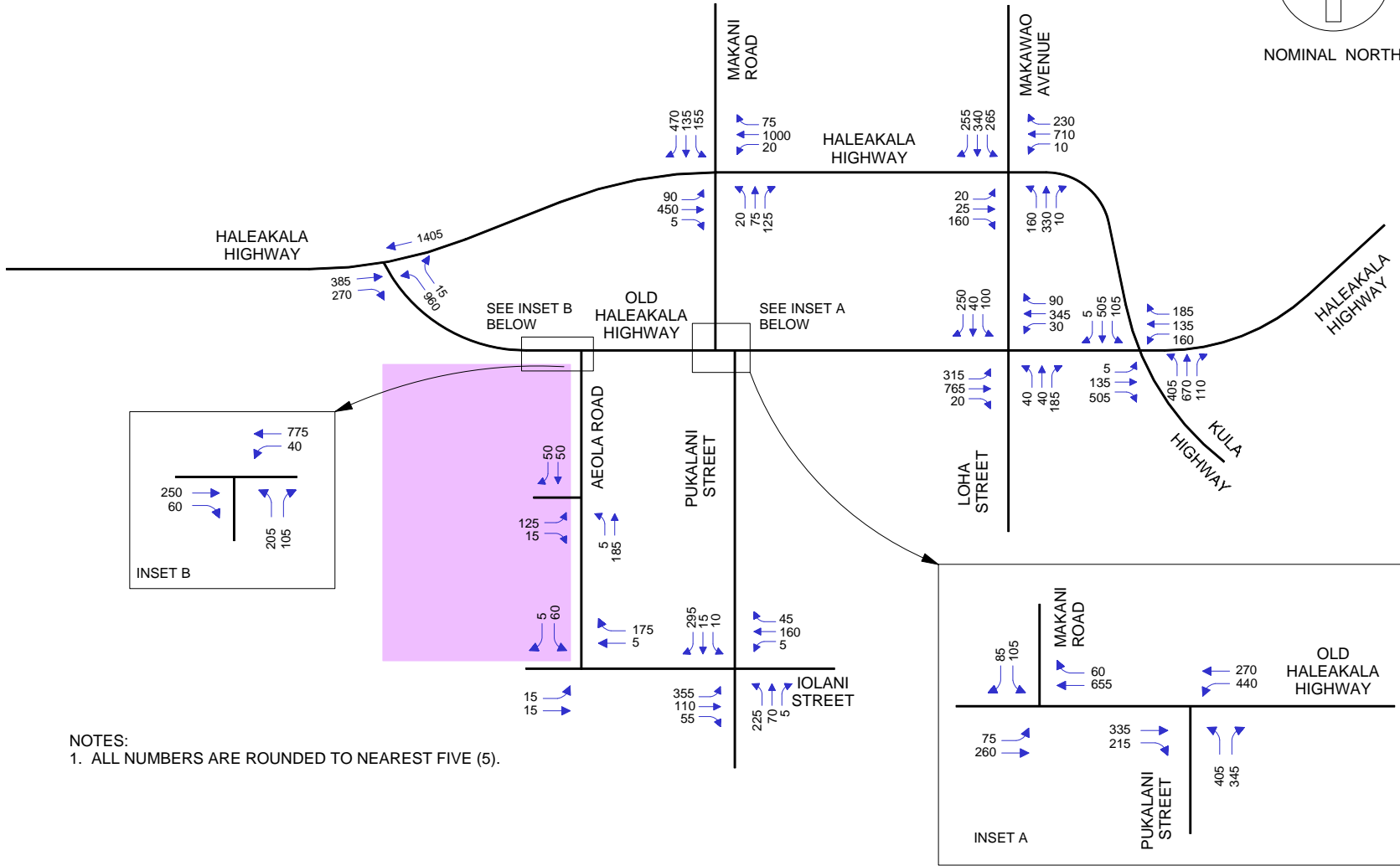


NOTES:  
1. ALL NUMBERS ARE ROUNDED TO NEAREST FIVE (5).

**Figure 12**  
**2015 BACKGROUND PLUS PROJECT AM PEAK HOUR TRAFFIC PROJECTIONS**

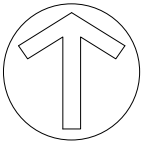


NOMINAL NORTH

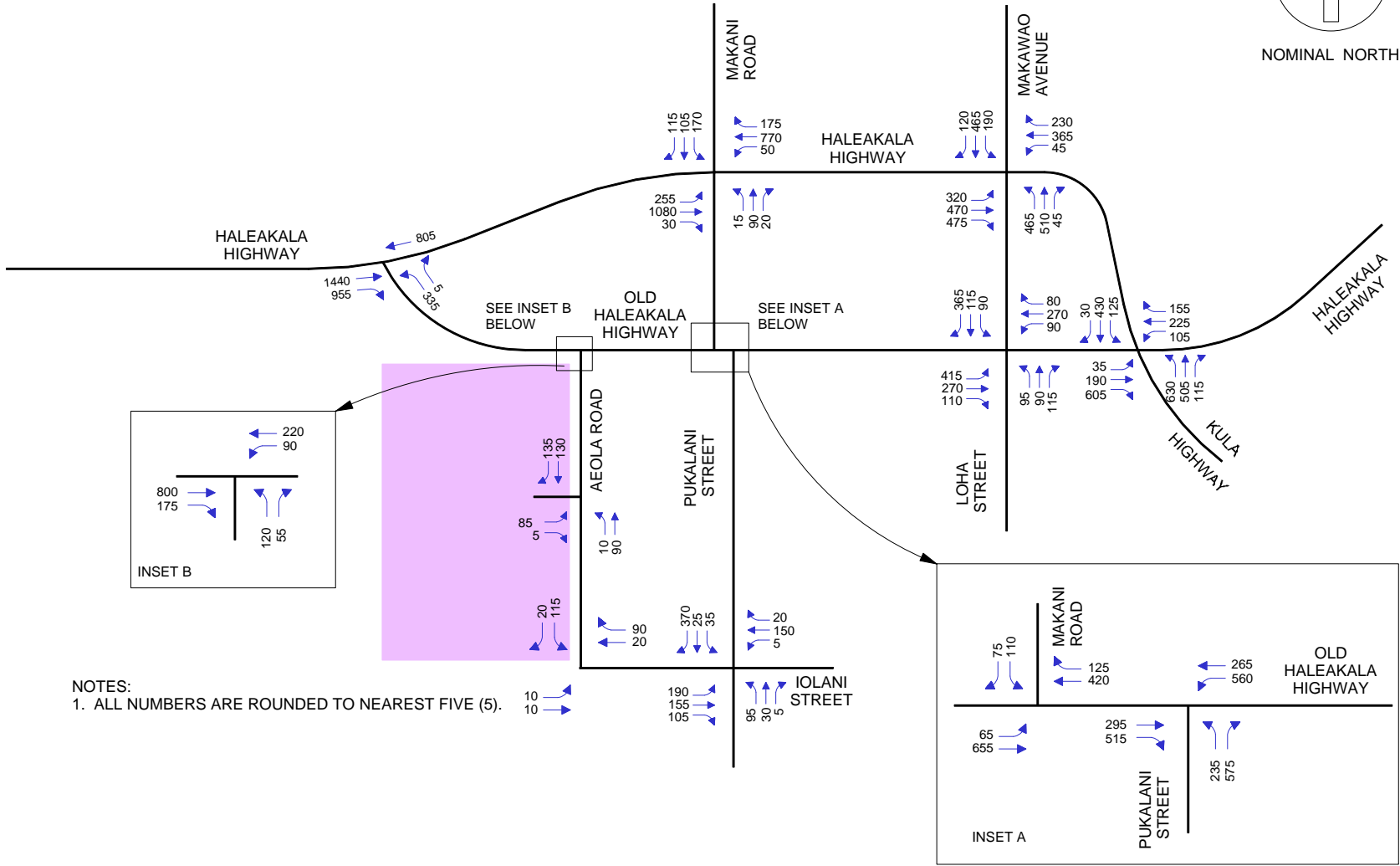


NOTES:  
1. ALL NUMBERS ARE ROUNDED TO NEAREST FIVE (5).

**Figure 12**  
**2015 BACKGROUND PLUS PROJECT AM PEAK HOUR TRAFFIC PROJECTIONS**



NOMINAL NORTH



NOTES:  
1. ALL NUMBERS ARE ROUNDED TO NEAREST FIVE (5).

**Figure 13**  
**2015 BACKGROUND PLUS PROJECT PM PEAK HOUR TRAFFIC PROJECTIONS**

## **5. TRAFFIC IMPACT ANALYSIS**

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The purpose of this chapter is to summarize the results of the level-of-service analysis of future conditions with traffic generated by Kauhale Lani. This analysis identifies any potential traffic operational deficiencies. If deficiencies are anticipated, mitigation measures are identified and assessed. The impact of the project was assessed by analyzing the changes in levels-of-service of the study intersections.

### **Methodology for Level-of-Service Analysis**

1. Synchro 6 was used to analyze the signalized intersections. The Highway Capacity Software was used to analyze the unsignalized intersections. Both software packages are based on the *Highway Capacity Manual*. Neither Synchro nor the Highway Capacity Software results report a volume-to-capacity ratio for unsignalized intersections or results for the overall unsignalized intersection.

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 and the major movements on the major roadways rather than each controlled lane group. Minor movements, such as left turns and side street approaches, may operate at Level-of-Service E for short periods. "Although this level is generally considered undesirable for a signalized intersection, 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."<sup>6</sup> 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 D or better. However, in many cases, the intersection operates at Level-of-Service E or F without project generated traffic. If the change in the volume-to-capacity ratio and delay are insignificant, then no mitigation is required. If the changes are significant, then mitigation should be provided to improve the volume-to-capacity ratio and delay to the level that they were before project generated traffic was added.
3. As the *Highway Capacity Manual* defines level-of-service by delay, we have used the same definitions.

### **Volume-to-Capacity and Level-of-Service Impact Analysis**

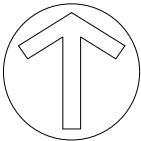
The level-of-service analysis was performed for 2015 background and 2015 background plus project conditions to identify the impacts of the project and locations where mitigation measures should be investigated. The level-of-service analysis calculates the volume-to-capacity ratio and delay of each controlled lane group. The delay defines the level-of-service of the intersection and the controlled movements. The change in the volume-to-capacity ratio and delay quantifies the impact of the project. As previously noted in Chapter 2, Level-of-Service D is generally considered an acceptable level-of-service.

The 2015 level-of-service analysis incorporates the traffic projections resulting from the related projects discussed previously and the anticipated roadway improvements associated with those projects and the roadway improvements that were identified during discussion with State of Hawaii Department of Transportation. The anticipated 2015 roadway network is shown as [Figure 14](#).

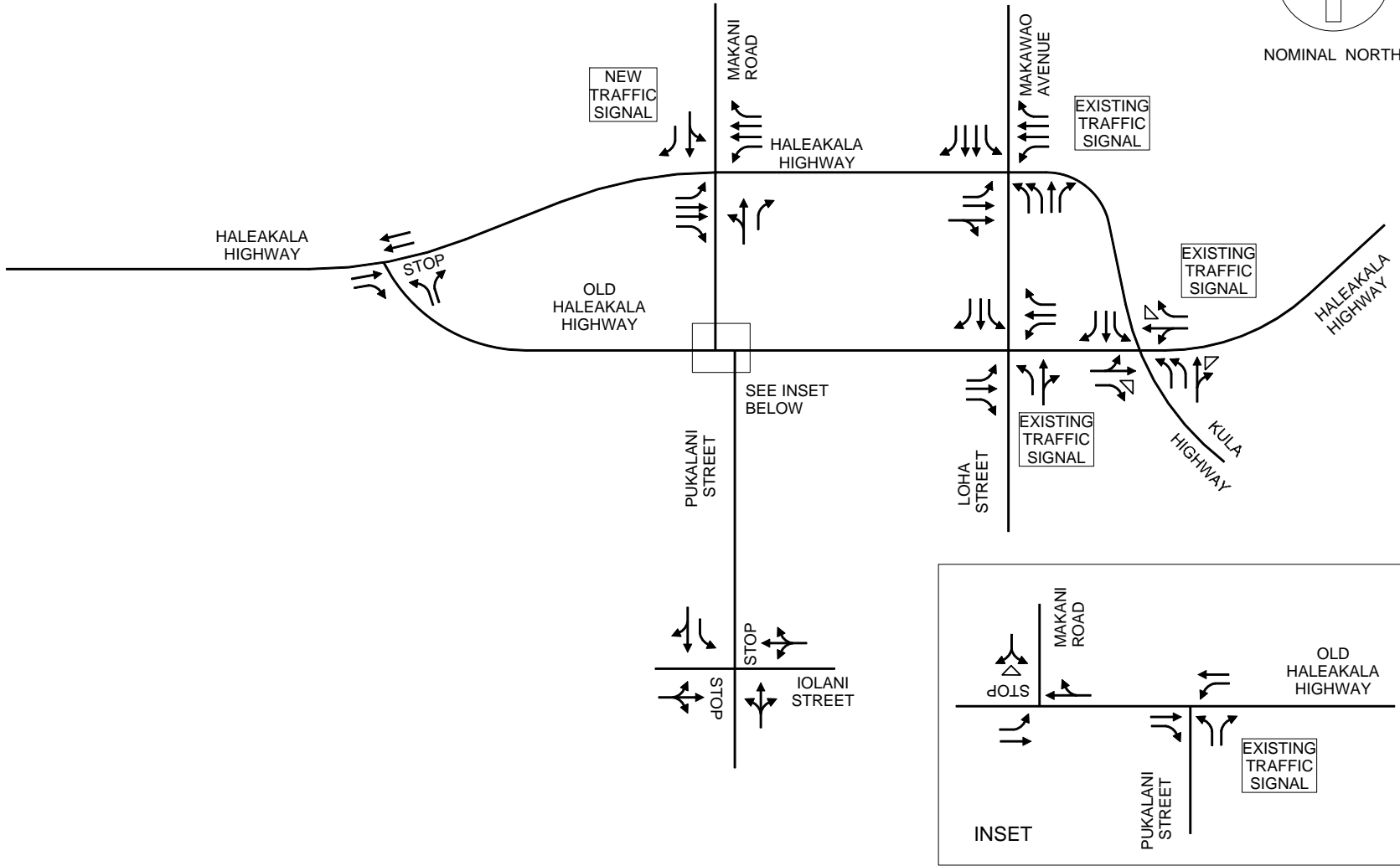
The results of the level-of-service analysis are presented separately for each of the study intersections.

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<sup>6</sup> M&E Pacific, Inc. *Traffic Impact Analysis Report for Lihue Civic Center Master Plan*, October 2005, p. 25



NOMINAL NORTH



**Figure 14**  
**2015 LANE CONFIGURATIONS AND RIGHT-OF-WAY CONTROLS**

Haleakala Highway at Kula Highway/Old Haleakala Highway

The level-of-service analysis of this intersection for existing right-of-way control conditions is summarized in Table 10. Overall, the intersection will operate at Level-of-Service D during both peak periods. Only the westbound left and through movement will operate at Level-of-Service E during both peak periods. All the remaining movements will operate at Level-of-Service D, or better. It should be noted that this level-of-service analysis reflects conditions that include the addition of a northbound to westbound left turn lane. As the intersection will operate at Level-of-Service D, no additional mitigation is recommended.

**Table 10 Level-of-Service Analysis - Haleakala Highway at Kula Highway**

Peak Hour, Approach and Movement	AM Peak Hour						PM Peak Hour					
	2015 Background Without Project			2015 Background With Project			2015 Background Without Project			2015 Background With Project		
	V/C <sup>(2)</sup>	Delay <sup>(3)</sup>	LOS <sup>(4)</sup>	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
<b>Intersection Total</b>	<b>0.96</b>	<b>34.0</b>	<b>C</b>	<b>0.98</b>	<b>35.2</b>	<b>D</b>	<b>0.98</b>	<b>36.5</b>	<b>D</b>	<b>0.98</b>	<b>37.6</b>	<b>D</b>
Eastbound Left & Thru	0.29	26.7	C	0.31	26.5	C	0.56	28.0	C	0.56	28.0	C
Eastbound Right	0.33	27.1	C	0.35	27.0	C	0.54	27.4	C	0.55	27.5	C
Westbound Left & Thru	0.93	62.9	E	0.94	66.3	E	0.96	66.1	E	0.96	66.5	E
Westbound Right	0.13	25.4	C	0.13	25.0	C	0.11	22.9	C	0.11	22.8	C
Northbound Left	0.72	38.9	D	0.72	38.8	D	0.90	46.7	D	0.91	48.6	D
Northbound Thru & Right	0.90	32.1	C	0.91	34.6	C	0.81	29.3	C	0.82	31.0	C
Southbound Left	0.70	51.2	D	0.70	51.7	D	0.65	44.5	D	0.64	44.2	D
Southbound Thru	0.68	24.4	C	0.70	26.4	C	0.71	31.3	C	0.72	32.5	C
Southbound Right	0.00	14.1	B	0.00	15.0	B	0.02	18.8	B	0.02	19.4	B

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

Old Haleakala Highway at Makawao Avenue & Loha Street

The results of the level-of-service analysis of the intersection of Old Haleakala Highway at Makawao Avenue is tabulated in Table 11. The intersection will operate at Level-of-Service C and all movements will operate at Level-of-Service D, or better, during both peak periods. No mitigation is recommended in addition to the improvements required to mitigate the impacts of the related projects.

**Table 11 Level-of-Service Analysis - Old Haleakala Highway at Makawao Avenue & Loha Street**

Peak Hour, Approach and Movement	AM Peak Hour						PM Peak Hour					
	2015 Background Without Project			2015 Background With Project			2015 Background Without Project			2015 Background With Project		
	V/C <sup>(2)</sup>	Delay <sup>(3)</sup>	LOS <sup>(4)</sup>	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
<b>Intersection Total</b>	<b>0.68</b>	<b>24.3</b>	<b>C</b>	<b>0.71</b>	<b>25.7</b>	<b>C</b>	<b>0.81</b>	<b>20.0</b>	<b>B</b>	<b>0.84</b>	<b>20.7</b>	<b>C</b>
Eastbound Left	0.88	38.3	D	0.90	40.2	D	0.85	25.3	C	0.87	27.8	C
Eastbound Thru	0.88	27.1	C	0.91	29.6	C	0.31	10.4	B	0.32	10.3	B
Eastbound Right	0.01	9.9	A	0.01	9.6	A	0.08	9.0	A	0.08	8.8	A
Westbound Left	0.32	19.0	B	0.33	18.8	B	0.40	22.9	C	0.38	22.5	C
Westbound Thru	0.55	20.0	B	0.55	19.5	B	0.65	27.0	C	0.67	27.0	C
Westbound Right	0.06	15.7	B	0.06	15.2	B	0.05	20.2	C	0.06	19.9	B
Northbound Left	0.10	18.2	B	0.11	19.3	B	0.27	18.4	B	0.28	18.9	B
Northbound Thru & Right	0.22	21.5	C	0.23	22.8	C	0.42	23.8	C	0.43	24.5	C
Southbound Left	0.28	14.2	B	0.29	15.2	B	0.26	14.3	B	0.27	14.8	B
Southbound Thru	0.07	16.9	B	0.07	17.9	B	0.23	18.5	B	0.23	19.0	B
Southbound Right	0.17	17.9	B	0.17	19.0	B	0.24	18.8	B	0.25	19.5	B

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

*Haleakala Highway at Makawao Avenue*

The results of the level-of-service analysis for the intersection of Haleakala Highway at Makawao Avenue are summarized in Table 12. Overall, the intersection will operate at Level-of-Service C during the morning peak hour and Level-of-Service D during the afternoon peak hour. During the morning peak hour, all movements will operate at Level-of-Service D or better. During the afternoon peak hour, all movements will operate at Level-of-Service D, or better, except the northbound through movement, which will operate at Level-of-Service F during the afternoon peak hour. As this northbound through movement is considered a minor movement, and that the overall intersection and the major eastbound and westbound movements operate at Level-of-Service D, or better, no additional mitigation is recommended.



**Table 12 Level-of-Service Analysis - Haleakala Highway at Makawao Avenue**

Peak Hour, Approach and Movement	AM Peak Hour						PM Peak Hour					
	2015 Background Without Project			2015 Background With Project			2015 Background Without Project			2015 Background With Project		
	V/C <sup>(2)</sup>	Delay <sup>(3)</sup>	LOS <sup>(4)</sup>	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
<b>Intersection Total</b>	<b>0.65</b>	<b>27.1</b>	<b>C</b>	<b>0.71</b>	<b>27.7</b>	<b>C</b>	<b>0.96</b>	<b>41.9</b>	<b>D</b>	<b>0.97</b>	<b>42.5</b>	<b>D</b>
Eastbound Left	0.42	44.0	D	0.42	38.6	D	0.88	53.3	D	0.89	54.6	D
Eastbound Thru & Right	0.09	19.9	B	0.09	19.5	B	0.80	31.4	C	0.79	31.3	C
Westbound Left	0.35	40.0	D	0.33	39.9	D	0.53	45.7	D	0.53	45.8	D
Westbound Thru	0.88	34.9	C	0.87	33.9	C	0.73	40.1	D	0.73	40.3	D
Westbound Right	0.16	20.3	C	0.16	20.6	C	0.16	32.4	C	0.16	32.5	C
Northbound Left	0.21	21.6	C	0.22	22.5	C	0.64	34.5	C	0.64	34.6	C
Northbound Thru	0.63	26.4	C	0.67	28.6	C	1.03	77.6	E	1.04	80.9	F
Northbound Right	0.01	17.0	B	0.01	17.9	B	0.03	22.6	C	0.03	22.7	C
Southbound Left	0.78	35.8	D	0.80	39.0	D	0.74	45.4	D	0.74	45.6	D
Southbound Thru	0.39	20.7	C	0.40	21.8	C	0.65	33.4	C	0.67	33.8	C
Southbound Right	0.17	19.4	B	0.18	20.4	C	0.08	27.6	C	0.08	27.7	C

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

*Pukalani Street at Iolani Street*

The results of the level-of-service analysis of the intersection of Pukalani Street at Iolani Street are summarized in [Table 13](#). All movements will operate at Level-of-Service C or better, except for the eastbound approach, which will operate at Level-of-Service F, during both peak periods. As the delay of the eastbound approach increases by a factor of over 2.5, the impact is significant and mitigation should be considered.

**Table 13 Level-of-Service Analysis - Pukalani Street at Iolani Street**

Peak Hour, Approach and Movement	AM Peak Hour						PM Peak Hour					
	2015 Background Without Project			2015 Background With Project			2015 Background Without Project			2015 Background With Project		
	V/C <sup>(2)</sup>	Delay <sup>(3)</sup>	LOS <sup>(4)</sup>	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Northbound Left, Thru & Right		8.2	A		8.5	A		8.4	A		8.4	A
Southbound Left & Thru		7.6	A		7.4	A		7.5	A		7.3	A
Westbound Left, Thru & Right		22.1	C		52.8	F		16.5	C		27.1	D
Eastbound Left, Thru & Right		391.5	F		1028.0	F		41.7	E		96.0	F

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

Old Haleakala Highway at Pukalani Street

The results of the level-of-service analysis of the intersection of Old Haleakala Highway at Pukalani Street is summarized in Table 14. Overall, the intersection will operate at Level-of-Service C during both the morning and afternoon hours. All movements will operate at Level-of-Service C. It should be noted that the northbound left turn will operate at Level-of-Service F during the morning peak hour without the project. Because the proposed connection to Aeloa Road will divert traffic from Old Haleakala Highway at Aeloa Road, the level-of-service improves from Level-of-Service F to Level-of-Service C.

As with existing conditions, there is an inconsistency between the level-of-service as defined by delay and the level-of-service implied by the volume-to-capacity ratio. However, since the accepted definitions of the levels-of-service are based on delay, not the volume-to-capacity ratio, no mitigation is recommended.

**Table 14 Level-of-Service Analysis - Old Haleakala Highway at Pukalani**

Peak Hour, Approach and Movement	AM Peak Hour						PM Peak Hour					
	2015 Background Without Project			2015 Background With Project			2015 Background Without Project			2015 Background With Project		
	V/C <sup>(2)</sup>	Delay <sup>(3)</sup>	LOS <sup>(4)</sup>	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
<b>Intersection Total</b>	<b>0.92</b>	<b>34.3</b>	<b>C</b>	<b>0.84</b>	<b>22.2</b>	<b>C</b>	<b>1.36</b>	<b>22.2</b>	<b>C</b>	<b>1.28</b>	<b>21.7</b>	<b>C</b>
Eastbound Thru	0.67	23.2	C	0.76	26.9	C	0.70	26.6	C	0.74	28.3	C
Eastbound Right	0.17	17.1	B	0.15	16.7	B	0.63	24.5	C	0.36	20.1	C
Westbound Left	0.84	20.6	C	0.90	29.0	C	0.89	23.9	C	0.90	27.1	C
Westbound Thru	0.27	7.3	A	0.29	7.2	A	0.22	5.7	A	0.26	5.8	A
Northbound Left	1.08	81.3	F	0.79	29.2	C	0.65	26.2	C	0.54	23.4	C
Northbound Right	0.24	15.0	B	0.24	15.8	B	0.39	20.7	C	0.40	21.0	C

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

Old Haleakala Highway at Makani Road

The results of the level-of-service analysis of the intersection of Old Haleakala Highway at Makani Road is summarized in Table 15. All movements will operate at Level-of-Service C, or better, except the southbound left turn, which will operate at Level-of-Service E during the morning peak hour and Level-of-Service F during the afternoon peak hour. No mitigation is recommended because the delays are less with the project than without the project. This is because traffic is diverted to Aeloa Road and the connection to Iolani Street.

**Table 15 Level-of-Service Analysis - Old Haleakala Highway at Makani Road**

Peak Hour, Approach and Movement	AM Peak Hour						PM Peak Hour					
	2015 Background Without Project			2015 Background With Project			2015 Background Without Project			2015 Background With Project		
	V/C <sup>(2)</sup>	Delay <sup>(3)</sup>	LOS <sup>(4)</sup>	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
Eastbound Left		9.9	A		9.5	A		8.9	A		8.9	A
Southbound Left		42.0	E		39.6	E		105.4	F		84.7	F
Southbound Right		17.5	C		15.2	C		12.2	B		12.6	B

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

*Haleakala Highway at Makani Road*

The results of the level-of-service analysis for the intersection of Haleakala Highway at Makani Road is summarized in [Table 16](#).

During the morning peak hour, the intersection will operate at Level-of-Service C, without and with the project and all movements will operate at Level-of-Service D, or better. Note that there is a change of the delay and level-of-service for the westbound left turn from Level-of-Service E to Level-of-Service D. This is a result of the traffic signal phasing and timing.

During the afternoon peak hour, the overall intersection level-of-service will change from Level-of-Service C to Level-of-Service D. However, there are no changes in the level-of-service of any of the movements. All movements will operate at Level-of-Service D, or better, except the eastbound left and the southbound left and through movements, which will operate at Level-of-Service E. As these movements are considered minor movements and the overall intersection and major eastbound and westbound movements will operate at Level-of-Service D, or better, no additional mitigation is recommended.

**Table 16 Level-of-Service Analysis - Haleakala Highway at Makani Road**

Peak Hour, Approach and Movement	AM Peak Hour						PM Peak Hour					
	2015 Background Without Project			2015 Background With Project			2015 Background Without Project			2015 Background With Project		
	V/C <sup>(2)</sup>	Delay <sup>(3)</sup>	LOS <sup>(4)</sup>	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
<b>Intersection Total</b>	<b>0.83</b>	<b>20.5</b>	<b>C</b>	<b>0.84</b>	<b>20.3</b>	<b>C</b>	<b>0.94</b>	<b>32.9</b>	<b>C</b>	<b>0.96</b>	<b>35.0</b>	<b>D</b>
Eastbound Left	0.56	33.1	C	0.55	32.3	C	0.88	59.5	E	0.87	57.1	E
Eastbound Thru	0.27	9.5	A	0.28	10.2	B	0.56	11.7	B	0.58	12.7	B
Eastbound Right	0.00	8.1	A	0.00	8.7	A	0.02	7.7	A	0.02	8.3	A
Westbound Left	0.62	69.4	E	0.62	37.0	D	0.40	45.3	D	0.50	44.5	D
Westbound Thru	0.72	17.8	B	0.73	18.2	B	0.98	49.5	D	0.99	52.9	D
Westbound Right	0.05	11.4	B	0.05	11.6	B	0.13	14.2	B	0.13	14.4	B
Northbound Left & Thru	0.16	18.2	B	0.21	18.3	B	0.26	30.2	C	0.29	30.2	C
Northbound Right	0.01	16.8	B	0.09	17.1	B	0.01	27.0	C	0.01	26.6	C
Southbound Left & Thru	0.70	25.9	C	0.72	26.7	C	0.91	62.2	E	0.95	72.0	E
Southbound Right	0.81	31.7	C	0.80	30.6	C	0.08	27.5	C	0.08	27.0	C

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

*Haleakala Highway at Old Haleakala Highway*

The results of the level-of-service analysis for the intersection of Haleakala Highway at Old Haleakala Highway are summarized in Table 17. The results shown are for unsignalized conditions. The northbound left turn will operate at Level-of-Service F during both peak periods, without and with the project.

**Table 17 Level-of-Service Analysis - Haleakala Highway at Old Haleakala Highway**

Peak Hour, Approach and Movement	AM Peak Hour						PM Peak Hour					
	2015 Background Without Project			2015 Background With Project			2015 Background Without Project			2015 Background With Project		
	V/C <sup>(2)</sup>	Delay <sup>(3)</sup>	LOS <sup>(4)</sup>	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
<b>Intersection Total</b>												
Northbound Left		1028.0	F		1082.0	F		725.3	F		873.7	F
Northbound Right		9.6	A		9.6	A		15.7	C		15.7	C

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

One of the assignments of this Traffic Impact Assessment Report was to determine if a traffic signal is warranted at this intersection. An assessment of the warrants for a traffic signal determined that four of the eight warrants for a traffic signal are satisfied: Warrant 1 - Eight-Hour Vehicular Volume, Warrant 2 - Four-Hour Vehicular Volume, Warrant 3 - Peak Hour Volume and Warrant 6 - Coordinated Traffic Signal System. These warrants are satisfied for 2015 conditions without the proposed project because of traffic generated by related projects and background conditions whether the proposed project is constructed or not. The results of the level-of-service analysis for signalized conditions is summarized in Table 18. As a signalized intersection, the intersection will operate at Level-of-Service B during both peak hours. It should be noted that the total traffic using this intersection will increase 1.6% during the morning peak hour and 3.0% during the afternoon peak hour as a result of project generated traffic.

**Table 18 Level-of-Service Analysis - Haleakala Highway at Old Haleakala Highway**

Peak Hour, Approach and Movement	AM Peak Hour						PM Peak Hour					
	2015 Background Without Project			2015 Background With Project			2015 Background Without Project			2015 Background With Project		
	V/C <sup>(2)</sup>	Delay <sup>(3)</sup>	LOS <sup>(4)</sup>	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS
<b>Intersection Total</b>	<b>0.83</b>	<b>17.4</b>	<b>B</b>	<b>0.85</b>	<b>18.1</b>	<b>B</b>	<b>1.26</b>	<b>11.7</b>	<b>B</b>	<b>1.31</b>	<b>12.5</b>	<b>B</b>
Eastbound Thru	0.23	8.5	A	0.23	8.6	A	0.78	10.3	B	0.79	10.9	B
Eastbound Right	0.17	14.0	B	0.19	14.0	B	0.61	18.0	B	0.66	19.1	B
Westbound Thru	0.84	16.6	B	0.84	17.0	B	0.46	6.4	A	0.47	6.7	A
Northbound Left & Right	0.83	23.1	C	0.85	24.5	C	0.35	14.5	B	0.38	14.6	B

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

Old Haleakala Highway at Aeloa Road

An analysis of the need for a separate left turn lane determined that a separate left turn lane for westbound to southbound left turns is warranted. The results of the level-of-service analysis for the intersection of Old Haleakala Highway at Aeloa Road are summarized in [Table 19](#). All movements will operate at Level-of-Service D, or better. A traffic signal warrant analysis determined that a traffic signal is not warranted. The delays are relatively low and the warrants for a traffic signal are not satisfied.

**Table 19 Level-of-Service Analysis - Old Haleakala Highway at Aeloa Road**

Peak Hour, Approach and Movement	AM Peak Hour			PM Peak Hour		
	2015 Background With Project			2015 Background With Project		
	V/C	Delay	LOS	V/C	Delay	LOS
Westbound Left		8.0	A		11.1	B
Northbound Left		34.9	D		25.9	D
Northbound Right		10.3	B		16.6	C

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

Aeloa Road at Iolani Street

The results of the level-of-service analysis for the intersection of Aeloa Road at Iolani Street are summarized in [Table 20](#). All movements will operate a Level-of-Service A.

**Table 20 Level-of-Service Analysis - Aeloa Road at Iolani Street**

Peak Hour, Approach and Movement	AM Peak Hour			PM Peak Hour		
	2015 Background With Project			2015 Background With Project		
	V/C	Delay	LOS	V/C	Delay	LOS
Westbound Thru & Right		7.7	A		7.5	A
Southbound Left & Right		9.7	A		9.8	A

NOTES:

1. Peak hour conditions analyzed are "worst-case" conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

*Aeloa Road at Project Driveway*

An analysis of the need for a separate left turn lane for traffic turning into the project concluded that a separate left turn lane is not warranted. The results of the Level-of-Service analysis for the project’s driveway along Aeloa Road are summarized in [Table 21](#). The controlled movements will operate at Level-of-Service A or B.

**Table 21 Level-of-Service Analysis - Aeloa road at Project Driveway**

Peak Hour, Approach and Movement	AM Peak Hour			PM Peak Hour		
	2015 Background With Project			2015 Background With Project		
	V/C	Delay	LOS	V/C	Delay	LOS
Eastbound Left & Right		7.4	A		7.9	A
Northbound Left & Thru		11.7	B		11.7	B

NOTES:

1. Peak hour conditions analyzed are “worst-case” conditions, which is the sum of the peak hour of the adjacent street plus the peak hour of the generator.
2. V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
3. Delay is in seconds per vehicle.
4. LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*. LOS is based on delay.

**Mitigation**

As noted in the previous section, the level-of-service analysis concluded that mitigation is needed at the intersection of Pukalani Street at Iolani Street. Without mitigation, the delay along the eastbound approach is 1028.0 seconds. This delay is so long that the entire intersection will operate at Level-of-Service F since the level-of-service of an unsignalized intersection is defined by the lowest level-of-service of the intersection approaches.

There are three viable alternative measures to mitigate the unacceptable level-of-service. The first is to convert the intersection from a two-way stop sign controlled intersection to a four-way stop sign controlled intersection. As a four-way stop sign controlled intersection, the eastbound approach will still operate at Level-of-Service F, but the delay is reduced from 1028.0 to 93.0 seconds. This is a significant improvement and may be acceptable to the community. The remaining approaches will operate at Level-of-Service C or D, which are acceptable levels-of-service.

The second alternative is to convert the intersection to a roundabout. As a roundabout, the intersection will operate at Level-of-Service B.

The third and last alternative is to install traffic signals. As a signalized intersection, the intersection will operate at Level-of-Service C during the morning peak hour and Level-of-Service B during the afternoon peak hour. Traffic signals are expensive and require continual maintenance.

As a signalized intersection, better levels-of-service will be provided. However, experience indicates that residential communities do not want traffic signals in their communities, and prefer four-way stop sign controlled intersections or roundabouts. Since the roundabout will provide acceptable levels-of-service during both peak periods and will also act as a traffic calming measure for this area of Pukalani Street, a roundabout appears to be the preferred alternative. However, a final recommendation should not be made without input from the surrounding community.

## **Other Traffic Issues**

### *Access to Pukalani Subdivision*

Four lots of the Pukalani Subdivision have access along Aeloa Road south of Old Haleakala Highway. As shown on the site plan (see [Appendix A](#)), the realignment of Aeloa Road in the vicinity of Old Haleakala Highway will cut this access off. An alternative access plan is needed.

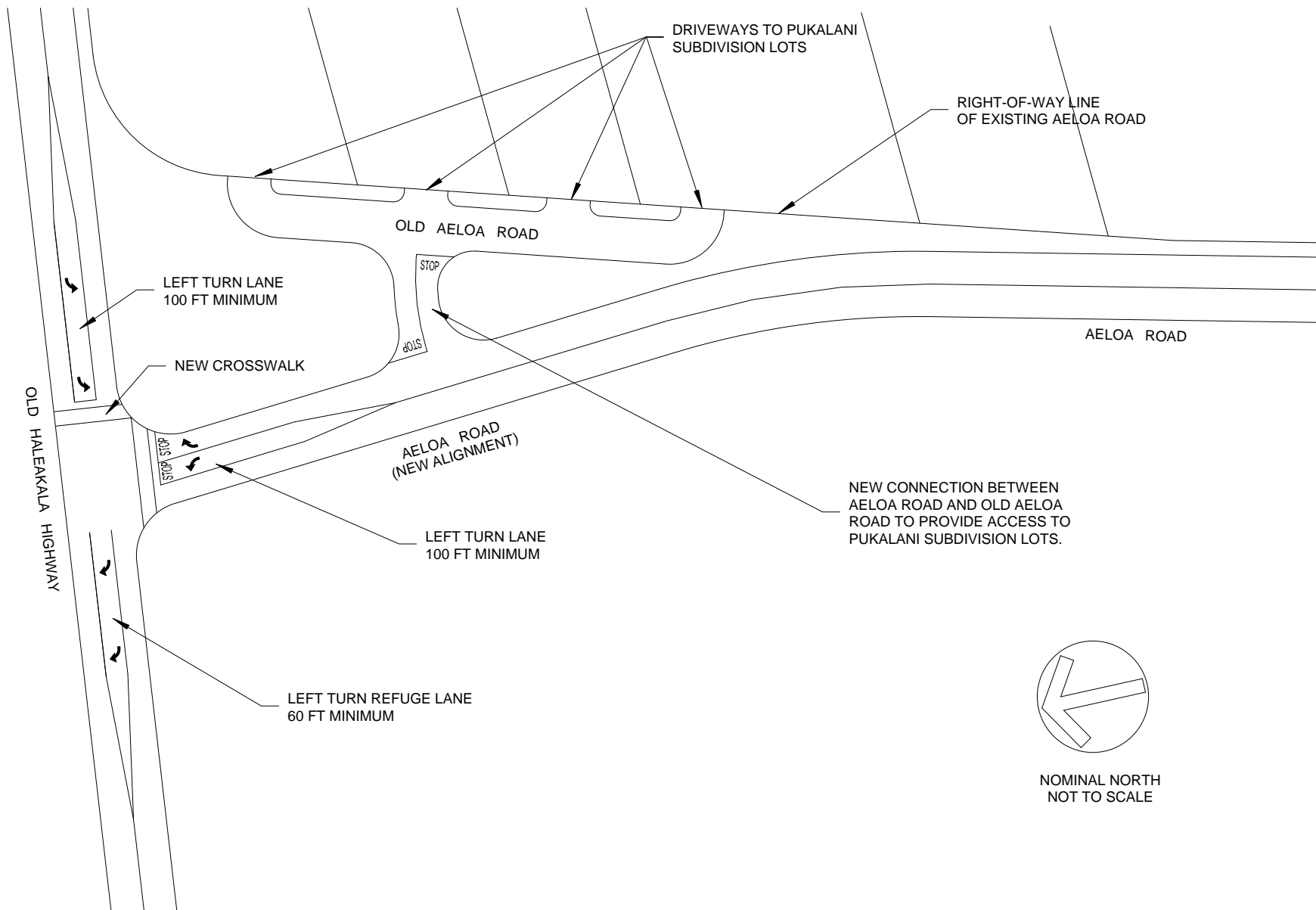
The preferable alternative is to provide a connection between the old Aeloa Road and the new Aeloa Road to provide this access. An analysis of the queue of traffic waiting along northbound Aeloa Road at Old Haleakala Highway concluded that the 95<sup>th</sup> percentile queue during the morning peak hour is 4.3 vehicles. This means that the connection should be far enough from the intersection to provide storage for at least five (5) car lengths, or 100 feet. This will provide sufficient storage so the connection would be clear 95%, or more, of the time.

A schematic drawing of the recommended configuration is provided as [Figure 15](#).

### *Pedestrian Crosswalk Across Old Haleakala Highway*

The project's site plan indicates a pedestrian crosswalk across Old Haleakala Highway along the east side of the intersection of with Aeloa Road. Because of the gradient of Old Haleakala Highway, the following enhancements should be provided at the crosswalk:

- a. Pedestrian crossing signs should be installed in compliance with the *Manual of Uniform Traffic Control Devices* and County standards. The signs should have a flashing warning light.
- b. Advance pedestrian crossing signs should be provided.
- c. The crosswalk should have internally illuminated lighting.



**Figure 15**  
**SCHEMATIC DIAGRAM OF INTERECTION OF OLD HALEAKALA HIGHWAY AT AELOA ROAD**



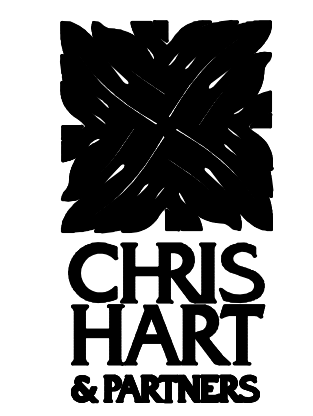
## **Conclusions and Recommendations**

1. The conclusion of the level-of-service analysis is that traffic generated by the Kauhale Lane project will have an impact on the levels-of-service of the key intersections in the study area. There are no significant changes in the volume-to-capacity ratios or delays, and therefore, the levels-of-service of any of the study intersections as a result of traffic generated by the Kauhale Lane project. However, the background levels-of-service of several intersections will be below acceptable conditions, whether Kauhale Lani is constructed or not, because of the heavy background traffic volumes.
2. The low levels-of-service at these intersections are the result of regional traffic. Traffic generated by the Kauhale Lane project comprises a small percentage of the total traffic projected to use these intersections during the peak hours. This is a clear indication that the low levels-of-service at these intersections are a regional issue that must be addressed on a regional basis. Improvements identified in the *Maui Long-Range Land Transportation Plan* should be implemented. The applicant should be responsible for no more than the project's pro rata share of the total traffic using the intersections.
3. Traffic calming measures should be provided along the roadways within the project. Alternative measures include speed humps, speed tables, roundabouts and four-way stops.
4. Community input should be obtained from the community relative to the preferred alternative for the intersection of Pukalani Street at Iolani Street. The advantages and disadvantages should be provided to them as input.
5. The intersection of Old Haleakala Highway at Aeloa Road should not be signalized.
6. A separate left turn lane should be provided for left turns from westbound Old Haleakala Highway to southbound Aeloa Road.
7. A connection should be provided between Aeloa Road and Old Aeloa Road to provide access to Pukalani Subdivision.
8. Enhanced signing should be provided at the crosswalk across Old Haleakala Highway at Aeloa Road as described earlier in this report.

**APPENDIX A  
CONCEPT SITE PLAN**



110



LANDSCAPE ARCHITECTURE  
AND PLANNING  
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WAILUKU, MAUI, HI 96793-7706  
TELEPHONE: 808-242-1955  
FACSIMILE: 808-242-1956  
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PREPARED FOR:

KAUHALE LANI

PUKALANI, MAUI, HAWAII

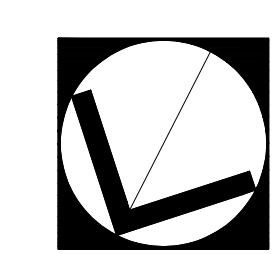
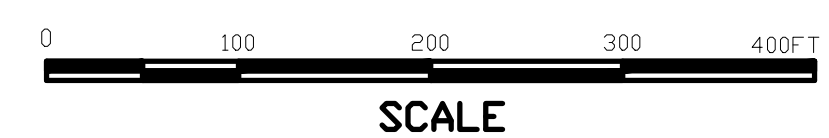
THIS WORK WAS PREPARED BY ME OR  
UNDER MY DIRECT SUPERVISION AND  
CONSTRUCTION OF THIS PROJECT WILL  
BE UNDER MY SUPERVISION

Signature Expires 04-30-08

- △
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Designed by  
Drawn by  
Checked by  
Date  
File No.

SHEET



REVISED CONCEPT  
SITE PLAN

**Appendix K:  
Preliminary  
Drainage Report**

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# PRELIMINARY DRAINAGE REPORT KAUHALE LANI

Pukalani, Maui, Hawaii

July 15, 2008

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Prepared for:

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Prepared by:



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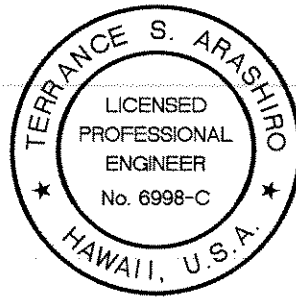
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# PRELIMINARY DRAINAGE REPORT

For

## KAUHALE LANI COMMUNITY

Pukalani, Maui, Hawaii



Prepared for:

Pukalani Associates, LLC  
c/o Michael Wright & Associates, Inc.  
P.O. Box 330784  
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Prepared by:

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July 2008

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**PRELIMINARY DRAINAGE REPORT**  
**KAUHALE LANI COMMUNITY**  
**PUKALANI, MAUI, HAWAII**

**I. INTRODUCTION**

The purpose of this report is to provide an overview of the preliminary drainage design for the Kauhale Lani Community (Project) in Pukalani, Maui. This report evaluates the existing site conditions and defines requirements for grading and drainage to meet the County of Maui Drainage Standards.

**II. PROPOSED PROJECT**

**A. Location**

The proposed project site is located on the Northeast side of Pukalani and southwest of where Old Haleakala Highway branches off from Haleakala Highway. The project site is comprised of two parcels with the following Tax Map Keys: 2-3-09: 07 (50 acres) and 2-3-09:64 (39 acres) which is divided by Old Haleakala Highway. The 50 acre parcel is bordered by Old Haleakala Highway and Haleakala Highway to the east, Hamakua Irrigation Ditch to the north and west, and the unimproved A`eloia Road and Lower Pukalani Terrace subdivision to the south. The 39 acre parcel is bordered by Haleakala Highway to the north and east, Old Haleakala Highway, a vacant parcel, and single family residences to the west, and Makani Road to the south. The main access to the site will be from Old Haleakala Highway via A`eloia Road which will be improved to County roadway standards. Refer to Exhibit 1 for Location and Vicinity Map.



## **B. Project Description**

The proposed project consists of 170 single-family residences, a wastewater pump station site, and open space for drainage purposes which will be contained on the 50 acre parcel, while community park area with a trail system shall be contained on the 39 acre parcel. Refer to Exhibit 2 for Preliminary Site Plan.

On-site improvements include clearing and grubbing of the agricultural lands and excavation and embankment for the proposed grading. Interior roadways will be constructed following existing terrain to the extent practicable. A'eloia Road which is a designated County right-of-way, but which remains unimproved will be constructed to County roadway standards to provide access to the Project as well as an alternate access to the lower Pukalani neighborhoods.

Intersection improvements will be made at the A'eloia Road intersection with Old Haleakala Highway to provide for turning lanes and deceleration and acceleration lanes. A'eloia Road will also be connected to Iolani Street.

## **III. EXISTING CONDITIONS**

### **A. Topography and Soil Conditions**

The 50 acre and the 39 acre parcels are currently undeveloped agricultural land with dirt roads, which were previously pineapple fields.

The 50 acre parcel consists of few rock piles scattered throughout, low-lying grass, weeds, and shrubs, along with two native species of flora, popolo and `uhaloa.

The 39 acre parcel is mainly overgrown pineapple fields with low-lying grass, weeds, various shrubs, some with koali `awa vines growing on them. There are also various Eucalyptus trees, 40 to 70 feet tall along Haleakala Highway. This site also has seven native species of flora, five of which are indigenous and 2 that are endemic. The indigenous species are popolo, `uhaloa, koali `awa, `ilima, and `a`ali`i. The endemic species are `akia and Sicyos.

The 50 acre parcel lies on a gentle grade which slopes southeast towards Old Haleakala Highway with elevations ranging from 1,088 feet to 1,186 feet. The slope has an average gradient of about 7 percent.

The 39 acre parcel has elevations ranging from 1,110 feet to 1,440 feet with varying slopes across the site.

Soil on the site is mainly Hali`imaile Silty Clay, 3-7 percent slopes (HhB) and 7-15 percent slopes (HhC). Hali`imaile is a commonly used soil for pineapple, sugarcane, pastures, and homesites. HhB soils have moderate permeability, slow runoff, and slight erosion hazard. HhC soils have medium runoff and moderate erosion hazard. Descriptions are based on the USDA Soil Conservation Service's publication, "Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai," State of Hawaii, dated August 1972.

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## **B. Drainage**

Existing runoff from the majority of the site is non-channelized and flows overland towards Hamakua Ditch. A small portion along Old Haleakala Highway is collected by a concrete lined ditch that also drains to the Hamakua Ditch. An old cane road runs along the mauka property boundary intercepting runoff from mauka residential areas. This road has a natural ditch on its south end which eventually ties into the Hamakua Ditch at the south corner of the property. Refer to Exhibit 3 for the Existing Conditions Drainage Area Map.

Since the Project area is less than 100 acres, the Rational Method is used to determine runoff quantities. The 50-year storm recurrence interval is required since detention facilities are proposed to control the runoff from the developed site. The total existing 50-year, 1-hour peak runoff from the 50 acre site is 108.0 cfs and volume of 194,361 cubic-feet. Refer to Table 3 for a summary of existing runoff.

## **C. Flood Zone**

The entire project site is within flood zone "C", defined as areas with minimal flooding. Flood zone information is obtained from the Federal Emergency Management Agency, Flood Insurance Rate Map (FIRM), Panel Number **150003-0195 and 150003-0260-B**.

#### **IV. PROPOSED IMPROVEMENTS**

##### **A. Grading and Drainage Plan**

Generally, the existing terrain and drainage patterns will be maintained to the extent practicable, with roadways following existing slopes. The moderately sloped site may require excavation and embankment to provide relatively level terraced buildable areas for the proposed structures with some requiring retaining walls. The proposed grading changes will maintain the existing drainage patterns outfall to the Hamakua Ditch.

Onsite runoff will be collected by a new storm drain system. Roads will be curbed and contain inlets along the gutter while open and landscaped areas will contain grass swales to manage storm drainage. The storm drain system will convey runoff to a central detention basin located at the open space in the lower middle section of the site. Off-site runoff from the residential areas mauka of the project site will continue to be intercepted by A'eloia Road along the mauka property line. Drainage runoff on A'eloia Road from Old Haleakala Highway to Koea Place will be diverted to the detention basin. A'eloia Road from Koea Place to Iolani Street will runoff to a water quality device on the south end of A'eloia Road before discharging off-site. Refer to Exhibit 4 for the Proposed Conditions Drainage Area Map.

##### **B. Hydrology**

The overall unmitigated proposed peak runoff to Hamakua Ditch is calculated at 198.0 cfs and volume of 356,329 cubic-feet. The increase in runoff volume (161,968 cubic-feet) will be stored in the detention basin so that the overall peak discharge rates do not increase. The basin will store the increased volume of runoff that is caused by the developed site and will slowly release the treated stormwater. Overall peak flow rates will be equal or less than existing conditions. Refer to Table 5 for a summary of proposed detention basins and overall post-development runoff.

**C. Water Quality**

Several methods of permanent water quality treatment will be utilized on the project site including grass swales, a detention basin, and stormwater quality filtering device. These BMPs will provide removal of stormwater pollutants such as phosphorous, nitrogen, total suspended solids (TSS) and petroleum-oils and lubricants (POL). Additionally, pervious surfaces will allow stormwater to infiltrate into the surrounding soils, thereby providing groundwater recharge.

**D. Erosion Control Plan**

Temporary erosion control measures will be incorporated during the construction period to minimize soil loss and erosion hazards. Best Management Practices will include several temporary sediment basins, temporary diversion berms and swales, silt fences, dust fences, inlet protection, stabilized construction entrances and truck wash-down areas. Periodic spraying of loose soils will also be required for dust control for both on-site and off-site disturbed areas.

**V. CONCLUSION**

The Project will meet the Maui County, Department of Public Works and Environmental Management's Storm Drainage Rules for the management of stormwater runoff. The increase in stormwater runoff caused by the developed site will be stored in detention basin resulting in a net decrease in stormwater runoff from existing conditions. In addition to managing peak flow rates, various stormwater best management practices will be used throughout the site to help treat stormwater runoff and remove pollutants.

A NPDES permit for discharge of stormwater associated with construction activities will be obtained and the requirements of the approved NPDES permit and Stormwater Pollution Prevention Plan (SWPPP) will be adhered to during construction. At a minimum, silt fences, diversion berms, gravel egress, truck wash down areas and dust screens will be included in the SWPPP.

A stormwater monitoring plan will be developed to review the effectiveness of the temporary construction and permanent best management practices (BMPs). Monitoring during construction will be the responsibility of the selected contractor with general

oversight by the owner or the owner's designated representative. Post-construction inspection and monitoring of BMPs will be the responsibility of the owner.

Based on the foregoing study, the project is expected to have no adverse effects on existing facilities or the surrounding environment.

## VI. REFERENCES

1. Department of Public Works and Waste Management, County of Maui. (November, 1995). *Rules for the Design of Storm Drainage Facilities in the County of Maui*. Title MC-15, Subtitle 01, Chapter 4.
2. USDA, Soil Conservation Service in Cooperation with the University of Hawaii Agricultural Experiment Station. (August, 1972). *Soil Survey of Island of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*.
3. Federal Emergency Management Agency. (September 17, 1997). *Flood and Insurance Rate Map, Maui County, Hawaii*. Map Number 150003-0195 and 150003-0260-B.

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4. Engineering Solutions, Inc. (May 2005). *Preliminary Drainage Report for Kauhale Lani Community*.

## TABLES

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**TABLE 1**

**RUNOFF COEFFICIENT CALCULATIONS**

**Existing Conditions**

<b>Watershed Characteristics</b>	<b>C</b>	<b>Notes</b>
Infiltration	0.07	Medium
Relief	0.03	Rolling (5-15%)
Vegetal Cover	0.05	Poor (<10%)
Development Type	0.15	Agricultural
<b>TOTAL</b>	<b>0.30</b>	(also matches C value for "Unimproved Areas")

**Proposed Conditions**

<b>Watershed Characteristics</b>	<b>C</b>	<b>Notes</b>
Infiltration	0.07	Medium
Relief	0.03	Rolling (5-15%)
Vegetal Cover	0.03	Good (10-50%)
Development Type	0.40	Residential
<b>TOTAL</b>	<b>0.53</b>	(Use <b>0.55</b> Minimum for Residential Areas)



TABLE 2

TIME OF CONCENTRATION CALCULATIONS

Existing Conditions

Drainage Area	Cover	Length (ft)	Elev. Top (ft)	Elev. Bot (ft)	Avg. Slope (%)	Tc (min)	Notes
1	Agricultural- little or no cover	1,170	1,180	1,088	7.86	4.78	Used Plate 3, lower curve

Proposed Conditions

Drainage Area	Cover	Length (ft)	Elev. Top (ft)	Elev. Bot (ft)	Avg. Slope (%)	Tc (min)	Notes
1	Pavements	1,180	1,175	1,097	6.61	1.64	Used Table 4 (v=12.0 fps)
2	Pavements	175	1,180	1,093	49.71	0.24	Used Table 4 (v=12.0 fps)
3	Pavements	1,120	1,130	1,088	3.75	3.73	Used Table 4 (v=5.0 fps)

Notes: 1. Minimum Time of Concentration used for calculations is 5.0 minutes.

**TABLE 3**

**DRAINAGE AREA SUMMARY- EXISTING CONDITIONS**

DA	Area (ac)	C	Tc (min)	1- hr. I <sub>50</sub> (in/hr)	Adjusted I <sub>50</sub> (in/hr)	Q <sub>50</sub> (cfs)	Vol (cf)
1	49.99	0.30	5.00	2.8	7.2	108.0	194,361
<b>TOTALS</b>	<b>49.99</b>					<b>108.0</b>	<b>194,361</b>

- Notes:
1. Refer to Tables 1 and 2 for Time of Concentration (Tc) and Runoff Coefficient (C ) calculations.
  2. One Hour Rainfall Intensity value taken from Maui County Drainage Standards Plate 7.
  3. Adjusted Rainfall Intensity value taken from Maui County Drainage Standards Plate 2.
  4. Minimum Time of Concentration used for calculations is 5.0 minutes.
  5. Refer to Appendix for runoff hydrographs.

**TABLE 4**

**DRAINAGE AREA SUMMARY- POST-DEVELOPMENT CONDITIONS (UNMITIGATED)**

DA	Area (ac)	C	Tc (min)	1- hr. I <sub>50</sub> (in/hr)	Adjusted I <sub>50</sub> (in/hr)	Q <sub>50</sub> (cfs)	Vol (cf)
1	31.05	0.55	5.00	2.8	7.2	123.0	221,324
2	10.35	0.55	5.00	2.8	7.2	41.0	73,775
3	7.68	0.55	5.00	2.8	7.2	30.4	54,743
<b>TOTALS</b>	<b>49.08</b>					<b>194.4</b>	<b>349,842</b>

**INCREASE FROM EXISTING**      **86.4**      **155,481**

- Notes:
1. Refer to Tables 1 and 2 for Time of Concentration (Tc) and Runoff Coefficient (C ) calculations.
  2. One Hour Rainfall Intensity value obtained from Maui County Drainage Standards Plate 7.
  3. Adjusted Rainfall Intensity value obtained from Maui County Drainage Standards Plate 2.
  4. Minimum Time of Concentration used for calculations is 5.0 minutes.
  5. Refer to Appendix for runoff hydrographs.

**TABLE 5**

**DETENTION BASIN AND RUNOFF SUMMARY**

<b>Basin No.</b>	<b>Surface Area (sf)</b>	<b>Ponding Depth (ft)</b>	<b>Storage Vol. (af)</b>	<b>Local Flow (cfs)</b>	<b>Add'l Bypass (cfs)</b>	<b>Total Q<sub>in</sub> (cfs)</b>	<b>Q<sub>out</sub> (cfs)</b>	<b>Outflow to</b>
1	36,000	4.5	162,000	123.0	0.0	123.0	33.0	Hamakua Ditch
<b>TOTAL VOL. =</b>			<b>162,000</b>	<b>TOTAL OUTFLOW =</b>			<b>33.0</b>	

**Required Storage Vol. =** **155,481**  
**Meets Requirement?** **Yes**

**Req. Max Flow Rate =** **108.0**  
**Meets Requirement?** **Yes**

- Notes:
1. Refer to Drainage Area Map for Basin Locations.
  2. Refer to Table 4 for Runoff Calculations

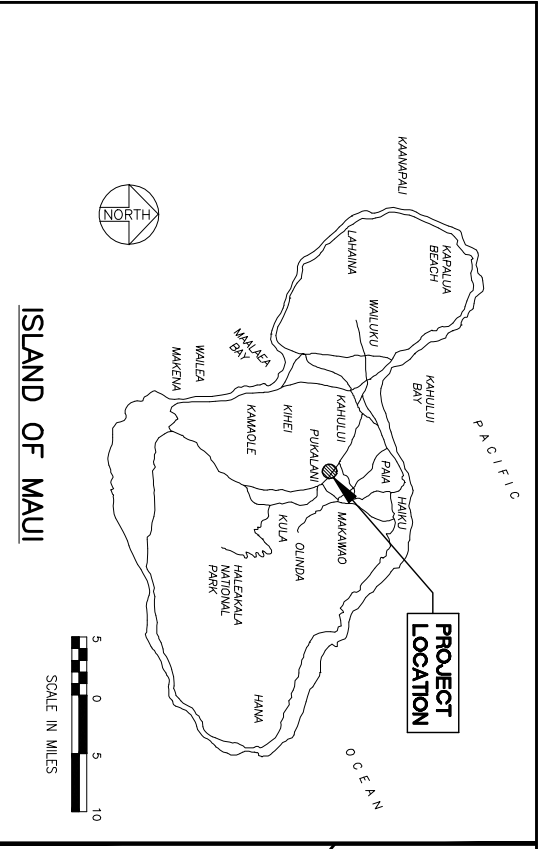
## **EXHIBITS**

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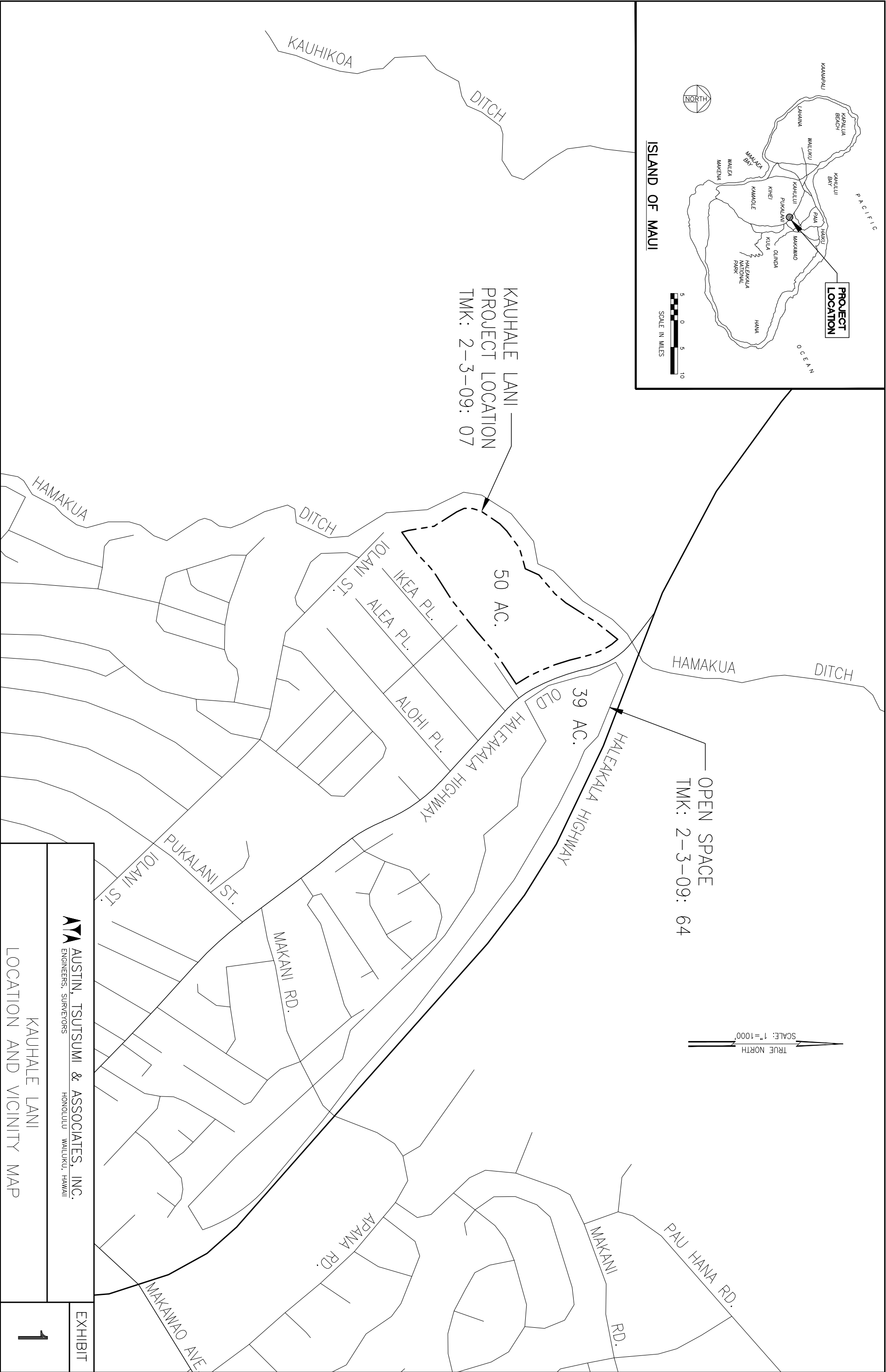
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KAUHALE LANI  
PROJECT LOCATION  
TMK: 2-3-09: 07

OPEN SPACE  
TMK: 2-3-09: 64

TRUE NORTH  
SCALE: 1" = 1000'




**ATA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS  
HONOLULU WAILUKU, HAWAII

KAUHALE LANI  
LOCATION AND VICINITY MAP

EXHIBIT

**1**



 <b>AUSTIN, TSUTSUMI &amp; ASSOCIATES, INC.</b> ENGINEERS, SURVEYORS HONOLULU WAILUKU, HAWAII	EXHIBIT
	2

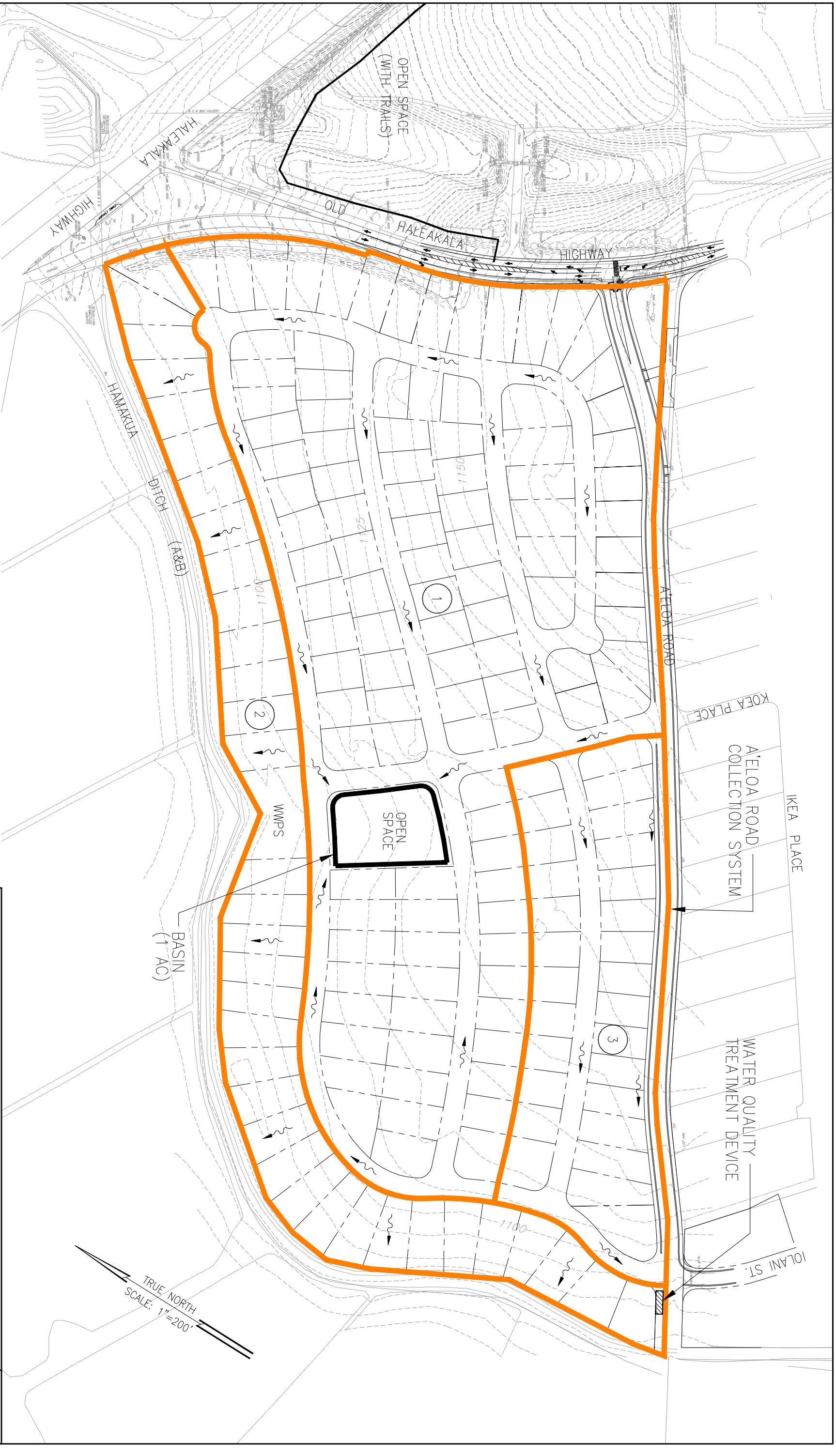


**ATA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
 ENGINEERS, SURVEYORS  
 HONOLULU WAILUKU, HAWAII

KAUHALE LANI  
 EXISTING DRAINAGE AREA MAP

EXHIBIT

**3**



X:\2007\07-025\DRAINAGE\REPORT\DA MAP FIG-4 PROP.DWG

**ATA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS  
HONOLULU WAILUKU, HAWAII

KAUHALE LANI  
PROPOSED DRAINAGE AREA MAP

EXHIBIT

**4**

JULY 2008



## APPENDIX

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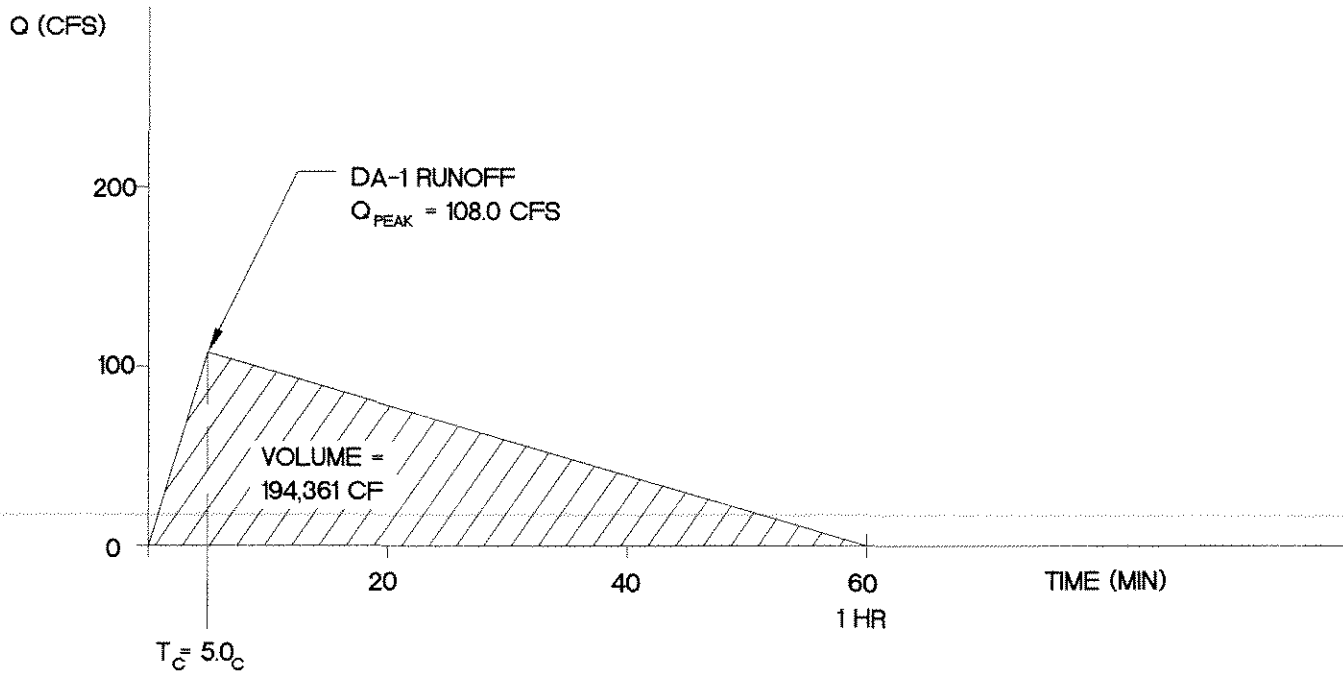
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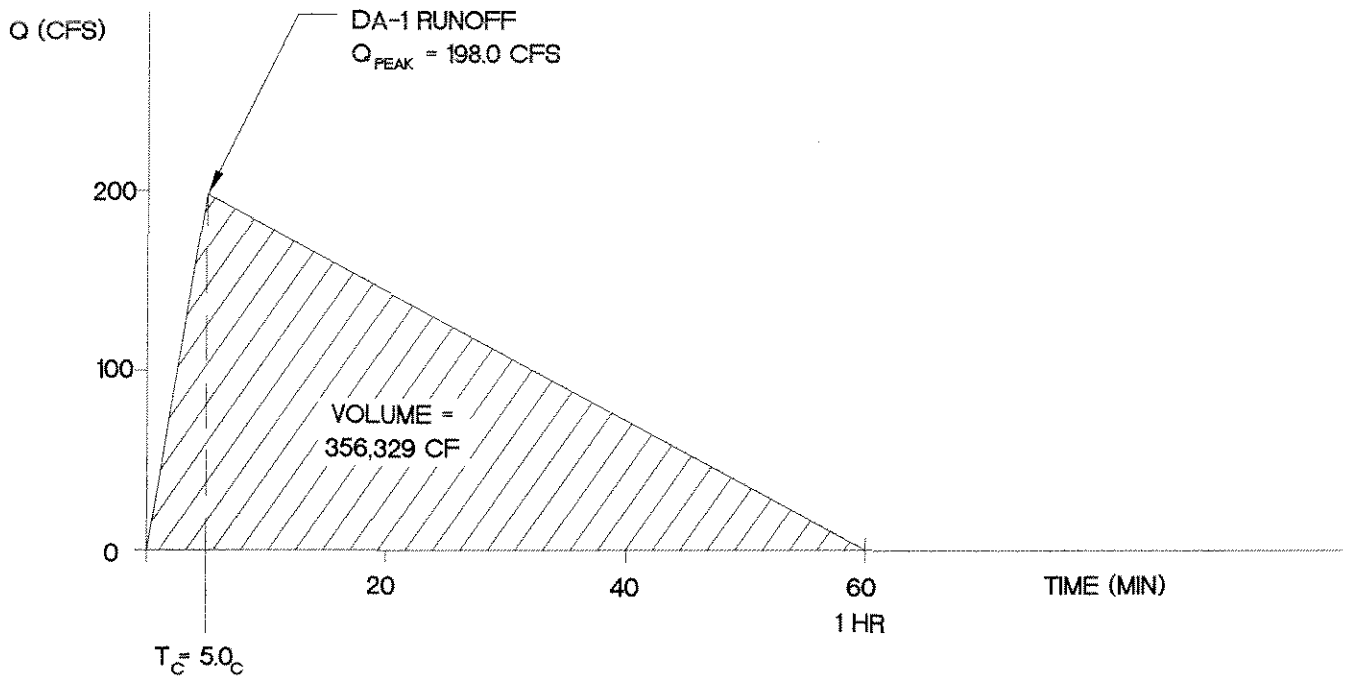
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# HYDROGRAPHS

EXISTING CONDITIONS: DA-1



PROPOSED CONDITIONS: DA-1



**Appendix L:  
Preliminary  
Engineering Report**

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# PRELIMINARY ENGINEERING REPORT KAUHALE LANI

Pukalani, Maui, Hawaii

July 14, 2008

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Prepared for:

Pukalani Associates, LLC  
c/o Michael Wright & Associates, Inc.  
P.O. Box 330784  
Kahului, Hawaii 96733

Prepared by:



*Austin, Tsutsumi & Associates, Inc.*

Civil Engineers • Surveyors  
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Honolulu • Wailuku, Hawaii

---

# **PRELIMINARY ENGINEERING REPORT**

**For**

**KAUHALE LANI COMMUNITY**

**Pukalani, Maui, Hawaii**



**Prepared for:**

**Pukalani Associates, LLC  
c/o Michael Wright & Associates, Inc.  
P.O. Box 330784  
Kahului, Hawaii 96733**

**Prepared by:**

**Austin, Tsutsumi & Associates, Inc.  
Civil Engineers • Surveyors  
501 Sumner Street, Suite 521  
Honolulu, Hawaii 96817-5031**

**July 2008**

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B. Infrastructure .....	3
IV. PROPOSED INFRASTRUCTURE IMPROVEMENTS	
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B. Wastewater System .....	5
C. Roadway Improvements.....	5
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Table 2 – Wastewater Calculations

### EXHIBITS

Exhibit 1 – Location/ Vicinity Map

Exhibit 2 – Site Plan

Exhibit 3 – Off-Site Water System Improvements

Exhibit 4 – On-Site Water System Improvements

Exhibit 5 – On-Site Wastewater System Improvements

Exhibit 6 – Proposed Wastewater Pump Station

**PRELIMINARY ENGINEERING REPORT**  
**KAUHALE LANI**  
**PUKALANI, MAUI, HAWAII**

**I. INTRODUCTION**

The purpose of this report is to provide an overview of the preliminary engineering design for the Kauhale Lani project (Project) in Pukalani, Maui. The Project is being developed by Pukalani Associates, LLC. This report evaluates the existing site conditions and defines requirements for roadway, wastewater, and water utilities, along with other site improvements. A separate Drainage Report, dated July 2008 has been prepared for the Project.

**II. PROPOSED PROJECT**

**A. Location**

The proposed project site is located on the Northeast side of Pukalani and southwest of where Old Haleakala Highway branches off from Haleakala Highway. The project site is comprised of two parcels with the following Tax Map Keys: 2-3-09: 07 (50 acres) and 2-3-09:64 (39 acres) which is divided by Old Haleakala Highway. The 50 acre parcel is bordered by Old Haleakala Highway and Haleakala Highway to the east, Hamakua Irrigation Ditch to the north and west, and the unimproved A'eloa Road and Lower Pukalani Terrace subdivision to the south. The 39 acre parcel is bordered by Haleakala Highway to the north and east, Old Haleakala Highway, a vacant parcel, and single family residences to the west, and Makani Road to the south. The main access to the site will be from Old Haleakala Highway via A'eloa Road which will be improved to County roadway standards. Refer to Exhibit 1 for Location and Vicinity Map.

**B. Project Description**

The proposed project consists of 170 single-family residences, a wastewater pump station site, and open space for drainage purposes which will be contained on the 50 acre parcel, while community park area with a trail system shall be contained on the 39 acre parcel. Refer to Exhibit 2 for Preliminary Site Plan.

On-site improvements include clearing and grubbing of the agricultural lands and excavation and embankment for the proposed grading. Interior roadways will be constructed following existing terrain to the extent practicable. Utility infrastructure will include waterlines, gravity and force main wastewater system, wastewater pump station, storm drains, and underground electrical and telephone lines. All public infrastructure work will conform to the "Standard Specifications" and "Standard Details" of the Department of Public Works, County of Maui. A'eloia Road which is a designated County right-of-way, but which remains unimproved will be constructed to County roadway standards to provide access to the Project as well as an alternate access to the lower Pukalani neighborhoods.

Off-site improvements include extension of an existing 12-inch water main in Old Haleakala Highway to the Project site. Intersection improvements will be made at the A'eloia Road intersection with Old Haleakala Highway to provide for turning lanes and deceleration and acceleration lanes. A'eloia Road will also be connected to Iolani Street. Both a gravity sewer main and sewer force main from the site will be extended to the existing sewer system at an existing manhole near the end of Iolani Street.

**III. EXISTING CONDITIONS**

**A. Topography and Soil Conditions**

The 50 acre and the 39 acre parcels are currently undeveloped agricultural land with dirt roads, which were previously pineapple fields.

The 50 acre parcel consists of few rock piles scattered throughout, low-lying grass, weeds, and shrubs, along with two native species of flora, popolo and `uhaloa.



The 39 acre parcel is mainly overgrown pineapple fields with low-lying grass, weeds, various shrubs, some with koali `awa vines growing on them. There are also various Eucalyptus trees, 40 to 70 feet tall along Haleakala Highway. This site also has seven native species of flora, five of which are indigenous and 2 that are endemic. The indigenous species are popolo, `uhaloa, koali `awa, `ilima, and `a`ali`i. The endemic species are `akia and Sicyos.

The 50 acre parcel lies on a gentle grade which slopes southeast towards Old Haleakala Highway with elevations ranging from 1,088 feet to 1,186 feet. The slope has an average gradient of about 7 percent.

The 39 acre parcel has elevations ranging from 1,110 feet to 1,440 feet with varying slopes across the site.

Soil on the site is mainly Hali`imaile Silty Clay, 3-7 percent slopes (HhB) and 7-15 percent slopes (HhC). Hali`imaile is a commonly used soil for pineapple, sugarcane, pastures, and homesites. HhB soils have moderate permeability, slow runoff, and slight erosion hazard. HhC soils have medium runoff and moderate erosion hazard. Descriptions are based on the USDA Soil Conservation Service's publication, "Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lanai," State of Hawaii, dated August 1972.

## **B. Infrastructure**

### **1. Water**

The County of Maui, Department of Water (DWS), currently provides water service to the Pukalani area via the Pukalani-Makawao Water System. A 1.0 MG reservoir located off Kula Highway near Makawao Avenue feeds the system. There is also a 850,000 gallon reservoir which serves the lower Pukalani subdivisions along the golf course.

Transmission mains ranging from 6-inch to 16-inch service the area. A 6-inch water main approximately 200 feet from the project site currently services the adjacent Lower Pukalani Terrace Subdivision, east of the site. An 8-inch water main services properties southwest of the project site. There is also an existing 12-inch water main which ends

approximately 2,300 feet above the site in Old Haleakala Highway and services properties east of the highway. The 12-inch main will be the connection point for the project's distribution system.

2. Wastewater

Currently, the Project site is not serviced by any County wastewater facilities. However, a private wastewater treatment system services a portion of the Pukalani area with the remainder being served by cesspools or septic tanks.

3. Roadway

The Project lies at the entrance to Pukalani. Access to the Project will be from Old Haleakala Highway via A'eloa Road which will be improved to County roadway standards.

Other roads which border the Project include the County's Koea Place and Iolani Street along the southern side of the Project that services the Lower Pukalani Terrace subdivision. Iolani Street will be connected to the Project integrating the Project with Pukalani and providing an alternate access to the lower subdivisions.

#### **IV. PROPOSED INFRASTRUCTURE IMPROVEMENTS**

##### **A. Water System**

Based on the Department of Water Supply "Water System Standards, 2002," the Project will require a maximum demand of about 161,175 gallons per day (gpd), at a maximum daily flow rate of approximately 168 gpm. This also assumes a 16-hour day to determine average and maximum daily flow rates. The fire flow anticipated to be required for the Project is 1,000 gpm for a 2-hour period. In order to serve Kauhale Lani, ML&P is planning an additional well on ML&P property at the 1,800 foot elevation along Piholo Road which will be turned over to the County. The capacity of this well is anticipated to produce 465 gpm of which 301,500 gpd or 45 percent of the daily yield will be allocated to ML&P. Out of this yield, Kauhale Lani will receive at a minimum the demand of 161,175 gpd.

The off-site water system improvements include the extension of the existing 12-inch water main in Old Haleakala Highway from Piimauna Street to A'eloā Road, approximately 2,300 feet. A pressure reducing valve may have to be installed in the system, due to the high pressures in the line. The 12-inch main will be extended in A'eloā Road from Old Haleakala Highway to Iolani Street, where it will tie into the existing 8-inch main. See Exhibit 3.

The on-site water distribution system will include 8-inch lines which shall loop through the subdivision, and will include fire hydrants and individual water laterals and meters servicing the lots. See Exhibit 4.

**B. Wastewater System**

Based on the Department of Wastewater Management's "Wastewater System Standards," the Project will generate an average daily flow of about 59,560 gallons per day of wastewater, a maximum of 0.298 million gallons per day (mgd) and a peak of 0.360 mgd. Assuming a 16-hour period, peak flow translates to 0.84 cfs.

A wastewater collection system will be implemented allowing gravity flow from approximately 60% of the lots to the existing collection system at the end of Iolani Street within the adjacent existing subdivision. A wastewater pump station is proposed for the remaining lots which are lower than the existing wastewater system. The required improvements will include a force main connecting to the existing collection system at the end of Iolani Street. All wastewater will be discharge and treated at the Pukalani Wastewater Treatment Plant. See Exhibit 5.

**C. Roadway Improvements**

As mentioned previously, access to the site will be primarily from Old Haleakala Highway via A'eloā Road, which will be improved. The improvements at A'eloā Road and Old Haleakala Highway will include addition of turning and deceleration lanes. The intersection will remain unsignalized. As required by the County of Maui, A'eloā Road will also connect to Iolani Street, to provide an alternate access to Pukalani, and in order to integrate Kauhale Lani with the surrounding community.

A'eloa Road will be a collector road with a minimum 56-foot right-of-way and 36-foot curb to curb pavement section. The Project's interior roads will be minor roads with a minimum 44-foot right-of-way and 28-foot curb to curb pavement section. The roads will all have curb and gutter with minimum 4-foot concrete sidewalks.

## **V. CONCLUSION**

The proposed improvements for this project will be designed in accordance with the applicable rules and regulations of the County of Maui.

Existing and future water facilities owned and operated by the County will provide adequate potable water source, storage and transmission to the Project.

The wastewater generated by the Project will be collected and conveyed to the new wastewater treatment plan via the new pump station, force main and gravity wastewater line within the Project area.

Roadways will be to County of Maui standards and will include curb, gutter and sidewalk. Interior roadways will be looped and interconnectivity between community and public areas and residential areas will be provided to improve internal traffic circulation and encourage walkable neighborhoods.

Based on the foregoing study, the project is expected to have no adverse effects on existing facilities and the surrounding environment.

## VI. REFERENCES

1. Department of Water Supply, County of Maui. (2002). *Water System Standards*.
2. Department of Wastewater Management, City and County of Honolulu (July 1993). *Design Standards of the Department of Wastewater Management*.

## TABLES

**Table 1. WATER DEMAND CALCULATIONS: KAUIHALE LANI SUBDIVISION**

7/2/2008

Development Type	Units	gpd/unit	Total gpd	
Single Family Units	170	600	102,000	
WWPS Site	0.54	6000	3,240	based on gal/acre
Open Space/Park	1.3	1700	2,210	based on gal/acre

**Total Average Daily Demand 107,450 gal/day**

x 1.5 max demand factor

**Total Max Demand 161,175 gal/day**

or 168 gal/min (16 hour day)

x 2 peak demand factor

**Total Peak Demand 336 gal/min**

Fire flow 1,000 gpm x 2 hours = 120,000 gal

Max Day demand during fire duration: 168 gpm x 2 hours = 20,160 gal

140,160 gal

Assuming tank is only 3/4 full at start

of fire, **Max. Storage Requirement** is: 140,160 gal x 4/3 = **186,880 gal/day**

**Table 2. WASTEWATER CALCULATIONS: KAUAHALE LANI SUBDIVISION**

7/2/2008

Development Type	LAND USE	# UNITS OR ACREAGE	UNITS	CAPITA PER ACRE (cpa)	POP. COUNT (units)	AVERAGE FLOW (gpd)	MAX. FLOW FACTOR	MAX. FLOW (gpd)	DRY WEATHER INFILTRATION/ INFLOW (l/l)	DESIGN AVE. FLOW (gpd)	DESIGN MAX. FLOW (gpd)	WET WEATHER INFILTRATION/ INFLOW RATE	DESIGN PEAK FLOW (gpd)
Single Family Units	Residential	170	# Units	4	680	59,500	5	297,500	5	3,400	300,900	58,750	359,650
WWPS Site	Lt. Industrial	0.54	Acres	4	2	60	5	300	5	10	310	675	985
Open Space/Park	Open	1.3	Acres	-	-	-	-	-	-	-	-	-	-
<b>TOTAL</b>						<b>59,560</b>		<b>297,800</b>		<b>3,410</b>	<b>301,210</b>		<b>360,635</b>

cfs  
0.84

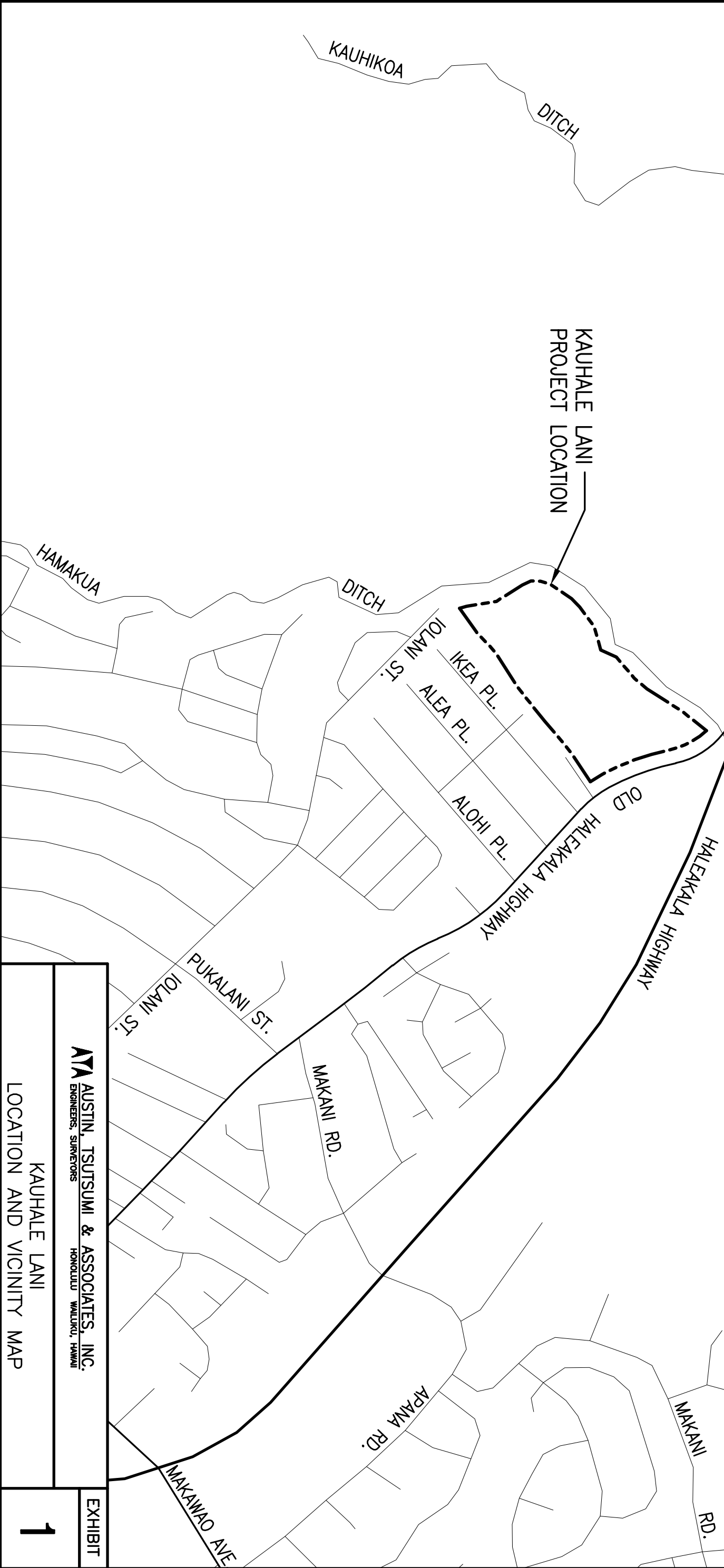
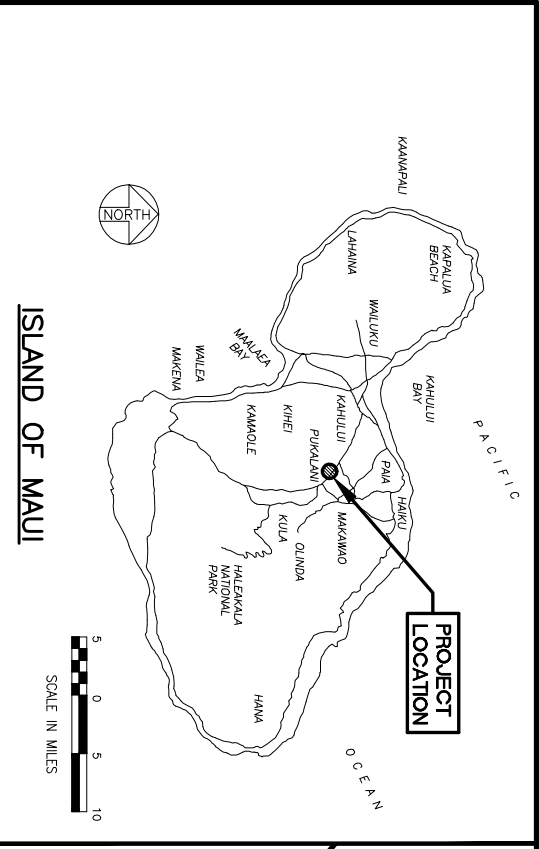


## **EXHIBITS**

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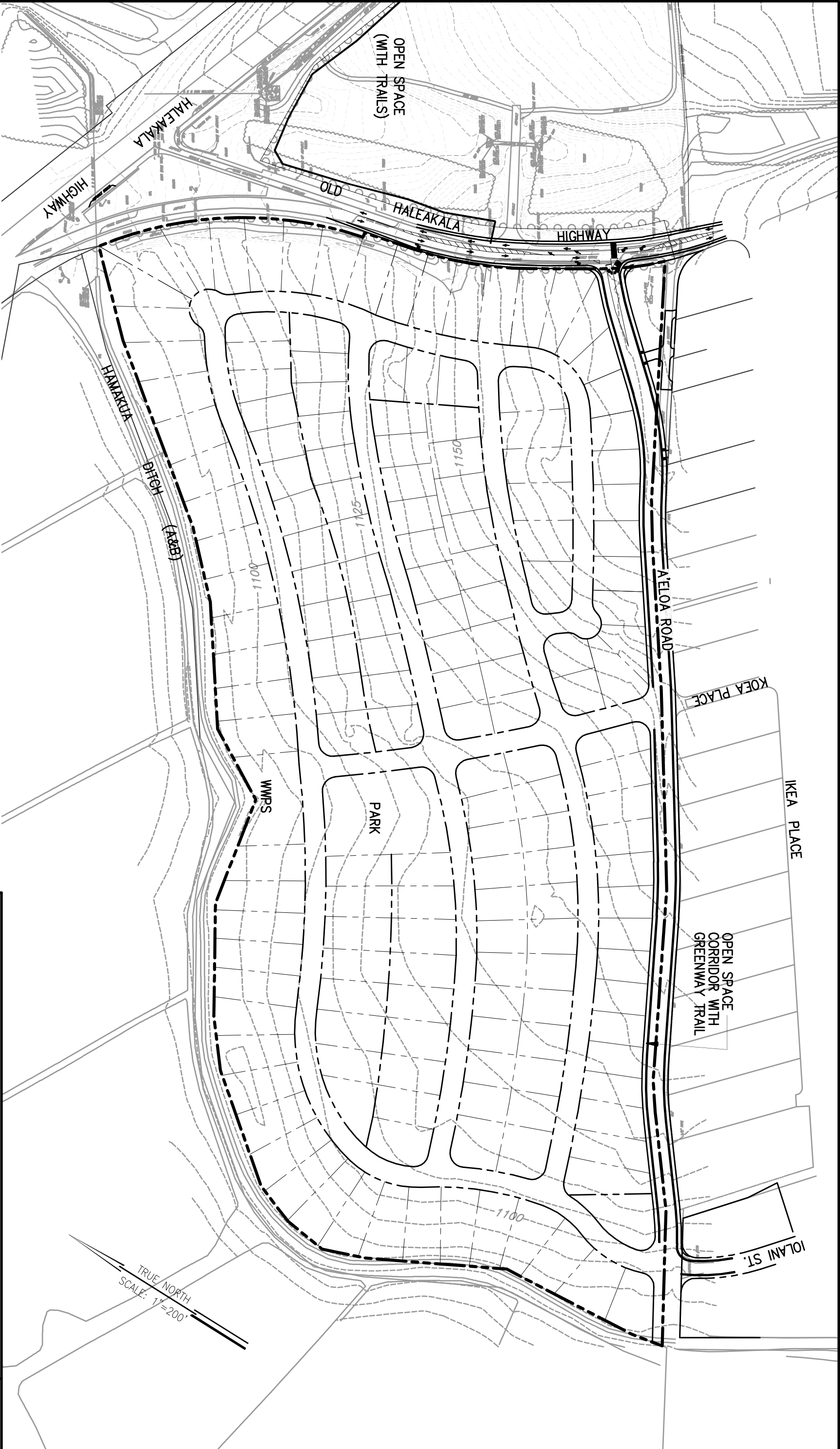
TRUE NORTH  
SCALE: 1" = 1000'

**ATA** **AUSTIN, TSUTSUMI & ASSOCIATES, INC.**  
ENGINEERS, SURVEYORS  
HONOLULU, WAILUKU, HAWAII

**KAUHALE LANI**  
LOCATION AND VICINITY MAP

EXHIBIT

**1**



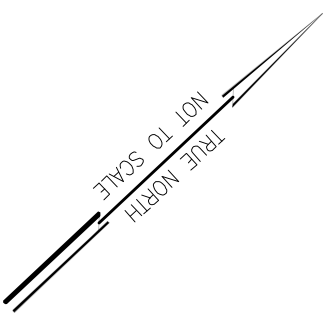
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**ATA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS  
HONOLULU WAILUKU, HAWAII

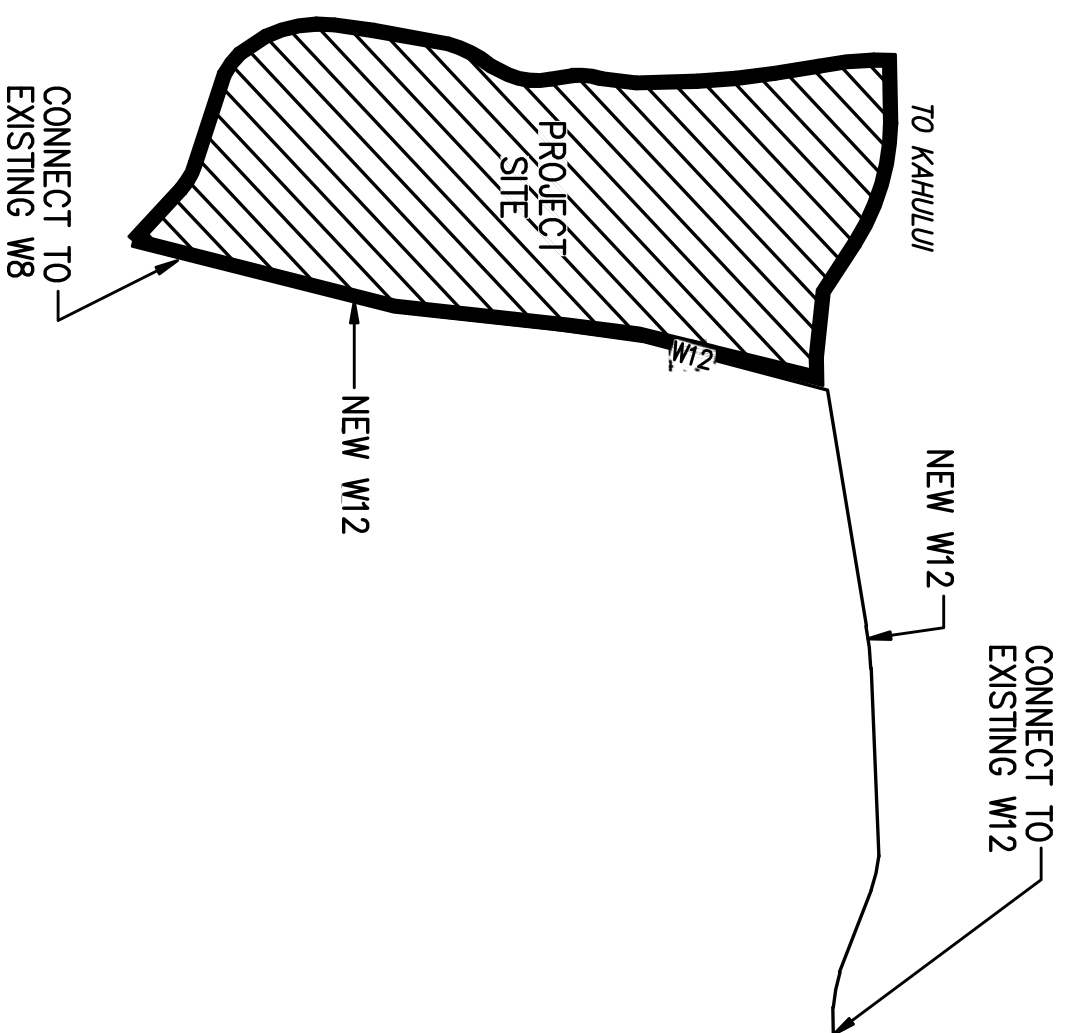
KAUHALE LANI  
SITE PLAN

EXHIBIT

**2**



1.0 M.G. CONC. TANK  
TOP ELEV.=1704.0'  
BOT. ELEV.=1684.0'



PUKALANI  
ELEMENTARY  
SCHOOL

PUKALANI  
COMMUNITY  
CENTER

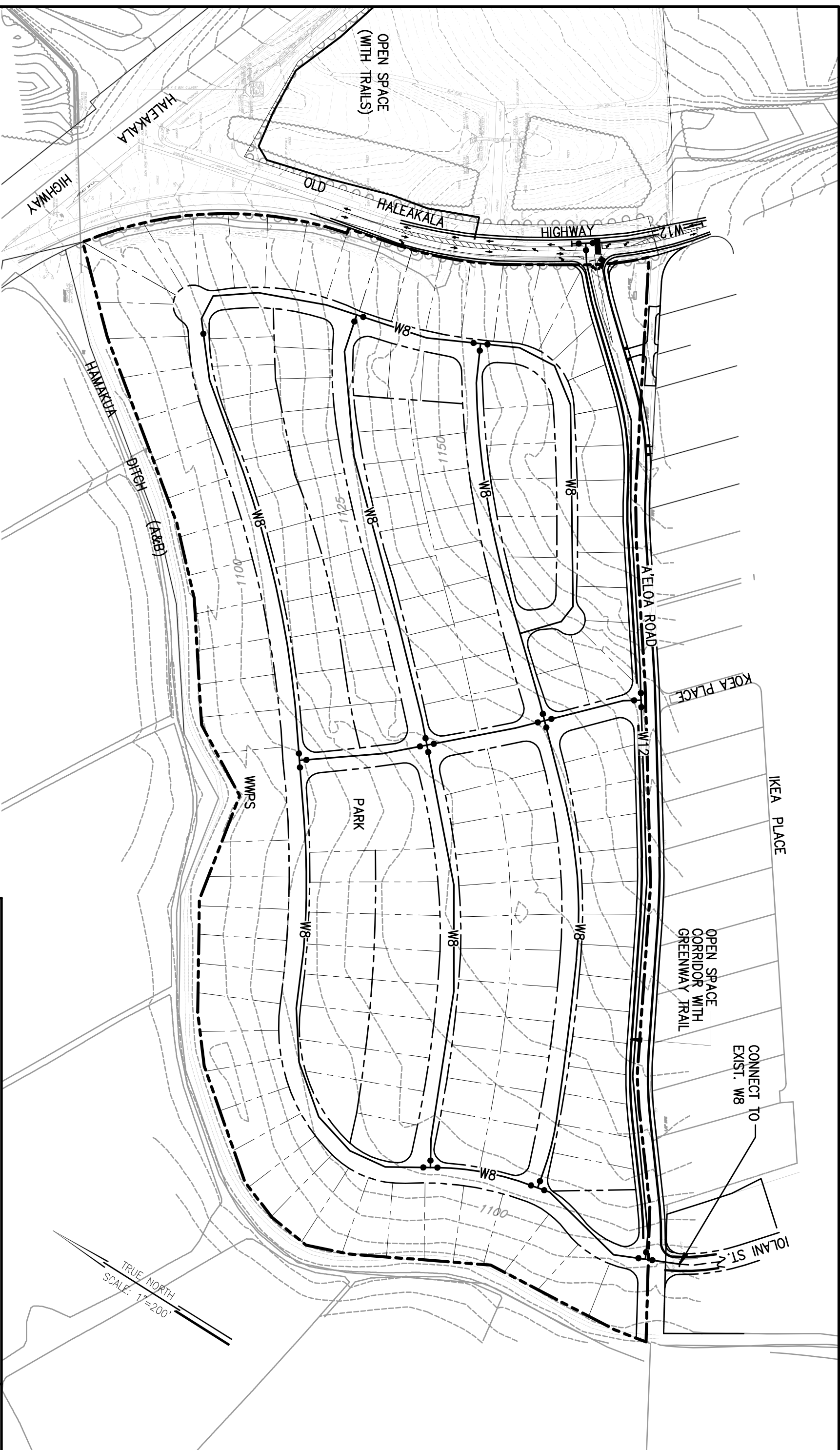
PUKALANI  
SHOPPING  
CENTER


**ATA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS  
HONOLULU WAILUKU, HAWAII

KAUHALE LANI  
OFF-SITE WATER SYSTEM IMPROVEMENTS

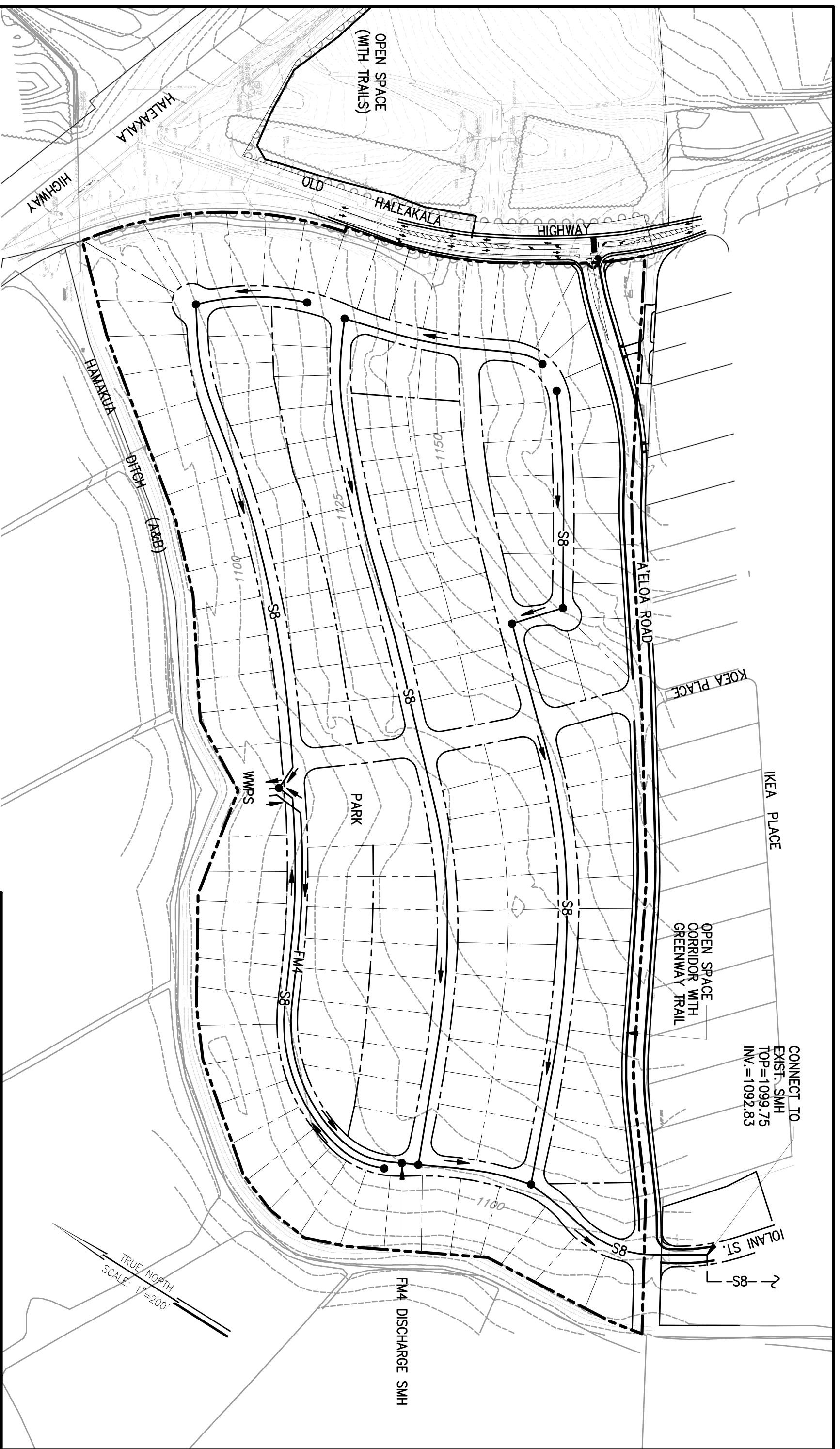
EXHIBIT

**3**



 <b>AUSTIN, TSUTSUMI &amp; ASSOCIATES, INC.</b> ENGINEERS, SURVEYORS HONOLULU WAILUKU, HAWAII	EXHIBIT
	4

KAUHALE LANI  
ON-SITE WATER SYSTEM IMPROVEMENTS



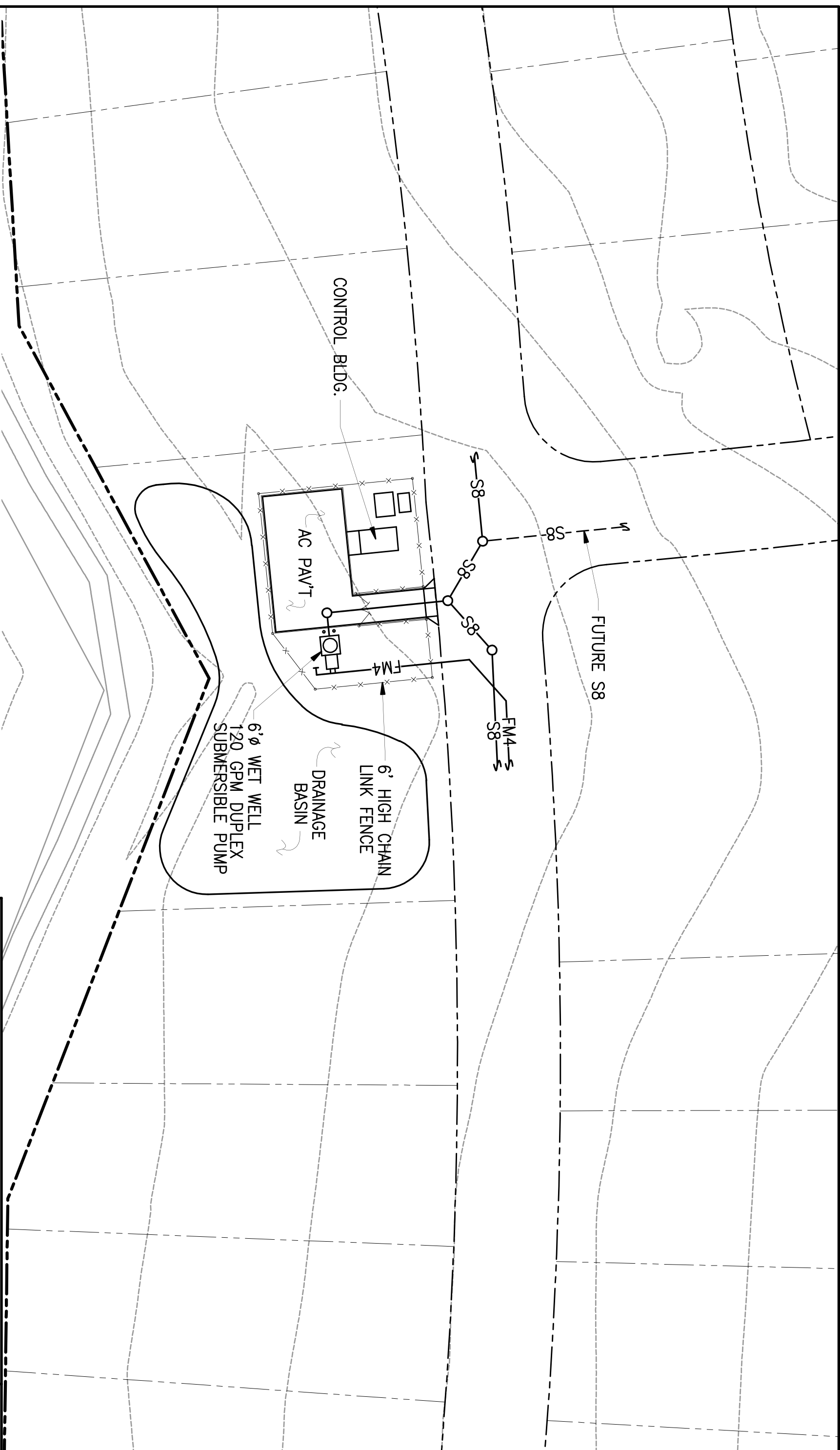
CONNECT TO  
EXIST. SMH  
TOP = 1099.75  
INV. = 1092.83


**ATA** AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ENGINEERS, SURVEYORS  
HONOLULU, WAILUKU, HAWAII

KAUHALE LANI  
ON-SITE WASTEWATER SYSTEM IMPROVEMENTS

EXHIBIT

**5**



 <b>AUSTIN, TSUTSUMI &amp; ASSOCIATES, INC.</b> ENGINEERS, SURVEYORS HONOLULU WAILUKU, HAWAII	<b>EXHIBIT</b>
	<b>6</b>
<b>KAUHALE LANI</b> <b>PROPOSED WASTEWATER PUMP STATION</b>	

**Appendix N:  
Early Consultation  
Comment and Response**



## PRE-CONSULTATION COMMENTS AND RESPONSES

Letters requesting pre-consultation comments on the proposed project were sent to the following agencies and organizations on March 29, 2005. Where indicated, the agency or organization submitted written comments. These comments and response letters are included on the following pages.

	<b>AGENCY</b>	<b>Comments</b>
	<b>County of Maui</b>	
1	Department of Housing & Human Concerns	4/4/05
2	Department of Parks & Recreation	4/28/05
3	Department of Planning	4/25/05
4	Department of Public Works & Environmental Management	4/14/05
5	Department of Water Supply	
6	Fire Department	4/4/05
7	Police Department	
	<b>State of Hawai'i</b>	
8	Department of Agriculture – Maui Office	
9	Department of Agriculture – State Office	
10	Department of Business, Economic Development & Tourism – Office of Planning	5/4/05
11	Department of Education	4/13/05
12	Department of Health – Clean Water Branch	4/7/05
13	Department of Health – Maui District Health Office	4/14/05
14	Department of Health – Safe Drinking Water Branch	
15	Department of Health – Wastewater Branch	4/11/05
16	Department of Land & Natural Resources	
17	Department of Land & Natural Resources – State Historic Preservation Division	
18	Department of Transportation	
19	Office of Hawaiian Affairs	
	<b>Private Companies, Organizations &amp; Individuals</b>	
20	Maui Electric Company, Ltd.	4/14/05
21	Verizon Hawaii, Inc.	4/21/05

March 29, 2005

Mr/Ms. XXXXXX, Title  
Department of XXXXXXXX  
XXXXXXXXXX Street  
XXXXXXXXXX, Hawaii 96XXX

**SUBJECT: KAUAHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT**

Dear Mr./Ms. XXXXXX:

PBR Hawaii is currently preparing an environmental assessment for Maui Land & Pineapple Company, Inc.'s proposed Kauhale Lani community. As shown on the attached map, the Kauhale Lani community site is located on the slopes of Haleakalā at the entrance to Pukalani, where Old Haleakalā Highway branches off from Haleakalā Highway. Two parcels, identified by TMK 2-3-09:07 (50 acres) and TMK 2-3-09:64 (39 acres) comprise the community site. Old Haleakalā Highway bisects the parcels. The Makawāo-Pukalani-Kula Community Plan designates both parcels for single-family residential uses.

Single family homes, parks, and a trail system are proposed on the 50-acre parcel (TMK 2-3-9:7). Up to 165 single family homes may be included. Uses on the 39-acre property (TMK 2-3-09:064) are undetermined but could include a small wastewater treatment plant to serve the community and trails and open space.

Maui Land & Pineapple Company Inc., will seek a State Land Use District Boundary Amendment from the State Land Use Commission to change the designation of the properties from the Agricultural District to the Urban District. In addition, a Change in Zoning from Agricultural to Residential zoning (R-1) will be sought from the County of Maui.

As part of the scoping process, we are writing to consult with your agency. We seek your comments as to whether the proposed Kauhale Lani community may have an impact on any of your existing or proposed projects, plans, policies or programs. We would appreciate receiving your comments by April 20, 2005.

Please do not hesitate to contact me if you need any additional information or have any questions.

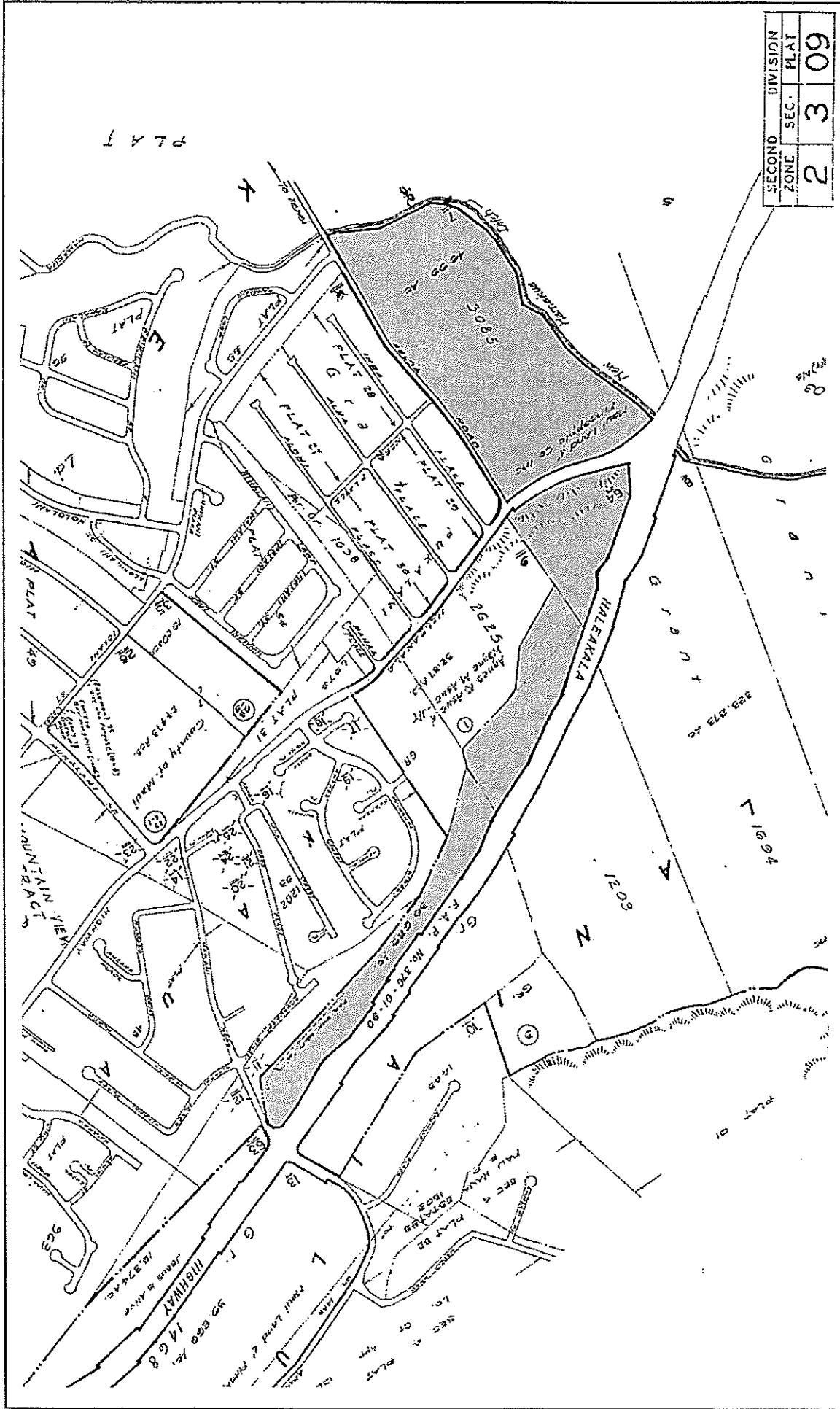
Sincerely,

PBR HAWAII

Tom Schnell, AICP  
Associate

Enclosure

cc: Leilani Pulmano/Maui Land & Pineapple Company, Inc.



Tax Map Key Map

**KAUHALE LANI**


MAUI LAND & PINEAPPLE COMPANY, INC.  
NORTH LINEAL SCALE (FEET)



0 500 1,000 2,000



**LEGEND**

 Kauhale Lani

Source: County of Maui Tax Map Key  
Disclaimer: This map has been prepared for general planning purposes only.

ISLAND OF MAUI

ALAN M. ARAKAWA  
MAYOR



**COUNTY OF MAUI**  
DEPARTMENT OF FIRE AND PUBLIC SAFETY

200 DAIRY ROAD  
KAHULUI, MAUI, HAWAII 96732  
(808) 270-7561  
FAX (808) 270-7919

CARL M. KAUPALOLO  
CHIEF

NEAL A. BAL  
DEPUTY CHIEF

REC'D

APR 18 2005

HAWAII

April 4, 2005

Tom Schnell, AICP  
PBR Hawaii  
2123 Kaolu Street  
Wailuku, HI 96793

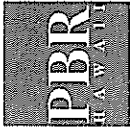
Subject: Kauhale Lani Draft Environmental Assessment

Dear Mr. Schnell,

At this time, our department does not have any concerns regarding the proposed project. I do imagine that we will be involved in the planning of this project and hope to make more detailed reviews as the project moves ahead.

Sincerely,

Valeriano F. Martin  
Captain  
Fire Prevention Bureau



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

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Tel: (808) 742-2375  
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E-Mail: [papula@ipbrwaikoloa.com](mailto:papula@ipbrwaikoloa.com)

May 12, 2005

Mr. Valeriano F. Martin, Captain  
County of Maui  
Department of Fire and Public Safety  
200 Dairy Road  
Kahului, Hawaii 96732

SUBJECT: KAUAHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT

Dear Captain Martin:

Thank you for your letter dated April 4, 2005. As the consultant for Maui Land & Pineapple Company, Inc., we acknowledge that you have no concerns regarding the project at this time. We will continue to consult with you throughout the planning of Kauhale Lani.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me.

Sincerely,

PBR HAWAII

Tom Schnell, AICP  
Associate

cc: Leilani Pulmano/Maui Land & Pineapple Company, Inc.

ALANI M. ARAKAWA  
Mayor

MILTON M. ARAKAWA, A.I.C.P.  
Director

MICHAEL M. MIYAMOTO  
Deputy Director

Telephone: (808) 270-7845  
Fax: (808) 270-7955



COUNTY OF MAUI  
**DEPARTMENT OF PUBLIC WORKS  
AND ENVIRONMENTAL MANAGEMENT**  
200 SOUTH HIGH STREET, ROOM 322  
WAILUKU, MAUI, HAWAII 96793

RALPH MAGAMINE, L.S., P.E.  
Development Services Administration

TRACY TAKAMINE, P.E.  
Wastewater Reclamation Division

CARY YAMASHITA, P.E.  
Engineering Division

BRIAN HASHIRO, P.E.  
Highways Division

Solid Waste Division

April 14, 2005

Mr. Tom Schnell, A.I.C.P.  
PBR HAWAII  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT  
KAUHALE LANI  
TMK: (2) 2-3-009:007

We reviewed the subject application and have the following comments:

1. Need to address solid waste/recycling.
2. The project is expected to have a major impact on two (2) adjacent County roads, Old Haleakala Highway and Aeloa Road. A more detailed roadway and lot layout needs to be submitted before we can comment on roadway sections, access restrictions, roadway widening, etc.
3. The Draft Environmental Assessment shall include a Traffic Impact Assessment Report (TIAR) and a detailed drainage report for the entire development. The TIAR shall address regional traffic impacts and include assessments from the local community police officer.
4. We note that there are several drainage ways within this property. Any drainage way that will be constructed outside of the right-of-way of any roads to be dedicated to the County shall remain under private ownership and maintenance. The makai

Mr. Tom Schnell, A.I.C.P.  
April 14, 2005  
Page 2

terminus of Iolani Street disposes drainage runoff into the current pineapple field. Accommodations shall be provided to handle this drainage runoff.

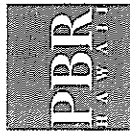
5. We would encourage the connection of Iolani Street, such that there would be an alternate path to Old Haleakala Highway. This would relieve some of the traffic that currently has to pass Pukalani School amidst the school's traffic congestion.

Please call Michael Miyamoto at 270-7845 if you have any questions regarding this letter.

Sincerely,

MILTON M. ARAKAWA, A.I.C.P.  
Director

MMA:MMM:da  
S:\LUCACZ\mka\maie\_Lani\_draft\_es\_20050307\_da.wpd



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Senior Associate

TOM SQUIRE, AICP  
Associate

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KIWI NISHIKAWA, ASLA  
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Fax: (808) 651-4869  
E-Mail: [pbrhawaii@maui.net](mailto:pbrhawaii@maui.net)

Waikaloa Office  
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Tel: (808) 242-2241  
Fax: (808) 242-2232  
E-Mail: [pbrhawaii@hawaii.net](mailto:pbrhawaii@hawaii.net)

ALANI M. ARAKAWA  
Mayor  
MICHAEL W. FOLEY  
Director  
WAYNE A. BOTEILHO  
Deputy Director



COUNTY OF MAUI  
DEPARTMENT OF PLANNING

April 25, 2005

Mr. Tom Schnell  
PBR Hawaii  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

RE: Preconsultation for the Draft Environmental Assessment (EA) –  
Kauhale Lani Subdivision located at TMK: 2-3-009: 007 and 064,  
Pukalani, Island of Maui, Hawaii (LTR 2005/0954)

The Maui Planning Department (Department) is in receipt of your request for preconsultation comments on March 30, 2005, and our meeting on April 20, 2005. Based on information provided, the Department provides the following preconsultation comments on the above referenced project:

1. Clarify whether chana units be allowed in the development.
2. Drainage
  - a. Include a discussion of designing the proposed drainage system to manage more than the net increase in stormwater runoff.
  - b. Does the proposed drainage plan intend to tie into the existing Hamakua Ditch.
3. Agricultural lands
  - a. Discuss the loss of agricultural land.
  - b. Discuss the impact of the agricultural operations adjacent to the proposed project area on the single family residential areas.

cc: Leilani Pulmano/Maui Land & Pineapple Company, Inc.

Sincerely,  
PBR HAWAII  
  
Tom Schnell, AICP  
Associate

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me.

5. We acknowledge that you encourage the connection of Iolani Street to provide an alternate path to Old Haleakala Highway.

4. We understand that any drainage ways constructed outside of the right-of-way of any County roads will remain under private ownership and maintenance. We also recognize that the makai terminus of Iolani Street disposes drainage runoff into the current pineapple field, and accommodations will be provided to handle this drainage runoff.

3. The DEA will include a Traffic Impact Assessment Report (TIAR) and detailed drainage report. The TIAR will address regional traffic impacts. Maui Land & Pineapple Company Inc., or its traffic consultant will consult the local community police officer.

2. We acknowledge your expectation that Kauhale Lani will have a major impact on two adjacent County roads, Old Haleakala Highway and Aeloa Road. The DEA will contain a conceptual subdivision plan which will include roadway and lot layouts. Please note that Aeloa Road is an unimproved County right-of-way. Current plans for Kauhale Lani do not include the improvement or use of Aeloa Road.

1. The Draft Environmental Assessment (DEA) will address the issues of solid waste and recycling.

Thank you for your letter dated April 14, 2005. As the consultant for Maui Land & Pineapple Company, Inc., we are responding to your comments.

SUBJECT: KAUHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT

Mr. Milton M. Arakawa, A.I.C.P., Director  
County of Maui  
Department of Public Works and Environmental Management  
200 South High Street, Room 322  
Wailuku, Hawaii 96793

May 12, 2005

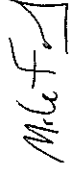
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APR 28 2005  
PBR HAWAII

- c. The project area was formerly in pineapple production, which historically used pesticides. Discuss any impacts of residual levels to the proposed action.
4. Discuss the impacts relating to the loss of open space as the entryway into Pukalani Town.
5. Discuss the proposed development plans for Parcel 64. The traffic patterns for the two (2) parcels should be coordinated if Parcel 64 is intended for development.
6. Parks, Street Treatments, and Pedestrian/Bikeway Trails
  - a. Identify the responsible party for maintaining the proposed park areas and landscaped street treatments and pedestrian/bikeway trails.
  - b. Identify the responsible party for constructing the proposed park areas and provide an anticipated timeframe for construction.
  - c. Provide schematics illustrating the proposed landscaped buffer, street treatments, and pedestrian/bikeway trails.
  - d. Will the pedestrian/bikeway trail be paved?
  - e. The Department prefers the park layout depicted in the draft site plan dated November 2004.
7. Discuss the proposed sewer systems. Given the location, the Department recommends connecting to the existing Pukalani Sewer System.
8. Identify the potable water source.
9. The Department recommends planning for connectivity with the existing subdivision located north of Parcel 7, specifically connecting the proposed and existing roadways located at the midpoint and eastern most area of the northern property boundary.
10. The draft site plans appear to indicate back alleyways will service the lots, which should reduce the need for wide roadways. As such,

discuss the rationale for establishing 50 ft roadways in the site plan dated April 2005.

Thank you for the opportunity to comment. Please include the Department on the mailing list for the Draft EA. Should you require further clarification, please contact Ms. Kivette Caigoy, Environmental Planner, at 270-7735.

Sincerely,



MICHAEL W. FOLEY  
Planning Director

MWF:KAC:lar

c: Wayne Boteitho, Deputy Planning Director  
Clayton Yoshida, Planning Program Administrator  
Kivette Caigoy, Environmental Planner  
Colleen Suyama, Staff Planner  
TMK File  
General File  
K:\WP\_DOCS\PLANNING\EA\PreConComments\20050954\_Kaithalei.aml.wpd



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Tel: (808) 242-2574  
Fax: (808) 242-2574  
E-Mail: [ipbrwaikaloa@ipbrhawaii.com](mailto:ipbrwaikaloa@ipbrhawaii.com)

May 12, 2005

Mr. Michael Foley, Planning Director  
County of Maui  
Department of Planning  
250 South High Street  
Waikuku, Hawaii 96793

**SUBJECT: KAUAHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT**

Dear Mr. Foley:

Thank you for your letter dated April 25, 2005. As the consultant for Maui Land & Pineapple Company, Inc., we are responding to your comments.

1. Ohana units will not be allowed in Kauhale Lani.
2. The Draft Environmental Assessment (DEA) will include a preliminary drainage report. Currently a drainage swale adjacent to Old Haleakala Highway discharges into the New Hamakua Ditch. The existing drainage pattern from the site is generally for runoff to sheet flow from the south to the north toward and into the ditch.  
The increases in onsite runoff will be diverted and detained in on-site detention basins located within community open areas. No additional runoff will be released into the existing drainage ways or onto Old Haleakala Highway. The net result of the proposed drainage improvements will be no increase in runoff from the community. All drainage improvements will be developed in accordance with applicable Department of Health and County of Maui drainage requirements and standards.
3. The DEA will discuss the loss of agricultural land and its impact to Maui Land & Pineapple Company's agricultural operations. Note that both parcels of the Kauhale Lani site are former pineapple fields. Maui Pineapple Company, Ltd. (a subsidiary of ML&P) ended pineapple cultivation on these parcels in 2002. The fields have been fallow since then, with the exception of a small section of the 39-acre parcel, on which Maui Pineapple Company cultivated organic pineapple until 2003.  
Both parcels are not well suited for pineapple cultivation and are inefficient to farm as part of Maui Pineapple Company (MPC) operations since the Pukalani Bypass separated these parcels from other contiguous MPC pineapple fields. As MPC downsizes its operations to focus on the fresh fruit market it is focusing on the best, most efficient land to farm.  
The DEA will discuss the impact of the neighboring agriculture operations on the proposed single-family homes.  
The DEA will include a section discussing chemicals and fertilizers used on the site.

4. The DEA will discuss the impacts relating to loss of open space at the entryway into Pukalani. Note that the Kauhale area is designated "SF" (single-family) on the

Mr. Michael Foley, Planning Director  
Subject: Kauhale Lani Draft Environmental Assessment  
May 12, 2005  
Page 2

5. *Makawao-Pukalani-Kula Community Plan*, which is a reflection of the needs and desires of the community.
  6. The DEA will discuss plans for Parcel 64. No homes are planned for this parcel. Current plans call for trails, open space, and other community amenities.
  7. The DEA will identify the parties responsible for constructing and maintaining the proposed park areas and landscaped treatments and pedestrian/bikeway trails, as well as provide a timeframe for construction.  
The DEA will also include a preliminary subdivision plan showing parks, landscaped buffers and pedestrian/bike trails.  
We acknowledge that the Department prefers the park layout depicted in the November 2004 draft site plan. Since November 2004, the Kauhale Lani plan has been revised based on topography to reduce the amount of grading necessary, optimize drainage conditions, and provide retention basins in appropriate areas.
  8. The DEA will discuss proposed sewer systems. We acknowledge the Department's recommendation to connect to the existing Pukalani sewer system.
  9. The DEA will identify the potable water source for the Kauhale Lani community.
  10. We acknowledge the Department's recommendation to plan for connectivity with the existing subdivision located north of Parcel 7, specifically connecting the proposed and existing roadways located at the midpoint and eastern most area of the northern property boundary.
  11. Roadways within the community will be built to County of Maui standards, while keeping in character with the Upcountry region. This will be discussed in the DEA.
- Thank you again for your participation in the preparation of the upcoming Environmental Assessment. We will provide a copy of the DEA to the Planning Department. If you have any questions regarding this project, please do not hesitate to contact me.

Sincerely,

PER HAWAII

Tom Schnell, AICP  
Associate

cc: Leilani Pulmano/Maui Land & Pineapple Company, Inc.



ALAN M. ARAKAWA  
Mayor



**DEPARTMENT OF PARKS & RECREATION**

700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawaii 96793

GLENN T. CORREA  
Director

JOHN L. BUCK III  
Deputy Director

(808) 270-7230  
Fax: (808) 270-7934

April 28, 2005

Tom Schnell, Associate  
PBR Hawaii  
2123 Kaohi Street  
Wailuku, Hawaii 96793

**RE: Kauhale Lani Draft Environmental Assessment**


Dear Mr. Schnell:

This is in response to your request for early comments regarding the Draft Environmental Assessment for the Kauhale Lani project.

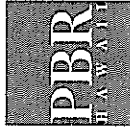
Our department would like to work with the developer in establishing active ballfields within the planned project site. Should this arrangement not be amenable to the developer, our department would ask that the Parks Dedications Requirements be satisfied through a cash contribution.

Thank you for the opportunity to provide these comments. Should you have any questions or need of additional information or clarification, please call me, or Patrick Matsui, Chief of Parks Planning & Development at 808-270-7387.

Sincerely,

  
Glenn T. Correa  
Director

c: Patrick Matsui, Chief of Parks Planning & Development  
Willard Asato, East Maui District Supervisor



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

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GRANT MURAKAMI, AICP  
SENIOR ASSOCIATE

TOM SCHNELL, AICP  
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KAYO NISHIKAWA, ASLA  
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May 12, 2005

Mr. Glenn T. Correa, Director  
County of Maui  
Department of Parks & Recreation  
700 Hali'a Nakoa Street, Unit 2  
Wailuku, Hawaii 96793

**SUBJECT: KAUAHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT**

Dear Mr. Correa:

Thank you for your letter dated April 28, 2005. As the consultant for Maui Land & Pineapple Company, Inc., we are responding to your comments.

We acknowledge that the Department of Parks and Recreation would like active ballfields established within the Kauhale Lani. Due to the sloping topography of the site, large ballfields may not be feasible. However, other recreation-related facilities will be established within Kauhale Lani, including centralized neighborhood park featuring various play courts. Since a detailed program has not yet been determined for the park, the preliminary concepts may be modified with further planning and input from your department. Maui Land & Pineapple Company Inc., will work with the Department of Parks & Recreation to resolve all park requirement issues.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me.

Sincerely,

PBR HAWAII



Tom Schnell, AICP  
Associate

cc: Leilani Pulmano/Maui Land & Pineapple Company, Inc.



CHRISTIE L. FURUKO, M.D.  
DIRECTOR OF HEALTH

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

In reply, please refer to:  
EHD/0108

04015PKP.05

April 7, 2005

Mr. Tom Schnell, AICP  
Associate  
PBR Hawaii  
1001 Bishop Street, Suite 650  
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

**Subject: Kaunale Lani Draft Environmental Assessment**

The Department of Health (DOH), Clean Water Branch (CWB), has reviewed the subject document and offers the following comments:

1. The Army Corps of Engineers should be contacted at 438-9258 to identify whether a Federal license or permit (including a Department of Army permit) is required for this project. Pursuant to Section 401(a)(1) of the Federal Water Pollution Control Act (commonly known as the "Clean Water Act"), a Section 401 Water Quality Certification is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters..."
2. A National Pollutant Discharge Elimination System (NPDES) general permit coverage is required for the following activities:
  - a. Storm water associated with industrial activities, as defined in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi).
  - b. Construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. **An NPDES permit is required before the commencement of the construction activities.**
  - c. Discharges of treated effluent from leaking underground storage tank remedial activities.
  - d. Discharges of once through cooling water less than one (1) million gallons per day.
  - e. Discharges of hydrotesting water.

Mr. Tom Schnell, AICP  
April 7, 2005  
Page 2

- f. Discharges of construction dewatering effluent.
- g. Discharges of treated effluent from petroleum bulk stations and terminals.
- h. Discharges of treated effluent from well drilling activities.
- i. Discharges of treated effluent from recycled water distribution systems.
- j. Discharges of storm water from a small municipal separate storm sewer system.
- k. Discharges of circulation water from decorative ponds or tanks.

The CWB requires that a Notice of Intent (NOI) to be covered by an NPDES general permit for any of the above activities be submitted at least 30 days before the commencement of the respective activities. The NOI forms may be picked up at our office or downloaded from our website at: <http://www.hawaii.gov/health/environmental/water/cleanwater/index.html>

3. The applicant may be required to apply for an individual NPDES permit if there is any type of activity in which wastewater is discharged from the project into State waters and/or coverage of the discharge(s) under the NPDES general permit(s) is not permissible (i.e. NPDES general permits do not cover discharges into Class 1 or Class AA State waters). An application for the NPDES permit is to be submitted at least 180 days before the commencement of the respective activities. The NPDES application forms may also be picked up at our office or downloaded from our website at: <http://www.hawaii.gov/health/environmental/water/cleanwater/index.html>

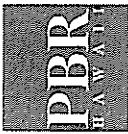
4. Hawaii Administrative Rules, Section 11-55-38, also requires the applicant to either submit a copy of the new NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the DOH that the project, activity, or site covered by the NOI or application has been or is being reviewed by SHPD.

If you have any questions, please contact Ms. Kris Poentis of the Engineering Section, CWB, at 586-4309.

Sincerely,

DENIS R. LAU, P.E., CHIEF  
Clean Water Branch

KP:cu



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KRYNN NIGURAWA, ASLA  
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May 12, 2005

Mr. Denis R. Lau, P.E., Chief  
State of Hawai'i  
Department of Health  
Clean Water Branch  
P.O. Box 3378  
Honolulu, Hawaii 96801-3378

**SUBJECT: KAUHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT**

Dear Mr. Lau:

Thank you for your letter dated April 7, 2005. As the consultant for Maui Land & Pineapple Company, Inc., we are responding to your comments.

1. The Army Corps of Engineers will be contacted to determine whether a Federal license or permit (including a Department of Army permit) is required. A Section 401 Water Quality Certification will be obtained if it is determined that the Kauhale Lani will involve any activity that may result in any discharge into navigable waters.
2. An NPDES permit will be obtained prior to construction to address non-point source discharges. In addition, a Notice of Intent (NOI) will be submitted, as required by the Clean Water Branch, at least 30 days before the commencement of construction activities such as clearing, grading, and excavation or any discharges.
3. While we presently do not foresee any instances in which the following may occur, we understand that an individual NPDES permit may be required if any activity discharges wastewater into State water and/or if the discharge(s) is not permissible under the NPDES general permit. If required, the application for the individual NPDES permit will be submitted at least 180 days before the commencement of such activities.
4. As required by Hawaii Administrative Rules, Section 11-55-38, a copy of the NOI or NPDES permit application will be submitted to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or the Department of Health to confirm that the project, activity, or site is being reviewed by the SHPD. Please note that an archaeological inventory survey for the Kauhale Lani site has been conducted and has been submitted to the State Historic Preservation Division for review.

Mr. Denis R. Lau, P.E., Chief  
Subject: Kauhale Lani Draft Environmental Assessment  
May 12, 2005  
Page 2

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me.

Sincerely,

PBR HAWAII

Tom Schnell, AICP  
Associate

cc: Leilani Pulmano/Maui Land & Pineapple Company, Inc.

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LINDA LURGLE  
GOVERNOR OF HAWAII



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

CHYOMIE LEMAKALA RUKIHO, M.D.  
DIRECTOR OF HEALTH

In reply, please refer to:  
File #

M2 3 009 007 & 064.wpd  
W12 nb050189

April 11, 2005

Mr. Tom Schnell, AICP  
PBR Hawaii  
Honolulu Office  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

Subject: Kauhale Lani Draft Environmental Assessment  
Maui Land & Pineapple Company, Inc.  
Slopes of Haleakala at the Entrance to Pukalani  
TMK: (2) 2-3-009: 007 and 064 50 acres and 39 acres

Thank you for allowing us the opportunity to provide pre-assessment comments to the subject project. Information provided indicates that the Kauhale Lani community project is proposing up to 165 single family homes, parks, and a trail system for the 50 acre parcel. Uses of the other 39 acre property are undetermined but could include a small wastewater treatment plant to serve the community and trails and open space. We have the following comments and information on the above subject property:

Our primary concern is that domestic wastewater generated is treated and disposed property. Ultimately, we would want the development to connect to the County sewer system. However, as that is not possible, the development will be required to use a small wastewater treatment plant and disposal system. Use of onsite wastewater system is not permitted due to the size of the development.

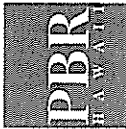
All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems." We do reserve the right to review the detailed wastewater plans for conformance to applicable rules.

Should you have any questions, please contact the Planning & Design Section of the Wastewater Branch at telephone (808)566-4294.

Sincerely,

HAROLD K. YEE, P.E., CHIEF  
Wastewater Branch

LNKM:mt



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FELLOW

JAMES LEONARD, AICP  
PRINCIPAL  
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SENIOR ASSOCIATE

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ASSOCIATE

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ASSOCIATE

KYVIN NISHIKAWA, ASLA  
ASSOCIATE

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Halo Hawaii 96724-2461

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FAX: (808) 961-4989  
E-MAIL: [paul@iliao.net](mailto:paul@iliao.net)

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2121 Kalia Street  
Suite 200  
Honolulu, Hawaii 96811-2504

TEL: (808) 242-2900  
E-MAIL: [whiting@whiting.com](mailto:whiting@whiting.com)

May 12, 2005

Mr. Harold K. Yee, P.E., Chief  
State of Hawaii  
Department of Health  
Wastewater Branch  
P.O. Box 3378  
Honolulu, Hawaii 96801-3378

SUBJECT: KAHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Yee:

Thank you for your letter dated April 11, 2005. As the consultant for Maui Land & Pineapple Company, Inc., we are responding to your comments.

1. We understand that the project will be required to use a small wastewater treatment plant and disposal system.
2. All wastewater plans will conform to applicable provisions of the DOH's Administrative Rules, Chapter 11-62, "Wastewater Systems," and the DOH has the right to review detailed wastewater plans for conformance to applicable rules.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me.

Sincerely,

PBR HAWAII

Tom Schnell, AICP  
Associate

cc: Leilani Pulimano/Maui Land & Pineapple Company, Inc.

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LINDA SINGLE  
GOVERNOR

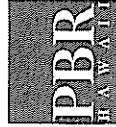


STATE OF HAWAII  
DEPARTMENT OF EDUCATION  
P.O. BOX 2350  
HONOLULU, HAWAII 96804

PATRICIA HAMAMOTO  
SUPERINTENDENT

RECEIVED  
APR 13 2005  
10:58 AM

STATE OF HAWAII



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E-Mail: [pbri@hilo.pbr.com](mailto:pbri@hilo.pbr.com)

OFFICE OF THE SUPERINTENDENT  
April 13, 2005

Mr. Tom Schnell, AICP  
PBR Hawaii  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

Subject: Kauhale Lani  
Early Consultation  
Pukalani, Maui, Hawaii. TMIK: 2-3-09-07

The Department of Education (DOE) has reviewed your March 29, 2005, letter requesting early consultation on the proposed plans of Maui Land & Pineapple Company, Inc. (MLPC) to develop up to 165 single-family homes near the intersection of Haleakala Highway and the Old Haleakala Highway at the entrance to Pukalani.

The DOE estimates that the residential project could generate a total of 95 school students who would most likely attend the following schools: Pukalani Elementary, Kalama Intermediate, and King Kekaulike High schools.

The DOE will request that the State Land Use Commission impose a school fair-share contribution as a condition of changing the designation of the land from agricultural to urban. We will ask that an agreement be reached between MLPC and the DOE prior to the project obtaining county rezoning.

We appreciate the opportunity to provide preliminary comment. If you have any questions, please call Rae Loui, Assistant Superintendent of the Office of Business Services, at 586-3444 or Heidi Meeker of the Facilities and Support Services Branch at 733-4862.

Very truly yours,

*Patricia Hamamoto*

Patricia Hamamoto  
Superintendent

PH:hy

cc: Rae Loui, Asst. Supt., OBS  
Kenneth Nomura, CAS, Baldwin/Kekaulike/Maui

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

May 12, 2005

Ms. Patricia Hamamoto, Superintendent  
State of Hawaii  
Department of Education  
P.O. Box 2360  
Honolulu, Hawaii 96804

SUBJECT: KAUHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT

Dear Ms. Hamamoto:

Thank you for your letter dated April 13, 2005. As the consultant for Maui Land & Pineapple Company, Inc., we are responding to your comments.

1. We acknowledge your estimates that the Kauhale Lani community could generate a total of 95 school students who would most likely attend Pukalani Elementary, Kalama Intermediate, and King Kekaulike High schools.
2. We understand that the DOE will request that the Land Use Commission impose a school fair-share contribution as a condition of changing the land use designation. Maui Land & Pineapple Company, Inc. will work with the DOE to reach a school fair-share contribution agreement.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me.

Sincerely,

PBR HAWAII

*Tom Schnell*

Tom Schnell, AICP  
Associate

cc: Leilani Pulmano/Maui Land & Pineapple Company, Inc.

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STATE OF HAWAII  
DEPARTMENT OF HEALTH  
MAUI DISTRICT HEALTH OFFICE  
WAILUKU, MAUI, HAWAII 96793-2102

April 14, 2005

Mr. Tom Schnell, AICP  
PBR Hawaii  
ASB Tower, Suite 650  
1001 Bishop Street  
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

Subject: **Kauhale Lani Draft Environmental Assessment  
TMK: (2) 2-3-09:07 & 2-3-09: 64**

Your letter of March 29, 2005, regarding the environmental assessment for the proposed Kauhale Lani project was forwarded to this office. We have the following comments to offer.

1. The property may be harboring rodents that will be dispersed to the surrounding areas when the site is cleared. The applicant is required by Hawaii Administrative Rules (HAR), Chapter 11-26, "Vector Control" to eradicate any rodents prior to demolition or site clearing activities and to notify the Department of Health by submitting Form VC-12 to the Maui Vector Control program when such action is taken. Rodent traps and/or rodenticides should be set out on the project site for at least a week or until the rodent activity ceases. The Maui Vector Control program telephone number is 808 873-3560.
2. National Pollutant Discharge Elimination System (NPDES) permit coverage is required for this project. The Clean Water Branch should be contacted at 808 586-4309.
3. Due to the nature and location of the project, there is a significant potential for fugitive dust emissions during site work preparations. It is recommended that a dust control management plan be developed. Implementation of adequate dust control measures during all phases of the project is warranted. Construction activities must comply with the provisions of HAR, Chapter 11-60.

CHYOME L. PUKING, M. D.  
DIRECTOR OF HEALTH  
LORRIN W. PANU, M. D., M. P. H.  
DISTRICT HEALTH OFFICER

APR 14 2005

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APR 14 2005

Mr. Tom Schnell  
April 14, 2005  
Page 2

4. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules, Chapter 11-46 "Community Noise Control". A noise permit may be required and should be obtained before the commencement of work.
5. Plan approval for all new wastewater disposal systems will be required prior to construction of the systems. The wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems".

Should you have any questions, please call me at 984-8230.

Sincerely,



Herbert S. Matsubayashi  
District Environmental Health Program Chief



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E-Mail: pbrmail@pbrhawaii.com

May 12, 2005

Mr. Herbert S. Matsubayashi  
District Environmental Health Program Chief  
State of Hawaii, Department of Health  
Maui District Health Office  
54 High Street  
Wailuku, Hawaii 96793-2102

**SUBJECT: KAUAHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT**

Dear Mr. Matsubayashi:

Thank you for your letter dated April 14, 2005. As the consultant for Maui Land & Pineapple Company, Inc., we are responding to your comments.

1. We understand that the property may need to undergo rodent eradication prior to demolition or site clearing activities. Maui Land Pineapple Company Inc., will notify the Department of Health if such measures are taken by submitting Form YC-12 to the Maui Vector Control program as required by the Hawaii Administrative Rules (HAR), Chapter 11-26, "Vector Control".
2. An NPDES Permit will be obtained through the Clean Water Branch.
3. We acknowledge your concern about the potential for fugitive dust emissions during site work preparations. A dust control management plan will be developed and implemented in compliance with the provisions of HAR, Chapter 11-60.
4. A noise permit will be obtained before work commences, should noise levels during construction phase exceed the maximum allowable levels set forth in the HAR, Chapter 11-46, "Community Noise Control".
5. All wastewater plans will conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems."

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me.

Sincerely,

PBR HAWAII

Tom Schnell, AICP  
Associate

cc: Leijani Pulmano/Maui Land & Pineapple Company, Inc.

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**DEPARTMENT OF BUSINESS,  
ECONOMIC DEVELOPMENT & TOURISM**

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THEODORE LUI  
DIRECTOR  
MARK K. ANDERSON  
ACTING DEPUTY DIRECTOR  
LAURA H. THIELEN  
DIRECTOR  
OFFICE OF PLANNING

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

**OFFICE OF PLANNING**

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

Ref. No. P-10916

May 4, 2005

Mr. Tom Schnell, AICP  
PBR Hawaii  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

**Subject: Pre-Consultation for Draft Environmental Assessment  
Kauhale Lani Community Project, TMK: (2) 2-3-09: 07, 64**

The Office of Planning has reviewed the materials transmitted as part of the Pre-Consultation Notice for the above Draft Environmental Assessment for the Maui Land and Pineapple's proposed Kauhale Lani community site at the entrance to Pukalani Town.

The proposed low-density residential community is planned for two lots currently in the State Agricultural District that are designated for single-family development in the County Community Plan.

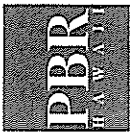
The Draft Environmental Assessment (DEA) should address the impacts on natural and cultural resources and state and county services and facilities. Please address the impact of the additional development on the limited groundwater supply in the East Maui watershed and storm water runoff and wastewater treatment.

Please also address the potential impacts on education and traffic in conjunction with other developments in the Pukalani and Lower Kula communities. Please also indicate how the developer plans to protect any cultural finds and access for traditional and customary practices.

We look forward to the opportunity to review and comment on the DEA. If you should have any questions, please call Mary Alice Evans of my staff at 587-2802.

Sincerely,

Laura H. Thielen  
Director



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
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212 KALANANULUI  
WAIKUKU, HAWAII 96826-2244  
TEL: (808) 342-2879  
FAX: (808) 342-2902  
E-MAIL: pch@hawaii.gov



DEPARTMENT OF  
**HOUSING AND HUMAN CONCERNS**  
COUNTY OF MAUI

ALAN M. ARAKAWA  
Mayor  
ALICE L. LEE  
Director  
HERMAN T. ANDAYA  
Deputy Director

210 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • PHONE (808) 270-2965 • FAX (808) 270-2765

April 4, 2005

Mr. Tom Schnell, AICP  
Associate  
PBR Hawaii  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

Subject: Kauhale Lani Draft Environmental Assessment

We have reviewed the information contained in your March 29, 2005 letter and enclosure and would like to provide the following comments:

1. Please indicate in the draft EA as to whether the IUC District Boundary Amendment and Change-In-Zoning will be requested through the regular process or some other process (please specify).
2. Please indicate if affordable housing units will be provided in the project, and if so, how many and affordable to what income group.
3. Please specify whether the units in the project will be lots only or house & lot packages. If the units will consist of house and lot packages, please provide floor plans and exterior elevations for the houses.
4. Will the sale of the units be subject to owner-occupancy requirements, buy-back option restrictions, shared-appreciation restrictions, or any other types of restrictions? If so, please specify what they will be.

Thank you for the opportunity to comment.

Very truly yours  
*Alice L. Lee*

ALICE L. LEE  
Director

ETO:hs  
c: Housing Administrator

May 12, 2005

Ms. Laura Thielien, Director  
State of Hawai'i  
Department of Business, Economic Development & Tourism  
Office of Planning  
P.O. Box 2369  
Honolulu, Hawaii 96804

SUBJECT: KAUHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT

Dear Ms. Thielien:

Thank you for your letter dated May 4, 2005 (Ref. No. P10916). As the consultant for Maui Land & Pineapple Company, Inc., we are responding to your comments.

The Draft Environmental Assessment (DEA) will address impacts related to:

1. Natural and cultural resources;
2. State and County services and facilities;
3. Water sources for the Kauhale Lani community;
4. Stormwater runoff;
5. Wastewater treatment;
6. Education facilities;
7. Traffic; and
8. Cultural finds and access

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me.

Sincerely,

PBR HAWAII

*Tom Schnell*

Tom Schnell, AICP  
Associate

cc: Leilani Pulmano/Maui Land & Pineapple Company, Inc.

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APR 18 2005  
PBR HAWAII



May 12, 2005

Ms. Alice L. Lee, Director  
County of Maui  
Department of Housing and Human Concerns  
200 South High Street  
Wailuku, Maui, Hawaii 96793  
Honolulu, Hawaii 96804

April 14, 2005

Mr. Tom Schnell  
PBR Hawaii  
ASB Tower, Suite 650  
1001 Bishop Street  
Honolulu, Hawaii 96813-3484

**SUBJECT: KAUAHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT**

Dear Ms. Lee:

Thank you for your letter dated April 4, 2005. As the consultant for Maui Land & Pineapple Company, Inc., we are responding to your comments.

1. Maui Land & Pineapple Company Inc., will request the LUC District Boundary Amendment and County Change in Zoning through the regular process.
2. At this time the Kauhale Lani community is targeted toward market-priced buyers. Maui Land & Pineapple Company, Inc., will work with your office to satisfy all County affordable housing requirements.
3. Currently plans for Kauhale Lani are preliminary. Maui Land & Pineapple Company Inc., has not determined if only lots will be provided or if house and lot packages will be available. As such, floor plans and exterior elevations of homes have not been prepared.
4. As the homes of Kauhale Lani are planned to be market rate, it is not currently envisioned that there will be buy-back options, shared-appreciation, or any other restrictions on sales or resales.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me.

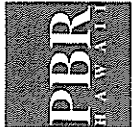
Sincerely,

PBR HAWAII

Tom Schnell, AICP  
Associate

cc: Letiano Pulmano/Maui Land & Pineapple Company, Inc.

OUJ0810-11U11607EAPreconsultation LetianoPulmano@pbr-hl-12.HHC.doc



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
ENVIRONMENTAL STUDIES

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THOMAS S. WITTEN, ASLA  
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PRINCIPAL  
HUIO OFFICE

GRANT MURAKAMI, AICP  
SENIOR ASSOCIATE

TODD SCUSELL, AICP  
ASSOCIATE

RAYMOND T. HIGA, ASLA  
ASSOCIATE

KENJI NISHIKAWA, ASLA  
ASSOCIATE

Honolulu Office  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, Hawaii 96813-3484  
Tel: (808) 521-5631  
Fax: (808) 521-1402  
E-Mail: syad@pbrhawaii.com

Hilo Office  
101 Aerial Street  
145 Lakes Center Suite 210  
Hilo, HI 96720-4262  
Tel: (808) 961-5333  
Fax: (808) 961-4695  
E-Mail: pbrhilo@pbrhawaii.com

Wailuku Office  
2123 Kalahe Street  
Wailuku, Hawaii 96793-2204  
Tel: (808) 242-2878  
Fax: (808) 242-2802  
E-Mail: pbrwailuku@pbrhawaii.com

Subject: Kauhale Lani - Draft Environmental Assessment - Old Haleakala Highway and Haleakala Highway, Pukalani, Maui, Hawaii TMK: (2) 2-3-09:07 and (2) 2-3-09:64

Dear Mr. Schnell,

Thank you for allowing us to comment on the Draft Environmental Assessment (EA) notice and map for the subject project, which was received on March 31, 2005.

In reviewing our records and the information received, Maui Electric Company (MECO) may require access and electrical easements for our facilities to serve the subject project site. Since we highly encourage the customer's electrical consultant to submit the electrical demand requirements and project time schedule. In addition, we recommend that the consultant schedule a meeting with us as soon as practical to verify and indicate the desired service location so that service can be provided on a timely basis.

Should you have any questions or concerns, please call Ray Okazaki at 871-2340.

Sincerely,

Neal Shinyama  
Manager, Engineering

NS/ro.lkh



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
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VINCENT SUGIKUNI  
PRINCIPAL

JAMES LEONARD, AICP  
PRINCIPAL  
FIELD OFFICE

GRANT MURAKAMI, AICP  
SENIOR ASSOCIATE

TOM SCHNELL, AICP  
ASSOCIATE

RAYMOND T. IJGA, ASLA  
ASSOCIATE

KYRA NISHIKAWA, ASLA  
ASSOCIATE

HONOLULU OFFICE  
100 BISHOP STREET  
ASB TOWER, SUITE 650  
HONOLULU, HAWAII 96813  
TEL: (808) 531-5631  
FAX: (808) 531-1402  
E-Mail: syedmin@pbrhawaii.com

FIELD OFFICE  
101 ALIPOKA STREET  
1001 ALIPOKA STREET, 310  
HONOLULU, HAWAII 96813  
TEL: (808) 561-3331  
FAX: (808) 561-4969  
E-Mail: pbrhawaii@verizon.com

MAUI OFFICE  
213 KAHOA STREET  
WAIKOLE, HAWAII 96791-2241  
TEL: (808) 241-2376  
FAX: (808) 241-2376  
E-Mail: pbrmaui@pbrhawaii.com

May 12, 2005

Mr. Neal Shinyama, Manager, Engineering  
Maui Electric Company, Ltd.  
210 West Kamehameha Avenue  
P.O. Box 398  
Kahului, Hawaii 96733-6898

**SUBJECT: KAHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT**

Dear Mr. Shinyama:

Thank you for your letter dated April 14, 2005. As the consultant for Maui Land & Pineapple Company, Inc., we are responding to your comments.

1. We recognize that MECO may require access and electrical easements to serve the Kauhale Lani community. Maui Land & Pineapple Company Inc., will work with MECO to resolve any access and electrical easement issues.
2. Electrical demand requirements and project time schedule will be submitted to MECO. In addition, Maui Land & Pineapple Company Inc., has scheduled a meeting on May 18, 2004 with MECO to verify and indicate the desired service location so that service can be provided on a timely basis.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me.

Sincerely,

PBR HAWAII

Tom Schnell, AICP  
Associate

cc: Leilani Pulmano/Maui Land & Pineapple Company, Inc.

O:\00810-11\1116.07EAP\reconciliation Letters\Responses\BL-07 MECO.doc



Verizon Hawaii Inc.  
P.O. Box 2203  
Honolulu, HI 96841

RECEIVED

APR 21 2005

PBR HAWAII

April 21, 2005

PBR Hawaii  
Bishop Street  
ASB Tower, Suite 650  
Honolulu, Hawaii 96813

ATTN: Mr. Tom Schnell

SUBJECT: Kauhale Lani Community  
DRAFT ENVIRONMENTAL ASSESSMENT

Dear Mr. Schnell:

Thank you for providing Verizon Hawaii Incorporated, the opportunity to comment on the Draft Environmental Assessment for the Kauhale Lani Community Project.

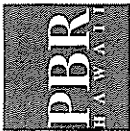
Verizon Hawaii's existing infrastructure providing telecommunication services to this area is nearly filled to capacity and unable to serve a project of this magnitude. In order to provide telecommunication services for this project, an easement area of 30' X 30' will be required for Verizon Hawaii to install a pair gain. Fiber cable and power lines will energize the pair gain to provide telecommunication services for the Kauhale Lani Community Project.

If there are any questions, please call Sheri Thada at (808) 242-5258 or Jerry Imai at (808) 242-5110.

Sincerely,

Lynette Yoshida  
Section Manager – Network Engineering & Planning  
Verizon Hawaii

C: File (3050-MKWO)  
S. Thada



LAND PLANNING  
LANDSCAPE ARCHITECTURE  
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RUSSELL Y.J. CHUNG, ASLA  
EXECUTIVE VICE-PRESIDENT

VINCENT SINGEKURI  
PRACTICAL

JAMES LEONARD, AICP  
PRACTICAL  
Hilo Office

GRAET MURAKAMI, AICP  
SENIOR ASSOCIATE

TOM SCHNELL, AICP  
ASSOCIATE

RAWKOND T. IIOGA, ASLA  
ASSOCIATE

KEVIN MURIEWA, ASLA  
ASSOCIATE

HONOLULU OFFICE  
1001 BIRNEY STREET  
ASB TOWER, SUITE 650  
HONOLULU, HAWAII 96813-3484  
TEL: (808) 521-5031  
FAX: (808) 521-1402  
MAIL: syshamini@pbhawaii.com

Hilo Office  
101 ACADEMY STREET  
101 LAYTON CENTER SUITE 110  
HILO, HAWAII 96720-4262  
TEL: (808) 951-3133  
FAX: (808) 951-4899  
E-MAIL: pbrhilo@lava.net

WAILUKU OFFICE  
2125 K. KONO STREET  
WAILUKU, HAWAII 96791-2204  
TEL: (808) 242-2878  
FAX: (808) 242-2804  
E-MAIL: pbrwailu@lava.net

May 12, 2005

Ms. Lynette Yoshida  
Section Manager--Network Engineering & Planning  
Verizon Hawaii Inc.  
P.O. Box 2200  
Honolulu, Hawaii 96841

**SUBJECT: KAUHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT**

Dear Ms. Yoshida:

Thank you for your letter dated April 21, 2005. As the consultant for Maui Land & Pineapple Company, Inc., we are responding to your comments.

We acknowledge that Verizon Hawaii's existing infrastructure for this area is nearly filled to capacity and unable to serve a project of the magnitude of Kauhale Lani. To provide telecommunication services for the Kauhale Lani community, Verizon Hawaii will require an easement area of 30' x 30' to install a pair gain. Fiber optic cable and power lines will energize the pair gain to provide telecommunication services for Kauhale Lani. Maui Land & Pineapple Company Inc., will work with Verizon to resolve any easement issues.

Thank you again for your participation in the preparation of the upcoming Environmental Assessment. If you have any questions regarding this project, please do not hesitate to contact me.

Sincerely,

PBR HAWAII

Tom Schnell, AICP  
Associate

cc: Leilani Pulmano/Maui Land & Pineapple Company, Inc.

O:\JOB10-11\1116.07EAP\Preconsultation Letters\Responses\BL-08 Verizon.doc

**Appendix O:  
Draft Environmental Assessment  
Comment and Response**



STATE OF HAWAII  
DEPARTMENT OF EDUCATION  
P.O. BOX 2360  
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

June 24, 2005

MEMO TO: Mr. Anthony J.H. Ching, Executive Officer  
Land Use Commission  
Department of Business, Economic Development and Tourism

F R O M: Patricia Hamamoto, Superintendent  
Department of Education

A handwritten signature in cursive script, reading "Patricia Hamamoto".

SUBJECT: Petition for State Land Use Boundary Change for  
Maui Land & Pineapple Company, Inc. for  
the Kauhale Lani Residential Subdivision  
Pukalani, Maui, TMK: 2-3-09: por. 7 and por. 64

The Department of Education (DOE) has reviewed the petition for land use change for the 165-lot Kauhale Lani residential subdivision project in Pukalani, Maui. The DOE supplied the school enrollment data included in the Draft Environmental Assessment in Section 3.2.8.4 on pages 45 and 46. The DOE estimates that approximately 95 public school students could reside in the project upon its completion.

If you should have any questions, please call Rae Loui, Assistant Superintendent of the Office of Business Services, at 586-3444 or Heidi Meeker of the Facilities and Support Services Branch at 733-4862.

PH:HM:hy

cc: Rae Loui, Asst. Supt, OBS  
Kenneth Nomura, CAS, Baldwin/Kekaulike/Maui Complex Area  
Laura Thielen, OP  
Genevieve Salmonson, OEQC  
Tom Schnell, PBR Hawaii ✓  
Ryan Churchill, Maui Land & Pineapple Company, Inc.



August 25, 2008

Patricia Hamamoto, Superintendent  
State of Hawaii  
Department of Education  
P.O. Box 119  
Honolulu, Hawaii 96810

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Ms. Hamamoto,

Thank you for your June 24, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

We acknowledge your estimate that 95 public school students could reside in the subdivision upon its completion based upon 165 lots. We note that the project currently proposes 170 lots.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at

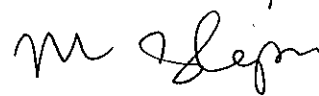
LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956

Patricia Hamamoto, Superintendent  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

<http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "M Slepín". The signature is fluid and cursive, with a prominent initial "M" and a long, sweeping underline.

Matthew M. Slepín, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

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-05-053

June 17, 2005

Mr. Tom Schnell, AICP  
PBR Hawaii  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, HI 96813

Dear Mr. Schnell:

SUBJECT: Draft Environmental Assessment  
Kauhale Lani  
Application for Land Use District Boundary Amendment  
Pukalani, Maui, Hawaii  
TMK: 2-3-09:007 - 50 acres  
TMK: 2-3-09:064 - 39 acres

Thank you for allowing us to review and comment on the subject document. Enclosed are comments regarding the wastewater treatment that our Wastewater Branch provided to you on April 27, 2005. Also, please refer to our website for the Standard Comments (<http://www.state.hi.us/health/environmental/env-planning/landuse/landuse.html>). If there are any questions about these standard comments please contact Jiakai Liu with the Environmental Planning Office at 586-4346.

Sincerely,

JUNE F. HARRIGAN-LUM, MANAGER  
Environmental Planning Office

Enclosure

c: EPO  
CWB  
WWB



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-05-050

June 30, 2005

Mr. Tom Schnell, AICP  
PBR Hawaii  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, HI 96813

Dear Mr. Schnell:

SUBJECT: Draft Environmental Assessment for Kauhale Lani Project  
Application for Land Use District Boundary Amendment, Docket No. A05-760  
Pukalani, Maui, Hawaii  
TMK: 2-3-09:007 - 50 acres, TMK: 2-3-09:064 - 39 acres

Thank you for allowing us to review and comment on the subject document. Please see the enclosed comments from our Wastewater Branch and Safe Drinking Water Branch. Also, please refer to our website for the Standard Comments (<http://www.state.hi.us/health/environmental/env-planning/landuse/landuse.html>). If there are any questions about these standard comments please contact Jiakai Liu with the Environmental Planning Office at 586-4346.

This letter is used to supersede the previous letter of EPO-05-053, dated June 17, 2005.

Sincerely,

JUNE F. HARRIGAN-LUM, MANAGER  
Environmental Planning Office

Enclosures

c: EPO  
HEER  
WWB  
SDWB



August 25, 2008

June F. Harrigan-Lum, Manager  
Department of Health  
Environmental Planning Office  
P.O. Box 3378  
Honolulu, HI 96801

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Ms. Harrigan-Lum,

Thank you for your letters of June 17 and June 30, 2005 providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

Thank you for forwarding comments from the Wastewater Branch and Safe Drinking Water Branch. We have responded to their comments directly. We also acknowledge the Standard Comments offered by your office.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Envi-

LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956

June F. Harrigan-Lum, Manager  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

ronmental Quality Control, upon publication in the Environmental Notice.  
Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

LINDA LINGLE  
GOVERNOR OF HAWAII



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

LORRIN W. PANG, M. D., M. P. H.  
DISTRICT HEALTH OFFICER

**STATE OF HAWAII**  
DEPARTMENT OF HEALTH  
MAUI DISTRICT HEALTH OFFICE  
54 HIGH STREET  
WAILUKU, MAUI, HAWAII 96793-2102

June 24, 2005

Mr. Tom Schnell, AICP  
PBR Hawaii  
ASB Tower, Suite 650  
1001 Bishop Street  
Honolulu, Hawai'i 96813

Dear Mr. Schnell:

Subject: **Kauhale Lani**  
**TMK: (2) 2-3-09: 7 & 64**  
**CIZ 2005/0006 and CUP 2005/0005**

Thank you for the opportunity to comment on the Environmental Assessment and Maui County Change in Zoning and Special Use Permit applications for the Kauhale Lani Project. We have no further comments to offer, other than comments made April 14, 2005 (copy enclosed).

Should you have any questions, please call me at 984-8230.

Sincerely,

A handwritten signature in black ink, appearing to read "H. Matsubayashi".

Herbert S. Matsubayashi  
District Environmental Health Program Chief

Enclosure

c: Ryan Churchill w/ enc.  
Anthony Ching w/ enc.  
OEQC w/ enc.  
Abe Mitsuda w/ enc.  
Kivette A. Caigoy w/ enc.

LINDA LINGLE  
GOVERNOR OF HAWAII



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

LORRIN W. PANG, M. D., M. P. H.  
DISTRICT HEALTH OFFICER

**STATE OF HAWAII**  
DEPARTMENT OF HEALTH  
MAUI DISTRICT HEALTH OFFICE  
54 HIGH STREET  
WAILUKU, MAUI, HAWAII 96793-2102

April 14, 2005

4/14/05- Mr. Tom Schnell, AICP  
PBR Hawaii  
ASB Tower, Suite 650  
1001 Bishop Street  
Honolulu, Hawai'i 96813-3484

Dear Mr. Schnell:

Subject: **Kauhale Lani Draft Environmental Assessment**  
**TMK: (2) 2-3-09:07 & 2-3-09: 64**

Your letter of March 29, 2005, regarding the environmental assessment for the proposed Kauhale Lani project was forwarded to this office. We have the following comments to offer.

1. The property may be harboring rodents that will be dispersed to the surrounding areas when the site is cleared. The applicant is required by Hawaii Administrative Rules (HAR), Chapter 11-26, "Vector Control" to eradicate any rodents prior to demolition or site clearing activities and to notify the Department of Health by submitting Form VC-12 to the Maui Vector Control program when such action is taken. Rodent traps and/or rodenticides should be set out on the project site for at least a week or until the rodent activity ceases. The Maui Vector Control program telephone number is 808 873-3560.
2. National Pollutant Discharge Elimination System (NPDES) permit coverage is required for this project. The Clean Water Branch should be contacted at 808 586-4309.
3. Due to the nature and location of the project, there is a significant potential for fugitive dust emissions during site work preparations. It is recommended that a dust control management plan be developed. Implementation of adequate dust control measures during all phases of the project is warranted. Construction activities must comply with the provisions of HAR, Chapter 11-60.

Mr. Tom Schnell  
April 14, 2005  
Page 2

4. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules, Chapter 11-46 "Community Noise Control". A noise permit may be required and should be obtained before the commencement of work.
5. Plan approval for all new wastewater disposal systems will be required prior to construction of the systems. The wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems".

Should you have any questions, please call me at 984-8230.

Sincerely,



Herbert S. Matsubayashi  
District Environmental Health Program Chief



August 25, 2008

Herbert S. Matsubayashi  
District Environmental Health Program Chief  
Department of Health  
Maui District Health Office  
54 High Street  
Wailuku, HI 96793

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. Matsubayashi,

Thank you for your letters of April 14 and June 24, 2005 letters providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

With regard to your comments on the Draft EA, we have numbered our responses to correspond with the comments in your letter:

Herbert S. Matsubayashi  
District Environmental Health Program Chief  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 3

1. In compliance with HAR, Chapter 11-26, "Vector Control", any rodents on site will be eradicated prior to demolition or site clearing activities. Form VC-12 will be submitted to the Maui Vector Control program when such action is taken. Rodent traps and/or rodenticides will be set out on the project site for at least one week or until the rodent activity ceases.

2. We acknowledge a National Pollutant Discharge Elimination System (NPDES) permit is required for this project and the Clean Water Branch will be contacted.

3. As recommended, a dust control management plan will be developed to mitigate the potential for fugitive dust emission during site work preparations. Adequate dust control measures will be implemented during all phases of the project, and construction activities will comply with the provisions of HAR, Chapter 11-60.

4. A noise permit will be obtained before the commencement of work, if noise created during the construction phase is anticipated to exceed the maximum allowable levels set forth in HAR, Chapter 11-46, "Community Noise Control".

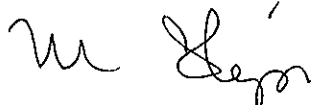
5. The wastewater facility has been removed from the project proposed. Project wastewater will be transmitted to the Pukalani Sewage Treatment Plant via the existing transmission system.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.



Herbert S. Matsubayashi  
District Environmental Health Program Chief  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 3 of 3

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "M. Slepín".

Matthew M. Slepín, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110



**STATE OF HAWAII**  
**OFFICE OF HAWAIIAN AFFAIRS**  
711 KAPI'OLANI BOULEVARD, SUITE 500  
HONOLULU, HAWAII 96813

HRD05/1796

May 23, 2005

Tom Schnell, AICP  
Associate  
PBR Hawaii  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, Hawai'i 96813-3484

**Re: Draft Environmental Assessment, Kauhale Lani Community, Pukalani, Island of Maui TMK: 2-3-9:007 & 064**

Dear Mr. Schnell:

The Office of Hawaiian Affairs (OHA) is in receipt of your request for comments regarding the Draft Environmental Assessment (DEA) your firm is preparing for Maui Land & Pineapple Company, Inc. regarding their development proposal for Kauhale Lani Community.

The proposal would develop up to 165 single family homes, parks, and a trail system on a 50-acre parcel and a possible wastewater treatment plant on a 39-acre parcel property.

After reviewing the submitted materials, OHA has concerns in the area of historical and cultural resources and environmental quality.

**Historical and Cultural Resources**

It is unclear from the submitted materials whether any form of archaeological investigation has occurred on the affected parcels. An archaeological inventory survey should occur in the area of the proposed development to determine the presence or absence of cultural and historic features. The archaeological investigation should take place in the form of an inventory level survey with sub-surface testing.

Mr. Tom Schnell  
May 23, 2005  
Page 2

The results of any archaeological investigation and testing program, and any proposed mitigation, can be included in the draft environmental survey.


### **Environmental Quality**

The details of any proposed wastewater facility to be built for the development, and possible adverse impacts to the environment from wastewater discharge in the area should be explored and discussed.

Any planned reuse of treated wastewater for the project should also be identified and the anticipated increase in water consumption from the development, once fully built out, discussed in detail given current water uses in the area.

If you have any questions or concerns, please contact Kai Markell, Policy Advocate, at 594-1945 or [kaim@oha.org](mailto:kaim@oha.org). Once again, thank you for your patience during our review and assessment of this important matter.

‘O wau iho nō,



Clyde W. Nāmu‘o  
Administrator



**STATE OF HAWAII**  
**OFFICE OF HAWAIIAN AFFAIRS**  
711 KAPI'OLANI BOULEVARD, SUITE 500  
HONOLULU, HAWAII 96813

HRD05/1796B

June 8, 2005

Tom Schnell, AICP  
PBR Hawaii  
ASB Tower, Suite 650  
Honolulu, HI 96813

**RE: Kauhale Lani Petition for Land Use District Boundary Amendment, Kula, Makawao, Maui, Hawai'i, TMK: (3) 2-3-09: parcels 7 & 64.**

Dear Mr. Schnell,

The Office of Hawaiian Affairs (OHA) is in receipt of your May 24, 2005 request for comment on the above listed proposed project, TMK: (3) 2-3-09: parcels 7 & 64. OHA offers the following comments:

OHA agrees that an Archaeological Monitoring Plan should be drafted in support of the above mentioned project. Although the project area contains neither surface sites nor subsurface features, pre-contact native Hawaiian sites have been documented in the surrounding area. All excavations, including utility trenching, footing excavations and grading, should be monitored by a professional archaeologist.

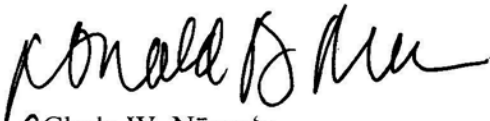
It is also recommended that native plants be incorporated into the future landscaping plans. As the project area has been in a state of exotic vegetation for many years, the proposed project provides an opportunity to promote native flora. As recommended by Mr. Maxwell, ulu (*Artocarpis Altilis*) would be an appropriate landscaping plant. Naupaka (*Scaevola sp.*), hala (*Pandanus odoratissimus*) and ti (*Cordyline terminalis*) would also be fitting for promoting a native aesthetic for the area. Native trees should also be planted to create an environment which is beneficial for native animals, namely avian species.

OHA further requests your assurances that if the project goes forward, should iwi or Native Hawaiian cultural or traditional deposits be found during ground disturbance, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Tom Schnell  
June 8, 2005  
Page 2

Thank you for the opportunity to comment. If you have further questions or concerns, please contact Jesse Yorck at 594-0239 or [jessey@oha.org](mailto:jessey@oha.org).

‘O wau iho nō,



Clyde W. Nāmu‘o  
Administrator

CC: Thelma Shimaoka  
OHA Community Affairs Coordinator (Maui)  
140 Hoohana St., Ste. 206  
Kahului, HI 96732

Anthony Ching  
State Land Use Commission  
P.O. Box 2359  
Honolulu, HI 96804

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

PHONE (808) 594-1888

FAX (808) 594-1865



**STATE OF HAWAII**  
**OFFICE OF HAWAIIAN AFFAIRS**  
711 KAPI'OLANI BOULEVARD, SUITE 500  
HONOLULU, HAWAII 96813

HRD05/1796C

June 29, 2005

Tom Schnell, AICP  
PBR Hawaii  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, HI 96813

**RE: Draft Environmental Assessment for the Proposed Kauhale Lani Development, Kula, Makawao, Maui, Hawai'i, TMK: (3) 2-3-09: parcels 7 & 64.**

Dear Mr. Schnell,

The Office of Hawaiian Affairs (OHA) is in receipt of your June 3<sup>rd</sup>, 2005 request for comment on the above listed proposed project, TMK: (3) 2-3-09: parcels 7 & 64. OHA offers the following comments:

Please see the attached review of the Kauhale Lani Petition for Land Use District Boundary Amendment. OHA maintains the same recommendations for this portion of the planning process. OHA commends you for complying with our recommendation for on-site monitoring in support of this project.

OHA further requests your assurances that if the project goes forward, should iwi or Native Hawaiian cultural or traditional deposits be found during ground disturbance, work will cease, and the appropriate agencies will be contacted pursuant to applicable law. As a side note, OHA asks that you please submit requests for review in hard copy form in the future.

Thank you for the opportunity to comment. If you have further questions or concerns, please contact Jesse Yorck at (808) 594-0239 or [jessey@oha.org](mailto:jessey@oha.org).

'O wau iho nō,

A handwritten signature in black ink, appearing to read "Clyde W. Nāmu'o".

Clyde W. Nāmu'o  
Administrator

CC: Thelma Shimaoka  
OHA Community Affairs Coordinator (Maui)  
140 Hoohana St., Ste. 206  
Kahului, HI 96732

Anthony Ching  
State Land Use Commission  
P.O. Box 2359  
Honolulu, HI 96804

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

Ryan Churchill  
Maui Land and Pineapple Company  
1000 Kapalua Drive  
Kapalua, Maui 96761



August 25, 2008

Clyde W. Namu'o, Administrator  
State of Hawaii  
Office of Hawaiian Affairs  
711 Kapi'olani Boulevard, Suite 500  
Honolulu, HI 96813

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. Namu'o,

Thank you for your May 23, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

We have titled our responses to correspond with the comments in your letter.

#### **Historical and Cultural Resources**

An archaeological inventory survey with sub-surface testing was conducted for the project and included in the Draft EA as Appendix D. No cultural resources were encountered. Should any traditional or cultural deposits be discovered during ground-disturbing activities, all work in the area will cease and the appropriate agencies contacted.

#### **Environmental Quality**

LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING



Clyde W. Namu'o, Administrator  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

As discussed above, the project has been revised and no wastewater treatment system is currently proposed.

Native plants will be incorporated into the landscaping plans as practicable.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

LINDA LINGLE  
GOVERNOR



RUSS K. SAITO  
COMPTROLLER  
KATHERINE H. THOMASON  
DEPUTY COMPTROLLER

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

(P)1161.5

JUN - 8 2005

**MEMORANDUM**

TO: Ms. Laura H. Thielen, Director  
Office of Planning  
Department of Business, Economic Development & Tourism

FROM: Russ K. Saito  
State Comptroller *Russ K. Saito*

Subject: A05-760/Maui Land & Pineapple Company, Inc.  
Petition for Amendment to the State Land Use District Boundaries  
Agriculture to Urban District  
Pukalani, Maui, Hawaii  
TMK: 2-3-09 Portion 7 and 64

Thank you for the opportunity to review the A05-760/Maui Land and Pineapple Company, Inc. Petition for Amendment to the State Land Use District Boundaries from Agriculture to Urban District.

This project does not impact any of the Department of Accounting and General Services projects or existing facilities. Therefore, we have no comments to offer.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Allen Yamanoha of the Public Works Division at 586-0488.

c: ✓ Mr. Tom Schnell, PBR Hawaii  
Mr. Anthony Ching, State Land Use Commission  
Ms. Genevieve Salmonson, OEQC  
Ms. Kivette Caigoy, County of Maui, Planning Department



August 25, 2008

Russ K. Saito, State Comptroller  
State of Hawaii  
Department of Accounting and General Services  
P.O. Box 119  
Honolulu, Hawaii 96810

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. Saito,

Thank you for your June 8, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

We have noted that the project does not impact any of your department's projects or existing facilities.

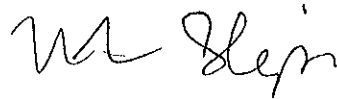
Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956

Russ K. Saito, State Comptroller  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

Respectfully submitted,

A handwritten signature in black ink, appearing to read "M. Slepina". The signature is fluid and cursive, with the first name "M" being particularly prominent.

Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

LINDA LINGLE  
GOVERNOR OF HAWAII



GENEVIEVE K. Y. SALMONSON  
DIRECTOR OF OEQC

**STATE OF HAWAII**  
**OFFICE OF ENVIRONMENTAL QUALITY CONTROL**  
**DEPARTMENT OF HEALTH**  
LEIOPAPA A KAMEHAMEHA  
235 SOUTH BERETANIA STREET, SUITE 702  
HONOLULU, HAWAII 96813  
TELEPHONE (808) 586-4185

In reply, please refer to:  
File:

June 30, 2005

Mr. Ryan Churchill  
Maui Land and Pineapple Company, Inc.  
1000 Kapalua Drive  
Kapalua, Hawaii'i 96761

Mr. Tom Schnell  
PBR Hawaii'i  
1001 Bishop Street, Suite 650  
Honolulu, Hawaii'i 96813

Mr. Anthony Ching  
Land Use Commission, State of Hawaii'i  
P.O. Box 2359  
Honolulu, Hawaii'i 96804

Dear Messrs. Churchill, Schnell and Ching:

The Office of Environmental Quality Control has received the draft environmental assessment for the Kauhale Lani Project, Tax Map Key (2) 4-5-07:04, in the judicial district of Lahaina and offers the following comments for your consideration and response.

**SUSTAINABLE BUILDING GUIDELINES AND NATIVE PLANT LANDSCAPING:** Please refer to, and incorporate as appropriate into the design plan, guidance concerning sustainable building found on our internet website at <http://www.state.hi.us/health/oeqc/guidance/index.html>.

**COMMUNITY CONSULTATION:** Please consult with adjacent neighbors and community associations.

Thank you for the opportunity to comment. If there are any questions, please call Mr. Leslie Segundo, Environmental Health Specialist, at (808) 586-4185.

Sincerely,

GENEVIEVE SALMONSON  
Director



August 25, 2008

Genevieve Salmonson, Director  
State of Hawaii, Department of Health  
Office of Environmental Quality Control  
235 South Beretania Street, Suite 702  
Honolulu, HI 96813

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Ms. Salmonson,

Thank you for your June 24, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note the following:

1. Your letter references Tax Map Key (TMK) (2) 4-5-07:04, in the Judicial District of Lahaina. We would like to clarify that the TMK for this project is (2) 2-3-009: 007 & 064, in the judicial district of Makawao.
2. Sustainable building guidelines and native plant landscaping will be incorporated into the design plan as appropriate.

LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956

Genevieve Salmonson, Director  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

Thank you again for providing us with your comments. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "M. Slepín".

Matthew M. Slepín, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

LINDA LINGLE  
GOVERNOR OF HAWAII



JUN 29 2005

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:  
EMD/SDWB

June 27, 2005

To: Jiacai Liu, Planner  
Environmental Planning Office

From: William Wong, P.E., Chief  
Safe Drinking Water Branch

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR KAUHALE LANI  
PROJECT, LAND USE DISTRICT BOUNDARY AMENDMENT,  
DOCKET NO. A05-760, PUKALANI, MAUI

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

Maui Land and Pineapple Company, Inc. proposes to construct a new potable water well. This well must receive the Director of Health's approval prior to its use to comply with the Hawaii Administrative Rules, Title 11, Chapter 20, "Rules Relating to Potable Water."

If you have any questions, please call me at 586-4258

WW:gm





August 25, 2008

William Wong, P.E., Chief  
Department of Health  
Safe Drinking Water Branch  
P.O. Box 3378  
Honolulu, HI 96801

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. Wong,

Thank you for your June 8, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note that Maui land & Pineapple, Co. is no longer the applicant and the Pukalani Associates are not the well developers. Water source for the project will be discussed in the Final EA.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oegc/index.html> by the Office of Envi-

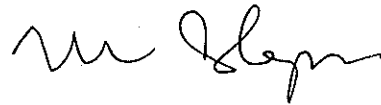
LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956

William Wong, P.E., Chief  
District Environmental Health Program Chief  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

ronmental Quality Control, upon publication in the Environmental Notice.  
Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "M. Slepina". The signature is fluid and cursive, with a large initial "M" and a long, sweeping tail.

Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

LINDA LINGLE  
GOVERNOR OF HAWAII



CHIYOME LEINAALA FUKINO, M.D.  
DIRECTOR OF HEALTH

**STATE OF HAWAII  
DEPARTMENT OF HEALTH**

P.O. BOX 3378  
HONOLULU, HAWAII 96801

In reply, please refer to:  
EMD / WB

June 7, 2005

M2 3 009 007 & 064 PBR.wpd  
D:W13 wb050422

Mr. Tom Schnell, AICP  
PBR Hawaii  
ASB Tower, Suite 650  
1001 Bishop Street  
Honolulu, Hawaii 96813

Dear Mr. Schnell:

Subject: Kauhale Lani Draft Environmental Assessment  
Maui Land & Pineapple Company, Inc.  
Slopes of Haleakala at the Entrance to Pukalani  
TMK: (2) 2-3-009: 007 and 064 50 acres and 39 acres

Thank you for sending us a hard copy of the subject document. On April 27, 2005, the Department of Health provided comments on the engineering report for the proposed R-1 treatment facility. The primary irrigation/disposal plan for R-1 water is not complete as the irrigation demand of the proposed development is less than the projected quantity of wastewater generated. The total irrigation requirement of the development is only 19 % of the projected plant effluent of 51,000 gallon per day. The disposal of the effluent needs to be addressed.

Should you have any questions, please contact the Planning & Design Section of our Branch at 586-4294.

Sincerely,

  
HAROLD K. YEE, P.E., CHIEF  
Wastewater Branch

LNKM:erm



August 25, 2008

Harold K. Yee, P.E., Chief  
Department of Health  
Wastewater Branch  
P.O. Box 3378  
Honolulu, HI 96801

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

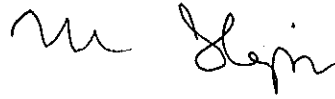
Dear Mr. Yee,

Thank you for your June 7, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oegc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Harold K. Yee, P.E., Chief  
District Environmental Health Program Chief  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

Respectfully submitted,

A handwritten signature in black ink, appearing to read "M. Slepina". The signature is written in a cursive, flowing style.

Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

ALAN M. ARAKAWA  
Mayor

MILTON M. ARAKAWA, A.I.C.P.  
Director

MICHAEL M. MIYAMOTO  
Deputy Director

Telephone: (808) 270-7845  
Fax: (808) 270-7955



COUNTY OF MAUI  
**DEPARTMENT OF PUBLIC WORKS  
AND ENVIRONMENTAL MANAGEMENT**

200 SOUTH HIGH STREET, ROOM 322  
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.  
Development Services Administration

TRACY TAKAMINE, P.E.  
Wastewater Reclamation Division

CARY YAMASHITA, P.E.  
Engineering Division

BRIAN HASHIRO, P.E.  
Highways Division

Solid Waste Division

July 8, 2005

Mr. Tom Schnell, A.I.C.P.  
PBR HAWAII  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, Hawaii 96813

Dear Mr. Schnell:

**SUBJECT: CHANGE IN ZONING AND COUNTY SPECIAL USE  
PERMIT APPLICATIONS AND DRAFT ENVIRONMENTAL  
ASSESSMENT  
KAUHALE LANI  
CIZ 2005/0006, CUP 2005/0005**

We reviewed the subject application and have the following comments:

1. Regarding the 39-acre parcel, this parcel has two (2) major drainage channels. One (1) system takes water from the five (5) trees (King Kekaulike High School) area down Old Haleakala Highway and eventually running through this property. The other takes water from the vicinity of the Pukalani Fire Station and drains water running approximately parallel to Haleakala Highway and on through this property. Due to the potential liabilities associated with these two (2) drainage systems, we would recommend that this area be retained under private ownership and maintenance.
2. We would also recommend that the proposed greenway and any drainage system or bike paths shall remain under private ownership and maintenance.

3. The landscaped buffer with trail along Old Haleakala Highway and interior roads shall be kept under private ownership and maintenance.
4. Roads constructed to County standards may be considered for dedication to the County; however, the proposed alleys shall remain under private ownership and maintenance.
5. We strongly recommend that the area fronting the New Hamakua Ditch be fenced for safety reasons.
6. The developer shall inform potential property owners of the requirement to maintain that portion of the County road frontage from their property boundary to the edge of pavement pursuant to Maui County Code, Chapter 12.02, inclusive of landscaping.
7. Any tree planted along road rights-of-way that is planned to be dedicated to the County shall have root barriers installed.
8. No plants or shrubs, other than trees or grass may be planted within the road right-of-way. Road shoulders shall allow for free passage of pedestrians and/or animals and not be obstructed by plants or shrubs.
9. Drainage systems outside of County road rights-of-way or within roundabouts or medians shall remain under private ownership and maintenance.
10. The drainage report indicated that the drainage system was designed for a ten (10) year, one (1) hour storm. The report proposes to utilize a detention basin. Therefore, the system and basin must be sized for a 50 year, one (1) hour storm.
11. Roadway features such as one-way streets, roundabouts, turnarounds, roadway islands and alleys may not comply with County standards. The applicant should clarify how they intend to have these features approved.
12. The applicant will need to comply with Section 18.16.070(A), Maui County Code (MCC), wherein it states:

“Streets shall be laid out to intersect at angles as near to right angles as practical except where topography requires a lesser angle, but in no case less than seventy-five degrees unless there is a special intersection design. Intersections which are not at right angles shall have a minimum corner radius of twenty-five feet along the right-of-way lines of the acute angle. . . .”

13. The report addresses compliance with the Makawao-Kula-Pukalani Community Plan by integrating lower Pukalani Terrace (Pukalani Lots Subdivision) with Kauhale Lani through the Kolea Place corridor. However, the Community Plan refers to Pukalani Terrace Subdivision which we interpret to be the mauka development, therefore, this issue has yet to be complied with.
14. The portion of Aeloa Road that abuts the proposed subdivision shall have an ultimate right-of-way of 50 feet. A road-widening strip shall be provided for the adjoining half of Aeloa Road and said lot shall be dedicated to the County.
15. All structures such as walls, trees, etc., shall be removed or relocated from the road-widening strip. The rear boundaries of the road-widening strip shall be clearly marked to determine if said structures have been properly removed and relocated.
16. A detailed and final drainage report and a Best Management Practices (BMP) Plan shall be submitted with the grading plans for review and approval prior to issuance of grading permits. The drainage report shall include hydrologic and hydraulic calculations and the schemes for disposal of runoff waters. It must comply with the provisions of the “Rules and Design of Storm Drainage Facilities in the County of Maui” and must provide verification that the grading and runoff water generated by the project will not have an adverse effect on adjacent and downstream properties. The BMP plan shall show the location and details of structural and non-structural measures to control erosion and sedimentation to the maximum extent practicable.
17. A verification shall be provided by a Registered Civil Engineer that the grading and runoff water generated by the project will not have an adverse effect on the adjacent and downstream properties.



Mr. Tom Schnell, A.I.C.P.  
July 8, 2005  
Page 4

18. A 30 foot radius shall be provided at the intersection of the proposed subdivision road and the adjoining subdivision roads and State roads.
19. A detailed final Traffic Impact Assessment Report for the entire subdivision/development shall be submitted for our review and approval. The report shall also address regional traffic impacts and include assessments from the local community police officer.
20. For all infrastructure to be dedicated to the County, preliminary construction plan submittal shall include a completed technical assistance review performed by the Disability and Communication Access Board (DCAB) for compliance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) for all facilities. All technical and structural infeasible assessments shall be the responsibility of the developer and an agreement waiving the County of Maui of any future liability, including redesign and reconstruction, for said facility shall be recorded with the State Bureau of Conveyances.
21. All existing features such as structures, driveways, drainage ways, edge of the pavement, etc. shall be shown on the project plat plan.
22. A site plan and a sight distance report to determine required sight distance and available sight distance at existing and proposed street intersections shall be provided for our review and approval.

Please call Michael Miyamoto at (808) 270-7845 if you have any questions regarding this letter.

Sincerely,



*M.* MILTON M. ARAKAWA, A.I.C.P.  
Director

MMA:MMM:da

xc: State Land Use Commission  
Office of Environmental Quality Control  
Department of Business, Economic Development and Tourism, State of Hawaii  
Kivette Caigoy, Staff Planner

ALAN M. ARAKAWA  
Mayor

MILTON M. ARAKAWA, A.I.C.P.  
Director

MICHAEL M. MIYAMOTO  
Deputy Director

Telephone: (808) 270-7845  
Fax: (808) 270-7955



COUNTY OF MAUI  
**DEPARTMENT OF PUBLIC WORKS  
AND ENVIRONMENTAL MANAGEMENT**

200 SOUTH HIGH STREET, ROOM 322  
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.  
Development Services Administration

TRACY TAKAMINE, P.E.  
Wastewater Reclamation Division

CARY YAMASHITA, P.E.  
Engineering Division

BRIAN HASHIRO, P.E.  
Highways Division

Solid Waste Division

June 1, 2005

Mr. Tom Schnell, A.I.C.P.  
PBR HAWAII  
ASB Tower, Suite 650  
1001 Bishop Street  
Honolulu, Hawaii 96813-3484

Dear Mr. Schnell:

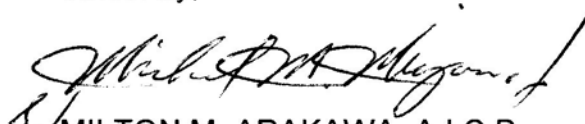
SUBJECT: RESPONSE TO COMMENTS  
KAUHALE LANI COMMUNITY DRAFT ENVIRONMENTAL  
ASSESSMENT  
TMK: (2) 2-3-009:007

We reviewed the subject application and have the following comments:

1. We would like to reiterate the need for improvements to Aeloa Road although the proposed development does not plan to access it.
2. The developer shall provide the required right-of-way and improvements for the adjacent half of Aeloa Road that abuts their subdivision. The ultimate total right-of-way for Aeloa Road is 60 feet and the road-widening lot should be provided accordingly.

Please call Michael Miyamoto at (808) 270-7845 if you have any questions regarding this letter.

Sincerely,

  
MILTON M. ARAKAWA, A.I.C.P.  
Director

MMA:MMM:da

S:\LUCA\ICZM\Kauhale\_Lani\_Resp\_to\_Cmts\_draft\_ea\_23009007\_da\_wpd.wpd

ALAN M. ARAKAWA  
Mayor

MILTON M. ARAKAWA, A.I.C.P.  
Director

MICHAEL M. MIYAMOTO  
Deputy Director

Telephone: (808) 270-7845  
Fax: (808) 270-7955



COUNTY OF MAUI  
**DEPARTMENT OF PUBLIC WORKS  
AND ENVIRONMENTAL MANAGEMENT**

200 SOUTH HIGH STREET, ROOM 322  
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.  
Development Services Administration

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Wastewater Reclamation Division

CARY YAMASHITA, P.E.  
Engineering Division

BRIAN HASHIRO, P.E.  
Highways Division

Solid Waste Division

July 8, 2005

Mr. Tom Schnell, A.I.C.P.  
PBR HAWAII  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, Hawaii 96813

Dear Mr. Schnell:

Subject: DISTRICT BOUNDARY AMENDMENT APPLICATION  
KAUHALE LANI  
TMK: (2) 2-3-009:007

We reviewed the subject application and have the following comments:

1. Regarding the 39-acre parcel, this parcel has two (2) major drainage channels. One (1) system takes water from the five (5) trees (King Kekaulike High School) area down Old Haleakala Highway and eventually running through this property. The other takes water from the vicinity of the Pukalani Fire Station and drains water running approximately parallel to Haleakala Highway and on through this property. Due to the potential liabilities associated with these two (2) drainage systems, we would recommend that this area be retained under private ownership and maintenance.
2. We would also recommend that the proposed greenway and any drainage system or bike paths shall remain under private ownership and maintenance.
3. The landscaped buffer with trail along Old Haleakala Highway and interior roads shall be kept under private ownership and maintenance.


Mr. Tom Schnell, A.I.C.P.  
July 8, 2005  
Page 2

4. Roads constructed to County standards may be considered for dedication to the County; however, the proposed alleys shall remain under private ownership and maintenance.
5. We strongly recommend that the area fronting the New Hamakua Ditch be fenced for safety reasons.
6. The developer shall inform potential property owners of the requirement to maintain that portion of the County road frontage from their property boundary to the edge of pavement pursuant to Maui County Code, Chapter 12.02, inclusive of landscaping.
7. Any tree planted along road rights-of-way that is planned to be dedicated to the County shall have root barriers installed.
8. No plants or shrubs, other than trees or grass may be planted within the road right-of-way. Road shoulders shall allow for free passage of pedestrians and/or animals and not be obstructed by plants or shrubs.
9. Drainage systems outside of County road rights-of-way or within roundabouts or medians shall remain under private ownership and maintenance.
10. Detailed comments and requirements shall be provided at the time development plans and permits are submitted for review. The applicant shall comply with all applicable rules and regulations, including, but not limited to Chapter 20.05 (Soil Erosion and Sedimentation Control) of the Maui County Code (MCC); Rules for the Design of Storm Drainage Facilities in the County of Maui; and Title 18 (Subdivision Ordinance), MCC; etc.

Mr. Tom Schnell, A.I.C.P.  
July 8, 2005  
Page 3

Please call Michael Miyamoto at (808) 270-7845 if you have any questions regarding this letter.

Sincerely,



MILTON M. ARAKAWA, A.I.C.P.  
Director

MMA:MMM:da

xc: State Land Use Commission  
Office of Environmental Quality Control  
Department of Business, Economic Development and Tourism, State of Hawaii,  
Kivette Caigoy, Staff Planner

S:\LUCA\CZM\Kauhale\_Lani\_dba\_23009007\_da.wpd



August 25, 2008

Milton Arakawa, Director  
County of Maui  
Department of Public Works  
200 South High Street  
Wailuku, HI 96793

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. Arakawa,

Thank you for your June 1, 2005 and July 8, 2005 letters providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

We have numbered our responses to correspond with the comments in your letters.

LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956

**June 1, 2005 letter regarding Draft EA**

1. The project has been revised to include improvements to A'eloa Road and access to the subdivision from that road.
2. The developer will provide the required right-of-way improvements for the adjacent half of A'eloa Road that abuts the property. We understand that the total right-of-way for A'eloa Road is 56' and will coordinate with your Department during the design phase of the project.

**July 8, 2005 letter regarding CIZ 2005/0006 and CUP 2005/0005**

1. We acknowledge that DPW recommends that the drainage areas on the 39 acre parcel be retained under private ownership and maintenance. The applicant has proposed dedication of this parcel to the County for park purposes, including a BMX bicycle park that would be maintained by a non-profit organization.
2. See the above response.
3. The landscaped buffer along Old Haleakala Highway and interior roads will be owned and maintained by the HOA.
4. Roads constructed to County standards within Kauhale Lani will be dedicated to the County. The project has been revised so that no alleyways are proposed.
5. The area fronting New Hamakua Ditch will be fenced for safety reasons.
6. Potential property owners in Kauhale Lani will be informed of the requirements to maintain the County road frontage from their property boundary to the edge of pavement pursuant to Maui County Code, Chapter 12.02, inclusive of landscaping.
7. Root barriers will be installed for trees planted along road rights-of-way that are planned to be dedicated to the County.

8. No plants or shrubs, other than trees or grass, will be planted within the road right-of-way.
9. Drainage systems outside of County road right-of-way will be owned and maintained by the HOA.
10. The drainage system and detention basin will be sized for a 50-year, one hour storm.
11. All roadway features proposed for Kauhale Lani will be designed to comply with County standards and design will be coordinated with the appropriate agencies during the construction-permits process.
12. The roadways in Kauhale Lani will comply with Section 18.16.070(A) of the Maui County Code.
13. The improvement of A'elo Road and its connection with Iolani Street will comply with the Community Plan goals of establishing an additional connection to Haleakala Highway.
14. As noted on page 1, the portion of A'elo Road that abuts Kauhale Lani will have an ultimate right-of-way of 56 feet. The road widening strip provided for the adjoining half of A'elo Road will be dedicated to the county.
15. There are currently no structures on the road-widening strip. Rear boundaries of the strip will be marked clearly.
16. A detailed and final drainage report and Best Management Practices plan will be submitted with grading plans for review and approval prior to issuance of grading permits.
17. The project's civil engineer will verify that grading and runoff water from the project will not adversely affect adjacent and downstream properties.
18. A 30 foot radius will be provided at the intersection of A'elo Road and the subdivision access road.



19. The project's Traffic Impact Assessment Report (TIAR) has been revised and will be included in the Final EA, as well as the Change In Zoning application.

20. County-dedicated infrastructure will comply with the Americans with Disabilities Act Accessibilities Guidelines.

21. There are no existing structures on the site; however, drainage ways will be shown on the project plan.

22. A site plan will be submitted for your review and approval.

**July 8, 2005 letter regarding District Boundary Amendment**

The first nine comments were the same as those from the CIZ/CUP letter; therefore, please refer to responses 1 through 9 above.

10. We understand that detailed comments and requirements will be provided when development plans and permits are submitted for review. The applicant will comply with all applicable rules and regulations.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Philip Rowel, Rowell & Associates  
Terence Arashiro, Austin, Tsutsumi, & Associates  
Project File 05-110

ALAN M. ARAKAWA  
Mayor



RECEIVED  
JUN 28 2005  
FOR HAWAII

GEORGE Y. TENGAN  
Director

**DEPARTMENT OF WATER SUPPLY**  
**COUNTY OF MAUI**  
200 SOUTH HIGH STREET  
WAILUKU, MAUI, HAWAII 96793-2155  
www.mauiwater.org

June 24, 2005

Mr, Michael W. Foley  
Director, Department of Planning  
County of Maui  
250 South High Street  
Wailuku, Hawaii 96793

Subject I.D.: CIZ 2005/0006 and CUP 2005/0005  
TMK: 2-3-09: por. 7 and por. 64  
Project Name: Kauhale Lani

Dear Mr. Foley:

Thank you for the opportunity to comment on these permit applications.

**Source Availability & Consumption**

The project site is served by the Upcountry/Makawao System. Water for the system comes from the Makawao Aquifer and the streams of the Koolau System.

The project is located in an area affected by the finding of inadequate water supply issued on March 16, 1993. The area has insufficient water supply developed for fire protection, domestic and irrigation purposes to take on new or additional services without the detriment to those already in the regulated area.

Anticipated consumption for the proposed project would be approximately 265,560 gpd by system standards.

Maui Land & Pineapple Co., Inc. is in the process of developing a new water source for their project in the Makawao Aquifer and has selected two possible sites in Piiholo. The well sites are located in an area with former and current large scale use of pesticide, specifically DBCP, as well as other sources of contamination. Although the Department does have a similarly situated well, the Department still recommends that other potential and more desirable well sites be considered due to concerns of elevation and proximity to contaminants.

*"By Water All Things Find Life"*



### **System Infrastructure**

There is a 6-inch waterline that ends at Ikea Place and a 8-inch waterline that ends at Iolani Street. Storage is provided by a 1 MG Pukalani concrete tank. However, there may not be adequate storage and transmission to serve the proposed subdivision. At the present time, the Department has no existing or proposed projects to increase storage or transmission in the area.

The subdivision will be subject to Department rules and regulations. The applicant will also be required to meet standards for domestic, irrigation and fire flow calculations. The approved fire flow calculation methods for use include Guidance for Determination of Fire Flow-Insurance Service Office, 1974 and Fire Flow-Hawaii Bureau, 1991. Fire flow requirements for single family units is 1000 gallons per minute at 350 feet spacing for a 2 hour duration.

### **Pollution**

The project overlies the Makawao and Paia Aquifers which have sustainable yields of 7 MGD and 8 MGD, respectively. In order to protect the groundwater resources, we encourage the applicant to adopt best management practices (BMP's) for construction to minimize infiltration and runoff. Please refer to the BMP "Source Water Protection Practices Bulletin - Managing Storm Water Runoff to Prevent Contamination of Drinking Water".

### **Conservation**

We recommend that the applicant consider the following conservation measures:

#### Eliminate Single-Pass Cooling:

Single-pass cooling systems should be eliminated per Maui County Code Subsection 14.21.20. Although prohibited by code, single-pass water cooling is still manufactured into some models of air conditioners, freezers and commercial refrigerators.

#### Utilize Low-Flow Fixtures and Devices:

Maui County Code Subsection 16.20A.680 requires the use of low-flow fixtures and devices in faucets, showerheads, urinals, water closets and hose bibs. Water conserving washing machines, ice-makers and other devices are available.

#### Maintain Fixtures to Prevent Leaks:

A simple, regular program for repair and maintenance can prevent the loss of hundreds or even thousands of gallons of water per day. Refer to the attached handout "The Costly Drip".

#### Use Climate-Adapted Plants:

The project site is located in the "Maui County Planting Plan" - Plant Zone 2. Native plants

Mr. Michael W. Foley  
Page 3  
June 24, 2005

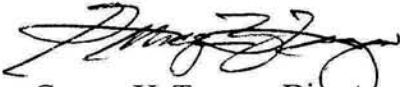
adapted to the area conserve water and protect the watershed from degradation due to invasive alien species. Please refer to the attached brochure "Saving Water in the Yard - What and How to Plant in Your Area".

Prevent Over-Watering by Automated Systems:

Provide rain-sensors on all automated irrigation controllers. Check and reset controllers at least once a month to reflect the monthly changes in evaporation rates at the site. As an alternative, provide more automated, soil-moisture sensors on controllers.

Should you have any questions, please contact me at 270-7816.

Sincerely,



George Y. Tengan, Director  
ayi

Enclosures: Map of Maui Land & Pine, Inc. Proposed Piiholo Wells  
Source Water Protection Bulletin - Managing Storm Water Runoff to Prevent Contamination of Drinking Water  
Ordinance No. 2108 - A Bill for an Ordinance Amending Chapter 16.20 of the County of Maui Code, Pertaining the Plumbing Code  
The Costly Drip  
Maui County Planting Plan - Saving Water in the Yard - What and How to Plant in your Area

c: Engineering  
Kivette A. Caigoy, Environmental Planner  
Tom Schnell, PBR Hawaii  
Leilani Pulmano, Maui Land & Pineapple, Inc.



August 25, 2008

Jeffrey Eng, Director  
County of Maui  
Department of Water Supply  
200 South High Street  
Wailuku, HI 96793

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. Eng,

Thank you for your Department's letter of June 24, 2005 providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

We have titled our responses to correspond with the comments in your letter.

#### **Source Availability & Consumption**

The applicant has negotiated a water allocation with Maui Land & Pineapple Co. (MLP) from their new well. Based upon the new site plan, project engineers estimate that consumption will be a maximum of 161,175 gallons per day (gpd), at

LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956

Jeffrey Eng, Director  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

a maximum daily flow rate of approximately 168 gpm. The project will receive the required amount of potable water from the well.

### **System Infrastructure**

As noted above, the project's water consumption will be met by the well developed by MLP. The project will comply with all standards for domestic, irrigation, and fire-flow calculations.

### **Pollution**

The applicant will implement appropriate Best Management Practices during construction to minimize groundwater impacts.

### **Conservation**

We acknowledge receipt of your comments regarding conservation water measures and will implement such measures as practicable, such as use of climate-adapted plants for landscaping. We note that the project proposes the development of single-family residential lots, rather than homes.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

ALAN M. ARAKAWA  
Mayor



GLENN T. CORREA  
Director

JOHN L. BUCK III  
Deputy Director

(808) 270-7230  
Fax (808) 270-7934

## DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nako'a Street, Unit 2, Wailuku, Hawaii 96793

**July 8, 2005**

Tom Schnell, Associate  
PBR Hawaii  
1001 Bishop Street  
ASB Tower Suite 650  
Honolulu, Hawaii 96813-3484

**RE: Kauhale Lani Draft Environmental Assessment  
TMK: (2) 2-3-009:007 & 064**

Dear Mr. Schnell:

Thank you for the opportunity to review the Draft Environmental Assessment (EA) for the Kauhale Lani project.

It is the determination of this department that the recreational need for the community in which this subdivision is located is for more active ballfields. The park plans as shown do not meet this need. Should the developer not be amenable to providing active ballfields, our department would ask that the parks dedications requirements be satisfied through a cash contribution in lieu of providing land.

Should you have any questions or need of additional information, clarification, or comment, please call me, or Patrick Matsui, Chief of Parks Planning & Development at 808-270-7387.

Sincerely,

A handwritten signature in black ink, appearing to read "Glenn T. Correa".

Glenn T. Correa  
Director

c: Anthony Ching, State Land Use Commission  
Ryan Churchill, Maui Land & Pineapple Company, Inc.  
Patrick Matsui, Chief of Parks Planning & Development  
Genevieve Salmonson, Office of Environmental Quality Control



August 25, 2008

Tamara Horcajo, Director  
County of Maui  
Department of Parks and Recreation  
700 Hali'a Nakoa Street, Unit 2  
Wailuku, Hi 96793

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Ms. Horcajo,

Thank you for your Department's letter of July 8, 2005 providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

We acknowledge that your Department's desire has been for more active ball fields. The provision of active ball fields is not deemed feasible by the applicant. The applicant, with its revised plan for Parcel 64, has proposed dedication of that parcel, with a BMX bicycle park and recreational trails, to the County, to address a segment of the park-using population to currently served.

LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

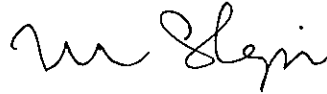
115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956



Tamara Horcajo, Director  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

November 3, 2005

Mr. Thomas Phillips, Chief of Police  
Police Department  
County of Maui  
56 Mahalani Street  
Wailuku, Maui, Hawaii 96793

**SUBJECT: KAUAHALE LANI DRAFT ENVIRONMENTAL  
ASSESSMENT, STATE LAND USE ASSESSMENT,  
CHANGE IN ZONING, AND CONDITIONAL USE PERMIT**

Dear Mr. Phillips:

Thank you for your letter dated June 16, 2005. As the consultant for the applicant, 3D Investment LLC, we offer the following responses to your comments:

- A. We acknowledge your comment regarding the limited sight-distance at the project area while traveling on Old Haleakalā Highway in the makai direction being a traffic hazard. We also thank you for your proposed mitigative measures.
  - 1. The driveways will be designed to ensure safe entry and exit to Old Haleakalā Highway. 3D Investment LLC will contribute its fair pro-rata share for necessary road improvements, such as widening roadways and re-alignment.
  - 2. A'eloā Road is unimproved and unpaved; therefore, it is not currently being considered as an access point to Kauhale Lani. However, the access through Koea Place may provide a connection from A'eloā Road.
  - 3. We will consider this option.
- B. Contra-flow (need traffic engineer to answer)
- C. Attached is a revised plan that included traffic lanes into the Kauhale Lani site. We would appreciate your comments on this.
- D. Attached is the plan for the 39-acre parcel, which will include open space, community trails, and community amenities.

Thank you for reviewing the Draft EA. Your letter will be included in the Final EA.

Sincerely,

PBR HAWAII

Tom Schnell, AICP  
Associate

cc: Mr. Anthony Ching, State Land Use Commission  
Mr. Abe Mitsuda, Office of Planning  
Ms. Colleen Suyama, County of Maui Planning Department  
Ms. Genevieve Salmonson, Office of Environmental Quality Control  
Mr. John Min, Chris Hart & Partners

O:\Job25\2522.01 Kauhale Lani\EA\Comment Response Letters\Police.doc



# POLICE DEPARTMENT COUNTY OF MAUI

ALAN M. ARAKAWA  
MAYOR

05 JUN 17 09:46

55 MAHALANI STREET  
WAILUKU, HAWAII 96793  
(808) 244-6400  
FAX (808) 244-6411

THOMAS M. PHILLIPS  
CHIEF OF POLICE

OUR REFERENCE  
ti  
YOUR REFERENCE

DEPT OF PLANNING  
COUNTY OF MAUI  
RECEIVED

KEKUAUPIO R. AKANA  
DEPUTY CHIEF OF POLICE

June 16, 2005

## MEMORANDUM

TO : MICHAEL W. FOLEY, PLANNING DIRECTOR

FROM : THOMAS M. PHILLIPS, CHIEF OF POLICE

SUBJECT : I.D. : CIA 2005/0006 and CUP 2005/0005  
 TMK : (2) 2-3-009: 007 and 064  
 Project Name : Kauhale Lani  
 Applicant : Maui Land & Pineapple Company

No recommendation or comment to offer.

Refer to enclosed comments and/or recommendations.

As always, thank you for giving us the opportunity to comment on this project.

*Glenn Miyahira*  
 Acting Assistant Chief Glenn Miyahira  
 For: THOMAS M. PHILLIPS  
 Chief of Police

Enclosures

Post-it® Fax Note	7671	Date	6/27	# of pages	3
To	Tom Schnell				
From	K. Craigory				
Co./Dept.					
Phone #					
Fax #					

COPY

Concur with  
commentary base  
on information  
provided. Transmit  
to Dept. of  
Planning.  
A. J. Meyer  
7/16/03

TO : THOMAS PHILLIPS, CHIEF OF POLICE, COUNTY OF MAUI  
VIA : CHANNELS  
FROM : MITCHELL PELLAZAR, SERGEANT, WAILUKU PATROL  
SUBJECT : KAHALE LANI DRAFT ENVIRONMENTAL ASSESSMENT  
(TMK: (2) 2-3-009: 007 and 064)

This To-From is being submitted to forward comments on the above-mentioned Draft Environmental Assessment for a total of 89-acres in the Pukalani Community area.

In review of the draft environmental assessment:

- A. On the Conceptual Master Plan, the project proposes two driveways (Driveway-A and Driveway-B) with project streets connecting to A'eloa Road and Koea Place to give a sense of continuity between the Kauhale Lani Sub-Division and the Lower portion of Pukalani Terrace.

**Comments:** As a resident of Pukalani that drives pass the proposed project site everyday during both AM and PM peak traffic times with the current traffic flow and speeds in the area of the proposed location Driveway-A and Driveway-B. Currently, while traveling on Old Haleakala Highway in the Makai direction, in the proposed project area, there is limited sight-distance due to a dirt/grassy embankment and roadway alignment, which will cause traffic hazards.

Mitigative Measures could be to:

1. Widen the roadway for the proposed Left-Turn Storage and Refuge lane for Driveway-B as well as re-alignment to increase sight distance.
2. Incorporate A'eloa Road as a driveway into the project sub-division, this would increase the distance between the two entry points into the project.
3. Have only one entry point into the project site, similar to Kua'aina Ridge which is also located on Old Haleakala Highway along with having the left-turn storage/refuge lanes.

- B. How will the current contra-flow traffic on Old Haleakala Highway during the Peak AM traffic, affect the proposed entry into Driveway-B, even with the Left-turn storage lane.

**Comments:** In looking at the Conceptual Master Plan even with the Left-turn storage lane into the project, traffic heading in the Makai direction will back-up as it does on any of the other intersections located on the East-side of Old Haleakala Highway.

In looking at the conceptual drawing, and envisioning the Left-turn storage lane on Old Haleakala Highway, with the morning contra-flow coning of the roadway.

It is likely that the contra-flow coning will affect the storage lane and may actually create more of a hazard.

- C. At this point it is difficult to comment further on future traffic problems as the conceptual drawing does not include the traffic lanes into the project site.
- D. As it is mentioned in the draft that the 39-acre parcel will used as Open Space for Community Trails and other Community Amenities, however there is no mention or conceptual drawing of this proposed area, as far as access points, parking, facilities, etc. as this may impact the traffic on either Old Haleakala Highway or Haleakala Highway.

Submitted for your perusal.

*Sgt. M. Pellazar*  
Sgt. Mitchell Pellazar E-8468  
Wailuku Patrol - Administrative Sergeant  
06/14/05 - 1520 hours

*CONCURRED*  
*MB 6/15/05*



August 25, 2008

Thomas Phillips, Chief of Police  
Police Department  
County of Maui  
55 Mahalani Street  
Wailuku, HI 96793

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Chief Philips,

Thank you for your Department's letter of June 16, 2005 providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note the following:

1. The project has been redesigned so that A'eloa Road will now provide the only entrance into the subdivision. We believe that this will resolve the issue identified in your letter. A new TIAR has been prepared for the redesigned subdivision and will be included in the Final EA.

LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956

Thomas Phillips, Chief of Police  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

2. As noted above, Driveways A and B have been removed. Contra-flow operations are not anticipated to impact traffic operations at the subdivision entrance on A'eola Road.

3. Attached is a revised plan that includes traffic lanes into the Kauhale Lani site.

4. Attached is the plan for the 39 acre parcel, which will include open space, community trails, and a BMX bicycle park.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

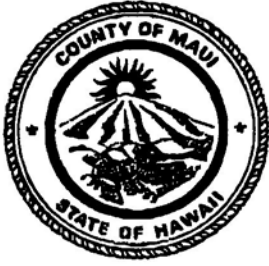
Respectfully submitted,



Matthew M. Slep, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110





**COUNTY OF MAUI**  
**OFFICE OF ECONOMIC DEVELOPMENT**  
**200 South High Street, 6th Floor**  
**Wailuku, Maui, Hawaii 96793**  
**Tel 808-270-7710 Fax 808-270-7995**  
**FAX**

**TO: PBR Hawaii**

**FAX # (808)523-1402**

**FROM: Kenneth Yamamura. Office of Economic Development**  
**NO. OF PAGES (including cover page): 2**

## Analysis of Kauhale Lani Project

One of the positives of the project is that the Community General Plan did allow this location to be designated as a residential area. There would not be tremendous loss of Agricultural land for Maui Pineapple Company. Since Maui Pineapple Company is reducing their planting of pineapple, the move to sell the more difficult lands to farm makes sense. The development appears to be for Upper Middle class purchasers rather than a mixture of High End and Upper Middle Class buyers or just for High End purchasers. It does offer beautiful vistas of the Central Valley. If projections are accurate, there would appear to be minimal effects on the existing schools servicing the area. Park facilities for the planned development appear to be adequate but I wish there could be at least one multipurpose field for sports events. Other infrastructure improvements appear to be dealt with adequately. Nearby residents above the field will no longer need to deal with the smell of pesticides being sprayed.

On the negative side, the selling of all the units at the market price of \$650,000, will probably rise as the project progresses to completion. There may not be a lot of families that may qualify to purchase a lot as prices escalate upwards. This project will not benefit anyone seeking an affordable home.

The loss of any agricultural land could be argued as a loss for society as farmable land costs escalate beyond the means of farmers to purchase land for farming.

The other big negative will probably be the morning traffic rush. This development is so close to the intersection of the Old and New Haleakala Highway, that traffic will back up past this new development in the mornings. Unless there is a traffic light on one of the roads leading into the development, it will difficult to merge with traffic heading for the Central Valley and beyond.



August 25, 2008

Victor Reyes  
County of Maui  
Office of Economic Development  
200 South High Street, 6th Floor  
Wailuku, HI 96793

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. Reyes,

Thank you for your Department's letter of July 7, 2005 providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note the following:

1. We thank you for your positive comments for the Kauhale Lani property, in particular acknowledgement that the property is located in an area designated by the Community Plan for residential use, and that there will be no significant loss

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CITY AND REGIONAL PLANNING

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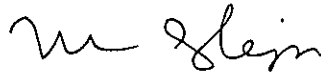
of agricultural land, since this land is no longer used due to the difficulty of cultivation, and has already been sold by Maui Land & Pineapple (ML&P). Our analysis of agricultural impacts, to be included in the Final EA, is that there are no substantial impact to agriculture from project implementation.

2. In regard to affordable housing, we note that the project will comply with the County's Residential Workforce Housing Policy and will either provide workforce housing units or partner with a nonprofit agency to develop workforce rental units.

3. With regard to increase in automobile traffic, a new plan for street development has been proposed. In this new plan, A'eloia Road and its intersection with Old Haleakala Highway will be improved, allowing traffic from the new development to merge safely with the existing AM and PM rush hour traffic. A new traffic report will be included in the Final EA which projects improvements from connecting A'eloia Road to Iolani Street, creating an additional route through Pukalani to Haleakala Highway.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110



June 8, 2005

Mr. Tom Schnell, AICP  
PBR Hawaii  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, HI 96813

Dear Mr. Schnell,

Subject:       Kauhale Lani – Draft Environmental Assessment (DEA)  
                  Old Haleakala Highway, Pukalani, Maui  
                  Tax Map Key: (2) 2-3-09:7 & 64

Thank you for allowing us to comment on the Draft Environmental Assessment (DEA) for the subject project, which was received on June 3, 2005.

In reviewing our records and the information transmitted, Maui Electric Company (MECO) has no objections to the proposed project at this time.

If you have any questions or concerns, please call Ray Okazaki at 871-2340.

Sincerely,

A handwritten signature in black ink, appearing to read "Neal Shinyama". The signature is fluid and cursive, with the first name "Neal" and last name "Shinyama" clearly distinguishable.

Neal Shinyama  
Manager, Engineering

NS/ro:lh

cc: Ryan Churchill – Maui Land & Pineapple Company, Inc.  
      Anthony Ching – State Land Use Commission  
      Abe Mitsuda – State of Hawaii, Dept. of Business, Economic Development and Tourism  
      Kivette Caigoy – County of Maui Planning Department  
      Office of Environmental Quality Control



August 25, 2008

Neal Shinyama, Manager, Engineering  
Maui Electric Company, Ltd  
210 West Kamehameha Avenue  
P.O. Box 398  
Kahului, HI 96733

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. Shinyama,

Thank you for your June 8, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

We acknowledge that MECO has reviewed its records and the information transmitted, and has no objections to the proposed project at this time. The applicant will continue to work closely with your department to address details of the electrical needs for Kauhale Lani.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oecq/index.html> by the Office of Envi-

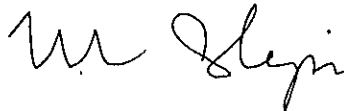
LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956

Neal Shinyama, Manager, Engineering  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

ronmental Quality Control, upon publication in the Environmental Notice.  
Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "M. Slepina".

Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

Rob & Marilyn Blackburn  
Kua Aina Ridge  
15 N. Hiena Pl.  
Pukalani, HI 96768

August 25, 2005

County of Maui Planning Department  
250 S. High Street  
Wailuku, HI 96793

Maui Land & Pineapple Co., Inc.  
Attn: Ryan Churchill  
1000 Kapalua Dr.  
Kapalua, HI 96761  
Ph.#669-5622

PBR Hawaii  
Attn: Tom Schnell  
1001 Bishop St. #650  
Honolulu, HI 96813  
Ph.#521-5631

State Land Use Commission  
Attn: Anthony Ching  
P.O. Box 2359  
Honolulu, HI 96804  
Ph.#587-3822

Office of Environmental  
Quality Control  
Attn: Genevieve Salmonson  
235 S. Beretania St. Ste. 702  
Honolulu, HI 96813  
Ph.#984-2400, ext. 64185

**RE: Change of Zoning Dispute  
Kauhale Lani Subdivision & Sewage Treatment Plant**

Dear Lady and Gentlemen,

Our property backs right up to Old Haleakala Highway at the entrance to the Kua Aina Ridge Subdivision. We already experience excessive noise from the abundance of vehicles that travel this route every morning and afternoon.

According to the documents received by the county, the above proposed 165 lot subdivision at the entrance to Pukalani, starting at the Old Haleakala Highway will cause a great disturbance to our community.

This new subdivision will add a minimum of 330 vehicles to the morning and afternoon traffic with an average of 415 vehicles daily at the entrance to Pukalani, making traffic outrageous and, totally unacceptable at this particular junction.



However, our biggest objection is in regards to the Sewage Treatment Plant they need/plan to build as a direct result of this new Kauhale Lani Subdivision. This new Sewage Treatment Plant they plan to build; will be located directly across the Old Haleakala Highway from Kauhale Lani Subdivision and placed just below Kua Aina Ridge!!!

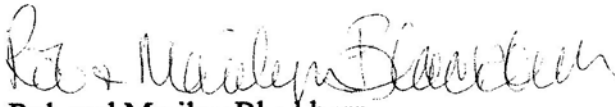
This could very well lower our property values, due to the Sewage Treatment Plant's close proximity to our subdivision. It also raises lots of other questions. Such as: health issues, odor/smells, insects, rodents and noise pollution, (which the by-pass is loud enough!!!) I think you get the point and hope you understand our concerns.

In order to build the Sewage Treatment Plant, the builders must get the area where they want to build the plant, in this case, just below our subdivision, changed from Agricultural to Residential. The reason they are trying to get it changed, is so they will be able to obtain a "Special Use Permit". Without which, they will be unable to build the facility.

**Please, for the sake of our community, do not grant a change in zoning permit from Agricultural to Residential for the Kauhale Lani Subdivision and the Sewage Treatment Plant.**

Thank you so much for your time.

Sincerely,



Rob and Marilyn Blackburn

Mailing Address:

1685 Longwood Ave.  
Claremont, CA 91711



August 25, 2008

Rob & Marilyn Blackburn  
Kau Aina Ridge  
15 N. Hiena Pl.  
Pukalani, HI 96768

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. & Mrs. Blackburn,

Thank you for your August 25, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note the following:

1. With regard to increase in automobile traffic, a new plan for street development has been proposed. In this new plan, A'elo Road and its intersection with Old Haleakala Highway will be improved, allowing traffic from the new development to merge safely with the existing AM and PM rush hour traffic. A new traffic report will be included in the Final EA and the revised Change in Zoning application which projects improvements from connecting A'elo Road to Iolani Street, creating an additional route through Pukalani to Haleakala Highway.

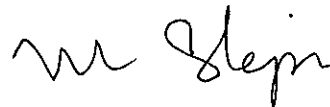
Rob & Marilyn Blackburn  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

2. As discussed above, the project has been revised and no wastewater treatment system is currently proposed.

3. The change in zoning request is being made to bring the property into conformance with the *Makawao-Pukalani-Kula Community Plan*. The Community Plan, adopted by ordinance in 1996, designates the property for Single-Family Residential use.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slepín, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

To whom it may concern:

This is a letter for the record stating my disapproval of the subdivision proposed by HLP. I think that the traffic growth in the area of Pukalani at Old Haleakala Hwy will be a safety and congestion problem. The building of 150 houses on the parcel proposed will raise the car population in this area by 300 cars. If you were familiar with this area in the morning hours you would know that this amount of cars merging into the traffic flow would cause more accidents and personal injury. It has also been proposed that Iolani St is being considered as an alternative egress point. I live on Iolani St and I wouldn't want it to become a heavily congested residential st. There is another concern with Iolani St that being there is a school at the top of the st. It is congested enough without another flow of traffic coming from the proposed development. This project in my opinion is ill conceived and the planning for the traffic is a disaster waiting to happen. It would be in the best interests of Pukalani community if this development never happens.

Signed

Mike Conlan resident on 2687 Iolani St Pukalani.



August 25, 2008

Mike Conlan  
2687 Iolani St.  
Pukalani, HI 96768

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. Conlan,

Thank you for your June 21, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note the following:

1. The project as currently proposed is for 170 residential lots in addition to a "pocket" park and an open space area with a BMX bicycle park and recreational trails.
2. With regard to increase in automobile traffic, a new plan for street development has been proposed. In this new plan, A'eloia Road and its intersection with Old Haleakala Highway will be improved, allowing traffic from the new devel-

LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

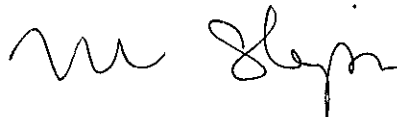
Mike Conlan  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

opment to merge safely with the existing AM and PM rush hour traffic. A new traffic report will be included in the Final EA and the revised Change in Zoning application which projects improvements from connecting A'elo Road to Iolani Street, creating an additional route through Pukalani to Haleakala Highway.

Also note that the improvements to A'elo Road and its connection to Iolani Street further the Transportation Goals from the *Makawao-Pukalani-Kula Community Plan*.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

Vagn & Leone Jensen  
137 Pi'imauna Street,  
Pukalani, Hi 96768

RECEIVED

JUL 13 2005

ENVIRONMENTAL OFFICE

July 7, 2005

State Land Use Commission,  
P.O.Box 2359,  
Honolulu, Hi 96804

Re: Kauhale Lani Subdivision  
Pukalani, Maui

Dear Mr. Ching,

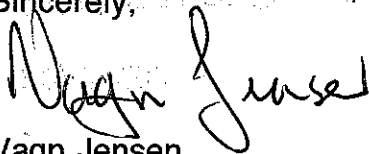
We are writing as concerned homeowners in the immediate area to the proposed Kauhale Lani Subdivision in Pukalani. As you consider the information provided to you from the developers to change the area they are requesting from Agriculture to Residential, please take into heart our concerns.

We have two main concerns of equal importance. One being the traffic the new subdivision, adding many, many cars exiting daily to and from a dangerous intersection onto Haleakala Highway and adding to already overburdened highway in peak hour traffic.

Our other concern and probably main concern is the proposed sewage treatment plant directly below our and other homes in Kua 'Aina Ridge. Our homes are on a ridge and the constant prevailing wind is from the north, thus we have very real concerns with health issues, odor and noise. We do not consider the developers plan to build a "park" a solution to any of those problems nor do we welcome a park in that area that would bring people unmonitored to our property. Upcountry has a lot of lovely parks that mainly go unused, but are there for those to enjoy.

With the over growth on Maui and lack of infrastructure in place, please do not allow this subdivision to go forward.

Sincerely,



Vagn Jensen

CC: Maui Land & Pineapple, PBR Hawaii, Office of Environmental Control



August 25, 2008

Vagn & Leone Jensen  
137 Pi'imauna St.  
Pukalani, HI 96768

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. & Mrs. Jensen,

Thank you for your July 7, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note the following:

1. With regard to increase in automobile traffic, a new plan for street development has been proposed. In this new plan, A'eloa Road and its intersection with Old Haleakala Highway will be improved, allowing traffic from the new development to merge safely with the existing AM and PM rush hour traffic. A new traffic report will be included in the Final EA and the revised Change in Zoning application which projects improvements from connecting A'eloa Road to Iolani Street, creating an additional route through Pukalani to Haleakala Highway.
2. As discussed above, the project has been revised and no wastewater treatment system is currently proposed.

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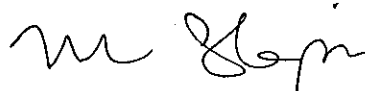


3. The project does include a "pocket" park, accessible to the public. This park will be privately maintained. The applicant has also proposed a public park on the *mauka* parcel, which is proposed to be dedicated to the County and contain a BMX bicycle park. The applicant believes that this park would serve a significant segment of the population who are unserved by current County parks.

4. We believe that there is sufficient infrastructure for the proposed project. Water will be obtained from a private source and wastewater will be collected by the existing Pukalani Sewage Treatment Plant for treatment via the existing transmission system. Also note our discussion under No. 1 above.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slepín, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

17 July 2005

County of Maui Planning Department  
250 S. High Street  
Wailuku, I 96793

Re: Kauhale Lani Subdivision development

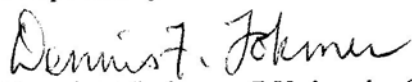
Please put me on record as opposed to this development, with its change in zoning from Agriculture to Residential in order to build a sewage treatment plant.

There are two major problems with putting the sewage treatment plant where it is proposed. The first is ignoring the direction of the trade winds, which puts the entire development downwind of the plant, allowing odors from the plant to blow directly into it. The second is the location relative to another development, namely Kua'aina Ridge, which is located just above the proposed plant location. Homeowners who paid a premium for the lots at the edge of the ridge with unobstructed views from Giggie Hill to Ma'alaea will have the sewage treatment plant directly in the center of this pristine view. Realtors say the property values will come down

Unless the County has the infrastructure in place to handle 300 new residences this development will grossly overload the already overstressed Haleakala Highway. Since most households have two vehicles minimum, at least 600 additional vehicles will be added to the existing bottleneck. Although the Haleakala widening has been given priority nothing has been done to alleviate the traffic from Upcountry to Kihei. At a time when water and electricity are being used to the point of overload, where are additional utilities going to come from?

If you have this development "greased" and public input will have no bearing, at least place the sewage treatment plant downwind of the homes. This plan has put the cart so far ahead of the horse, the horse will never catch the cart.

Respectfully,



Dennis F. Lokmer, 7 Ka'apeha Street, Pukalani, HI 96768, 572-2086

CC: Ryan Churchill, Maui Land & Pine Co., Anthony Ching, State Land Use Commission, Tom Schnell, PBR Hawaii, Genevieve Salmonson, Office of Environmental Quality Control



August 25, 2008

Dennis F. Lokmer  
7 Ka'apeha Street  
Pukalani, HI 96768

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. Lokmer,

Thank you for your July 17, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note the following:

1. We would like to clarify that the Change in Zoning from Agricultural to Residential is not proposed to allow the development of a sewage treatment Plant (which has since been eliminated from the plan). The change in zoning request is being made to bring the property into conformance with the *Makawao-Pukalani-Kula Community Plan*. The Community Plan, adopted by ordinance in 1996, designates the property for Single-Family Residential use. This, in turn, will allow the development of a residential subdivision.

2. As discussed above, the project has been revised and no wastewater treatment system is currently proposed.

3. With regard to increase in automobile traffic, a new plan for street development has been proposed. In this new plan, A'eloa Road and its intersection with Old Haleakala Highway will be improved, allowing traffic from the new development to merge safely with the existing AM and PM rush hour traffic. A new traffic report will be included in the Final EA and the revised Change in Zoning application which projects improvements from connecting A'eloa Road to Iolani Street, creating an additional route through Pukalani to Haleakala Highway.

4. We believe that there is sufficient infrastructure for the proposed project. Water will be obtained from a private source and wastewater will be collected by the existing Pukalani Sewage Treatment Plant for treatment via the existing transmission system. Also note our discussion under No. 3 above.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

August 1, 2005

County of Maui Planning Department  
250 S. High Street  
Wailuku, HI 96793

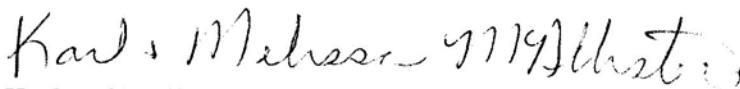
RE: Kauhale Subdivision Development

We are asking to be put on record as opposed to this development, with its change in zoning from Agriculture to Residential in order to build a sewage treatment plant.

We see 2 major problems with putting the sewage treatment plant where it is proposed. The first is the direction of the trade winds that will allow the strong odors to blow directly into our development. The second is the unsightly blemish to our pristine view. We have been told, by realtors, that our property value will go down if it is allowed to happen.

It is also worth mentioning that this proposed housing development will make a rather congested intersection a true mess!

Respectfully,



Karl and Melissa McAllister  
109 Piimauna St.  
Pukalani, HI. 96768  
572-0170



August 25, 2008

Karl and Melissa McAllister  
109 Piimauna Street  
Pukalani, HI 96768

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. & Mrs. McAllister,

Thank you for your August 1, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note the following:

1. We would like to clarify that the Change in Zoning from Agricultural to Residential is not proposed to allow the development of a sewage treatment Plant (which has since been eliminated from the plan). The change in zoning request is being made to bring the property into conformance with the *Makawao-Pukalani-Kula Community Plan*. The Community Plan, adopted by ordinance in 1996, designates the property for Single-Family Residential use. This, in turn, will allow the development of a residential subdivision.

LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956

Karl and Melissa McAllister  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

2. As discussed above, the project has been revised and no wastewater treatment system is currently proposed.

3. With regard to increase in automobile traffic, a new plan for street development has been proposed. In this new plan, A'eloa Road and its intersection with Old Haleakala Highway will be improved, allowing traffic from the new development to merge safely with the existing AM and PM rush hour traffic. A new traffic report will be included in the Final EA and the revised Change in Zoning application which projects improvements from connecting A'eloa Road to Iolani Street, creating an additional route through Pukalani to Haleakala Highway.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

17 July 2005

County of Maui Planning Department  
250 S. High Street  
Wailuku, HI 96793

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AUG 01 2005

DEVELOPMENT OFFICE

Re: Kauhale Lani Subdivision development

Please put me on record as opposed to this development, with its change in zoning from Agriculture to Residential in order to build a sewage treatment plant.

There are two major problems with putting the sewage treatment plant where it is proposed. The first is ignoring the direction of the trade winds, which puts the entire development downwind of the plant, allowing odors from the plant to blow directly into it. The second is the location relative to another development, namely Kua'aina Ridge, which is located just above the proposed plant location. Homeowners who paid a premium for the lots at the edge of the ridge with unobstructed views from Giggle Hill to Ma'alaea will have the sewage treatment plant directly in the center of this pristine view. Realtors say the property values will come down

Unless the County has the infrastructure in place to handle 300 new residences this development will grossly overload the already overstressed Haleakala Highway. Since most households have two vehicles minimum, at least 600 additional vehicles will be added to the existing bottleneck. Although the Haleakala widening has been given priority nothing has been done to alleviate the traffic from Upcountry to Kihei. At a time when water and electricity are being used to the point of overload, where are additional utilities going to come from?

If you have this development "greased" and public input will have no bearing, at least place the sewage treatment plant downwind of the homes, or install a septic tank for each home. This plan has put the cart so far ahead of the horse, the horse will never catch the cart.

Respectfully,

*Adelbert McIntyre*  
*Margaret McIntyre*

Mr. & Mrs. Adelbert McIntyre 47 Pi'imauna St. Pukalani, HI. 96768 (808) 572-0106

CC: Ryan Churchill, Maui Land & Pine Co., Anthony Ching, State Land Use Commission, Tom Schnell, PBR Hawaii, Genevieve Salmonson, Office of Environmental Quality Control





August 25, 2008

Mr. & Mrs. Adelbert McIntyre  
47 Pi'imauna St.  
Pukalani, HI 96768

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. & Mrs. Adelbert McIntyre,

Thank you for your July 17, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note the following:

1. The change in zoning request is being made to bring the property into conformance with the *Makawao-Pukalani-Kula Community Plan*. The Community Plan, adopted by ordinance in 1996, designates the property for Single-Family Residential use.
2. As discussed above, the project has been revised and no wastewater treatment system is currently proposed.
3. With regard to increase in automobile traffic, a new plan for street development has been proposed. In this new plan, A'elo Road and its intersection with

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115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956

Mr. & Mrs. Adelbert McIntyre  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

Old Haleakala Highway will be improved, allowing traffic from the new development to merge safely with the existing AM and PM rush hour traffic. A new traffic report will be included in the Final EA and the revised Change in Zoning application which projects improvements from connecting A'eloa Road to Iolani Street, creating an additional route through Pukalani to Haleakala Highway.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

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JUL 07 2005

PBR HAWAII

Jeff Murray  
P.O. Box 880316  
(11 Ikea Place)  
Pukalani, HI 96788-0316  
Ph:808-572-3452

July 01, 2005

PBR Hawaii  
1001 Bishop St.  
ASB Tower, Suite 650  
Honolulu, HI 96813-3484  
Attn: Tom Schnell


Dear Mr. Schnell,

I am writing to you on behalf of my family and neighbors with concerns regarding the proposed project Kauhale Lani, on TMK: (2) 2-3-09-064 (39 acre parcel). On this parcel there is a proposed waste water treatment facility planned. On the letter dated May 25, 2005 to nearby property owners, the facility can be effectively screened with landscaping. What this facility looks like is a low priority at this time. The toxic emissions and health hazards, should be the top priority! Many of the families and homeowners in this area have been here for over 50 years and will be impacted daily, as all homes are directly downwind of this project. Are there any other solutions to a waste water treatment facility? Please give consideration in regards to our health concerns.

Traffic from this proposed project is problematic. Currently there will only be a right turn on to Old Haleakala Hwy. to exit this area. Are there plans to connect to Iolani St., Koea Pl. and Ikea Pl.? Impact to these areas by traffic will be overwhelming. These streets were not intended for this type of traffic. Many homeowners purchased in this area for the safety of children and lack of speeders on roads with "no thru traffic".

I would like to be informed of any updates concerning this project in writing. Please feel free to contact me if I could be of any assistance.

Mahalo,

  
Jeff Murray, Owner/Resident



August 25, 2008

Jeff Murray  
209 Kaulani Dr.  
Pukalani, HI 96768

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. Murray,

Thank you for your July 1, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note the following:

1. As discussed above, the project has been revised and no wastewater treatment system is currently proposed.
2. With regard to increase in automobile traffic, a new plan for street development has been proposed. In this new plan, A'eloia Road and its intersection with Old Haleakala Highway will be improved, allowing traffic from the new devel-


LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

Jeff Murray  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

opment to merge safely with the existing AM and PM rush hour traffic. A new traffic report will be included in the Final EA and the revised Change in Zoning application which projects improvements from connecting A'elo Road to Iolani Street, creating an additional route through Pukalani to Haleakala Highway.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slep, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

July 5, 2005

Mr. Ryan Churchill  
MAUI LAND & PINEAPPLE CO., INC.  
1000 Kapalua Drive  
Kapalua, HI 96761

Mr. Tom Schnell  
PBR HAWAII  
1001 Bishop Street, Suite 650  
Honolulu, HI 96813

Mr. Anthony Ching  
STATE LAND USE COMMISSION  
P. O. Box 2359  
Honolulu, HI 96804

OFFICE OF ENVIRONMENTAL QUALITY CONTROL  
235 South Beretania Street  
Leiopapa A Kamehameha, Suite 702  
Honolulu, HI 96813

SUBJECT: KAUAHALE LANI: APPLICATIONS FOR STATE LAND USE DISTRICT BOUNDARY AMENDMENT, COUNTY CHANGE IN ZONING, COUNTY SPECIAL USE PERMITS AND DRAFT ENVIRONMENTAL ASSESSMENT (DEA) KAUAHALE LANI, MAKAWAO-PUKALANI-KULA COMMUNITY PLAN  
TAX MAP KEY NUMBER (2) 2-3-009:007&064  
CIZ 2005/00006, CUP 2005/0005

Dear Mr. Churchill, Mr. Schnell, Mr. Ching and OEQC:

We have several concerns on the proposed Kauhale Lani Project (KLP), which are as follows:

1. We are concerned that KLP will have a significant impact on Old Haleakala Highway in addition to Iolani Street, Aeloa Road, Koea Place and Ikea Place (if built and/or connected to KLP streets).
  - a. We estimate KLP volume of cars will be about 330 to 412 cars in the 165 KLP lots (based on two cars or two-one/half cars per dwelling).
  - b. KLP proposes two entrances at Old Haleakala Highway. Primary access and egress to KLP will provided by a primary

kauhalelaniLUC.doc

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- and secondary entrance along the South side of Old Haleakala Highway; both entrances will be unsignalized. The secondary entry closest to the intersection of Haleakala Highway and Old Haleakala Highway will be restricted to right turns only (in and out).
- c. It is the intent of KLP to provide stubs to Aeloa Road for possible future connections as encouraged by the Upcounty community plan. KLP intent is to limit their vehicular accesses to Old Haleakala Highway.
  - d. Please note that the DEA precedes any comments from the State Department of Transportation on the two KLP connections.
  - e. The Haleakala Highway, Project No. 37C-01-90, Haliimaile Road to Kula Highway Junction (better known as the Pukalani Bypass) right of way map has the ownership of Old Haleakala Highway vested with the State of Hawaii ending at its intersection with Aeloa Road.
  - f. Along the KLP parcel 7 the above right of way map restricts access and allows only a sixty-foot wide access permitted for the agricultural zoned lot.
  - g. The existing access to parcel 64 and the proposed wastewater treatment plant site as shown on the KLP maps is located along the State owned portion of Old Haleakala Highway where access is restricted to the agricultural zoned parcel.
  - h. We, being residents of Pukalani for the past twenty-two years, have observed that any vehicular left turn movement onto and off Old Haleakala Highway and from Old Haleakala Highway is usually hampered by the oncoming traffic.
  - i. The Upcountry Community Plan states "...Recognize Pukalani as the geographic, public service and commercial hub of the region. With the huge Department of Hawaiian Home Lands developments at Waiohuli and Kulamalu Subdivision more traffic will be directed through Old Haleakala Highway to the shopping center and establishments.
2. We are opposed to the Makawao-Pukalani-Kula Community Plan encouraging an Iolani Street-Aeloa Road connection or a Koea Place-Ikea Place connection or an Iolani Street-KLP roads connection to Old Haleakala Highway.
    - a. Iolani Street is a 40 feet wide right of way with a pavement width of about 24 feet from Pukalani Street to mid-block just past the Pukalani School Entrance. From this mid-block location to the unopened Aeloa Road, Iolani Street is a 44 feet wide right of way with a curb-to-curb width of 24 feet. Iolani Street from Pukalani Street is a minor street by Chapter 18.16.050 "Minimum right of way and pavement widths", from Subdivision Design Standards from the Maui County Code.

- b. Iolani Street from Pukalani Street is a minor street, which passes along Pukalani School and through a residential area with nearly every lot having an Iolani Street driveway. It was not designed or meant to be a collector street. Currently, Iolani Street dead-ends at the unopened Aeloa Road.
- c. The Upcountry community plan "...Establish an additional roadway connection to Haleakala Highway from Pukalani Terrace through the 65-acre single family area located North of and adjacent to the existing Pukalani Terrace residential subdivision. The alignment of this roadway shall not displace existing residences. [Here the Upcountry community plan encourages the connection of Iolani Street (a minor street) to Aeloa Street (an unopened road) to KLP streets-to Koea Place (a minor street 24 foot wide) -to Ikea Place (a minor street 25 feet wide) and re-routing (Pukalani Street traffic signal) traffic to and from Iolani Street to and from Old Haleakala Highway. This connection, if allowed, will increase the vehicular volumes to the three intersections at the Pukalani off-ramp from Haleakala Highway introducing traffic safety issues. It should be noted here that the Old Haleakala traffic signals at Pukalani Street and at the Makawao Avenue-Loha Street have proven to be adequate to handle the vehicular volume while providing a safe access to and from the Pukalani Community.
- d. The Upcountry community plan states "...Ensure the safe and convenient movement of people and goods by providing maintained roadways having adequate carrying capacities..." Iolani Street, Koea Place and Ikea Place do not have adequate carrying capacities.
- e. The Upcountry community plan states "...Support the planning of new roadways provided that there will be minimal impact to the Upcountry lifestyle and character..." The Upcountry community plan section, which calls for above connection shall severely affect the existing Upcountry lifestyle and character of residents who live on Iolani Street below Pukalani Street and the residents along Aeloa Road and that of the residents along Koea Place and Ikea Place.
- f. Aeloa Road:
  - i. A short portion is paved from Old Haleakala Highway with the remainder unopened to Iolani Street.
  - ii. From the Pukalani Lots subdivision map Aeloa Road is described as "...the centerline of a Kihei-Makawao Government Road (15.0 from boundary of Pukalani Lots"
  - iii. A memorandum dated April 27, 1982 states that the opening of Aeloa Road to Iolani Street was opposed in 1978 by the residents bordering Aeloa Road who did not want to take the brunt of Pukalani Terrace traffic.



- iv. By a March 7, 1985 letter from the County of Maui Director of Public Works to the State of Hawaii, Department of Land and Natural Resources District Land Agent a request was made for abstractors to research and determine if Aeloa Road is a government road. No reply was found.
3. We are opposed to the proposed location of the wastewater treatment plant.
  - a. The location for the plant is upwind (based on prevailing trade winds) and any odor will affect the Kuaaina Subdivision, the Pukalani Lots Subdivision, the Pukalani Terrace Subdivision, the KLP subdivision, and the community plan designated single family above the plant site.
  - b. The draft assessment states "...In any case, odors from the wastewater system and treatment plant will be during design..."
  - c. Item b is not acceptable. The DEA does not satisfactorily assure compliance with the community plan statement "...Preserve the existing visual, noise, odor and air quality characteristics found in agricultural/rural neighborhoods of the Makawao-Pukalani-Kula region..."
  - d. A suggested option is to expand and utilize the Sports Shinko facility. We understand that this requires negotiations between Maui Land & Pineapple Co., Inc. and Sports Shinko.
4. We are concerned and opposed to any real property tax increase the KLP will more then likely effect on the Pukalani community. While the DEA accounts for the socio-economic revenues to be received by the State and County of Maui from KLP, the DEA does not address its socio-economic impact on and to the existing Pukalani Community with respect to real property taxes. Our real property taxes has increased by about 38% from 2001 to 2004. The estimated starting sale price for 165 homes is \$650,000. One cannot dispute the fact that KLP sales shall raise the valuation of the existing Pukalani Community increasing the Pukalani residents' real property tax rates.
  - a. The Upcountry community plan specified goal is the maintenance and enhancement of Upcountry's unique and diverse rural land use character with sensitivity to existing land use patterns, natural resource values, and economic and social needs of the region's residents.
  - b. Apparently when the community plan specified "...Encourage new residential developments in areas which are contiguous extensions of, or infills within the established residential pattern which do not adversely affect agriculture uses..." or "...Within Pukalani: Single Family expansion contiguous with existing residential uses..." it does not address the possibility of a new

- subdivision substantially affecting the existing adjoining  
subdivisions real property taxes.
- c. The DEA should evaluate the impact to the Pukalani Community  
real property taxes.

Thank you for this opportunity to express my concerns on the Kauhale Lani  
Project.

Sincerely,

  
Allen Watanabe



August 25, 2008

Allen Watanabe  
2645 Iolani St.  
Pukalani, HI 96768

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Mr. Watanabe,

Thank you for your July 5, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note the following:

1. With regard to increase in automobile traffic, a new plan for street development has been proposed. In this new plan, A'elo Road and its intersection with Old Haleakala Highway will be improved, allowing traffic from the new development to merge safely with the existing AM and PM rush hour traffic. A new traffic report will be included in the Final EA and the revised Change in Zoning

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CITY AND REGIONAL PLANNING

115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956

application which projects improvements from connecting A'eola Road to Iolani Street, creating an additional route through Pukalani to Haleakala Highway.

We further note that the applicant continues to coordinate with the State of Hawaii, dept of Transportation, which controls the segment of Old Haleakala Highway abutting the property.

2. We acknowledge your opinions regarding the *Makawao-Pukalani-Kula Community Plan* and its recommendations. The Community plan exists as the community's recommendation for the growth of the region. In that light, the County of Maui is requiring the project to improve A'eola Road to collector status.

We have also communicated your concerns regarding the status of Iolani Street to the County of Maui, dept of Public Works. They believe that collector status for A'eola Road is the correct requirement of the project.

Through the Environmental Assessment process, we conclude that, in keeping with the *Makawao-Pukalani-Kula Community Plan*, development of Kauhale Lani will have minimal impact to the Upcountry lifestyle and character.

Finally, we have addressed the issue of ownership over A'eola road with the County, who contend that it is, indeed, a County right-of-way.

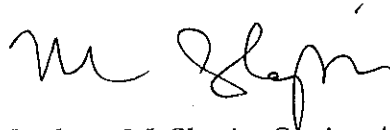
3. As discussed above, the project has been revised and no wastewater treatment system is currently proposed.

4. An Economic Impact Analysis has been prepared for the project. This analysis projects no significant impacts to area property taxes. The report will be included in the Final EA.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Allen Watanabe  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 3 of 3

Respectfully submitted,

A handwritten signature in black ink, appearing to read "M. Slepina". The signature is fluid and cursive, with the first letter of the last name being a large, prominent 'S'.

Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110

June 28, 2005

RECEIVED  
JUN 30 2005  
HAWAII

Mr. Tom Schnell  
PBR Hawaii  
1001 Bishop Street  
ASB Tower, Suite 650  
Honolulu, Hawaii 96813

Dear Mr. Schnell:

Thank you for the material you sent on the new Kauhale Lani subdivision.

As I will not have the time to read and take any action on your project before the July 7<sup>th</sup> deadline, I hope this letter will suffice until I can take some action.

I do intend to canvass my neighbors and start a petition on a couple of things.

First, I do not believe Iolani Street wide enough to take the traffic it will undoubtedly generate if the County decides to connect it to the highway. We already have a lot of cars parked roadside, as most families have more than one car. I also believe that an extremely large number of residents will utilize Iolani instead of the Pukalani Street entrance. This would not ease traffic as the Public Works Director suggests, but only make traffic more congested if people are driving in from both directions, especially for the school. The Hiwalani Loop stop onto Iolani is right where the curve in the road is. This makes visibility very poor for the drivers from Hiwalani Loop.

The other objection is the wastewater treatment plant. I asked people who have worked in treatment plants, and they say there will definitely be an odor. Not to mention any hazardous spills that may occur so close to the homes right across the street. I hardly think a few trees and smell will hide the treatment plant right next to our new highway being traveled upon by our upcountry residents and tourists.

I have made a call to Pukalani STP to ask about the possibility of your connecting to our already existing treatment plant, and to ask that they negotiate in good faith in perhaps connecting your subdivision. I hope this will be a solution to both parties.

Because the homes in Kauhale Lani will be sold for \$650,000 or more, I have been told that our property tax will increase. That added to the odor of the treatment plant and excessive traffic does not bode well for us at all. In the six homes at the end of Iolani, three are retired residents; my husband and I will very soon be the fourth. I am sure there are many more.

Sincerely,



Kay Watanabe

cc: State Land Use Commission  
Office of Environmental Quality Control  
State of Hawaii, Dept. of Business, Economic Development & Tourism  
Maui County Planning Dept.



August 25, 2008

Kay Watanabe  
2645 Iolani St.  
Pukalani, HI 96768

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Ms. Watanabe,

Thank you for your June 28, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note the following:

1. With regard to increase in automobile traffic, a new plan for street development has been proposed. In this new plan, A'elo Road and its intersection with Old Haleakala Highway will be improved, allowing traffic from the new development to merge safely with the existing AM and PM rush hour traffic. A new traffic report will be included in the Final EA and the revised Change in Zoning application which projects improvements from connecting A'elo Road to Iolani Street, creating an additional route through Pukalani to Haleakala Highway.

LANDSCAPE ARCHITECTURE  
CITY AND REGIONAL PLANNING

115 N. MARKET STREET • WAILUKU, MAUI, HAWAII 96793-1706 • PHONE 808-242-1955 • FAX: 808-242-1956

Kay Watanabe  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
August 25, 2008  
Page 2 of 2

2. As discussed above, the project has been revised and no wastewater treatment system is currently proposed.

3. We acknowledge your comment regarding your property tax. An Economic Impact Analysis has been prepared for the project. This analysis projects no significant impacts to area property taxes. The report will be included in the Final EA.

Thank you again for providing us with your comments. The Final Environmental Assessment will be made available online at <http://hawaii.gov/health/environmental/oeqc/index.html> by the Office of Environmental Quality Control, upon publication in the Environmental Notice. Please feel free to call me at (808) 242-1955 should you have any questions.

Respectfully submitted,



Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110



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JUL 11 2005

DEVELOPMENT OFFICE

Julie Zane  
PO Box 880774  
Pukalani, HI 96788  
July 2, 2005

Mr. Ryan Churchill  
MAUI LAND & PINEAPPLE CO., INC.  
1000 Kapalua Drive  
Kapalua, HI 96761

Mr. Tom Schnell  
PBR HAWAI'I  
1001 Bishop Street, Suite 650  
Honolulu, HI 96813

Mr. Anthony Ching  
STATE LAND USE COMMISSION  
P. O. Box 2359  
Honolulu, HI 96804

OFFICE OF ENVIRONMENTAL QUALITY CONTROL  
235 South Beretania Street  
Leiopapa A Kamehameha, Suite 702  
Honolulu, HI 96813

SUBJECT: KAUAHALE LANI: APPLICATIONS FOR STATE LAND USE DISTRICT  
BOUNDARY AMENDMENT, COUNTY CHANGE IN ZONING, COUNTY  
SPECIAL USE PERMITS AND DRAFT ENVIRONMENTAL  
ASSESSMENT (DEA) KAUAHALE LANI, MAKAWAO-PUKALANI-KULA  
COMMUNITY PLAN  
TAX MAP KEY NUMBER (2) 2-3-009:007  
CIZ 2005/00006, CUP 2005/0005

Dear Mr. Churchill, Mr. Schnell, Mr. Ching and OEQC:

I am in 100% opposition to the Kauhale Lani Project. There has not been enough planning to consider the existing Pukalani Community. More thought is required on how this project affects the existing community.

As a nearby Pukalani resident who will be directly affected by the proposed Kauhale Lani Project (KLP), I have several serious concerns which are as follows:

1. Private Wastewater Treatment Plant

I am deeply concerned with the idea of having a Wastewater Treatment Facility upwind of a highly densely populated residential area. The entire Pukalani Community downwind of the Treatment Facility will be affected by the odor created by this treatment plant.

After consulting with a wastewater treatment engineer, I was informed that the Draft Environmental Assessment (DEA) does not adequately address the Wastewater Treatment facility for odor and wastewater discharge.

Per the DEA, "...In any case, odors from the wastewater system and treatment plant will be during design...". This statement is unacceptable. I agree with my colleague that the DEA does not satisfactorily assure compliance with the community plan statement "...Preserve the existing visual, noise, odor and air quality characteristics found in agricultural/rural neighborhoods of the Makawao-Pukalani-Kula region...".

According to page 39 of the DEA, Engineering Solutions, Inc. is recommending a membrane bioreactor system for this Treatment Facility. After consulting with a county wastewater engineer, I was advised that a membrane bioreactor system is a new technology that has not been used in the State of Hawaii or Maui County. Therefore, there would be no knowledgeable person who would be able to maintain this type of facility on Maui. Maintenance of this type of facility is unknown.

A second concern of the plant is the effluent discharge water. According to page 40 of the DEA, it is estimated that a maximum flow of 273,350 gpd of discharge will be created from the Kauhale Lani subdivision. Where will all of this wastewater go? It surely can't be discharged onto the 39 acre parcel!

The DEA also does not address the issues of 1) a failure in the treatment facility, 2) a backup system to sustain a failure, 3) a clear disposal method of the solids and liquids, and 4) the odor created from the plant and especially from the sludge drying beds as shown in Appendix K. The DEA does state that irrigation of the Pukalani Golf Course is one method of liquid disposal, however, what happens to the remaining liquids on a daily basis.

It is very appalling that a private developer does not have to follow the same guidelines as the County when building a new wastewater treatment facility. All County wastewater treatment facilities are located outside of densely populated residential areas. For the most part, they are located in areas that are away from the community and sparsely populated, especially by homeowners. Why should there be an exception for this privately runned facility?

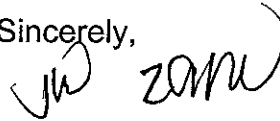
It would be much more responsible and reasonable for the developers to work with the Sports Shinko facility to upgrade, expand, and utilize their plant, which is located away from the residential community.

2. The amount of traffic that will be added to the already congested Old Haleakala Road. It is estimated that approximate 300 additional cars will be generated from this subdivision at a very critical location.

It is my understanding that Mr. Allen Watanabe of Pukalani also submitted a letter of concern regarding the above mentioned subdivision. Per his submittal, I support and acknowledge all of Mr. Allen Watanabe's concerns.

Thank you for allowing me to express my concerns.

Sincerely,

A handwritten signature in black ink, appearing to read 'JW ZANE', written over the word 'Sincerely,'.

Julie Zane



August 25, 2008

Julie Zane  
PO Box 880774  
Pukalani, HI 96788

SUBJECT: Draft Environmental Assessment for the Proposed Kauhale Lani Residential Subdivision Pukalani, Maui, HI; TMK: (2) 2-3-009: 007 & 064

Dear Ms. Zane,

Thank you for your July 2, 2005 letter providing comments on the Draft Environmental Assessment (DEA) for the proposed Kauhale Lani Subdivision. Subsequent to the June 8, 2005 publication of the DEA in the Environmental Notice, the project site was sold by Maui Land & Pineapple Co. to the current owners, Pukalani Associates, LLC. Pukalani Associates have revised the subdivision concepts, in part due to comments received on the original DEA. Notably, the project no longer proposes to develop a private, on-site wastewater treatment facility. Instead, subdivision wastewater will be transmitted to the Pukalani Sewage Treatment Plant for treatment via the existing transmission system.

In response to your comments we note the following:

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Julie Zane  
Draft EA for the Kauhale Lani Residential Subdivision  
Pukalani, Maui, HI  
TMK: (2) 2-3-009: 007 & 064  
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Page 2 of 2

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Respectfully submitted,



Matthew M. Slepina, Senior Associate

CC. Sharon Wright, Michael Wright & Associates  
Project File 05-110