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

April 26, 2001

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

Dear Ms. Salmonson:

Subject: Finding of No Significant Impact (FONSI) for Lands of Lana'i, Tax Map Key No. (2) 4-9-02:57, Lana'i City, Lana'i, Hawaii

The Department of Hawaiian Home Lands has reviewed the comments received during the 30-day public comment period which began on March 8, 2001. The agency has determined that this project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the May 8, 2001 OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form, four copies of the final EA. Should you have any questions, please call Ms. Michele Otake, Project Manager at 587-6451.

Aloha,

Raynard C. Soon, Chairman
Hawaiian Homes Commission

01 APR 26 P2:13

Enc. (5)

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2001-05-08-LA-FEA

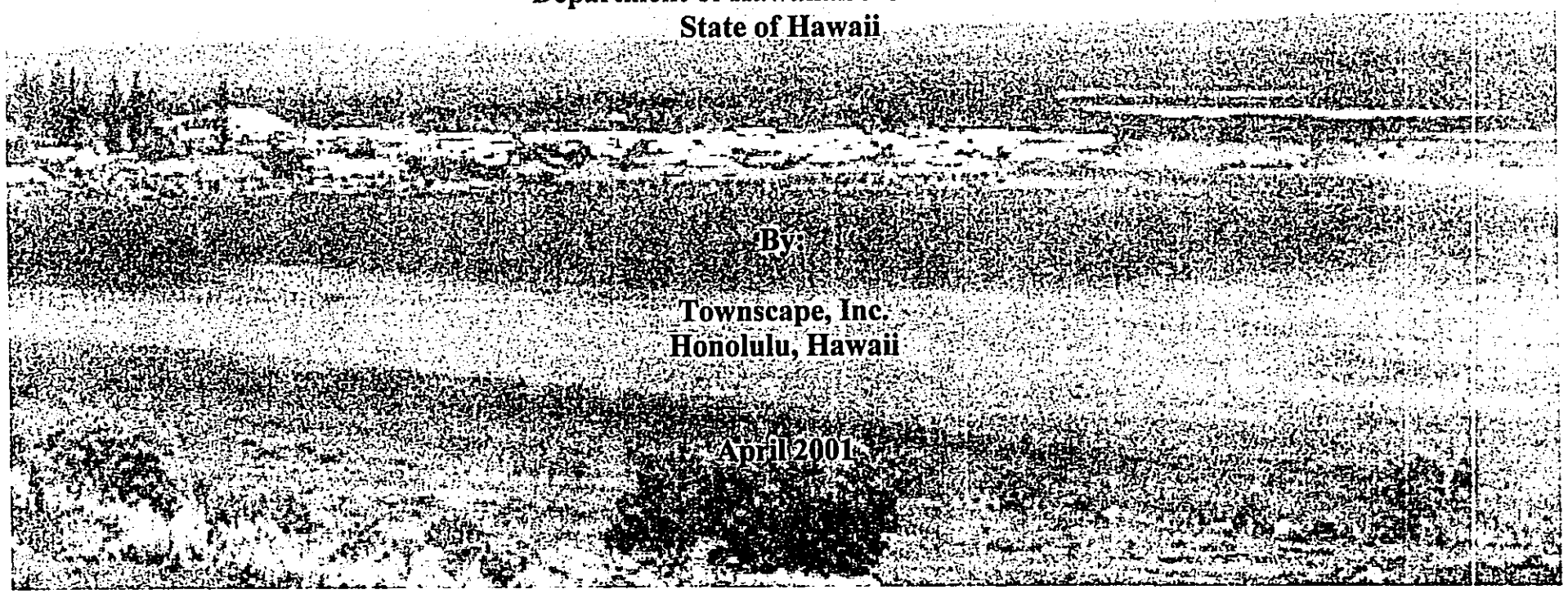
FINAL ENVIRONMENTAL ASSESSMENT

(Lands of Lana`i)

Lana`i City, Hawaii

For:

Department of Hawaiian Home Lands
State of Hawaii



By:

Townscape, Inc.
Honolulu, Hawaii

April 2001

FINAL
ENVIRONMENTAL ASSESSMENT

Lands of Lana`i

Lana`i City, Hawaii

For:

Department of Hawaiian Home Lands
State of Hawaii

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Honolulu, Hawaii

April 2001

TABLE OF CONTENTS

List of Figures

List of Appendices

SECTION 1
INTRODUCTION AND SUMMARY

1.1 INTRODUCTION AND PURPOSE

The Department of Hawaiian Home Lands (DHHL) is planning to develop approximately 136 single-family lots and 20 multi-family units for the purpose of providing homes for native Hawaiian beneficiaries. A five-acre park and community center complex are also planned as part of this project. Sandwich Isles Communications, Inc. will also be constructing a 2,000 square foot switching facility and offices, and a 4,000 square foot warehouse at the Community Center site. The project is tentatively identified as *Lands of Lana`i*, and consists of one lot (TMK:(2) 4-9-02:57) totaling 50 acres of lands previously used for pineapple cultivation.

This is the first DHHL project on Lana`i, as the island has been singly owned since the inception of the Hawaiian Home Lands program in 1920. In October 1994, the 50-acre parcel was among 16,518 acres identified for conveyance to DHHL as part of an action by the State Board of Land and Natural Resources (BLNR) to make the Hawaiian home lands trust whole. The lots are being conveyed as a charitable donation by the Lana`i Company, Inc. for residential housing and usually associated uses only.

1.2 PROJECT LOCATION

The site is located in the central portion of the island (see Figure 1), in the northwest edge of Lana`i City. Lana`i City lies at the lower slopes of Lana`ihale and is the only populated area on the island. The site will be accessed by a westward extension of Fifth Street, and will border vacant lands to the north, south and west, with the Olopua Woods Subdivision to the east (see Figure 2).

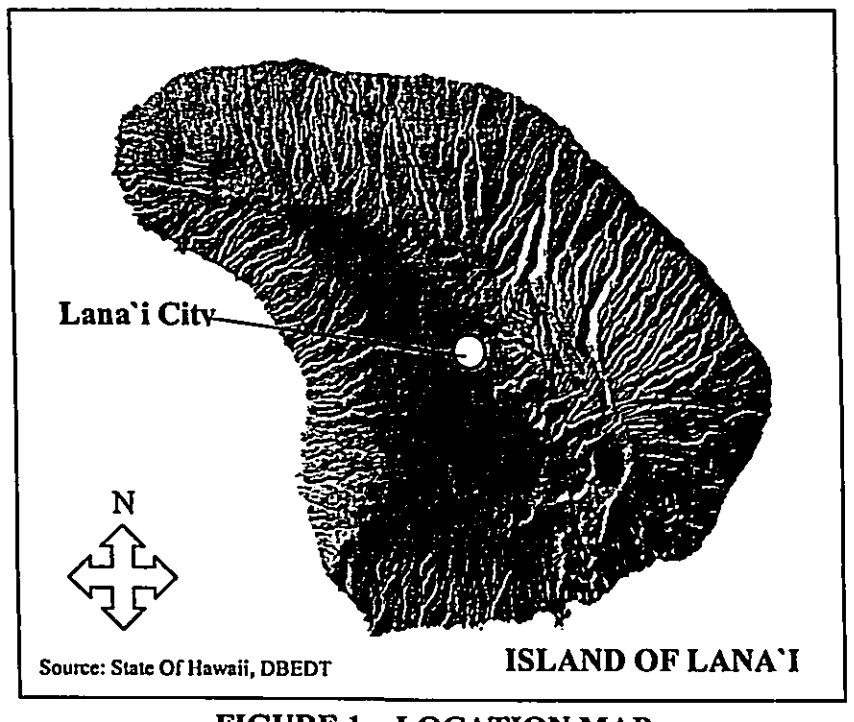
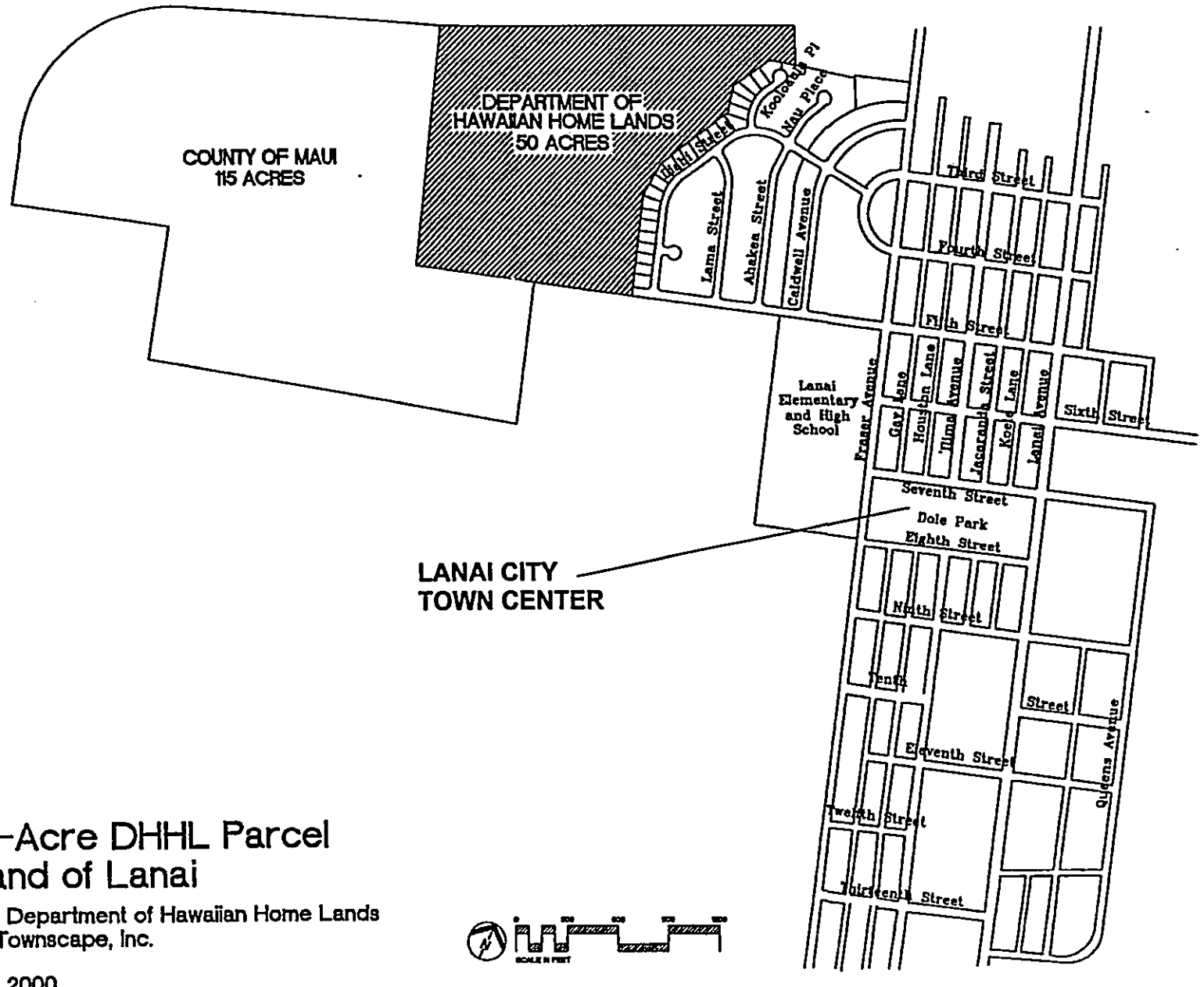


FIGURE 1 – LOCATION MAP



50-Acre DHHL Parcel
Island of Lanai

For: Department of Hawaiian Home Lands
By: Townscape, Inc.

July 2000

FIGURE 2 – VICINITY MAP

1.3 PROJECT DESCRIPTION

This project is planned to contain approximately 136 single-family lots, 20 multi-family or Kupuna units and a five-acre park and community center. A 2,000 square foot switching facility and offices, and a 4,000 square foot warehouse will be constructed at the community center parcel by Sandwich Isles Communications, Inc. (SIC). The total area required for SIC's operations is approximately 20,000 square feet.

The total number of units planned is 156. The lot sizes will average 10,000 square feet or more. Lots will be leased to eligible native Hawaiian applicants for one dollar ($1.00) a year pursuant to the Hawaiian Homes Commission Act of 1920, as amended. Financially qualified beneficiaries may purchase the homes that will be constructed on the lots. The developer of the project may also offer self-help and owner-builder home construction.

Because native Hawaiian beneficiaries with Lanai addresses total less than 156 people, approximately 25 lots are planned as Phase 1 of this project in accordance with the warranty deed for the property. DHHL is in the process of identifying other native Hawaiians on Lanai that are currently not on the waiting list for homestead lots.

A five-acre park and community center is planned within the project boundary that will be landscaped, and will include parking, restroom facilities, utility facilities and community buildings. The Homeowner's Association will maintain the park and community center.

The park and community center have been located in the southwestern corner of the site. This location was selected by the community because of potential noise impacts that might affect residents during large gatherings. The community center may feature such amenities as gathering areas, picnic and imu facilities.

1.4 SUMMARY OF IMPACTS AND MITIGATION MEASURES

1.4.1 Environmental Impacts

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

1.4.2 Social and Economic Impacts

The project is contiguous with existing development at Lana`i City and will be a natural extension of the existing community. There appears to be strong interest among the Lana`i beneficiaries to remain on Lana`i. There currently are approximately 30 people on the DHHL beneficiaries list with Lana`i addresses.

During the construction phase of the project, direct and indirect jobs will be created, which will have a positive effect on the economy of Lana`i.

1.4.3 Public Facilities and Services

The existing sewer, water, and electric systems all have sufficient capacity to accommodate this project. Telephone service and necessary infrastructure will be provided by Sandwich Isles Communications, Inc, (SIC). On-site drainage facilities will be constructed according to Maui County standards.

Health services will be provided by Lana`i Community Hospital located in Lana`i City, approximately 0.6 miles away.

Police and fire protection will be provided by the Lana`i City stations located 0.5 and 0.8 miles away from the site, respectively.

School children will attend Lana`i High and Elementary. According to the Department of Education standards, approximately 30 elementary, 14 intermediate school students and 15 high school students will come from this 156-unit project. However, since existing Lana`i residents will be the initial new residents of this project, impacts on the school will not be significant.

1.5 RELATIONSHIP TO PLANS, POLICIES AND CONTROLS

1.5.1 Hawaiian Homes Commission Act of 1920

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

1.5.2 Hawai`i State Plan and Functional Plans

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

1.5.3 State Land Use

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

1.5.4 County of Maui General Plan

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

1.5.5 County of Maui Community Plan and Zoning

The project parcel is designated "DHHL" on preliminary maps received from the County of Maui for the recently updated and approved Lana`i Community Plan. The County zoning designation for the property is "interim". Like State Land Use Laws, DHHL is also exempt from County of Maui Community Plan and Zoning ordinances, rules and regulations.

1.5.6 Lanai City Community Design Guidelines

The project is consistent with the guidelines outlined in the Lanai City Community Design Guidelines where new developments are compatible with existing structures in the immediate vicinity. The proposed project will be constructed in similar design and density to existing recently developed Lanai communities.

1.6 NECESSARY PERMITS AND APPROVALS

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

1.7 ALTERNATIVES CONSIDERED

The no action alternative would mean that the 30 native Hawaiian applicants currently residing on Lana`i would continue to be on the Maui waiting list to receive a residential lot on another island.

Alternatives considered included the types of land uses that would be developed as part of this project. Initially, the project was envisioned as containing primarily single-family house lots. However, in response to requests from the existing community, multi-family or Kupuna housing, and the park and community center were added to the Preferred Concept Plan (see Figure 3). The inclusion of the park and community center would provide nearby amenities within walking distance from their homes.

Commercial uses were also considered but rejected because such uses would be contrary to the terms and conditions of the warranty deed and the County of Maui General Plan, which encourages the retention of the existing traditional town center.

Other alternatives that were considered for this project dealt mainly with the internal configuration of the lots and location of uses. The primary DHHL objective is to provide affordable housing for native Hawaiian beneficiaries.

SECTION 2
PROJECT DESCRIPTION

2.1 OVERVIEW

The Department of Hawaiian Home Lands (DHHL) plans to develop approximately 136 single-family houses and 20 multi-family or Kupuna housing units on a 50-acre site in Lana`i City, Hawai`i. The land was acquired through a donation of land from Castle & Cooke, Inc. and the Lana`i Company, Inc. In October 1994, 50 acres on the island of Lana`i were among 16,518 acres identified for conveyance to the DHHL as part of an action by the State Board of Land and Natural Resources (BLNR) to make the Hawaiian Home Lands Trust whole. The parcel consists of one lot (TMK 2nd Div. 4-9-02:57) totaling 50 acres located at the northwest edge of Lana`i City. The land was formerly used for pineapple cultivation. Existing roadway access is from Fifth Street. Immediately adjacent to and east of the project site is the Olopua Woods subdivision constructed in 1992.

The finished lots will be leased to eligible native Hawaiians for one dollar ($1.00) a year. A developer will be contracted to design and construct on- and off-site infrastructure; and design, build and market the houses, or provide assistance to native Hawaiian beneficiaries wishing to construct their own house. A five-acre park and a community center is master planned for future development. A conceptual diagram of the project is shown in Figure 3.

2.2 PROJECT DESCRIPTION

DHHL will contract directly with a civil engineer to produce infrastructure construction plans. Invitation for Bids (IFB) process will be used to select the contractor. The Request for Proposals (RFP) process will probably be used to select a self-help coordinator.

Single-family lots will be 10,000 square feet or larger. Approximately 136 single-family lots are planned. Because the list of qualified beneficiaries with Lana`i addresses currently total approximately 30 families, the first phase of this project will contain a minimum of 25 house lots, in accordance with the warranty deed. DHHL will consider a mix of housing construction techniques, such as construction by contractors, by individual homeowners, owner-builder, or any combination thereof.

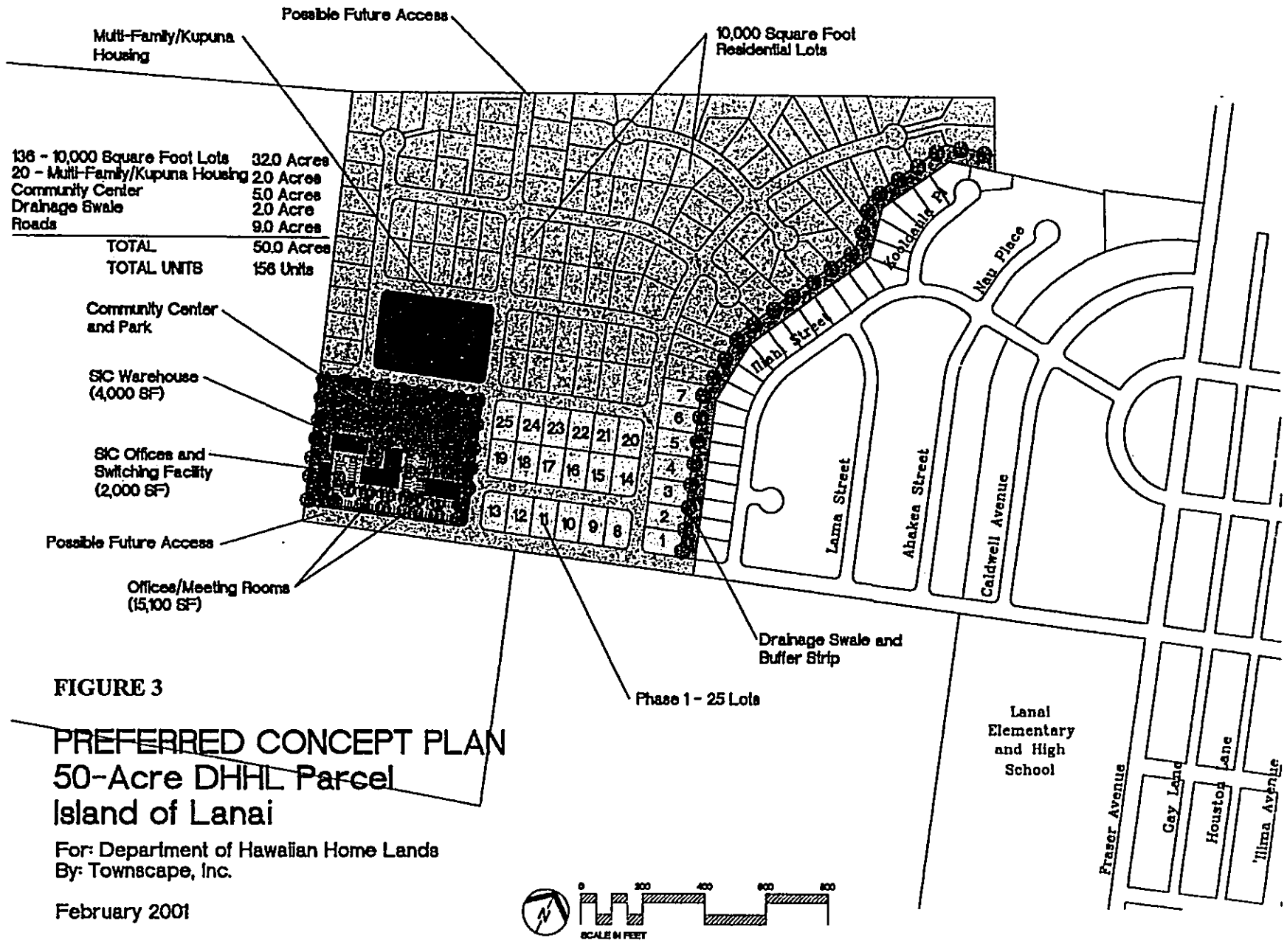


FIGURE 3

PREFERRED CONCEPT PLAN
50-Acre DHHL Parcel
Island of Lanai

For: Department of Hawaiian Home Lands
By: Townscape, Inc.

February 2001

A two-acre area has also been set-aside for multi-family or Kupuna housing units. Approximately 20 units are planned at this site with a density of 10 units per acre.

A planned future five-acre park and community center is sited within the project that will be landscaped and include parking and comfort facilities. Sandwich Isle Communications will construct a 2,000 square foot switching facility and offices, and a 4,000 square foot warehouse at the community center to provide telephone service to the residents of this community.

The total cost to develop the project is not known at this time. The DHHL will request proposals from contractors to construct the Phase 1 site improvements as described in this EA. DHHL will be responsible for payment of on- and off-site infrastructure. Beneficiaries will be responsible for payment of the cost related to house construction. Financing will be sought through Federal mortgage programs administered by the Department of Housing and Urban Development, Veterans Administration, or Department of Agriculture, Rural Economic Development in addition to Department of Hawaiian Home Lands and the State Office of Hawaiian Affairs.

DHHL is anticipating construction to begin in early 2002. The project is expected to take two to three years for the first 25 homes to be constructed.

DHHL has had discussions with Lana`i Company, various County and State agencies, and utilities companies regarding connection to existing infrastructure and utilities. Lana`i Company indicated that DHHL would be able to connect to the existing water system. The water system currently has the capacity to accommodate this project. For the sewer system, an 8-inch sewer line extends into the project site from Fifth Street. This development will connect to this sewer line and gravity flow to the wastewater treatment plant.

Drainage facilities will be constructed such that there will be no increase in the volume of storm water leaving the site and entering the existing drainage system. Grass-lined drainage swales will be constructed to the east to act as a siltation basin and to direct flows to existing drainage channels and basins. An erosion control plan and Best Management

Practices will be prepared for construction operations and submitted to the County of Maui Department of Public Works and Waste Management for review.

Maui Electric Company will provide electric service and Hawaii Cablevision will provide cable television service. Sandwich Isles Communication, Inc., a native Hawaiian corporation (a subsidiary of Waimana Enterprises, Inc.) under an exclusive license granted by the Hawaiian Homes Commission, will provide underground telephone service to the property. The electric, cable television and telephone lines will be placed in an underground duct system. Sandwich Isles will also be constructing an underground fiber optic network connecting its facility to other Hawaiian homelands communities throughout the State.

Access to the site is via Fifth Street, a county-owned roadway. Internal roadways will be constructed to Maui County standards and maintained by the county pursuant to the Hawaiian Homes Commission Act, 1920, as amended.

SECTION 3
EXISTING PHYSICAL ENVIRONMENT AND RELATED IMPACTS

3.1 GEOGRAPHY AND CLIMATE

The proposed project is situated on the Island of Lana`i on the southeastern base of the only mountain, Lana`ihale. According to the Atlas of Hawai`i, the average annual rainfall in the Lana`i City area is approximately 30 inches. No adverse impacts on the geography and climate are anticipated from this project.

3.2 SURROUNDING LAND USES AND OWNERSHIP

Land uses adjacent to the property include Olopua Woods Subdivision to the east and vacant land formerly planted in pineapple to the north, south and west. Olopua Woods parcels are owned fee-simple, vacant land to the south and west is owned by the County of Maui, and vacant lands to the north and a portion of the vacant land to the south are owned by Lana`i Company Inc.

The Olopua Woods Subdivision was constructed in 1992 by Lana`i Company, Inc. In July of 1999, Lana`i Company under an agreement with the state conditionally donated the 50 acre parcel to DHHL. At that time, Lana`i Company also donated a 115-acre parcel to the west of the DHHL parcel to the County of Maui. There are no current plans for the county parcel at this time.

3.3 SOILS AND TOPOGRAPHY

According to the U.S. Department of Agriculture, Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and Lana`i, State of Hawai`i (1972), the site is composed of one predominant soil series: Waihuna Clay (WoA), 0 to 3 percent slopes. On this soils series, runoff is slow, and the erosion hazard is no more than slight. The soil is strongly acidic in the 18" surface layer as a result of pineapple culture, but is neutral to medium acid in the rest of the profile. It has high shrink-swell potential and low shear strength.

The site is located on the central plain at an elevation of about 1,570 feet mean sea level. The property is relatively flat with a slight slope towards the southeast. Remnants of black plastic sheeting used in the cultivation of pineapple are evident throughout the site.

Soil analysis and laboratory tests performed by Terrasano in November 2000 indicated that no harmful residues from past agricultural uses exist in the soils (see Appendix A). There was evidence of construction and

household debris on the property that will need to be removed prior to construction.

A few homeowners living in the Olopua Woods subdivision have been repairing cars on the property. Should contaminated soil from oil spills be found on the site, the contaminated soil will be removed and replaced with good soil material in accordance with County of Maui solid waste disposal requirements.

A drainage swale runs along the eastern border of the parcel. During construction, the property will be graded to provide sufficient slope to direct storm water runoff to the existing swale via an underground drainage system. Excess storm water runoff will be directed to a drainage basin south of the site known as the "Mississippi" where storm water percolates into the ground. No adverse impacts resulting from grading or soil conditions are expected.

3.4 NOISE

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

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

3.5 AIR QUALITY

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

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

3.6 FLORA

Char & Associates conducted a survey of the site in December 2000 (see Appendix B). No proposed, rare, threatened or endangered species were found on the site. The

site contained weedy scrub vegetation of introduced or alien species. Lantana (*lantana camara*), Christmas Berry (*schinus terebinthifolius*) and Guinea grass are predominant species on the site. There are a few small ironwood (*casuarinas sp.*) and Formosan koa (Acacia confusa) trees on the parcel. Two native species, the `uhaloa (Waltheria indica) and popolo (Solanum americanum), were observed during the survey. Both these native species are indigenous and are native to Hawaii and elsewhere.

Because there were no rare, threatened, and endangered species or species of concern on the site, no adverse impacts on the botanical resources are expected.

3.7 FAUNA

Phil Bruner, biologist, performed a faunal survey of the site in November 2000 (see Appendix C). During the survey, no rare, threatened, or endangered fauna were found on the site. The site is dominated by alien plans and animals. Since no rare, threatened or endangered fauna were present on the site, adverse impacts on the faunal resources are not anticipated.

3.8 ARCHAEOLOGY

In November 2000, Cultural Surveys Hawaii performed an archaeological inventory survey of the site (see Appendix D). Based on that report, there were no archaeological resources of significance on the site. The site has been heavily modified by human activity, particularly from pineapple cultivation. Thus no impacts on archaeological resources are anticipated. In the event archaeological resources of significance are found on the site, all work will cease and the State Historic Preservation Office (SHPO), the local Burial Council and the Office of Hawaiian Affairs will be consulted.

3.9 CULTURAL RESOURCES

Cultural Surveys Hawaii performed the study to assess native rights issues for the property through historical research and interviews with native Hawaiians living on the island (see Appendix E). The study concluded that there were no cultural resources, sites or cultural practices within the 50-acre project site.

The ahupuaa of Kamoku where the 50-acre site is located was impacted by Kalani`opu`u's raid of 1778 and slash and burn method of cultivation. By the time early explorers went to Lana`i, much of the lowland dry and mesic native forests had already disappeared. The site was further impacted by grazing of sheep and goat, then ranching activities, and finally pineapple cultivation, which left no trace of cultural practices or resources within the project area. Thus, no impacts on native rights issues are expected.

3.10 AGRICULTURE

The site was used in the past for the cultivation of pineapple. However, the site has been lying fallow since the closure of Castle and Cooke's pineapple operations in 1993. It property is presently undeveloped. Thus, no adverse impacts on agriculture are expected.

According to the Agricultural Lands of Importance to the State of Hawaii the lands are designated "Unique," which are lands that have a special combination of soil quality, location moisture content or other attributes that produce a higher yield of specific crops. According to the Land Study Bureau, Detailed Land Classification, the 50-acre parcel is rated "C", which means that the lands have fair suitability for agricultural use. Although the 50-acre parcel is conducive to cultivating crops, there are no plans by the major landowner of the island to cultivate the lands for agricultural purposes. However, new residents of this project may have a better success rate with landscaping material in their yards or growing fruits and vegetables for their own use.

3.11 VISUAL RESOURCES

Since the property is located in a basin on the central plain, there are no coastal views. Pu`u Koa blocks any view to the nearest coastline. The dramatic view of Lana`ihale is minimally obstructed by the Olopua Woods Subdivision. Because the site is at a lower elevation, development of the site will not block existing visual resources from neighboring developments. Thus, no negative impacts on visual resources are anticipated.

SECTION 4
SOCIO-ECONOMIC ENVIRONMENT AND RELATED IMPACTS

4.1 POPULATION CHARACTERISTICS

According to the 1990 census, the island of Lana`i had a resident population of 2,426 people. The 1995 population was estimated at 2,989 people, a 23.2% increase over a five-year period. Projections for year 2000 estimated a population of 3,000. Approximately 10% of the population on Lana`i is of Hawaiian descent. The 1998 Maui County Data Book estimated that by the year 2010 the population on Lana`i would increase to 5,148 people.

Development and occupation of the project units will satisfy some of the growth that is expected in the area. However, it should be noted that as part of the terms of the warranty deed, DHHL shall give preference to residents of the island of Lana`i. Thus, it is expected that new residents of this project already reside on Lana`i.

4.2 ECONOMIC CHARACTERISTICS

In 1999, there were approximately 1,750 people in the labor force for the island of Lana`i with 1650 people employed and 100 unemployed. The average per capita income for the island is $13,584 compared to the State average of $25,159.

The service industry had the highest number of jobs totaling 1,550, which is 88% of the total number of jobs on Lana`i. Approximately 850 of these service industry jobs are in hotels. The other 100 jobs on Lana`i are in the construction and manufacturing industry.

The estimated visitor count to Lana`i for 1998 was 94,390 people as compared to the County of Maui total of 2,360,350 people and the State total of 6,738,220 people.

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

SECTION 5
PUBLIC FACILITIES AND SERVICES AND RELATED IMPACTS

5.1 FLOODING AND DRAINAGE

The Federal Emergency Management Agency has not identified any flood zones on the island of Lana`i. The site is located on the central plain of Lana`i at an elevation of approximately 1600 feet, and is well outside any potential tsunami inundation zone.

Storm water runoff from the Koele area flows into a drainage swale north of the project site. Storm water runoff from an existing underground drainage system in the Olopua Woods Subdivision outlets into a grass-lined swale along the eastern boundary of the project site at Fifth Street. This grass-lined swale directs water to a basin to the southeast known as "Mississippi" where storm water percolates into the ground. This swale will be enhanced as part of the Lands of Lana`i development to act as a siltation basin and to direct flows to the Mississippi drainage basin.

The underground drainage system for the project will include a series of catch basins that will direct flows to the drainage swale between Olopua Woods and Lands of Lana`i.

5.2 POTABLE WATER

Lana`i Company, Inc. owns the potable water system on Lana`i and will supply potable water to the site. An existing eight-inch water line has been installed along Fifth Street and will be extended into the project site. Lana`i Company has indicated that water is currently available to service the site and the water distribution system and storage capacities are adequate. The eight-inch line is adequate to provide domestic and fire flow demands of the project.

5.3 WASTEWATER TREATMENT AND DISPOSAL

An eight-inch sewer line extends into the site off of Fifth Street on the eastern side of the parcel and gravity flows to the County of Maui sewage treatment plant (STP) located south of the project site. Discussions with County of Maui Department of Public Works and Waste Management indicated

that the STP has sufficient capacity to accommodate this project. In addition, these homes are expected to be occupied by residents already living on Lana'i. Thus, the volume of wastewater flows to the STP is not expected to increase significantly.

5.4 TRANSPORTATION

Access to the site will be from an extension of Fifth Street, which is a two-lane roadway with a right-of-way width of 56 feet. The extension of the roadway from the stub-out will be consistent with current dimensions.

Currently, there are no future development plans along Fifth Street. However, the County of Maui received 115 acres from Lanai Company, Inc., and it is anticipated that this parcel will eventually be developed.

Julian Ng, traffic engineer, was consulted to evaluate potential traffic impacts from the development of the project. The evaluation concluded that the project is planned in an area of little traffic congestion and will have no adverse impact on traffic conditions and on regional traffic demands. The 24-hour traffic volume on area roadways is still below the capacity of roadways on Lana'i. Thus, no adverse impacts on peak hour traffic are expected.

5.5 POWER AND COMMUNICATIONS

Electric power will be supplied by Maui Electric Company via underground lines. DHHL will encourage the developer to design the houses to take advantage of the prevailing trade winds for cooling, provide an option to homeowners for solar water heaters versus electric, and install low-flush toilets and energy-efficient devices to promote an environmentally sensitive and energy efficient development.

Telephone service will be provided by Sandwich Isle Communications (SIC) and service lines will be placed underground. A switching facility with offices and a warehouse are planned to be constructed at the community center by SIC. Approximately 2,000 square feet will be required for the switching facility and offices, and 4,000 square feet for the warehouse and equipment. Additional area may be required for

storage of equipment and materials. SIC is also building a statewide fiber optic network connecting all DHHL properties.

Currently, cable television service is provided to Lana`i residents by Hawaii Cablevision. The cable lines will be placed in the same underground duct system as the telephone lines.

5.6 FIRE, POLICE AND EMERGENCY MEDICAL SERVICES

Fire protection service for this area is provided by the Lana`i Fire Station. According to discussions with Fire Prevention Services and the Lana`i Fire Station, response time to the site is estimated at less than five minutes. There are no significant impacts foreseen as a result of this project.

The Lana`i Fire Station has a staff of five fire fighters, and is equipped with two engines: a Pierce 1250 GPM Pumper and a 64 Seagrave. Ambulance service is provided by American Medical Response out of Lana`i City.

Police service is provided by 9 officers on three shifts covering the island of Lana`i. One to two officers are assigned to patrol the Lana`i City area. The police station is located on the corner of Eighth Street and Fraser Avenue, approximately 0.5 miles from the site.

Health services will be provided by the Lana`i Community Hospital located north of Lana`i Avenue on Seventh Street, which is approximately 0.6 miles from the site. The hospital is a 14-bed facility that provides acute and long-term care, as well as 24-hour emergency medical service. According to a hospital spokesperson, the hospital is not at capacity. Hence, no adverse impacts on fire, police, or emergency medical facilities are anticipated as a result of this project.

5.7 SCHOOLS

Lana`i Elementary and High School is located only one quarter mile from the site, and is not at capacity. The enrollment for the 2000-2001 school year was 687 students. The capacity of the school is 711 students.

Based on discussions with the Department of Education (DOE), the 156-unit project will have approximately 30 elementary students, 14 intermediate students, and about 15 high school students. At the current rate of growth in Lana`i City, the school is expected to reach capacity within a few years. However, since the initial phase of the project gives precedence to Lana`i residents, the children of these families are most likely already enrolled at the school. Therefore, the project will have no adverse impact on the school.

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

6.1 HAWAIIAN HOMES COMMISSION ACT OF 1920

In 1921, Congress passed the Hawaiian Homes Commission Act (HHCA) of 1920, 42 Stat. 108, as amended, which set aside certain lands within the Territory of Hawai`i for the benefit of native Hawaiians. This project implements the HHCA by developing tracts of land and distributing homestead leases to native Hawaiians for the first time on Lana`i.

6.2 HAWAI`I STATE PLAN

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

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

6.2.1 Population (HRS Section 226-5)

Development of this project will provide much-needed housing for the native Hawaiian community on Lana`i. There are approximately 30 native Hawaiian residents on Lana`i that are qualified to receive DHHL awards. This project will create the opportunity for native Hawaiians to become homeowners.

6.2.2 Economy (HRS Section 226-6)

The proposed project will create short-term design and construction employment opportunities. Since the deed from Lana`i Company specifically states that the parcel should be used for residential purposes and related community facilities, long-term employment opportunities from this project is not anticipated.

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

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

The project site is not near the coastline. Therefore the project will not affect shoreline or marine resources.

The project site is contiguous to existing residential development to the east of the project site and is a natural extension of Lana`i City.

Because the project site is situated at a lower elevation than surrounding developed areas, existing scenic views will be preserved. New residents of this community will be able to experience scenic views of Lana`ihale and Kanepu`u from their homes and community center.

The property has been cultivated for many years; hence the probability of significant historic resources on the site is small. However, if historic resources are encountered during the construction phase of the project, the State Historic Preservation Division will be contacted and work will cease until appropriate mitigation measures can be established.

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

The developer of the project will work together with the State and County agencies to provide adequate infrastructure to

service the site. An existing eight-inch sewer line extends into the site off of Fifth Street. The sewer system for this project will connect to this eight-inch sewer line, which will gravity flow to the County's STP.

Potable water will be provided to the site by Lana`i Company. The eight-inch line within Fifth Street will be extended into the project site and service the new residents. According to Lana`i Company, the existing potable water source, storage and transmission system have sufficient capacity to accommodate this project.

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

Electric power will be provided by Maui Electric Company via underground electric lines.

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

The project satisfies the State's objectives for socio-cultural advancement because it provides housing opportunities for native Hawaiians. Houses will be purchased at very affordable prices, since the land acquisition and site improvement costs will be financed by the DHHL and will not be included in the price of the house to the lessee. It is anticipated that some of the houses will be built by the beneficiaries, promoting a sense of pride, responsibility, and personal well-being. DHHL, owner-builder or self-help built housing alternatives will also provide a means to offer variable priced homes for differing economic levels.

The master planned future 5-acre park and community center will provide the people of this community a place for recreation, leisure and informal gatherings.

Being located on the central plain, the project is not within the tsunami inundation zone. Drainage swales will be developed to direct storm water runoff to existing drainage

basins. Therefore, public safety will not be jeopardized by this project.

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

6.3 STATE FUNCTIONAL PLANS

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

6.3.1 State Energy Functional Plan

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

Options to install solar or gas water heaters to minimize the demand for electrical power will be allowed. DHHL also encourages the design of houses to take advantage of the prevailing trade winds for cooling and install low-flush toilets and energy efficient devices to promote an environmentally sensitive and energy efficient development.

6.3.2 State Transportation Functional Plan

The objective of the Transportation Functional Plan is to provide for the efficient, economical, safe and convenient movement of people and goods in consonance with the planned growth objectives for the State of Hawai`i. The roadways within the subdivision will be constructed to Maui County

standards. Fifth Street will provide access to the site and include sidewalks.

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

In addition, the planned park and community center will reduce the use of motor vehicles on the area roadways. Residents will have the convenience of walking to the park for recreation and gatherings. Retail medical and social services activities at the existing Lanai City town center are also within walking distance.

6.3.3 State Agriculture Functional Plan

The project is consistent with the State's objectives for the Agricultural Functional Plan because it will not affect the viability of the agricultural industry, nor will it hinder the growth of diversified agriculture. The land is designated agriculture on the State Lands Use Maps; however, agricultural crops are not being cultivated on the land. Currently there are no plans by the majority owner of the island to cultivate the lands for agricultural purposes.

6.3.4 State Historic Preservation Functional Plan

The project is consistent with the objective of the Historic Preservation Functional Plan because the site has been highly disturbed by agricultural operations in the past, so the possibility of historic resources being found on the site is remote. The archaeological reconnaissance survey did not identify historic resources of significance on the property. In the event that cultural or historical resources are discovered during the construction phase of the project, work on the development will cease and the State Historic Preservation Division will be consulted for the appropriate mitigative actions.

6.3.5 State Recreation Functional Plan

This project satisfies the objective of the Recreation Functional Plan because it proposes a 5-acre park site. Creation of this park will reduce the long-term demand on existing park facilities in the vicinity of the project.

6.3.6 State Housing Functional Plan

This project satisfies the objective of the Housing Functional Plan to provide affordable housing to native Hawaiian beneficiaries either through the private sector turnkey houses, self-help and/or owner-builder house lots.

6.3.7 State Employment Functional Plan

The focus of the Employment Functional Plan is to provide employment training and education to cope with changes in the work force and to prepare people for the working environment. Although the project is not expected to provide these types of services, the development of the project will create direct and indirect employment during the construction phase of the project.

6.4 STATE LAND USE

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

6.5 COUNTY OF MAUI GENERAL PLAN

The project is consistent with the Population and Land Use Objectives and policies of the County of Maui General Plan for Lana`i in support of the policy to encourage the retention of the traditional town center with its associated community-based and community supported retail businesses.

The project will not adversely impact the environment or cultural resources in the area and is consistent with the Environment and Cultural Resources objectives and policies of the General Plan. No rare, threatened or endangered plants or

animals were present at the site. In addition, no significant archaeological resources were present on the site.

The internal roadway system within the subdivision will be designed to provide efficient movement of vehicular and pedestrian traffic consistent with the Transportation objectives and policies.

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

The park facility and community center are planned to provide appropriate facilities that will meet the recreational and social needs of the users. The park and community center will be consistent with the General Plan objectives and policies for Recreation and Open Space.

Development of the project will be consistent with the Government objectives and policies because DHHL will coordinate with other government agencies to insure that services not provided by the private sector will be made available to the residents of this project.

6.6 LANA`I COMMUNITY PLAN

The community plan map designation for the project site is "DHHL", according to preliminary information received by the County of Maui Planning Department. Thus, the project is consistent with the recently approved, but not published, Lana`i Community Plan.

6.7 COUNTY ZONING

County Zoning designation for the parcel is interim. DHHL is also not subject to County zoning rules and regulations. However, it is anticipated that the project will be developed according to R-3 standards with a minimum lot size of 10,000 square feet.

SECTION 7
PERMITS/APPROVALS REQUIRED

7.1 STATE PERMITS

Permit/Approvals	Agency
Erosion & Dust Control Plan	State Department of Health

7.2 COUNTY PERMITS

The following County of Maui permits will be required.

Permit/Approvals	Agency
Grading Permit	County of Maui, Department of Public Works and Waste Management
Building Permit	County of Maui, Department of Public Works and Waste Management
Subdivision Plan Approval	County Planning Department

7.3 FEDERAL PERMITS

Federal permits are not required for the proposed development.

SECTION 8
ALTERNATIVES TO THE PROPOSED ACTION

8.1 NO ACTION ALTERNATIVE

The no action alternative would mean that none of the native Hawaiian beneficiaries on the DHHL Lana`i waiting list would be able to receive a homestead lot in Lana`i City. Non-development would mean that the land would be returned to Lana`i Company, Inc., as per the terms of the warranty deed.

8.2 ALTERNATIVES CONSIDERED

Because the warranty deed specified the types of uses that would be permitted on the property, alternatives that were considered dealt mainly with the subdivision layout, lot sizes and the location of the park and community center. DHHL worked together with the native Hawaiian beneficiaries to develop the "Preferred Concept Plan", as presented in this Environmental Assessment.

Inclusion of commercial uses was considered but rejected because such uses would be contrary to the terms of the warranty deed, and contrary to the County of Maui General Plan, which encourages the retention of the existing Lanai City traditional town center.

SECTION 9
DETERMINATION, FINDINGS AND REASONS FOR SUPPORTING DETERMINATION

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

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

Development of the project will not impact natural or cultural resources in the area. Botanical, biological and archaeological surveys were performed and the results indicated that the property did not contain any important natural or cultural resources.

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

The project was used for agriculture in the past and is currently fallow. The location of the site adjacent to existing residential developments makes for a natural extension of Lana`i City. In addition, it provides needed housing for native Hawaiian beneficiaries. A park and community center are also planned, which will provide additional beneficial uses of the site.

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

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

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

The project will have a beneficial effect on the economy and social welfare of the community. During the construction phase of the project, short-term direct and indirect employment will be created. Once the project construction phase is completed, the native Hawaiian beneficiaries will have affordable housing.

5) *Substantially affects public health;*

Short-term noise and air quality impacts may occur during the construction phase of the project. However, these impacts can be mitigated as discussed in the earlier sections of this EA. After construction is completed, the project will not have an adverse affect on public health.

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

The project probably will not increase the population because future residents of this development already reside on Lana'i. Similarly, infrastructure will be extended to the undeveloped site to provide services to this new development, but increased demand on infrastructure is expected to be minimal. Therefore, substantial secondary effects on population and infrastructure are not expected.

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

The project will be developed to minimize adverse effects on the environmental quality of the area. Based on studies performed, there were no rare, threatened or endangered plants and animals on the site, and no evidence of historic resources were present on the property. The development will not obstruct scenic views from existing developed areas.

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

The project is not expected to have a considerable cumulative effect on the environment that will involve the need for larger actions. Once the land is developed and occupied as described, the demand for additional facilities and services is not anticipated. It is also expected that most of the land will be left undeveloped, since the number of native Hawaiians residing on Lana`i is not high enough to occupy all of the 156 units planned for this project.

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

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

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

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

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

The project is not located in an environmentally sensitive area that will suffer damage. The site is at an elevation of approximately 1600 feet mean sea level, thus it is outside of the tsunami inundation zone and is not situated in an identified flood zone, as defined by the Federal Emergency Management Agency (FEMA).

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

The site is not located in an area that will obstruct scenic vistas and view planes that have been identified in County or State plans or studies. The site lies at a relatively low elevation compared to other developed areas on Lana`i.

13) Requires substantial energy consumption.

The project is not expected to require a substantial consumption of energy. Energy conservation devices, such as solar water heaters, will be encouraged to reduce the demand on electricity. The homes will also be constructed to take advantage of the prevailing trade winds.

Based on the foregoing, no significant adverse impacts are expected from the development of this project.

SECTION 10
LIST OF INDIVIDUALS, ORGANIZATIONS AND AGENCIES CONSULTED

10.1 STATE

Department of Education
Department of Transportation

10.2 COUNTY OF MAUI

Department of Public Works and Waste Management
Planning Department
Police Department
Fire Department

10.3 OTHERS

Maui Electric Company
Hawaii Cablevision
Sandwich Isle Communications
Lana`i Company
Lana`i Community Hospital
Kanaka Maoli O Lana`i

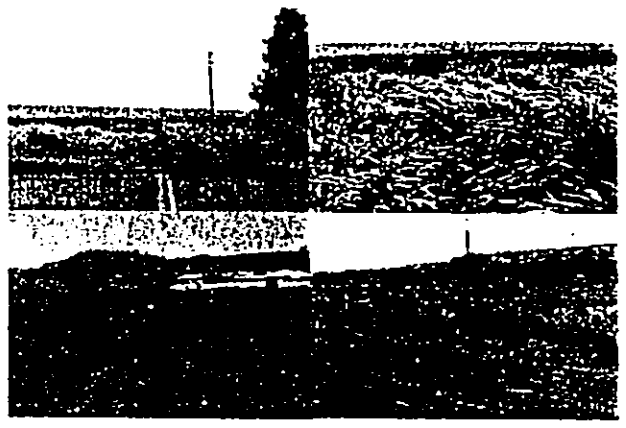
APPENDIX A

Soils Analysis Study

Phase I Environmental Site Assessment

Former Agricultural Land

Lana'i City, Lana'i, Hawai'i
Tax Map Key 2-4-9-002:057



Prepared for Townscape, Inc.
December 2000

Terrasano LLC
72 Dowsett Avenue
Honolulu, HI 96817

Phase I Environmental Site Assessment

Former Agricultural Land

Lana'i City, Lana'i, Hawai'i
Tax Map Key 2-4-9-002:057

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Project Number: 011-003
Project Manager: Martha Walters

December 2000

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

bgs	Below ground surface
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
HDOH	State of Hawai'i Department of Health
MCL	Maximum Contaminant Level
NA	Not analyzed
ND	Not detected
PCB	Polychlorinated biphenyl
ppm	Parts per million
PRG	EPA Region 9 Preliminary Remediation Goals
Terrasano	Terrasano LLC
TMK	Tax Map Key
UST	Underground storage tank

I. INTRODUCTION

I.1 Purpose

Terrasano LLC (Terrasano) was retained by Townscape, Inc. (Townscape) to perform a Phase I Environmental Site Assessment (ESA) of about 50 acres of former pineapple growing land; tax map key (TMK) 2-4-9-002:057. The site location is shown on Figure 1. This ESA was performed to establish current environmental conditions at the property and propose recommendations for additional investigation, if warranted. "Recognized environmental conditions" means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water or the property (American Society for Testing and Materials [ASTM] 2000). This term is not intended to include *de minimus* conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate government agencies.

Hazardous substances are those substances defined under Section 101 of the federal Comprehensive Environmental Response, Compensation, and Liability Act. They are listed under Title 40 of the Code of Federal Regulations (CFR) Part 302. They include hazardous substances and toxic pollutants regulated under the Clean Water Act, hazardous wastes regulated under the Resource Conservation and Recovery Act (RCRA), and hazardous air pollutants regulated under the Clean Air Act. Petroleum products include crude oil, gasoline, kerosene, diesel oil, jet fuel, fuel oil, lubricating oil, natural gas, liquefied natural gas, and *synthetic gas usable for fuel.*

This assessment was conducted in accordance with ASTM Standard E 1527-00, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (2000). Because this property was used for pineapple cultivation for over 100 years, Terrasano was requested to evaluate site conditions for potential redevelopment of the land into residential use. The scope of work consisted of four major components:

1. Site Description
   - Location and Legal Description
   - Site and Vicinity Characteristics
   - Site Description
   - Physiography
   - Site Geology
2. Records Review
   - Federal and State Records
   - Local Records
   - Site History
   - Past Environmental Investigations
3. Site Reconnaissance and Interviews
   - Site Reconnaissance
   - Interviews

4. Evaluation of Residual Pesticides in Soil
   - Soil Sample Collection
   - Risk Evaluation of Pesticide Residues
5. Conclusions and Recommendations

1.2 Limitations and Exclusions

We have performed our services for this project in accordance with our Agreement, and with ASTM Practice E 1527-00 for ESA investigations; no guarantees are either expressed or implied.

The records search was limited to information available from public sources and, to a limited extent, records provided for review by the current property owner. This information changes continually and is frequently incomplete. Unless we have actual knowledge to the contrary, information obtained from interviews or provided to us by third parties has been assumed to be correct and complete. We do not assume any liability for misrepresentation of information or for items not visible, accessible, or present on the site at the time of the site visit.

Because of the uncertainty in identifying and characterizing conditions beneath the surface of the ground, no environmental investigation can show or prove the absence of hazardous substances at the site. Likewise, because environmental regulatory programs are constantly evolving and changing, statements about the acceptability of the site for human health and the environment are relative only to the regulatory program in place today. Future programs could change the way these conditions are viewed, and could require additional action to address hazardous conditions at the site.

Work for this project was performed and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. Opinions and judgments expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions. It is intended for the exclusive use of Townscape, Inc. and its clients for specific application to the site. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made. Any reliance on this report by third parties shall be at such party's sole risk.

Terrasano relied on verbal information provided by the individuals indicated in this report, and Terrasano can only relay this information and cannot be responsible for its accuracy or completeness.

Any questions regarding our work and this report, the presentation of the information, and the interpretation of the data are welcome and should be referred to the project manager.

2. SITE DESCRIPTION

This section describes the physical characteristics of the site, including land uses, topography, geology, and hydrogeology.

2.1 Location and Zoning

The subject property is known as Tax Map Key number 2-4-9-002:057 and is located in the Kamoku District of central Lana'i, Hawai'i, as shown in Figure 1. The property lies at the end of Fifth Street in Lana'i City and has not been assigned any street address. Figure 2 shows the parcel layout on a topographic map of the area.

2.2 Site and Vicinity Characteristics and Topography

The property was previously part of the Castle and Cooke pineapple plantation on Lana'i, and it was in pineapple cultivation from the 1920s until production of pineapples on the island was reduced in the early 1990s and many fields became fallow. The site falls within the field designated 5311 by the plantation. Topography at the site ranges from about 475 to about 490 feet above mean sea level (MSL) in elevation. Maui Electric Company, Inc. maintains a right of way across the property for overhead electrical transmission lines.

Land use around the site includes a housing developing to the immediate east of the property and vacant former pineapple fields surrounding the property on the north, west, and south sides. The property is about 0.5 miles from Lana'i Elementary and High School.

2.3 Physical Description

The property is generally described as two distinct areas: a cleared and graded area that runs behind the houses along Iliahi Street at the eastern border of the property, and a vegetated area that makes up the remainder of the property. The Maui Electric right of way crosses the property through the vegetated portion of the property. The housing development to the east of the property appears to be tied into Lana'i City infrastructure, including sanitary and stormwater sewer systems. There are several dirt roads that were previously used to access pineapple fields and one of these crosses the site at the southern part of the property. Ditches along the dirt road collect runoff water. Rainwater and stormwater runoff for the rest of the property appears to be generally from northeast to southwest. There are no property markers or boundary fences for the site.

2.4 Physiography

The Hawaiian Islands lie at the northern margin of the tropics (21 degrees north latitude), but have a subtropical climate due to cool trade winds. However, small Lana'i island lies in the rain shadow of the larger West Maui Mountains on the island of Maui. Annual rainfall on at the summit of Lana'ihale at 3,370 feet MSL is 30 to 40 inches. Rainfall for Lana'i City is about 30 inches per year.

The property lies in the ahupua'a of Kamoku.

2.5 Site Geology and Hydrogeology

Lana'i is a single extinct volcano with only shield-stage lavas exposed, dated at 1.28 million years old. Near surface soils consist primarily of the weathered remnants of the original basaltic surface. Near surface soils consist of several feet of a deep-red lateritic soil lithosol having a loose, and generally porous, structure. Underlying the surface soil is the subsoil. The subsoil is similar to the surface soil in texture and mineralogy but has larger and more distinct structural units. The subsoil grades with depth to saprolite, which is a highly weathered basalt that retains some textural and structural features of the parent rock, such as vesicles, fractures, and relict minerals. Saprolite is a clay-rich, thoroughly decomposed

rock formed by in-situ weathering of the basalt. Beneath the saprolite lies basalt. In places, the basalt immediately beneath the saprolite exhibits some moderate weathering. This zone of weathered basalt is a transitional zone between highly weathered saprolite and fresh basalt. (Stearns 1939)

The Lana'i groundwater aquifer is the sole source of drinking water and irrigation water for the island. The property is located above this drinking water aquifer. Although groundwater elevations have not been measured at the site, the basal groundwater aquifer is expected to lie at an elevation approximately equal to mean sea level (Visher and Mink 1964), or about 480 feet below ground surface. Perched aquifers, consisting of groundwater in lava structures, may lie closer to the ground surface and may be connected to the deeper basal aquifer.

3. REGULATORY AGENCY RECORDS AND REPORT REVIEW

Terrasano reviewed publicly available federal, state, and local records to assess the potential presence of hazardous substances and petroleum at the site. Federal and state environmental databases were searched to identify operations on the subject property and vicinity properties regulated by the Environmental Protection Agency (EPA) and/or the Hawai'i State Department of Health (HDOH). Section 5 contains a detailed discussion on environmental issues identified during record reviews.

3.1 Federal and State Records

Because a detailed property report was not available from a third party vendor, Terrasano compiled its own report (contained in Appendix B) from the following federal and state databases:

- National Priorities List (NPL) sites
- Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS/NFRAP) sites
- Corrective Action Report for hazardous waste facilities (CORRACTS)
- Hazardous waste treatment, storage, and disposal facilities (TSD)
- Emergency response notification system for spills (ERNS)
- Large quantity and small quantity generators of hazardous waste (LG GEN/SM GEN)
- State landfills and other solid waste sites (SWLF)
- Underground Storage Tank (UST) sites registered with the State of Hawai'i
- Leaking Underground Storage Tank (LUST) sites listed by the State of Hawai'i
- Groundwater contamination maps for the State of Hawaii (HDOH 1998)

Based on information compiled from these sources, Terrasano identified the following registered, permitted, or regulated units identified within one mile of the site that involve management of hazardous substances or petroleum. Regulatory agency files were reviewed to confirm the current status of each unit.

1. Six different sites were investigated by the HDOH for pesticide disposal activities. Preliminary assessments were conducted in 1993 for all six sites, and HDOH was unable to confirm that any of the sites contained hazardous substances or petroleum releases. No further action determinations were made for all six sites by HDOH. A map of the six sites is located in Appendix B, along with a list of pesticides used by Dole Pineapple Company.
2. Six leaking underground storage tanks located at the following addresses:
   - 730 Lanai Avenue – 2 tanks registered to the Dole Lanai Plantation. No cleanup activities have been initiated to date. These tanks appear to be downgradient of the subject property and should not impact groundwater or soil at the site.
   - 750 Lanai Avenue – 2 tanks registered to the Dole Lanai Plantation. No cleanup activities have been initiated to date. These tanks appear to be downgradient of the subject property and should not impact groundwater or soil at the site.
   - 423 Ninth Avenue – One tank registered to the Lanai Central Office that has completed cleanup.

- 850 Fraser Avenue – One tank registered to Oshiro Enterprises. No cleanup activities have been initiated to date. This tank appears to be downgradient of the subject property and should not impact groundwater or soil at the site.

3. Five small quantity hazardous waste generators, none of which are located within one-half mile of the site, including:
   1. Lana'i Company
   2. Maui Electric Company Lanai Electric Plant
   3. Castle and Cooke Foods Lanai Plantation
   4. Lanai City Service Station
   5. Lanai Oil Company Division of Maui Oil Company
4. Two facilities regulated under the Clean Air Act:
   2. Maui Electric Company Lanai Electric Plant
   3. Lanai Oil Company Division of Maui Oil Company

3.2 Local Records

Hawai'i Real Property Assessment division records were reviewed to compile an ownership and lease history. There have been structures constructed on the site. Historic Sanborn Fire Insurance Company Maps and aerial photographs were searched for and reviewed when possible to research historic uses of the property.

3.2.1 Title and Lease Records

A chain-of-title was reviewed to identify previous owners and lessors.

6. The parcel was formed in 1999 from a portion of parcel 2-4-9-14:001, which had been recorded since 1940 to the Dole Pineapple Company. This portion, Lot 1157, was redesignated parcel 2-4-9-002:057 in September 1998. The property was owned by the Lanai Company Inc., a successor to the Dole Pineapple Company.
7. In October of 1999, a warranty deed was recorded for the property, with ownership split between the Department of Hawaiian Homelands (28.068 acres) and Castle and Cooke Inc. (21.932 acres).
8. Two easements were recorded for the property. One easement is to Maui Electric Company, recorded in 1996. The second easement is to the County of Maui, recorded in January of 1999, for drainage of rainwater runoff.

3.2.2 Historic Maps

A search for historic maps did not yield any of significance for the area. Sanborn Fire Insurance maps are not available as the area was not developed. Maps produced through the 1980s show the site to be agricultural in use.

3.2.3 Aerial Photographs

Aerial photographs from 1964 and 1982 were examined to identify land uses and activities that could potentially impact the environment at the site. These photographs were consistent with other site histories and showed pineapple fields consistently throughout available coverage.

3.3 Site History

Available records indicate that pineapple was grown at the site, which makes up part of Field 5311, from the 1920s to the late 1980s or early 1990s. When pineapple production was reduced on the island, Field 5311 was one of the first to be discontinued for pineapple cultivation. It was reportedly used for placement of excess soil and fill material during the construction of the Lanai Lodge and subdivision adjacent to the site.

Prior to the Dole Pineapple Company's acquisition of Lana'i, the island was primarily used as ranch land. Prior to that, the island native Hawaiian residents farmed portions of the island. State land records do not provide specific information about the property's use prior to 1920.

4. SITE RECONNAISSANCE AND INTERVIEWS

4.1 Site Reconnaissance

Ms. Marty Walters visited the site on November 16, 2000. The parcel and lot boundaries were examined and soil samples were collected from two different locations at the site.

Access to the site was gained at the end of Fifth Street, which travels west off Fraser Avenue and dead ends at the southeast corner of the property. There are no boundary lines or fences. A dirt road continues past the end of Fifth Street and curves north across the southern portion of the property. Electrical transmission lines run from south to north across the property. Several subsurface vaults are located along the transmission lines. According to MECO maintenance manager Kerry Nishida, these vaults contain transformers. Since the transformers were installed after 1996 when the electrical lines were placed, they do not contain polychlorinated biphenyls (PCB).

At the time of the site visit, the cleared and graded portion of the site contained a number of cars and other vehicles in various stages of being dismantled. It appears that several residents along Iliahi Street are using this area as extensions to their backyards and/or businesses. Near the entrance to the property along Fifth Street is an area that has apparently been used as a dumpsite by local residents. A sign reminds passersby that solid waste must not be dumped there and that waste must be taken to the county landfill (similar signs were observed at other locations along the western border of Lana'i City. A small amount of solid waste was observed in this area, including building materials, paint cans, and automotive parts. One automotive battery was observed. One soil sample was collected from this location.

The remainder of the site indicated that topsoil had been disturbed, moved, and turned throughout the property. In some areas, solid waste had been mixed with soil and turned or moved. Solid waste observed included engine parts, bottles, cans, other automotive parts, cars, clothing, and general household debris. Most of the solid waste appeared to have been placed some time ago and vegetation has grown over the disturbed soil and solid waste.

Appendix A contains photos from the site reconnaissance.

4.2 Interviews

Telephone interviews were conducted with Mr. Kerry Nishida, Maintenance and Facilities Supervisor for Maui Electric Company, and Mr. Ronald Woolsey, community resident, and Mr. Vince Bagoyo, Vice President for the Lanai Company.

Mr. Kerry Nishida was interviewed by telephone on November 23, 2000. He confirmed that the electrical transmission line that traverses the site was installed in 1996 and that any transformers placed along the line do not contain PCBs.

Mr. Ronald Woolsey was interviewed by telephone on November 27, 2000. He believes that the property has been used as a dumpsite by local residents for nearly 10 years. The adjacent subdivision, Olopua Woods, was constructed in the early 1990s, and Mr. Woolsey believes that when we worked on that construction topsoil was removed and placed on the subject property.

Mr. Vince Bagoyo stated that solid waste disposal is a difficult problem throughout the island due to the fees charged for waste disposal at the Maui County landfill on the island. He does not know when Field 5311 was last planted for pineapple, but Dole stopped pineapple cultivation in large scale at the island in 1993. Mr. Bagoyo was interviewed on December 12, 2000.

5. PESTICIDE RESIDUES IN SOIL

Because this property is proposed for conversion from agricultural use to residential development, Terrasano was requested to evaluate potential impacts from the use of pesticides at the site. The information presented in this section is limited to those pesticides used historically for pineapple cultivation. The analysis presented in this section focuses only on those pesticides that are considered long-lasting in the environment or have been previously banned from use by EPA.

5.1 Identifying Pesticides of Concern

According to the University of Hawaii College of Tropical Agriculture and Dole Pineapple Company's records, 18 pesticides were used in pineapple cultivation. These 18 compounds are presented in Table 5-1. The major sources used to compile this information included the preliminary assessment study conducted by the Hawaii Department of Health (1992) and the Pesticide Information Profiles compiled by the Extension Toxicology Network, revised in June 1996. Table 5-1 also incorporates health-based screening levels for compounds, where the EPA has established screening levels as a preliminary remediation goal under its Superfund program (EPA 1999). These screening levels are conservative, health risk based levels that were developed for a residential land use scenario.

Based on the following factors, the list of pesticides was narrowed to generate a list of pesticides of concern.

- Persistence in the environment or time required to break down on fields
- Potential threat to human health through direct contact

Based on this analysis, the following pesticides were identified for inclusion in sampling and laboratory analysis of soils at the property:

Chlordane
DDT (and its breakdown products, DDD and DDE)
Heptachlor
Lindane

In addition to these pesticides, one sample, collected from the area used for dumping solid waste, was analyzed for heavy metals regulated under the Resource Conservation and Recovery Act, the federal law that governs hazardous waste management. In particular, the sample was collected to determine if heavy metals from automotive wastes, including car batteries, used oil, and other components, may be present in near-surface soils.

Table 5-1. Summary of Pesticides Used in Pineapple Cultivation on Lana'i Island

Compound	Pounds Active Ingredient Used	Years of Use	EPA Health Screening Level[1] (mg/kg)	Half-life in Soil (days)	Comments
Ametryn	2-3 pounds per acre	Unknown	550	70 to 250 days	Commonly used in Hawai'i. Slightly toxic to humans, moderately irritating to eyes, skin, respiratory tract. Carcinogenicity not determined.
Benomyl (Benalate)	2.5 pounds per 100 gallons	Unknown	3100	3-6 months	Low acute toxicity but classified as possible human carcinogen. Residues don't tend to accumulate.
Bromacil (Hyvar-X)	2-3 pounds per acre	Unknown	None established	60 days	Potential carcinogen at high doses; nearly non-toxic in solid form.
Captafol (Difolatan)	560 pounds used in 1983	Until 1983	57	3 to 8 days	No longer sold in U.S. due to concerns about carcinogenicity for applicators.
Chlordane	180 gallons used in 1985	Unknown	1.6	4 years	EPA cancelled use in 1988 due to concerns about cancer. Persistent in soils.
Chloropicrin	Unknown	Started in mid 40s	None established	8 hours to 5 days	High acute toxicity but not a carcinogen. Currently undergoing registration with EPA.
DPCP (dibromochloropropane)	40-70 gallons per acre	1959 to 1982	0.45	180	Very volatile and unlikely to remain in soil at one foot depth. Use discontinued due to groundwater concerns.
DDT (dichlorodiphenyltrichloroethane)	Unknown	Early 1950s to late 1960s	1.7	2 to 15 years	Banned in U.S. in 1972. Long-term chronic effects, classified as a carcinogen. Highly persistent in soils. Breakdown products are DDD and DDE.
Diazinon	Unknown	Unknown	55	2 to 4 weeks	Slightly to moderately toxic. Not a carcinogen.
1,3-dichloropropene (Telone II)	Late 1940s to 1982	50-60 gallons per acre	0.082	10 days	Moderately toxic, potential human carcinogen. Breaks down relatively quickly in soils.
Diuron	2-3 pounds per acre	Unknown	120	1 to 12 months	In Hawai'i used as spot treatment only. Slightly toxic to mammals but can cause eye and throat irritation. Not a carcinogen.
EDB (ethylene dibromide)	12 gallons per acre	1982 to 1983	0.0069	100 days	Use suspended by EPA due to groundwater concerns. Does not persist in near-surface soils. Potential carcinogen; high acute toxicity.
Fenamiphos (Nemacur)	1985 - 4500 pounds used	1982 to present	15	4 days	High acute toxicity but not a carcinogen. Breaks down easily in soils.
Fosetyl-al (Aliette)	2.5 pounds per 100 gallons	Unknown	100,000	0.1 days	Not classified as a carcinogen. Breaks down quickly in soils.
Heptachlor	2 pounds per acre	Early 1960s to 1978	0.11	6 to 10 months	Banned in 1988 with use phased out starting in 1978. Easily absorbed by humans; moderately to highly toxic. Persistent in soils.
Lindane	11 pounds per acre	At least 1969 to 1983	0.44	15 months	Use cancelled by EPA due to concerns about carcinogenicity. Highly persistent in soils.
Hexazinone (Velpar)	200 pounds per year	Unknown	2000	90 days	Slightly toxic, not classified as a human carcinogen.
Paraquat	Minimal use	Unknown	270	1-2 years	Highly toxic to animals and humans. Classified as possible human carcinogen. Breaks down readily in sunlight, ultraviolet light, and with soil microorganisms.

1. Screening Levels from U.S. EPA Preliminary Remediation Goals for a residential land use scenario (1999).

5.2 Sampling Procedures

During the site reconnaissance, two locations were selected for soil sampling. These locations are shown in Figure 3. One location was selected near the historical solid waste dump area and one location was selected in an area within the historical Field 5311. Approximately 8 ounces of soil were collected from a depth of one foot at each sample location. This depth was selected because it represents the greatest potential for exposure to future residents or future construction workers involved in building homes.

Prior to collecting each sample, all sample tools were decontaminated using the following process:

- Liquinox soap solution and scrub brushes were used to remove gross contamination.
- The sample tools were rinsed in deionized water.
- The sample tools were sprayed with isopropyl alcohol.
- A final rinse with deionized water was performed.

Nitrile gloves were worn by the sampler to prevent cross contamination between samples and contamination from outside the sample area.

After the soil samples were collected, sample jars were placed into a cooler and chilled to 4□ Centigrade. A chain of custody document was completed for the samples and accompanied the samples to the local laboratory to ensure that the samples were handled correctly and outside sources of contamination were not introduced.

Quality assurance samples were not collected for this sample effort due to the small number of samples collected.

5.3 Laboratory Analysis

Samples were shipped to TEG Pacific laboratory in Honolulu, Hawaii. EPA Test Method 8081A for Organochlorine Pesticides and Test Methods 6010 and 7471 for heavy metals. Table 5-2 summarizes the results of the testing. Laboratory analysis results are located in Appendix C. A comparison was made of the sample results to the U.S. EPA's Region 9 Preliminary Remediation Goals (PRG) (1999). The PRGs are conservative screening criteria that provide decision makers with a tool to determine whether contaminants at a site may require additional evaluation or investigation. Among the pesticides tested for in the two soil samples, only DDT and its breakdown product, DDE, were detected. The detected levels were well below the PRG screening levels. Among the heavy metals tested for sample B011003001, Cadmium and Chromium exceeded the EPA PRG screening levels.

These results indicate that, for the two samples collected at a one-foot depth below ground surface, residual pesticides from pineapple cultivation do not appear to present a human health risk for future residents or construction workers.

The heavy metal results indicate that cadmium and chromium, contaminants associated with used oil, are present above conservative screening levels at a depth of one foot where the sample was collected. This sample location was selected because it appeared to be a place where current and historical dumping has occurred. This finding is consistent with observations of solid waste disposal activity throughout the site, with a variety of automotive related materials being disposed. These contaminants are not highly mobile and are likely contained within the soil immediately surrounding where used oil, batteries, and other automotive-related wastes were dumped.

Table 5-2. Summary of Laboratory Results for Soil Sampling

Compound	Sample Results – Sample Number B011003001 (mg/kg)	Sample Result – Sample Number B011003002 (mg/kg)	Region 9 Residential PRG in Soil (mg/kg)
Chlordane	Not detected	Not detected	1.6
DDT (dichlorodiphenyltrichloroethane)	0.011	0.020	1.7
DDD	Not detected	Not detected	2.4
DDE	0.010	0.018	1.7
Heptachlor	Not detected	Not detected	0.11
Lindane	Not detected	Not detected	0.44
Arsenic	15	Not analyzed	22
Barium	130	Not analyzed	5400
Cadmium	16	Not analyzed	9.0
Chromium	520	Not analyzed	210
Lead	12	Not analyzed	400
Mercury	0.15	Not analyzed	23
Selenium	Not detected	Not analyzed	390
Silver	Not detected	Not analyzed	390

mg/kg – milligrams per kilogram
PRG – preliminary remediation goal

6. IDENTIFICATION OF ENVIRONMENTAL CONCERNS

Based on the review of regulatory and historical records, previous environmental investigation reports, and the site reconnaissance, Terrasano identified areas of concern where previous activities or operations may have caused impacts to the environment from hazardous substances or petroleum. This section discusses each area in detail for the site and adjacent areas that may impact the site.

6.1 Underground Storage Tanks

There were no USTs observed at the site or activities that are commonly associated with USTs. There are no registered USTs within one-quarter mile of the site. Leaking USTs registered with HDOH appear to be hydraulically downgradient from the site with respect to groundwater, and are unlikely to affect groundwater quality at the site.

6.2 Polychlorinated Biphenyls

Polychlorinated biphenyls, or PCBs, are organic chemicals that are thought to cause health concerns and are long lasting in the environment. PCBs are commonly associated with transformers that were manufactured before 1979, when they were banned under the federal Toxic Substances Control Act. Transformers in several vaults located beneath the ground along the electrical transmission line that traverses the site were installed in 1996 and do not contain PCBs.

6.3 Asbestos and Lead-based Paint

There are no structures on the property or on the immediately surrounding parcels. Asbestos and lead paint are typically associated with structures built before the late 1970s, when EPA banned these substances. There is little risk for these substances to be present at the parcel from structures. However, some lead-based paint and asbestos materials may have been disposed at the site through dumping of solid waste, particularly automotive materials.

6.4 Fuel Pipelines and Above Ground Storage Tanks

No fuel pipelines or above ground storage tanks were identified at the property or within one-quarter mile of the site.

6.5 Hazardous Materials

Hazardous materials observed at the site included one automotive battery that appeared to the abandoned with other automotive wastes. Empty containers of ethylene glycol (automotive coolant) were also observed. Several internal combustion engines were also observed that might contain used oil. Presumably, small quantities of hazardous materials were disposed throughout the site along with the solid waste and automotive components that were dumped there.

6.6 Wastewater

Other than incidental surface water runoff, there appears to be no activity on site that produces wastewater. Surface water runoff that does not infiltrate into surface soils is likely to flow to the south and west of the property.

6.7 Groundwater

The groundwater system of Lana'i is the sole source of the island's drinking water supply. The drinking water system for the island is privately operated by the Lana'i Company. According to the HDOH report on contaminating drinking water wells (HDOH 1998), there

have been no reports of contaminated wells for the island of Lana'i. A map showing wells on the island is located in Appendix B.

6.8 Pesticides

As discussed in Section 5, a range of pesticides (including herbicides, fungicides, and insecticides) has been used at the site to control pests during pineapple cultivation between 1920 and the late 1980s. Of these chemicals, only those that are long lasting in the environment and pose significant human health risk are of concern for future residential development of the property. Testing of two soil samples from the site indicate that pesticides that have potential long-term impacts are not present or are present in very low concentrations in site soils that are part of present or former agricultural fields. This indicates that former land use at the site – agricultural cultivation – has not left residual levels of pesticides that pose excess risk to the health of future residents.

7. CONCLUSIONS AND RECOMMENDATIONS

The conclusions presented below are based on the site reconnaissance, interviews with site personnel, historical review, and records review conducted during this Phase 1 environmental assessment.

The site was used for about 70 years for pineapple cultivation. Two samples of soil collected at the site indicate that pesticide residues in near-surface soils are below U.S. EPA screening levels. Since the late 1980s or early 1990s the property has been used as open space and for some illegal solid waste dumping. There are many signs of historical and current dumping activity at the property. In addition, the soil appears to have been disturbed through grading activities. There are no other ongoing or former operations at the site that have involved the use of hazardous substances. Activities at neighboring properties do not appear to be affecting the site.

Contaminants have not been reported in the groundwater beneath the site, which serves as the sole source of drinking water for the island.

The level of environmental risk for future residents at the site is a function of the level of hazardous substances disposed with solid waste and automotive components at the site. However, the overall risk of significant impacts from hazardous substances at the site is low due to the following factors:

- The population of the island has remained between 2500 and 3000 for the last 20 years, and the volume of hazardous materials that are part of normal household waste will be limited due to the small population on the island.
- There are very few industrial activities on the island, since the major activities have been agriculture and, more recently, tourism. Hazardous wastes associated with industrial activities are unlikely to have been disposed at the property.

The following recommendations were developed to address potential hazardous substance releases at the site:

1. During grading and site development, solid waste materials should be removed and properly disposed of according to County of Maui solid waste disposal requirements. Soil that has been visibly impacted by petroleum or hazardous substances should be removed and disposed as well.
2. During grading activities, if significant amounts of hazardous substances are identified (for example, multiple containers or units of automotive batteries, used oil, ethylene glycol, paint, solvents, pesticides, wood treatment chemicals or large containers or drums of unknown materials), these materials should be segregated for proper disposal. Visibly impacted soil should also be removed and segregated from uncontaminated material. Soil samples from the area should be collected and analyzed to determine the extent of impacts and potential risks to future residents.
3. A hazardous substance release report may be required if the amount of material spilled is greater than the regulatory reportable quantity. Depending on the type of material and amount spilled, this report must be made immediately by telephone to the Coast Guard's National Response Center, the Hawaii Department of Health, and the Maui County Civil Defense. More information is available on reporting requirements from the Hawaii Department of Health's Hazard Evaluation and Emergency Response Office.

8. REFERENCES

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State of Hawaii Department of Health (HDOH). 1998. Groundwater Contamination Maps for the State of Hawaii.

Stearns, H.R. and Vaksvik, K.N. 1935. Geology and Ground-Water Resources of the Island of Lana'i, Hawai'i. Division of Hydrography, Territory of Hawai'i, Bulletin 3.

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United States Environmental Protection Agency (U.S. EPA). 1999. Region 9 Preliminary Remediation Goals. October 1.

9. SIGNATURE AND QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONAL

This Phase 1 assessment was completed by Martha M. Walters, principal for Terrasano LLC. A resume for Ms. Walters is included in Appendix D of this report. Questions and comments on the report may be directed to Ms. Walters at the following address:

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Honolulu, HI 96817

Phone: 808-595-7473
Fax: 808-989-0561

Email: marty_walters@terrasano.com

Signature: Martha M. Walters Date: December 11, 2000

FIGURES

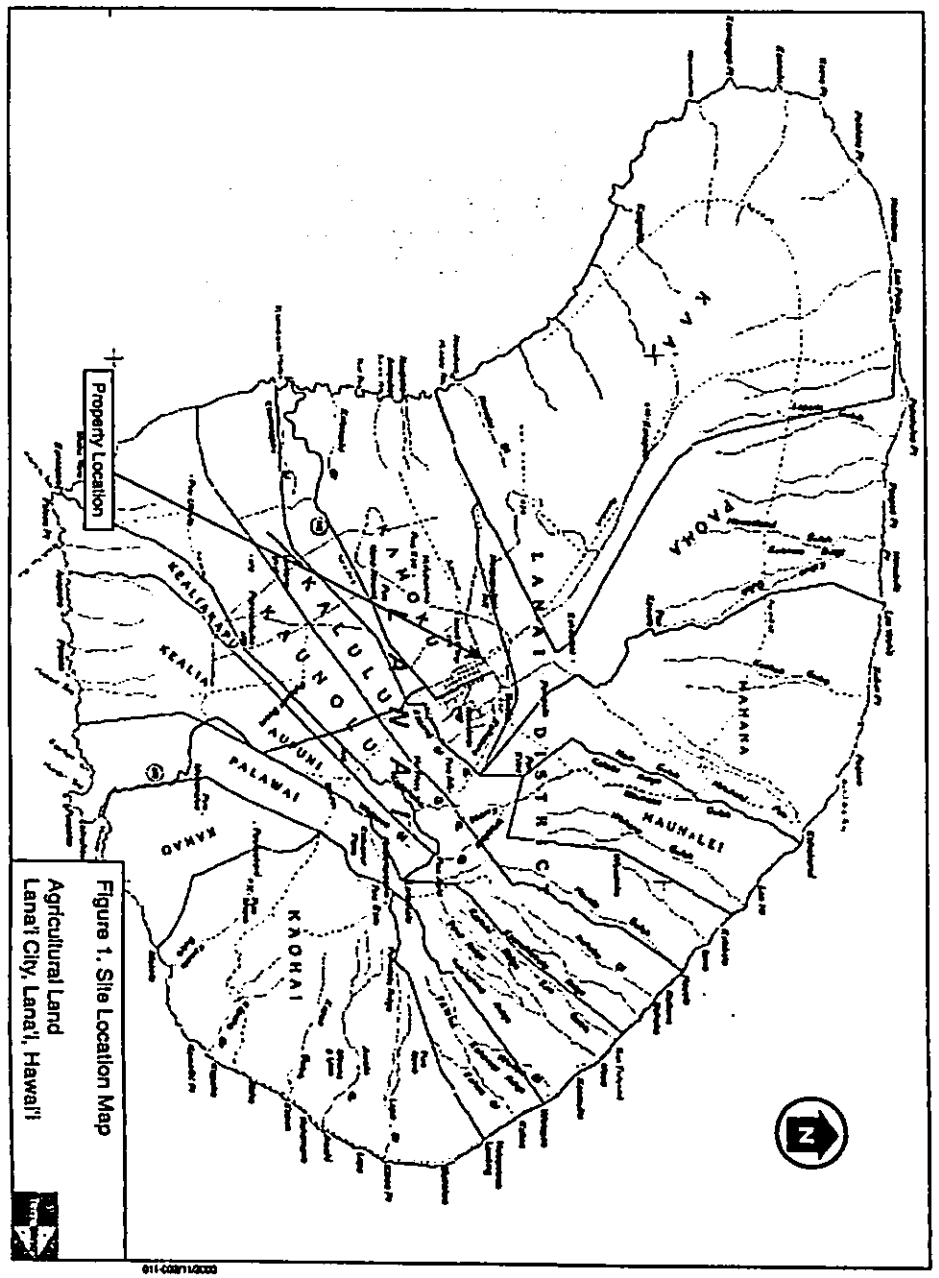
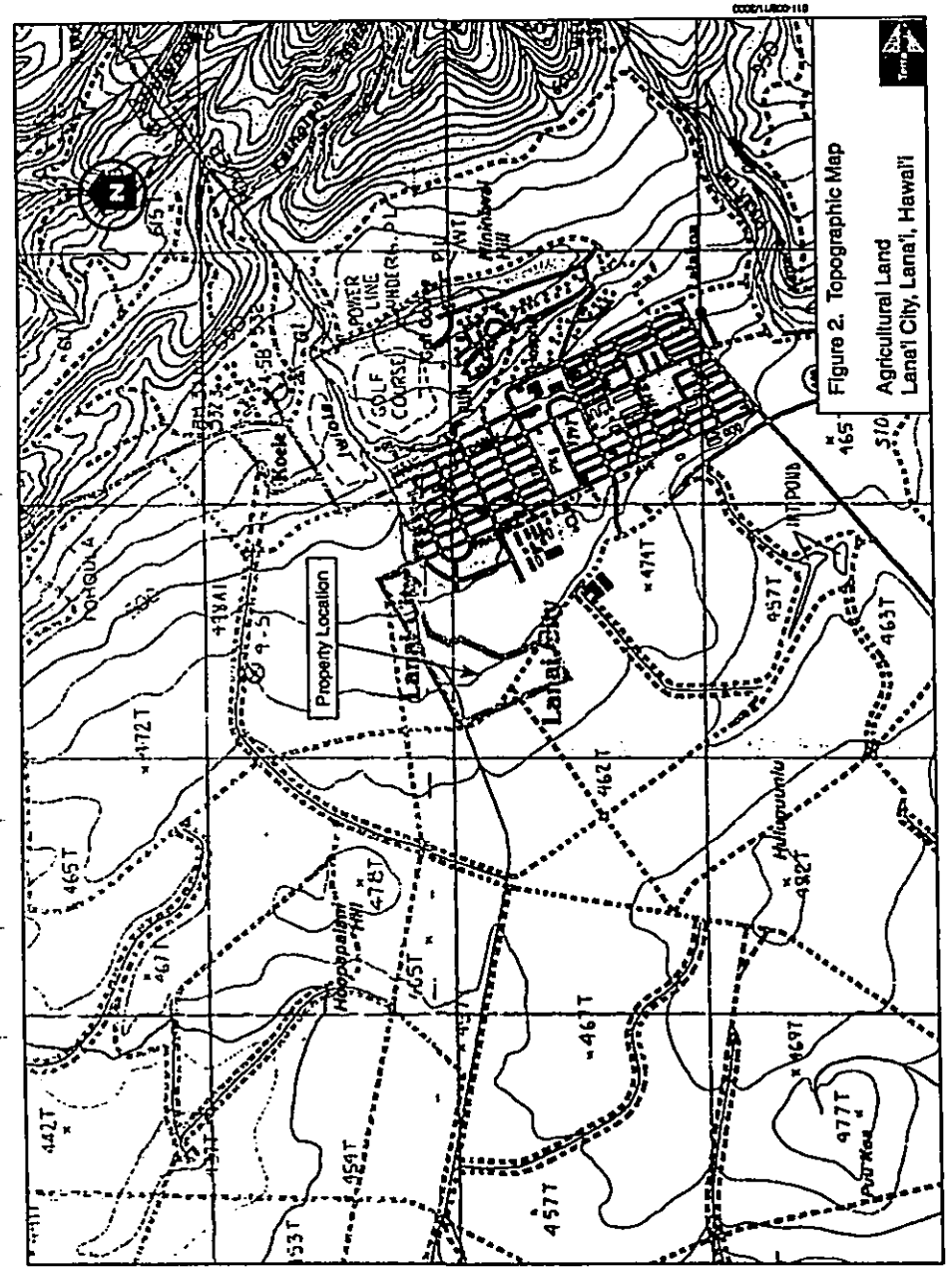
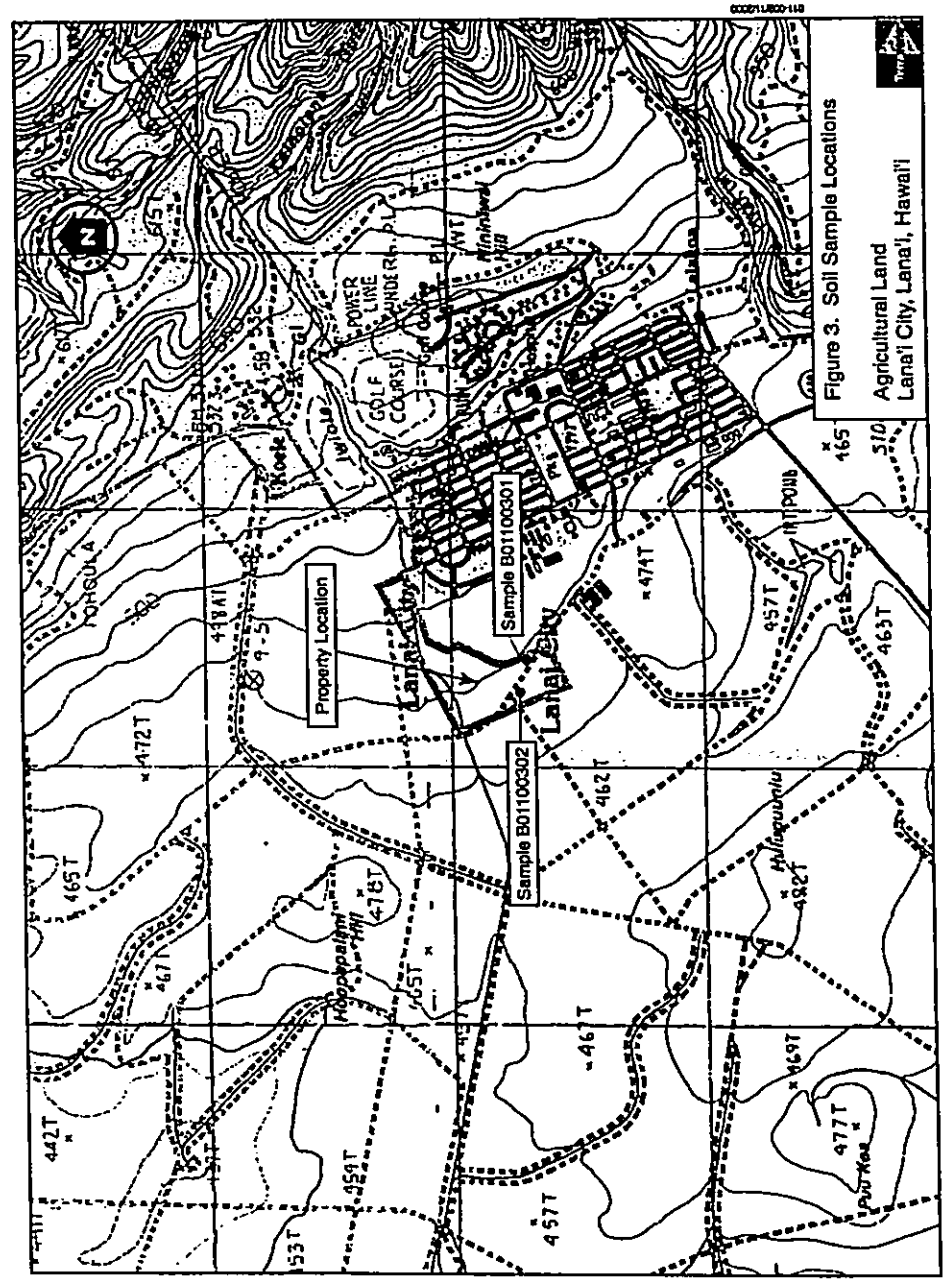
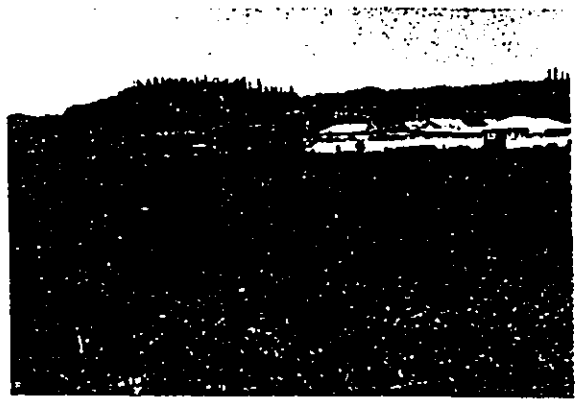


Figure 1. Site Location Map
Agricultural Land
Lanai City, Lanai, Hawai'i





APPENDIX A
Site Photographs

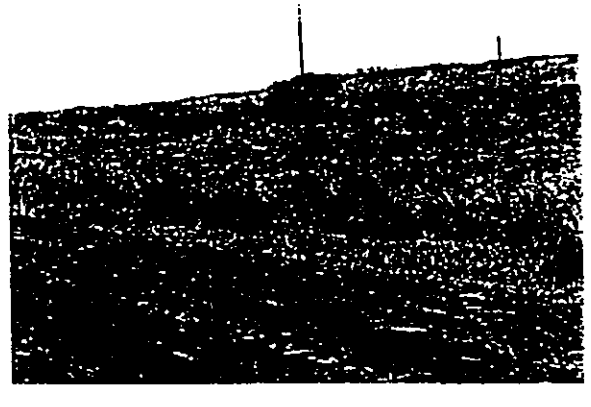


1

A view of the property's eastern boundary, which includes a cleared and graded area bordering homes along Ilihi Street.

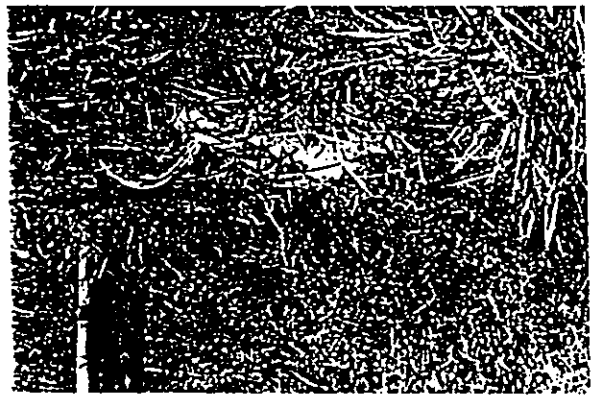
2

The southern boundary of the property, looking west from the end of Fifth Street.

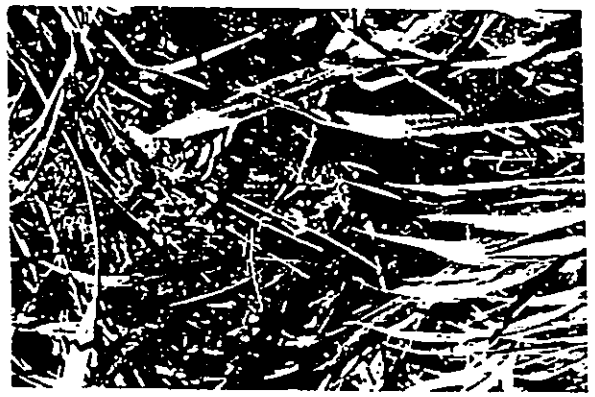


3

View of property from south to north, with electrical transmission lines that traverse the site.



6 This underground chamber at the rural south is located under the chemical transmission line and likely contains a transformer. It is located at the south end of the property.



9 Dumping of solid waste mixed with topsoil

5 At the end of Fifth Street, this sign reminds passersby that waste should not be dumped at the property. In fact, several junked cars

4 The southern portion of the property, looking from east to west

8 Grading activities combined with solid waste disposal at the site have resulted in a mixture of disturbed earth with solid waste, mostly composed of automotive parts, building supplies, and paper.

7 Automotive components, such as this engine block, are dispersed throughout the site. Evidence suggests that older solid disposal at the property has been limited and partially graded.

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11 *Some underwater dismantling activity at the property appears to be an extension of work being done at adjacent homes.*

10 *Junked cars and automotive components, including one lead-acid battery, were present at the westbound corner of the property.*

APPENDIX B
Federal and State Regulatory
Agency Information

Underground Storage Tanks Registered on Lanai, Hawaii

Facility ID	Facility Name	Location			Tank Owner Information				Tank ID	Status	Capacity	Substance	Date Installed	Date Closed
9-400397	LANAI CITY SERVICE, INC	1036 LANAI AVE / P.O. BOX L	Lanai City	HI	96763 DOLE FOOD COMPANY, INC	P.O. BOX 2960	Honolulu	HI	96882 R-2	Out of Use Permanently	2100	Gasoline	11 Apr 84	30 Oct 96
9-400397	LANAI CITY SERVICE, INC	1036 LANAI AVE / P.O. BOX L	Lanai City	HI	96763 DOLE FOOD COMPANY, INC	P.O. BOX 2960	Honolulu	HI	96882 1	Out of Use Currently, In Use Permanently	12000	Gasoline	31-Dec-96	
9-400397	LANAI CITY SERVICE, INC	1036 LANAI AVE / P.O. BOX L	Lanai City	HI	96763 DOLE FOOD COMPANY, INC	P.O. BOX 2960	Honolulu	HI	96882 R-3	Out of Use Permanently	2000	Gasoline	11-Apr-84	30-Oct-96
9-400397	LANAI CITY SERVICE, INC	1036 LANAI AVE / P.O. BOX L	Lanai City	HI	96763 DOLE FOOD COMPANY, INC	P.O. BOX 2960	Honolulu	HI	96882 R-1	Out of Use Permanently	1000	Gasoline	11-Apr-84	30 Oct-96
9-400557	LANAI CENTRAL OFFICE	423 NINTH ST	Lanai City	HI	96763 GTE HAWAIIAN TELEPHONE CO.,	1177 BISHOP ST	Honolulu	HI	96813 R-1	Out of Use Permanently	285	Diesel	9 May 87	30 Mar 00
9-400557	LANAI CENTRAL OFFICE	423 NINTH ST	Lanai City	HI	96763 GTE HAWAIIAN TELEPHONE CO.,	1177 BISHOP ST	Honolulu	HI	96813 2	Use Permanently	500	Diesel	10-Jun-00	
9-400557	LANAI CENTRAL OFFICE	423 NINTH ST	Lanai City	HI	96763 GTE HAWAIIAN TELEPHONE CO.,	1177 BISHOP ST.	Honolulu	HI	96813 1	Out of Use Permanently	125	Diesel	2 Jun 87	30 Mar 00
9-400773	DOLE LANAI PLANTATION	730 LANAI AVE / (POWER PLANT)	Lanai City	HI	96763 DOLE PACKAGED FOODS CO	601 DILLINGHAM BLVD.	Honolulu	HI	96817 R-L1	Out of Use Permanently	25000	Diesel	9 May 88	
9-400773	DOLE LANAI PLANTATION	730 LANAI AVE / (POWER PLANT)	Lanai City	HI	96763 DOLE PACKAGED FOODS CO	601 DILLINGHAM BLVD	Honolulu	HI	96817 L6	Out of Use Permanently	5000	Diesel	9 May 88	
9-401388	OSHIRO ENTREPRISES, INC.	850 FRASER AVE	Lanai City	HI	96763 CASTLE & COOKE, INC	P.O. BOX L	Lanai City	HI	96763 R-1	Out of Use Permanently	2000	Gasoline	2-Jun-84	29-Jun-97
9-401388	OSHIRO ENTREPRISES, INC.	850 FRASER AVE	Lanai City	HI	96763 CASTLE & COOKE, INC	P.O. BOX L	Lanai City	HI	96763 R-2	Out of Use Currently, In Use Permanently	2000	Gasoline	2-Jun-84	29-Jun-97
9-401879	LALAROA II SUBDIVISION	1540 E EHOOKA PL	Lanai City	HI	96763 LANAI COMPANY, INC.	P.O. BOX L	Lanai City	HI	96763 1	Use Permanently	500	Diesel	1-Apr-92	
9-402422	DOLE LANAI PLANTATION	730 LANAI AVE (KAUMALAPAU HWY FIELD 5520)	Lanai City	HI	96763 DOLE PACKAGED FOODS CO	601 DILLINGHAM BLVD	Honolulu	HI	96817 R-L2	Out of Use Permanently	10300	Diesel	9 May 73	
9-402422	DOLE LANAI PLANTATION	730 LANAI AVE (KAUMALAPAU HWY FIELD 5520)	Lanai City	HI	96763 DOLE PACKAGED FOODS CO	601 DILLINGHAM BLVD.	Honolulu	HI	96817 R-L3	Out of Use Permanently	7950	Gasoline	9 May 73	
9-402422	DOLE LANAI PLANTATION	730 LANAI AVE (KAUMALAPAU HWY FIELD 5520)	Lanai City	HI	96763 DOLE PACKAGED FOODS CO	601 DILLINGHAM BLVD.	Honolulu	HI	96817 R-L4	Out of Use Permanently	11750	Gasoline	9 May 83	
9-402423	DOLE LANAI PLANTATION	LABOR YARD (LANAI AVE-11TH ST)	Lanai City	HI	96763 DOLE PACKAGED FOODS CO	601 DILLINGHAM BLVD	Honolulu	HI	96817 R-L5	Out of Use Permanently		Used Oil	9 May 94	
9-402424	DOLE LANAI PLANTATION	750 LANAI AVE / (EMULSION PLANT - FRASER AVE)	Lanai City	HI	96763 DOLE PACKAGED FOODS CO	601 DILLINGHAM BLVD	Honolulu	HI	96817 R-L7B	Out of Use Permanently	10000	Diesel	9 May 91	
9-402424	DOLE LANAI PLANTATION	750 LANAI AVE / (EMULSION PLANT - FRASER AVE)	Lanai City	HI	96763 DOLE PACKAGED FOODS CO	601 DILLINGHAM BLVD	Honolulu	HI	96817 R-L7A	Out of Use Permanently	10000	Diesel	9 May 91	
9-402425	DOLE LANAI PLANTATION	730 LANAI AVE / (SHOP- LANAI AVE, 9TH ST)	Lanai City	HI	96763 DOLE PACKAGED FOODS CO	601 DILLINGHAM BLVD	Honolulu	HI	96817 R-L8-1	Out of Use Permanently	1000	Diesel	9-May-96	
9-402425	DOLE LANAI PLANTATION	730 LANAI AVE / (SHOP- LANAI AVE, 9TH ST)	Lanai City	HI	96763 DOLE PACKAGED FOODS CO	601 DILLINGHAM BLVD.	Honolulu	HI	96817 R-L8-4	Out of Use Permanently	1000	Not Listed		
9-402425	DOLE LANAI PLANTATION	730 LANAI AVE / (SHOP- LANAI AVE, 9TH ST)	Lanai City	HI	96763 DOLE PACKAGED FOODS CO	601 DILLINGHAM BLVD.	Honolulu	HI	96817 R-L8-2	Out of Use Permanently	1000	Not Listed		
9-402425	DOLE LANAI PLANTATION	730 LANAI AVE / (SHOP- LANAI AVE, 9TH ST)	Lanai City	HI	96763 DOLE PACKAGED FOODS CO	601 DILLINGHAM BLVD.	Honolulu	HI	96817 R-L8-3	Out of Use Permanently	1000	Not Listed		
9-402426	DOLE LANAI PLANTATION	730 LANAI AVE / (DD FARM- FIELD 5303)	Lanai City	HI	96763 DOLE PACKAGED FOODS CO	601 DILLINGHAM BLVD.	Honolulu	HI	96817 R-L9	Out of Use Currently, In Use Permanently	1400	Hazardous Substance	9 May-95	
9-402551	LANI SERVICE STATION	TMK 4-9-06 99	Lanai City	HI	96763 LANI SERVICE STATION	TMK 4-9-06 99	Lanai City	HI	96763 1	Use Currently, In Use		Not Listed		
9-402551	LANI SERVICE STATION	TMK 4-9-06 99	Lanai City	HI	96763 LANI SERVICE STATION	TMK 4-9-06 99	Lanai City	HI	96763 3	Use Currently, In Use		Not Listed		
9-402551	LANI SERVICE STATION	TMK 4 9-06 99	Lanai City	HI	96763 LANI SERVICE STATION	TMK 4-9-06 99	Lanai City	HI	96763 2	Use Permanently		Not Listed		
9-400813	FAA - LANAI	P.O. BOX 757	Lanai City	HI	96763 FAA-HONOLULU AFS	6700 KALANIANAOLE HWY,	Honolulu	HI	96825 R-1	Out of Use Permanently	525	Gasoline	9 May 62	11-Jun-90
9-402551	LANAI AIRPORT	LANAI AIRPORT	Lanai City	HI	96763 DOT - AIRPORTS DIVISION	HONOLULU INTERNATIONAL	Honolulu	HI	96819 R-1	Out of Use	310	Diesel		

Leaking USTs for Lanai Island

LastName	AllFacilityID	AllEventID	LocName	LocStr	Status	StatusDate	Loc City	Loc State	Loc ZIP
Li	9-402422	900129	DOLE LANAI PLANTATION	730 LANAI AVE (KAUMALAPAU HWY FIELD 5520)	Confirmed Release	6/1/95	Lanai City	HI	96763
Manlulit	9-402426	930036	DOLE LANAI PLANTATION	730 LANAI AVE / (DD FARM- FIELD 5303)	Confirmed Release	11/21/96	Lanai City	HI	96763
Li	9-402424	900128	DOLE LANAI PLANTATION	750 LANAI AVE / (EMULSION PLANT - FRASER AVE)	Confirmed Release	12/22/93	Lanai City	HI	96763
Manlulit	9-400773	900013	DOLE LANAI PLANTATION	750 LANAI AVE / (POWER PLANT)	LUST Cleanup Initiated: Petroleum Site Cleanup	9/29/97	Lanai City	HI	96763
Ruiz	9-400557	960052	LANAI CENTRAL OFFICE	423 NINTH ST	Completed Disconfirmed	8/3/00	Lanai City	HI	96763
Manlulit	9-400397	900121	LANAI CITY SERVICE, INC	1036 LANAI AVE	Release Confirmed	1/20/04	Lanai City	HI	96763
Manlulit	9-401388	900130	OSHIRO ENTREPRISES, INC.	850 FRASER AVE	Release	4/5/94	Lanai City	HI	96763

Contaminated Site List for Lanai, Hawaii - HDOH

Unit	File Section	TYPE	ADDRESS	CITY	ZIP	ISST_DATE	ISST_PA	SI	LAST_UPDAT	FED_ID	NOTES	LAT_LONG
Dole Pineapple Pesticide Site Lanai	Central	Private									Dole Pineapple Pesticide Site Lanai - General File - Correspondence, etc	
Dole Pineapple Pesticide-Lanai	Central	Private										
Dole Plantation	Central	Private	Palawai & 5318 Beane South end of Field #5311	Lanai City	96763		No	No	12/01/93	HID000826754		20 50 030 / 156 55 000
Lanai Chemical Mixing Area	Central	Private	Been Lanai		96763	3/28/00	NFA	No	No 12/01/93	HID984488561		
Lanai Company Manele Bay Golf Course Development	Central	Private	P.O. Box L SE of Field #5303/North	Lanai City	96763				11/25/97		Letter fr. Lanai Co., Inc., dated 4/2/93, with lab analysis report attached.	
Lanai DOT Storage Tank Area	Central	Private	end of Field #5417		96763	3/28/00	NFA	No	No 12/01/93	HID984488504		
Lanai Drum Site No. 1	Central	Private	South end of Field #53180		96763	3/28/00	NFA	No	No 12/01/93	HID984488512		
Lanai Drum Site No. 2	Central	Private	South off Mau Rd		96763	3/27/00	NFA	No	No 12/01/93	HID984488520		
Lanai Drum Site No. 3	Central	Private	Northwest of Field #5319		96763	3/28/00	NFA	No	No 04/16/96	HID984488538		
Lanai Dump Site	Central	Private	SE of Field #5311		96763	3/28/00	NFA	No	No 12/01/93	HID984488546		
Lanai Dump Site Palawai Basin	Central	Private	Bounded by Fields No 5429, 5421 & 5413		96763	3/28/00	NFA	No	No 12/01/93	HID984488553		20 47 47 / 156 58 04
Lanai Landfill	Central	County	Lanai Island		96763	4/30/00	NFA	No	No 12/01/93	HID980497242		

EPCRA Reports Lanai Island

Unit	ADDRESS	CITY	ZIP	Suffix	SIC_CODE	D_B_NUMBER	OWNER	OWNER_ADDR	OWNER_CITY	OWNER_STAT	OWNER_ZIPC
Central Services Facility	1233 Fraser Ave	Lanai City	96763		6512	6926978	Lanai Company Inc.	P.O. Box 630	Lanai City	HI	96763
Dole Lanai Plantation	730 Lanai Ave	Lanai	96763		0179	103906996	Dole Food Company Hawaii	1116 Whitmor	Wahiawa	HI	96786
Fleet Maintenance	948 Lanai Ave	Lanai City	96763		7699		Lanai Company Inc.	P.O. Box 630	Lanai City	HI	96763
Fleet Maintenance	948 Lanai Ave	Lanai City	96763		7699		Lanai Company Inc.	P.O. Box 630	Lanai City	HI	96763
Manele Bay Hotel	RR1 Manele Rd	Lanai City	96763		7011	6926978	Lanai Company Inc.	P.O. Box 630	Lanai City	HI	96763
Manele Wastewater Treatment Facility	RR1 Manele Rd	Lanai City	96763		4941		Lanai Water Co. Inc.	P.O. Box 630	Lanai City	HI	96763
Manele Wastewater Treatment Facility	RR1 Manele Rd	Lanai City	96763		4941		Lanai Water Co. Inc.	P.O. Box 630	Lanai City	HI	96763
Lanai Wastewater Reclamation Facility	Lanai City	Lanai City	96763		4952		County of Maui, Dept. of Public W	200 S High St	Wailuku	HI	96793
Lanai Water Co. Inc.	P.O. Box 630310	Lanai City	96763	0310	4941		Lanai Water Co. Inc.	P.O. Box 630	Lanai City	HI	96763
Lanai Water Co. Inc.	P.O. Box 630310	Lanai City	96763	0310	4941		Lanai Water Co. Inc.	P.O. Box 630	Lanai City	HI	96763
Lanai Yard	Kaumalapau Hwy	Lanai	96763		4924	6926978	Citizens Utilities Company, dba: TI	P.O. Box 3000	Honolulu	HI	96802
MECO-Lanai City Generating Station	Ninth St	Lanai City	96763		4911	6927164	Maui Electric Co., Inc.	P.O. Box 398	Kahului	HI	96733
MECO-Lanai City Generating Station	Ninth St	Lanai City	96763		4911	6927164	Maui Electric Co., Inc.	P.O. Box 398	Kahului	HI	96733
MECO-Mai Basin Generating Station	Mai Rd	Lanai City	96763		4911	6927164	Maui Electric Co., Inc.	P.O. Box 398	Kahului	HI	96733
MECO-Mai Basin Generating Station	Mai Rd	Lanai City	96763		4911	6927164	Maui Electric Co., Inc.	P.O. Box 398	Kahului	HI	96733
MECO-Mai Basin Generating Station	Mai Rd	Lanai City	96763		4911	6927164	Maui Electric Co., Inc.	P.O. Box 398	Kahului	HI	96733
Rock and Concrete Crusher	RR1 Kaumalapau Hwy	Lanai City	96763		5032		Lanai Company Inc.	P.O. Box 630	Lanai City	HI	96763

Release Reports for Lanai Island

Date Report	Time Report	CASE_NO	UNIT	ADDRESS	CITY	ZIP	INCIDENT	CAUSE	SUBSTANCES	QUANTITY	MEDIA
		19980413-2	Popoakea Vessel/Barge	3 Miles offshore	Kaumalapau		Vessel tank punctured by tug, gasoline flow to ocean waters		gasoline	420 bbl	Ocean
9/22/97	1/1/04	19930821-1136	Lanai Playhouse Broken Fumigation Tent	7th St&Lanai Ave	Lanai	96763	Report of break in fumigation tent on theater on 4/3/93 at 17:03. Fire department blocked road and evacuated nearby homes. Tent was eventually fixed	Break in Tent	Vikane	Unkn	Air
		19940609	Manele Bay Hotel, Lanai	Hulopoe Bay	Lanai City	96763	Blue/turquoise cap, 4cc found along shore	Unknown	Syringe	1	Ocean
5/27/02	1/1/04	19990526-0847	Lanai Company	At Sporting Clay @ Lodge at Koele	Lanai	96763	Release happened 1 week ago. Fuel spill from an above ground storage tank. System had a faulty fitting. Contractor operated the tank (Hawaiian Construction).		Diesel Fuel	100 Gal	
10/29/02	1/1/04	19991029-1254	Fuel spill, Manele Bay	Manele Bay, Lanai	Lanai City	96763	Caller is representing Castle & Cook (property owner). 30 yards from water. Tank dropped on the barge "Auskai", oil	Faulty fitting	Diesel Fuel	More than 25 Gal	Soil
3/19/03	1/1/04	19990316-1255	Barge " Auskai " Removable Tank Rupture	Kaumalapau Harbor Pier	Lanai	96763	between the pier. Approx 20-30 gals of waste oil entered the water	Human error, tank rupture	Black waste oil	20-30 gals	Ocean
11/28/03	1/1/04	19991125-1558	Ship Ran Aground - Lanai		Lanai	96763	Ship ran aground off Lanai. No contamination. Awaiting police & fire to call in info. Possible pollution threat		Unknown		Ocean
8/24/04	1/1/04	20000823-1448	Club Lanai Diesel spill	Halepalaoa Landing	Lanai City	96763	Club Lanai, day resort, site assessment by possible buyer discovered possible release. Generator was used on site for electricity. Threw it is diesel, possible 25 gal. Owner wants to do assessment. Will send letter to		Possible diesel	25 gal ?	Soil

EPA GEOGRAPHIC INFORMATION QUERY SYSTEM (Version 97.1.8)   November 15, 2000

Title : Lanai Agricultural Land
Sub-Title: EPA Site Mapping
Maui, Hawaii.
Location in Lat/Long: 20 49 40.4 156 55 39 (DMS)
US Albers: X= 7542 Y= 414523 (Meters)
Map Scale: Auto Fit to 15 x 11
Notes:
Read Notes on accuracy and extent of all GIS database coverages!!!
Note Version Id on top line as we are continuously upgrading data layers, quality, and calculation methods for this report and associated graphics.
Disclaimer:

This computer representation has been compiled by the Environmental Protection Agency (EPA) from sources which have supplied data or information that has not been verified by the EPA. This data is offered here as a general representation only, and is not to be used for commercial purposes without verification by an independant professional qualified to verify such data or information. The EPA does not guarantee the accuracy, completeness, or timeliness of the information shown, and shall not be liable for any loss or injury resulting from reliance upon the information shown.

*** End of Notes ***

** Human Health Factors/Concerns **

Population Factors Using 1990 Census Data

Approximate Population and Demographic Analysis

Notes:

1) Based on summing Census Tract/Block centroids within selected map area. A portion of actual block may extend beyond distance (overcount), or portions of some blocks may be within distance but centroid is outside (undercount). This technique is simple and achieves good agreement with other methods for all basins and centroid radii at or beyond 2 miles in non-rural areas. Additional tests are planned for method accuracy comparisons.
2) The Hispanic Origin category is defined as an ethnic category, not as a race in the official Census definitions. Hispanic Origin may include counts from any of the Census race categories including White. PL171 Census data included a cross tabulation of origin versus race (Fields P004_0001 to 0006). We used these tabulations for our summaries below. Our definition for Total People of Color is Total Population minus the White Non-Hispanic Origin as tabulated in the PL171 data. These fields are similar to the STF1A P009 class of fields.

Summary for Distance Range of 0 to 1 mile(s).

Processing State Library HI15...
97 Census Block Centroids within selected library/map area.
Will now process statistics for 97 Census Block Centroids...
Total Population = 2426
Household Units = 1007

Population By Origin:		Total	Summary Stats	National Comparison 50 States/D.C.
White	=	242	10.0%	75.6%
Black	=	2	0.1%	11.8%
AmInd/Esk/Ale	=	4	0.2%	0.7%

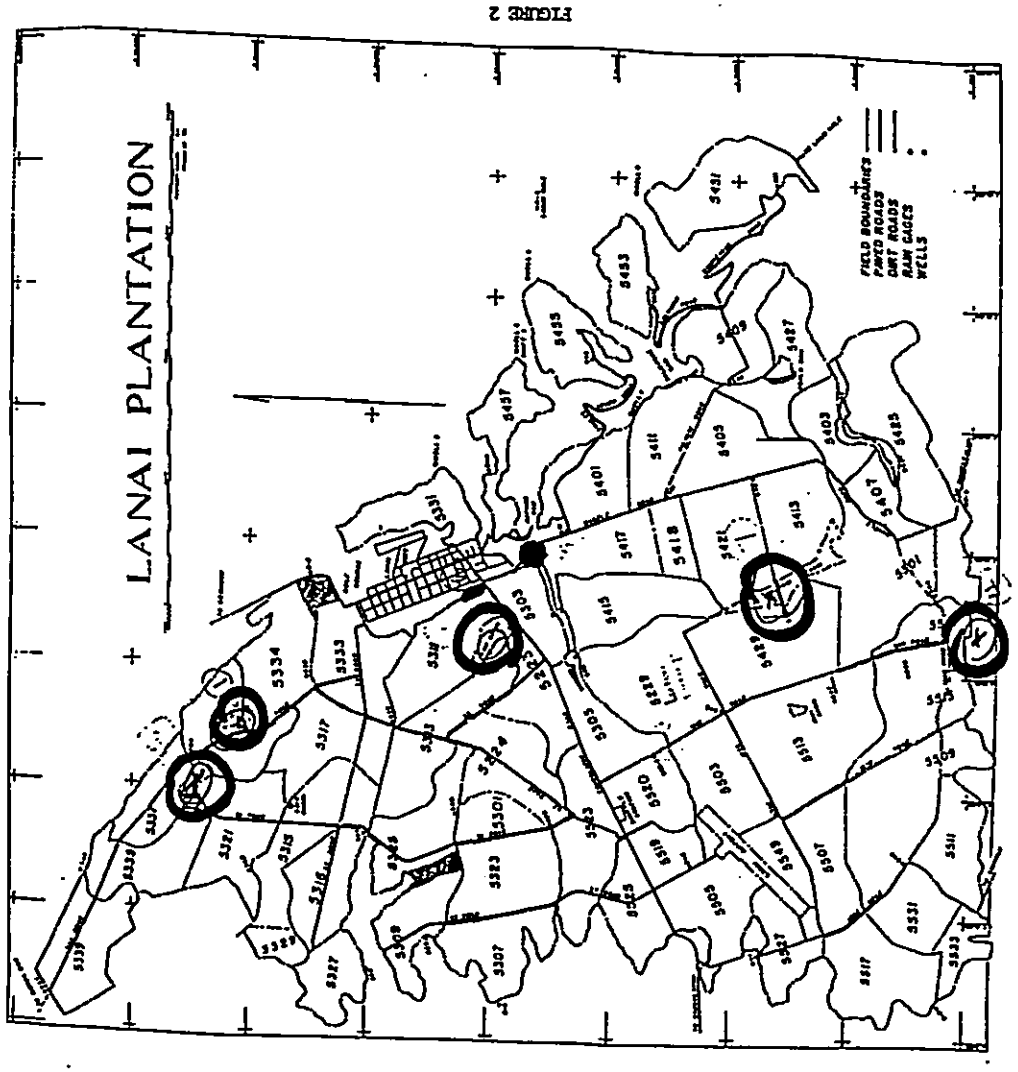
```
        Asian/PacIsnd =    1966      81.0%       2.8%
        Other         =       1       0.0%       0.1%
        Hispanic      =     211       8.7%       9.0%
 Total People of Color=    2184      90.0%      24.4%   See note 2.
 Average Pop Density per sq mi =     772 (Centroids/Distance Radius Area)
Summary for Distance Range of 0 to 5 mile(s).
------------------------------------------------------------------
Processing State Library HI15...
        148 Census Block Centroids within selected library/map area.
Will now process statistics for 148 Census Block Centroids...
      Total Population =    2426
      Household Units  =    1007

        Population                          Summary   National
        By Origin:          Total           Stats   Comparison
        ----------        --------          ------  50 States/D.C.
        White         =        242          10.0%       75.6%
        Black         =          2           0.1%       11.8%
        AmInd/Esk/Ale =          4           0.2%        0.7%
        Asian/PacIsnd =       1966          81.0%        2.8%
        Other         =          1           0.0%        0.1%
        Hispanic      =        211           8.7%        9.0%
 Total People of Color=       2184          90.0%       24.4%   See note 2.
 Average Pop Density per sq mi =      30 (Centroids/Distance Radius Area)
**********************************
**  Regulated Facility Report   **
**********************************
EPA Envirofacts Facility Databases Information
==============================================
Note: 04/10/97 - Using National Envirofacts .EF Data Layer
  Envirofacts:    12 facility record instances within this search request...
        Of these, we are interested in the following Program Facilities:
                  8 RCRIS instances (All - "General" and "Major")
                    (     1 of these are "major" TSD or LQG facilities)
                  1 PCS instances
                  3 AFS/AIRS instances
                  0 CERCLIS instances
                  0 TRIS instances
 Important Notes:
   1. For information about the various EPA Facility Program databases
      and their environmental/regulatory aspects, see the Envirofacts
      WWW home page at http://www.epa.gov/enviro/html/ef_home.html
   2. We have excluded FINDS database record instances from this listing.
   3. The latitude/longitude is from the 1st program instance record only.
      It may not be the best location!
   4. Locational accuracy currently varies greatly for this database as
      EPA is in the process of improving it. Some facilities may still
      be located at zip code centroids or even have wrong lat/longs
      putting a facility in a wrong state!
 Your Specific Requested Options:
   RCRIS Facilities: Selected
   PCS (NPDES) Facilities: Selected
   AIRS/AFS Facilities: Selected
   CERCLA Facilities: Selected
   TRI Facilities: Selected
 Letter in column indicates record instance for:
  r . . . . .  RCRIS Program System database ("General" Facility)
  R . . . . .  RCRIS Program System database ("Major" - TSD or LQG Facility)
  . P . . . .  PCS Program System database
  . . A . . .  AIRS/AFS Program System database
  . . . C . .  CERCLIC (Superfund) Program System database
```



```
  . . . . T .  TRI (Toxics Release Inventory) Program System database
  . . . . . O  Other Program Database
                Facility Name                                          Latitude  Longitude
 Fac UIN        Facility Address                                       (Decimal Degrees)
 -------------- ---------------------------------------------------------------------------
 000008995820   LANAI CO INC                                           20.823121 -156.921673
  r . . . . .     1233 FRASER AVE, LANAI CITY, HI. 96763
 HI0001434588   MAUI ELEC - LANAI                                      20.838323 -156.929947
  r . A . . .     LANAI ELECTRIC PLANT, LANAI CITY, HI. 96763
 HID000626754   CASTLE & COOKE FOODS-LANAI PLANTATION                  20.834167 -156.916667
  r . . . . .     PALAWAI & 5319 BASINS, LANAI CITY, HI. 96763
 HID981424203   DOLE PACKAGED FOODS CO                                 20.828959 -156.921196
  r . . . . .     730 LANAI AVE, LANAI CITY, HI. 96763
 HID982476681   LANAI CITY SERVICE                                     20.824837 -156.919396
  r . . . . .     1036 LANAI AVE, LANAI, HI. 96763
 HID984470153   OSHIRO SERVICE STATION                                 20.826981 -156.923415
  r . . . . .     850 FRASER AVE, LANAI CITY, HI. 96763
 HIT000615351   LANAI OIL CO DIV OF MAUI OIL CO INC                    20.838323 -156.929947
  r P A . . .     KAUMALAPAU HARBOR ROAD, KAUMALAPAU, HI. 96763
 HIT000615369   CHEVRON USA INC KAUNAKAKAI BULK PLANT                  20.838323 -156.929947
  R . . . . .     NIUMALU RD, KAUNAKAKAI, HI. 96763
Envfacts Facility Report completed...
**********************
***  End of Report  ***
**********************
```

FIGURE 2
LAND USE MAP
DOLE PLANTATION - LANAI



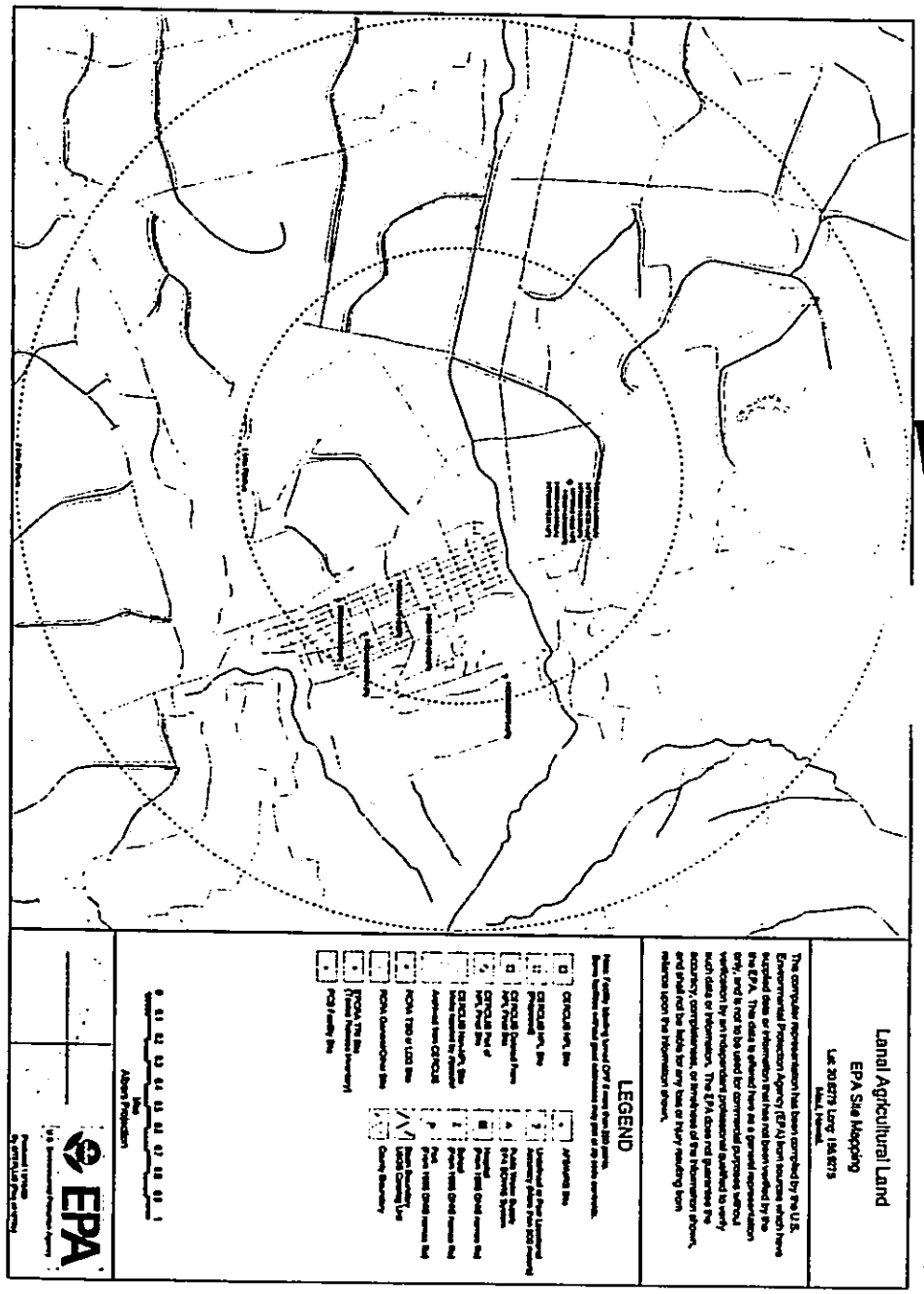


TABLE 1
CHEMICAL INVENTORY

COMPOUND NAME	Chemical Category	Years of Use	Range of Application	Purpose/Comments
Chloropickerin	Fumigant	Mid 40s to ?	unknovn	pre-plant fumigant
Shell DD	Fumigant	Late 1940s to 1982	50/60 gal/acre	pre-plant fumigant (use suspended)
DBCP	Co-Fumigant	1959 to 1982	40/70 gal/acre varied in concentrations	pre-plant fumigant (use suspended)
DDT	Pesticide	early 1950s to late 1960s	unknovn	Ant Control (use suspended)
EDB	Pesticide	1982 to 1983	12 gal/acre	Pre-plant fumigant
Tellone II	Pesticide	1984 to present	34 gal/acre	Pre-plant fumigant
Heptachlor	Insecticide	early 1960s to 1978	2 lbs/acre	Ant control and mealy bugs/applied before forcing (use suspended)
Aliette	Fungicide	unknovn	2.5 lbs/100 gallons	Dipping crovns before they are planted.
Benalate	Fungicide	unknovn	2.5 lbs/100 gallons	Dipping crovns before they are planted.
Nemacur	(Organophos-phate) nematicides	since 1982 (drip irrigated)	use in 1985 vas 4500 lbs.	Post plant production; used to control neuratodes. Used on field bypass basis.
Lindane	Insecticide	At least 1969 to 1983	11 lb/acre	
Roundup	Herbicide	unknovn	use for 1985-180 gallons	Used for fallov period.
Karmex Diuron	Herbicide	unknovn	2-3 lbs/acre	Used prior to boom application
Diazinon	Insecticide	unknovn		Ant control.
Anetryne	Herbicide	unknovn	2-3 lbs/acre	Used prior to boom application.

TABLE 1 (CONTINUED)

COMPOUND NAME	Chemical Category	Years of Use	Range of Application	Purpose/Comments
Hyvar-X (Bromacil)	Herbicide	unknovn	2-3 lbs/acre	Used prior tc boom application.
Paraquat	Herbicide	unknovn	minimal use	Spot veed control.
Velpar	Herbicide	unknovn	200 lbs/year	Used for fallov period.
Difolatan	Fungicide	Till 1983	Use for 1983-560 lbs.	Discontinued because it caused rashes and made employees ill.

adapted from: Ecology and Environment, Inc.

APPENDIX C
Soil Testing
Analytical Results

teg

Terrasano LLC PROJECT #011-003
Lenal Field 8311

TEG Project #D011271045

ORGANOCHLORINE PESTICIDES ANALYSES OF SOILS BY EPA 8081A

SAMPLE DESCRIPTION	Blank	B01100301	B01100301 Dup	B01100302
DATE ANALYZED	11/29/00	11/29/00	11/29/00	11/29/00
Alpha-BHC	nd	nd	nd	nd
Beta-BHC	nd	nd	nd	nd
Gamma-BHC (Lindane)	nd	nd	nd	nd
Delta-BHC	nd	nd	nd	nd
Heptachlor	nd	nd	nd	nd
Aldrin	nd	nd	nd	nd
Heptachlor epoxide	nd	nd	nd	nd
Gamma-Chlordane	nd	nd	nd	nd
Endosulfan I	nd	nd	nd	nd
Alpha-Chlordane	nd	nd	nd	nd
Dieldrin	nd	nd	nd	nd
4,4'-DDE	nd	0.010	0.010	0.018
Endrin	nd	nd	nd	nd
Endosulfan II	nd	nd	nd	nd
4,4'-DDD	nd	nd	nd	nd
Endrin aldehyde	nd	nd	nd	nd
Endosulfan sulfate	nd	nd	nd	nd
4,4'-DDT	nd	0.011	0.010	0.020
Endrin ketone	nd	nd	nd	nd
Methoxychlor	nd	nd	nd	nd
Technical Chlordane*	nd	nd	nd	nd
Toxaphene*	nd	nd	nd	nd
FLAGS				
SURROGATE RECOVERY (%)	101%	107%	107%	105%
DETECTION LIMIT (mg/kg)	0.005	0.005	0.005	0.005

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (TCMX or DCB): 65% - 135%

*Technical Chlordane Detection Limit- 0.1mg/kg
*Toxaphene Detection Limit- 0.25mg/kg

QA/QC Data - EPA 8080 Analyses

	Matrix Spike			Matrix Spike Duplicate				
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	RPD (%)	FLAGS
Alpha-BHC	0.050	0.055	110.0%	0.050	0.049	98.0%	11.5%	
Heptachlor	0.050	0.062	124.0%	0.050	0.050	100.0%	21.4%	
Aldrin	0.050	0.055	110.0%	0.050	0.045	90.0%	20.0%	
P P DDE	0.050	0.050	100.0%	0.050	0.046	92.0%	8.3%	
P P DDD	0.050	0.056	112.0%	0.050	0.050	100.0%	11.3%	
P P DDT	0.050	0.059	118.0%	0.050	0.048	96.0%	20.6%	

CA-DOHS-ELAP CERTIFICATION #1888
ANALYSES PERFORMED BY : U. Baumgartner, Ph.D.
DATA REVIEWED BY: E. Young

SOUND ANALYTICAL SERVICES, INC.

Client Name	TEG Pacific, Inc.
Client ID:	B01100301
Lab ID:	94432-01
Date Received:	11/30/00
Date Prepared:	12/1/00
Date Analyzed:	12/1/00
Dilution Factor	1
% Solids	76.81

Metals by ICP - USEPA Method 6010

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Arsenic	15	2.5	
Barium	130	1.3	
Cadmium	16	1.3	
Chromium	520	2.5	
Lead	12	2.5	
Selenium	ND	13	
Silver	ND	13	

SOUND ANALYTICAL SERVICES, INC.

Client Name	TEG Pacific, Inc.
Client ID:	B01100301
Lab ID:	94432-01
Date Received:	11/30/00
Date Prepared:	12/1/00
Date Analyzed:	12/1/00
Dilution Factor	1
% Solids	76.81

Mercury by CVAA - USEPA Method 7471

Sample results are on a dry weight basis.

Analyte	Result (mg/kg)	PQL	Flags
Mercury	0.15	0.026	

SOUND ANALYTICAL SERVICES, INC.

Lab ID:	Method Blank - S154
Date Received:	-
Date Prepared:	12/1/00
Date Analyzed:	12/1/00
Dilution Factor	1

Metals by ICP - USEPA Method 6010

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Arsenic	ND	2	
Barium	ND	1	
Cadmium	ND	1	
Chromium	ND	2	
Lead	ND	2	
Selenium	ND	10	
Silver	ND	10	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike Report

Client Sample ID:	B01100301
Lab ID:	94432-01
Date Prepared:	12/1/00
Date Analyzed:	12/1/00
QC Batch ID:	S154

Metals by ICP - USEPA Method 6010

Parameter Name	Sample Result (mg/kg)	Spike Amount (mg/kg)	MS Result (mg/kg)	MS % Rec.	Flag
Arsenic	14.6	988	884	88	
Barium	130	988	1020	91	
Cadmium	16	24.7	37.6	87	
Chromium	520	98.8	623	103	
Lead	12	247	216	83	
Selenium	0	988	821	83	
Silver	0	148	153	103	

Duplicate Report

Client Sample ID:	B01100301
Lab ID:	94432-01
Date Prepared:	12/1/00
Date Analyzed:	12/1/00
QC Batch ID:	S154

Metals by ICP - USEPA Method 6010

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Arsenic	15	15	0.0	
Barium	130	110	17.0	
Cadmium	16	15	6.5	
Chromium	520	520	0.0	
Lead	12	12	0.0	
Selenium	0	0	NC	
Silver	0	0	NC	

Lab ID:	Method Blank - S053
Date Received:	-
Date Prepared:	12/1/00
Date Analyzed:	12/1/00
Dilution Factor	1

Mercury by CVAA - USEPA Method 7471

Sample results are on an as received basis.

Analyte	Result (mg/kg)	PQL	Flags
Mercury	ND	0.02	

SOUND ANALYTICAL SERVICES, INC.

Blank Spike/Blank Spike Duplicate Report

Lab ID:	S053
Date Prepared:	12/1/00
Date Analyzed:	12/1/00
QC Batch ID:	S053

Mercury by CVAA - USEPA Method 7471

Compound Name	Blank Result (mg/kg)	Spike Amount (mg/kg)	BS Result (mg/kg)	BS % Rec.	BSD Result (mg/kg)	BSD % Rec.	RPD	Flag
Mercury	0	0.2	0.182	90.9	0.187	93.5	2.8	

SOUND ANALYTICAL SERVICES, INC.

Matrix Spike Report

Client Sample ID:	B01100301
Lab ID:	94432-01
Date Prepared:	12/1/00
Date Analyzed:	12/1/00
QC Batch ID:	S053

Mercury by CVAA - USEPA Method 7471

Parameter Name	Sample Result (mg/kg)	Spike Amount (mg/kg)	MS Result (mg/kg)	MS % Rec.	Flag
Mercury	0.154	0.258	0.331	68	x7

SOUND ANALYTICAL SERVICES, INC.

Duplicate Report

Client Sample ID:	B01100301
Lab ID:	94432-01
Date Prepared:	12/1/00
Date Analyzed:	12/1/00
QC Batch ID:	S053

Mercury by CVAA - USEPA Method 7471

Parameter Name	Sample Result (mg/kg)	Duplicate Result (mg/kg)	RPD %	Flag
Mercury	0.15	0.16	-6.5	

Sound Analytical Services, Inc.
ANALYTICAL & ENVIRONMENTAL CHEMISTS
4813 Pacific Hwy East • Tacoma, WA 98424
(253) 922-2310 • FAX (253) 922-5047
e-mail: info@sasdlab.com

DATA QUALIFIERS AND ABBREVIATIONS

B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).

B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).

C1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be ≤ 40%.

C2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be > 40%. The higher result was reported unless anomalies were noted.

M: GC/MS confirmation was performed. The result derived from the original analysis was reported.

D: The reported result for this analyte was calculated based on a secondary dilution factor.

E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.

J: The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.

MCL: Maximum Contaminant Level

MDL: Method Detection Limit

N: See analytical narrative.

ND: Not Detected

PQL: Practical Quantitation Limit

X1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.

X2: Contaminant does not appear to be "typical" product.

X3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.

X4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.

X4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.

X5: Matrix spike recovery was not determined due to the required dilution.

X6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was re-analyzed with similar results.

X7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.

X7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.

X8: Surrogate recovery was not determined due to the required dilution.

X9: Surrogate recovery outside advisory QC limits due to matrix interference.

TURNAROUND TIME: STANDARD

CHAIN-OF-CUSTODY RECORD

CLIENT: TEG - Pacific
ADDRESS: 1818 Kahai St. Honolulu HI 96819
PHONE: 808-847-0067 FAX: 808-847-0917
CLIENT PROJECT #: PROJECT MANAGER: Uwe Baumgartner

DATE: 11/29/02 PAGE 1 OF 1
TEG PROJECT #: D0112710-45
LOCATION: Lanai Field 5311
COLLECTOR: Mark Walters DATE OF COLLECTION: 11/16

Sample Number	Depth	Time	Sample Type	Container Type	8021B HVOC	8021B BTEX	8021B MtBE	8015 Gasoline	8015 Diesel	8015 Oil	418.1 TRPH	8082 PCB	8100 PAH	Total Lead	Total Cadmium	Total Chromium	[illegible]	6020	Field Notes	Total Number Of Containers	Laboratory Note Number
0111030l			Soil	4oz jar													X			1	1
							LAST ENTRY														

RELINQUISHED BY (Signature): Kaw [signature] DATE/TIME: 11/29 930 RECEIVED BY (Signature): Ashton [signature] DATE/TIME: 11/30/02 :45
RELINQUISHED BY (Signature): DATE/TIME: RECEIVED BY (Signature): DATE/TIME:

SAMPLE DISPOSAL INSTRUCTIONS
☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	1
CHAIN OF CUSTODY SEALS Y/N/NA	N
SEALS INTACT? Y/N/NA	N
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

APPENDIX D
Resume for Martha M. Walters

Terrasano LLC
72 Dowsett Avenue
Honolulu, HI 96817-1105
Office (808)595-7473
Fax (808)989-0561
www.terrasano.com

MARTHA M. WALTERS

Summary of Qualifications

In her 14 years of experience in the environmental field, Ms. Walters has worked side by side with operations personnel, EPA and state enforcement officers, consultants, and government project managers. A rarity in the environmental field, Ms. Walters has developed an expertise in site cleanup as well as waste management. She has worked at over 30 cleanup sites in California and Hawaii, managing projects and developing strategies for cleaning up facilities more quickly and cost effectively. Ms. Walters also worked for a major hazardous waste incineration firm and for Hawaii's only commercial hazardous waste storage facility.

RELEVANT EXPERIENCE

Training

Ms. Walters is the training director for Terrasano, responsible for developing and presenting a wide range of courses on hazardous waste, emergency response, and environmental remediation. She has developed a training program with internal quality control and quality improvement mechanisms that meet standards for the U.S. Environmental Protection Agency and the Occupational Safety and Health Administration.

Ms. Walters serves as the environmental training contractor for Hawaiian Electric Company and its subsidiaries Maui Electric Company and Hawaiian Electric and Light Company. She develops and presents seminars on a wide range of subjects to the company's operations personnel. A critical part of her work involves gathering information from operational units on environmental compliance issues and bringing those back to the company's environmental department to revise or develop new environmental policies.

Ms. Walters also develops and presents training to management and line supervisors at several Hawaii companies with diverse holdings and operations, providing them with basic environmental awareness training.

In her work at hazardous waste cleanup sites and waste management operations, Ms. Walters has been called on to provide on-the-job and formal training to fellow employees and clients. She has developed and presented numerous short courses on topics ranging from reuse options for contaminated soil to establishing cleanup goals for removal actions. Ms. Walters uses an effective technique that incorporates site-specific problem solving within a project team that team members can then apply to other projects.

Ms. Walters provided training to the U.S. Environmental Protection Agency's enforcement and permitting staff on the federal and State of California hazardous waste programs. She developed and presented numerous courses to federal and state agency staff, including an orientation to the federal RCRA program, an in-depth course on the California hazardous waste program, an advanced workshop on the land disposal restrictions program, and a practical course on permit writing. She also coordinated training on information management, closure cost estimating and financial assurance, and other hazardous waste program topics.

Public Participation and Community Outreach

- **Air Force 15th Air Base Wing Community Relations Support** - For the Air Force in Hawaii, Ms. Walters manages projects for community outreach and communication. Her team developed fact sheets, poster displays, videos, and other materials for use in community relations and internal command briefings. She supported the Air Force in its development of Restoration Advisory Boards covering 11 installations in Hawaii and Wake Island and provided support for various public meetings and outreach events.

- **Naval Air Station Barbers Point Community Relations Plan** - For the Pacific Division of the Naval Facilities Engineering Command. Ms. Walters managed a project to develop a community relations plan for environmental restoration at this closing base. The project involved interviews with members of the community, local politicians, and representatives of the military community to identify community concerns. A detailed community relations plan and step-by-step implementation manual were developed to guide the Navy's interaction with the community during cleanup efforts, with a focus on issues relevant to bases undergoing closure and transition to civilian use.

- **San Francisco Bay Area Closing Naval Bases Restoration Advisory Board Support** - Ms. Walters provided technical and community relations support to the Navy in its development and ongoing implementation of Restoration Advisory Boards for eight closing bases in the San Francisco Bay region. She developed presentations, fact sheets, poster displays, and other outreach material to communicate information related to the cleanup and closure of bases, with an emphasis on risk communication, the decision making process, and how land reuse planning is incorporated into cleanup activities.

- **Pacific Missile Range Facility, Barking Sands, Kauai** - Ms. Walters supported the Navy's program office in ensuring public participation during the expansion of the facility's intercontinental missile testing program. She has attended public meetings and assisted the project team in gauging community interest and developing community outreach materials.

Environmental Assessments

- **Former Sugar Mill Assessment** - Ms. Walters provided both a Phase 1 and Phase 2 environmental assessment for a potential buyer of the former Waipahu Sugar Mill property in Waipahu, Hawaii. This assessment required review of over 15 years of environmental documentation in a very short time frame to identify major issues for the potential buyer. Specific issues identified during the Phase 1 assessment, including impacts to groundwater, the closure status of 10 underground storage tanks, and PCB releases to soil, were addressed during a Phase 2 site investigation. As a result of this work, Ms. Walters identified a critical groundwater issue that would have greatly increased potential liabilities for the potential buyer and prevented redevelopment of the site, and as a result the purchase was delayed while the current owner completes remediation activities.

- **Solid Waste Facilities** - Ms. Walters provided extensive support to Horizon Waste Services in its acquisition of Browning Ferris Industries operations in Hawaii, including two baseyards and a material recovery facility. During an extensive Phase 2 site investigation, Ms. Walters identified a number of issues that were overlooked during initial property evaluations and successfully documented conditions to be paid by Browning Ferris. The investigation included not only evaluating facility environmental conditions but identifying specific operational practices that may have adversely impacted the environment at these facilities.

- **Communications Tower Placement** - As part of a major communications project for the U.S. military, Ms. Walters conducted an environmental assessment under the State of Hawaii's environmental review law to identify potential environmental impacts from construction of the tower on State conservation land. This project required extensive

coordination among multiple parties, including the landowner, site licensee, the government's prime contractor, and various subcontractors.

Site Remediation Planning and Implementation

- **Agricultural Research Station, Hawaii** – Ms. Walters is currently supporting the planning and remediation of disposal pits at an agricultural research station. She developed a strategy using in-the-field decision making to characterize and remove impacted soils during a single field effort, minimizing the costs of mobilizing equipment and personnel during multiple field efforts. This site presented a challenge in that multiple pesticides were disposed in underground pits, but no records remained of the types and quantities of material disposed. Ms. Walters worked closely to coordinate research station information and requirements under the Hawaii Environmental Response Law to ensure that the site was addressed in the most cost effective manner to protect human health and the environment.

- **Former Mare Island Naval Shipyard, Vallejo, California** - Ms. Walters is currently providing support to the U.S. Naval Facilities Engineering Command on landfill issues at this closed Navy facility. She proposed an innovative solution for integrating a number of remedial and removal actions planned for this large industrial facility. To minimize the volume of waste shipped to off-site treatment and storage facilities, Ms. Walters developed a plan to use an existing on-site hazardous waste landfill for disposal of a large volume of soil and sludge generated during cleanup at the base. The soil will also serve as a base material to create the slope necessary to place a final cap on the landfill, after all remedial activities were completed. It was estimated that using the landfill as a consolidation unit would save about $22 million in the cost of cleanup, compared to off-site treatment and disposal of remediation wastes.

- **Naval Computer and Telecommunication Area Master Station, Eastern Pacific** - Ms. Walters managed a project to identify and remove contamination from polychlorinated biphenyls (PCB) from sites where transformer oil had been spilled or released. This project involved developing supporting documentation for a non-time-critical removal action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), coordinating with the Navy's Public Works Center to accomplish field activities, and collecting confirmation samples to evaluate the effectiveness of the cleanup. In conjunction with this project, several innovative technologies will be evaluated under the Superfund Innovative Technology Evaluation program. Based on results of this evaluation, a treatment technology that can be mobilized to Hawaii may be selected and implemented for final treatment of soils containing PCBs.

- **Naval Air Station Barbers Point** - Ms. Walters served as the coordinator for environmental activities under the Base Realignment and Closure (BRAC) program. The Navy plans to close the base on July 2, 1999, with immediate transfer of much of the base to state and county agencies. Ms. Walters was responsible for coordinating all contractors performing environmental work at the base to ensure that environmental issues are addressed prior to transferring any land. She developed findings of suitability to transfer (FOST) and supporting environmental baseline surveys on an accelerated schedule to meet the Navy objective. Several parcels of land will be transferred prior to cleanup, and Ms. Walters developed supporting documentation for these transactions. In addition to supporting base closure activities, Ms. Walters assisted the Navy with a wide range of environmental services, ranging from sampling hot spots to closing hazardous waste storage areas.

- **Hunters Point Naval Shipyard, San Francisco, California** - In support of a fast-track plan to clean up and transfer this National Priorities List site to the City of San Francisco, Ms. Walters developed final records of decision for several large areas of the base. Completing the record of decision under a very ambitious schedule required close coordination with the Navy's technical and legal staff, the U.S. Environmental Protection

Agency, the California Department of Toxic Substances Control, and the San Francisco Bay Regional Water Quality Control Board, as well as a detailed understanding of a myriad of federal and state environmental regulations.

- **Naval Weapons Station, Concord California** - For the Navy's Engineering Field Activity West, Ms. Walters supported the remedial action for several wetland sites where soils contaminated with heavy metals were excavated and disposed of at off-site landfills. She coordinated changes in the remedial design to ensure compliance with regulatory requirements and the record of decision while incorporating timesaving and cost-saving measures. One such measure included developing an on-site treatment unit to remove excess moisture from excavated soils to minimize the volume and weight of soil transported to the landfill. This land-based treatment unit was designed to meet the technical standards for a corrective action management unit. After the remedial action was completed, the treatment unit was closed and all structures removed.

- **Naval Communications Station, Stockton, California** - Ms. Walters provided compliance and regulatory support for an on-site treatment operation that was used to treat soil contaminated with pesticides and polychlorinated biphenyls. The time-critical removal action was also demonstrating a new technology in conjunction with the U.S. Environmental Protection Agency's Superfund Innovative Technology Evaluation program. Applicable or relevant and appropriate requirements (ARAR) were identified for several land-based storage units along with the treatment process, which was conducted using containers and tanks. Ms. Walters was able to use the corrective action management unit and temporary unit regulations under the Resource Conservation and Recovery Act (RCRA) to significantly streamline the design and construction of the storage and treatment units while providing containment and monitoring appropriate for the temporary operation.

- **Naval Air Weapons Station, China Lake, California** - Ms. Walters coordinated the initial identification and classification of 52 sites at this testing center, including providing initial risk ranking and identifying sites that could be quickly classified as no-action sites under the Navy's Installation restoration program. Ms. Walters managed a subcontractor who developed no action records of decisions in three phases and coordinated public participation activities.

- **Naval Weapons Testing Center, China Lake, California** - Ms. Walters was instrumental in developing a strategy for managing more than 14 land disposal sites at this large installation. She categorized each land disposal site by age, size, probability of release, depth to groundwater, and other factors. Working with the remedial action contractor, Ms. Walters prioritized the land disposal sites and developed cost estimates and closure plans for each site. Based on these data, a strategy was developed to close each unit in the most cost-effective and timely manner. In some cases, it was determined that excavation and consolidation were most appropriate, while for others it was determined that no action and official closure under the state's solid waste landfill program was most appropriate. For the most urgent sites, a combination of containment and groundwater response was used to fast track remediation.

Hazardous Waste Operations

- **Naval Facilities Engineering Command, Engineering Field Activity West, Waste Management Program for Restoration Sites** - Ms. Walters developed an integrated waste management program for all waste generated under the Comprehensive Long-term Environmental Action Navy (CLEAN) contracts for Navy bases in California. Ms. Walters leads a team of hazardous waste specialists who assist project teams with any waste generated during investigation and cleanup. Her responsibilities include establishing temporary storage locations, characterizing and profiling wastes, arranging for transportation, treatment, and disposal of wastes destined for off-site management, and ensuring compliance for on-site treatment and disposal units. The team also provides

assistance to engineers developing feasibility studies to ensure that ARARs are identified and that appropriate cost estimates are completed during the feasibility study or engineering evaluation/cost analysis stage of a project.

- **Union Pacific Rail Yard Munitions Management** - Ms. Walters provided support to an unexploded ordnance firm conducting cleanup at this active rail yard. Under an extremely tight schedule and under extensive public scrutiny, she obtained an emergency permit allowing the Sierra Army Depot to accept and treat several Mark 81 bombs that were found at the rail yard near homes and public roads. Her waste management team provided on-site storage, waste characterization, packaging, and transportation to the Sierra Army Depot, while coordinating closely all aspects of the project with the California Department of Toxic Substances Control.

- **City and County of San Francisco** - Ms. Walters worked with the City and County of San Francisco in evaluating hazardous waste generation trends within the county. As part of this project, she developed a database to track waste generation rates over a period of five years and conducted waste audits at a number of companies located in San Francisco. Ms. Walters assisted the City with community outreach efforts to communicate the results of this study.

- **Unitek Environmental Services, Inc** - Ms. Walters served as the Regulatory Affairs Manager for Unitek Environmental Services, Inc., Hawaii's only hazardous waste storage and transfer facility. She reported directly to the president of the company on issues relating to environmental compliance, permitting, reporting, and coordinating with operating groups throughout the Pacific.

- **Ross Incineration Services, Inc** - Ms. Walters was previously employed by Ross Incineration Services, Inc., a major treatment, storage, and disposal facility in Ohio. She served as compliance officer at the company's incineration facility and was responsible for day-to-day environmental compliance within the operations group. She was instrumental in successfully implementing the facility's final RCRA Part B permit and conducting in-depth training for line workers at the facility. Ms. Walters also managed several projects to close 21 above ground hazardous waste storage tanks and eight surface water impoundments.

Permitting of Waste Management Facilities

- **Thermal Treatment Facility, Honolulu, Hawaii** - Ms. Walters developed solid waste and air permits for Hawaii's first commercial treatment facility for thermal destruction of petroleum in soil. She negotiated permit conditions with state regulators and developed a waste analysis plan to ensure that permit conditions were met during operation of the facility.

- **Unitek Environmental Services, Honolulu, Hawaii** - Ms. Walters developed RCRA Part B permits for Unitek's hazardous waste storage facilities in Hawaii and Guam and negotiated with state and federal regulators to establish ongoing permit conditions for storing, consolidating, and transporting hazardous waste between Guam, Hawaii and the mainland United States.

Other permitting projects have included RCRA Part B hazardous waste permit applications for military and civilian aircraft manufacturing facilities in Long Island and for Chemical Waste Disposal, a commercial hazardous waste storage and transfer facility in Queens, New York. In addition, Ms. Walters has completed permit applications and negotiated terms for solid waste recycling facilities, stormwater discharge permits, underground injection well permits for oily wastewaters, and industrial wastewater sewer discharge permits.

Project and Program Management

- **Naval Facilities Engineering Command, Pacific Division, Comprehensive Long-term Environmental Action Navy (CLEAN) Contract** - Ms. Walters managed a $35 million team subcontract under this 10-year contract, responsible for implementing all technical phases of work. Projects ranged from investigation of subsurface fuel plumes in Hawaii to environmental compliance surveys in Singapore. She provided support to project teams in identifying technical resources, developing cleanup strategies, incorporating risk management decisions, and providing project tracking, budget tracking, and project management.

- **Naval Facilities Engineering Command, Engineering Field Activity West CLEAN Contract** - Ms. Walters provided regulatory, technical, and public participation support for various projects under Tetra Tech's CLEAN contracts for the Engineering Field Activity West in San Bruno, California. As a lead regulatory support specialist, she was responsible for ensuring that project teams met regulatory requirements while implementing innovative strategies for achieving site cleanup quickly and in a cost-effective manner. She provided technical support to the Navy's environmental legal counsel on a wide range of issues related to implementing cleanups and complying with applicable regulatory requirements. To support public participation at the program-wide level, Ms. Walters developed presentations, newsletters, posters, and handout materials for community groups and restoration advisory boards. She served as a resource to BRAC Environmental Coordinators in their community outreach efforts.

Education and Special Training

B.A., Environmental Studies and Biology, Oberlin College, 1987
Groundwater Remediation of Chlorinated Solvents, Interstate Technology and Regulatory Cooperation Workgroup, 2000
Sediment Remediation in Marine Environments, University of Wisconsin-Madison, College of Engineering, 1997
Training Techniques for Professional Continuing Education Courses, PRC, Inc., 1995
Succeeding at Waste Minimization, University of Wisconsin-Madison, College of Engineering, 1988
Environmental Auditing: Risk Management for the Future, University of Wisconsin-Madison, College of Engineering, 1988
Emergency Response to Hazardous Materials, Findlay College, 1989
40-hour OSHA Training for CERCLA Sites and 24-hour Training for RCRA Sites, 1987
8-hour OSHA Supervisor Training for CERCLA Sites, 1989
8-hour OSHA Refresher Training for CERCLA Sites, 1998

Professional Affiliations

Society of American Military Engineers
Air and Waste Management Association
National Environmental Training Association

Employment History

Terrasano LLC, Principal and Training Director, 1999-Present
Tetra Tech EM Inc., Senior Regulatory Specialist and Project Manager, 1993 - 1999.
Manager of Honolulu Operations, 1997-1999.
Unitek Environmental Services, Inc., Manager of Regulatory Affairs, 1990 - 1993
Ross Incineration Services, Inc., Environmental Scientist, 1987-1989

APPENDIX B

Botanical Resources Assessment

CHAR & ASSOCIATES
Botanical/Environmental Consultants
4471 Puu Panini Ave.
Honolulu, Hawaii 96816
(808) 734-7828

21 December 2000

BOTANICAL RESOURCES ASSESSMENT
LANA'I MASTER PLAN
DHHL ±50-ACRE SITE

INTRODUCTION

The 50-acre project site is located adjacent to the Olopua Woods subdivision. The parcel was formerly used for pineapple cultivation and is now fallow and overgrown primarily with Guinea grass and shrubs of lantana and Christmas berry. Parts of the site are used for grazing horses. Axis deer also frequent the site. The Department of Hawaiian Home Lands (DHHL) is planning to develop 100+ residential homestead lots as well as a community center on the 50-acre site.

Field studies to assess the botanical resources on the project site were conducted on 20 December 2000. The primary objectives of the survey were to:

1) provide a general description of the vegetation on the 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.

DESCRIPTION OF THE VEGETATION

The plant names used in the report follow Wagner et al. (1990). The few recent name changes since 1990 follow those recorded in the Hawaii Biological Survey series (Evenhuis and Miller 1995-1998, Evenhuis and Eldredge 1999-2000).

The soils on the site are mapped as Waihuna clay (WoA), 0 to 3 percent slopes (Foote et al. 1972). These are well-drained soils formed in old, fine-textured alluvium. Permeability is moderately slow. Runoff is slow, and the erosion hazard is no more than slight. Remnants of black plastic sheets used in pineapple cultivation are found in the soil. The topography is level to nearly level.

A dense cover of Guinea grass (Panicum maximum), 5 to 6 feet tall, covers the majority of the site; this species is native to Africa and was originally introduced as a forage grass, but has since become naturalized. Scattered throughout the Guinea grass cover are scattered clumps of lantana (Lantana camara) and Christmas berry (Schinus terebinthifolius) shrubs, 6 to 9 feet tall. A few ironwood (Casuarina sp.) and Formosan koa (Acacia confusa) trees are also found on the property. Tall clumps of Napier or elephant grass (Pennisetum purpureum) are also scattered throughout the site. On the western half of the property, lantana and Christmas berry shrubs become very dense and form large thickets, 7 to 10 feet tall.

Where the Guinea grass cover has been grazed and the shrubs browsed, the plant cover is more open with areas of bare soil. Patches of weedy, mostly annual, species are common to abundant in these areas. These include narrow-leaved plantain (Plantago lanceolata), Spanish needle (Bidens pilosa), balloon plant

(Asclepias physocarpa), Natal redtop grass (Melinis repens), staggerweed (Stachys arvensis), castor bean (Ricinus communis), sourgrass (Digitaria insularis), pigweed (Portulaca oleracea), and feather fingergrass (Chloris virgata).

DISCUSSION

The project site as well as the surrounding lands have been used for pineapple cultivation for a very long period of time. After pineapple cultivation ceased, the fieldswere invaded by Guinea grass and shrubs of lantana and Christmas berry. Smaller, weedy herbaceous species also became more numerous along the dirt roads and on areas disturbed by grazing and browsing animals.

As a result of these past and present disturbances, the vegetation on the site is dominated by introduced or alien plant species. Introduced species are all those plants which were brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact, that is, Cook's arrival in the islands in 1778. Only two native species were observed during this study; these were the 'uhaloa (Waltheria indica) and popolo (Solanum americanum). Both are indigenous, that is, they are native to Hawai'i and elsewhere.

None of the plants observed during the field studies is a threatened and endangered species or a species of concern (U.S. Fish and Wildlife Service 1999). All of the plants can be found in similar environmental habitats. This is not surprising as the property has been disturbed for a long time.

Given the findings above, the proposed use of the site for residential lots and a community center is not expected to have

a significant negative impact on the botanical resources. There are no botanical reasons to impose any restrictions, conditions, or impediments to the proposed development of the site.

LITERATURE CITED

Evenhuis, N.L. and S.E. Miller, editors. 1995-1998. Records of the Hawaii Biological Survey. Bishop Museum Occasional Papers Nos. 41-60.

Evenhuis, N.L. and L.G. Eldredge, editors. 1999-2000. Records of the Hawaii Biological Survey. Bishop Museum Occasional Papers Nos. 58-64.

Foote, D.E., E.L. Hall, S. Nakamura, and F. Stephens. 1972. Soil survey of the islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. U.S. Department of Agriculture, Soil Conservation Service, Washington, D.C.

U.S. Fish and Wildlife Service. 1999. U.S. Fish and Wildlife Service species list, plants. March 23, 1999. Pacific Islands Ecoregion Office, Honolulu, HI.

Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i. 2 vols. University of Hawai'i and Bishop Museum Press, Honolulu, HI. Bishop Museum Special Publication 83.

APPENDIX C

Avifaunal and Feral Mammal Survey

AVIFAUNAL AND FERAL MAMMAL FIELD SURVEY OF A 50 ACRE DHHL PARCEL, ISLAND OF LANAI

Prepared for Townscape Inc.

Prepared by:

Phil Bruner
Environmental Consultant
Faunal (Bird & Mammal) Surveys
Box 1775
BYU-H
Laie, HI 96762

17 November 2000

INTRODUCTION

The purpose of this report is to give the findings of a one day (14 November 2000) field survey of a 50 acre parcel of DHHL located on the island of Lanai. This survey was conducted to support the EA for the Lanai Master Plan. Appropriate published and unpublished resources were consulted to supplement the field data. The primary purpose of the survey was to determine what species currently occur on this site. Native, migratory and introduced species were noted. Resources important to native and migratory birds were also recorded.

GENERAL SITE DESCRIPTION

This parcel adjoins existing residential lots. The topography is relatively flat. Grass, Lantana, and Christmas Berry are the dominant plants. The settling ponds of the sewage treatment facility are located downslope of the property. No wetlands were noted on the site.

METHODS

The entire property plus some surrounding lands were covered on foot. All birds seen or heard were tallied. In addition, the tracks of birds and mammals were also noted. No attempts were made to trap mammals in order to obtain data on their relative

abundance. Such an effort was not warranted for this investigation. Scientific names used in this report follow the most current published sources (Pyle 1997, Honacki et al. 1982).

RESULTS AND DISCUSSION

Native Birds:

No native birds were tallied on the survey. Given the location and habitats available at this site the only native species that might on occasion be seen foraging would be the Short-eared Owl or Pueo (*Asio flammeus sandwichensis*). Pueo are found on all the main Hawaiian Islands. They are listed by the State of Hawaii as endangered on Oahu. This species is active at dawn and dusk and occasionally during the day. They hunt in a variety of habitats but are most often found in grasslands (Hawaii Audubon Society 1993). As noted earlier, there are settling ponds associated with the sewage treatment facility located downslope of the property. These ponds provide habitat for native and endangered waterbirds such as the Black-necked Stilt (*Himantopus mexicanus knudseni*) and the Hawaiian Coot (*Fulica alai*).

Migratory Birds:

The only migratory species recorded on the survey was the Pacific Golden-Plover (*Pluvialis fulva*). Four plover were tallied over the course of the investigation. These birds were located in open patches between clumps of Lantana. This species is the most

abundant migrant in Hawaii (Johnson et al. 1981, 2001). They are not listed as endangered or threatened.

Introduced Birds:

A total of nine non-native (introduced species were tallied on the survey (Table 1). Spotted Dove (*Streptopelia chinensis*) and Nutmeg Mannikin (*Lonchura punctulata*) were the most abundant species. None of the nine species are listed as endangered or threatened. Hawaii Audubon Society (1993) and Pratt et al. (1987) provide a complete list of introduced species known to occur on Lanai. Although only nine species were recorded other introduced birds could occur in this area. Bruner (1992, 1996, 1997a, 1997b) provide additional insights regarding the occurrence and relative abundance of introduced birds elsewhere on Lanai.

Feral Mammals:

Three Axis Deer (*Axis axis*) were flushed from the brush on a walk-through of the property. Numerous tracks and game paths attest to the occurrence and abundance of deer in this area. Dog (*Canis familiaris*) and cat (*Felis catus*) tracks were also observed. The only native mammal, the endangered Hawaiian Hoary Bat (*Lasiurus cinereus semotus*), was not found. Their status on Lanai is not well known. Elsewhere in Hawaii they can be seen foraging in a wide variety of habitats ranging from forest to open country and even urban areas.

CONCLUSIONS

This property and the surrounding area have experienced significant landscape transformation from their original state. Residential and agricultural projects have completely altered the area. Today this site is dominated by alien plants and animals. No unique or important habitats for native birds were observed. The proposed development of this land should have little or no impact on the abundance of birds on Lanai.

TABLE 1

Introduced birds recorded on a 50 acre site of DHHL on the island of Lanai. Relative Abundance estimates are based on actual counts of birds made on a walk-through of the property. A=abundant (50+ counted), C=common (25-50 counted), U=uncommon (5-25 counted), and R=rare (less than five tallied).

COMMON NAME	SCIENTIFIC NAME	RELATIVE ABUNDANCE
Ring-necked Pheasant	*Phasianus colchicus*	R
Gray Francolin	*Francolinus pondicerianus*	R
Common Myna	*Acridotheres tristis*	U
Spotted Dove	*Streptopelia chinensis*	A
Zebra Dove	*Geopelia striata*	C
Northern Cardinal	*Cardinalis cardinalis*	U
Northern Mockingbird	*Mimus polyglottos*	U
Japanese White-eye	*Zosterops japonicus*	C
Nutmeg Mannikin	*Lonchura punctulata*	A

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APPENDIX D

Archaeological Reconnaissance Survey

ARCHAEOLOGICAL INVENTORY SURVEY OF A 50-ACRE HAWAIIAN HOME LANDS PARCEL, LĀNA'I CITY, KAMOKU *AHUPUA'A*, LĀNA'I, HAWAI'I (TMK 4-9-02)

by

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Prepared for
Townscape, Inc.

Cultural Surveys Hawai'i, Inc.
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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

I. INTRODUCTION

In October 2000 Townscape, Inc. contracted Cultural Surveys Hawai'i, Inc. to carry out an archaeological inventory survey of an approximately 50-acre parcel of Department of Hawaiian Home lands on the northwest corner of Lāna'i City, Kamoku *Ahupua'a*, Island of Lāna'i (TMK 4-9-02) (Figures 1 & 2).

A. Project Background

The Department of Hawaiian Home Lands is planning the development of 100+ residential homestead lots and a community center on this parcel. The inventory survey is a necessary step in the historic review process. The inventory survey will be included in an Environmental Assessment (EA) for the proposed project.

B. Project Area Description

The project area consists of former pineapple fields located on the northeast side of Lāna'i City. The project area is bounded by Iliahi Street and Kooloaula Pl. on the east, with the other three sides bounded by abandoned pineapple fields.

In a larger context, the project area is situated on the upper plateau region of Lāna'i, between 480 and 500 m (approximately 1440-1600 feet) above sea level. "The entire island nestles in the dry rain shadow of Haleakalā on Maui, leaving it without a wet windward side (Hazlett and Hyndman 1996:175). The mean annual rainfall in this area of Lāna'i ranges between 699-800 mm (25-35 inches), with the heaviest rains in January averaging 100 mm and the lightest rains in June averaging 10 mm. Temperatures range between 60° and 80° F. Winds are dominated by consistent northeasterly trades. The soil within the project area is Waihuna clay (WoA) (Foote *et al.* 1972). The main vegetation in the previously cultivated pineapple fields is now lantana, Christmasberry, California grass, and other exotic weeds.

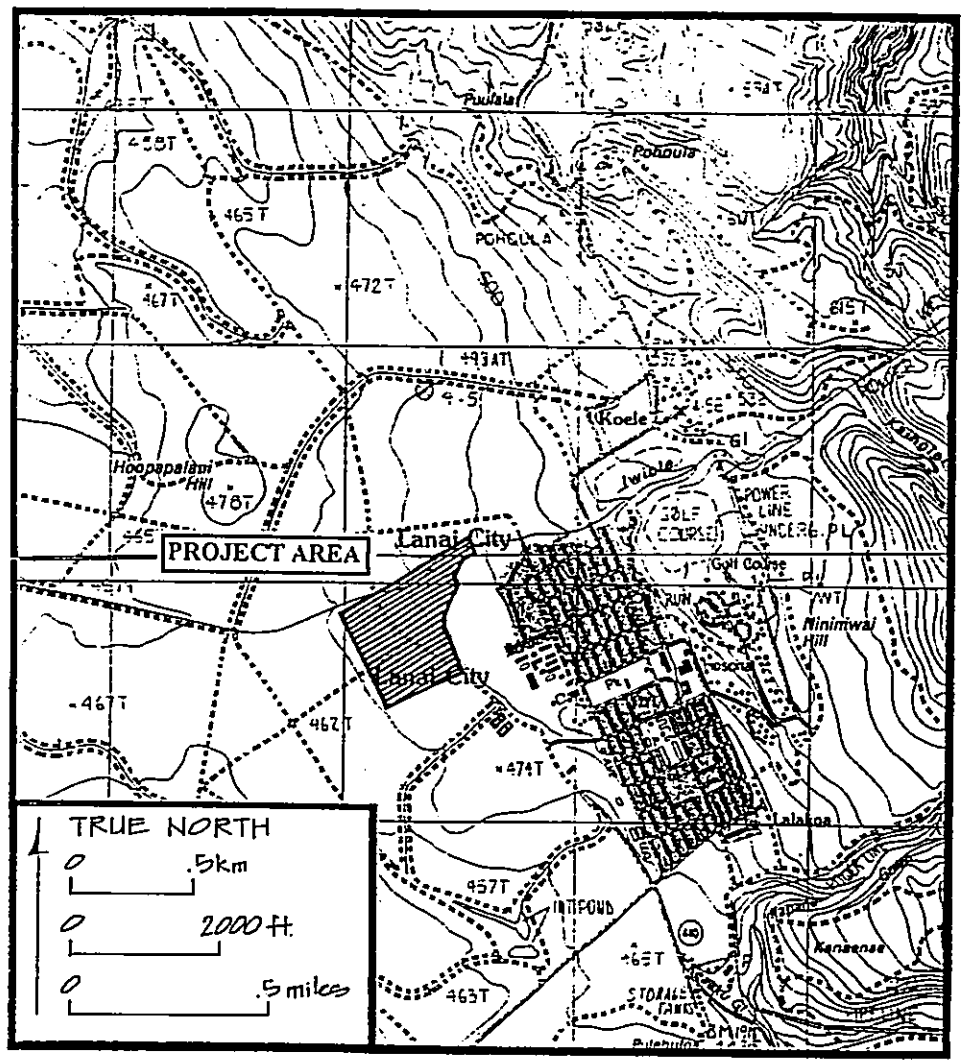

Figure 1 Portion of 1984 USGS Maps of the Island of Lāna'i, Showing Project Area

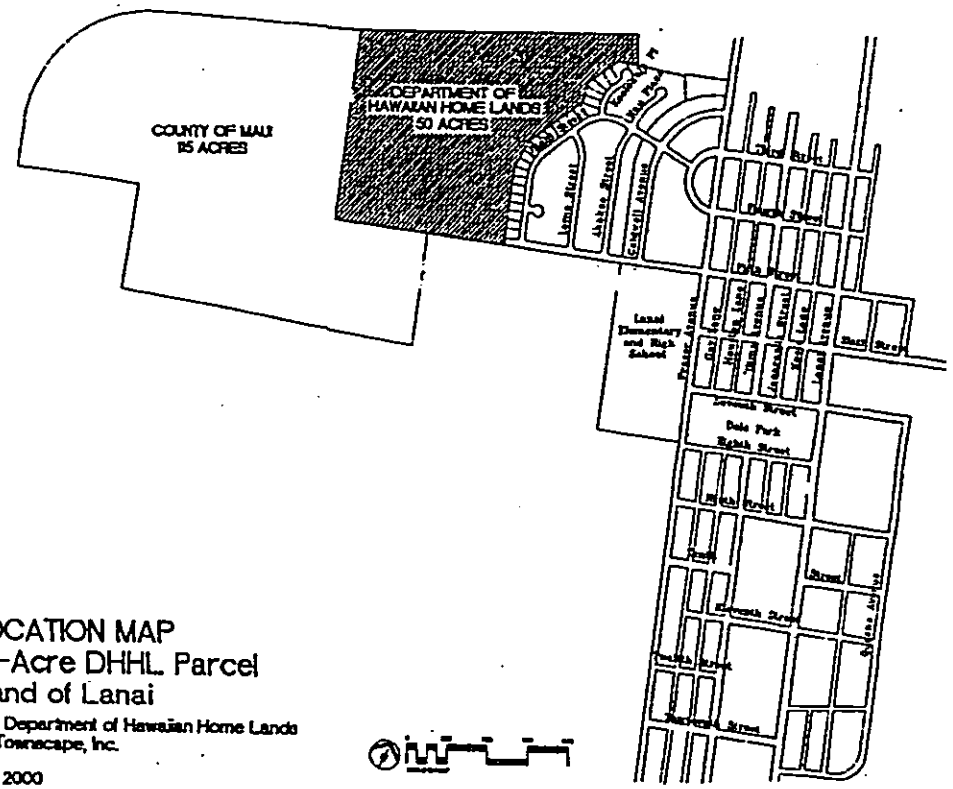

Figure 2 Townscape, Inc. Map (July 2000) Showing the Relation of the 50-Acre DHHL Parcel to Lāna'i City

C. Scope of Work

The inventory survey and its accompanying report document all historic properties within the subject parcel. The following scope of work was followed:

1. A complete ground survey of the entire project area for the purpose of site inventory. All sites would be located, described, and mapped with evaluation of function, interrelationships, and significance. Documentation will include photographs and scale drawings of selected sites and complexes. All sites will be assigned State site numbers.

2. If warranted, limited subsurface testing with a back hoe to test for the presence of subsurface cultural deposits. If encountered subsurface deposits will be documented and samples, including charcoal for radiocarbon dating, will be collected.

3. Research on historic and archaeological background, including search of historic maps, written records, Land Commission Award documents. This research will focus on the specific area with general background on the *ahupua'a* and district and will emphasize settlement patterns.

4. Preparation of a survey report which will include the following:

   a. A topographic map, if available, of the survey area showing all archaeological sites and site areas;

   b. Description of all archaeological sites with selected photographs, scale drawings, and discussions of function;

   c. Historical and archaeological background sections summarizing prehistoric and historic land use as they relate to the archaeological features;

   d. A summary of site categories, their significance in an archaeological and historic context;

   e. Recommendations based on all information generated which will specify what steps should be taken to mitigate impact of development on archaeological resources - such as data recovery (excavation) and preservation of specific areas. These recommendations will be developed in consultation with the client and the State agencies.

D. Methods

The field work for the inventory survey was conducted on November 21 and November 22, 2000 by two Cultural Surveys Hawai'i, Inc. archaeologists, David W. Shideler and Jared Hammatt. The perimeter of the project area was established by tape and compass. Pedestrian sweeps (from east to west and west to east) were then carried out with the archaeologists typically 15 m apart. Ground visibility ranged from fair in the thick lantana of the southern portion of the project area to good in the relatively open savanna of the north portion. Particular attention was given to the search for lithic debitage and midden that might indicate the presence of a site lying within the pineapple plow-zone. No evidence of traditional Hawaiian occupation was observed.

The project area was confirmed to consist of former pineapple fields and field access roads. Decaying black plastic weed barrier was visible over virtually the entire project area. Grading for commercial agriculture was indicated over the entire project area. In the north portion of the project area and near the houselots on Iliahi Street was evidence of the discarding of mid to late twentieth century trash including an auto transmission, concrete, and clay and PVC pipe, but there was no evidence of an in situ historic deposit. Photos were taken from each corner of the project area.

II. HISTORIC BACKGROUND

A. Introduction

There are several sources dealing with the general history of Lāna'i. Notable among these are K. Emory (1924), L.D. Gay (1965), M. Ashford (1974), and R. Tabrah (1976). Recent archaeological work on Lāna'i has produced a number of reports with historical documentary sections summarizing Lāna'i history, with specific information relating to individual archaeological project areas.

Historic research specific to the *ahupua'a* of Kamoku and adjacent *ahupua'a* has been accomplished in previous reports (Hammatt and Borthwick 1993; Borthwick and Hammatt 1990; Hammatt and Borthwick 1989; and Borthwick *et al.* 1990). This report presents a summary of previous information with comments on traditional Hawaiian settlement as it would apply to the project area.

B. The *Ahupua'a* of Kamoku

The *ahupua'a* of Lāna'i are shown on the island map by Emory 1924 (Figure 3). This map displays the *ahupua'a* boundaries. The *ahupua'a* of Kamoku includes 8,291 acres of the western portion of Lāna'i and extends from the west coast , north of Kaumalapau, east upslope to Kō'ele which lies at the base of the high NW to SE trending ridge crest of the island. Some of the *ahupua'a* of Lāna'i are shown as extending from one coast of the island to the opposite coast (Kaunolū, Pālāwai, and Kalulu) but Kamoku *Ahupua'a* has a more typical sea to uplands configuration.

Prior to Hawaiian occupation, the project area was probably in native Hawaiian forest. Even in the early 1900s vestiges of this forest could be seen. "Most of the lands along the upper portion of the island were those above the 1,000 ft. elevation, as evidenced by the presence of dead tree skeletons along this elevation and above" (L.D. Gay, 1965:51). Clearing of this forest was undoubtedly initiated by the traditional subsistence farming practices of slash and burn clearing. In Emory's 1920 survey of Lāna'i, he did not observe any house sites within the project area but noted that the upper plateau lands were intensively utilized for agriculture. The pattern of house sites in the archaeological and historic record (Figures 3 and 4) suggests that the project area was below or *makai* of the lands used for intensive agriculture.

Early historical accounts of Lāna'i generally attest to the general barrenness and small population (A. Menzies 1792, W. Ellis 1823). However, in 1779 Capt. King of the Cook expedition related that Lāna'i "appeared to be well inhabited" and "that it abounds in roots such as yams, sweet potatoes and tarrow" (in Emory 1924:6). Emory deduced that the differences in these early descriptions was probably due to the devastating raid on Lāna'i and Kaho'olawe by Kalaniopu'u. The *ahupua'a* of Kamoku figures prominently in the recollections of this raid. S.M. Kamakau writes:

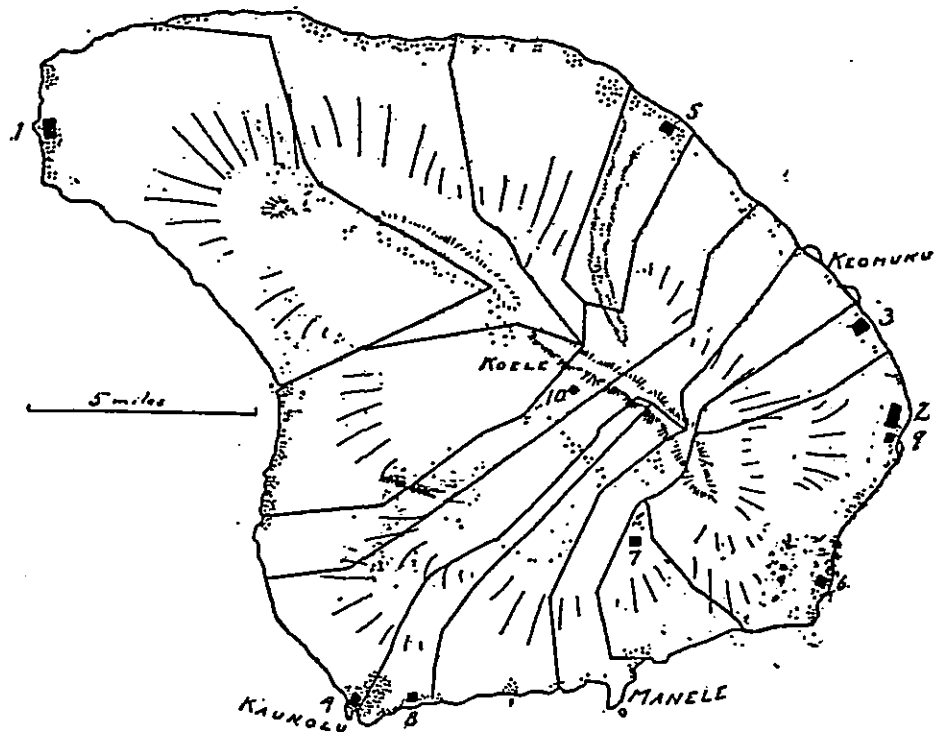

Figure 3 Map of Lāna'i Showing *Ahupua'a* and the Distribution of House Sites and *Heiau* Known to Kenneth Emory in 1921 (dots represent visible house sites, rectangles represent *heiau*, numbers give the order of *heiau* according to size). (From Emory 1924:49)

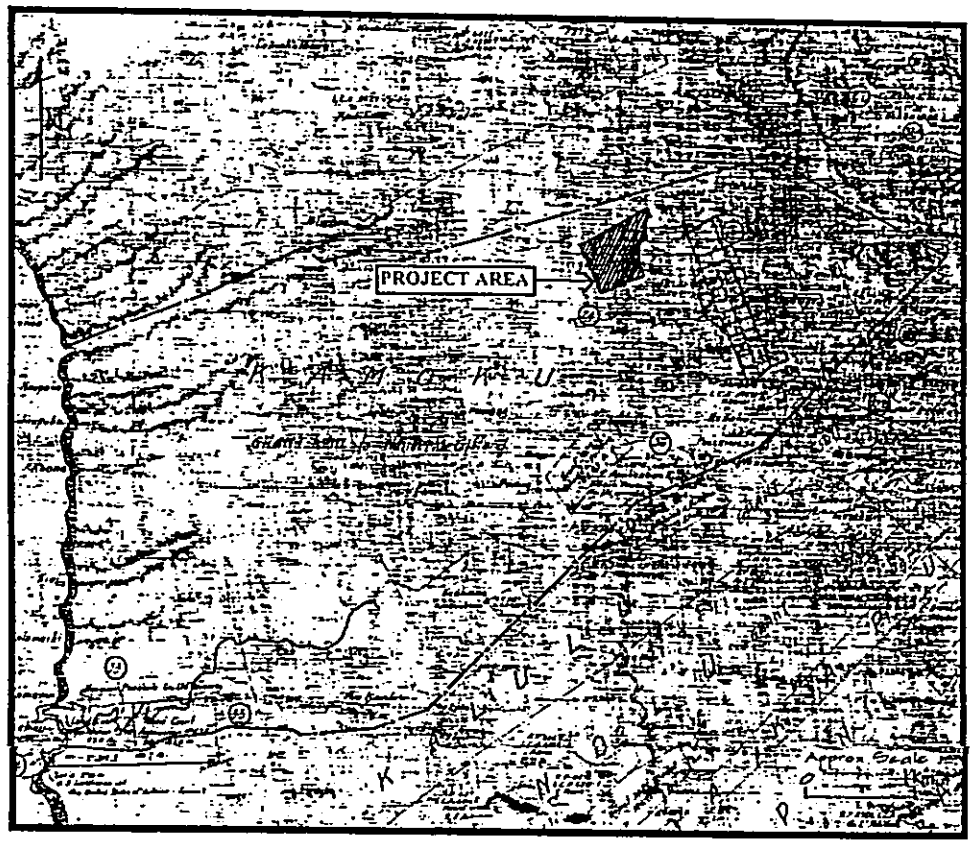

Figure 4 Portion 1927 Land Court Map, Island of Lāna'i, Showing Kamoku *Ahupua'a* and Former *Kuleana* Lots

During Kalaniopu'u's occupancy of Lāna'i, the food ran out, and the men had to eat the root of a wild plant called *kūpala*, this had a loosening effect upon the bowels when eaten in quantity. The war is therefore called "The-land-of-loose-bowels ('Kamoku-Hī') and it is a war still talked of [circa 1866] among the descendants on Lāna'i. (Kamakau 1962:91)

Kamoku refers to the *ahupua'a* where the *kūpala* grew thick, and *Hī* refers to a form of dysentery/diarrhea which could result from eating too much *kūpala*. "*Kūpala*" may refer to a variety of famine foods such as an endemic cucurbit (*Sicyos pachycarpus*), and a wild sweet potato or morning-glory (Pukui and Elbert 1984:170).

Another explanation of the name of the district "Kamoku - the piece cut off" suggested to Emory the etymology and history of a similarly named *ahupua'a* in the Hāmākua District of the Big Island. In Hāmākua C.J. Lyons (In Emory 1969:31) recorded an *ahupua'a* of Kamoku that was once cut off from a number of *ahupua'a* for the use of the whole district, hence its name." It seems highly probable that Emory was correct in concluding that the resources of this land division were explicitly available to residents of all the *ahupua'a* of Lāna'i and perhaps of the rest of Lahaina District as well.

C. *Māhele* Information

By the mid 1800s much of the upper plateau lands of Kamoku and adjacent *ahupua'a* had been transformed to more open grass lands (*pili* grass). This is indicated in the native and foreign testimonies given during the mid 1800s as part of the *Māhele* and *Kuleana* Acts. The *ahupua'a* of Kamoku, in which the project area lies, was "omitted" (Interior Dept. Memos 1860-70s) at the time of the *Māhele* (1848) and was subsequently leased as government lands (ca. 1860) (See Figure 4).

Though there were individual land claims most of the Kamoku and Kalulu claims were also "omitted" following the *Māhele* leading to prolonged confusion over title to the land. Two branches of government, Interior Department and Commissioner for Crown Lands, simultaneously felt they had control over these lands. Eventually the lands became "government lands" and were subject to leases by the Interior Department.

The closest Land Commission Award (LCA), awarded to Noa Pali (LCA 10,630; see Figure 4), is located on the flats on the northwest side of Lāna'i City, approximately 1 km east of the project area. Noa Pali was *konohiki* of Kamoku *Ahupua'a* during the Māhele period (i.e., mid 1800s). The bulk of Pali's large *kuleana* (ca. 112 acres) was grassland, but he did have "areas for cultivation of sweet potatoes and gourds" as well as a house site. The only other claim awarded for Kamoku *Ahupua'a* was a house lot (LCA 6833) to Kaaiai, located approximately 1.5 km southwest of the project area.

D. Late 1800s

In the 1860s a Chinese man, Ahsee, procured a lease for Kamoku to raise goats. Walter Murray Gibson also arrives in the 1860s first as a Mormon to the Pālāwai Basin

Mormon Commune. He eventually gained control, through government leases, over most of Lāna'i and became Hawaii's "Premier of Everything" during the 1880s. Gibson's Lāna'i Ranch eventually had up to 18,000 goats and 12,000 sheep which were allowed to forage freely, virtually denuding the island of vegetation and causing severe erosion problems.

The Gibson holdings were bought up by Charles Gay in 1902. The Gay family eventually bought virtually the entire island in fee simple. The ranch center was still at Kō'ele, the location where Gibson's headquarters had been moved in the 1870s. The Gay family went into considerable debt to get the island converted to fee simple ownership, and was unable to retain the vast holdings. The family was forced to liquidate all holdings, except some 600 acres. The Gays also proved that pineapples could be successfully grown on Lāna'i, both at Keōmuku and Lālākoa.

E. Twentieth-Century

In 1922 James Dole purchased most of the island of Lāna'i and began a rapid changeover to commercial pineapple cultivation. The rapid commercialization included the building of Lāna'i City and Kaumalapau Harbor. "In 1924 Lāna'i City began as a simple plantation town with only 150 residents" (Savrann 1989: unnumbered pages).

The 1923 USGS map (Figure 5) shows an "Airfield" in the immediate vicinity of the project area. A "best fit" overlay suggests that the south runway of the first Lāna'i airfield lay within the northwest portion of the present project area. During the field inspection nothing suggestive of an airfield was observed. There were however two or three roughly cubic, approximately 50 cm on a side, chunks of concrete with basalt gravel appearing to date from the early twentieth century. Possibly these related to Lāna'i's first airfield which is assumed to have been a quite modest construction.

The project area was formerly part of the commercial pineapple cultivation dating to as early as the 1920s. These fields were abandoned about ten years ago. The project area since has become overgrown with foreign grasses and shrubs.

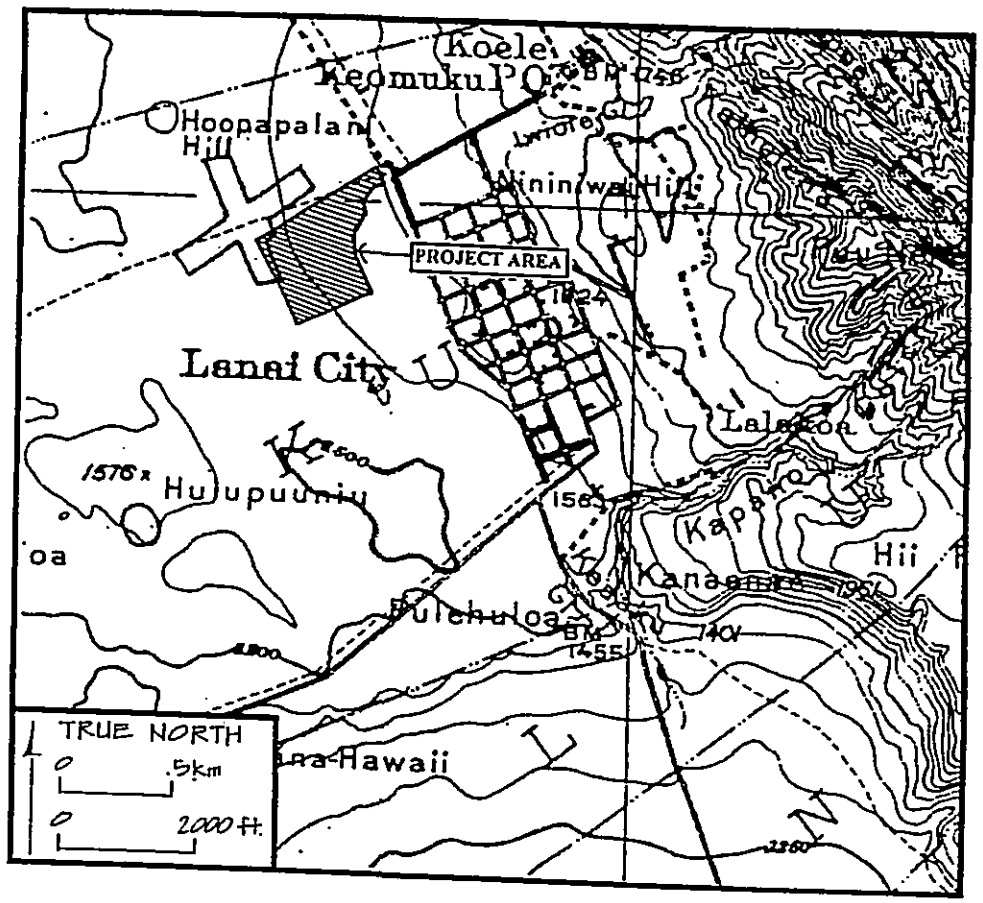

Figure 5 1923 USGS Map Showing an "Airfield" in the Immediate Vicinity of the Project Area ("best fit" location of the project area shown).

III. PREVIOUS ARCHAEOLOGICAL RESEARCH

Archaeological studies that deal with Lāna'i history in general, with specific mentions of the *ahupua'a* of Kamoku include: Emory (1924), the State-wide survey, Lāna'i Island (Hommon 1974), Kaschko (1986), Hammatt and Borthwick (1988), and Hammatt and Borthwick (1989). Table 1 lists previous archaeological studies in Kamoku *Ahupua'a* and vicinity. A brief discussion of pertinent archaeological studies follows.

Table 1: Previous Archaeological Research in Kamoku and Vicinity (Figure 6)

Researcher(s), Year	Type of Study	Comments
Emory, Kenneth 1924	Reconnaissance survey of entire island	Island-wide survey, no sites in project area
Ahlo 1985	Archaeological Survey	Proposed Lāna'i Sanitary Landfill Site
Kaschko 1986	Archaeological Reconnaissance Survey and Subsurface Testing	Kō'ele Hotel Project Area
Nagata 1987	Inspection Report and Recommendations	Proposed Lāna'i Sanitary Landfill
Walker & Haun 1987	Archaeological Reconnaissance Survey and Limited Data Recovery Excavations,	Proposed Sanitary Landfill Site
Hammatt, Borthwick & Shideler 1988	Assessment, excavation and analysis of Ranching Era at Kō'ele	Excavation and analysis of recovered historic material from 2 trash pits correlated with events during ranching era
Hammatt & Borthwick, 1988	Assessment for proposed Lālākoa Subdivision	Midden scatters in former pineapple lands for proposed subdivision
Borthwick & Hammatt, 1989	Reconnaissance of Proposed Waialua Multi-Family Housing Subdivision	Just to the north of the present project area, pineapple fields were surveyed with finds of basalt & volcanic flake scatters in disturbed context
Hammatt & Borthwick 1989	Reconnaissance survey of proposed Kō'ele Golf Course & 3 other parcels	Ranching era artifacts found

Researcher(s), Year	Type of Study	Comments
Borthwick & Hammatt 1990	Reconnaissance	Proposed quarry area
Hammatt & Borthwick 1990	Additional 100 acres inventory survey for Kō'ele Golf Course for proposed single-family housing	Fallow pineapple fields and sloping forest land at north
Hammatt *et al.* 1990	Reconnaissance	Proposed landfill
Hammatt & Chiogioji 1991	Archaeological investigations	Waialua annex subdivision
Borthwick & Hammatt 1992	Archaeological survey	Proposed Kō'ele Reservoir
Hammatt & Borthwick 1993a	Archaeological data recovery and monitoring of the Kō'ele Golf Course Parcel	Recovered from trash pits many items connected to ranching-era events
Hammatt & Borthwick 1993b	Reconnaissance of proposed housing, Queens and Waialua subdivisions	Flake scatters were found in former pineapple fields
Hammatt & Borthwick 1993c	Inventory survey	Proposed waste management facility at Ko'ele
Hammatt & Chiogioji 1993	Inventory survey	Veteran's Cemetery site
Colin & Hammatt 1996	Inventory survey	Near Kaumalapau Harbor

Emory's island-wide survey (1924) identified no sites in the immediate vicinity of the project area (Figure 3). He did identify a cluster of house sites approximately 700 m to the northeast.

Previous archaeological studies specific to Kamoku *Ahupua'a* include archaeological work conducted in association with a proposed landfill site (Ahlo, 1985; Nagata, 1987; and Walker and Haun, 1987). The proposed landfill site was located near the top in the *mauka*-most section of Kaumalapau Gulch. The archaeological work conducted there located eight sites which included four agricultural complexes, three temporary habitation shelters, and a trail marker (Walker and Haun, 1987). Test excavations "yielded an extremely limited range of prehistoric artifacts (a total of 17, including basalt flakes and shell scrapers) and sparse to moderate amounts of midden" (Walker and Haun, 1987:ii). Three radiocarbon dates were obtained from two of the shelters and an agricultural feature, with the dates

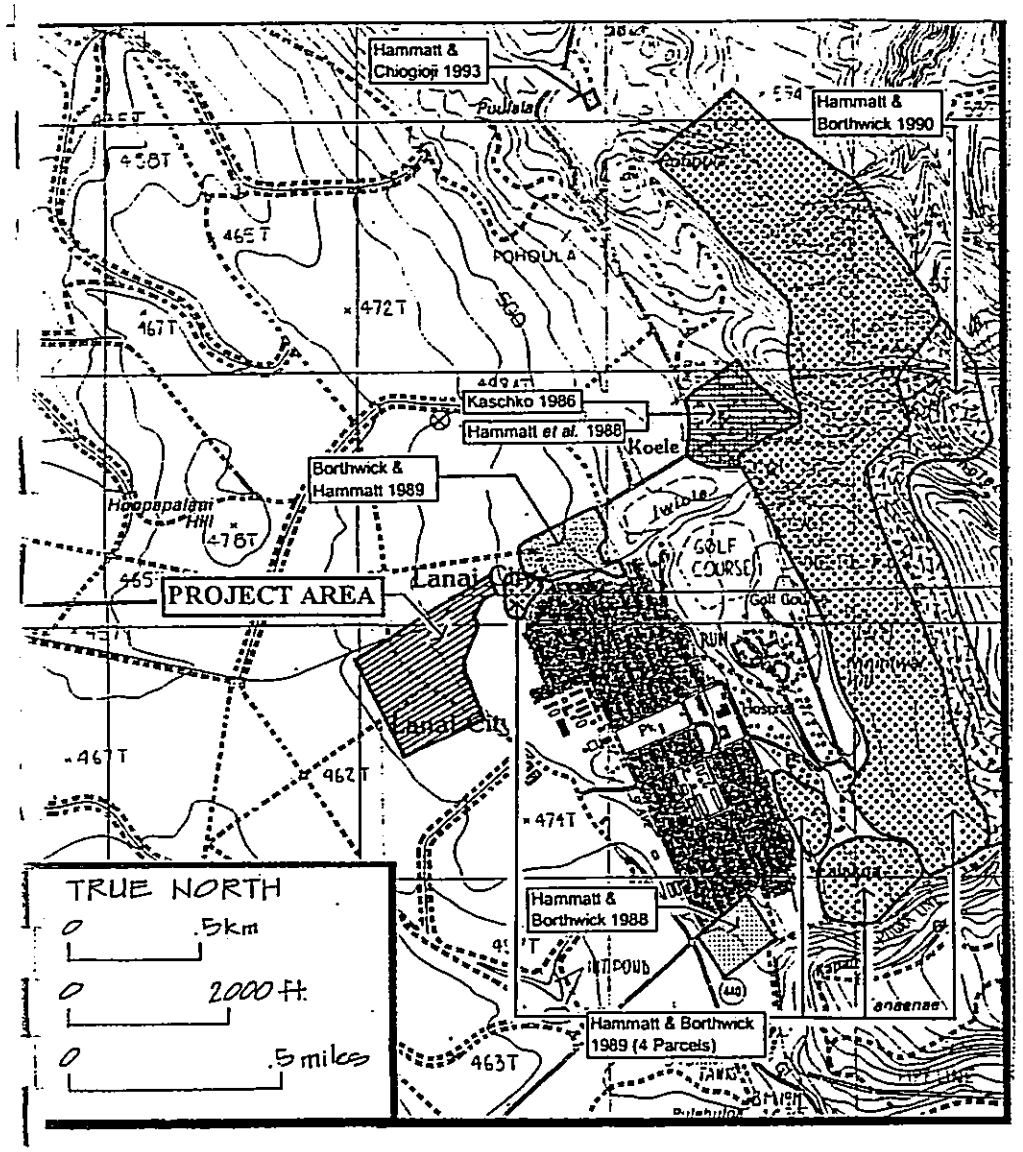

Figure 6 Portion of U.S.G.S. Maps of Lāna'i, Showing Previous Archaeological Work in the Vicinity of Lāna'i City

clustered tightly at 300± 50 years before present, indicating probable occupation in the 17th Century. These sites were characterized as "probable temporary habitation features and scattered probable agricultural features" (Walker and Haun 1987:40).

At another proposed landfill site in Kamoku *Ahupua'a*, above Anapuka Bay, two C-shape temporary shelters, two trail marker cairns and a possible shrine *ahu* were identified (Hammatt *et al.* 1990).

Bishop Museum staff members Paul Cleghorn and Aki Sinoto conducted an on-site assessment for the Lāna'i Airport expansion. They recorded "two localities (B.M. Locality 1 and B.M. Locality 2) with surface artifacts." Locality 1 contained a possible "abrader, made of volcanic rock," and Locality 2 contained "two basalt flakes, a small rectangular adz blank," and a "surface scatter primarily composed of basalt fragments although some midden and historics were observed" (Sinoto, 1989:2). With the discovery of the surface artifacts further archaeological work, consisting of "further surface collection and test excavations" was recommended (Sinoto, 1989:2).

Subsurface testing of these two and other likely localities within the airport expansion area was conducted in 1990 (Borthwick *et al.* 1990). No evidence of subsurface cultural layers was discerned. It was concluded that scattered surface artifacts are evidence of traditional Hawaiian use of the Lāna'i plateau lands above 1,000 feet elevation but that the context has been destroyed by many years of pineapple cultivation.

The 1990 archaeological survey of the Quarry and Rock Crushing Plant (Borthwick and Hammatt 1990) found no archaeological sites within the project area. The presence of the "10-foot trail" was noted as was the remnant of a historic house site with a charcoal kiln. The house site, judging by associated nails and bottles, probably post-dates the 1920s.

Work was also conducted in 1993 near the present location of the Lāna'i Rock Quarry for the proposed Solid Waste Management Facility (Hammatt and Borthwick 1993d). No archaeological sites were encountered during the survey.

In 1996 Colin and Hammatt conducted an inventory survey and limited subsurface testing of 36 acres, near Kaumalapau Harbor, Kamoku. Three sites were identified: 50-40-98-1938, 1939, and 1940 and consisted of a terrace, a mound and a complex of cement foundations and an enclosure, all of which date within the 20th century.

On the eastern side of Lāna'i City, Hammatt and Borthwick conducted an assessment for the proposed Lālākoa Subdivision (1988) to determine the nature of the surface scatter of stone artifacts on that 25-acre parcel. The coarse-grained materials collected were determined to come from introduced road gravel in modern times. Some fine-grained basaltic material was also collected as well as one finished adz fragment. Four of the pieces collected were determined to be retouched and/or fashioned into adz preforms. However, any original archaeological context for any of these artifacts had long ago been destroyed by plowing to depths of over 30 cm. and, in fact, may not have even been from this property.

Most archaeological studies in the vicinity of Lāna'i City (Kaschko 1986; Hammatt *et al.* 1988; Borthwick and Hammatt 1989, 1992; Hammatt and Borthwick 1990, 1993b; Hammatt and Chiogioji 1993) have identified no significant traditional Hawaiian sites or deposits. A scatter of lithic material (volcanic glass and basalt flakes) designated site 50-40-98-1596 was identified (Hammatt and Borthwick 1989, 1993a) approximately two kilometers east of the present project area.

IV. SETTLEMENT PATTERN

Summary of Settlement Patterns

The historical sources, Land Commission Awards information, Land Court Applications, as well as previous archaeological research in this area of central Lāna'i all contribute to the formation of a model of traditional Hawaiian settlement.

The thick soils of the plateau lands of central Lāna'i were in traditional use for dryland agriculture. This use although waning, continued into the mid 1850s and is reflected in the *kuleana* testimony for Kamoku and the adjacent *ahupua'a* that mention cultivation of sugar cane, sweet potatoes and gourds. It is not coincidental that all of the LCAs in Kamoku, Kalulu and Kaunolū are well above 1,000 feet in elevation where rainfall was adequate to support dryland crops.

Before widespread pineapple cultivation, traces of the ancient upland forest were observed as late as the early 1900s (L.K. Gay 1964:51). Clearly the prehistoric agricultural pattern involved forest clearing, probably including slash-and-burn methods.

During the mid- to late-1800s the plateau was transformed to open grassland as grazing of goats and later sheep became a dominant land use. In the late 1920s, after successful experimental planting, the entire plateau area of Lāna'i was eventually plowed for large-scale commercial pineapple cultivation.

Lāna'i City was constructed in the 1920s as an entirely new residential area, specific to the Dole Pineapple Plantation. The city has been expanded upon recently in association with the change over to tourism as the main economic force on Lāna'i City.

Predictive Model

Based on historic and archaeological data no sites, either surface or sub-surface, are anticipated within the 50-acre project area since the cultivation of pineapple for more than 70 years would have removed all sites. However, occasional remnant artifacts (*i.e.* basalt flakes and adzes), have turned up in other previously cultivated pineapple fields. While artifacts may be encountered occasionally, their archaeological context would be anticipated to have been massively impacted if not completely destroyed.

V. FINDINGS

Two archaeologists, David Shideler and co-author Jared Hammatt from Cultural Surveys Hawai`i, Inc, first established the perimeter of the project area and established flags every 100 feet and then traversed it in 50-ft transects moving from north to south in north/west sweeps.

The project area is separated into two vegetation zones, with thick lantana on the south side of the project area and more open California grass on the northern side. Fragments of black plastic sheets, used in pineapple cultivation, were found throughout the entire project area. Furthermore, in the northern half of the project area there are many areas of heavy ground disturbance due to bulldozing. The entire area is level, and appears to have been completely planted in pineapple as recently as ten years ago. Photos were taken from the four corners of the project area (Figures 7-10).

In the north part of the project area, among the thick vegetation on the surface there was general surface trash, as well as piles of earth and with some rocks, PVC parts, car parts and other trash. All of these piles were on the northern side of the project near a maintained road corridor. No other cultural materials, such as midden or lithic scatters, were found.

VI. SUMMARY

There are no areas, such as gullies or *pu`u*, within the project area that would have been left uncultivated because of topography. No subsurface testing was undertaken, given its 70+ years of pineapple cultivation and the total absence of any indication of potentially significant cultural deposits. The background history and settlement model indicate habitation and cultivation were located in areas east of Lāna`i City at higher elevations to take advantage of higher rainfall.

There were no archaeological sites or features located in the project area. No further archaeology is warranted within the project area since it has been entirely cultivated in pineapples for over 70 years. If, however, findings are uncovered during construction, the State Historic Preservation Division (SHPD) of the Department of Land and Natural Resources should be contacted before work continues in that particular area. The SHPD can be contacted at 692-8015.

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PHOTO APPENDIX

Figure 7 General View of Project Area from Southeast Corner, View to Northwest

Figure 8 General View of Project Area from Southwest Corner, View to Northeast

Figure 9 General View of Project Area from Northwest Corner, View to Southeast

Figure 10 General View of Project Area from Northeast Corner, View to Southwest

APPENDIX E

Traditional Practices Assessment

A Traditional Practices Assessment
for an Approximately 50-Acre
Department of Hawaiian Home Lands Parcel
Near Fifth Street, Lāna'i City
Island of Lāna'i
(TMK 4-9-02)

DRAFT

by

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and

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Prepared for

Townscape, Inc.

Cultural Surveys Hawai'i
January, 2000

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

I. INTRODUCTION

Townscape, Inc. contracted Cultural Surveys Hawai'i to conduct a Traditional Practices Assessment of an approximately 50-acre parcel of Department of Hawaiian Home lands on the northwest corner of Lāna'i City, Kamoku Ahupua'a, Island of Lāna'i (TMKI 4-9-02) (Figures 1-2).

The Hawai'i State Constitution, Article XII, Section 7 protects "all rights" of native Hawaiians that are "customarily and traditionally exercised for subsistence, cultural and religious purposes". Most recently, H.B. No. 2895 was passed by the 20th Legislature, and approved by Governor Cayetano as Act 50 on April 26, 2000. The bill acknowledges that

> ". . . the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture."

This bill makes it clear that ". . . environmental assessments or environmental impact statements should identify and address effects on Hawai'i's culture, and traditional and customary rights."

The purpose of this traditional practices assessment is to consider the effects the proposed development may have on native Hawaiians as it pertains to their right to practice traditional customs.

This assessment is meant to be informational for the purpose of disclosing any impacts the proposed development might have on native Hawaiian culture and to meet the requirements of the Office of Hawaiian Affairs (OHA), the Office of Environmental and Quality Control and any other state and county agencies involved in the review process for the proposed development.

Scope of Work

In addressing any Hawaiian customary and traditional rights and their applicability to the project area, the following scope of work was followed:

1) Examination of historical documents, Land Commission Awards, historic maps, with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal and other resources, burial patterns, and places of particular cultural import as may be indicated in the historic record.

2) A review of the existing archaeological information pertaining to any sites on the property as they may allow us to reconstruct traditional land use activities and identify and describe the cultural resources, practices and beliefs associated with the parcel, and identify present uses.

3) Conduct one to two formal interviews with knowledgeable persons about the historic and traditional practices in the project area and region, as well as informal talk-story with other individuals and organizations on Maui about the project area and surrounding vicinity.

4) Preparation of a report on the above items summarizing the information gathered related to traditional practices and land use. The report will assess the impact of the proposed action on the cultural practices and features identified in the project area.

Interview Informants

Following are brief biographical sketches of the two interviewees, listed in alphabetical order.

Solomon Kaho'ohalahala

Born and raised on Lāna'i, Mr. Kaho'ohalahala is a fifth-generation Hawaiian. His family, on the Kaopuiki line, traces their genealogy back to the 1400's. Most of Mr. Kaho'ohalala's professional career has been spent in the visitor industry and hotel management arena. Mr. Kaho'ohalahala is currently the Director of Cultural Resources for the Lodge at Kō'ele and Mānele Bay Hotel, where he has been employed since 1989. Prior to 1989, he managed Hotel Lāna'i. Most recently, Mr. Kaho'ohalahala served as State representative for Lāna'i, Kaho'olawe, Moloka'i, Kalaupapa and West Maui. Mr. Kaho'ohalahala takes a special interest in Lāna'i history and has spent countless hours talking with *kūpuna* (elders) about Lāna'i's past. He has become a reliable source of information which draws from personal, as well as family knowledge. He is an active and well-respected community member who is very interested in protecting Lāna'i's cultural resources.

Samuel Kaopuiki

Though he was not indepently interviewed, *Kupuna* Kaopuiki was invited to sit-in on the formal taped interview with Mr. Kaho'ohalahala. *Kupuna* Kaopuiki did add a few comments and these were transcribed as part of Mr. Kaho'ohalahala's interview. Overall, *Kupuna* Kaopuiki concurred with Mr. Kaho'ohalahala's assessment of the project area.

Kupuna Kaopuiki is the husband of the late Elaine Kaopuiki who was a noted *kumu hula* on the island of Lāna'i. *Kupuna* Kaopuiki is a third-generation descendant and is related to Mr. Kaho'ohalahala. *Kupuna* Kaopuiki's father and Mr. Kaho'ohalahala's great-grandmother are brother and sister. He is 71 years of age and has lived on Lāna'i since birth. *Kupuna* Kaopuki grew up at Keomuku and was a cowboy on the ranch. When ranching phased out, he moved to Lāna'id City and worked for the pineapple plantation as a truck driver and machine operator. Even though *Kupuna* Kaopuiki is officially retired, he keeps himself busy by being a shuttle driver for the Lodge at Kō'ele and the Mānele Bay Hotel. *Kupuna* Kaopuiki is also a musician and loves to play music in his spare time.

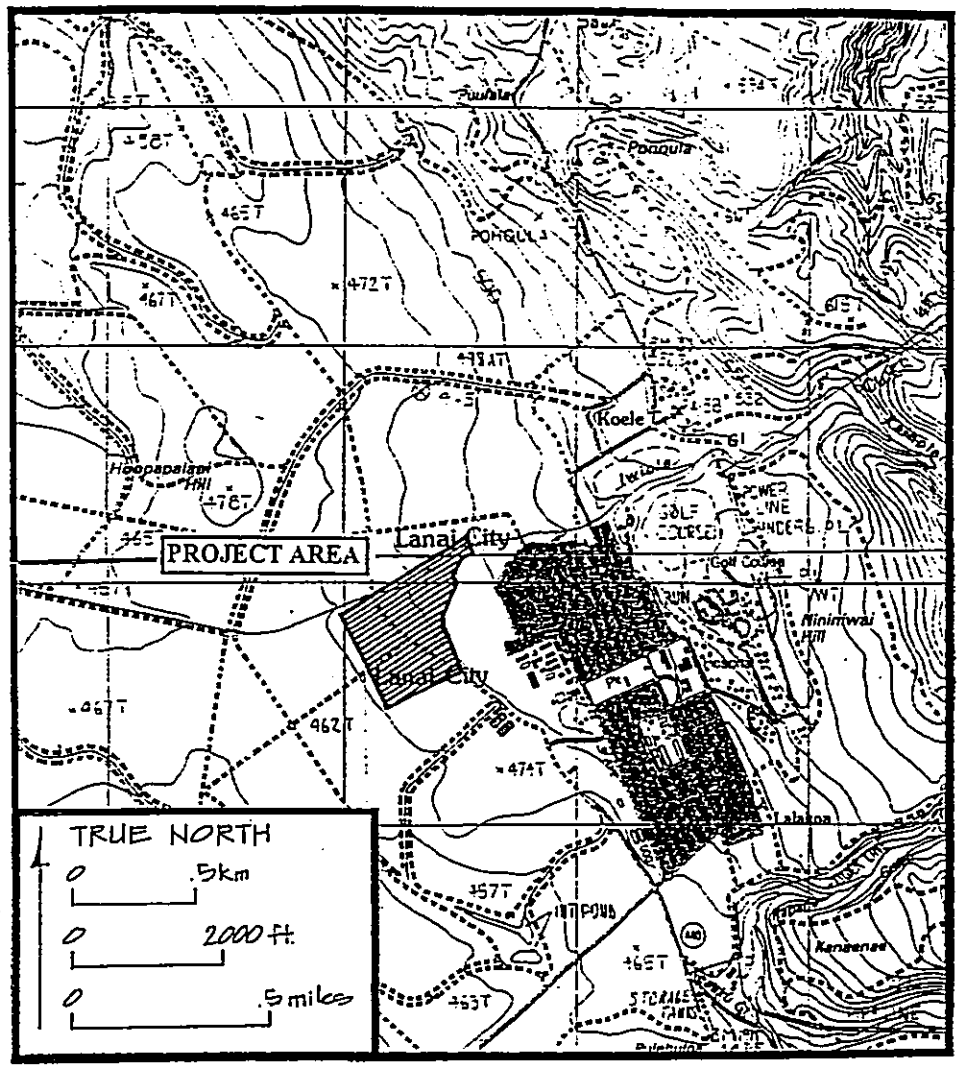

Figure 1 Portion of 1984 USGS Maps of the Island of Lāna'i, Showing Project Area

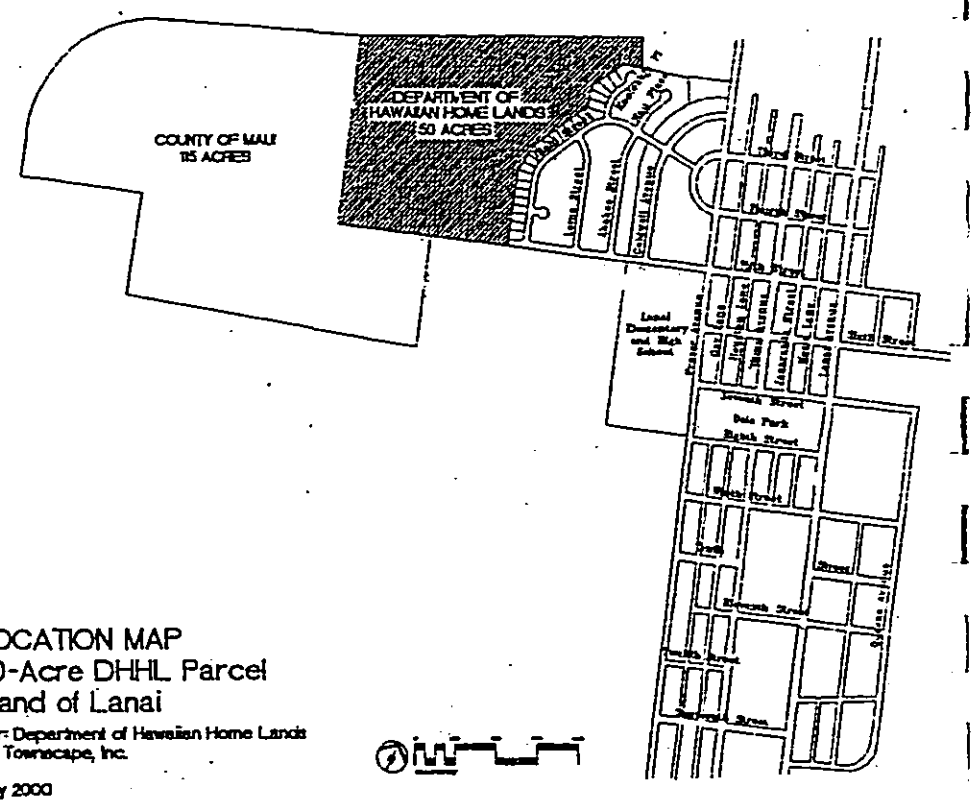

Figure 2 Townscape, Inc. Map (July 2000) Showing the Relation of the 50-Acre DHHL Parcel to Lāna'i City

II. DESCRIPTION OF THE PROJECT AREA AND TRADITIONAL CUSTOMS AND PRACTICES REGION

Project Background and Location

The approximately 50-acre parcel was donated to the Department of Hawaiian Home Lands (DHHL) by Lāna'i Company (Kaho'ohalahala Interview). The DHHL plans to develop 100+ residential homestead lots and a community center on the parcel. What distinguishes this project from other DHHL projects on other islands is that a stipulation of the "gifted" parcel requires that Hawaiian residents on Lāna'i be given first choice for homestead lots. The usual procedure follows that applicants apply for DHHL lands which are doled out according to placement on a list which is currently 20,000+ names long. The above stipulation immediately and directly benefits the Hawaiian community on Lāna'i. There are currently no other DHHL lands on the island of Lāna'i.

The actual project area is located on the northwest side of Lāna'i City. The project area is bounded by 'Iliahi Street and Ko'oloa'ula Place on the east, with the other three sides bounded by abandoned pineapple fields. The Olopua Woods subdivision lies adjacent to the project area on the east.

Formerly the project area consisted of cultivated pineapple fields which was the major economic activity since the early 1920's. Prior to that, the project area was utilized as pasture land for grazing and ranching activities.

Natural Setting

The project area is situated on the plateau region of Lāna'i, between 480 and 500 m (approximately 1440 - 1600 ft) above sea level. "The entire island nestles in the dry rain shadow of Haleakalā on Maui, leaving it without a wet windward side (Hazlett and Hundman 1996:175). The mean annual rainfall in this area of Lāna'i ranges between 699-800 mm (25-25 inches), with the heaviest rainfall in January, averaging 100 mm and the lightest rains in June, averaging 10 mm. Temperatures range between 60° and 80 ° F. Winds are dominated by consistent northeasterly trades. The soil within the project area is Waihuna clay (WoA (Foot *et al.* 1972). The main vegetation in the previously cultivated pineapple fields is now lantana, Christmasberry, California grass, and other exotic weeds.

III. CULTURAL SETTING

The Origin of Lāna'i

The name Lāna'i is a cognate of a more archaic name, "Nana'i", which is referenced in Hawaiian chants and is used today by older Hawaiians. One example is given in the story of "Pele and Hi'iaka", where Malaeha'akoa and his retinue chant of Pele's deeds to Hi'iaka , "A Nāna'i Ka'ulahea . . ." (Nāna'i of Ka'ulahea) (Emerson 1915:115). This is in reference to a Maui ruling chief (Kamakau 1992:128). From ancient times, Lāna'i's political status seems to have been connected to the island of Maui.

Though the meaning of the name Lāna'i is not known for sure, Mary Kawena Pukui and others (Pukui *et al.*, 1974:128) suggest the name might mean "day of victory" referring to Kaululā'au who conquered the evil spirits of Lāna'i. Kenneth Emory writes that the name is a descriptive name for the island which means "hump" (1924:34). Pukui's translation is considered to be the more accurate one used by most people today.

In the cosmic genealogy of Papa and Wākea (*Mele o Pāku'i*; traditional chant), Lāna'i was born from the mating of Wākea and Kaulawahine and was the eldest child of Kaulawahine:

Moe 'o Wākea, moe iā Kaulawahine	Wākea then slept with Kaulawahine
Hānau 'o Lāna'i Kaula	and Lāna'i Kaula was born,
He makahiapo na ia wahine.	the first-born child of that wife.

In yet another chant composed by Kahakuikamoana (*Ea Mai Hawai'inuiākea*; traditional chant) the obscure and mysterious beginnings of Lāna'i are alluded to and we learn that Lāna'i was an adopted child.

Kū mai ke ali'i, ka lani	Here stands the king, the heavely one,
Ka haluku wai ea o Tahiti	the life-giving water drops of Tahiti
Loa'a Lāna'i, he keiki ho'okama.	Lāna'i was found, an adopted child.

The name "Tahiti" is a variant of *Kahiki* and probably does not refer to the island of Tahiti we know of today. Instead, it is an obscure and ancient reference to a place so distant in time, that no memory exists of the actual location.

Prehistory of Lāna'i

Paramount to the prehistory of Lāna'i is the story of Kaululā'au. There are several versions to the story and a simple one is related here.

Hawaiian *mo'olelo* (stories) relate that for the first 500 years of Hawaiian settlement, the island of Lāna'i was uninhabitable by humans. In fact, the first inhabitants of Lāna'i were spirits — evil cannibal spirits who, it was said, ate anyone who landed there. One could not survive even a single night on the island. These spirits were led by Pahulu, the god of nightmares, who is believed to reside in the *weke* (goatfish). It is said that if the head of a *weke* is eaten just before bedtime, nightmares will result and the closer the *weke* is caught to Lāna'i, the worse the nightmares will be (Pukui 1983:105).

The first settler is said to be a young chief named Kaululā'au, the first-born son of Kaka'alaneo and Kanikaniā'ula. Kaka'alaneo was the king of Maui and resided at Lele (ancient name for Lahaina). As a young boy, Kaululā'au had a reputation for digging up the *'ulu* (breadfruit) trees in Lele. He pulled up so many trees that soon *'ulu*, an important food source, became scarce in Lele. Frustrated with his son, Kaka'alaneo decided to abandon Kaululā'au to Lāna'i with the spirits. All the chiefs and people agreed this was the best thing to do. So it was that Kaululā'au was put ashore at Lāna'i with food and supplies. In a dream that night, Kaululā'au's *'aumakua* (god) spoke to him and warned him to sleep in a nearby cave. At daylight, Kaululā'au would venture out around the island. It soon turned into a game of wit between him and the spirits who were always trying to discover his sleeping place. It was his intelligence and cunning that kept Kaululā'au alive. After some time, all of the spirits were eventually killed by Kaululā'au except for Pahulu who escaped to Kaho'olawe. On the beach at Naha, which is across the channel from Lele, Kaululā'au built a fire and kept it burning all night long. Night after night he did this to let his family know that he was still alive. Seeing the fires burning, Kaka'alaneo was curious to see if his son was still alive and he sent a canoe over to Lāna'i to investigate. Kaululā'au returned to Lele a changed person. His experiences on Lāna'i had taught him to be a good chief and leader. He gathered up a group of people and returned to Lāna'i to start up a settlement at Keōmuku. Thus, it can be said that Kaululā'au truly conquered the island of Lāna'i.

There are several *'ōlelo no'eau* (wise sayings) which attest to the importance of Kaululā'au in Lāna'i's history. A popular epithet for the island is *Lāna'i a Kaululā'au* or Lāna'i of Kaululā'au. Pukui (1983:210) explains that this is "Said in admiration of Lāna'i." The saying honors Kaululā'au's achivements in outwitting the spirits.

A Hawaiian Landscape

Though it is not known for sure, it is probably that the landscape and environment on the plateau, which encompasses the project area, once consisted of a dry mesic forest. The deeply eroded gulches, especially on the windward slopes, are an indication that at one time waters flowed more freely and abundantly than they do today. Much of the original vegetation has since been replaced by introduced species and altered by ranching and pineapple activities in the 19th and 20th century. The plateau lies approximately between 1250 and 1650 ft (381 and 503 m). Lāna'i City, where the project area is located, is at 1620 ft. elevation.

Evidence for the presence of a native forest for much of the plateau area can be drawn from Kānepu'u and areas of similar elevation that, today, contain remnant stands of native trees such as *olopua* and *lama*, as well as endangered species like the rare sandalwood (*Santalum freycinetianum* var.), and the Hawaiian gardenia (*nā'ū*; *G. brighamii*). Marjorie Ziegler conducted a study at Kānepu'u and estimated that half of Lāna'i could have originally supported a dry forest or woodland (*In 'Elepaio* 49 (4):19-24). Today, Lāna'i has "remnants of extremely species-rich dry to mesic forests with no clear dominant tree species" (Cuddihy and Stone 1990:15). By the time the early explorers "discovered" Lāna'i, the environment had already undergone radical changes. What they observed and reported was a desolate and barren landscape with very little native forest left. Today, remnant dry and mesic native forest stands do exist in the upper gulches and isolated areas (*Ibid.* 27).

Traditional Land Tenure

Geographically and politically, Lāna'i, Molokai and Kaho'olawe were grouped with Maui, with the Maui chief being the ruling entity. In some cases, Lāna'i was called a *kālana* and, therefore, a subordinate to one of the Maui *ahupua'a* (land divisions). At other times it was considered a separate *mokupuni* (island) (Sterling 1998:3; Moffat and Fitzpatrick 1995:23).

After Kaululā'au settled Lāna'i, his father and ruling chief of Maui, Kaka'alaneo, divided the island into thirteen *ahupua'a* or traditional land divisions which in most cases ran from *mauka* (the mountains) to *makai* (seaward). These divisions were: Ka'a, Paoma'i, Mahana, Maunalei, Kamoku, Kalulu, Kaunolū, Keāliakapu, Keālinaupuni, Pālīwai, Kaohai, and Kamao. The DHHL 50-acre parcel under discussion is located within the *ahupua'a* of Kamoku.

It seems that, for the most part, Lāna'i inhabitants lived peacefully until 1778 when the infamous raid by Kalani'ōpu'u occurred. Prior to this, settlements were established near the various coastal areas, with a few habitation sites inland near Kō'ele and Pālīwai (Kaopuiki and Moore 1987:14). Inland areas, where the elevation was higher and cooler, were used to grow *kalo* (*Colocasia esculenta*; taro) and *'uala* (*Ipomoea batatas*; sweet potato).

Kalani'ōpu'u's Attack on Lāna'i

In 1778, Kalani'ōpu'u, then ruler of Hawai'i Island was warring with Kahekili, the Maui king, under whose jurisdiction Lāna'i fell. The Hawaiian historian, Samuel Kamakau writes about the raid of Kalani'ōpu'u on Lāna'i.

> Kalani'ōpu'u carried the war into Lāna'i and attacked the chiefs and soldiers in their stronghold called Ho'oki'o, *mauka* of Maunalei, which was their place of refuge. The trouble with the place was that when the chiefs and soldiers fled thither, their water supply was cut off and they were all slaughtered. The whole island of Lāna'i was ravaged by the forces of Kalani'ōpu'u. At Paoma'i, at Keaea close to the forest, and at Ka'ohai was the place called Kamokupeu scarred by war markings of old. (1992:90)

Kamakau goes on to say that when food became scarce, the famine food *kūpala* was eaten by the warriors.

> During Kalani'ōpu'u's occupancy of Lāna'i, the food ran out, and the men had to eat the root of a wild plant called *kūpala*. This had a loosening effect upon the bowels when eaten in quantity. (*Ibid.*:91)

This war was referred to as *Kamoku hī* or "the land of loose bowels. This war decimated the population and the physical environment of Lāna'i, which never fully recovered. Marguerite Ashford writes:

> It was this raid, more than any other event, which was responsible for the poor condition of the Lāna'i lands in the following years. The burning and devastation of the island left many areas dry and barren, easy prey for erosional-causing winds. (1974:14)

Following this, the devastation and erosional effects on the land were exacerbated by historic activities such as the introduction of goats, sheep and cattle for ranching, which further contributed to the loss of most of the native dryland and mesic forest. A note worthy of mention is that the young Kamehameha accompanied Kalani'ōpu'u on this raid.

An Analysis of Place Names

The concept of *wahi pana* (a place with a story or legend attached to it) in Hawaiian culture is important because it is a connection to the past and, therefore, the ancestors. From the name of a place one can know intimate details about the people who lived there, the environment, cultural practices and historical events which took place. In Hawaiian culture, if a particular spot is given a name, it is because an event occurred there which has meaning for the people of that time. Because Hawaiian culture was an oral tradition, place names and their stories were an important way of remembering these traditions and ensuring these stories would be passed on to future generations. In Hawaiian thinking, the fact that a place has a name deems it important. Often, spiritual power or *mana* is attached to a place which increases its importance. On the subject of *wahi pana*, Edward Kanahele writes:

> As a native Hawaiian, a place tells me who I am and who my extended family is. A place gives me my history, the history of my clan, and the history of my people. I am able to look at a place and tie in human events that affect me and my loved ones. A place gives me a feeling of stability and of belonging to my family, those living and dead. A place gives me a sense of well-being and of acceptance of all who have experienced that place. (Kanahele *in* Van James 1995:6)

The *ahupua'a* of Lāna'i are shown on the island map by Emory (1924) (Figure 3). This map displays the *ahupua'a* boundaries. The *ahupua'a* of Kamoku includes 8,291 acres of the western portion of Lāna'i and extgends from the west coast, north of Kaumalapau, east upslope to Kō'ele which lies at the base of the high NW to SE trending ridge crest of the island. Some of the *ahupua'a* are shown as extending from one coast of the island to the opposite coast (Kaunolū, Pālāwai and Kalulu), but Kamoku *Ahupua'a* has a more typical sea to uplands configuration.

An 1878 Government Survey Map of Lāna'i by J. F. Brown and M. D. Monsarrat (UH Hamilton: Map Collection) indicate only six place names within Kamoku Ahupua'a. Kenneth Emory's 1921 survey of Lāna'i lists an additional 18 place names in the *ahupua'a* of Kamoku. The following list of place names for Kamoku Ahuapua'a was compiled and wherever possible, derivations and annotations are given.

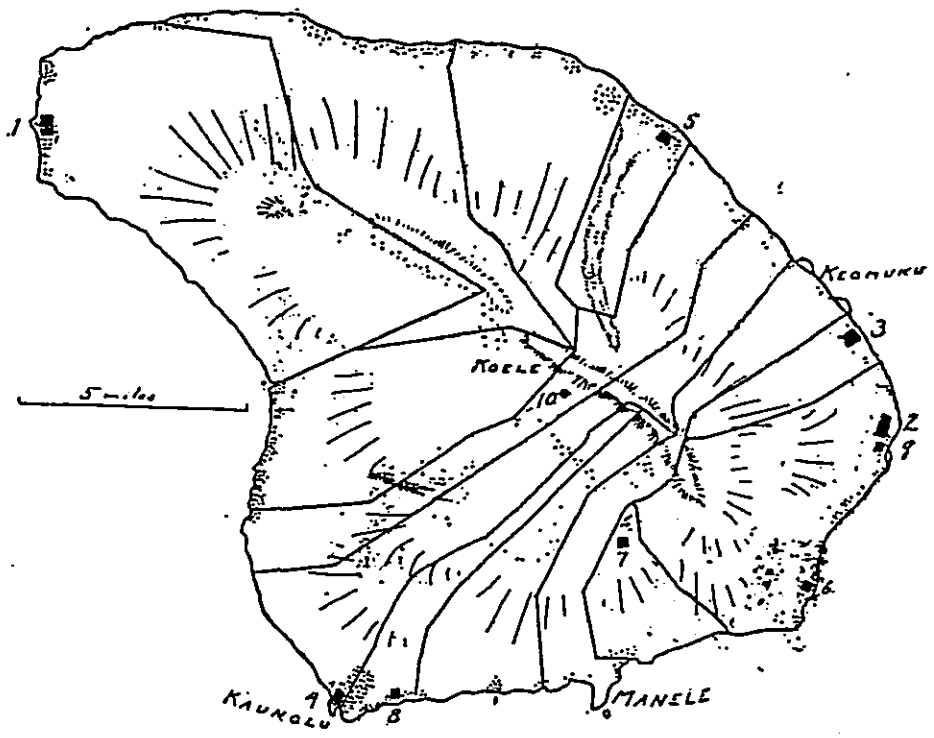

Figure 3 Map of Lāna'i Showing *Ahupua'a* and the Distribution of House Sites and *Heiau* Known to Kenneth Emory in 1921 (dots represent visible house sites, rectangles represent *heiau*, numbers give the order of *heiau* according to size). (From Emory 1924:49)

Major Place Names in Kamoku Ahupua'a

All place name translations were taken from *Place Names of Hawai'i* (Puku'i *et al.*, (1976), unless otherwise noted.

Anapuka	An arch on the coast. A rocky point with an arch (Emory 1924:29). *Lit.*, cave with holes.
Hōkūao	Located on the plateau. Translation: "morning star" (Emory 1924:29).
Hulupu'uniu	A hill (*pu'u*) on the plateau. Translation: "whirling feather hill" (Emory 1924:30).
Iwi'ole	Lower section of Kaiholena Valley. Today, there is an apartment complex there (Kaho'ohalahala interview). *Lit.*, Without bones (Emory 1924:30). Mr. Kaho'ohalahala shares his understanding of the meaning of the name as he learned it from *Kupuna* Richardson, "... this area is ... not necessarily without the bones ... it means that the spirits there are wandering because ... 'No more the bones.' So, there's no physical place for the *'uhane* (spirit) to be. So, in this area ... Iwi'ole doesn't talk about only the physical, but it talks about the spiritual."
Kaiholena	A valley. *Lit.*, the yellow core and a reference to the *iholena* banana, which was one of the few varieties women were permitted to eat in traditional times (Pukui & Elbert 1986:95).
Kalama Iki	A gulch, west Lāna'i, located near the coast. *Lit.*, small Kalama.
Kalama Nui	A gulch, west Lāna'i, located near the coast. *Lit.*, the big Kalama. Emory translates it as "the torch" (1924:31).
Kaumaikahōkū	A hill. Emory translates the name as "the stars are out" which refers to "the fact that above this spot there are usually no clouds" (1924:32).
Kaumalapau	Name of a harbor and light, southwest Lāna'i, since 1926. The older spelling of the name was Kaumālapa'u which means "soot [from burning] placed [in] gardens". (Pukui *et al.* 1974:94). Emory writes: "The Kekoewa family say this name should be Kamuelapa'u; but Mrs. Awili Shaw says that her parents and grandparents called the place Kaumolopa'u. None of these names can be translated with any meaning (1924:32).
Keaaku	A small valley. Emory's translation: "The standing root" (1924:32).

Keahi'āloa	A hill. Emory adds that it is a name of a *heiau*, according to one native informant, but he did not find any physical evidence of a *heiau* in the area (1924:32). He translates the name as "The fire of Loa" (*Ibid.*). Pukui *et al.* give "the fire long burning" as the translation.
Keone	A bay, west Lāna'i. *Lit.*, the sand.
Ki'ei	A bay, southwest Lāna'i. *Lit.*, to peer. Emory incorrectly translates this as "high".
Kihamaniania	"A smooth hill covered with maniania grass. Ruins of a Protestant church built in 1851" (Emory 1924:33). Emory translates the name as "smooth Kiha" (*Ibid*). The Hawaiian diacritics are uncertain.
Kō'ele	A land division, central Lāna'i. *Lit.*, dark sugarcane. Emory writes that this was a place "seized by a chief" and the site of a Hawaiian village. Emory is probably incorrect in translating this as "dry" and he notes that this is "not a dry place" (1924:33).
Lālākoa	Land section, northeast Lāna'i; also the site of the Charles Gay home. *Lit.*, the *koa* tree branch.
Makapala	Located on the plateau. Emory translates the meaning of this name as "enclosed eyes". Pukui *et al.*, give the meaning of Makapala as "sore, beginning to heal", in reference to a place name on the island of Hawai'i.
Naupaka	Land section, west Lāna'i. Emory describes it as a hanging valley. *Lit.*, the *Scaevola* shrubs, in reference to the *naupaka* plant which commonly grows along beaches and at lower elevations. As the name implies, this land section is located near the coast.
Nininiwai	Located on the plateau. *Lit.*, to pour water.
Pūlehuloa	A hill. Emory gives Thomas Thrum's translation, "the big roasting" (1924:36).
Pu'u Kauila	A hill. The name is a reference to the *kauila* tree which probably grew on this hill or *pu'u* at an earlier time. *Lit.*, *kauila* tree hill.
Pu'u Koa	A hill. *Lit.*, *koa* tree hill.
Pu'u Nānā i Hawai'i	A hill on the plateau from which, on a clear day, one can view Maunaloa and Maunakea on the island of Hawai'i (Kaho'ohalahala interview).
Pu'u Nēnē	A hill and feeding ground for Hawaiian geese. *Lit.*, goose hill.

Olopua Woods Subdivision

Situated adjacent to the project area, is a modern subdivision named Olopua Woods which has existed since ". The name for this subdivision, and the street names as well, were given by Lāna'i's cultural specialist, Solomon Kaho'ohalahala. He explains:Several years ago, prior to the development of that subdivision, Lāna'i Company had asked if I would consider naming the project. When I look at an area that is barren, that was once pineapple lands, I thought that "Olopua Woods" would be an appropriate name. I can tell you that once they accepted the name, the reaction was varied on Lāna'i. In fact, one potential homeowner thought it was totally absurd to call this subdivision "Olopua Woods". This particular individual came up to me and he said, "I gotta ask you this question. How do you get a name like "Olopua Woods" in an area that was only pineapple?" I said, "Let me back up and explain to you why I want to consider this name for a new subdivision. If you can imagine Lāna'i before pineapple and before ranching, perhaps, this entire plateau would have been an *olopua* forest, because, today, the largest stands of native trees that we have at this same elevation are *olopua*. But, in the *olopua* forest is also scattered some other plants. So, I wanted to remind us in this subdivision, although today we only remember it as pineapple lands, that there was an old forest here before and possibly an *olopua* forest. Within the forest, there were other plants like *ma'o hau hele* (*Hibiscus brackenridgei*), *nā'ū* (*Gardenia brighamii*), *naio, lama*, and all of these things scattered throughout." So, in the subdivision, if you look, I've named every street in the subdivision after one more native plant that still lives on the island of Lāna'i today. In a very subtle way, what I'm hoping is that by calling it what it used to be, it is going to bring back some of the information and the understanding of Lāna'i in an older time and place. One of the more difficult names in this subdivision is the *ko'oloa 'ula* (*Abutilon menziesii*). I happened to know one person on Lāna'i who bought a home on that street. I remember asking her, "Now, tell me what street you live on." And, she looked at me and she was very puzzled and she said, "You know, my street has this real long name and it's really hard to say. It's "Ko'o something." I said, it's Ko'oloa 'ula and here is the photograph of the *ko'oloa 'ula*. I want you to know that this is a very beautiful hibiscus. Moloka'i, Lāna'i and Maui has the same variety of *ko'oloa 'ula* but, they say the color between each island is a little different. So, on Lāna'i, our's is a very dark, scarlet, very dark red miniature hibiscus." And, I said, "One day, I hope that you will have planted in your yard a *ko'oloa 'ula*." And, so when I had a seedling of a *ko'oloa 'ula*, I took it to her and she planted it in her yard. Today, when you go to her and say, "Where do you live?" She'll proudly say to you, "I live on Ko'oloa 'ula Street." So to me, what we do in this process is that, suddenly, we educate our people. They have to know what their street names are and by just saying what street they live on they bring back the sound and the name of the plant that is part of Lāna'i. When I explained this to that gentleman who was kind of disturbed, he finally said, "Wow, now I know why it's called "Olopua Woods". So, it's an education process.

Culturally, the giving of a name is very serious business to Hawaiians. A name recalls a specific knowledge, tells a story and evokes a memory of a person, place or event. In re-educating the people of Lāna'i about their past, the name *Olopua* will be a constant reminder to present and future generations of what probably did exist there in the ancient past. In addition, the power of the spoken word in Hawaiian thought can actually create the *mana* which will in turn replenish Lāna'i with the native plants that once grew in this area.

IV. HISTORICAL SETTING

Introduction

Notable sources dealing with the history of Lāna'i are: Kenneth Emory (1924), Lawrence Gay (1965), Marguerite Ashford (1974), Ruth Tabrah (1976) and Elaine Kaopuiki and Randolph Moore (1987). The following is only meant to be a brief summary of Lāna'i's history.

Early Historic Period

Captain James Cook had met the unlucky fate of death in early February of 1779 at Kealakekua, Hawai'i. Shortly afterward, two of his ships, the *Resolution* and the *Discovery* happened upon the island of Lāna'i. Though the expedition did not actually land, Captain James King gives the first description of Lāna'i on February 29, 1779. This description is probably based from other native accounts. He writes:

> The country to the south is elevated and craggy; but the other parts of the island had a better appearance and seemed to be well inhabited. It abounds in roots, such as sweet potatoes, taro and yams; but produces very few plantains and breadfruit trees. (1785:115)

The next explorer, Captain Nathaniel Portlock, sailed by in 1786, seven years later. He mentions that a few canoes came out to their ship to barter, but says they "brought nothing of any consequence" (1789:66).

A year later, Captain George Dixon notes that "During the afternoon we had several canoes from Ranai [Lāna'i] alongside, which brought us a number of fishing lines, but little besides: these were purchased with small toes [*sic*] [toys] (1789:251).

In 1792, Archibald Menzies, a surgeon on the Vancouver expedition, wrote about Lāna'i:

> Early next morning we passed to the southward of Kaho'olawe and was at noon off the south end of Lāna'i . . . The wind being light and variable, with clear weather in the middle of the day, gave us an opportunity of observing the state and naked appearance of the island, which seemed thinly covered with shrivelled grass in a scorched state. No hamlets or plantaions were to be seen, no trees or bushes adorned the face of the country, which swelled out gradually to a moderate height, so that we have reason to think that the island is but very thinly inhabited. A few canoes came off to us with two or three men in each, which we conjectured were a fishing party or led merely by curiosity, as they brought nothing to dispose of and had no women with them.
>
> . . . Lāna'i, presents a naked, dreary, barren waste, without either habitation or cultivation. (1920:22)

The difference between Captain King's and Menzies' description are no doubt due to the 1778 raid of Kalani'ōpu'u. It has been suggested by some that these early explorers merely wrote about Lāna'i from afar and never actually made extensive explorations of the island. From the sea, the coast of Lāna'i may have looked arid and desolate, but the inland regions were more lush and supported agricultural endeavors that could have supported a sizable native population.

Of the southwest coast of Lāna'i, the Rev. William Ellis provides an explanation as to why ships may not want to land:

> It is not unusual for vessels passing this way to be becalmed there for six, eight, or even ten days. The natives with the small crafts belonging to the islands usually keep close in shore, availing themselves of the gentle land breeze to pass the point in the morning; but this is attended with danger as there is usually a heavy swell rolling in towards the land. (1917:23)

Ellis further writes:

> . . . the ravines and glens, notwithstanding, are filled with thickets of small trees, and to these many inhabitants of Maui repair for the purpose of cutting posts and rafters for their small houses. The inhabitants are few, probably not exceeding 2,000. (*Ibid.*)

Captain Charles Wilkes, of the U. S. Exploring Expedition, 1830-42, was one of the last of the noted explorers to write about Lāna'i:

> It affords little ground for cultivation, and is only inhabited by a few fisherman, who have some temporary huts at its eastern end. It is alike destitute of cattle, water, and wood. (1861:296)

In 1830, a penal colony for women was established at Ka'ena on Lāna'i and, likewise, a penal colony for men was set-up on Kaho'olawe. Food at both colonies was often scarce and the exiled convicts were often forced to exist on the *kāpala* root which; when eaten in quantity, produced severe dysentery. The penal colonies existed until 1843 when they were both disbanded by the chiefs (Ashford 1974:21).

In 1835, Rev. Dwight Baldwin, a protestant missionary from the Lahaina Station, was the first missionary to touch foot on Lāna'i. By 1837, three schools were operated by teachers from Lahainaluna Seminary. In 1843, the Protestants began building two meeting houses, one of which was at Kihamanienie, near Kō'ele, in the *ahupua'a* of Kamoku (*Ibid.*:24).

The Māhele of 1848 and Land Commission Awards

The *Māhele* of 1848 forever altered the traditional land tenure system. Essentially, the lands were divided between the King, the Chiefs and the Government. The *maka'āinana* (common tenants) were allowed to make claims for plots of land on which they lived or were cultivating. These lands are commonly referred to as *kuleana*. If awarded, the

parcels were called Land Commission Awards (LCA). In order to establish a claim, the petitioner had to present the testimony of two witnesses who verified the petitioner's connection to the land. Once awarded, a Royal Patent number was issued.

The *Māhele* resulted in the following *ahupua'a* being designated as Government lands: Kalulu (6078 ac.), Kaunolū (7860 ac.) Keālinaupuni (4679 ac.), Kamao (2751 ac.) Pawili (1930 ac.) and Mahana (7973 ac.) (Indices of Awards 1929). For some reason, the *ahupua'a* of Kamoku and Paomai, which were supposed to be Crown Lands, were unassigned (Interior Dept. Memos 1860-70's; 1878 Government Survey) at the time of the *Māhele* in 1848. Though there were individual land claims, due to the discrepancy, most of the Kamoku and Kalulu claims were also "omitted" which led to further confusion over land title. Both the Interior Department and the Commissioner for Crown Lands fought for control over these lands. Eventually, Kamoku and Paomai became Government Lands and were subject to leases by the Interior Department.

LCA #10630 (Figure 4), awarded to Noa Pali, was located on the flats on the northwest side of Lāna'i City and approximately 1 km east of the project area. The Native Register (526, vol. 6) indicates that Pali was a tax collector and "*konohiki* of the *Mō'ī*. He first received these lands from Kekāuluohi in 1839. In the claim, Pali states "There are some areas of grass and areas for cultivating sweet potatoes and gourds." Because his various plots are scattered all over, he is asking to consolidate his lands. He is awarded a large *kuleana* of 112 ¼ acres.

The only other claim awarded for Kamoku *Ahupua'a* was LCA #6833 to Kaaiai, who had *'āpana* (parcels) in both Kamoku and the adjacent *ahupua'a* of Kalulu (Figure 4). Kaaiai's lands amounted to approximately 20 acres, the bulk of which was in Kalulu. The parcel in Kamoku, a houselot, was located southeast of the project area. Native Testimony indicates Kaaiai received these parcels in 1840 from his parents, who in turn received them from Danial 'Ī'ī (Vol. 13:272-73).

The native testimonies indicate that, by the *Māhele*, much of the plateau area in Kamoku and the adjacent *ahupua'a* had been altered to more open grass (*pili*) lands. This paved the way for ranching to enter into the picture.

Post-Māhele - 1900

The first Mormon missionary, Francis Hammond, arrived on Lāna'i in 1853 in hopes of starting a colony for converts in Pālāwai Basin. These initial efforts failed due to lack of water and insects (*pe'elua* worms) that destroyed the crops. In 1861, another Mormon, Walter Gibson, or "Kipikona" as he was called by the Hawaiians, took up the torch. Gibson had ulterior motives and under the disguise of proselytizing "natives" and convincing them to support the church financially, he was able to buy Lāna'i lands only to register them in his own name rather than the Mormon church (Ashford 1974:43). Little by little he began acquiring more and more land until he controlled a substantial portion of Lāna'i. Gibson formed Lāna'i Sheep Ranch by consolidating the 26,000 acres of land he controlled (Nishimoto 1990:3).

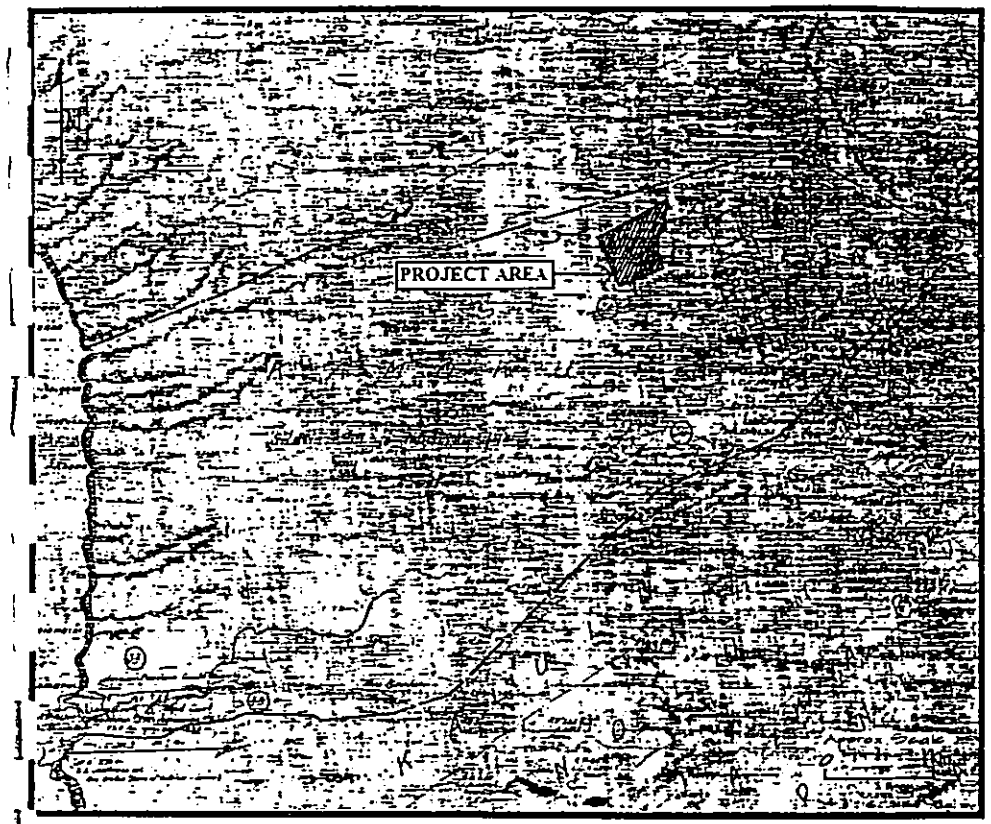

Figure 4 Portion 1927 Land Court Map, Island of Lāna'i, Showing Kamoku *Ahupua'a* and Former *Kuleana* Lots

By 1863, Gibson was being investigated for fraud and in 1864 he was officially excommunicated from the Mormon Church. However, the damage was done. Gibson held on to the lands he had purchased under the guise of the Mormon Church and refused to relinquish them. By 1867, the ranch had grown to 10,000 sheep and 18,000 goats. Gibson continued to buy and ease parcels until by 1875, he controlled 90% of Lāna'i.

Also, in the 1860's, a Chinese man by the name of Ahsee leased the entire *ahupua'a* of Kamoku for the purpose of raising goats and open grazing. The decade of the 1860's began an era of commercial ranching activity that lasted into the 20th century. When Gibson died in 1888, his daughter, Talula Lucy Hayseldon, inherited the ranch, which had grown to 40,000 sheep, 3,000 Angora goats, 600 horses and 200 head of cattle (*Ibid.*).

Talula's husband, Frederick Hayseldon increased their land holdings by purchasing many native *kuleana*. He also cancelled some leases his father-in-law held and renegotiated new leases in his name. In 1890, Kamoku and Paomai were re-leased from the Commissioner of Crown Lands for a 25-year period at $500 per year. Lāna'i became a major supplier of mutton to the neighbor island markets. Wool was also exported to the United States and Europe. The Hayseldon's also tried their hand at sugar and formed the Lāna'i Sugar Company which later became the Maunalei Sugar Company (Ashford 1974:59-60).

The Twentieth Century to the Present

Beset by financial problems, Charles Gay, of the Sinclair and Robinson family who owned Ni'ihau, purchased the Gibson ranch in 1902. In the eight years as manager, Gay made major improvements to the ranch. He built employee housing, dug reservoirs and wells, laid pipelines, built windmills, and did experimental farming. However, it was difficult to make a profit and, by 1910, Gay sold the majority of his land to a group of businessmen who formed Lāna'i Ranch Company. He retained only 600 acres for himself.

In 1911, George Munro, from New Zealand, entered the scene when Lāna'i Ranch Company hired him as ranch manager. He immediately made huge capital improvements by spending $200,000 to build fences, a wool-shearing shed, a sheep-dip and a 3mg storm-water reservoir. Understanding the concept of "fog drip", Munro also planted Norfolk Island pine trees over the island as a means to increase the island's water supply. The ranch also shifted its emphasis from sheep to raising cattle for the beef market (Nishimoto 1990:3-4).

In 1917, Lāna'i Ranch Company sold the island to the Baldwin family for $588,000. During this time, a pipeline was constructed from the only running stream on the island to irrigate upland pastures (*Ibid.*).

Five years later (1922), the Baldwins sold Lāna'i to Hawaiian Pineapple Company. This began the era of pineapple cultivation on a grand scale. The pineapple era would forever alter the island's landscape as well as the social fabric of the community by bringing in plantation laborers of varied ethnic groups, i.e., Japanese and Filipino. By 1927, pineapple operations of 40,000 acres accounted for nearly half of the island's total acreage. Lāna'i Ranch utilized 44,000 acres and 5,000 acres was forest reserve.

George Munro retired as ranch manager in 1935. The ranch continued to decline and in 1951, the ranch officially closed. In 1961, Castle & Cooke acquired total ownership of Hawaiian Pineapple Company. Looking into the future, Castle & Cooke decided to diversify their interests and in 1987 construction began for the Lodge at Kō'ele and a few years later, the Mānele Bay Hotel. Due to foreign competition ande high labor costs, Castle & Cooke announced the phasing out of pineapple in the 1990's.

A 1923 USGS map (Figure 5) shows an "Airfield" in the immediate vicinity of the project area. A "best fit" overlay suggests that the south runway of the first Lāna'i airfield lay within the northwest portion of the present project area. During the field inspection nothing suggestive of an airfield was observed. There were however two or three roughly cubic, approximately 50 cm on a side, chunks of concrete with basalt gravel appearing to date from the early twentieth century. These related to Lāna'i's first airfield which was a modest construction. Interview informant, Samuel Kaopuiki talks briefly about the airstrip:

CSH: The other thing I wanted to ask about was if there was an old airport nearby the project area?

SK: Right close to Olopua, where this subdivision is going to be, where the corral is now, right outside of there. Where that ditch is.

SPK: The *kahawai*, the one that goes down to Kaiholena?

SK: Yeah.

SPK: Just past the ditch?

SK: Right around that ditch. Never had that ditch before. The only planes that came in was the old kind, with the boat.

CSH: Like a seaplane?

SK: Yeah. That's the only one at that time.

CSH: The airport is shown on a 1923 map. Do you know when it was built?

SK: I know, us kids, we used to ride bicycle down in that area. I don't know when. But, that's the only runway they had.

CSH: Before this airport [that we use today]?

SK: Yeah. They never had that new one going down to Kaumalopau. That was the new one. But, we had that old one. It was just dirt.

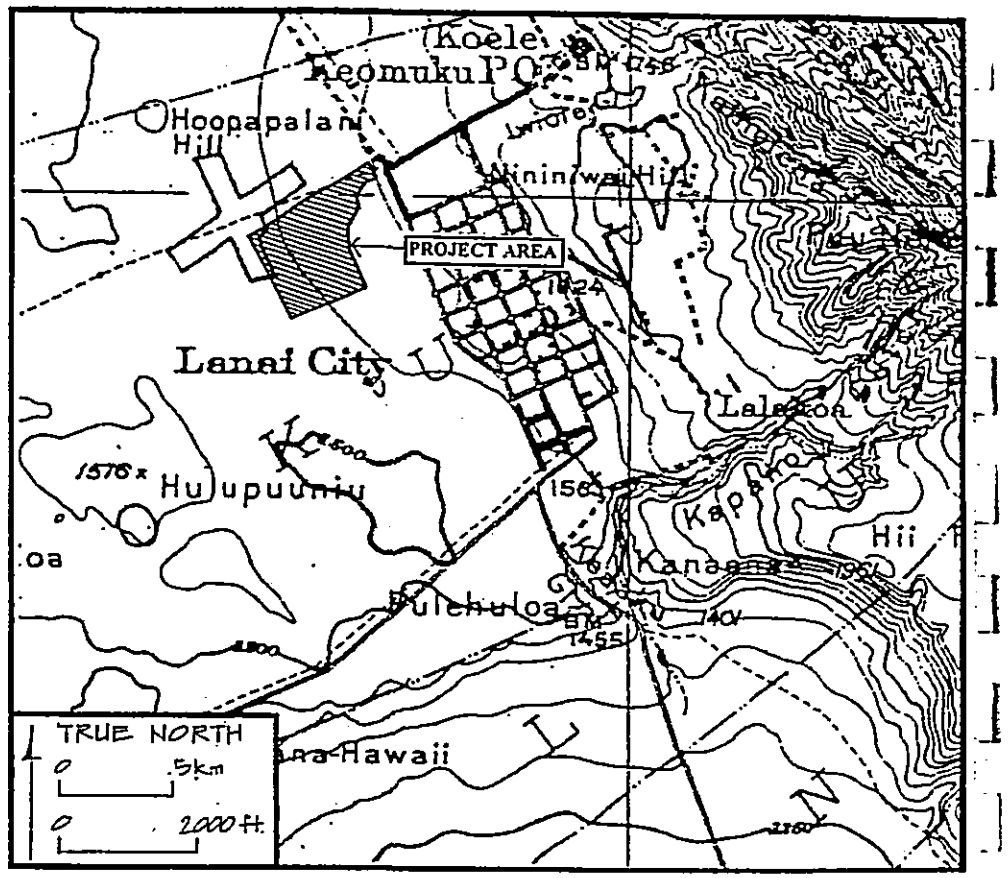

Figure 5 1923 USGS Map Showing an "Airfield" in the Immediate Vicinity of the Project Area ("best fit" location of the project area shown).

CSH: Oh, so no asphalt or paving — just dirt?

SK: It was just dirt. I don't know what year the one down there was built. I think it was somewhere in the late 1930's and into the 1940's that we still had that old one. I remember the only kinds of planes that landed there was the seaplane because us kids used to do down with the bicycle. From Kō'ele, we used to ride down and watch the plane come in. That was the only kind of plane that came in.

V. PREVIOUS ARCHAEOLOGICAL RESEARCH

Archaeological studies that deal with Lāna'i history in general, with specific mentions of the *ahupua'a* of Kamoku include: Emory (1924), the State-wide survey, Lāna'i Island (Hommon 1974), Kaschko (1986), Hammatt and Borthwick (1988), and Hammatt and Borthwick (1989). Table 1 lists previous archaeological studies in Kamoku *Ahupua'a* and vicinity. A brief discussion of pertinent archaeological studies followa.

Table 1: Previous Archaeological Research in Kamoku and Vicinity (Figure 6)

Researcher(s), Year	Type of Study	Comments
Emory, Kenneth 1924	Reconnaissance survey of entire island	Island-wide survey, no sites in project area
Ahlo 1985	Archaeological Survey	Proposed Lāna'i Sanitary Landfill Site
Kaschko 1986	Archaeological Reconnaissance Survey and Subsurface Testing	Kō'ele Hotel Project Area
Nagata 1987	Inspection Report and Recommendations	Proposed Lāna'i Sanitary Landfill
Walker & Haun 1987	Archaeological Reconnaissance Survey and Limited Data Recovery Excavations,	Proposed Sanitary Landfill Site
Hammatt, Borthwick & Shideler 1988	Assessment, excavation and analysis of Ranching Era at Kō'ele	Excavation and analysis of recovered historic material from 2 trash pits correlated with events during ranching era
Hammatt & Borthwick, 1988	Assessment for proposed Lālākoa Subdivision	Midden scatters in former pineapple lands for proposed subdivision
Borthwick & Hammatt, 1989	Reconnaissance of Proposed Waialua Multi-Family Housing Subdivision	Just to the north of the present project area, pineapple fields were surveyed with finds of basalt & volcanic flake scatters in disturbed context
Hammatt & Borthwick 1989	Reconnaissance survey of proposed Kō'ele Golf Course & 3 other parcels	Ranching era artifacts found

Researcher(s), Year	Type of Study	Comments
Borthwick & Hammatt 1990	Reconnaissance	Proposed quarry area
Hammatt & Borthwick 1990	Additional 100 acres inventory survey for Kō'ele Golf Course for proposed single-family housing	Fallow pineapple fields and sloping forest land at north
Hammatt *et al.* 1990	Reconnaissance	Proposed landfill
Hammatt & Chiogioji 1991	Archaeological investigations	Waialua annex subdivision
Borthwick & Hammatt 1992	Archaeological survey	Proposed Kō'ele Reservoir
Hammatt & Borthwick 1993a	Archaeological data recovery and monitoring of the Kō'ele Golf Course Parcel	Recovered from trash pits many items connected to ranching-era events
Hammatt & Borthwick 1993b	Reconnaissance of proposed housing, Queens and Waialua subdivisions	Flake scatters were found in former pineapple fields
Hammatt & Borthwick 1993c	Inventory survey	Proposed waste management facility at Ko'ele
Hammatt & Chiogioji 1993	Inventory survey	Veteran's Cemetery site
Colin & Hammatt 1996	Inventory survey	Near Kaumalapau Harbor

Emory's island-wide survey (1924) identified no sites in the immediate vicinity of the project area (Figure 3). He did identify a cluster of house sites approximately 700 m to the northeast.

Previous archaeological studies specific to Kamoku *Ahupua'a* include archaeological work conducted in association with a proposed landfill site (Ahlo, 1985; Nagata, 1987; and Walker and Haun, 1987). The proposed landfill site was located near the top in the *mauka*-most section of Kaumalapau Gulch. The archaeological work conducted there located eight sites which included four agricultural complexes, three temporary habitation shelters, and a trail marker (Walker and Haun, 1987). Test excavations "yielded an extremely limited range of prehistoric artifacts (a total of 17, including basalt flakes and shell scrapers) and sparse to moderate amounts of midden" (Walker and Haun, 1987:ii). Three radiocarbon

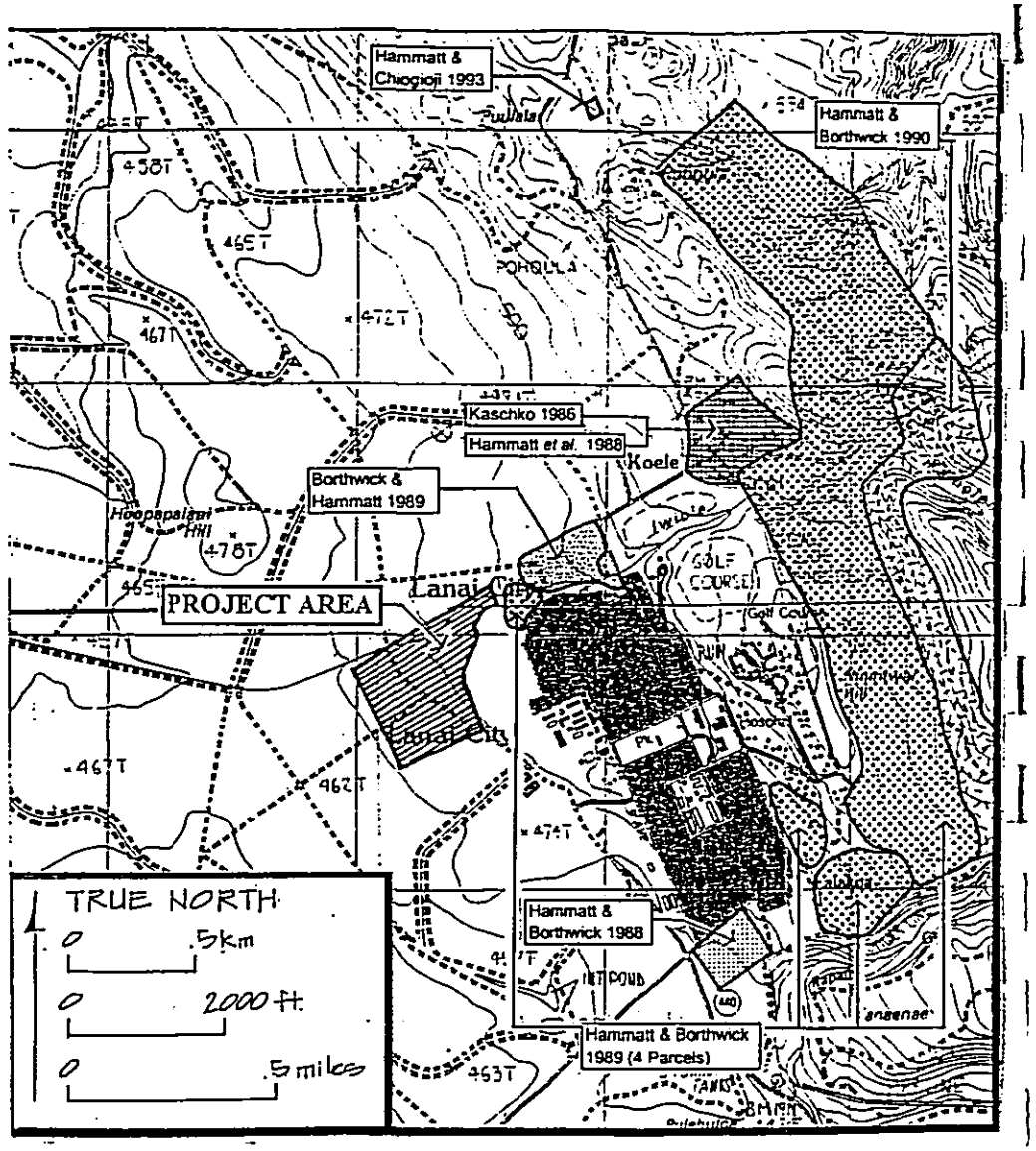

Figure 6 Portion of U.S.G.S. Maps of Lāna'i, Showing Previous Archaeological Work in the Vicinity of Lāna'i City

dates were obtained from two of the shelters and an agricultural feature, with the dates clustered tightly at 300± 60 years before present, indicating probable occupation in the 17th Century. These sites were characterized as "probable temporary habitation features and scattered probable agricultural features" (Walker and Haun 1987:40).

At another proposed landfill site in Kamoku *Ahupua'a*, above Anapuka Bay, two C-shape temporary shelters, two trail marker cairns and a possible shrine *ahu* were identified (Hammatt *et al.* 1990).

Bishop Museum staff members Paul Cleghorn and Aki Sinoto conducted an on-site assessment for the Lāna'i Airport expansion. They recorded "two localities (B.M. Locality 1 and B.M. Locality 2) with surface artifacts." Locality 1 contained a possible "abrader, made of volcanic rock," and Locality 2 contained "two basalt flakes, a small rectangular adz blank," and a "surface scatter primarily composed of basalt fragments although some midden and historics were observed" (Sinoto, 1989:2). With the discovery of the surface artifacts further archaeological work, consisting of "further surface collection and test excavations" was recommended (Sinoto, 1989:2).

Subsurface testing of these two and other likely localities within the airport expansion area was conducted in 1990 (Borthwick *et al.* 1990). No evidence of subsurface cultural layers was discerned. It was concluded that scattered surface artifacts are evidence of traditional Hawaiian use of the Lāna'i plateau lands above 1,000 feet elevation but that the context has been destroyed by many years of pineapple cultivation.

The 1990 archaeological survey of the Quarry and Rock Crushing Plant (Borthwick and Hammatt 1990) found no archaeological sites within the project area. The presence of the "10-foot trail" was noted as was the remnant of a historic house site with a charcoal kiln. The house site, judging by associated nails and bottles, probably post-dates the 1920s.

Work was also conducted in 1993 near the present location of the Lāna'i Rock Quarry for the proposed Solid Waste Management Facility (Hammatt and Borthwick 1993d). No archaeological sites were encountered during the survey.

In 1996 Colin and Hammatt conducted an inventory survey and limited subsurface testing of 36 acres, near Kaumalapau Harbor, Kamoku. Three sites were identified: 50-40-98-1938, 1939, and 1940 and consisted of a terrace, a mound and a complex of cement foundations and an enclosure, all of which date within the 20th century.

On the eastern side of Lāna'i City, Hammatt and Borthwick conducted an assessment for the proposed Lālākoa Subdivision (1988) to determine the nature of the surface scatter of stone artifacts on that 25-acre parcel. The coarse-grained materials collected were determined to come from introduced road gravel in modern times. Some fine-grained basaltic material was also collected as well as one finished adz fragment. Four of the pieces collected were determined to be retouched and/or fashioned into adz preforms. However, any original archaeological context for any of these artifacts had long ago been destroyed by plowing to depths of over 30 cm. and, in fact, may not have even been from this property.

Most archaeological studies in the vicinity of Lāna'i City (Kaschko 1986; Hammatt *et al.* 1988; Borthwick and Hammatt 1989, 1992; Hammatt and Borthwick 1990, 1993b; Hammatt and Chiogioji 1993) have identified no significant traditional Hawaiian sites or deposits. A scatter of lithic material (volcanic glass and basalt flakes) designated site 50-40-98-1696 was identified (Hammatt and Borthwick 1989, 1993a) approximately two kilometers east of the present project area.

VI. SETTLEMENT PATTERN

Summary of Settlement Patterns

The historical sources, Land Commission Awards information, Land Court Applications, as well as previous archaeological research in this area of central Lāna`i all contribute to the formation of a model of traditional Hawaiian settlement.

The thick soils of the plateau lands of central Lāna`i were in traditional use for dryland agriculture. This use although waning, continued into the mid 1850s and is reflected in the *kuleana* testimony for Kamoku and the adjacent *ahupua`a* that mention cultivation of sugar cane, sweet potatoes and gourds. It is not coincidental that all of the LCAs in Kamoku, Kalulu and Kaunolū are well above 1,000 feet in elevation where rainfall was adequate to support dryland crops.

Before widespread pineapple cultivation, traces of the ancient upland forest were observed as late as the early 1900s (L.K. Gay 1964:51). Clearly the prehistoric agricultural pattern involved forest clearing, probably including slash-and-burn methods.

During the mid- to late-1800s the plateau was transformed to open grassland as grazing of goats and later sheep became a dominant land use. In the late 1920s, after successful experimental planting, the entire plateau area of Lāna`i was eventually plowed for large-scale commercial pineapple cultivation.

Lāna`i City was constructed in the 1920s as an entirely new residential area, specific to the Dole Pineapple Plantation. The city has been expanded upon recently in association with the change over to tourism as the main economic force on Lāna`i City.

Predictive Model

Based on historic and archaeological data no sites, either surface or sub-surface, are anticipated within the 50-acre project area since the cultivation of pineapple for more than 70 years would have removed all sites. However, occasional remnant artifacts (*i.e.* basalt flakes and adzes), have turned up in other previously cultivated pineapple fields. While artifacts may be encountered occasionally, their archaeological context would be anticipated to have been massively impacted if not completely destroyed.

VII. NATIVE HAWAIIAN CUSTOMS PERTAINING TO THE PROJECT AREA

Introduction

While understaking this assessment, the following potential impacts were looked at: burials, old Hawaiian trails, hunting and gathering practices for cultural resources, religious shrines and sites and any other archaeological and historic property concerns.

Results

Due to the history of the land tenure: loss of the mesic forest, the introduction of sheep and goats, ranching activities and pineapple cultivation for over the last 200 years, the landscape within the project area was permanently altered and these activities have left no evidence of Hawaiian cultural practices in the project area. For most of the 20th century, the project area has been cultivated in pineapple fields. The Lāna`i residents and the community people contacted for this project remember the project area to be pineapple fields and, prior to that, pasture and grazing lands for ranching activities.

Old maps were researched to indicate habitation sites and/or Hawaiian trails within the immediate area of the project. There were no trails found to traverse the project area. Previous archaelogical reports were studied to determine if any burials, cultural or historic sites were present in the project. None were found. An avifaunal and botanical study, conducted by independent contractors, did not indicate any native birds or rare or endangered plants in the project area. For all of the above concerns, no cultural resources or native Hawaiian customs were found to exist within the 50-acre DHHL parcel.

An interview with cultural specialist, Solomon Kaho`ohalahala, confirmed the above results of no potential impact. Mr. Kaho`ohalahala shares his knowledge of the project area as he knows it from his own experiences and from the knowledge pnased down to him through his family:

CSH: I wanted to talk about the specific project area — the 50 acres that DHHL is proposing to build homes on. Specifically, I wanted to ask what you know about the project area culturally, and do you know anything about the land use and history of the general area?

SPK: Growing up on Lāna`i, the thing we all know is that the 50-acres has mainly been related to pineapple. So, considering that pineapple started in 1923 until 1994, when it ended. I just knew that whole area as being cultivated in pineapple when I grew up as a child. It was in the area just below the school's agricultural area. So, where the cattle and the pigs were being raised, and where the gardening was for the school's agricultural program, this 50-acres was adjacent to that and just below one of the kahawai, the gulches, that start up from Kaiholena and running down to Paliamano and Nānāhoa. These are sort of the channels that went right through Lāna`i City and went right through the pineapple fields. But, the 50-acres were actually set in those boundaries. So, for me, as a kid growing up, it was the borderline to Lāna`i City to the pineapple area. Of course, we always not only worked in those fields where the 50-acres are, but as kids, we also ran and drove and played in that area because it was

just bordering Lāna'i City. But, historically, I know that prior to pineapple, this area was all cattle grazing and sheep grazing land. I can't say that I'm an expert at that time, because I wasn't born then, but at least from the stories from families — my father was a cowboy and all of my relatives were all involved in Kō'ele being the main center of ranching — there was no Lāna'i City then. These open areas were all really open, grazing lands.

In regard to clearing the pineapple fields within the project area, he relates the following story.

CSH: You mentioned that you had spoken to someone who used to work for the plantation and helped clear the pineapple fields. Can you tell me about that?

SPK: Yes. I was talking about Mr. Kurashige. He has a very interesting story. He came to Lāna'i when Boomfield Brown was plantation manager. He came from Wahiawa. His story of him coming to Lāna'i was interesting even then. He worked in Wahiawa. Then, all of a sudden he was told he had to pack up and catch the boat to Lāna'i because he was going to work here on Lāna'i under Boomfield Brown. He packed up all his stuff and he went to the harbor in Honolulu. But, the boat left without him. So, he went back to Wahiawa. His boss in Wahiawa saw him and said, "What are you doing here? You're supposed to be on your way to Lāna'i." He said, "I went to the harbor, but the boat left." So, his boss went down and made arrangements to have him find another passage to get to Lāna'i. He said he got a boat from Honolulu to Lahaina. At Lahaina, they put him on a smaller boat — just himself and all his belongings and they brought him all the way around to where Kaumalapau was going to be. It was a site for the future harbor for the plantation. He said, when he came to Kaumalapau, there was no harbor, he was in a boat, but there was a crane over there. What they did was, from the crane, they lowered this skiff into the water and the boat came by, and he put all of his belongings on the skiff. He jumped on top, the boat left and they lifted him up with the crane and brought him in and placed him on the land. That's how he came to Lāna'i. But, he was a tractor and bulldozer operator. So, he's talking 1922 or 1923. Mr. Kurashige said his job was to be the bulldozer operator to clear all these lands so that they could be cultivated for pineapple. In fact, I think he said that he had to walk up from Kaumalapau, which is the harbor today, come all the way up to this area, because Lāna'i City was only just starting to be developed, and he had a tractor and a bulldozer. He went through all of these high plateau area — now the lands would have been already cleared out by cattle and ranching. This whole plateau was all the pasture areas for sheep, cattle, horses, donkeys. So, his job was to look at any boulders within this high plateau area and he had a sled that he would put the boulders on and he would sled it to the perimeter of the area he was going to cultivate and drop all of the rocks off. The only reason I mentioned him is because if there is any one person that would have had any idea of what may have been located, in features, I'm talking stone structures, walls, house sites or anything else, it

would have been Mr. Kurashige. But, if you look at the size of the plantation, up to 17,000 acres of land were cleared, Mr. Kurashige, in his lifetime, was in part responsible for clearing all these lands. I talked about that one site, Keahi'āloa. If that site was similar to the other site, then surely there must have been a structure of stones, there would have been a particular *ahu* to describe this site where the fire was burning. If Mr. Kurashige was responsible for dismantling this site, possibly, he would have been the person who could have described it to us. But he passed on a couple of years ago. But, I thought his story was very interesting and I kept thinking about what Mr. Kurashige would have said, having spent a lot of his years clearing the entire 17,000 acres, perhaps, of features. You have to know that at that time, I don't think any Hawaiian site necessarily was of importance when you had to look at creating a new industry and a new plantation and all you wanted was cleared, fallowed lands that you could just plant pineapple. So, today, all of this area is just barren, open dirt lands. Like I said, we only remember it as being pineapple. I don't know who would tell you the story of what was there before pineapple. I think Mr. Kurashige might have had stories about that.

CSH: So, he didn't give you any indication about possible Hawaiian sites that may have been located within the lands cleared for pineapple?

SPK: No, because at that time, none of us would have thought that Hawaiian Homes would be a consideration. I'm talking about sitting down with Mr. Kurashige about ten years ago. But, I found him to be interesting in that he would be considered one of those cultural resources of Lāna'i having to do with the plantation.

VIII. SUMMARY AND RECOMMENDATIONS

Summary

The landscape of Lāna'i and the *ahupua'a* of Kamoku was majorly impacted by Kalani'ōpu'u's raid of 1778, as well as from the slash and burn method of cultivation. By the time the early explorers happened upon Lāna'i, much of the lowland dry and mesic native forest had already disappeared.

During the *Māhele* of 1848, only two Land Commission Awards were awarded for the *ahupua'a* of Kamoku. Both of these LCA's lie outside of the project area.

Add to the above the impact of ungulates — sheep and goats, who are known destroyers of native vegetation. With much of the native forests gone, the landscape became predominantly grass lands. This paved the way for commercial ranching. The heavy grazing of pasture lands for ranching activity further impacted and altered the environment. The final chapter in alteration of the landscape was major cultivation of previous pasture lands for pineapple. All of the above activities have left no trace of any cultural practices or resources within the project area.

This cultural study did not locate any cultural resources, sites or cultural practices within the 50-acre DHHL project area. It is unlikely that any cultural resources or practices will be impacted by the project.

The proposed project is a direct benefit to the Hawaiian community on Lāna'i and the community views it as a positive addition to the island.

Recommendations

It should be noted that though no specific information regarding burial sites in the project area was found, it is possible for inadvertent burials to be uncovered during the construction phase. If burials are inadvertently discovered during any phase of the project, all work in the immediate area should halt and the State Historic Preservation Office (SHPD) should be immediately notified.

The above study does not indicate a need for an archaeological monitor to be present during any sub-surface ground activities.

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APPENDIX A: INTERVIEW TRANSCRIPT

Preface

For this project, a formal, joint interview, conducted by Ka'ohulani Mc Guire for Cultural Surveys Hawai'i was taped and transcribed. The transcript of the interview is included in its entirety below.

The reader is reminded that the information shared in this interview are the express opinions and views of the informants, much of which relates to their personal experiences as cultural practitioners and their own family traditions. These are their words, their experiences and their stories. Please respect them by not using portions of the interviews out of context or by quoting from the interviews without giving proper credit where credit is due. These interviews may not be used in their entirety in any publications unless the written authorization of the interviewee is obtained.

Cultural Surveys Hawai'i is very grateful to both interviewees, Solomon Kaho'ohalahala and Samuel Kaopuiki, for sharing their thoughts and for giving so willingly of their time. It is hoped that the value of documenting their *mana'o* (thoughts) will be understood and appreciated by all who read this interview. It is a glimpse into the past and into their lives.

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Interview with Solomon Kaho'ohalahal and Samuel Kaopuiki

Interview with: Solomon P. Kaho'ohalahala (SPK)
Also Present During the Interview: Samuel Kaopuiki (SK)
Project: 50-Acre Department of Hawaiian Home Lands (DHHL) Parcel
Interviewed by: Ka'ohulani Mc Guire (KM) for Cultural Surveys Hawai'i (CSH)
Place of Interview: Lāna'i City, Lāna'i
Date: December 29, 2000

CSH: For the record, can you state your full name and birth date?

SPK: My name is Solomonh Pili Kaho'ohalahala and I was born on March 30, 1951.

CSH: Were you born on Lāna'i?

SPK: I was born in Lāna'i City.

CSH: How many generations has your family lived on Lāna'i?

SPK: I am fifth generation on Lāna'i, but we have been working on our family genealogy recently and at least for the Kaopuiki line, we have been able to trace our line back to the 1400's. Our genealogy takes us back to Lele (Lahaina), where our families have been related and closely linked together across the ocean from the time of Kaululā'au who made the island of Lāna'i inhabitable.

CSH: Who were your parents?

SPK: My father is George Solomon Kaho'ohalahala and my mother is Geraldine Betty Kauila.

CSH: What did they do for a living?

SPK: My dad actually came to Lāna'i as a teenager and worked as a cowboy on the ranch. Then, when pineapple started, he did that.

CSH: Did your mom work on the plantation also?

SPK: Yes, my mom worked on the plantation. I'm one of ten children, so she was pretty busy with all the kids. But, when we were older, she was a pineapple picker.

CSH: What is your educational background?

SPK: I attended the University of Puget Sound for 2½ years. Then, I came back to Hawai'i and attended MCC [Maui Community College]. But, when I moved back here, the only opportunity I had was the Maui Community College satellite. So, being home and not being able to attend college or university, I attended MCC and then got my Associate's [degree] in "Hotel Operations". That was the only thing happening at the time.

CSH: Have you worked in the visitor industry most of your career?

SPK: I actually managed Hotel Lāna'i since 1983 or 1984 and up until 1989 when the Lodge at Kō'ele opened. Then, I was hired as the Director of Cultural Resources for the Lodge at Kō'ele. When Mānele opened, it was just an additional hotel property, so I became responsible for two hotel properties. I have continued in that position until today — now, more confined to projects rather than day-to-day guest services and employee training. The other part of the job was giving the employees a good background in Hawaiian history with an emphasis on Lāna'i's history.

CSH: Are you actually an employee or a consultant?

SPK: An employee.

CSH: And, this office here is a part of that?

SPK: It's part of my work.

CSH: Do you still serve in any political office in an official capacity?

SPK: Up until this last election [November, 2000], I was the State Representative for Lāna'i, Molokai, West Maui and Kalaupapa. But, now that I've not been re-elected, I'm back doing my work as the Director of Cultural Resources. But, in terms of

political activity, I think I'll continue to be involved in political issues that I think are important enough, just as any other person as a citizen would be. I don't have an official capacity at this time, but I'll continue to be involved.

CSH: I wanted to talk about the specific project area — the 50 acres that DHHL is proposing to build homes on. Specifically, I wanted to ask what you know about the project area culturally, and do you know anything about the land use and history of the general area?

SPK: Growing up on Lāna'i, the thing we all know is that the 50-acres has mainly been related to pineapple. So, considering that pineapple started in 1923 until 1994, when it ended, I just knew that whole area as being cultivated in pineapple when I grew up as a child. It was in the area just below the school's agricultural area. So, where the cattle and the pigs were being raised, and where the gardening was for the school's agricultural program, this 50-acres was adjacent to that and just below one of the *kahawai*, the gulches, that start up from Kaiholena and running down to Paliamano and Nānāhoa. These are sort of the channels that went right through Lāna'i City and went right through the pineapple fields. But, the 50-acres were actually set in those boundaries. So, for me, as a kid growing up, it was the borderline to Lāna'i City to the pineapple area. Of course, we always not only worked in those fields where the 50-acres are, but as kids, we also ran and drove and played in that area because it was just bordering Lāna'i City. But, historically, I know that prior to pineapple, this area was all cattle grazing and sheep grazing land. I can't say that I'm an expert at that time, because I wasn't born then, but at least from the stories from families — my father was a cowboy and all of my relatives were all involved in Kō'ele being the main center of ranching — there was no Lāna'i City then. These open areas were all really open, grazing lands.

Trying to work at the preservation of Lāna'i's cultural sites and resources in the last 25 years, whether they are flora or fauna, for me, has been a major focus and interest. One of the things that I've become very aware of is that our native plants on Lāna'i, some that are endemic to Lāna'i and found nowhere else are rare and endangered and, that the area that I grew up in and knew as only pineapple lands possibly were, in fact, covered in a blanket of native forest. The reason I can come to that conclusion is by looking at some of the old reports by visiting botanists during the ranching area, since the early 1900's, with George Munroe being here and, even at the time when Charlie Gay was here, before Munroe's time, just at the turn of the century, describing forest lands on this high plateau that were now being over-grazed. One instance is talking about a stand of *'akoko* (*Euphorbia* spp.) that had all fallen and had been eaten by sheep and goat. Basically, these trees were debarked and died and just fell in place. If you think back that these are recollections of people at the turn of the century, they're describing the remnants of an ancient Lāna'i forest in the high plateau — we're talking about 1500-1800 ft elevation, the trees were all fallen in place. I imagine that beyond just the *'akoko* forest, we're talking about other trees that are still here today like the *naio* (*Myoporum sandwicense*), *lama* (*Diospyros*), *olopua* (*Osmanthus sandwicensis*).

In Kānepu'u, which is the northwest plateau of Lāna'i, our native dryland forest preserve is really a low, canopy forest of these plants. So, we have *naio* mixed in with *lama*. And, *olopua* is a major stand of trees. Inside of that, we have other rare and endemic trees or shrubs of Lāna'i. But, if you could cover the entire plateau, because they're all at the same elevation, I imagine that before Lāna'i City was even considered in the early 1920's, that prior to ranching, the first settlers that came to Lāna'i probably saw this entire plateau covered with a native forest of trees.

CSH: When you say "first settlers", do you mean before contact or after contact?

SPK: Prior to contact [1778], this was the Lāna'i that would have existed for native Hawaiians. I looked at a scientific paper that was put out by a Lāna'i boy, who is now a State forester, Bob Hobdy, who we invite back to Lāna'i quite often to talk to us about our native plants here. He has written a paper describing an island in decline in these modern times. The statement that sticks out in my mind, in this paper that he presented several years ago, was that the agent that was responsible for the decline of an island, whether we're talking about plants or animals, is still present. So, unless the agent is dealt with, the island of Lāna'i will continue to deteriorate and the forest cover of this island will continue to diminish. I'm very concerned with this, so that's one of the reasons I've become very involved in trying to see if we can preserve or conserve whatever we have, to the point of encouraging propagation of native plants.

But, let's go back to the 50-acre area. Adjacent to that area today is the most recent subdivision of Lāna'i. That subdivision is named "Olopua Woods". Several years ago, prior to the development of that subdivision, Lāna'i Company had asked if I would consider naming the project. When I look at an area that is barren, that was once pineapple lands, I thought that "Olopua Woods" would be an appropriate name. I can tell you that once they accepted the name, the reaction was varied on Lāna'i. In fact, one potential homeowner thought it was totally absurd to call this subdivision "Olopua Woods". This particular individual came up to me and he said, "I gotta ask you this question. How do you get a name like "Olopua Woods" in an area that was only pineapple?" I said, "Let me back up and explain to you why I want to consider this name for a new subdivision. If you can imagine Lāna'i before pineapple and before ranching, perhaps, this entire plateau would have been an *olopua* forest, because, today, the largest stands of native trees that we have at this same elevation are *olopua*. But, in the *olopua* forest is also scattered some other plants. So, I wanted to remind us in this subdivision, although today we only remember it as pineapple lands, that there was an old forest here before and possibly an *olopua* forest. Within the forest, there were other plants like *ma'o hau hele* (*Hibiscus brackenridgei*), *nā'ū* (*Gardenia brighamii*), *naio, lama*, and all of these things scattered throughout." So, in the subdivision, if you look, I've named every street in the subdivision after one more native plant that still lives on the island of Lāna'i today. In a very subtle way, what I'm hoping is that by calling it what it used to be, is going to bring back some of the

information and the understanding of Lāna'i in an older time and place. One of the more difficult names in this subdivision is the *ko'oloa 'ula (Abutilon menziesii)*. I happened to know one person on Lāna'i who bought a home on that street. I remember asking her, "Now, tell me what street you live on." And, she looked at me and she was very puzzled and she said, "You know, my street has this real long name and it's really hard to say. It's "Ko'o something." I said, it's Ko'oloa 'ula and here is the photograph of the *ko'oloa 'ula*. I want you to know that this is a very beautiful hibiscus. Moloka'i, Lāna'i and Maui has the same variety of *ko'oloa 'ula* but, they say the color between each island is a little different. So, on Lāna'i, our's is a very dark, scarlet, very dark red miniature hibiscus." And, I said, "One day, I hope that you will have planted in your yard a *ko'oloa 'ula*." And, so when I had a seedling of a *ko'oloa 'ula*, I took it to her and she planted it in her yard. Today, when you go to her and say, "Where do you live?" She'll proudly say to you, "I live on Ko'oloa 'ula Street." So to me, what we do in this process is that, suddenly, we educate our people. They have to know what their street names are and by just saying what street they live on they bring back the sound and the name of the plant that is part of Lāna'i. When I explained this to that gentleman who was kind of disturbed, he finally said, "Wow, now I know why it's called "Olopua Woods". So, it's an education process.

Our fifty acres is a part of that area, so I hope that as we move further into this new subdivision for Hawaiian Homes, we'll continue this idea of bringing back familiarity to place names and to those things that are cultural — flora, fauna. Here is an attempt to do that in a subdivision that is now called "Olopua Woods" and we're going to be attached to "Olopua Woods".

Another thing I wanted to share is place names that I've associated within this *ahupua'a* of Kamoku that is around where this 50-acres is located. There are several hills or *pu'u* to the west and there are names given to us like Pu'u Kauila. There's a place name called Keahi'āloa. There's a Pu'u Koa. There's Pu'u nānā i Hawai'i. There's Pu'u Niu. There's Kaumaikahoku. They kind of encircle the area of the 50-acres. So, when you're standing in the 50-acres and looking west, the *pu'u* before you, Hulupu'uniu. Just to the south of that would be Pu'u nānā i Hawai'i. As you continue west, you have Pu'u Koa and Pu'u Kauila. Now, if those are the old names of this plateau, within the *ahupua'a* of Kamoku, I would think that our Hawaiian people would name them to associate them to some of the things that are of that particular area. For example, Pu'u nānā i Hawai'i, if you stand on that *pu'u* today, on a very clear day, as you look southeast of Lāna'i, you'll see the two mountain peaks of Hawai'i, Maunaloa and Maunakea. So, was this the most advantageous point? Yes, because you're in the center part of the island of Lāna'i and you're not on the highest mountain — you're on the plateau. Yet, from this plateau and this particular Pu'u nānā i Hawi'i, you have a clear view of the island of Hawai'i. So, here is a name given to this *pu'u*. Now, Pu'u Kauila, are we talking about *kauila*, which is the native plant, the tree, the *kauila* of which we prize the wood? Pu'u Koa, is this a hill also describing perhaps the Hawaiian *koa* that

was a part of that particular hill? The one that I think is interesting is Hulupu'uniu. *Hulu* is describing something that is feathery. But, Pu'u niu — the hill of the *niu*? Was there palm here? Was there coconut here? So, I think interpretation now is open for us to think about through the eyes of the older Hawaiian people who named these places. So, I want to say that here in circum this area of the 50-acres are these place names, most of which describe perhaps the native flora and physical environment.

Now, Keahi'āloa is talking about the fire. The only other reference I know to Keahi'āloa is in another *ahupua'a* on Lāna'i. In that *ahupua'a*, Keahi'āloa is actually a perpetual fire. That is one of the stories of Lāna'i where the fire was continuing to burn. But, it also had a physical feature for the fire. Now, at this particular place of Keahi'āloa [in Kamoku Ahupua'a], was there an actual site at which this fire was maintained? If that's the case then, surely, the pineapple plantation would have cleared all the land of any features, so stones and boulders that were used to build this fireplace are no longer there. But, a place name is given. So, if it's the same as another place, Keahi'āloa of Lāna'i, then I would imagine that here at this site in Kamoku, that Keahi'āloa would have been a similar feature, which was a round fire in an elevated *ahu* for a fire. But, none of it is there today and I have never seen it. I can only try to look at why a name is given for a particular area. But, there is a physical site on Lāna'i with the same name, in another area, and it has in its place a feature that is an elevated *ahu* that is a fireplace.

CSH: Have you heard any stories from kūpuna about these place names or anything regarding interpretations of the names?

SPK: I know that just a little bit east of this area is Iwi'ole. The only stories I've heard *kūpuna* talk about is Iwi'ole. Today, it's the name of employee housing, the apartments. It is a place name that runs along the *kahawai* that is coming from Kaiholena Valley and, just about where Lāna'i City begins, is where this apartment housing complex was built. The place there is called Iwi'ole. When that name was chosen to name that subdivision, Kupuna Richardson talked about Iwi'ole. He says that the name, because it says "Iwi'ole, without bones", what he was really saying is that this area which is again, adjacent to the 50-acres is not necessarily without the bones but, he said it means that the spirits there are wandering because, he says, "No more the bones." So, there's no physical place for the *'uhane* (spirit) to be. So, in this area, he says that Iwi'ole doesn't talk about only the physical, but it talks about the spiritual. That's the only area that is adjacent to the 50-acres that I know of a story that describes this place.

CSH: Do you see a danger in trying to interpret place names when there is nothing to go by other than the literal translation?

SPK: I see the danger in trying just to interpret by words because I know very well that place names may have nothing to do with the literal translation. I know that to be a

fact. The other thing is that unless we have information that is handed down about a particular family name or place name, then we have nothing else to fall back on. I think this is where you're going to be called upon as the people of an area to come to some understanding or some idea of interpretation that you feel comfortable with. As Hawaiian people, I think those senses are inherent and sometimes we're so afraid to exercise that ability or that authority because we believe sometimes that others have that authority to do so. I think on Lāna'i, for what appears to be lost, it's only lost if we say it is lost. Olopua Woods may be a modern subdivision today, but in getting it a name and giving it breath or calling it for what it was, is to bring back an interpretation. So, when you look at place names, could you come to some idea of what that interpretation might have been in these times and see it as not a good thing? I would say that for Lāna'i, I would feel comfortable with doing that. For another place, I would not because I'm not *ma'a* (used to, familiar) to that surrounding. But, for this island, I'm very comfortable with that. I think it is within our authority as Hawaiian people to make those interpretations and come to those conclusions and to add to them in our time so that something else will be passed on beyond the old names that we have, that we've created new names that give different associations in different times. So, I'm comfortable with that, but, I understand fully and I would not want people to literally interpret something and then give it meaning through its literal interpretation.

An example of this is the plant *Abutilon eremitopetalum*, which is the scientific name. I asked what its Hawaiian name is — because surely every plant, every animal and every insect was named because we discovered them, we tried to become familiar with them and then we gave it a name. Now, no one knows but, it is a plant found only on the island of Lāna'i and nowhere else in Hawai'i at all. This plant was thought to be extinct and it was rediscovered. The last time it was recorded was, I believe, in 1944 and only in 1989 or 1990 was this plant rediscovered, so to speak. So, all of a sudden, you say, "Oh, wow! It's still here." When I asked about a Hawaiian name, no one knew. So, I asked one of my friends who is very fluent in *'ōlelo Hawai'i* (Hawaiian language) and I said, "I want you to come and I'll take you to this plant and I'll show you what it looks like, show you the conditions under which it lives and from a very Hawaiian point of view, what would you call it?" So, I took him down. I did some beautiful sketches of it. Then he says, "*pua ke ala huna*". I asked, "What is the *mana'o* [reasoning, thought] behind that?" He said, "Well, obviously, it's a beautiful blossom, but you cannot see it because as it blooms and the calyx of the plant opens up, the flower petals don't even emerge. They stay all within the calyx and they're hiding. The only part of the flower you see is the pistol and the stamen of the plant. So, it's a miniature hibiscus, but you never see it." So, we described it as "the flower that is hidden". So, I said, "We're going to name it *pua ke ala huna*, because today, no one knows what it was called in Hawai'i, but, we're going to call it by a Hawaiian name. Now, the botanists were quite concerned with that because there was no previously known Hawaiian name. I said, "But, you've given it your scientific name and *eremitopetalum* simply means hidden petal, *Abutilon* hibiscus. So, all I'm saying is that from our interpretation, this is the flower that has many hidden

secrets. So, we're are calling it *pua ke ala huna*. And, they said, "Okay." So, again, we need to exert that authority as Hawaiian people to give some interpretations to things we are now becoming familiar with that have lost some of its interpretations of old.

SK: Like the name you mentioned, Hulupu'uniu, used to have that palm tree. Oh, there was an old date palm. It's very different from the coconut, except from a distance, it appeared to be coconut.

CSH: It has thorns or sharp points on the frond or the leaves.

SK: Well, I think that's what Hulupu'uniu is talking about.

CSH: And the *hulu* is . . .

SPK: The fronds. For Hawaiian plants, *loulu* (*Pritchardia*) would be very different because it would be the fan, the fan frond. But, that's also a plant that's quite rare on Lāna'i today, but it is a part of Lāna'i.

I can only say that when people look at Lāna'i today, they can only describe it as a desolate and a very arid island. And, when I look at Lāna'i today, I can see that this is the result of land use. If I can turn back time and go back to a Lāna'i that was pristine, I think it would paint a very different picture. I'd like to keep that image of Lāna'i as something that we can strive toward today. The only way to move into that direction is to make sure that you bring that image and that vision to these times and, then, our responsibility now is going to be on how to *mālama* (care for) this place, how to find a place to perhaps reintroduce some of those things that were once a natural part of Lāna'i. So, a subdivision like Olopu, if every street could introduce its own plants — bring the *ko'oloa 'ula*, bring the *nīoī*, bring the *olopua* back and place it there, then what we've done is we've given life once more. We've brought back the physical plant, we've brought back the sound and the name of the plant and we're calling it by its name daily and then we're allowing it to be a part of our culture today. Then, the future is a better place for doing that than it was if I had just assumed this place to be a dry and a desolate island. That is part of our responsibility for these times in terms of interpretation and how we envision our future. A lot of it is going to come from our past and a lot of it is going to be on how we want to bring life back to that vision.

CSH: You mentioned that you had spoken to someone who used to work for the plantation and helped clear the pineapple fields. Can you tell me about that?

SPK: Yes. I was talking about Mr. Kurashige. He has a very interesting story. He came to Lāna'i when Boomfield Brown was plantation manager. He came from Wahiawa. His story of him coming to Lāna'i was interesting even then. He worked in Wahiawa. Then, all of a sudden he was told he had to pack up and

catch the boat to Lāna'i because he was going to work here on Lāna'i under Boomfield Brown. He packed up all his stuff and he went to the harbor in Honolulu. But, the boat left without him. So, he went back to Wahiawa. His boss in Wahiawa saw him and said, "What are you doing here? You're supposed to be on your way to Lāna'i." He said, "I went to the harbor, but the boat left." So, his boss went down and made arrangements to have him find another passage to get to Lāna'i. He said he got a boat from Honolulu to Lahaina. At Lahaina, they put him on a smaller boat — just himself and all his belongings and they brought him all the way around to where Kaumalapau was going to be. It was a site for the future harbor for the plantation. He said, when he came to Kaumalapau, there was no harbor, he was in a boat, but there was a crane over there. What they did was, from the crane, they lowered this skiff into the water and the boat came by, and he put all of his belongings on the skiff. He jumped on top, the boat left and they lifted him up with the crane and brought him in and placed him on the land. That's how he came to Lāna'i. But, he was a tractor and bulldozer operator. So, he's talking 1922 or 1923. Mr. Kurashige said his job was to be the bulldozer operator to clear all these lands so that they could be cultivated for pineapple. In fact, I think he said that he had to walk up from Kaumalapau, which is the harbor today, come all the way up to this area, because Lāna'i City was only just starting to be developed, and he had a tractor and a bulldozer. He went through all of these high plateau area — now the lands would have been already cleared out by cattle and ranching. This whole plateau was all the pasture areas for sheep, cattle, horses, donkeys. So, his job was to look at any boulders within this high plateau area and he had a sled that he would put the boulders on and he would sled it to the perimeter of the area he was going to cultivate and drop all of the rocks off. The only reason I mentioned him is because if there is any one person that would have had any idea of what may have been located, in features, I'm talking stone structures, walls, house sites or anything else, it would have been Mr. Kurashige. But, if you look at the size of the plantation, up to 17,000 acres of land were cleared, Mr. Kurashige, in his lifetime, was in part responsible for clearing all these lands. I talked about that one site, Keahi'āloa. If that site was similar to the other site, then surely there must have been a structure of stones, there would have been a particular *ahu* to describe this site where the fire was burning. If Mr. Kurashige was responsible for dismantling this site, possibly, he would have been the person who could have described it to us. But he passed on a couple of years ago. But, I thought his story was very interesting and I kept thinking about what Mr. Kurashige would have said, having spent a lot of his years clearing the entire 17,000 acres, perhaps, of features. You have to know that at that time, I don't think any Hawaiian site necessarily was of importance when you had to look at creating a new industry and a new plantation and all you wanted was cleared, fallowed lands that you could just plant pineapple. So, today, all of this area is just barren, open dirt lands. Like I said, we only remember it as being pineapple. I don't know who would tell you the story of what was there before pineapple. I think Mr. Kurashige might have had stories about that.

CSH: So, he didn't give you any indication about possible Hawaiian sites that may have been located within the lands cleared for pineapple?

SPK: No, because at that time, none of us would have thought that Hawaiian Homes would be a consideration. I'm talking about sitting down with Mr. Kurashige about ten years ago. But, I found him to be interesting in that he would be considered one of those cultural resources of Lāna'i having to do with the plantation.

SK: There was another bulldozer operator — Shimizu.

SPK: Walter Shimizu.

SK: He told me he wanted me to see this big boulder down Palawai, underneath, by that ditch. It was on the side there and he covered it up.

SPK: What Uncle's talking about is an example of how on the plantation, historic sites weren't necessarily important. Walter Shimizu, who grew up on Lāna'i, became a bulldozer operator. When you look at Palawai Basin, all the gulches and the *kahawai* all drain into Palawai Basin. But, to cultivate pineapple, they had to somehow prevent the water from running down into the Basin. Mr. Shimizu's job was to dam all the gulches within Palawai Basin so that the water cannot come down ts natural waterway. But, when he had to build this road, it went right across one of Lāna'i's most significant cultural sites of petroglyphs [Luahiwa]. Today, it's still a very well-known site, but Mr. Shimizu had to draw a straight line because his boss said, "Make the dam from here to there." So, he went right through the sites.

When I met him, it was really by accident. He recognized me and he stopped me and he says, "Eh, I say you on TV." I said, "Oh, I've done a couple of things like *Lāna'i, Rare Gift of Beauty*." He says, "I want to tell you about these sites on Lāna'i." Here I am meeting a total stranger and he says he wants to tell me something about cultural sites. What he told me was this story about how he was supposed to make this dam in the middle of this road, in the Luahiwa sites. There was a large boulder in the middle of what he was supposed to clear. So, he said, it was his job to move that boulder, so he did. But, before he moved the boulder — this is interesting because he was Japanese — he went up to the stone and he looked and he saw petroglyphs on the stone. So, he said he talked to the stone. He told the stone, "Forgive me, but my boss said I gotta make one road, right through here, so I gotta move you. I just like tell you that so you know I'm not trying to do you any harm. I'm just trying to do my work. Please excuse me." He said he moved this huge boulder that was bigger than his tractor. He nudged it into a position and then he built the road right over it. It's not a road, but he built the dam right over it. And, when he was coming to tell us, he said, "I wanted somebody to know where I put it." So, we took him there, he looked on the mountain, he looked on the side and he says, "This is where it is, right underneath here." But, I said, "You know, because

you covered it, you're actually preserving it, in a way. But, it was nice that someone like you decided that you needed to tell someone else so that we know." But, if there were a more appropriate name for the Munroe Trail, it should be called the "Shimizu Trail" because this is the man who cut that road across the mountain, one inch at a time and, by right, we should call it the "Shimizu Trail.

CSH: Has he passed on?

SPK: He moved to O`ahu. In fact, he's lived on O`ahu since he left the plantation. He was just visiting Lāna`i when he saw me. So, I spent a day with him. But, the other thing that was coincidental was that my grandmother was his school teacher.

CSH: The other thing I wanted to ask about was if there was an old airport nearby the project area?

SK: Right close to Olopua, where this subdivision is going to be, where the corral is now, right outside of there. Where that ditch is.

SPK: The *kahawai*, the one that goes down to Kaiholena?

SK: Yeah.

SPK: Just past the ditch?

SK: Right around that ditch. Never had that ditch before. The only planes that came in was the old kind, with the boat.

CSH: Like a seaplane?

SK: Yeah. That's the only one at that time.

CSH: The airport is shown on a 1923 map. Do you know when it was built?

SK: I know, us kids, we used to ride bicycle down in that area. I don't know when. But, that's the only runway they had.

CSH: Before this airport [that we use today]?

SK: Yeah. They never had that new one going down to Kaumalopau. That was the new one. But, we had that old one. It was just dirt.

CSH: Oh, so no asphalt or paving — just dirt?

SK: It was just dirt. I don't know what year the one down there was built. I think it was somewhere in the late 1930's and into the 1940's that we still had that

old one. I remember the only kinds of planes that landed there was the seaplane because us kids used to do down with the bicycle. From Kō'ele, we used to ride down and watch the plane come in. That was the only kind of plane that came in.

CSH: Very briefly, what do you think of Emory's survey of Lāna`i?

SPK: For the amount of time he spent on Lāna`i, it was pretty remarkable that he was able to gather the kind of information he did. I know that Emory always wanted to come back to finish the work on Lāna`i and he never did. I don't believe he did as thorough a survey of Lāna`i but, considering the amount of time that he had, it's still remarkable. There's a few things about Emory's interpretations that I disagree with. I base it on a couple of things. First, Emory did not have command of the Hawaiian language. He relied heavily on the Hawaiian speaking people of Lāna`i to give him the place names that he had recorded. The second thing is that he was a new archaeologist, just graduated, and his first work was the island of Lāna`i. He comes to some conclusions in his book that I disagree with. It's based on those two things: he's relatively new as an archaeologist, he has the whole island of Lāna`i to survey, and he has to now, in his work, interpret that and come to some kind of conclusion again. A lot of it is based on the quantitative measurements of the sites itself and he doesn't have command of the Hawaiian language, but he makes some conclusions about sites of Lāna`i based on quantitative information. That's why I think that the fine line of having that ability or authority as an archaeologist that allows him to make such a statement, that may be contradictory to that of the people of the island. That's why I take on that challenge and I say that I disagree with some of his conclusions. There are stories of Lāna`i that have been passed down to him and he writes about them in his book, but he comes to some very different conclusions than what the people have known for generations as being the story. His conclusions are now based on his measurements of the site. And he says, "Therefore, I don't believe what the people of Lāna`i say is correct. It is instead this." So, I challenge those kinds of assessments.

SK: There are a lot of things he didn't cover. There are a lot of sites that are not in his book.

SPK: You also have to look at who was hosting him at the time. Charlie Gay was kinda moving out, but then you have the Munroes — Hector Munroe. For them, Hawaiian cultural resources was just something you could collect. It was a collector's item. Some of the things he did that I did not like was he unearthed grave sites and removed some of the skeletal remains and removed some of — just skulls, because there were other scientists that needed to study the anatomy of Hawaiians against others. So, he was grave digging. I know some of the specific sites he was grave digging for. And, the time was different. I have to say that the work that he did at that time was pretty remarkable. He had some other theories about Lāna`i that he had not been able to

substantiate because he had not been able to follow up and come back. That is the kind of thing I would like to see continue in these times. And again, he did heavily rely on Hawaiian people that were here on Lāna'i. That's why I say that had they not rendered information to him, a lot of what he has recorded and written could not have been done. But, now it is Emory's information because everyone quotes him. One of the people that gave him information was my Tūtū Nami. When I look back, I say here were people that had information and knowledge, that were keepers of that information and knowledge. They were really trying to take care of it. So, we have to be mindful that there are within our people individuals that have to be responsible for that kind of knowledge. If that knowledge isn't kept and nurtured properly and passed on intact and with that same expectation for it to be nurtured, then I think it gets lost and it becomes that thing where "now, I'm an authority". So, I'm very *maka'ala* about that. I'm very cautious about that. That's why I need to be really clear about who is seeking information, for what purpose is it being used and how will it be cared for once its given. I take that as my *kuleana*, my responsibility for Lāna'i's resources.

CSH: I was wondering about the meaning of "Kamoku" and what you understand it to mean. Some say it refers to the abundance of *kūpala* that used to grow there. Emory's explanation is "the piece that is cut off". He's associating the meaning with the Hawai'i Island name of "Kamoku" in Hāmākua, which means the same thing. Have you heard anything from *kūpuna* about the possible meaning of "Kamoku"?

SPK: I have no further interpretation of "Kamoku". I don't know about the reference to *kūpala*, but I do know that *kūpala* is referenced in another part of Lāna'i. That's an important story of Lāna'i. I know that Emory made a couple of interpretations of the *ahupua'a* themselves and, like you described, again, his reference is going to go back to what he's familiar with. I don't know that much of the *ahupua'a* themselves were interpreted by the Lāna'i people. So, I can't speak to "Kamoku".

CSH: One last question, what are you thoughts about the project? Is it a positive development for Lāna'i Hawaiians?

SPK: Yes. If you look at the Hawaiian Home Lands since its inception in 1920 or 1921, Lāna'i had never been included as part of that. I can only say that for all of the years that Hawaiian Homes issues have been around with their beneficiaries and, from what we've seen in news reports, they really played no significance to the people of Lāna'i. Here is an issue that seems to be statewide. It's not something that we're familiar with and, therefore, we don't have any interest in it. It's only because we've had no familiarity with the program. We've had no idea of what the intent of this program had been set aside for. We've had no idea of the history of Hawaiian Home Lands — not

even anything that Kūhiō had been involved with in trying to pursue this particular act of Congress. It's no different than any other Hawaiian program that's available now to Hawaiian people, but not on the island of Lāna'i.

SK: A lot of people say they hear this is a private island so, then, they don't talk about this Hawaiian Homes thing. But, actually before these people came here on this island to raise cattle, there were 48,000 acres that was Hawaiian Homes land.

SPK: Yes. Land tenure on Lāna'i is still worth researching. But, one thing we can say right now is that, even if it's 50 acres, it's still better than no Hawaiian Home lands. So, I think we all agree upon that. The second that we all agree on and are very thankful for is the condition under which the land was "gifted" to the Department of Hawaiian Home Lands by Lāna'i Company, that Lāna'i residents would be given first choice is something that the program does not allow for currently. If it were to have been given to the Department under the Department's same programs and rules, it would not have been a benefit to the people of Lāna'i, especially considering that the wait list is up to 20,000 now. Had this 50-acres come in just a year ago, the Lāna'i residents were going to be required to now apply to be qualified beneficiaries and they would have been placed on the list of 20,000 people. What would that have done for Lāna'i? It meant that most Lāna'i residents would have been at the bottom of the list and trying to apply for lands in their own community and home and they would probably not have been able to get on those lands until those prior to them on the waiting list were accommodated. So, that's something that we have to be especially mindful for and I think that people recognize that. I am thankful that the Department actually accepted that as a condition. We are at this time saying that we agree the 50-acres should be looked as residential for now. But, now, we are also aware that the programs available in Hawaiian Homes go well beyond residential. We hope, in the future, this is only the first step toward the Hawaiian Homes Lands program — that we will be looking at other opportunities for homesteading and for pastoral and ag lots as options that Lāna'i's beneficiaries should also be given because it is part of the statewide program. So, we're agreeing to allow the 50-acres to go residential now, but we're anticipating future acquisitions, however they may come about to the Department, and we want to be able to be afforded opportunities for these other kinds of lands as well.

CSH: Well, we've covered all the questions I had. Mahalo for consenting to the interview and for being so forthright and generous in sharing the knowledge you have about the project area.

— END OF INTERVIEW —

APPENDIX F

Comment Letters and Responses

JAMES "KIMO" APANA
Mayor
JOHN E. MIN
Director
CLAYTON I. YOSHIDA
Deputy Director

COUNTY OF MAUI
DEPARTMENT OF PLANNING

March 13, 2001

Ms. Michele Otake
Department of Hawaiian Home Lands
1099 Alakea Street, 12th Floor
Honolulu, Hawaii 96813

Dear Ms. Otake:

RE: Draft Environmental Assessment (DEA) - Department of Hawaiian Home Lands (DHHL) 50-Acre Project for 136 Single-Family Lots and 20 Multi-Family Units, Five-Acre Park, Community Center Complex, Sandwich Isles Communications, Inc.'s 2,000 Square Foot Switching Facility and Offices, and a 4,000 Square Foot Warehouse at the Community Center Site, Lanai City, Island of Lanai, TMK (2) 4-9-002:057

The Maui Planning Department (Department) received your request for review and comments on the above subject DEA. The proposed project is located on a 50-acre site on the west side of the existing Olopua Woods Subdivision constructed in 1992. The community center complex is also located to the south west corner of the project site. A possible future access road, as well as a drainage and buffer strip between the proposed and existing developments are included in the proposed development plan. A total of 156 dwelling units will be constructed.

The Department has the following comments:

1. Social and Economic Impacts - The DEA states that there are currently 30 people on the DHHL beneficiaries' list with Lanai addresses. The first phase of the project, 25 single-family lots, will be made available to Lanai residents, implying that the remaining 126 dwellings would be occupied by non-Lanai residents. There is no population/demographic information on the future residents of the proposed development in the DEA. In addition, the DEA concludes that the increase in population would be insignificant. There is no data to justify this conclusion. Based on an average of 4.0 persons per household, the increase in population could be approximately 600. The average household size of the beneficiaries may be different. In any case, the number of new residents could be a significant increase and impact the existing population in this small community. Employment opportunities in the community, as well as the need for additional social services, if any, were not discussed. The capacity of the school is 711 students. The additional estimated increase would be 59 students, which is 35 students over the capacity.

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
PLANNING DIVISION (808) 270-7735; ZONING DIVISION (808) 270-7253; FACSIMILE (808) 270-7634

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2. Traffic. The DEA notes that their traffic consultant's evaluation concluded that the project is planned in an area of little traffic congestion and will have no adverse impact on traffic conditions and on regional traffic demands. The traffic consultant further noted that the 24-hour traffic volume on area roadways is still below the capacity of roadways on Lanai. Thus, no adverse impacts on peak hour traffic are expected. The DEA does not include any traffic data to arrive at this conclusion. Based on an average of about two (2) vehicles per household or even one vehicle per household, the number of vehicles will be between 156 to 312 vehicles. Depending on the demographics of the residents and the phasing of the project, the impact may or may not be minimal.

If you have any questions, please contact Julie Higa, Staff Planner, of this office at 270-7814.

Very truly yours,

for JOHN E. MIN
Planning Director

JEM:JH:cmb
c: Clayton Yoshida, AICP, Deputy Director of Planning
Julie Higa, Staff Planner
Project File
General File
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BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII

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

RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

April 12, 2001

The Honorable John Min
Planning Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Mr. Min:

Subject: Draft Environmental Assessment for Lands of Lana'i
Lana'i City, Hawai'i

Thank you for your letter on the Draft Environmental Assessment (DEA) dated March 13, 2001 for the subject project. We appreciate your review of the document and offer the following response:

1. The Department of Hawaiian Home Lands (DHHL) is planning to develop a minimum of 25 lots as "Phase 1" of the project in order to satisfy the warranty deeds for the parcel, as stated in the DEA. At this time, if the number of qualified DHHL beneficiaries living on Lanai increases, the number of lots that would be developed would increase accordingly. Currently, DHHL has identified 30 native Hawaiians with Lana'i addresses. It is the intent of the Department to only develop this first phase of the project with the remaining property undeveloped until such time that demand for housing improves.

2. The traffic consultant, Julian Ng, has provided additional information on the traffic situation on Lanai. A copy of his letter is enclosed for your information.

Should you have any questions, please contact Ms. Michele Otake, Special Assistant for HHL Housing at (808) 587-6451. Thank you for participating in the environmental review process.

Aloha,

Raynard C. Soon, Chairman
Hawaiian Homes Commission

Enc.

Julian Ng, Incorporated
Transportation Engineering Consultant
P.O. Box 816 Kaneohe, Hawaii 96744-0816
phone: (808) 236-4325
fax: (808) 235-8869
email: jngpe@lava.net

April 12, 2001

Ms. Joanne Hiramatsu
Townscape, Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813

SUBJECT: Lanai Master Plan, DHHL 50-Acre Project
Lanai City (TMK (2) 4-9-002:057

Dear Joanne,

As we had discussed earlier, the proposed project is not expected to have significant adverse impacts to traffic. The following details the traffic evaluation that we conducted.

Traffic generated by the proposed project were estimated using the widely accepted trip rates from *Trip Generation*, a publication from the Institute of Transportation Engineers; the estimated vehicular trips generated by full development of the proposed project are:

	Entering	Exiting	Total
Average Weekday	750	750	1,500
AM Peak Hour	29	88	117
PM Peak Hour	101	57	158

The major street system serving north-south traffic in Lanai City are Fraser Avenue and Lanai Avenue. These two-lane, two-way streets can typically carry 10,000 vehicles per day without traffic congestion.

In 1999, 24-hour counts taken by the State Highways Division showed the following volumes (peak hour volumes were counted between 7:30 and 8:30 AM and between 3:00 and 4:00 PM):

	Fraser Avenue		Lanai Avenue	
	southbound	northbound	southbound	northbound
24-hour (weekday)	1,367	1,348	1,707	2,173
AM Peak Hour	148	117	103	159
PM Peak Hour	124	121	130	193

The project traffic would use both roadways. If 65% of the project traffic were to use Fraser Avenue and 35% were to use Lanai Avenue, the daily volumes would be 3,700 vehicles on Fraser Avenue and 4,400 vehicles on Lanai Avenue, both significantly lower than capacity.

The greatest delays anticipated would occur in the AM Peak Hour for stopped traffic on Fifth Street wishing to enter or cross Fraser Avenue. A capacity analysis of the future peak hour conditions, where an estimated 130 vehicles would stop on Fifth Street with 200 vehicles on Fraser Avenue, shows an average delay of less than 15 seconds per stopped vehicle. For an unsignalized intersection, this delay is considered Level of Service B (levels of service are defined from "A" for minimal delay to "F" for very long delay; LOS C is considered acceptable for rural conditions).

Based on this evaluation, we conclude that even with the proposed project fully developed, the existing street system will be adequate and peak hour traffic conditions will be acceptable.

Should there be any questions, please contact me as noted above.

JULIAN NG, INCORPORATED

Julian Ng, PE, PTOE
President

TSILANAI.DOC

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

DEPT. OF HAWAIIAN HOME LANDS

01 MAR 29 A9:37

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

GILBERT S. COLOMA-AGARAN, CHAIRPERSON
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FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS

March 14, 2001

Michele Otake
Department of Hawaiian Homelands
1099 Alakea Street, 12th Floor
Honolulu, Hawaii 96813

LOG NO: 27111 ✓
DOC NO: 0103CD24

Dear Ms. Otake,

SUBJECT: Chapter 6E-8 Historic Preservation Review Pertaining to the Draft Environmental Assessment for the Proposed Lands of Lana'i, Lana'i City
Kamoku Ahupua'a, Lahaina District, Island of Lana'i
TMK: 4-9-02:057

Thank you for the opportunity to comment on the Draft Environmental Assessment (Draft EA) for the Proposed Lands of Lana'i. Based on the submitted Draft EA, we understand the proposed undertaking to consist of the development of approximately 136 single-family lots and 20 multi-family units for Native Hawaiian beneficiaries. A five-acre park and community center complex are also planned as part of this development. In addition, Sandwich Isles Communications is planning to construct a 200 sq. ft facility and offices and a 4000 sq. ft warehouse at the Community Center site. The total acreage of the subject property is 50 acres.

Cultural Surveys Hawaii recently conducted an archaeological inventory survey of the subject property. During the inventory survey, no significant historic sites were identified. The report documenting the inventory survey findings has been reviewed and accepted by this office (SHPD DOC NO.: 0102KK05/LOG NO.: 2700). Given the negative findings of the inventory survey no further archaeological work is necessary and we believe it is unlikely that historic sites will be encountered during the proposed undertaking.

Given the above information, we believe the proposed undertaking will have "no effect" on significant historic sites.

Please call Cathleen Dagher at 692-8023 if you have any questions.

Aloha,

Don Hibbard, Administrator
State Historic Preservation Division

CD:jen

c: Joanne Hiramatsu Townscape, Inc. 900 Fort Street Mall, Suite 1160 Honolulu, Hawaii 96813

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII

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

RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

April 12, 2001

To: Don Hibbard, Administrator
State Historic Preservation Division
Department of Land and Natural Resources

From: Raynard C. Soon, Chairman
Hawaiian Homes Commission

Subject: Draft Environmental Assessment for Lands of Lana`i
Lana`i City, Hawai`i

Thank you for your letter on the Draft Environmental Assessment (DEA) dated March 14, 2001 for the subject project. We appreciate your review of the document and note your determination that the project will have "no effect" on significant historic sites.

Should you have any questions, please contact Ms. Michele Otake, Special Assistant for HHL Housing at 587-6451. Thank you for participating in the environmental review process.

PHONE (808) 594-1888

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

DEPT OF HAWAIIAN HOME LANDS FAX (808) 594-1865

'01 MAR 20 P2:52

March 19, 2001

Mr. Michele Otake
Department of Hawaiian Home Lands
1099 Alakea Street – 12th Floor
Honolulu, HI 96813

Subject: Lands of Lana'i Homes Project – Draft Environmental Assessment

Dear Mr. Otake:

We are in receipt of the Draft Environmental Assessment (DEA) for the Lands for Lana'i homes project which will provide homes for native Hawaiian beneficiaries. The Office of Hawaiian Affairs commends DHHL for undertaking the project which is the first such project for the island of Lana'i. We are in concurrence with the findings made in the Archaeological Reconnaissance Survey, which stated:

> *There are no areas, such as gullies or pu'u within the project area that would have been left uncultivated because of topography. No subsurface testing was undertaken, given its 70+ years of pineapple cultivation and the total absence of any indication of potentially significant cultural deposits. The background history and settlement model indicate habitation and cultivation were located in areas east of Lanai City at higher elevations to take advantage of higher rainfall.*

We are also in concurrence with the findings made in the Traditional Practices Assessment, which stated:

> *The landscape of Lana'i and the ahupua'a of Kamoku was majorly impacted by Kalani'opu'u's raid of 1778, as well as from the slash and burn method of cultivation. By the time the early explorers happened upon Lana'i, much of the lowland dry and mesic native forest had already disappeared.*
>
> *Add to the above impact of ungulates—sheep and goats, who are known destroyers of native vegetation. With much of the native forests gone, the landscape became predominantly grass lands. This paved the way for commercial ranching. The heavy grazing of pasture lands for ranching activity further impacted and altered the environment. The final chapter in alteration of the landscape was major cultivation of previous lands for pineapple. All of the above activities have left no trace of any cultural practices or resources within the project area.*

We would like to make one correction. In both of the above reference reports you note that if burial or other findings are discovered during construction or any phase of the project, all work in the immediate area will halt and the State Historic Preservation Office (SHPD) will be immediately notified. Please make amendments to note both the Offices of Hawaiian Affairs (OHA) and the local Burial Council must also be notified.

If you have any additional questions, please feel free to contact Jerry B. Norris at 594-1847.

Sincerely,

Colin C Kippen Jr

Colin C. Kippen, Jr.
Deputy Administrator, Hawaiian Rights Division

cc: OHA Board of Trustees
Randall K. Ogata, Administrator
Joanne Hiramatsu, Townscape, Inc.
Office of Environmental Quality

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII

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

RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

April 12, 2001

Mr. Colin C. Kippen, Jr.
Deputy Administrator, Hawaiian Rights Division
Office of Hawaiian Affairs
State of Hawaii
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

Dear Mr. Kippen:

Subject: Draft Environmental Assessment for Lands of Lana'i
Lana'i City, Hawai'i

Thank you for your letter on the Draft Environmental Assessment (DEA) dated March 19, 2001 for the subject project. We appreciate your review of the document and offer the following response:

The DEA will be changed to reflect the addition of notifying the Offices of Hawaiian Affairs and the local Burial Council along with the State Historic Preservation Division in the event that burials or other significant findings are discovered during the construction or any phases of the project.

Should you have any questions or need further information, please contact Ms. Michele Otake, Special Assistant for HHL Housing at 587-6451. Thank you for participating in the environmental review process.

Aloha,

Raynard C. Soon, Chairman
Hawaiian Homes Commission

Maui Electric Company, Ltd. • 210 West Kamehameha Avenue • PO Box 398 • Kahului, Maui, HI 96733-6898 • (808) 871-8461

DEPT. OF HAWAIIAN HOME LANDS

'01 MAR 29 A8:57

March 23, 2001

Ms. Michele Otake
Department of Hawaiian Home Lands
PO Box 1879
Honolulu, HI 96805

RE: Proposed Lanai Development

Ms. Michele Otake

Dear Ms. Otake:

I am writing in regards to Department of Hawaiian Home Lands proposed Lanai development of 136 single-family homes and 20 multifamily units. Maui Electric Company would like to offer support for your project by providing technical assistance and funding for the installation of solar water heating systems and other energy conservation measures.

By having a Maui Electric approved solar hot water heating system made an integral part of the home, your buyers will be assured of quality installations, affordability, lower monthly expenses, and discounts on their mortgages through participating Energy Star Lenders.

If this would be of interest to you, I can be reached at (808) 871-2332.

Sincerely,

Earle Ifuku
Manager Customer Service
Maui Electric Company, Limited

jw
cc: Sheila Black

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII

RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

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

April 12, 2001

Mr. Earle Ifuku
Manager Customer Service
Maui Electric Company, Limited
210 West Kamehameha Avenue
P.O. Box 398
Kahului, Hawaii 96733-6898

Dear Mr. Ifuku:

Subject: Draft Environmental Assessment for Lands of Lana'i
Lana'i City, Hawai'i

Thank you for your letter on the Draft Environmental Assessment (DEA) dated March 23, 2001 for the subject project. We appreciate your support of the project and review of the document.

As we near the construction phase of the project we will contact you for technical assistance and funding for the installation of solar water heating systems and other energy conservation measures. The cost savings will be of great interest to the new residents of this community.

Should you have any questions, please contact Ms. Michele Otake, Special Assistant for HHL Housing at (808) 587-6451. Thank you for participating in the environmental review process.

Aloha,

Raynard C. Soon, Chairman
Hawaiian Homes Commission

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

March 23, 2001

Mr. Raynard Soon, Chairman
Hawaiian Homes Commission
P.O. Box 1879
Honolulu, Hawai'i 96805

Dear Mr. Soon:

Subject: Draft Environmental Assessment for the Lands of Lana'i

Thank you for the opportunity to review and comment on the subject document. We have the following comments.

1. We recommend that you review the attached "Guidelines for Sustainable Building Design in Hawai'i" and incorporate the recommendations in these guidelines in the design of the project.

2. This project should also comply with sections 103D-407 and 408 of Hawai'i Revised Statutes concerning the use of indigenous plants and recycled glass.

3. Electric power will be supplied by Maui Electric Company via underground lines. If any underground line will be located near residential areas, the potential health effects of the electric and magnetic field should be analyzed.

4. Please consult with the Department of Health concerning the soil analyses and laboratory tests that were performed on the formerly pineapple fields.

Should you have any question, please call Jeyan Thirugnanam at 586-4185.

Sincerely,

Genevieve Salmonson
Director

c: Townscape

Guidelines for Sustainable Building Design in Hawai`i

A planner's checklist

(Adopted by the Environmental Council on October 13, 1999)

Introduction

Hawai'i law calls for efforts to conserve natural resources, promote efficient use of water and energy and encourage recycling of waste products. Planning a project from the very beginning to include sustainable design concepts can be a critical step toward meeting these goals.

The purpose of the state's environmental review law (HRS Ch. 343) is to encourage a full, accurate and complete analysis of proposed actions, promote public participation and support enlightened decision making by public officials. The Office of Environmental Quality Control offers the following guidelines for preparers of environmental reviews under the authority of HRS 343 to assist agencies and applicants in meeting these goals.

These guidelines do not constitute rules or law. They have been refined by staff and peer review to provide a checklist of items that will help the design team create projects that will have a minimal impact on Hawai`i's environment and make wise use of our natural resources. In a word, projects that are *sustainable*.

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 Hawai`i's residents and visitors today without compromising the needs of future generations. Compared to conventional projects, a resource-efficient building project will:

I. Use less energy for operation and maintenance
II. Contain less *embodied* energy (e.g. locally produced building products often contain less *embodied* energy than imported products because they require less energy-consuming transportation.)
III. Protect the environment by preserving/conserving water and other natural resources and by minimizing impact on the site and ecosystems
IV. Minimize health risks to those who construct, maintain, and occupy the building
V. Minimize construction waste
VI. Recycle and reuse generated construction wastes

1

VII. Use resource-efficient building materials (e.g. materials with recycled content and low embodied energy, and materials that are recyclable, renewable, environmentally benign, non-toxic, low VOC (Volatile Organic Compound) emitting, durable, and that give high life cycle value for the cost.)

VIII. Provide the highest quality product practical at competitive (affordable) first and life cycle costs.

In order to avoid excessive overlapping of items, the checklist is designed to be read in totality, not just as individual sections. This checklist tries to address a range of project types, large scale as well as small scale. Please use items that are appropriate to the type and scale of the project.

Although this list will help promote careful and sensitive planning, mere compliance with this checklist does not confirm sustainability. Compliance with and knowledge of current building codes by users of this checklist is also required.

TABLE OF CONTENTS

I. Pre Design

___1. Hold programming team meeting with client representative, Project Manager, planning consultant, architectural consultant, civil engineer, mechanical, electrical, plumbing (MEP) engineer, structural engineer, landscape architect, interior designer, sustainability consultant and other consultants as required by the project. Identify project and sustainability goals. Client representatives and consultants need to work together to ensure that project and environmental goals are met.

___2. Develop sustainable guideline goals to insert into outline specifications as part of the Schematic Design documents. Select goals from the following sections that are appropriate for the project.

___3. Use Cost-Benefit Method for economic analysis of the sustainability measures chosen. (Cost-Benefit Method is a method of evaluating project choices and investments by comparing the present and life cycle value of expected benefits to the present and life cycle value of expected costs.)

___4. Include "Commissioning" in the project budget and schedule. (Building "Commissioning" is the process of ensuring that systems are designed, installed, functionally tested, and capable of being operated and maintained in accordance with specifications that meet the owner's needs, and recognize the owner's financial and operational capacity. It improves the performance of the building systems, resulting in energy efficiency and conservation, improved air quality and lower operation costs. *Refer to Section IX.*)

II. Site Selection & Site Design

A. Site Selection

___1. Analyze and assess site characteristics such as vegetation, topography, geology, climate, natural access, solar orientation patterns, water and drainage, and existing utility and transportation infrastructure to determine the appropriate use of the site.

___2. Whenever possible, select a site in a neighborhood where the project can have a positive social, economic and/or environmental impact.

___3. 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.

B. Site Preparation and Design

___1. Prepare a thorough existing conditions topographic site plan depicting topography, natural and built features, vegetation, location of site utilities and include solar information,

rainfall data and direction of prevailing winds. Preserve existing resources and natural features to enhance the design and add aesthetic, economic and practical value. Design to minimize the environmental impact of the development on vegetation and topography.

___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.

___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.

___4. Retain existing topsoil and maintain soil health by clearing only the areas reserved for the construction of streets, driveways, parking areas, and building foundations. Replant exposed soil areas as soon as possible. Reuse excavated soils for fill and cut vegetation for mulch.

___5. Grade slopes to a ratio of less than 2 : 1 (run to rise). Balance cut and fill to eliminate hauling. Check grading frequently to prevent accidental over excavation.

___6. Minimize the disruption of site drainage patterns. Provide erosion and dust controls, positive site drainage, and siltation basins as required to protect the site during and after construction, especially, in the event of a major storm.

___7. Minimize the area required for the building footprint. Consolidate utility and infrastructure in common corridors to minimize site degradation, and cost, improve efficiency, and reduce impermeable surfaces.

___8. For termite protection, use non toxic alternatives to pesticides and herbicides, such as Borate treated lumber, Basaltic Termite Barrier, stainless steel termite barrier mesh, and termite resistant materials.

III. Building Design

___1. Consider adaptive re-use of existing structures instead of demolishing and/or constructing a new building. Consult the State Historic Preservation Officer for possible existing historic sites that may meet the project needs.

___2. Plan for high flexibility while designing building shell and interior spaces to accommodate changing needs of the occupants, and thereby extend the life span of the building.

___3. Design for re-use and/or disassembly. (For recyclable and reusable building products, see Section VII).

___4. Design space for recycling and waste diversion opportunities during occupancy.

___5. Provide facilities for bicycle and pedestrian commuters (showers, lockers, bike racks, etc.) in commercial areas and other suitable locations.

___6. Plan for a comfortable and healthy work environment. Include inviting outdoor spaces, wherever possible. *(Refer to Section VIII.)*

___7. Provide an Integrated Pest Management approach. The use of products such as Termi-mesh, Basaltic Termite Barrier and the Sentricon "bait" system can provide long term protection from termite damage and reduce environmental pollution.

___8. Design a building that is energy efficient and resource efficient. *(See Sections IV, V, VII.)* Determine building operation by-products such as heat gain and build up, waste/gray-water and energy consumption, and plan to minimize them or find alternate uses for them.

___9. For natural cooling, use
   a. Reflective or light colored roofing, radiant barrier and/or insulation, roof vents
   b. Light colored paving (concrete) and building surfaces
   c. Tree Planting to shade buildings and paved areas
   d. Building orientation and design that captures trade winds and/or provides for convective cooling of interior spaces when there is no wind

IV. Energy Use

___1. Obtain a copy of the State of Hawai'i Model Energy Code (available through the Hawai'i State Energy Division, at Tel. 587-3811). Exceed its requirements. (Contact local utility companies for information on tax credits and utility-sponsored programs offering rebates and incentives to businesses for installing qualifying energy efficient technologies.)

___2. Use site sensitive orientation to :
   a. Minimize cooling loads through site shading and carefully planned east-west orientation.
   b. Incorporate natural ventilation by channeling trade winds
   c. Maximize daylighting.

___3. Design south, east and west shading devices to minimize solar heat gain.

___4. Use spectrally selective tints or spectrally selective low-e glazing with a Solar Heat Gain Coefficient (SHGC) of 0.4 or less.

___5. Minimize effects of thermal bridging in walls, roofs and window systems.

___6. Maximize efficiencies for lighting, Heating, Ventilation, Air Conditioning (HVAC) systems and other equipment. Use insulation and/or radiant barriers, natural ventilation, ceiling fans and shading to avoid the use of air conditioning whenever appropriate.

___7. Eliminate hot water in restrooms when possible.

___8. Provide tenant sub-metering to encourage utility use accountability.

___9. Use renewable energy. Use solar water heaters and consider the use of photovoltaics and Building Integrated Photovoltaics (BIPV).

__10. Use available energy resources such as waste heat recovery, when feasible.

A. Lighting

___1. Design for at least 15% lower interior lighting power allowance than the Energy Code.
___2. Select lamps and ballasts with the highest efficiency, compatible with the desired level of illumination and color rendering specifications. Examples that combine improved color rendering with efficient energy use include compact flourescents and T8 flourescents that use tri-phosphor gases.
___3. Select lighting fixtures which maximize system efficacy and which have heat removal capabilities
___4. Reduce light absorption on surfaces by selecting colors and finishes that provide high reflectance values without glare.
___5. Use task lighting with low ambient light levels.
___6. Maximize daylighting through the use of vertical fenestration, light shelves, skylights, clerestories, building form and orientation as well as through translucent or transparent interior partitions. Coordinate daylighting with electrical lighting for maximum electrical efficiency.
___7. Incorporate daylighting controls and/or motion activated light controls in low or intermittent use areas.
___8. Avoid light spillage in exterior lighting by using directional fixtures.
___9. Minimize light overlap in exterior lighting schemes.
__10. Use lumen maintenance procedures and controls.

B. Mechanical Systems

__1. Design to comply with the Energy Code and to exceed its efficiency requirements.
___2. Use "Smart Building" monitor/control systems when appropriate.
___3. Utilize thermal storage for reduction of peak energy usage.
___4. Use Variable air volume systems to save fan power.
___5. Use variable speed drives on pumping systems and fans for cooling towers and air handlers.
___6. Use air-cooled refrigeration equipment or use cooling towers designed to reduce drift.
___7. Specify premium efficiency motors.
___8. Reduce the need for mechanical ventilation by reducing sources of indoor air pollution. Use high efficiency air filters and ultraviolet lamps in air handling units. Provide for regular maintenance of filtration systems. Use ASHRAE standards as minimum.
___9. Locate fresh air intakes away from polluted or overheated areas. Locate on roof where possible. Separate air intake from air exhausts by at least 40 ft.
__10. Use separate HVAC systems to serve areas that operate on widely differing schedules and/or design conditions.
__11. Use shut off or set back controls on HVAC system when areas are not occupied.
__12. Use condenser heat, waste heat or solar energy. (Contact local utility companies for information on the utility-sponsored Commercial and Industrial Energy Efficiency Programs which offer incentives to businesses for installing qualifying energy efficient technologies.)
__13. Evaluate plug-in loads for energy efficiency and power saving features.
__14. Improve comfort and save energy by reducing the relative humidity by waste reheat, heat pipes or solar heat.
__15. Minimize heat gain from equipment and appliances by using:
  a. Environmental Protection Agency (EPA) Energy Star rated appliances.
  b. Hoods and exhaust fans to remove heat from concentrated sources.
  c. High performance water heating that exceeds the Energy Code requirements.
__16. Specify HVAC system "commissioning" period to reduce occupant exposure to Indoor Air Quality (IAQ) contaminants and to maximize system efficiency.

V. Water Use

A. Building Water

___1. Install water conserving, low flow fixtures as required by the Uniform Plumbing Code.
___2. If practical, eliminate hot water in restrooms.
___3. Use self closing faucets (infrared sensors or spring loaded faucets) for lavatories and sinks.

B. Landscaping and Irrigation

(See Section VI.)

VI. Landscape and Irrigation

___1. Incorporate water efficient landscaping (xeriscaping) using the following principles:
  a. Planning, Efficient irrigation: Create watering zones for different conditions. Separate vegetation types by watering requirements. Install moisture sensors to prevent operation of the irrigation system in the rain or if the soil has adequate moisture. Use appropriate sprinkler heads.
  b. Soil analysis/improvement: Use (locally made) soil amendments and compost for plant nourishment, improved water absorption and holding capacity.
  c. 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.
  d. Practical turf areas: Turf only in areas where it provides functional benefits.

e. Mulches: Use mulches to minimize evaporation, reduce weed growth and retard erosion.

Contact the local Board of Water Supply for additional information on xeriscaping such as efficient irrigation, soil improvements, mulching, lists of low water-demand plants, tours of xeriscaped facilities, and xeriscape classes.

___2. Protect existing beneficial site features and save trees to prevent erosion. Establish and carefully mark tree protection areas well before construction.
___3. Limit staging areas and prevent unnecessary grading of the site to protect existing, especially native, vegetation.
___4. Use top soil from the graded areas, stockpiled on the site and protected with a silt fence to reduce the need for imported top soil.
___5. Irrigate with non-potable water or reclaimed water when feasible. Collect rainwater from the roof for irrigation.
___6. Sub-meter the irrigation system to reduce water consumption and consequently water and sewer fees. Contact the local county agency to obtain irrigation sub-metering requirements and procedures. Locate irrigation controls within sight of the irrigated areas to verify that the system is operating properly.
___7. Use pervious paving instead of concrete or asphalt paving. Use natural and man-made berms, hills and swales to control water runoff.
___8. Avoid the use of solvents that contain or leach out pollutants that can contaminate the water resources and runoff. Contact the State of Hawai'i Clean Water Branch at 586-4309 to determine whether a NPDES (National Pollutant Discharge Elimination System) permit is required.
___9. Use Integrated Pest Management (IPM) techniques. IPM involves a carefully managed use of biological and chemical pest control tactics. It emphasizes minimizing the use of pesticides and maximizing the use of natural process
__10. Use trees and bushes that are felled at the building site (i.e. mulch, fence posts). Leave grass trimmings on the lawn to reduce green waste and enhance the natural health of lawns.
__11. Use recycled content, decay and weather resistant landscape materials such as plastic lumber for planters, benches and decks.

VII. Building Materials & Solid Waste Management

A. Material Selection and Design

___1. Use durable products.
___2. Specify and use natural products or products with low embodied energy and/or high recycled content. Products with recycled content include steel, concrete with glass,

drywall, carpet, etc. Use ground recycled concrete, graded glass cullet or asphalt as base or fill material.
___3. Specify low toxic or non-toxic materials whenever possible, such as low VOC (Volatile Organic Compounds) paints, sealers and adhesives and low or formaldehyde-free materials. Do not use products with CFCs (Chloro-fluoro-carbons).
___4. Use locally produced products such as plastic lumber, insulation, hydro-mulch, glass tiles, compost.
___5. Use advanced framing systems that reduce waste, two stud corners, engineered structural products and prefabricated panel systems.
___6. Use materials which require limited or no application of finishing or surface preparation. (i.e. finished concrete floor surface, glass block and glazing materials, concrete block masonry, etc.).
___7. Use re-milled salvaged lumber where appropriate and as available. Avoid the use of old growth timber.
___8. Use sustainably harvested timber.
___9. Commit to a material selection program that emphasizes efficient and environmentally sensitive use of building materials, and that uses locally available building materials. (A list of Earth friendly products and materials is available through the Green House Hawai'i Project. Call Clean Hawai'i Center, Tel. 587-3802 for the list.)

B. Solid Waste Management, Recycling and Diversion Plan

___1. Prepare a job-site recycling plan and post it at the job-site office.
___2. Conduct pre-construction waste minimization and recycling training for employees and sub-contractors.
___3. Use a central area for all cutting.
___4. Establish a dedicated waste separation/diversion area. Include Waste/Compost/Recycling collection areas and systems for use during construction process and during the operational life cycle of the building.
___5. Separate and divert all unused or waste cardboard, ferrous scrap, construction materials and fixtures for recycling and/or forwarding to a salvage exchange facility. Information on "Minimizing C&D (construction and demolition) waste in Hawai'i" is available through Department of Health, Office of Solid Waste Management, Tel. 586-4240.
___6. Use all green waste, untreated wood and clean drywall on site as soil amendments or divert to offsite recycling facilities.
___7. Use concrete and asphalt rubble on-site or forward the material for offsite recycling.
___8. Carefully manage and control waste solvents, paints, sealants, and their used containers. Separate these materials from C&D (construction and demolition) waste and store and dispose them of them carefully.
___9. Donate unused paint, solvents, sealants to non-profit organizations or list on HIMEX (Hawai'i Materials Exchange). HIMEX is a free service operated by Maui Recycling

Group, that offers an alternative to landfill disposal of usable materials, and facilitates no-cost trades. See web site, www.himex.org.

__10. Use suppliers that re-use or recycle packaging material whenever possible.

VIII. Indoor Air Quality

___1. Design an HVAC system with adequate supply of outdoor air, good ventilation rates, even air distribution, sufficient exhaust ventilation and appropriate air cleaners.

___2. Develop and specify Indoor Air Quality (IAQ) requirements during design and contract document phases of the project. Monitor compliance in order to minimize or contain IAQ contaminant sources during construction, renovation and remodeling.

___3. Notify occupants of any type of construction, renovation and remodeling and the effects on IAQ.

___4. Inspect existing buildings to determine if asbestos and lead paint are present and arrange for removal or abatement as needed.

___5. Supply workers with, and ensure the use of VOC (Volatile Organic Compounds)-safe masks where required.

___6. Ensure that HVAC systems are installed, operated and maintained in a manner consistent with their design. Use UV lamps in Air Handling Units to eliminate mold and mildew growth. An improperly functioning HVAC system can harbor biological contaminants such as viruses, bacteria, molds, fungi and pollen, and can cause Sick Building Syndrome (SBS).

___7. Install separate exhaust fans in rooms where air polluting office equipment is used, and exhaust directly to the exterior of the building, at sufficient distance from the air intake vents.

___8. Place bird guards over air intakes to prevent pollution of shafts and HVAC ducts.

___9. Control indoor air pollution by selecting products and finishes that are low or non-toxic and low VOC emitting. Common sources of indoor chemical contaminants are adhesives, carpeting, upholstery, manufactured wood products, copy machines, pesticides and cleaning agents.

__10. Schedule finish application work to minimize absorption of VOCs into surrounding materials e.g. allow sufficient time for paint and clear finishes to dry before installing carpet and upholstered furniture. Increase ventilation rates during periods of increased pollution.

__11. Allow a flush-out period after construction, renovation, remodeling or pesticide application to minimize occupant exposure to chemicals and contaminants.

IX. Commissioning & Construction Project Closeout

___1. Appoint a Commissioning Authority to develop and implement a commissioning plan and a preventative maintenance plan. Project Manager's responsibilities must include coordination of commissioning activities during project closeout.

___2. Commissioning team should successfully demonstrate all systems and perform operator training before final acceptance.

___3. Provide flush-out period to remove air borne contaminants from the building and systems.

___4. Provide as-built drawings and documentation for all systems. Provide data on equipment maintenance and their control strategies as well as maintenance and cleaning instructions for finish materials.

X. Occupancy and Operation

A. General Objectives

___1. Develop a User's Manual for building occupants that emphasizes the need for Owner/Management commitment to efficient sustainable operations.

___2. Management's responsibilities must include ensuring that sustainability policies are carried out.

B. Energy

___1. Purchase EPA rated, Energy Star, energy-efficient office equipment, appliances, computers, and copiers. (Energy Star is a program sponsored by U.S. Dep. Of Energy. Use of these products will contribute to reduced energy costs for buildings and reduce air pollution.)

___2. Institute an employee education program about the efficient use of building systems and appliances, occupants impact on and responsibility for water use, energy use, waste generation, waste recycling programs, etc.

___3. Re-commission systems and update performance documentation periodically per recommendations of the Commissioning Authority, or whenever modifications are made to the systems.

C. Water

___1. Start the watering cycle in the early morning in order to minimize evaporation.

___2. Manage the chemical treatment of cooling tower water to reduce water consumption.

D. Air

___1. Provide incentives which encourage building occupants to use alternatives to and to reduce the use of single occupancy vehicles.

___2. Provide a location map of services within walking distance of the place of employment (child care, restaurants, gyms, shopping).
___3. Periodically monitor or check for indoor pollutants in building.
___4. Provide an IAQ plan for tenants, staff and management that establishes policies and documentation procedures for controlling and reporting indoor air pollution. This helps tenants and staff understand their responsibility to protect the air quality of the facility.

E. Materials and Products

___1. Purchase business products with recycled content such as paper, toners, etc.
___2. Purchase Furniture made with sustainably harvested wood, or with recycled and recycled content materials, which will not off gas VOC's.
___3. Remodeling and painting should comply with or improve on original sustainable design intent.
___4. Use low VOC, non-toxic, phosphate and chlorine free, biodegradable cleaning products.

F. Solid Waste

___1. Collect recyclable business waste such as paper, cardboard boxes, and soda cans.
___2. Avoid single use items such as paper or Styrofoam cups and plates, and plastic utensils.

XI. Resources

Financing: Energy Efficiency in Buildings. U.S. Department of Energy, DOE/EE-0152, May, 1998 (Call Tel.1-800-DOE-EREC or visit local office)

Building Commissioning: The Key to Quality Assurance. U.S. Department of Energy, DOE/EE-0153, May, 1998 (Call Tel.1-800-DOE-EREC or visit local office)

Guide to Resource-Efficient Building in Hawaii. University of Hawai'i at Manoa, School of Architecture and Energy, Resources and Technology Division, Department of Business, Economic Development and Tourism, October 1998. (Call Tel. 587-3804 for publication)

Hawaii Model Energy Code. Energy, Resources and Technology Division, Department of Business, Economic Development and Tourism, November 1997 (Call Tel. 587-3810 for publication)

Photovoltaics in the Built Environment: A Design Guide for Architects and Engineers. NREL Publications, DOE/GO #10097-436, September 1997 (Call Tel.1-800-DOE-EREC or visit local office)

Building Integrated Photovoltaics: A Case Study. NREL Publications #TP-472-7574, March 1995 (Call Tel.1-800-DOE-EREC or visit local office)

Solar Electric Applications: An overview of Today's Applications. NREL Publications, DOE/GO #10097-357, Revised February, 1997 (Call Tel.1-800-DOE-EREC or visit local office)

Green Lights: An Enlightened Approach to Energy Efficiency and Pollution Prevention. U.S. Environmental Protection Agency, Pacific Island Contact Office (Call Tel. 541-2710 for publication.)

Healthy Lawn, Healthy Environment. U.S. Environmental Protection Agency, Pacific Island Contact Office. (Call Tel. 541-2710 for this and related publications)

How to Plant a Native Hawaiian Garden. Office of Environmental Quality Control (OEQC), Department of Health, State of Hawai'i (Call Tel. 586-4185 for publication)

Buy Recycled in Hawai'i. Clean Hawai'i Center, Energy, Resources and Technology Division, Department of Business, Economic Development and Tourism, November 1997. (Call Tel. 587-3802 for publication)

Hawai'i Recycling Industry Guide and other recycling and reuse related fact sheets. Clean Hawai'i Center, Energy, Resources and Technology Division, Department of Business, Economic Development and Tourism, July 1999. (Call Tel. 587-3802 for publication)

Minimizing Construction and Demolition Waste. Office of Solid Waste Management, Department of Health and Clean Hawai'i Center, Energy, Resources and Technology Division, Department of Business, Economic Development and Tourism, February 1998. (Call Tel. 586-4240 for publication)

Contractor's Waste Management Guide and Construction and demolition Waste Management Facilities Directory. Clean Hawai'i Center, Energy, Resources and Technology Division, Department of Business, Economic Development and Tourism, 1999. (Call Tel. 587-3802 for publication)

Waste Management and Action: Construction Industry. Department of Health, Solid and Hazardous Waste Branch (Call Tel. 586-7496 for publication)

Business Guide For reducing Solid Waste. U.S. Environmental Protection Agency, Pacific Island Contact Office, Tel. 541-2710 (Call for publication.)

The Inside Story: A Guide to Indoor Air Quality. U.S. Environmental Protection Agency, Pacific Island Contact Office, Tel. 541-2710 (Call for this and related publications.) Additional information is available from the American Lung Association, Hawai'i, Tel. 537-5966

Selecting Healthier Flooring Materials. American Lung Association and Clean Hawai'i Center, February 1999. (Call Tel. 537-5966 x307)

Office Paper Recycling: An Implementation Manual. U.S. Environmental Protection Agency, Pacific Island Contact Office, Tel. 541-2710 (Call for publication.)

Acknowledgments

OEQC and the Environmental Council would like to thank Allison Beale, Gary Gill, Nick H. Huddleston, Gail Suzuki-Jones, Purnima McCutcheon, Virginia B. MacDonald, Steve Meder, Ramona Mullahey, Thomas P. Papandrew, Victor Olgay, Howard Tanaka, and Howard Wiig for their assistance with this project.

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII

RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

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

April 12, 2001

To: Genevieve Salmonson, Director
Office of Environmental Quality Control
Department of Health

From: Raynard C. Soon, Chairman
Hawaiian Homes Commission

Subject: Draft Environmental Assessment for Lands of Lana'i
Lana'i City, Hawai'i

Thank you for your letter on the Draft Environmental Assessment (DEA) dated March 23, 2001 for the subject project. We appreciate your review of the document and offer the following response:

1. To the extent possible, the "Guidelines for Sustainable Building Design in Hawai'i" will be used in the design of the project. The planning team has had several meetings with the community to develop the "Preferred Concept Plan" shown on page 8 of the Draft Environmental Assessment. The layout shown on the "Preferred Concept Plan" took into consideration the physical and environmental attributes of the site.

2. The project will comply with Sections 103D-407 and 408 of the Hawai'i Revised Statutes (HRS) regarding the use of indigenous plants and recycled glass. Discussions have already begun with the community on the use of indigenous and Polynesian introduced plants that are unique to the island of Lana'i.

3. As discussed with Mr. Jeyan Thirugnanam of your office and our consultant Ms. Joanne Hiramatsu, the health effects related to underground electric lines would be a concern only if high voltage lines (i.e. 46KV or higher) were

planned through the site. The underground electric system within the project site will not contain high voltage lines.

4. The DEA has been sent to the Department of Health (DOH) for review and comment. However, we are aware that there has been a "freeze" placed on all environmental review documents because of the absence of staff to coordinate the review process. Nevertheless, we have contacted the Solid and Hazardous Waste section of DOH and requested that they review the soils report and confirm that the soil analyses and laboratory test results indicate that there are no harmful residues in the soil from past agricultural uses, as stated in the DEA. We received verbal comments from the Solid and Hazardous Waste section on Thursday, April 5, 2001. They wanted the soils consultant to elaborate on why only two samples were taken, where the samples were taken and why chromium levels were high in one of the samples taken near an area that showed evidence of household wastes. The elaborated explanation from the soils consultant is enclosed.

Should you have any questions or need further information, please contact Ms. Michele Otake, Special Assistant for HHL Housing at (808) 587-6451. Thank you for participating in the environmental review process.

Enc.

Terrasano LLC
72 Kowe'e Avenue
Honolulu, HI 96817-1105
Office (808) 595-7473
Fax (808) 969-0561
www.terrasano.com

April 12, 2001

Joanne Hiramatsu
Townscape Inc.
900 Fort Street Mall, Suite 1160
Honolulu, Hawaii 96813

Via Fax to: (808) 524-4998

Subject: **Response to Verbal Comments Received on Phase 1 Environmental Site Assessment, Hawaiian Homelands Parcel**
Lana'i City, Lana'i, Hawai'i, Tax Map Key 2-4-9-002:057
Terrasano Project 011-002

Dear Ms. Hiramatsu:

This letter responds to several verbal comments provided by Mr. Bryce Hataoka of the Hawaii Department of Health, Hazard Evaluation and Emergency Reponse Office, on the Phase 1 Environmental Site Assessment prepared for the above-referenced site. Terrasano prepared the report in December 2000.

A Phase 1 environmental site assessment is intended to screen sites for the presence or likely presence of any hazardous substances or petroleum products that indicate a release has occurred or may occur at the site. These assessments typically rely on record reviews and a visual inspection of the site to identify these possible conditions. In this case, several soil samples were collected to provide an additional point of reference for screening residual pesticides and herbicides that were used for pineapple cultivation at the site. One sample was collected from the side of a drainage swale, at the edge of a former pineapple field. The second sample was collected from an area where solid and hazardous waste materials had been illegally disposed. This location was selected after the visual site inspection showed the extent of solid waste disposal that occurred at the property. In addition to pesticides and herbicides, this sample was also analyzed for heavy metals.

Mr. Hataoka expressed concern over the representativeness of the two soil samples collected at the site. This issue is addressed for the two major concerns for the site: residual pesticides/herbicides and hazardous substances associated with solid waste disposal.

Residual Pesticides and Herbicides

The process for evaluating the potential effects of residual pesticides and herbicides involved a review of records from Dole Pineapple Company, the Department of Health, and the University of Hawaii. Based on these reviews, a list of pesticides and herbicides was developed that might present a potential human health risk for future residences if present in excess levels. The soil samples were collected to further screen the site and determine whether additional study would be necessary to evaluate the effect of residual pesticides and herbicides. Composite samples were not collected, as these samples are not typically

used in comparing analytical data to risk-based human health screening levels. Because agricultural chemicals are applied relatively evenly over fields, it was felt that two single samples would adequately represent ambient conditions of the soil with respect to residual pesticides and herbicides. One sample was collected on the bank of a drainage swale, where higher levels of residual pesticides and herbicides might accumulate from runoff.

Hazardous Substances from Solid Waste Disposal

When the visual inspection of the property was made, Terrasano discovered that much of the property had been used for disposal of a wide range of solid wastes, including hazardous substances associated with motor vehicles and construction. One of the soil samples collected to evaluate residual pesticides and herbicides was from an area where solid waste disposal activities are ongoing, and in addition to pesticides and herbicides this sample was analyzed for heavy metals. Given the widespread nature of disposal activities and variety of materials observed, Terrasano did not intend for this sample to represent conditions at the site with respect to hazardous substances from solid waste disposal. Rather, the following recommendations were made in the report to address this concern:

1. *During grading and site development, solid waste materials should be removed and properly disposed of according to County of Maui solid waste disposal requirements. Soil that has been visibly impacted by petroleum or hazardous substances should be removed and disposed as well.*
2. *During grading activities, if significant amounts of hazardous substances are identified (for example, multiple containers or units of automotive batteries, used oil, ethylene glycol, paint, solvents, pesticides, wood treatment chemicals or large containers or drums of unknown materials), these materials should be segregated for proper disposal. Visibly impacted soil should also be removed and segregated from uncontaminated material. Soil samples from the area should be collected and analyzed to determine the extent of impacts and potential risks to future residents.*
3. *A hazardous substance release report may be required if the amount of material spilled is greater than the regulatory reportable quantity. Depending on the type of material and amount spilled, this report must be made immediately by telephone to the Coast Guard's National Response Center, the Hawaii Department of Health, and the Maui County Civil Defense. More information is available on reporting requirements from the Hawaii Department of Health's Hazard Evaluation and Emergency Response Office.*

If significant quantities of hazardous substances are encountered during site preparation, more soil sampling may be required to address the potential impacts of residual chemicals on future residents. This process is managed by the Department of Health's Hazard Evaluation and Emergency Response Office and is triggered when a hazardous substance report is made.

If you have any further questions or concerns about the report, please contact me at 595-7473.

Sincerely,

Martha M. Walters

Martha M. Walters

DEPARTMENT OF
PARKS AND RECREATION
COUNTY OF MAUI

1580-C KAAHUMANU AVENUE
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JAMES "KIMO" APANA
Mayor

FLOYD S. MIYAZONO
Director

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Deputy Director

808-270-7230
808-270-7934

March 29, 2001

Michele Otake
Department of Hawaiian Home Lands
1099 Alakea Street, 12th Floor
Honolulu, Hawaii 96813

RE: Lands of Lana'i
TMK (2) 4-9-02:57
Draft Environmental Assessment

Dear Ms. Otake:

Thank you for the opportunity to review the Draft Environmental Assessment for the proposed Lands of Lana'i development on the island of Lana'i.

Upon review of the submitted documents, we have no comment or objections to offer in this matter. Should you have any questions or need of further information, please call me or Patrick Matsui, Chief of Parks Planning & Development at 808-270-7931.

Sincerely,

Floyd S. Miyazono
Director

FSM:PTM:rh

c: Patrick Matsui, Chief of Parks Planning & Development
Joanne Hiramatsu, Townscape, Inc.
Office of Environmental Quality Control
SMA/Subdivision Files

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BENJAMIN J. CAYETANO
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RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

April 12, 2001

Mr. Floyd S. Miyazono, Director
Department of Parks and Recreation
County of Maui
1580-C Kaahumanu Avenue
Wailuku, Hawaii 96793

Dear Mr. Miyazono:

Subject: Draft Environmental Assessment for Lands of Lana'i
Lana'i City, Hawai'i

Thank you for your letter on the Draft Environmental Assessment (DEA) dated March 29, 2001 for the subject project. We appreciate your review of the document and note that you have no comments or objections to the project.

Should you have any questions, please contact Ms. Michele Otake, Special Assistant for HHL Housing at (808) 587-6451. Thank you for participating in the environmental review process.

Aloha,

Raynard C. Soon, Chairman
Hawaiian Homes Commission