

UNIVERSITY OF HAWAII AT HILO

Administration
Administrative Affairs

August 14, 2002

RECEIVED

'02 AUG 27 P1:00

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State Office Tower
235 South Beretania Street, Room 702
Honolulu, HI 96813

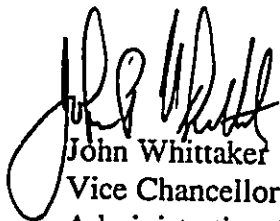
Subject: Finding of No Significant Impact (FONSI) for
Renovations at Panaewa Research Farm TMK: 62-2-056:056
Waiakea, South Hilo District, Hawaii

Dear Ms. Salmonson:

We have reviewed the comments received during the 30-day public comment period that began on July 8, 2002. We have determined that this project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the next edition of the Environmental Notice.

A completed OEQC Publication Form and four copies of the Final EA are enclosed. Please call Mr. Michael Murakami at (808) 974-7595 if you have any questions.

Sincerely,



John Whittaker
Vice Chancellor
Administrative Affairs

Enclosures

SEP 8 2002

FILE COPY

2002-09-08-HI- FEA-

FINAL ENVIRONMENTAL ASSESSMENT

RENOVATION OF PANAEWA RESEARCH FARM

UNIVERSITY OF HAWAI'I AT HILO
Waiakea, South Hilo, Hawaii

Prepared for

University of Hawai'i at Hilo
200 W. Kawili Street
Hilo, Hawaii 96720

August 2002

FINAL ENVIRONMENTAL ASSESSMENT

RENOVATION OF PANAWEA RESEARCH FARM
UNIVERSITY OF HAWAI'I AT HILO
Walakea, South Hilo, Hawaii

Prepared in Partial Fulfillment of the Requirements
of Chapter 343, Hawaii Revised Statutes and
Title 11, Chapter 200, Hawaii Administrative Rules,
Department of Health, State of Hawaii

Prepared for

University of Hawai'i at Hilo
200 West Kawili Street
Hilo, Hawaii 96720

Prepared by

Awa & Associates, LLC
1831 Young Street
Ground Floor
Honolulu, Hawaii 96814

and

Gerald Park Urban Planner
1400 Rycroft Street, Suite 876
Honolulu, Hawaii 96814

August 2002

PROJECT PROFILE

Proposed Action: Renovation of Panaewa Research Farm
University of Hawai'i at Hilo
Project No. UHH-00-008E

Proposing Agency: University of Hawai'i at Hilo

Accepting Authority: University of Hawai'i at Hilo
For Governor, State of Hawaii

Need for Assessment: Propose the use of state lands or funds

Location: Waiakea, South Hilo District, Hawaii
Tax Map Key: 2-2-056: 056
Land Area: 110.206 acres
Building Site: Approximately 1.25 acre
Landowner: State of Hawaii

Existing Use: Agricultural Research Facility

State Land Use Designation: *Agricultural*
County General Plan: Orchard
Zoning: A-3a

Anticipated Determination: Finding of No Significant Impact

Contact Person: Michael Murakami
Project Coordinator
UH Hilo Facilities Planning and Construction
200 W. Kawili Street
Hilo, Hawaii 96720

Telephone: 974-7595

Note: Revisions to the text of the Draft Environmental Assessment
are in ***bold italic*** type. Deleted text is shaded.

TABLE OF CONTENTS

	Project Profile	i
	Table of Contents	ii
	List of Figures and Photographs	iii
SECTION 1	DESCRIPTION OF THE PROPOSED ACTION	1
	A. Purpose and Need for the Project	1
	B. Technical Characteristics	1
	C. Social Characteristics	2
	D. Economic Characteristics	2
SECTION 2	EXISTING CONDITIONS	8
SECTION 3	SUMMARY OF ENVIRONMENTAL IMPACTS AND MEASURES TO MITIGATE ADVERSE EFFECTS	13
	A. Short-term Impacts	13
	B. Long-term Impacts	14
SECTION 4	ALTERNATIVES TO THE PROPOSED ACTION	16
	A. No Action	
	B. Alternative Site Plan	
SECTION 5	LIST OF PERMITS AND APPROVALS	17
SECTION 6	AGENCIES AND ORGANIZATIONS TO BE CONSULTED IN PREPARING THE ENVIRONMENTAL ASSESSMENT	18
SECTION 7	DETERMINATION OF SIGNIFICANCE	19
	REFERENCES	21
APPENDIX A	A CULTURAL IMPACT ASSESSMENT FOR RENOVATIONS AT UNIVERSITY OF HAWAII AT HILO PANA'EWA RESEARCH FARM, WAIĀKEA AHUPUA'A, DISTRICT OF SOUTH HILO, ISLAND OF HAWAII (TMK: 2-2-56: POR 56)	
APPENDIX B	COMMENT LETTERS AND RESPONSES	

LIST OF FIGURES

Figure	Title	Page
1	Location Map	
2	Tax Map	3
3	Site Plan	4
4	Building Plan	5
5	Building Section and Elevation	6
6	Detailed Land Classification	7
		10

IMAGES

Image	Title	Page
1	View of Arena Site from the East (Beyond Wire Fence). Note Slope On the Right.	9
2	View of Arena Site From the North.	9

The University of Hawai'i at Hilo ("UHH") proposes to construct site improvements at its Panaewa Research Farm located in the Panaewa Agricultural Park, Waiakea, South Hilo District, Island, County, and State of Hawaii.

The Panaewa Research Farm ("PRF") is part of the larger 470-acre Panaewa Agricultural Park developed by the State of Hawaii and administered by the Department of Agriculture, State of Hawaii. Located in the southern corner of the agricultural park, the PRF is identified as tax map key 2-2-056: 56 comprising an area of 110.206 acres. A Location Map and Tax Map are shown in Figures 1 and 2.

A. Background of the Project

The College of Agriculture and the Hawaii Community College at UHH provides academic and practical education in the various aspects of agriculture to prepare its graduates to be readily employed in the agricultural community. The agricultural program currently offers courses in three specialized areas: animal science, general agriculture, and tropical crop production.

The PRF complements classroom instruction s by providing actual farming facilities where students can apply the knowledge they have acquired. By performing various farm operations, graduates are prepared to enter agricultural operations with a minimum of additional training.

The proposed improvements at Panaewa Research Farm are the result of a donation to the UHH PRF in the form of a covered, open-sided structure to be used by students in the equine program for training horses. A covered structure would benefit all farm activities considering that the Panaewa area receives about 136" of rainfall annually (University of Hawaii, 1988).

B. Technical Characteristics

A 134-foot by 250-foot pre-fabricated steel structure (33,500 square feet covered) will be erected in an open field on the southeast side of the PRF (See Figure 3). The structure will be covered because of the high frequency of rainy days common to East Hawaii. Frequent rainfall has caused the cancellation of many outdoor classes at the existing uncovered arena at the PRF to the detriment of students and faculty.

The open-sided structure will be supported on steel frames anchored on poured in place pier footings. The structure is approximately 23'4" high in the center measured from grade to the top of the roof ridge (See Figures 4 and 5). Clear space under the structure is dimensioned at approximately 30,750 square feet.

A layer of cinder or ash on a combination rock and earth base will top the arena floor. Alternative surfacing material may be used excluding concrete and asphalt paving. The finished floor is proposed at elevation 236 feet.

Vehicle access is proposed on the west side of the arena. A 24-foot wide driveway is proposed for accommodating automobiles and trucks including large vehicle drawn horse trailers. The driveway will be graded but not paved. Approximately 340 feet in length, the driveway leads to a roadway and parking area encircling the arena. The roadway and parking area ranges from 30 feet to 51 feet in width (See Figure 3). The parking area and roadway will be constructed of 6" aggregate basecourse material. Two, paved accessible parking stalls will be provided on the south side of the arena.

Water is available from an existing water line near the northeast corner of the building site. A new supply line will be connected to the existing water line and distributed around the arena.

Roof runoff from the covered arena will be collected in two separate 12" drain lines and discharged into separate drywells located at the low end of the site. A third drywell is proposed adjoining the paved accessible parking stalls. The drywells will be 8 feet deep and 8 feet in diameter. ***The Department of Health has informed the design engineers that the drywells are not injection wells (Department of Health Consultation Letter).***

The area immediately adjoining the covered arena will not be landscaped. The use of indigenous plant materials will be considered should the area be landscaped in the future (Office of Environmental Quality Control Comment).

Electrical service will be brought to the arena on overhead lines. It has not been determined if ceiling lights would be installed for interior illumination. Lights will be mounted on the exterior of the structure for security purposes.

C. Economic Characteristics

The cost for site work, erecting the prefabricated building, and installing mechanical, electrical, and plumbing systems is estimated at \$ 1.0 million. The pre-fabricated structure is being donated to the UH Hilo for the intended use.

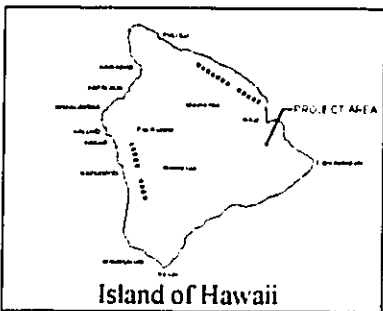
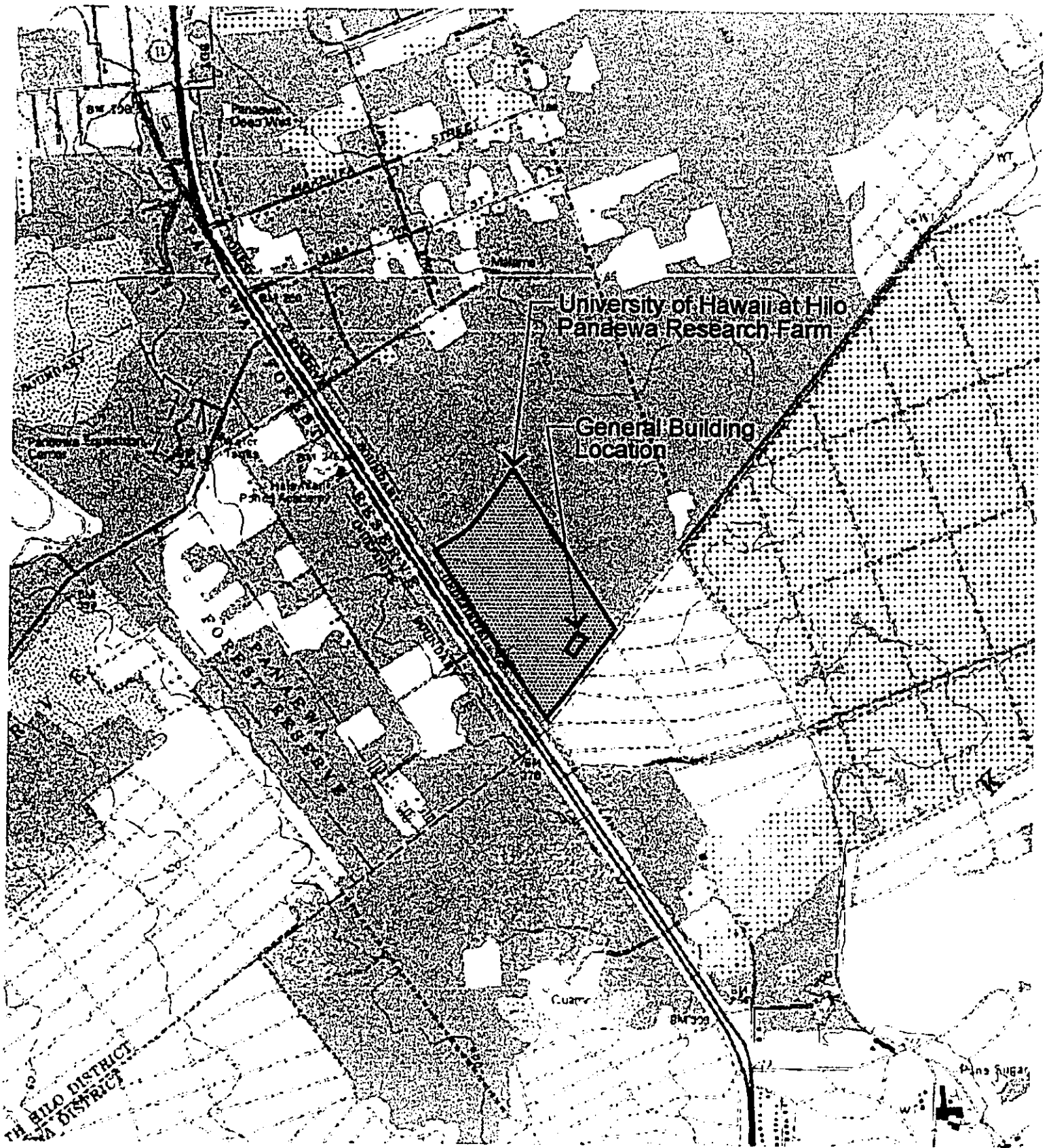
Construction work will commence after all necessary permits and approvals are received. A 6-month construction schedule is estimated.

Panaewa Agricultural Park is on land owned by the State of Hawaii and administered by the State Department of Agriculture. The 110-acre Panaewa Research Farm lot is leased to the University of Hawaii Hilo for a period of 55 years ending in 2036. The entire Panaewa Agricultural Park is on ceded lands.

The building site, to include the site of the covered arena, driveways and parking areas, is estimated at 1.25 acre.

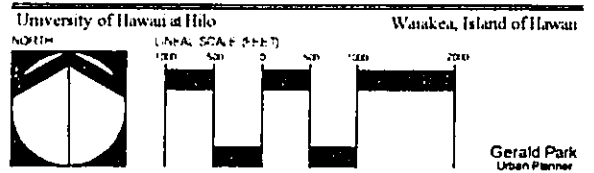
D. Social Characteristics

The proposed project will not displace any current agricultural activity conducted at the UHH Panaewa Research Farm.



Source USGS, Hilo and Mountain View Quadrangles

Figure 1
 Location Map
 Renovation of Panaewa
 Research Farm



Gerald Park
 Urban Planner
 March 1970

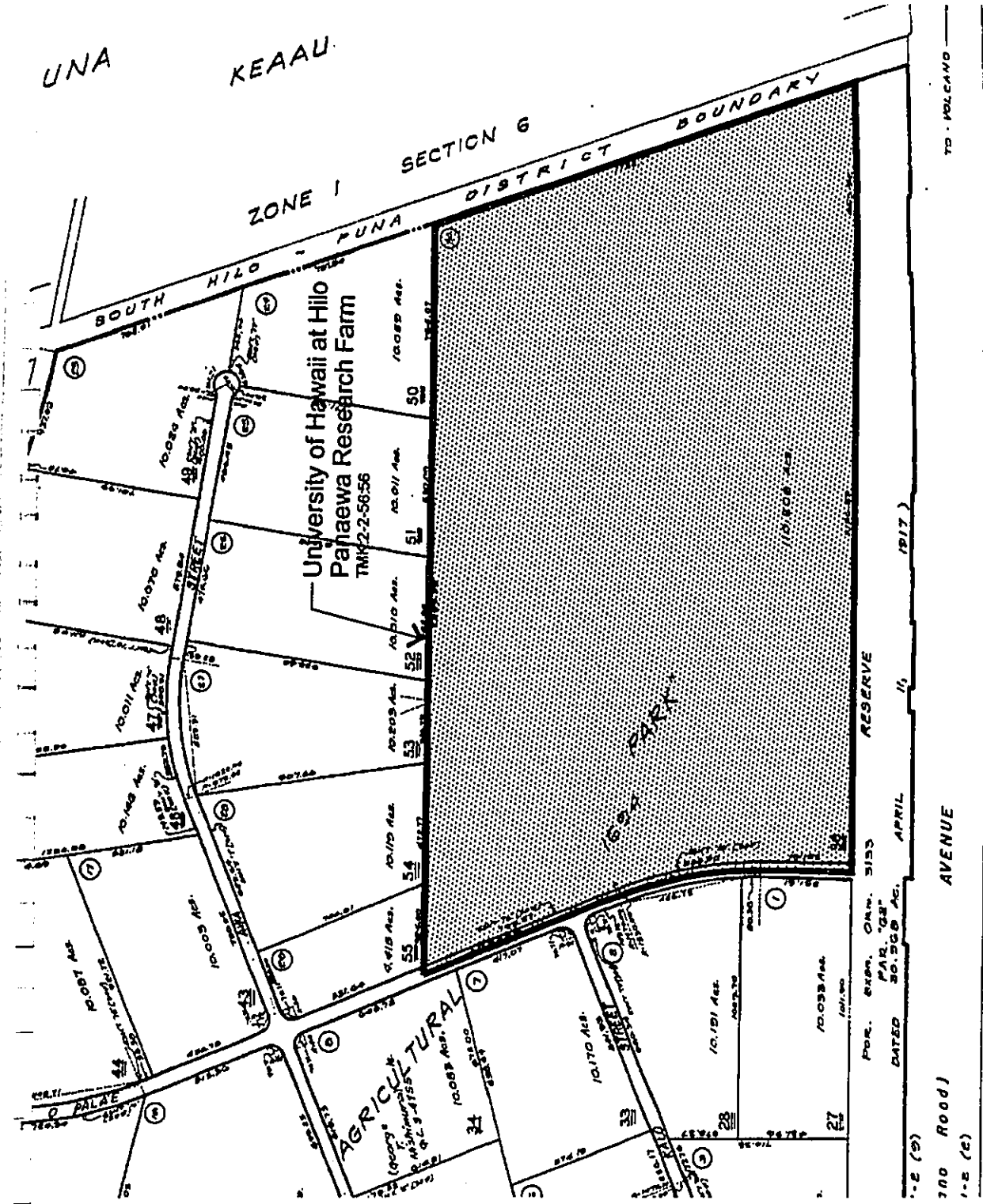
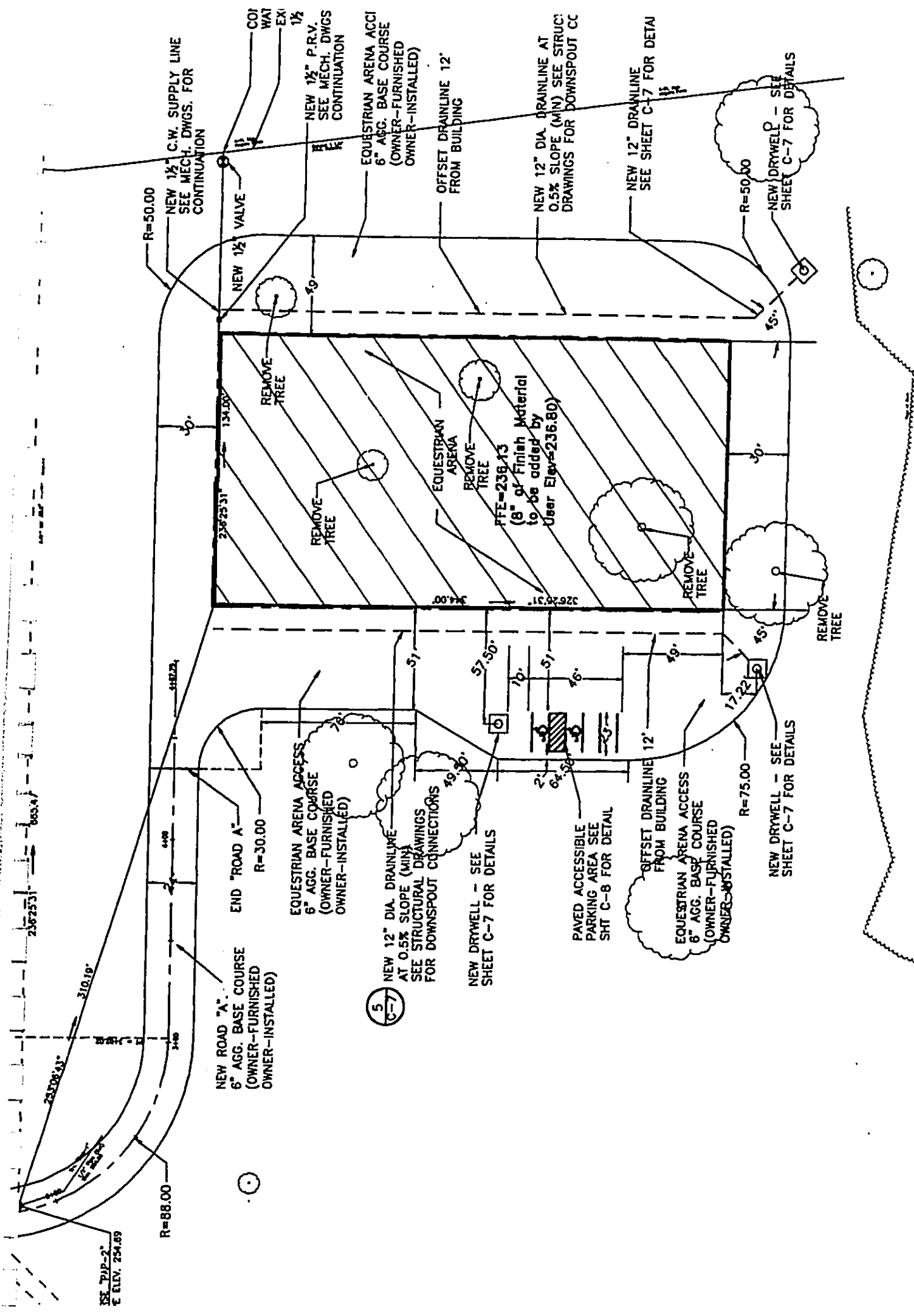


Figure 2
 Tax Map Key
 Renovation of Panaewa
 Research Farm
 University of Hawaii at Hilo
 Waikua, Island of Hawaii
 LEAL SCALE (FEET)
 0 10 20 30 40 50
 University of Hawaii at Hilo
 Gerald Park
 Urban Planner
 March 1982

DEPARTMENT OF TAXATION PROPERTY TECHNICAL OFFICE TAX MAPS BRANCH STATE OF HAWAII		
THIRD TAXATION DISTRICT		
ZONE	SEC	PLAT
2	2	56

Source: Department of Taxation, Tax Map Bureau



SEE PIP-2
E ELEV. 254.65

R=88.00

NEW ROAD "A"
6" AGG. BASE COURSE
(OWNER-FURNISHED
OWNER-INSTALLED)

END "ROAD A"
R=30.00

EQUESTRIAN ARENA ACCESS
6" AGG. BASE COURSE
(OWNER-FURNISHED
OWNER-INSTALLED)

5
C-7

NEW 12" DIA. DRAINLINE
AT 0.5% SLOPE (MIN)
SEE STRUCTURAL DRAWINGS
FOR DOWNSPOUT CONNECTIONS

NEW DRYWELL - SEE
SHEET C-7 FOR DETAILS

PAVED ACCESSIBLE
PARKING AREA SEE
SHT C-8 FOR DETAIL

OFFSET DRAINLINE 12"
FROM BUILDING

EQUESTRIAN ARENA ACCESS
6" AGG. BASE COURSE
(OWNER-FURNISHED
OWNER-INSTALLED)

NEW DRYWELL - SEE
SHEET C-7 FOR DETAILS

R=75.00

R=50.00

NEW 1/2" C.W. SUPPLY LINE
SEE MECH. DWGS. FOR
CONTINUATION

NEW 1/2" VALVE

NEW 1/2" P.R.V.
SEE MECH. DWGS
CONTINUATION

EQUESTRIAN ARENA ACCI
6" AGG. BASE COURSE
(OWNER-FURNISHED
OWNER-INSTALLED)

OFFSET DRAINLINE 12"
FROM BUILDING

NEW 12" DIA. DRAINLINE AT
0.5% SLOPE (MIN) SEE STRUC
DRAWINGS FOR DOWNSPOUT CC

NEW 12" DRAINLINE
SEE SHEET C-7 FOR DETAIL

R=50.00

NEW DRYWELL - SEE
SHEET C-7 FOR DETAILS

REMOVE
TREE

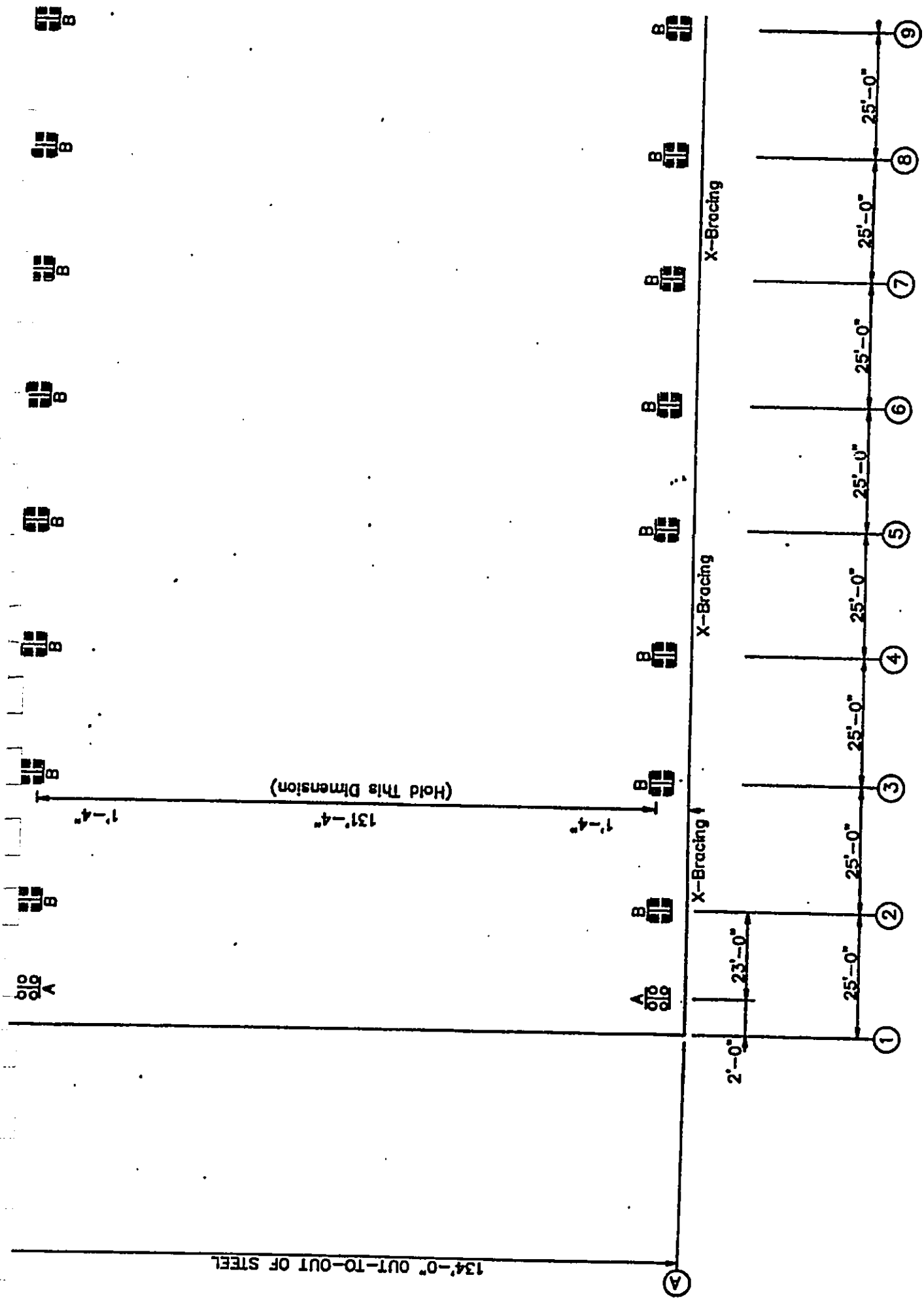
REMOVE
TREE

REMOVE
TREE

EQUESTRIAN
ARENA
REMOVE
TREE
FFE=236.13
(8" of Finish Material
to be added by
User Elev=236.80)

REMOVE
TREE

REMOVE
TREE



ANCHOR BOLT PLAN
 NOTE: All Base Plates ϕ 100'-0" (U.N.)

A. Existing Use and Structures

The proposed arena will be located on the southeast side of the PRF. The area is bounded by tree lines to the south and west, a fence line on the east (and horse pasture beyond the fence), and farming facilities (shadehouse, storage sheds, and banana patch) to the north. The approximately 15-acre area has been cleared of vegetation leaving several standing trees and a grass mat covering the ground surface (See Images 1 and 2). There are no permanent improvements on the premises. The level portion of the site is between 10-12 feet lower in grade than the adjoining farming facilities bordering the site to the northeast. The proposed improvements are planned on approximately 1.25 acres of the larger 15-acre area.

An existing arena for training horses, a smaller training enclosure, a covered, open-sided building used for stabling horses and classroom/storage, and a horse pasture are located in the southeastern corner of the PRF. The existing arena/classroom/stable is approximately 550 feet away from the proposed walkway to the new arena. According to the Farm Manager, there are about 13 horses stabled on the premises; 4 belong to the college and the remainder owned by faculty, students, and university employees.

B. Topography

The project area is relatively flat having been graded in the past. Ground elevation falls from a high of 238 feet in the southern corner to about 234 feet in the northern corner. Ground slope is about 1.5% measured along this gradient.

C. Soils

The Soil Conservation Service (1972) soil map for the area identifies one soil type—Papai, extremely stony muck—overlying a'a lava fragments. This soil is extremely stony and difficult to cultivate with machinery. Orchards and pasture uses are better adapted to this soil. The soil is rapidly permeable and the erosion hazard is slight.

The Detailed Land Classification-Island of Hawaii (Land Study Bureau, 1963) classifies the land E271 (See Figure 6). The "E" rating means the land is very poorly suited for agriculture and "271" is the land type.

The Agricultural Lands of Importance to the State of Hawaii ("ALISH") map designates Panaewa Agricultural Park (and land adjoining the Park to the north, south and east) as Other Important Agricultural Land. Other Important Agricultural Land is defined as "Land other than Prime or Unique Agricultural Land that is also of statewide or local importance for agricultural use (Department of Agriculture, 1977).

A strip of land designated Panaewa Forest Preserve between the agricultural park and Kanoelehua Highway is not rated on the ALISH map.

D. Hazards

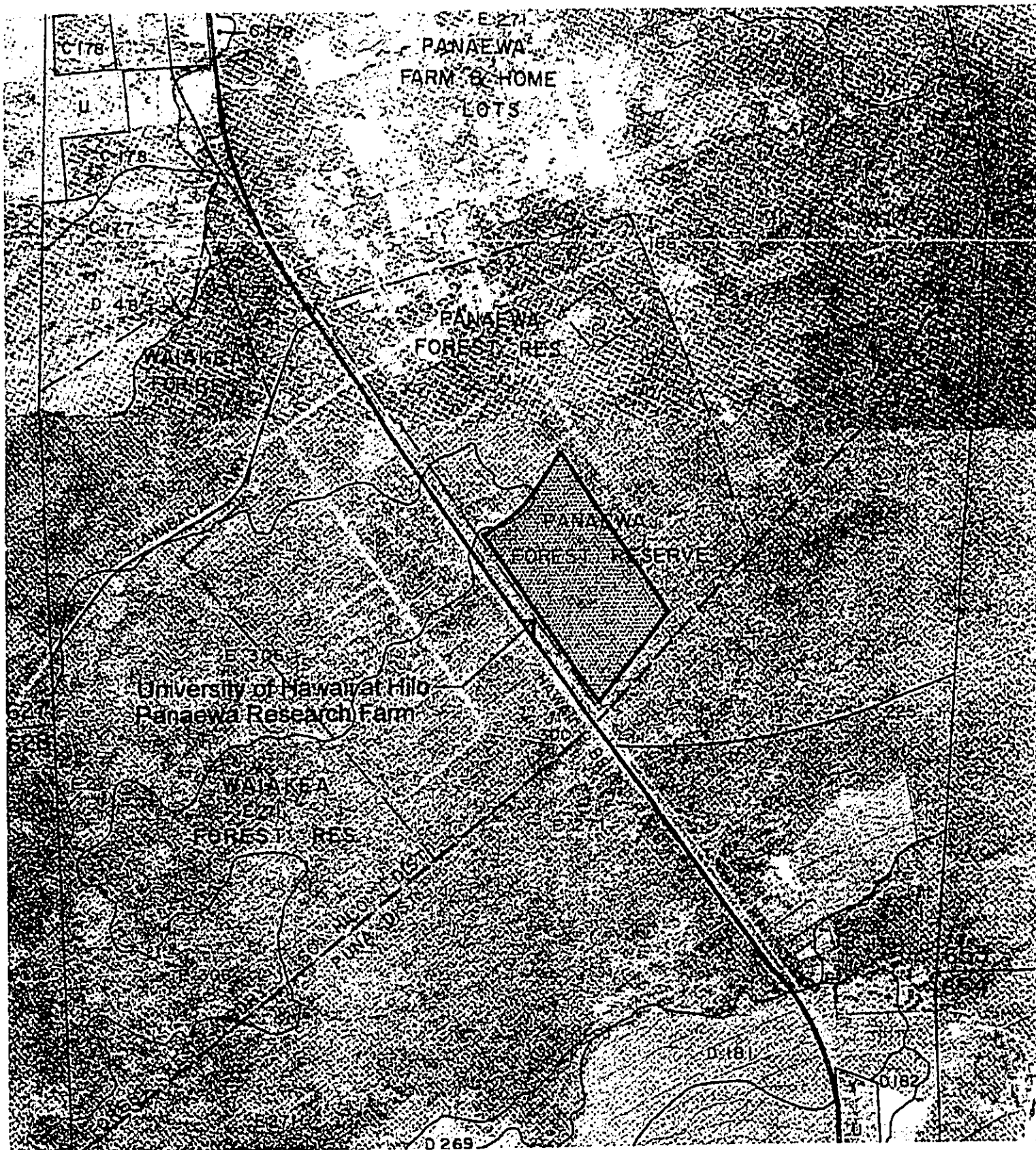
Panaewa Agricultural Park is located on land created by the Kau Volcanic Series from Mauna Loa. A Lava Flow Hazard Map for Hawaii places Panaewa along with the towns of Hilo, Keaau, and Mountain View in Hazard Zone 3 (Heliker, No Date). Zone 3 is defined as "areas gradationally less hazardous than Zone 2 (areas adjacent to and downslope of active rift zones) because of greater distance from recently active vents and/or because the topography makes it less likely that flows will cover these areas."



Image 1. View of Arena Site (Beyond the Wire Fence) from the East. Note Slope on the Right.



Image 2. View of Arena Site from the North.

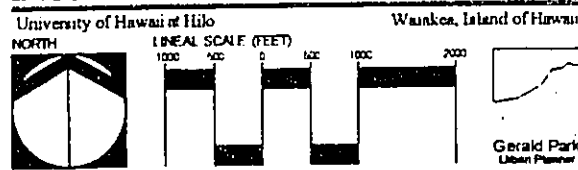


Legend

- A Highest Productivity
- B
- C
- D
- E Lowest Productivity
- U Urban

Source Land Study Bureau, 1967

Figure 6
Detailed Land Classification
Renovation of Panaewa
Research Farm



Although there are potential hazards of volcanic eruptions, the location does not appear to be in an area of high volcanic activity (University of Hawaii, 1989).

The area appears to be stable and there are no known occurrences of landslides or land slips (University of Hawaii, 1988).

A Flood Insurance Rate Map ("FIRM") for the Panaewa Agricultural Park (and surrounding areas) has not been printed. FIRM community panels that are not printed are labeled "Panel not printed-- area all in Zone X." Flood Zone "X" is defined as "areas determined to be outside the 500-year flood plain (Federal Emergency Management Agency, 1994).

E. Groundwater Resources

No streams, major drainages, ponds, or wetlands occur on-site.

F. Flora

The project area has been graded and signs of its previous vegetation long removed. Several banyan trees and a mat of Hilo grass interspersed with wandering Jew cover the ground surface. Ornamental plantings such as autograph tree, variegated ficus, pittosporum, ti, bamboo, money plant, and banana (actually a banana patch) are planted on the high ground to the north of the building site.

None of the observed species are rare, threatened or endangered or proposed for such status. All are common to the Hilo area and the State of Hawaii.

G. Historical and Cultural Resources

Previous grubbing and grading for construction of the Panaewa Agricultural Park and the Panaewa Research Farm removed surface archaeological features if they previously occurred on the site. No evidence of archaeological or cultural features was observed on the ground surface comprising the PRF.

A Traditional Cultural Practices Assessment was prepared for the proposed improvements and the Panaewa Agricultural Park in general. The complete Assessment is presented in Appendix A.

The project area has previously undergone major land alterations related to commercial sugar cane and the present Panaewa agricultural Park. No historical properties are present. The community consultation process did not raise any concerns regarding potential cultural properties or potential negative impacts due to the proposed project. One person lamented the loss of the native forest of Panaewa as a whole.

H. Hazardous Materials

The project area appears to be free of hazardous materials. Signs of petrochemical soil stains, open or sealed containers containing herbicides, pesticides, etc. were not observed. Pesticides and other chemicals used in activities conducted at the AFL are stored in a storage shed located to the west of the building site.

I. Land Use Controls

Panaewa Agricultural Park is in an area designated Agricultural by the State Land Use Commission. The park and areas immediately adjoining the park are general planned Orchard and zoned A-3a (Agriculture 3 acre minimum building site area) by the County of Hawaii.

The Facilities Map component of the General Plan depicts a proposed "secondary arterial road" to be built along the South Hilo and Puna District boundary. The road would connect Kanoelehua Highway

to a future scenic parkway to be built along the South Hilo and Puna coast. The parkway would "basically follow the existing road [Puna Coast Road] from the Kalapana end of the Chain of Craters Road to the proposed extension of the Saddle Road in the vicinity of the Hilo Airport (General Plan, 1989; Update, 2001)."

K. Public Facilities

Panaewa Agricultural Park is located about 4 miles south of Hilo and is accessible from north and south directions by Kaneohe Highway. The PRF has its own paved driveway onto Kaneohe Highway. Outbound traffic is controlled by a stop sign.

A single, 20-foot wide, crushed rock driveway connects to the paved entry road to the PRF at Kaneohe Highway with the existing horse arena at the rear of the PRF. Grass paths or crushed rock paths branching off this central driveway lead to the many agricultural activities and structures on the premises. Utility poles aligned along the driveway support telephone and electrical distribution lines.

Domestic water is available throughout the Agricultural Park and is supplied to the PRF via a ~~3-inch~~ **2-inch (Department of Water Supply Comment)** water meter.

Cesspools are the principal means of domestic (1 cesspool) and animal (2 cesspools) wastewater collection and disposal. Manure collected from the horse stable is scattered in the adjoining horse pasture for use as fertilizer.

3

SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND MEASURES TO MITIGATE ADVERSE EFFECTS

The scope of the project was discussed with the consulting architect, members of the design team, and staff of the University of Hawai'i at Hilo Panaewa Research Farm. State and County agencies were contacted for information relative to their areas of expertise. Time was spent in the field noting site conditions and conditions in the vicinity of the project. The sum total of our consultations and field investigations helped to identify existing conditions and features that could affect or be affected by the project. These conditions include:

- Mass grading has altered the natural contours of the building site;
- There are no rare, threatened, or endangered flora or fauna on the building site;
- There are no archaeological features on the building site;
- The building site is not located in a flood hazard zone;
- There are no streams, ponds, lakes, or wetlands on the premises;
- A section of the Panaewa Forest Reserve borders the research farm on the west but will not be affected by the proposed action; and
- Existing water and utilities are adequate to serve the proposed improvements.

A. Short-term Impacts

Site work is required to prepare the land for building the temporary and permanent improvements to follow and is probably the most disruptive construction activity on the environment.

Site work is a persistent source of fugitive dust. Site contractors are aware that dust is a nuisance to both workers and people living and working near construction sites and it is imperative for them to maintain stringent dust controls. For this project, the building site is primarily rock which is not a significant dust generator. Cutting and filling will be required to achieve the design elevation and the rock base will be covered with a layer of soil.

Given the size of the building site and the scale of proposed improvements, water sprinkling is probably the most effective dust control measure. The almost daily rainfall also could aid in dust control. The Contractor, however, may choose to implement other control measures based on their experience with similar projects and job sites. Pollution control measures shall comply with Chapter 60.1, Air Pollution Control regulations of the State Department of Health.

The Contractor will be responsible for general housekeeping of the site and for keeping adjacent streets and areas free of dirt, mud, and construction litter and debris.

Construction noise, like fugitive dust, cannot be avoided. Construction noise will be audible at various locations near the building site but exposure is expected to vary in volume, frequency, and duration. Noise will vary also by construction phase, the duration of each phase, and the type of equipment used during the different phases. For this project, noise will be most pronounced during the early stages when the building site is grubbed and when concrete is poured for the piers to support the structure and the pedestrian walkway. Noise will diminish as the pre-fabricated structure is erected and roofed.

Construction noise is not anticipated to interfere with activities at the PRF. The building site is not located in close proximity to any classroom where noise could interfere with instruction and will not interrupt agricultural activities being carried out at the nearby shadehouse, poultry house, swine facility, and horse stable/classroom/arena. The latter is about 550 feet from the building site and distance should help to attenuate construction noise.

Community Noise Control regulations establish a maximum permissible sound level for construction activities occurring within various zoning districts. Agricultural lands are placed in the Class C zoning district and the maximum permissible sound level is 70 dBA during day and night (Chapter 46, Community Noise Control, 1996). Construction activities often produce noise in excess of the permissible daytime noise level and a noise permit will be needed. If a variance or permit to exceed the noise standards is warranted, the Contractor will be responsible for obtaining the variance or permit and complying with conditions attached to the variance or permit. Work will be scheduled for normal working hours (7:00 am to 3:30 pm) Mondays through Fridays.

Site work generally exposes soil thus creating opportunities for runoff and erosion. At the PRF, however, most of the ground surface is remnant lava with very little soil cover thus minimizing the chances of soil loss. All grubbing, grading, and excavation will be performed in accordance with erosion control standards of the County of Hawaii and approved grading plans. Because the area to be grubbed and graded is less than five acres, NPDES Permits for erosion control during construction are not required.

The State Historic Preservation Division commented that "this project has already gone through the historic preservation review process, and mitigation has been completed. Thus, we believe that "no historic properties will be affected" by this undertaking." Should subsurface archaeological or cultural features or burials be unearthed, work in the immediate area will cease and historic authorities notified immediately for proper disposition of the finds. In burials are uncovered, the State Historic Preservation Division Burials Program will be notified.

Adverse effects on flora are not anticipated. None of the species observed on the building site are or are candidates for rare, threatened, or endangered status.

B. Long-term Impacts

The completed structure is not anticipated to generate adverse environmental impacts on the building site. The building site is relatively flat and can be remodeled without adversely affecting soils, drainage, and the existing "graded" slope of the land. A minimal amount of ground disturbance is anticipated, as the building will be supported on poured in place concrete piers.

Currently the site is not used for agricultural purposes thus the proposed improvements will not displace any agricultural activity. There are neither rare, threatened or endangered flora or fauna nor archaeological features on the premises.

The structure will be painted to blend with the landscape and would be similar in appearance to agricultural warehouse buildings already on the premises. The arena is proposed at a location away from public view and in an area where the difference in ground elevation would make the structure appear less tall than it really is.

The covered arena would effectively double the area available for training and exercising horses. As such, it represents a significant addition to the existing facilities at the PRF and the animal science program. Because the covered arena is being donated to the equine program, the program stands to benefit the most from its construction.

With the covered facility, the number of days or training time "lost" due to inclement weather would be decreased. This is an important consideration when students need to have a certain number of hours of classroom and applied learning to complete their course requirements. In addition, students would have the option of training their animals at either arena and sign-up times can be scheduled to minimize conflicts between users. A second arena would also mean less time spent waiting to use an arena and more time for hands on learning.

Other agricultural activities conducted at the PRF should benefit from having an on-site covered, open-sided building. The covered structure could be used for agricultural product displays and farm

shows to highlight livestock and crops raised on the premises. It also has been suggested that the UHH could use the facility to engage in new athletic endeavors such as rodeo competition (at the collegiate level) with students and horses competing in individual and team roping. Special events are expected to attract both residents and visitors. On the one hand, public patronage is a desired outcome but a large influx of people and vehicles can also create traffic problems. Event organizers will have to plan and implement traffic control measures in the vicinity of the PRF (for example the in and outbound lanes from/to the PRF from Kanoelehua Highway) and for parking on the premises. Such measures could include hiring off-duty police officers for traffic control and designating (temporary) parking areas on the premises.

Agricultural parks are a permitted use of the Agriculture zoning district and, by inference, the current zoning allows the agricultural uses conducted at the PRF. The proposed improvement is considered an accessory structure and uses and structures accessory to permitted uses are allowed subject to approval of the Planning Director, County of Hawaii.

The cultural assessment examined the effects that renovations at the University of Hawaii at Hilo Panaewa Research Farm may have on Hawaiian culture relating to cultural practices and cultural properties. Consultation conducted with the community and various Hawaiian organizations did not identify community concerns or potential impacts on cultural resources and properties. Based on the historical research, the absence of historical properties on or in the immediate vicinity of the Panaewa Research Farm, and community consultation, the proposed renovations at the University of Hawaii at Hilo Panaewa Research Farm will have no affect on cultural or historic properties.

A. No Action

A no action alternative would maintain the status quo of the building site and preclude the occurrence of all environmental impacts, short and long-term, beneficial and adverse described in this Assessment. Resources committed to plan and build the covered equestrian facility would be foregone and the need for the project unachieved.

B. Alternative Locations

An alternative location for the facility was not examined. The selected area is large enough to accommodate the facility and is in close proximity to the existing uncovered arena and combination covered classroom and horse stable. An alternative layout—one in which the arena is oriented in a different direction was evaluated. After considering the grading and site work costs for both alternatives and vehicle and pedestrian access including ADA access, the proposed layout was selected.

Permits required for the project and responsible authorities are identified below. Additional permits and approvals may be required depending on final construction plans.

<u>PERMIT/APPROVAL</u>	<u>AUTHORITY</u>
County of Hawaii Grubbing, Grading, Excavation and Stockpiling Permit Building Electrical and Plumbing Permit	Department of Public Works Department of Public Works
State of Hawaii Agricultural Park Improvements	Department of Agriculture

**AGENCIES AND ORGANIZATIONS TO BE CONSULTED IN
PREPARING THE ENVIRONMENTAL ASSESSMENT**

*The Draft Environmental Assessment for the Renovation of Panaewa Research Farm was published in the Office of Environmental Quality Environmental Notice of July 8, 2002 and July 23, 2002. Publication initiated a 30-day public review period ending on August 7, 2002. The Draft Environmental Assessment was mailed to agencies and organizations listed below. An asterisk * identifies agencies and organizations that submitted written comments during the review period. All comment letters and responses are appended in Appendix B.*

County of Hawaii

*Department of Water Supply
Department of Planning
Department of Public Works
Bureau of Building Construction and Inspection

State of Hawaii

Department of Agriculture
*Department of Health
Hawaii District Health Office
*Office of Environmental Quality Control
Department of Land and Natural Resources
*Historic Preservation Division

Others

Hawaii Electric Light Company, Inc.
Hilo Public Library (Placement)
Mt. View Public Library (Placement)

Chapter 200 (Environmental Impact Statement Rules) of Title 11, Administrative Rules of the State Department of Health, establishes criteria for determining whether an action may have significant effects on the environment (§11-200-12). The relationship of the proposed project to these criteria is discussed below.

1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;

Natural or cultural resources will not be lost as a result of this project. There are no historic properties present on the building site and community consultations did not identify community concerns or potential impacts on cultural resources and properties.

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

The project does not curtail the beneficial uses of the environment.

3) Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in chapter 344, Hawaii Revised Statutes, and any revisions thereof and amendments thereto, court decisions or executive orders;

The project does not conflict with long-term environmental policies, goals, and guidelines of the State of Hawaii.

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

The project will not substantially affect the economic or social welfare of the community or the State.

5) Substantially affects public health;

Public health will not be adversely affected during construction. Short-term environmental impacts in the form of fugitive dust and noise from construction equipment can be expected. These impacts can and will be mitigated by measures described in this Assessment and measures stipulated in construction plans and documents.

6) Involves substantial secondary impacts, such as population changes or effects on public facilities;

Substantial secondary impacts are not anticipated.

7) Involves a substantial degradation of environmental quality;

Environmental quality will not be degraded.

8) Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;

Construction and long-term use of the arena will not result in significant adverse short and long-term environmental impacts or involve a commitment to a larger action.

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

Rare, threatened or endangered flora and fauna were not observed on the building site.

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

Ambient air quality will be affected by fugitive dust and combustion emissions during construction but can be controlled by measures stipulated in this Assessment. Construction noise may be pronounced during site preparation work but should diminish once the structural improvements are completed. All construction activities will comply with air quality and noise pollution regulations of the State Department of Health.

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, fresh water, or coastal waters.

The proposed improvements are not located in an environmentally sensitive area.

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

The proposed improvements will not affect scenic vistas or view planes identified in county plans.

13) Requires substantial energy consumption.

Electricity will be used for illuminating the outside of the arena for security purposes. Electrical outlets may be installed at locations for the convenience of users.

REFERENCES

- County of Hawaii Planning Department. 1989. *The General Plan County of Hawaii*.
- Cultural Surveys Hawaii. 2002. *A Cultural Impact Assessment for Renovations at University of Hawai'i at Hilo Pana'ewa Research Farm, Waiākea Ahupua'a, District of South Hilo, Island of Hawai'i (TMK: 2-2-56: por. 56)*.
- Federal Emergency Management Agency. 1994. *Flood Insurance Rate Map, County of Hawaii*. Community Panel No. 1551660895C.
- Heliker, Christine. No Date. *Volcanic and Seismic Hazards on the Island of Hawaii*. U.S. Department of the Interior, Geological Survey.
- Land Study Bureau. 1965. *Detailed Land Classification, Island of Hawaii*. L.S. Bulletin, No. 6. University of Hawaii.
- Park, Gerald. 2002. *Field Observation*.
- State of Hawaii, Department of Agriculture. 1977. *Agricultural Lands of Importance to the State of Hawaii (Maps)*.
- University of Hawaii. 1980. *Environmental Impact Statement for Panaewa Agricultural Park Supplemental Statement*. Farm Laboratory, University of Hawaii at Hilo, Waiakea, Hilo, County of Hawaii, State of Hawaii.
- _____. 1988. *Environmental Impact Statement for Panaewa Agricultural Park Amendment to the Supplemental Statement*. Farm Laboratory, University of Hawaii at Hilo Waiakea, Hilo, County of Hawaii, State of Hawaii.
- U.S. Department of Agriculture, Soil Conservation Service. 1973. *Soil Survey of Island of Hawaii, State of Hawaii*. In Cooperation with The University of Hawaii Agricultural Experiment Station. U.S. Government Printing Office, Washington D.C.

APPENDIX A

**A CULTURAL IMPACT ASSESSEMENT FOR
RENOVATIONS AT UNIVERSITY OF HAWAI'I AT HILO
PANA'EWA RESEARCH FARM,
WAIĀKEA AHUPUA'A, DISTRICT OF SOUTH HILO,
ISLAND OF HAWAI'I (TMK 2-2-56: POR.56)**

**A CULTURAL IMPACT ASSESSMENT FOR
RENOVATIONS AT UNIVERSITY OF HAWAII AT HILO
PANA'EWA RESEARCH FARM,
WAIĀKEA AHUPUA'A, DISTRICT OF SOUTH HILO,
ISLAND OF HAWAII (TMK 2-2-56:Por. 56)**

By

Hallett H. Hammatt, Ph.D.
Mary Perzinski, B.A. (Historical Research)
Ka'ohulani Mc Guire (Community Consultation)

Prepared for:

Gerald Park Urban Planner

Cultural Surveys Hawai'i, Inc.
March, 2002

ABSTRACT

A Traditional and Cultural Practices Assessment for renovations at the University of Hawai'i at Hilo Pana'ewa Research Farm was conducted for Gerald Park Urban Planner. The project area, located in Pana'ewa in the *ahupua'a* of Waiākea, consists of approximately 15-acres of the 110-acre Pane'ewa Research farm.

A site visit was conducted on February 25, 2002. The focus of this assessment was historical research and community consultation with Hawaiian organizations and members of the community. No oral interviews were conducted for this project. The consultation process did not identify any potential negative cultural impacts or identify any cultural concerns.

TABLE OF CONTENTS

ABSTRACT	i
I. INTRODUCTION	1
A. Project Background/Purpose	1
B. Scope of Work	1
C. Methodology	4
D. Natural Setting	4
II. CULTURAL BACKGROUND	8
A. Traditional Hawaiian Folklore of Waiākea <i>Ahupua`a</i>	8
Resources of Waiākea	12
Heiau of Waiākea	13
B. Traditional Hawaiian Folklore of Pana`ewa	14
C. Waiākea and Pana`ewa Myths and Legends Summary	16
III. HISTORIC BACKGROUND	17
A. Late Prehistoric Early Historic ca. 1790-1840	17
B. Mid 1800s	19
C. Late 1800s	19
D. Early 1900s	20
E. Mid 1900s till present	21
F. Summary	21
IV. PREVIOUS ARCHAEOLOGICAL RESEARCH	23
V. RESULTS OF COMMUNITY CONSULTATIONS	29
VI. SUMMARY	32
VII. REFERENCES	33

LIST OF TABLES

Table 1: Legends of Waiākea, Hawai`i	9
Table 2: Legends of Pana`ewa, Hawai`i	15
Table 3: Previous Archaeological Investigations in the <i>Ahupua`a</i> of Waiākea	23
Table 4: Previous Archaeological Investigations in Pana`ewa	26
Table 5: Results of Community Consultations	30

LIST OF FIGURES

Figure 1	Portion of USGS Topographic Map, 7.5 minute series, Hilo Quadrangle, Showing Project Area.	2
Figure 2	Tax Map 2-2-56:56, Showing Location of Project Area.	3
Figure 3	1980 Map of Pana'ewa Farm Lots and Approximate Location of Project Area. .	6
Figure 4	Recent Map of Project Area Showing Proposed Horse Arena Location.	7
Figure 5	McEldowney's Zones of Early-Historic Land Use (1979:64), Current Project Area Indicated.	18
Figure 6	Portion of USGS Topographic Map, Hilo Quadrangle, Showing Previous Archaeology within the Vicinity of the Current Project Area.	28

I. INTRODUCTION

A. Project Background/Purpose

At the request of Gerald Park Urban Planner, Cultural Surveys Hawai'i, Inc., conducted a cultural impact assessment for the proposed renovations of the University of Hawai'i at Hilo Pana'ewa Research Farm located at the existing Pana'ewa Agricultural Park (TMK 2-2-56:Por. 56). The current project area is located in the eastern half of the southern corner of the Pana'ewa Agricultural Park (Figures 1 and 2). According to the Agricultural Parks website (www.hawaiiag.org/hdoa/arm_agparks.htm), the Hawai'i Department of Agriculture operates eight agricultural parks statewide which are areas that are set aside for agricultural related activities. Pana'ewa Agricultural Park, one of four agricultural parks on the Island of Hawai'i, is composed of 460 acres subdivided into 28 lots. The University of Hawai'i Farm Laboratory comprises 110 acres within the Pana'ewa Agricultural Park. No previous archaeological work has been done within the current project area.

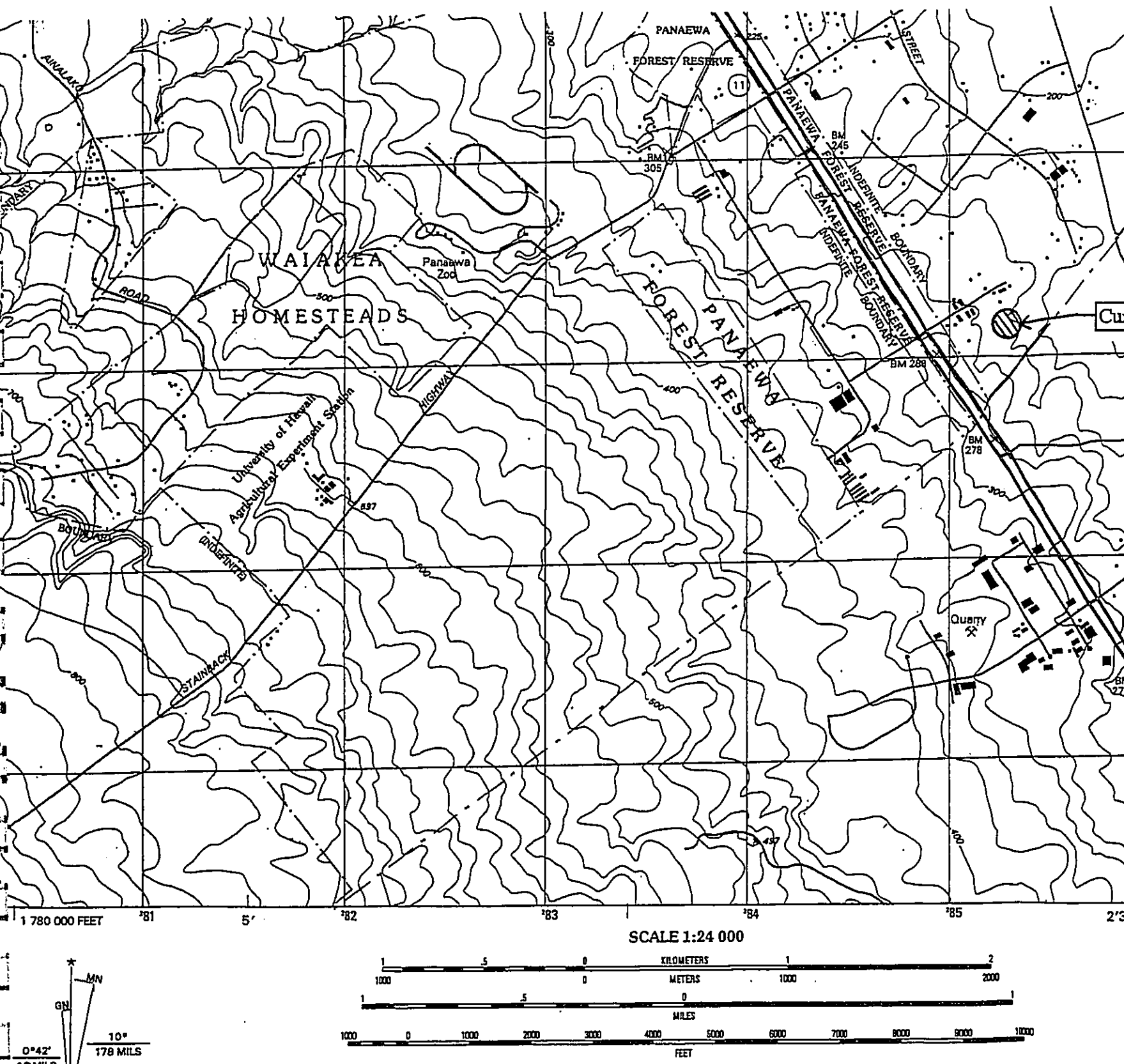
B. Scope of Work

This scope of work was based on past conversations with Dr. Holly McEldowney, of the State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR) cultural branch. Dr. McEldowney's input was helpful regarding the development of similar project scopes of work.

The assessment of traditional cultural practices, for proposed improvements is a relatively new component within the longer established assessments of development environmental impacts (e.g. traffic, noise, air quality, ground water, etc.). As you may be aware, there is little concordance regarding the scale of these undertakings, their general scope of work, or even the general focus of this type of research. These matters are being worked out as more and more of these studies are undertaken through a feed-back loop. The State of Hawai'i Office of Environmental Quality Control (OEQC) has provided guidelines for the assessment of cultural impacts. Typically these studies include background historic, cultural and archaeological research, consultation of knowledgeable groups and individuals, and oral interviews with particularly informative individuals.

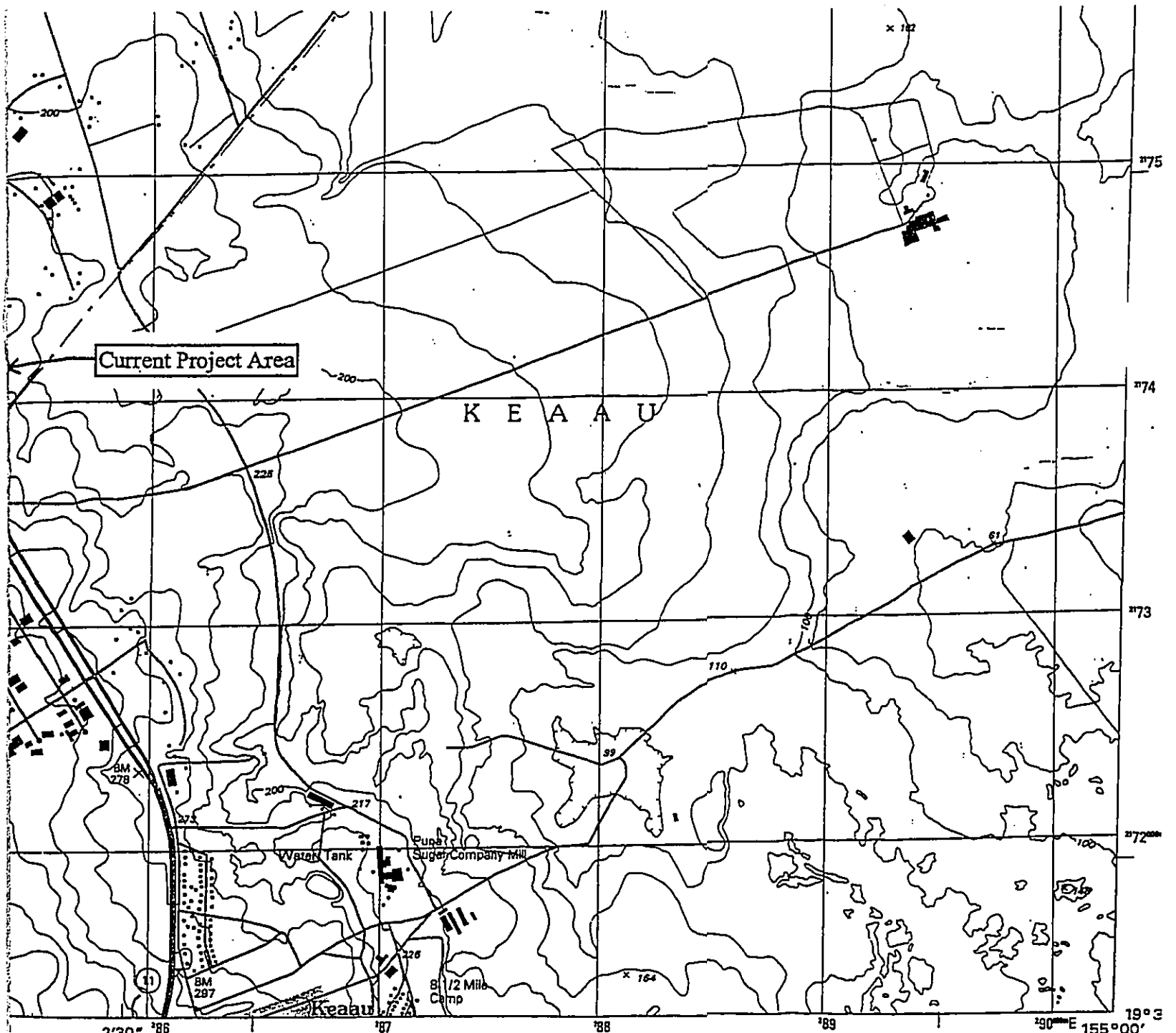
Instead of formal interviews, a modest program of assessment and consultation was conducted. This consultation consisted of contacting local residents who know about and/or can recall past and present land use of the Pana'ewa Agricultural Park vicinity. The consultation process regarding traditional cultural practices studies is an effective and less costly means of gathering required information. It generally consists of informal question and answer sessions conducted through written correspondence, conversations – either via telephone or in person. It lacks the formality of the oral interview, and offers the potential for incorporating the views, memories, and beliefs of a greater number of individuals.

With the results of a modest background study to synthesize the cultural history of the specific project area along with modest consultation, we believe these steps provide an adequate assessment of the cultural impact of the proposed improvements.






CONTOUR INTERVAL 20 FEET
 SUPPLEMENTARY CONTOUR INTERVAL 10 FEET
 DATUM IS MEAN SEA LEVEL
 TO CONVERT FROM FEET TO METERS, MULTIPLY BY 0.3048
 THE MEAN RANGE OF TIDE IS APPROXIMATELY 2 FEET

Figure 1 Portion of USGS Topographic Map, 7.5 minute series, Hilo Quadrangle, Showing Project Area.



INTERIOR - GEOLOGICAL SURVEY, RESTON, VIRGINIA - 1998

ROAD CLASSIFICATION

- | | |
|---|--|
| Primary highway
hard surface | Light-duty road, hard or
improved surface |
| Secondary highway
hard surface | Unimproved road |
-  Interstate Route
  U.S. Route
  State Route

QUADRANGLE LOCATION

1	2	3	1 Akaka Falls
			2 Papaihou
			3
			4 Pihooua
4		5	5 Keaau Ranch



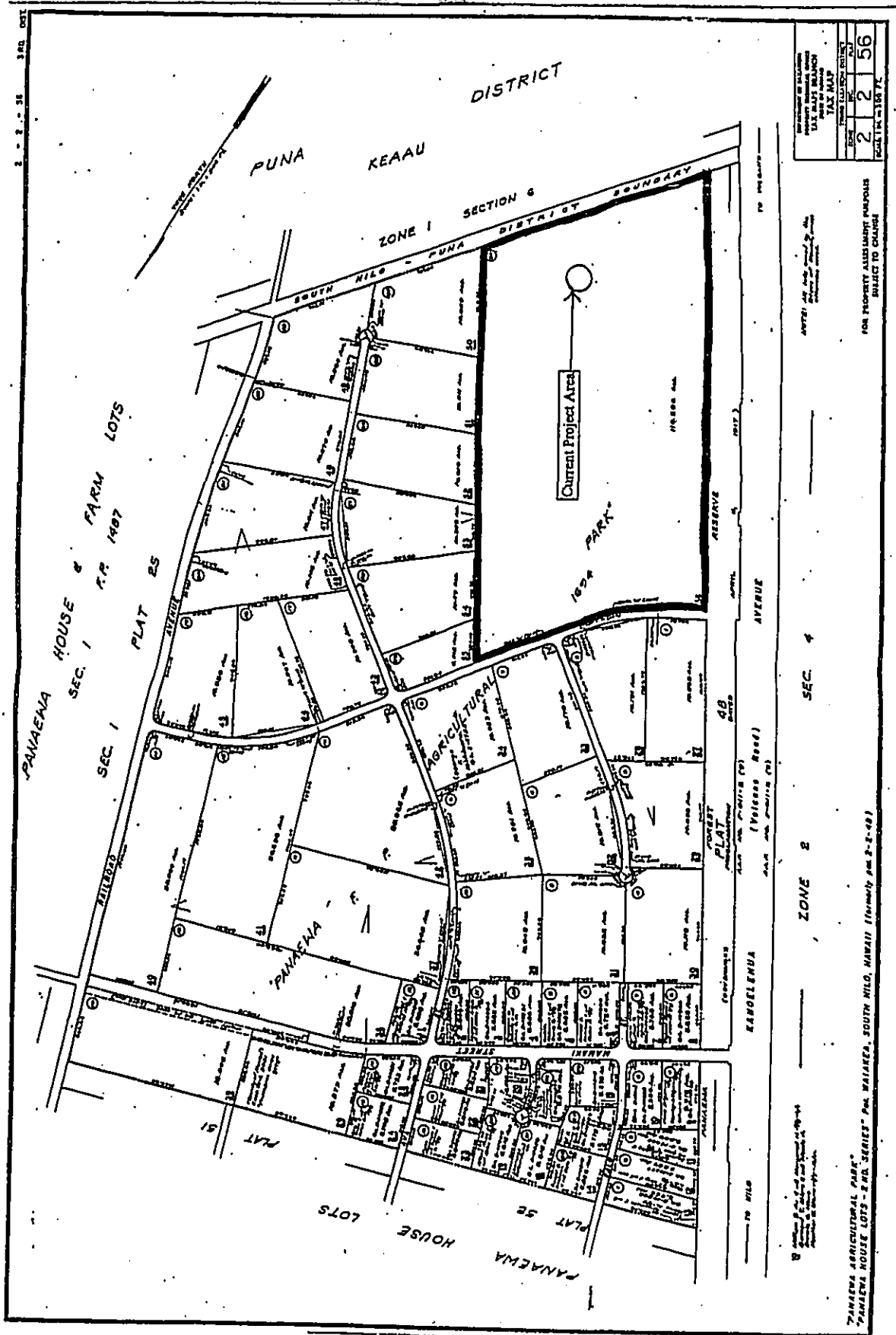


Figure 2 Tax Map 2-2-56:56, Showing Location of Project Area.

The following scope of work was proposed:

- 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 or agricultural pursuits as may be indicated in the historic record.
- 2) A review of the existing archaeological information pertaining to the immediate vicinity of 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, if appropriate.
- 3) Consultation with local residents and other knowledgeable persons regarding specific traditional use of the Pana`ewa Agricultural Park and its environs. Cultural Surveys Hawai`i, Inc. will contact Native Hawaiian groups in order to identify groups or persons knowledgeable about the historic and traditional practices in the project area and region.
- 4) Preparation of a report on items 1-3 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.

It should be clear that this scope of work does not fulfill all of the OEQC guidelines for the assessment of cultural impacts, specifically the guidelines related to social impact. However, based on past conversations with Dr. McEldowney, we believe this scope of work will be sufficient.

C. Methodology

Historical documents and maps were researched at the Hawai`i State Survey Office, Hawai`i State Library, Bernice Pauahi Bishop Museum archives and library, the State Historic Preservation Division (SHPD) library, and the library of Cultural Surveys Hawai`i.

Hawaiian organizations, agencies and community members were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the project area and the surrounding vicinity. A discussion of the consultation process can be found in Section V on "Community Consultations".

D. Natural Setting

Pana`ewa is a land division within the *ahupua`a* of Waiākea. The project area is located in the southern portion of Pana`ewa Agricultural Park which borders the South Hilo/Puna District boundary to the southeast and Kanoelehua (Volcano Road) Avenue to the southwest. Elevation of the project area ranges from 240-260 ft. above mean sea level. Rainfall averages 3000-4000 mm (118-157 inches) per year (Giambelluca, Nullet, and Schroeder 1986:34).

In 1979 Holly McEldowney prepared an "Archaeological and Historical Literature Search and Research Design," as part of a "Lava Flow Control Study" (McEldowney 1979). In her report, McEldowney describes five zones of land use and associated resources. The five zones, which are applicable to Waiākea, include: I. Coastal settlement; II. Upland Agricultural; III. Lower Forest; IV. Rain forest; and V. Sub-Alpine or Montaine (McEldowney 1979). The current project area exists entirely within Zone II, or the Upland Agricultural zone. As such, only this zone is described in depth here.

Zone II is defined as ranging from 50 - 1,500 ft in elevation. The zone was described by "early visitors to Hilo Bay" as "an open parkland gently sloping to the base of the woods . . . an expanse broken by widely spaced cottages or huts, neatly tended gardens, and small clusters of trees" (McEldowney 1979).

The present study area is situated within the lower elevations of this upland agricultural zone. Though described as a vast "expanse", it would appear that only the more agriculturally productive areas were intensively farmed. In the 1820s, it was "estimated that 1/20 of the expanse (*i.e.*, zone of cultivation) in N. and S. Hilo was planted in crops" (Goodrich 1826:4 cited in McEldowney 1979:21). The reasons for what appeared to the early visitors as a "lack of more extensive planting" (McEldowney 1979:21) include, the need for fallow periods especially in soils where nutrients are rapidly leached out, but more important to intensive agricultural use in the Hilo area is soil type or lack thereof. Intensive agriculture in Zone II was focused on area with a soil mantle leaving younger exposed lava areas for plants not needing continuous care (*e.g.* grasses, ferns).

Habitation within the upland agricultural zone (*i.e.* Zone II) apparently included some permanent occupation sites but was still dominantly temporary. The description of habitations refer to "scattered huts" with adjacent "garden plots" or "cottages" with "neatly tended gardens" (McEldowney 1979: 18-19) but no descriptions of village complexes like those along the coast.

The upland agricultural zone was probably expanded into as the prime lands within the coastal zone were intensively utilized. Over time the upland agricultural zone was converted from forest to an "open parkland" where plantings occurred on soil mantled lava flows. Habitation for most part was probably temporary with a few scattered permanent occupation complexes.

According to a 1980 map provided by the client, the vegetation within the project area consisted of macadamia nut plantation, anthurium lot and a poultry lot (see Figure 3). Today, the proposed horse arena is situated between a proposed golf course and a horse pasture (see Figure 4).

UHH FARM LABORATORY PLOT PLAN

PAHAHA FARM LOTS
(Not drawn to scale)
February 1980

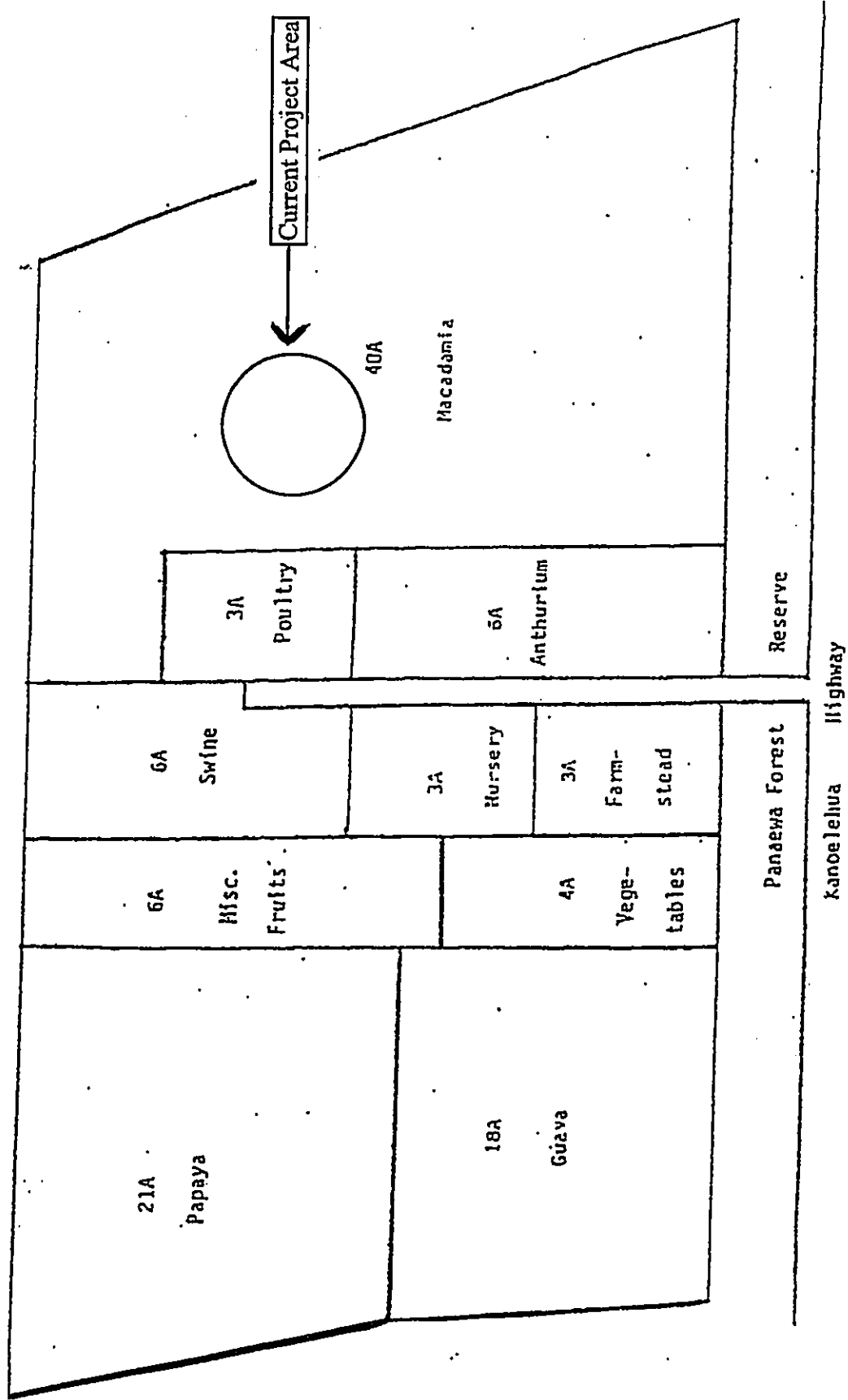
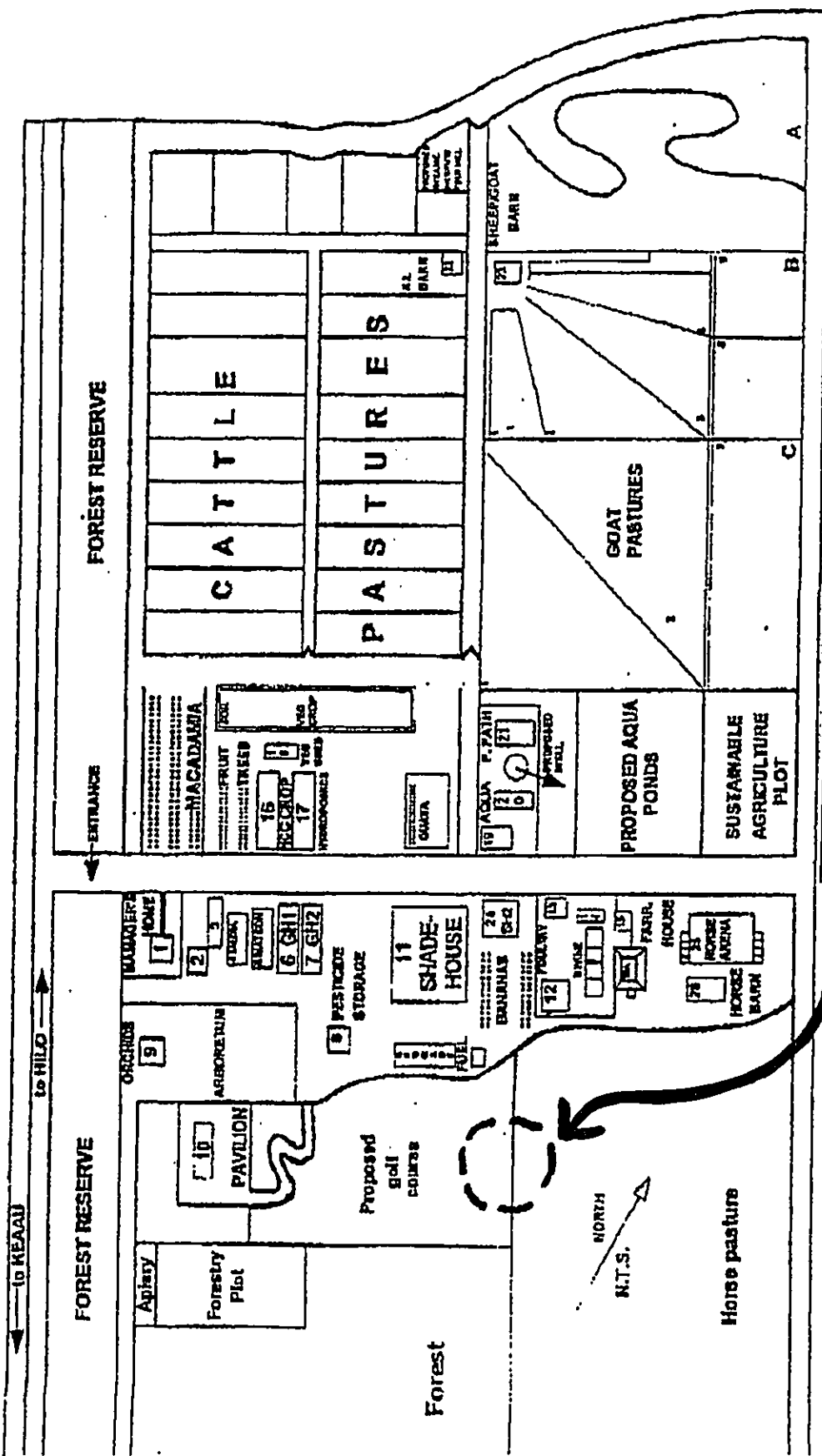


Figure 3 1980 Map of Pahaaha Farm Lots and Approximate Location of Project Area.



LOCATION OF PROPOSED IMPROVEMENTS

{ } Inv. Bldg. No.

- 1) Farm Manager's Home (3374A)
- 2) Office/subrooms (3374B)
- 3) Machinery shed/tool room (3374J)
- 4) Machinery building (3374H)
- 5) Mason storage containers (2)
- 6) Greenhouse #1 (3374)
- 7) Greenhouse #2 (3374D)
- 8) Pesticides storage (3374M)
- 9) Orchid shed/shouse
- 10) Pavilion
- 11) Shadehouse
- 12) Poultry/storage *
- 13) HCC poultry *
- 14) Swine handling *
- 15) Farrowing house *
- 15A) Swine waste lagoon and cesspool *
- 16) HCC crop shelter (3374F)
- 17) Hydroponics (3374G)
- 18) Vegetable pack shed (3374J)
- 18) Aquaculture **
- 20) Aqua pond-house (2) **
- 21) Plant incising (2) ** (3374E)
- 22) Cattle All Barn (3374K)
- 23) Sheep & Goat handling barn (3374L)
- 24) Shadehouse #2 (3374N)
- 25) Horse arena
- 26) Horse barn

7/89

University of Hawaii at Hilo
CAFNRM Farm Map

Figure 4 Recent Map of Project Area Showing Location of Proposed Improvements.

II. CULTURAL BACKGROUND

A. Traditional Hawaiian Folklore of Waiākea *Ahupua`a*

Waiākea literally means "broad waters" (Pukui *et al.* 1974:221), but is also a type of taro grown in Kona, Hawai`i (*lehua ke`o ke`o*) (Pukui & Elbert 1986:199, 377). Waiākea, with its rich natural resources of the forests and the sea, has long been a center of habitation for Hawaiians and is often mentioned in Hawaiian folklore and legends. According to many legends, Waiākea was also associated with the Hawaiian royalty (*ali`i*).

In *Native Planters in Old Hawai`i*, Handy and Handy (1972) record the agricultural methods used to grow taro, sweet potatoes, and sugar cane in Waiākea. Handy and Handy describe the natural habitat and agricultural development of Waiākea and South Hilo:

In lava-strewn South Hilo there were no streams whose valleys or banks were capable of being developed in terraces, but [taro] cuttings were stuck into the ground on the shores and islets for many miles along the course of the Wailuku River far up into the forest zone. In the marshes surrounding Waiākea Bay, east of Hilo, taro was planted in a unique way known as *kanu kipi*...On the lava-strewn plain of Waiākea and the slopes between Waiākea and the Wailuku River, dry taro was formerly planted wherever there was enough soil. There were forest plantations in Pana`ewa and in the lower fern-forest zone above Hilo town and along the course of the Wailuku River (Handy and Handy 1972:538-539).

Handy and Handy cite the Hawaiian language newspaper, *Ka Nūpepa Kū`oko`a*, in a 1922 article which refers to planting sweet potatoes and sugar cane on *pāhoehoe* lava fields:

...There are *pāhoehoe* lava beds walled in by the ancestors, in which sweet potatoes and sugar cane were planted and they are still growing today. Not only one or two but several times forty (*mau ka`au*) of them. The house sites are still there, not one or two but several times four hundred in the woods of Panaewa. Our indigenous bananas are growing wild, these were planted by the hands of our ancestors. (Handy and Handy 1972:131-132)

There are abundant references to Waiākea in the myths and legends of Hawai`i recorded by the early ethnographers Thrum, Emerson, Westervelt, and Fornander. An early account of the Hawaiian chieftom of Waiākea is told by Samuel Kamakau in a story of the unification of the Island of Hawai`i under chief `Umi-a-Liloa, beginning with the chiefly residences of Waiākea in the 16th century (1961:15-17). The legend establishes Waiākea as a relatively early residence of Hawaiian royalty. Hilo's Kanoa *Heiau*, where human sacrifices were offered, was also mentioned in the story, indicating its early existence (Kelly, Nakamura and Barrère 1981:1).

Table 1 on the following page is a comprehensive list of Hawaiian tales which include Waiākea as a place setting. These legends were primarily found in the Hawaiian Legends Index (Revised Edition) compiled by Lillian Ching and edited by Dr. Masae Gotanda, Director of Hawai`i State Library (1989).

Hawai'i State Library (1989).

Table 1: Legends of Waiākea, Hawai'i

Author	Original Publication and Year	Legend Title
Emerson, Nathaniel	<i>Pele and Hiiaka</i> (1915)	"Pele and Hiiaka"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk-lore, v. 1</i> (1916-1919)	"The Story of Umi"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk-lore, v. 2</i> (1916-1919)	"Legend of Kuapakaa"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk-lore, v. 2</i> (1916-1919)	"Legend of Halemano"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk-lore, v. 1</i> (1916-1919)	"Legend of Kapuaokaoheloai"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk-lore, v. 1</i> (1916-1919)	"Legend of Kaipalaoa, the Hoopapa Youngster"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk-lore, v. 2</i> (1916-1919)	"Famous Men of Early Days"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk-lore, v. 2</i> (1916-1919)	"Legend of Pamano"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk-lore, v. 2</i> (1916-1919)	"Brief Stories of Ghosts and Cunning"
Gowen	<i>Hawaiian Idylls of Love and Death</i> (n.d.)	"Keala"
Green	<i>Folk-tales from Hawai'i</i> (n.d.) also in <i>Hawaiian Stories and Wise Sayings</i> (n.d.)	"The Story of Pele and Hiiaka"
Hale'ole, S. N.	<i>The Hawaiian Romance of Laieikawai</i> (n.d.)	"Kaipalaoa"

Author	Original Publication and Year	Legend Title
Thrum, Thomas G.	<i>More Hawaiian Folk Tales</i> (1923)	"Umi's Necklace War Tradition"
Thrum, Thomas G.	<i>More Hawaiian Folk Tales</i> (1923)	"Kai a Kahinalii"
Thrum, Thomas G.	<i>More Hawaiian Folk Tales</i> (1923)	"Ulu's Sacrifice"
Thrum, Thomas G.	<i>More Hawaiian Folk Tales</i> (1923)	"The Hinas of Hawaiian Folklore"
Thrum, Thomas G.	<i>Hawaiian Folk Tales</i> (1998)	"Stories of the Menehunes: As Heiau Builders"
Westervelt, William	<i>Legends of Gods and Ghosts</i> (1915)	"Keaomelemele, The Maid of the Golden Cloud"
Westervelt, William	<i>Legends of Gods and Ghosts</i> (1915)	"Keaunini"

Many of the above stories merely mention Waiākea in brief passing such as in Fornander's "Legend of Pamao" (1916-1919:304-305) and "Brief Stories of Ghosts and Cunning" (1916-1919:422-423) and Green's "The Story of Pele and Hiiaka" (n.d.:25). The "Legend of Halemano" tells of love between Halemano and his wife Kamalalawalu and their home in Waiākea, in an area called Uluomalama, apparently above the cliffs of Pana'ewa, Hilo. Halemano "looked at his wife, and when he saw the tears in her eyes his love for her again welled up within him as he remembered how they had lived at Uluomalama in Waiākea, Hilo; so he chanted ... as follows:"

We once lived in Hilo, in our own home,
 Our home that was in Panaewa...
 The streams of Hilo are innumerable,
 The high cliffs was the home where we lived...
 From the waters of Wailuku where the people are carried under,
 Which we had to go through to get to the many cliffs of Hilo,
 Those solemn cliffs that are bare of people...

*Noho i Hilo i o maua hale-e,
 He hale noho i Panaewa e;...
 He kini, he lehu, kahawai o Hilo e,
 Pali kui ka hale a ke aloha i alo ai. ...
 Mai ka wai lumalumi kanaka o Wailuku,
 A kaua i alo aku ai i na pali kinikini o Hilo,
 O ia mau pali anoano kanaka ole, ...
 (Fornander 1916-1919:250-251, vol. V, part II)*

Another brief mention of Waiākea is found in Green's "The Story of Pele and Hiiaka" in *Hawaiian Stories and Wise Sayings*. Hi'iaka, Pele's sister, "slept at Waiākea, Hilo, and in the

Hawaiian chiefs of high rank. In Westervelt's "Keaomelemele, The Maid of the Golden Cloud," chief Kahanai-a-ke-Akua (adopted son of the gods), and his friend Waiola (water of life), "went down to Waiakea, a village by Hilo" (1915:133). The men were invited to sport, but only Waiola went because Kahanai "himself was of too high rank" (1915:133).

In the legend "Keala" (Gowen n.d.:43-50), "well-known landmarks" of Waiākea are viewed by Ahi, a Hawaiian priest, in his spirit form:

The green water below was the bay of Hilo, the mountain was the terrible Kilauea, where in Halemaumau, the house of everlasting fire, the goddess Pele was wont to ride the red surges with her sisters and tilt with lances of flaming lava. The road was the mountain-path from Waiakea to Kapapala... (Gowen n.d.:47)

John Papa 'Ī'i makes two general references to Waiākea, Hilo. According to 'Ī'i, at the time of Kamehameha I (circa 1800),

The lands of the chief of Kau were divided within their own district, each being given a portion and each asking for what he wanted. For this reason, a skilled war leader whose name I have forgotten said to Keoua Kuahuula, son of Kalaniopuu and half brother of Kiwalao, "Perhaps you should go to the chief and ask that these lands be given us. Let Waiākea and Keaau be the container from whence our food is to come and Olaa the lid" ('Ī'i 1959:13-14).

'Ī'i's second reference notes the well-known surf of "Kanukuokamanu in Waiākea, Hilo" ('Ī'i 1959:134). Kanukuokamanu, on the western side of Wailoa River, was also mentioned in the 16th century story by Kamakau (1961:15-17) as a beach where chiefs and people gathered "at night ... to amuse themselves with hula dancing, chanting, and the playing of games calling for forfeits of entertainment or sexual favors" (Kelly *et al.* 1981:1). This summary was likely drawn from two legends: "Story of Umi" and "Umi's Necklace War Tradition."

The "Story of Umi" describes the chiefly residences at Hilo and the king of Hilo, Kulukulua. The legend tells of the chiefs of Hilo gathering at a place called Kanukuokamanu, in Waiākea: "One night there was a grand entertainment for all the chiefs of Hilo at Kanukuokamanu, in Waiākea; there was dancing and games of *papuhene*, *kilu* and *loku*. (*A he po lealea nui no na 'Ii o Hilo a pau ma Kanukuokamanu ma Waiākea, he hula, he papahene, a he kilu, a me a ka loku*)" (Fornander 1916-1919:220-221). A similar story "Umi's Necklace War Tradition" also mentions the festive night at Kanukuokamanu, Waiākea, and Umi's marriage to Iiwalani, the daughter of the king of Hilo (Thrum 1923).

The "Legend of Kapuaokaokeloai" makes a passing reference to Waiākea as a place where the people of "high chief rank of Hilo" lived (*O Waiākea, i Hilo ka aina, o ka mua ke kaikunane, o ka muli ke kaikuahine, he mau alii lakou no Hilo*) (Fornander 1916-1919:540-541). Again, this passage reiterates the importance of Hilo as a chiefly residence. This story is also told in "The Hinas of Hawaiian Folklore" (Thrum 1923).

Although a brief mention, another reference to the associated royalty of Waiākea can be found in the "Legend of Kaipalaoa, the Hoopapa Youngster" (Fornander 1916-1919:574-575).

According to the legend, "Kaipalaoa" (a relative of Kukuipahu, the king of Kona) "was born in Waiākea, Hilo" (*O Waiākea i Hilo ka aina, o Helepaki ka makuakane, o Wailea ka makuahine*).

Resources of Waiākea

The rich resources of Waiākea were well known and sought after. According to the legend, "Ulu's Sacrifice," Waiākea was the home of 'Ulu (breadfruit) (Thrum 1923). During a famine, 'Ulu died of starvation and he was laid to rest near a stream. The following morning, there was a breadfruit tree standing where he was buried, ending the famine (Pukui 1974:219-220).

Many legends tell of the abundant fish and shrimp of Waiākea. The fishpond of Waiākea was so valued that Kamehameha I sent runners from Kawaihai and Kailua to fetch live mullet from Waiākea. Fornander's "Famous Men of Early Days" describes Kamehameha I sending his fastest runners, Makoa and Kaneakaehu, to "Hilo to get mullet from the pond of Waiākea, on the boundary adjoining Puna" (*o ka nanawa ia o Makoa e holo ai i Hilo i ka anae o ka loko o Waiākea, aia ma ka palena e pili la me Puna*) (1916-1919:490-491).

Westervelt's story "Keaunini" tells of the abundant mullet of Lolakea and Waiākea. "The people feasted on the mullet of Lolakea and the baked dogs of Hilo and the humpbacked mullet of Waiākea and all the sweet things of Hawaii" (1915:191).

In the "Legend of Kuapakaa," the shrimps of Waiākea are mentioned, suggesting their value as a resource. The king of Hilo, Kulukulua, is also mentioned again in a chant as follows:

Our chief of Hilo, Kulukulua, is not a chief [by birth];
He is a snarer of the shrimps of Waiākea;
After the snaring,
He places the outside covering of the coconut on his ears.

*O ua 'lii o makou o Hilo, o Kulukulua, aohe alii;
He pāhelehele opae no Waiākea;
A pau ke pāhelehele ana,
Kau ae la i ka pulu niu i ka pepeiao.
(Fornander 1916-1919:84-85)*

This chant suggests that the chief of Hilo participated in tasks of the commoners and plainly states that he was not a chief by birth. The chant also may be the source of the saying "Waiākea of the ears that hold coconut-fiber snares" (*Waiākea pepeiao pulu 'aha*) explained below.

There are two passages which mention Waiākea in Pukui's *Ōlelo No 'eau Hawaiian Proverbs & Poetical Sayings* (1983). The first passage (passage 2901) is a proverbial saying which refers to the small fish, shrimp, and crabs resources of Waiākea: "Waiākea of the ears that hold coconut-fiber snares" (*Waiākea pepeiao pulu 'aha*). The saying is further explained:

Snares for small fish, shrimp, or crabs were made of a coconut midrib and the fiber from the husk of the nut. When not in use the snare was sometimes placed behind

the ear as one does a pencil. This saying is applied to one who will not heed - he uses his ears only to hold his snare (1983:318).

The second saying is a common expression used in chants of Hilo and refers to "The sparkling sand of Waiolama" (*Ke one `anapa o Waiolama*) "a place between Waiākea and the town of Hilo. It was said to have sand that sparkled in the sunlight" (passage 1773:190).

"Kai a Kahinalii" is the tale of a disastrous flood which devastated the Island of Hawai`i. After the waters ebbed, two survivors, a fisherman and his wife descended "the gentle slope that leads to the bay of Waiākea. There they built a temple and offered sacrifices to the gods" (Thrum 1923:234). Perhaps this temple is one of the recorded *heiau* described below.

Heiau of Waiākea

According to Hunt and McDermott (1994), "Thrum (1907a:40-41) lists 16 *heiau* for Hilo District. Of these, three were located near the coastline in the *ahupua`a* of Waiākea" (1994:11). Based on research, there were at least six *heiau* within Waiākea: Kanoa (*luakini* class), Kapaieie (unknown class, Site 50-10-35-18883), Makaoku (*luakini* class, Site -188843) on the shore opposite Coconut Island, Ohele (*luakini* class, Site -18884), Kiniakua (small *heiau ho`oūlu`ai*), and Pepekeo (unknown class). Thomas Thrum (1907), Samuel Kamakau (1961), and John Papa `I`i (1959) mention Kanoa *Heiau* within Hilo. `I`i writes that human sacrifices were offered at Kanoa *Heiau* and Liholiho would journey to this and other Hawai`i *luakini heiau* (1959:137, 160). This *heiau* stood for at least three centuries, for, according to legend, it was present at the time of chief `Umi-a-Liloa in the 16th century. According to Thrum, it was destroyed between 1853 and 1898 (1907:40).

Research by Rosendahl on Waiākea *Ahupua`a* is thorough and includes mention of two specific *heiau* within Waiākea: Kapaieie and Kiniakua (Rosendahl 1994:5). Kapaieie *Heiau* was originally recorded by A. E. Hudson in a manuscript of archaeological and historical literature research of east Hawai`i (Hudson 1932). According to Rosendahl, Kapaieie *Heiau* was located "along the old Hilo - `Ōla`a trail (not far from the route of modern-day Kīlauea Avenue)" (Rosendahl 1994:5). Hudson writes:

There was a *heiau* named Kapaieie near Honokawailani in Waiākea. Bloxam who passed the site on his way from Hilo to the volcano say that its center was marked by a single coconut tree. At the time of his visit nothing remained but ruined walls choked with weeds. He was told that the priests would lie in wait for passersby and dispatch them with clubs. Thrum [1908:40] states that the site was famed in the Hilo-Puna wars but its size and class are unknown. No remains of any kind could be found and no Hawaiians with whom I talked had ever heard of it (Hudson 1932:240).

Hudson recorded the location of Kiniakua as being "near the spring of Waikapu" although "none of the maps or references consulted...identified the site locations" (Rosendahl

1994:5). This *heiau* was reportedly a "small *heiau ho`oūlu`ai* (a temple at which ceremonies were offered to ensure successful harvests)" (*ibid*:5).

According to Thrum's "Stories of the Menehune: As Heiau Builders" the Pepeekeo *Heiau* at Hilo, was constructed by the Menehune in a single night with the boulders that had been gathered by the residents by order of their chief (Thrum 1998:117).

Thrum also had information on Ohele *Heiau* which was located in Waiākea near the old Pitman store. It was reportedly "a *luakini* class *heiau* measuring 60 feet square. It was destroyed before Pitman's time" (Stokes and Dye 1991:155).

B. Traditional Hawaiian Folklore of Pana`ewa

Pana`ewa, a land division within the *ahupua`a* of Waiākea, is also mentioned in traditional Hawaiian folklore. The literal translation of Pana`ewa is "crooked or unjust place" which was derived from legends associated with Pana`ewa, a rogue god who could change into many forms. Pana`ewa is a thick forest which lies "between the volcano and the ocean" (Westervelt n.d.:98) where the god Panaewa lived.

In the legend "Hiiaka's Battle with Demons" the mischievous god Panaewa is reported to accost passersby and rob them, sometimes eating them as well. The land and the god are described in the legend as follows:

The land of the island of Hawaii slopes down from the raging fire-pit, mile after mile, through dense tropical forests and shining lava beds, until it enfolds, in black lava shores, the ceaselessly moving waters of the bay of Hilo. In this forest dwelt Pana-ewa, a reptile-man. He was very strong and could be made animal or man as he desired, and could make the change in a moment. He watched the paths through the forest, hoping to catch strangers, robbing them and sometimes devouring them. Some he permitted to pass, but for others he made much trouble, bringing fog and rain and wind until the road was lost to them.

He ruled all the evil forces of the forest above Hilo. Every wicked sprite who twisted vines to make men stumble over precipices or fall into deep lava caves was his servant. Every demon wind, every foul fiend dwelling in dangerous branches of falling trees, every wicked gnome whirling clouds of dust or fog and wrapping them around a traveller, in fact every living thing which could in any way injure a traveller was his loyal subject. He was the kupua chief of the vicious sprites and the cruel elves of the forest above Hilo. Those who knew about Pana-ewa brought offerings of awa to drink, taro and red fish to eat, tapa for mats, and malos, or girdles. Then the way was free from trouble. (Westervelt n.d.:98-99)

Table 2 below is a comprehensive list of Hawaiian tales which include Pana`ewa as a place setting. These legends were primarily found in the Hawaiian Legends Index (Revised Edition) compiled by Lillian Ching and edited by Dr. Masae Gotanda, Director of Hawai'i State Library (1989).

Table 2: Legends of Pana`ewa, Hawai`i

Author	Original Publication and Year	Legend Title
Colum, Patrick	<i>At the Gateways of the Day</i> (1937)	"The Story of Halemano and the Princess of Kama"
Emerson, Nathaniel	<i>Pele and Hiiaka</i> (1915)	"Pele and Hiiaka"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk-lore, v. 2</i> (1916-1919)	"Legend of Halemano"
Fornander, Abraham	<i>Fornander Collection of Hawaiian Antiquities and Folk-lore, v. 2</i> (1916-1919)	"Tradition of Kamapuaa"
Westervelt, William	<i>Legend of Kawelo</i> (1911)	"Kawelo's Birth and Training"
Westervelt, William	<i>Hawaiian Legends of Volcanoes</i> (n.d.)	"Hiiaka's Battle with Demons"
Westervelt, William	<i>Legends of Gods and Ghosts</i> (1915)	"Keaunini"

Pana`ewa was well-known for its flourishing *awa* plantations which are mentioned in two legends: "Keanini" and "Kawelo's Birth and Training." *Awa* (*Piper methysticum*) is native to the Pacific Islands and is used to make an intoxicating beverage. The root of the *awa* plant is dried, ground and then mixed with water and strained. The *awa* of Pana`ewa sometimes grew in the crotches of trees, planted by birds (Pukui and Elbert 1986:33). In Westervelt's legend "Keaunini," Pana`ewa's *awa* is briefly mentioned in passing:

Then Ke-au-miki rushed over the river and up the precipices, speeding along to Pa-ai-ei, where the long ohia point of Pana-ewa is found, then turned toward the sea and went to Haena, to the place where the little stones aala-manu are found. He picked up the stones and ran to Pana-ewa and got the *awa* hanging on the tree, tied up the *awa* and stones and hurried back. (1915:198)

The renown *awa* of Pana`ewa is again mentioned in the tale "Kawelo's Birth and Training" (Westervelt 1911:20-27). Apparently, the *awa* of Pana`ewa was so sought after, that some journeyed from Kauai to Hawai`i just for the *awa*:

After a time Ma-lei felt a longing for *awa* such as is planted by birds in the trees of Pa-na-e-wa. Again were her brothers dispatched to Hawaii to obtain what she craved and again it was ten days before they returned to Kauai. When the *awa* was prepared both Ma-lei and her lord Mai-huna-'lii-iki-o-ka-poko drank so deeply as to be intoxicated. (Westervelt 1911:20-27)

In "Pele and Hiiaka," the forest of Pana`ewa is briefly mentioned in a chant by Hi`iaka:

Pana-ewa's rain beats down the lehuas,
A rain by the sea smites the halas of Puna.
My love, my pity go out to Koloa;-
Her fare, wilted herbs at Malei.

*He ua kui lehua ko Pana-ewa ;
He ua ma kai kui hala ko Puna, e!
Aloha e, aloha wale Koloa, e-e!
Na mau'u i moe o Malei. (Emerson 1915:14)*

C. Waiākea and Pana`ewa Myths and Legends Summary

Waiākea, with its rich natural resources of the forests and the sea, has long been a center of habitation for Hawaiians and is often mentioned in Hawaiian folklore and legends. According to many legends, Waiākea has also been associated with Hawaiian royalty (*ali`i*) since the 16th century and a gathering place for many ceremonies. The rich mountain resources of taro and sweet potato and the abundant marine resources particularly shrimp and fish made Waiākea very valuable to the Hawaiian people. At least five *heiau* of various sizes and class, stood within Waiākea. One in particular, Kanoa *Heiau*, was of significant size and class where human sacrifices were offered to the gods. Many Hawaiian gods and goddesses frequented Waiākea including Pele, Hiiaka and Pana`ewa.

Pana`ewa, a forested land division within Waiākea, has its own associated myths and legends. The densely wooded forest was named after a mischievous god, Pana-ewa, who lived in the forest and tormented travelers. The *awa* grown in the trees of Pana`ewa were sought by Hawaiian *ali`i* from as far away as Kauai. According to an article in The Hawaiian language newspaper, *Ka Nupepa Kū`oko`a* (1922), Pana`ewa was home to a large community: "The house sites are still there, not one or two but several times four hundred in the woods of Pana`ewa (Handy and Handy 1972:131-132). No other record of these house sites could be found.

III. HISTORIC BACKGROUND

The *ahupua`a* of Waiākea, South Hilo, is large, encompassing some 95,000 acres. It extends from the coast to approximately the 6,000 foot elevation on the windward slope of Mauna Loa. In 1979 Holly McEldowney prepared an "Archaeological and Historical Literature Search and Research Design," as part of a "Lava Flow Control Study" (McEldowney 1979). In her report, McEldowney describes five zones of land use and associated resources. The five zones, which are applicable to Waiākea, include: I. Coastal settlement; II. Upland Agricultural; III. Lower Forest; IV. Rain forest; and V. Sub-Alpine or Montaine (McEldowney 1979). The current project area exists entirely within Zone II, or the Upland Agricultural zone (Figure 5).

Habitation within the upland agricultural zone (*i.e.* Zone II) apparently included some permanent occupation sites but was still dominantly temporary. The description of habitations refer to "scattered huts" with adjacent "garden plots" or "cottages" with "neatly tended gardens" (McEldowney 1979: 18-19) but no descriptions of village complexes like those along the coast.

The upland agricultural zone was probably expanded into as the prime lands within the coastal zone were intensively utilized. Over time the upland agricultural zone was converted from forest to an "open parkland" where plantings occurred on soil mantled lava flows. Habitation for most part was probably temporary with a few scattered permanent occupation complexes.

A. Late Prehistoric Early Historic ca. 1790-1840

The rich and varied resources that Waiākea offered made it one of the most important locales on Hawai'i Island. Traditional accounts concerning Waiākea include references to it being the seat of chiefly residences as early as ca. A.D. 1550 (Kelly, Nakamura, Barrère 1981). Chiefly associations with Waiākea continued through traditional times and into the historic era. Kamehameha retained Waiākea after he had conquered all of the islands (ca. 1800), and upon "his death his personally held Hilo lands, including Pi`i-honua, Punahoa, and Waiākea, descended to Liholiho, his son and heir to the kingdom,"..additionally " Kamehameha had given the ili kupo of Pi`opi`o to his favorite wife Ka`ahumanu" (Kelly, Nakamura, Barrère 1981: 11). The `ili of Pi`opi`o is in Waiākea and is situated between Hilo Bay and Wailoa River and its associated fishponds.

Land use during the early historic period was still essentially subsistence based though aspects of major changes were occurring. The sandalwood trade, establishment of the American Board of Commissioners for Foreign Missions (ABCFM) station in Hilo, and the arrival of whalers began the shift away from subsistence to a market based economy. Settlement was still focused on the coastal zone as was most of the agricultural production of both indigenous food crops and newly introduced plants.

During this early historic period the land use of the Forest and Sub-Alpine Zones was changing. The more traditional land use activities in the upper zones, such as the procurement of timber products and bird feathers (McEldowney 1979:35), was replaced by the hunting of cattle, goats, and sheep in the upper zones. These animals were introduced in the 1790s and after an imposed 10 year prohibition on their killing had spread over large portions of the interior of

Hawai'i Island, especially the Waimea area. However, "by the 1830s substantial amounts of hides, jerked meat, and tallow were exported from Hilo" (McEldowney 1979:36).

B. Mid 1800s

Traditional land tenure changed during this time span to the privatization of land ownership. Generally referred to as the "Great Mahele," privatization actually included a number of government acts from the late 1840s to the mid 1850s. The Kamehameha dynasty's control over the valuable Waiākea *ahupua`a* was evidenced in that virtually the entire *ahupua`a* became Crown Lands with the *'ili* of Pi`opi`o awarded to Victoria Kamamalu (LCA 7713:16), a granddaughter of Kamehameha I and heir to Ka`ahumanu as well.

Twenty-six (26) Land Commission Awards (LCAs) were granted within Waiākea. None of these LCAs are within the present study area. The LCAs were all within the coastal zone, except for two (2663 and 2402) which were in the lower portion (*i.e.* ca. 100 ft. AMSL) of the upland agricultural zone. The LCAs or *kuleana*(s) were for the most part focused around the edges of the large fishponds of Waiākea. According to a reconnaissance survey and historical documentation research of Pana`ewa by Ching and Stauder (1974):

The *ahupua`a* of Waiākea became Crown Lands in the mid-1800's at the time of the *Māhele*. Pana`ewa eventually became part of the lands of the Hawaiian Homes Commission.

It is generally possible to evaluate the use of lands and a history of land from the "Register" and "Foreign and Native Testimonies to the Board of Commissioners to Quiet Land Titles in the Hawaiian Islands". However, this information material is not available for Pana`ewa since this was Crown Land and definitive information was not required. (Ching and Stauder 1974:10)

Therefore, information on historical land-use of the current project area is scarce. The history of the land must be inferred from other documentation and written accounts.

Interior land use during this period was progressing toward more organized ranching, especially cattle ranching. Timber for firewood and housing was also still being exploited, as Hilo was being transformed into an entirely wooden-framed "New Bedford type Whaling Town" (McEldowney 1979:37).

The coastal zone still contained the vast majority of the population. Houses and stores were concentrated in the northern half of Hilo bay, somewhat removed from Waiākea, because at the time the main pier for Hilo was at the mouth of the Wailuku River. This indicates a substantial change from the traditional settlement pattern of a "nearly continuous complex of native huts" along the bay's shoreline.

C. Late 1800s

During this period commercial sugar cane became the economic mainstay of the Hilo area with Waiākea Mill Company becoming one of the largest. Plantation operations generally

developed ca. 1860s and for Waiākea this was on leased Crown lands. Waiākea Mill Company was in operation by the late 1870s and through its agents, Theo H. Davies and Alexander Young, had procured the lease of all of Waiākea by 1888 (Kelly, Nakamura, Barrère 1981:89). The mill was located at the head (*mauka* end) of Waiākea Fishpond and sugar was transported by barge through the pond and down Wailoa River to Hilo Bay.

Land use was dominated by commercial cane activities within Zones I to III (Coast to Lower Rain Forest). Ranching became formalized though not specific to Waiākea. "Other examples of business, not directly related to sugar cultivation, were the continued use of the Waiākea fishponds, an active Chinese fish market, small pastures above Hilo supporting dairy cattle, and scattered vegetable gardens" (McEldowney 1979:39).

Isabella Bird describes the country area around Hilo in 1873 and the variety of crops grown, "Above Hilo, broad lands sweeping up cloudwards with their sugar-cane, *kalo*, melons, pine-apples, and banana groves suggest the boundless liberality of nature" (Bird 1964:38, also in Handy and Handy 1972:538).

D. Early 1900s

Sugar and its associated industries continued to expand during this period. The Hawai'i Consolidated Railway was built eventually extending "from Waiākea Mill and wharf through Puna, most of Ōla'a and along the N and S Hilo coast" (McEldowney 1979:41). Many of the immigrant laborers from the late 1800s moved off the plantation, being replaced by new Filipino laborers. Hilo continued to grow and become the second largest urban center in the new Territory of Hawai'i.

Ranching in the Hilo areas, but not specifically in Waiākea, came under the control of two large enterprises; the Parker and Shipman Ranches. In Waiākea a large portion of Zone II (Upland Agricultural Zone) too rocky for sugar cane cultivation became available for lease as Waiākea pasture lands. The present study area is entirely former Waiākea pasture land. The specific use of the pasture land is not known but McEldowney indicates that "A substantial amount of grazing land adjacent to Hilo or to sugarcane fields supported dairy cows for Hilo's several dairies" (McEldowney 1979:41). In 1918 the 30-year lease of the Waiākea Mill Co. expired and because Hawai'i had become a Territory the "land fell under homesteading laws that required the government to put some of it up for lease to homesteaders who would be willing to grow sugar cane on it. Waiākea Mill was to grind the crop for them. A total of about 700 acres of land was divided into cane lots (between 10 and 76 acres each) and house lots ranging from 1 to 3 acres..." (Kelly, Nakamura, Barrère 1981:121). The homestead and cane lots eventually reverted to the overall mechanized cultivation of the mill company as the homestead and cane lots "experiment was declared a failure" (Kelly, Nakamura, Barrère 1981:121).

By the 1920s the Waiākea Mill Co. had some 7,000 acres in cane production. Also, in the 1920s large tracts of remaining forest in Waiākea were "designated as forest reserve" (McEldowney 1979:42). The main reason appears to have been for maintaining the "forest as a 'watershed' to capture, retain, and support the continuous flow of water necessary to the sugar industry" (McEldowney 1979:42). Clearly, sugar was the dominate economic factor during this period including the formation of settlements (*i.e.* camps).

E. Mid 1900s till present

Plantation life dominated the early portion of this time span but in 1948 Waiākea Mill Co. was liquidated (Condé and Best 1973:119). However, a major industry associated with cane by-products, canec, was begun in 1928. The canec plant was located adjacent to Waiākea Mill with bagasse, the cane by-product utilized, pumped through pipes from the mill to the plant. The canec plant shut down operations in 1966.

During this period major construction jobs started in the 1920s were completed. These major construction jobs, in part, included Hilo Bay, wharfs and breakwater and bridges. Some of these projects were actually major reconstruction work from damage during the winter of 1923, which included storm surf in January and a tidal wave in February (Kelly, Nakamura and Barrère 1981:171). During the World War II period in Hilo, expansion and designation of Hilo airport as General Lyman Field and the construction of the Saddle Road were major projects undertaken as part of the military presence on the island, which was very substantial.

Prior to the closing of the Waiākea Mill Co. there were at least 10 "camps" or plantation villages. Only Camp 1 was within the coastal zone with Camps 2 to 10 within the upland agricultural zone with Camp 10 the highest at ca. 1300 ft. a.m.s.l.

After statehood (1959) and with the closing of the mill and canec plant, tourism was looked at as the next economic mainstay. In Waiākea, C. Brewer & Co. built a hotel complex at the site of the old canec plant. Other hotels were built along the Hilo Bay frontage of Waiākea near Coconut Island or Mokuola. Large tracts of former Waiākea Homestead and Cane lots were converted to housing or sub-division tracts adjacent to the study area. U.H. Hilo campus was expanded as it continues to do presently.

F. Summary

The present project lies within the *ahupua`a* of Waiākea. It is contained within Zone II, or the Upland Agricultural Zone, according to McEldowney's (1979) zones of land use and associated resources. This is defined as the 50 - 1,500 ft. elevation, an area of "open parkland gently sloping to the base of the woods,..." (McEldowney 1979). Some permanent habitation occurred in this region, but the majority of habitation was of a temporary nature (*i.e.* "scattered huts" as opposed to the village complexes near the coast).

Chiefly associations with the *ahupua`a* of Waiākea began early, with chiefly residences being documented as early as ca. 1550 (Kelly, Nakamura, Barrère 1981), mainly due to the rich resources of the area (*i.e.* fishponds, crops, sandalwood, bird feathers, and later the whaling industry). Kamehameha I retained Waiākea after conquering the island, and later gave the *ili* of Pi`opi`o to his favorite wife Ka`ahumanu.

In the early 1800s, with the coming of the sandalwood trade, the arrival of the ABCFM station in Hilo, and the whaling industry descending on the Hilo area came the shift from a subsistence-based to a more market-based economy. Land use still remained essentially the same, but was starting to evolve, as elements such as cattle, timber and whaling became more intensive.

In the mid- 1800s, the Māhele brought with it the end of traditional land tenure, issuing in the age of privatization of land. Twenty-six Land Commission Awards (LCAs) were granted within Waiākea, all but two being in the coastal zone, and the remaining two being within the first 100 ft AMSL of the upland agricultural zone (not close to the current project area). No LCAs were located near the current project area.

The late 1800s brought with it the advent of sugarcane and the Waiākea Mill Company. Plantations developed in the 1860s, and by the 1888 the Waiākea Mill had procured all of the *ahupua`a* of Waiākea. Immigrant labor lived in "camps", near existing sugar cane railroad lines. With the 1900s came the expansion of sugar cane production in the area, but also brought in the Parker and Shipman ranches for pasture in areas too rocky for sugar cane. "A substantial amount of grazing land adjacent to Hilo or to sugarcane fields supported dairy cows for Hilo's several dairies" (McEldowney, 1979). Homesteading was tried but declared a failure two years later. In the 1920s several large tracts of the remaining forest lands in Waiākea were designated as a forest reserve (McEldowney 1979).

In the late 1900s, major construction projects were completed in the Hilo area (*i.e.* Hilo Bay, wharfs, breakwater, and bridges, the Hilo Airport, and construction of the Saddle Road). After statehood, and with the closing of the sugar mill and canec plant, tourism was focused on. U.H. Hilo's campus was constructed and continues to be developed.

IV. PREVIOUS ARCHAEOLOGICAL RESEARCH

Below is a table summarizing previous archaeological investigations in the *ahupua`a* of Waiākea. Figure 6 shows the locations of this previous research in relation to the current project area.

Table 3: Previous Archaeological Investigations in the *Ahupua`a* of Waiākea

Reference	Location	Description and Results
Thrum 1907	<i>Ahupua`a</i> of Waiākea heiau sites	No heiau located near the present project parcel.
Thrum 1908	<i>Ahupua`a</i> of Waiākea	An inventory/description of Heiau throughout Hawai`i. Identifies 3 heiau within the <i>ahupua`a</i> of Waiākea.
Hudson 1930	East Hawai`i	Site Survey.
Ching and Stauder 1974	Recon Survey of Proposed 2.5 mile alignment between Keaukaha and South Hilo-Puna Boundary	1 faced stacked pahoehoe wall (Site 6223); 1 possible burial platform/ monument (site 6224); 1 lava sink w/ pahoehoe wall blocking entrance (site 6225); 1 small rectangular enclosure (site 6227)- all sites were at southern end of project area near coastline
McEldowney 1979	Hilo Bay area	Zonal Characteristics--Land-use study.
Kelly, Nakamura, and Barrère 1981	Hilo Bay area	History of Hilo Bay area; nothing specifically pertaining to current project area.
Cox 1983	Memorandum on Unrecorded Heiau on State Lands, Waiākea, South Hilo TMK 2-1-07:11	Heiau - Previously unrecorded though listed on Tax Map Key
Rosendahl and Talea 1988	Recon Survey for EIS for Proposed Irradiation Site (TMK: 2-1-12:106 (Site A); 2-1-12:Var (Site B); 2-1-25: 86 (Site C))	No sites or features encountered
Rosendahl 1988	Recon Survey for EIS for Hilo Judiciary Complex Sites (TMK: 2-2-33:11-14,19 & 20 [site 1]; 2-2-13:2, 18 and 2-2-14:72 [site 2]; 2-2-9:1, 54, 55, 56, 62 and 2-2-10:16 [site 3]; 2-3-15:1 [site 4]; 2-3-44:9 [site 5])	No sites or Features encountered due to ground disturbing activities

Reference	Location	Description and Results
Rosendahl 1988	Recon Survey for EIS for Hilo Wastewater Treatment Facility (TMK 2-1-13: 12, 13, 20, 22)	No sites or features encountered
Pietrusewsky 1989	Human Remains Found at Waialoa Bridge Renovation	Incomplete Remains
Smith 1991	Waiākea, South Hilo, Hawai'i Island TMK: 3-2-4-01:7	Sites exist on the >4000 year old flow; one site on the 1500 - 750 year old flow; inventory survey recommended.
Smith 1992	Waiākea Cane Lots, Waiākea, South Hilo, Hawai'i Island TMK: 3-2-4-57:1	Several stacked stone walls, mounds, a large rectangular enclosure, and several "C"-shaped.
Moniz 1992	<i>Ahupua`a</i> of Waiākea, Hilo, Hawai'i	A listing of 1979-1992 inventory surveys within Waiākea, including walls, platforms, and a burial cave.
Hunt 1992	Lands of Waiākea, Kukuau 1 & 2, and Ponahawai, South Hilo District, Hawai'i (Puainako Street Extension project)	Interim report of inventory survey field inspection findings--31 features identified within the project boundaries, including walls, mounds, platforms, and faced terraces.
Spear 1993	Piihonua <i>Ahupua`a</i> , South Hilo TMK:2-3-32:4	Inventory survey of 5-acre parcel. Two historic features located and documented--an oven and a trash dump. No further work recommended.
Borthwick and Hammatt 1993	Survey and Testing of Proposed U of HI at Hilo Expansion Area (TMK 2-4-01:7 and 41)	4 historic rock clearance mounds and 1 stacked boulder wall- constructed and maintained by Waiakea Mill Co.
Borthwick, Collins, Folk and Hammatt 1993	<i>Ahupua`a</i> of Waiākea TMK: 2-4-01:7 and 41	Inventory survey-163 acres immediately across Komohana Street from the present project area. Four sites found--all thought to be related to historic agriculture (sugar cane). No further work recommended beyond the documentation of the inventory survey
Hunt and McDermott 1994	Lands of Waiākea, Kukuau 1 and 2, and Ponahawai, South Hilo (Puainako Street Extension project)	Inventory survey (final report of Hunt 1992). Historical, oral interview, and archaeological data combine to demonstrate the numerous stack stone features in the project area, comprising 13 sites, are all related to historic sugar cane agriculture.

Reference	Location	Description and Results
Kennedy 1994	Inventory Survey for Hilo Forestry Office Complex Extension (TMK 2-2-27:01), Waiakca, South Hilo	No significant archaeological features
Maly, Walker, and Rosendahl 1994	Land of Waiākea, South Hilo, TMK:2-4-57:01	Inventory survey of 4.5 Waiākea Cane lots parcel. Four sites, comprising 47 features (C-shape and L-shape walls, mounds terraces and walls). These features were thought similar in appearance to the historic features reported by Hunt and McDermott. One radiocarbon date and recovered artifacts may indicate prehistoric land-use of the parcel. Data recovery recommended.
Spear 1995	Land of Waiākea, South Hilo, TMK:2-4-57:01	Data recovery of the Maly <i>et al.</i> (1994) parcel. Following excavation, all features in the project area are considered historic, a few temporary habitations, but the majority related to historic sugar cane agricultural. No additional archaeological work is recommended.
Robins and Spear 1996	Lands of Waiākea, Kukuau 1 & 2, and Ponahawai, South Hilo District, Hawai'i (Puainako Street Extension project)	Inventory survey of same alignments, but wider corridor, of the same Puainako Street Extension project inventoried by Hunt and McDermott (1994)--additional historic sugar cane agricultural features were located.
Rechtman and Henry 1998	Kawaili Street Development (TMK:3-2-4-01:5)	117 Features all related to Historic Period sugar cane cultivation
McGerty and Spear 1999	Land of Waiakea (TMK: 2-4-57:1)	13 Features all related to sugar cane cultivation
Hammatt and Bush 1999	Inv. Survey for Proposed Stainback HWY Improvements (TMK 2-4-008)	Several lava tubes and blisters though no archaeological sites
Hammatt and Bush 1999	Inv Survey of Portions of HI Army National Guard Keaukaha Military Reservation (TMK: 2-1-12:3 and 2-1-13:10)	4 Sites: 50-10-99-18869 (portion of Puna Trail); 50-10-35-21657(C-Shape); -21658 (group of 5 ahu); -21659 (modified lava blister)
Haun and Henry 2000	Inv. Survey of Hilo Harbor Facilities Expansion (TMK: 3-2-1-09: 2, 12, 41, 42 and 3-2-1-07: 20-37)	Early 1900's U.S. Engineer facilities

Reference	Location	Description and Results
Bush et al 2000	Inv Survey of an Approx 20 Acre Parcel for the USDA Pacific Basin Ag Research Center (TMK: 2-4-01: por 122)	One isolated human femur in sinkhole (State Site 50-10-35-22,080)
Rechtman 2001	Inv. Survey for the Proposed Wastewater Treatment Facility (TMK: 3-2-4-08:9)	No adverse affect to any historic or traditional cultural properties

Table 4: Previous Archaeological Investigations in Pana`ewa

Reference	Location	Description and Results
Ching and Stauder 1974	Pana`ewa Drag Strip, Waiakea, South Hilo	No archaeological sites or features
Bonk 1979	Survey of HHL of Pana`ewa, Tract 1, Waiakea, South Hilo	Historic wall segment and "old" road
Nagata 1985	Inspection of Cave Site (TMK: 2-4-08:22) Pana`ewa, South Hilo	Two adult human burials
Carson 1999	176 Acre Pana`ewa Campus Site (TMK 2-1-13:154)	No significant archaeological sites or features

The majority of archaeological work in Waiākea has occurred near the downtown core of Hilo, at the University of Hawai`i at Hilo and in and around General Lyman Field (see Figure 6). The current project area is due south of the General Lyman Field with a few archaeological reports documenting sites within the general area. These include Ching and Stauder (1974), Nagata (1985) and Carson (1999).

Ching and Stauder (1974) conducted an archaeological reconnaissance and historical investigation of a 135- acre drag strip at Pana`ewa, South Hilo. During the survey no archaeological sites were recorded.

Bonk (1979), from the University of Hawai`i, Hilo, conducted a "walk-through" survey with two students through the land parcel which would eventually be home to Prince Kuhio Plaza at the northeast corner of Puainako Street and Kanoiehua Avenue. A rock wall interpreted to be of "recent origin" and the remains of an "old road" were recorded.

Nagata (1985), State Parks Administrator, in a memorandum to the director of the Hawai`i County Economic Opportunity Council responded to a discovery of a cave in Pana`ewa. He stated that Mr. Wendall Kam, staff archaeologist, inspected the cave and reported the presence of two adult human burials. It was recommended that the a "buffer zone" be established around the

entrance to the site and to restrict any unauthorized access. The cave is believed to be located approximately 3.7 km east of the current project area.

Carson (1999) conducted an archaeological inventory survey of the 176-acre Pana'ewa Campus site in the Hilo District. During the survey he determined that no significant archaeological sites or features were present in the project area.

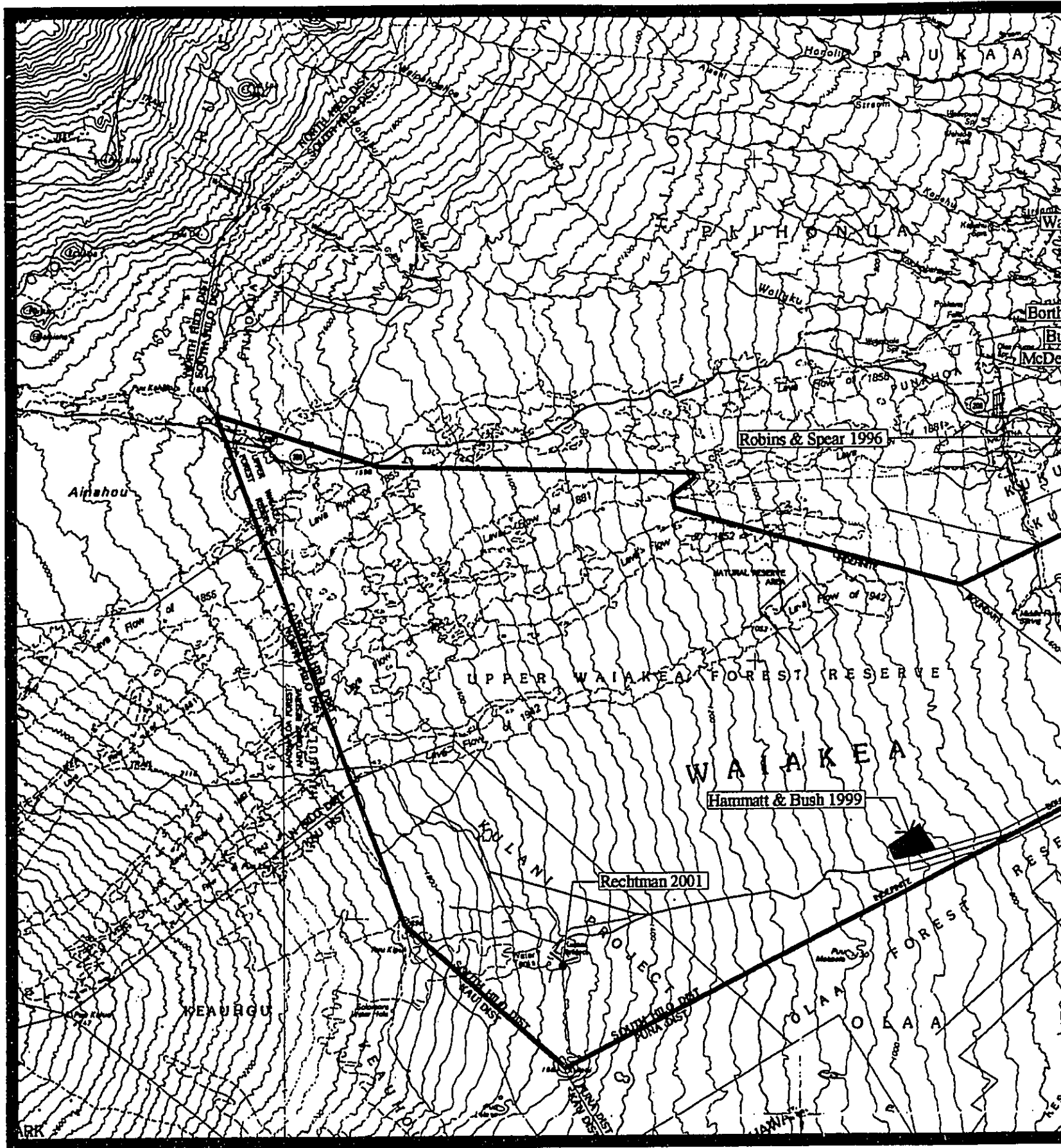


Figure 6 Previous Archaeology in the Ahupua'a of Waiakea Overlaid on USGS Hawaii County Maps 1 & 2 of the County Map Series

V. RESULTS OF COMMUNITY CONSULTATIONS

Consultation was conducted with the following: Department of Land and Natural Resources/State Historic Preservation Division (DLNR/SHPD) - Culture and History Branch, Office of Hawaiian Affairs, Department of Hawaiian Studies - University of Hawai'i at Hilo; Department of Anthropology - University of Hawai'i at Hilo; Pana'ewa Homestead Association; Hawaiian Civic Clubs, and community members. Everyone who was contacted (either by letter or by phone) was asked to comment on the proposed project - specifically in regard to their general knowledge of the project area, knowledge of any cultural properties and sites in the project area, to identify any potential negative cultural impacts and, to identify potential interview informants or *kūpuna* who might be willing to share their knowledge of the project area.

A site visit was conducted on February 25, 2002 by Ka'ohulani Mc Guire. The proposed project area contains very little soil and presently consists of introduced grasses and a few scattered banyan trees over a fairly flat area. Approximately two years ago, the project area was bulldozed and grubbed by prisoners at Kulani Prison as part of their work program (Personal Communication, Gregory Nielsen).

The area for the proposed improvements was previously planned for a golf course (to be used in training students on golf course management). The plan for a golf course has since been abandoned.

The community consultation process did not raise any concerns regarding potential cultural properties or potential negative impacts due to the proposed project. One person lamented the loss of the native forest of Pana'ewa as a whole. It should be noted that the project area for the proposed horse arena does not contain any native forest. Along the southwestern border of the Agricultural Park fronting Kanoiehua Highway, there is a narrow border of Forest Reserve area which does contain remnant native forest with predominantly tall *'ōhi'a* canopy (*Metrosideros*), some *lama* (*Diaspyros*) as well as *uluhe* fern (*Dicranopteris linearis*). This remnant forest area is presently being overtaken by introduced *waiawī* (*Psidium cattleianum*), also known as strawberry guava. Several community residents confirmed that though sugar was grown just outside the boundaries of the project area, sugar was not actually grown within the area of the Agricultural Park itself, probably due to its lack of soil.

The following Table 5 indicates the people and organizations who were consulted with for this project.

Table 5: Results of Community Consultations

Key:

Y = Yes

N = No

A = Attempted (at least 3 attempts were made to contact individual, with no response)

S = Some knowledge of the project area

D = Declined to comment

U = Unable to contact, i.e., no phone or forwarding address, phone number unknown

Name	Affiliation	Contacted (Y/N/NR/U)	Personal Knowledge (Y/N/S/D)	Referral(s)
Ahuna, Eleanor	Keaukaha	Y	S	Y
Akimseu, Maile	Keaukaha/Pana'ewa Ag lots	Y	S	N
Banks, Roberta	Nā Pua No'ea	Y	N	Y
Bell, Kenneth	Born/raised in Hilo	Y	S	N
Chun, Kamuela	University of Hawai'i	Y	N	Y
'Ehu, Bess	Pana'ewa Homestead Association	Y	S	Y
Garmon, Ululani	Edith Kanaka'ole Foundation; Hawai'i Island Burial Council	Y	N	N
Kama'u-Fragas, Mary	Hilo resident	Y	N	N
Hamilton, Ginger	University of Hawai'i	Y	N	Y
Kaiewe, John	Kea'au resident	Y	S	N
Kanaka'ole Kanahale, Pualani	Hawai'i Community College; Edith Kanaka'ole Foundation; Kumu Hula	Y	N	N
Kimura, Kauanoe	Hawaiian Studies, University of Hawai'i @ Hilo	Y	N	N
Langlas, Charles	Anthropology Department, University of Hawai'i @ Hilo	Y	N	Y
Lee-Loy, Genesis	Born/raised in Hilo; Pana'ewa Homestead Association	Y	S	N
Maly, Kepā	Cultural Specialist; Consultant	Y	S	Y
McEldowney, Holly	DLNR/SHPD	Y	N	N
Meyer, Manu	University of Hawai'i @ Hilo	Y	N	N
Mitchell, Auli'i	Kumu Hula	Y	N	N
Perreira, Malia	Pana'ewa Homestead Association	Y	N	Y
Plunkett, Terry	Royal Order of Kamehameha	Y	N	N

Name	Affiliation	Contacted (Y/N/NR/U)	Personal Knowledge (Y/N/S/D)	Referral(s)
Sherlock, Ululani	Office of Hawaiian Affairs- Hilo Branch, represents various Hawaiian Civic Clubs	Y	S	Y

VI. SUMMARY

This cultural assessment examined the effects that renovations at the University of Hawai'i at Hilo Pana'ewa Research Farm located in the Pana'ewa Agricultural Park may have on Hawaiian culture relating to cultural practices and cultural properties.

The present project area lies in the Upland Agricultural Zone (Zone II) within Waiākea *Ahupua'a*. Though 26 Land Commission Awards (LCAs) were granted within Waiākea, there were no LCAs awarded within the Agricultural Park. The proposed project area, which was bulldozed about two years ago, consists of introduced grasses and a few scattered banyan trees. Though other and more fertile parts of Waiākea were utilized for sugar cane, the project area itself, which is lacking in soil, was not used for this purpose but was used for grazing and pasture land instead.

Consultation with the community and various Hawaiian organizations was conducted over a period of approximately two months. The consultation process did not identify community concerns or potential impacts on cultural resources and properties.

The project area has previously undergone major land alterations related to commercial sugar cane and the present Pana'ewa Agricultural Park. No historical properties are present. Community consultation indicated no cultural concerns related to historic properties or the potential for historic properties. Thus, based on historic and cultural research, including community consultations, the proposed renovations at the University of Hawai'i at Hilo Pana'ewa Research Farm will have no affect on cultural or historic properties.

VII. REFERENCES

- Bird, Isabella L.
1964 *Six Months in the Sandwich Islands*. University of Hawai'i Press, Honolulu, HI.
- Bonk, William J.
1979 *An Archaeological Survey of a Portion of Hawaiian Home Lands of Panaewa, Tract I, Waiakea, South Hilo, Hawai'i*, University of Hawai'i at Hilo
- Borthwick, Douglas, Anthony Bush, and Hallett Hammatt
1998 *Archaeological Inventory Survey of the Proposed New Hawai'i Island Correctional Facility, Waiakea, South Hilo, Island of Hawai'i (TMK: 2-4-008:por. 1) Draft*
- Borthwick, Douglas, Joy Collins, William H. Folk, and Hallett H. Hammatt
1993 *Archaeological Inventory Survey and Testing of Lands Proposed for Research and Technology Lots at the University of Hawai'i at Hilo (TMK 2-4-01:7 and 41)*. Prepared for Engineering Concepts, Ms. on file at the State Historic Preservation Division, Kapolei, Hawai'i.
- Bowen, Robert N.
1961 *Hawaiian Disposal of the Dead*: M. A. Thesis in Anthropology, University of Hawai'i, Manoa.
- Bowen, Robert N.
1974 *Mokapu: Its Historical and Archaeological Past*, Appendix A in *Early Hawaiians: An Initial Study of Skeletal Remains*: University Press of Kentucky, Lexington.
- Bush, Tony, Matt McDermott and Hallett H. Hammatt
2000 *Archaeological Inventory Survey of an Approximately 20-acre Parcel Proposed for the USDA Pacific Basin Agricultural Research Center located near the intersection of Komohana and Puainako Streets, South Hilo, Hawai'i Island (TMK 2-4-01:POR 122)*, Cultural Surveys Hawai'i, Kailua, HI.
- Carson, Mike
1999 *Archaeological Inventory Survey of the 176 Acre Pana'ewa Campus Site, Waiakea Ahupua'a, Hilo District, Hawai'i (TMK: 2-1-13:154)*
- Ching, Francis and Cathrine Stauder
1974 *Archaeological Reconnaissance and Historical Investigation of the Proposed Drag Strip, Pana'ewa, South Hilo*
- Ching, Francis K. W. and Catherine Stauder
1974 *The Archaeology of South Hilo, Hawai'i, Archaeological Reconnaissance and Preliminary Historical Investigation of the Proposed 2 1/2 Mile Alignment (Alt. A) Between Keaukaha and the South Hilo - Puna Boundary*, Archaeological Research Center Hawai'i, Lawai, Kauai, HI.

References (continued)

- Cleghorn, June Noelani Johnson
1987 *Hawaiian Burial Reconsidered: An Archaeological Analysis*: M. A. Thesis in Anthropology, University of Hawai'i, Manoa.
- Colum, Patrick
1937 *Legends of Hawai'i*. Yale University Press, New Haven Conn.
- Condé, Jesse C. and Gerald M. Best
1973 *Sugar Trains: Narrow Gauge Rails of Hawai'i*, Glenwood Publishers, Felton Calif.
- Giambelluca, Thomas, Michael Nullet and Thomas Schroeder
1986 *Rainfall Atlas of Hawai'i*. Department of Land and Natural Resources, Honolulu, HI.
- Hammatt, Hallett H. and Anthony Bush
1999 *Archaeological Inventory Survey of Selected Portions of the Hawai'i Army National Guard, 503.6-acre Keaukaha Military Reservation, Waiakea Ahupua'a, South Hilo District, Hawai'i Island, TMK: 2-1-12:3 and 2-1-13:10*, Final Draft, Cultural Surveys Hawai'i, Kailua, HI
- Hammatt, Hallatt H and Anthony Bush
1999 *Archaeological Inventory Survey for the Proposed Stainback Highway Improvements Project, Waiakea, South Hilo, Island of Hawai'i (TMK: 2-4-008)* Draft, Cultural Surveys Hawai'i, Kailua, HI
- Han, Toni L., Sara L. Collins, Stephan D. Clark, and Anne Garland
1986 *Moe Kau a Ho'oilu, Hawaiian Mortuary Practices at Keopu, Kona, Hawai'i*: Department of Anthropology, Bishop Museum, Honolulu.
- Handy, E.S. Craighill and Elizabeth G. Handy
1972 *Native Planters in Old Hawai'i: Their Life, Lore, and Environment*, B.P. Bishop Museum Bulletin 233, B.P. Bishop Museum, Honolulu, HI.
- Haun, Alan E. and Henry, Dave
2000 *Archaeological Inventory Survey Hilo Harbor Facilities Expansion (TMK: 3-2-1-09:2, 12, 41, 42; 3-2-1-07: 20-37) Land of Waiakea, South Hilo District, Island of Hawai'i*
- Hudson, Alfred E.
1932 *Archaeology of East Hawai'i*, Ms. in Department of Anthropology, Bishop Museum, Honolulu.

References (continued)

- Hunt, Terry L.
1992 *Interim Report: Archaeological Inventory Survey Puainako Street Extension Project: Lands of Waiākea, Kukuau 1 and 2, and Ponohawai, South Hilo District, Island of Hawai'i,*
- Hunt, Terry L., and Matthew McDermott
1994 *Archaeological Inventory Survey, Pu`ainako Street Extension Project, Lands of Waiākea, Kukuau 1 and 2, and Ponahawai, South Hilo District, Island of Hawai'i,* Prepared for Okahara & Associates, Engineering Consultants, Ms. on file at the State Historic Preservation Division, Kapolei, Hawai'i.
- Hurst, Gwen and Paul L. Cleghorn
1991 *Historical Literature and Documents Search for the Proposed Redevelopment of the Hilo Judiciary Complex Project, Waiakea, South Hilo, Hawai'i: Part 1: Historical Literature and Documents Survey,* B.P. Bishop Museum, Honolulu, HI.
- ʻIi, John Papa
1959 *Fragments of Hawaiian History* (Pukui translation), Bishop Museum Press, Honolulu, HI.
- Kam, Wendell
1983 *Reconnaissance Survey Files: Unrecorded Heiau on State Lands, Waiakea, South Hilo, Hawai'i (TMK 2-1-07:11),* State of Hawai'i DLNR, Historic Preservation Office, Honolulu, HI.
- Kelly, Marion, Barry Nakamura and Dorothy B. Barrère
1981 *Hilo Bay: A Chronological History, Land and Water Use in the Hilo Bay Area, Island of Hawai'i,* Bishop Museum, Honolulu.
- Kennedy, Joseph
1994 *An Archaeological Inventory Survey for the Proposed Hilo Forestry Office Complex Extension Located at TMK: 2-2-27:01 (Portion) in Waiakea Ahupua`a, South Hilo District, Island of Hawai'i- Draft,* Archaeological Consultants of Hawai'i, Inc., Haleiwa, HI
- Lockwood, J., and J. Buchanan-Banks
1991 *Preliminary Geologic report for the Alenaio Stream Flood Damage Reduction Study area, Hilo, Hawai'i. Open-file Report 81-791, U. S. Geological Survey.*
- Maly, Kepā, Alan T. Walker, and Paul H. Rosendahl
1994 *Archaeological Inventory Survey, Waiākea Cane Lots, Portion of Parcel 6, Land of Waiākea, South Hilo District, Island of Hawai'i (TMK: 2-4-57-01).* Prepared for Roy Takemoto, Ms. on file at the State Historic Preservation Division, Kapolei, Hawai'i.

References (continued)

- Malo, David
1951 *Hawaiian Antiquities* Bernice P. Bishop Museum, special publication 2, second edition: Bishop Museum Press, Honolulu
- 1996 *Ka Moololo Hawai'i: Hawaiian Traditions: First People's Productions*, Honolulu.
- McGerty, Leann and Robert L. Spear
1999 *An Inventory Survey of an Additional Unsurveyed Portion of TMK: 2-4-57:1, Land of Waiakea, South Hilo District, Island of Hawai'i*
- Moniz, Jadelyn J.
1992 "Summary of Prior Archaeological Work" *Historical and Archaeological Synthesis of Land Use and Settlement Patterns Waiākea Ahupua`a, Hilo Hawai'i*, UH Anthropology 645: Historic Preservation, Fall 1992, Honolulu.
- McEldowney, Holly
1979 *Archaeological and Historical Literature Search and Research Design: Lava Flow Control Study, Hilo, Hawai'i*, Department of Anthropology, Bishop Museum, Prepared for the U. S. Army Engineer District, Pacific Ocean.
- Nagata, Ralston
1985 *Field Inspection of Cave Site, Fodder Growing Project (CDUA-HA 1736) Parcel, Panaewa, South Hilo, Hawai'i TMK: 2-4-08:22*, State Parks Administrator
- Pietrusewsky, Michael
1989 *Human Remains Found at Wailoa Bridge Renovation Project, Waiakea, South Hilo, State Site # 50-10-35-11,115, TMK: 2-1-01:12*
- Pukui, Mary Kawena
1983 *Ōlelo No`eau: Hawaiian Proverbs and Poetical Sayings*, Bishop Museum Special Publication No.71, Bishop Museum Press, Honolulu, HI.
- Pukui, Mary Kawena and Samuel H. Elbert
1986 *Hawaiian Dictionary*, 2nd Edition, University of Hawai'i Press, Honolulu, HI.
- Pukui, Mary K., Samuel H. Elbert and Esther Mookini
1974 *Place Names of Hawai'i*, University of Hawai'i Press, Honolulu, HI.
- Rechtman, Robert B.
2001 *Archaeological Inventory Survey and Limited Cultural Assessment for the Proposed Wastewater Treatment Facility at Kulani Correctional Facility (TMK: 3-2-4-08:9), Waiakea Ahupua`a, South Hilo District, Hawai'i*

References (continued)

- Rechtman, Robert B. and Henry, Jack D.
1998 *University of Hawai'i Hilo Kawili Street Development Archaeological Inventory Survey (TMK: 3-2-4-01:5) Waiakea Ahupua`a, South Hilo District, Island of Hawai'i*
- Robins, Jennifer, and Robert L. Spear
1996 *An Inventory Survey of the Puainako Street Realignment/Extension Project Expanded Corridor, Waiākea, Kukuau 1 and 2, and Ponahawai, South Hilo District, Island of Hawai'i*. Prepared for Okahara and Associates, Ms. on file at the State Historic Preservation Division, Kapolei, Hawai'i.
- Rosendahl, Margaret L.K. and Lawrence Tales
1988 *Archaeological Reconnaissance Survey for Environmental Impact Statement (EIS) Proposed Irradiation Plant Site, District of South Hilo, Island of Hawai'i (TMK 2-1-12:106 [Potential Site A]; 1-2-12:Var. [Potential Site B]; 2-1-25:Por. 86 [Potential Site C]), PHRI, Hilo, HI.*
- Rosendahl, Margaret L.K.
1988 *Archaeological Reconnaissance Survey for Environmental Impact Statement (EIS) Hilo Wastewater Treatment Facility Site, Land of Waiakea, District of South Hilo, Island of Hawai'i (TMK 2-1-13:Por. 12, 13, 20, 22), PHRI, Hilo, HI.*
- Rosendahl, Margaret L.K.
1988 *Archaeological Reconnaissance Survey for Environmental Impact Statement (EIS) Hilo Judiciary Complex Sites, Hilo, District of South Hilo, Island of Hawai'i (TMK 2-2-33:12, 13, 14, 19, 20 [Site 1]: 202013:3, 18 and 2-2-14:72 [Site 2]: 2-2-9:1, 54, 55, 56, 62 and 2-2-10:16 [Site 3]: 2-3-15:1 [Site 4]: 2-3-44:9 [Site 56]), PHRI, Hilo, HI.*
- Sato, H. *et al.*
1973 *Soil Survey of the Island of Hawai'i*, U.S. Department of Agriculture and Univ. of Hawai'i Agricultural Experiment Station.
- Smith, Marc
1991 *Site Inspection of the University of Hawai'i - Hilo Perimeter Road Alignment, Research and Technology Park Phase I, Waiākea, South Hilo, Hawai'i Island (TMK: 3-2-4-01:7), November 8, 1991, State Historic Preservation Division, Department of Land and Natural Resources, Honolulu.*
- Smith, Marc
1991 *Site Inspection for State Land Disposition parcel in Waiakea Homesteads, South Hilo, Hawai'i (TMK: 3-2-4-41:78), December 11, 1991, State Historic Preservation Division, Department of Land and Natural Resources, Honolulu.*

References (continued)

- Smith, Marc
1992 *Field Inspection for State Land Disposition of the Proposed Department of Water Supply Office Site in Hilo, Waiākea Cane Lots, Waiākea, South Hilo, Hawai'i Island (TMK: 3-2-4-56:1), January 3, 1992, State Historic Preservation Division, Department of Land and Natural Resources.*
- Snow, Charles E.
1974 *Early Hawaiians: An Initial Study of Skeletal Remains: University Press of Kentucky, Lexington.*
- Spear, Robert L.
1993 *An Inventory Survey of the H.C.E.O.C. (Option II) Parcel, Piihonua Ahupua`a, South Hilo District, Hilo, Island of Hawai'i [TMK :2-3-32:4]. Prepared for Stuart/Erickson & Associates, Ms. on file at the State Historic Preservation Division, Kapolei, Hawai'i.*
- 1995 *Data Recovery Excavations for Sites 50-10-35-19431, 19432, 19433, and 19434, Land of Waiākea, South Hilo District; Island of Hawai'i [TMK: 2-4-57:01]. Prepared for Roy Takemoto, Ms. on file at the State Historic Preservation Division, Kapolei, Hawai'i.*
- Stokes, John F. G., and Tom Dye (Editor)
1991 *Heiau of The Island of Hawai'i: A Historic Survey of Native Hawaiian Temple Sites, ed. Tom Dye, Bishop Museum Press, Honolulu, HI.*
- Thrum, Thos., G.
1907 "Heiau and heiau sites throughout the Hawaiian Islands." *Hawai'i Almanac and Annual for 1908.*
1908 *Hawai'i Almanac and Annual for 1909, Honolulu: [n.p.]*
- 1923 *More Hawaiian Folk Tales, A.C. McClurg & Co., Chicago, IL.*
- 1998 "Stories of the Menehunes." *Hawaiian Folk Tales, Mutual Publishing, Honolulu, HI.*
- Walker, Alan T. and Rosendahl, Paul H.
1996 *Archaeological Assessment Study Hilo Judiciary Complex Project, Lands of Wainaku, Ponahawai, Pi`ihonua and Waiakea, South Hilo District, Island of Hawai'i (TMK: 2-6-15:1, 2; 2-6-16:2; 2-4-49:18, 19; 2-2-15:33; 2-4-1:12; 2-3-36:3; 2-3-32:1; 2-4-57:1)*
- Westervelt, William D.
1911 *Legends of Kewalo.*
- 1915 *Legends of Gods and Ghosts. Boston, MA. (In Sterling and Summers, Bishop Museum, Honolulu, HI.)*

APPENDIX B

COMMENT LETTERS AND RESPONSES

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
801 KAMOMOLA BOULEVARD
KAPOLEI, HAWAII 96707

GILBERT S. COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCES MANAGEMENT

DEPUTIES
ERIC T. HIRANO
LUNNEL NISHIOKA

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE
MANAGEMENT
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS

received
7.19.02

July 16, 2002

HAWAII HISTORIC PRESERVATION
DIVISION REVIEW

LOG NO: 30318
DOC NO: 0207PM10

Agency/Applicant: Gerald Park
Address: 1400 Rycroft Street, Suite 876
Honolulu, Hawaii 96814.

Project: Environmental Assessment for Renovation of
Panaewa Research Farm

Location: Waiakea, South Hilo, Hawaii Island
TMK: (3) 2-2-056:056

1. We believe there are no historic properties present because:

- _____a. intensive cultivation has altered the land
- _____b. residential development/urbanization has altered the land
- X-c. previous grubbing/grading has altered the land
- _____d. an acceptable archaeological assessment or inventory survey found no historic properties
- _____e. other: no historic properties on the subject parcel

2. This project has already gone through the historic preservation review process, and mitigation has been completed. X

Thus, we believe that "no historic properties will be affected" by this undertaking.

Signed Patrick C. McCoy Date 7/16/02
Patrick C. McCoy
Hawaii Island Archaeologist

PM:amk



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
 345 KEKUAMADA STREET, SUITE 20 • HILO, HAWAII 96720
 TELEPHONE (808) 961-8050 • FAX (808) 961-8657

July 25, 2002

received
 7.27.02

Gerald Park Urban Planner
 1400 Rycroft Street, Suite 876
 Honolulu, HI 96814

DRAFT STATE ENVIRONMENTAL ASSESSMENT
 RENOVATION OF PANALEWA RESEARCH FARM
 TAX MAP KEY 2-2-056:056

We have reviewed the subject document and our only comment is that the existing meter, Account No. 130-90300, is a 2-inch meter and not a 3-inch meter as stated on page 12. However, the existing 4-inch service lateral is large enough to accommodate a 3-inch meter.

If you have any questions, please contact our Water Resources and Planning Branch at 961-8070, extension 1.

Sincerely yours,

Milton D. Pavao, P.E.
 Manager

BCM:seo

copy - Mr. Michael Murakami, UHH

...Water brings progress...



GERALD PARK
 Urban Planner

Planning
 Land Use
 Record
 Environmental
 Studies

1400 Rycroft Street
 Suite 876
 Honolulu, Hawaii
 96814-3021

Telephone:
 (808) 942-7484
 Facsimile:
 (808) 942-7485
 e-mail:
 geraldpark@aol.com

August 26, 2020

Milton Pavao, P.E., Manager
 Department of Water Supply
 County of Hawaii
 345 Kekumaoa Street, Suite 20
 Hilo, Hawaii 96720

Dear Mr. Pavao:

Subject: Renovation of Panalewa Research Farm
 TMK: 2-2-056: 056
 Waialea, South Hilo District, Hawaii

Thank you for your comment on the Draft Environmental Assessment. The text of the document will be corrected to indicate that water service is from a 2-inch meter and not a 3-inch meter.

Thank you for participating in the environmental assessment review process.

Sincerely,

GERALD PARK URBAN PLANNER

Gerald Park
 Principal

c. M. Murakami, UHH



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

August 2, 2002

Mr. Gerald Park, Urban Planner
1400 Ryeroft Street, Suite 876
Honolulu, Hawaii 96814-3021

Dear Mr. Park:

Subject: Draft Environmental Assessment (DEA)
Renovations of Panawaa Research Farm
Waialea, South Hilo District, Hawaii
Tax Map Key: 2-2-056; 056

Thank you for the opportunity to review and comment on the subject proposal. The DEA was routed to the various branches of the Environmental Health Administration. We have the following comments.

Safe Drinking Water Branch (SDWB)

1. The project is located above the Underground Injection Control (UIC) line. Areas above the UIC line are considered to overly underground sources of drinking water. There are no known drinking water wells within 1/4 mile of the project boundary;
2. As the proposed drainage structures are constructed to dispose of rainfall runoff water, they may be regulated as drainage injection wells. We recommend that the drainage structure design consultant contact the UIC program to discuss applicable UIC regulations; and
3. The cesspools are constructed to dispose of domestic and animal wastewater. Certain cesspools may be regulated as UIC injection wells. There are both State and Federal regulations that may prohibit the construction of the project's cesspools. We recommend that the cesspool design consultant contact the UIC program to discuss applicable State and Federal UIC regulations and prohibitions.

If you have any questions, please contact Norris Uehara of the Safe Drinking Water Branch at (808) 586-4258.

Mr. Gerald Park, Urban Planner
August 2, 2002
Page 2

Wastewater Branch (WVB)

The area is located in the critical wastewater disposal area with one (1) acre lot exception. Use of new cesspools is allowed for lots with one (1) acre or more except for public facilities. As the renovations are considered public facilities, no new cesspools will be allowed for the subject project. All domestic wastewater generated on the site must be treated and disposed of via non-cesspool individual wastewater systems. Other types of wastewater such as animal waste or non-domestic wastewater generated from the site must be treated and disposed of in accordance with various guidelines established by the Department such as its animal Waste Guidelines and the Guidelines for the Treatment and Use of Reclaimed Water.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems". We reserve the right to review the detailed wastewater plans for conformance to applicable rules.

If you have any questions, please contact the Planning/Design Section of the Wastewater Branch at (808) 586-4294.

Sincerely,

GARY GILL,
Deputy Director
Environmental Health Administration

c: SDWB
WVB
Hawaii District Health Office

In reply, please refer to:
File: 02-172/epo

received
8.7.02



August 26, 2002
Bruce S. Anderson, Ph.D., Director
Department of Health
State of Hawaii
PO Box 3378
Honolulu, Hawaii 96801
Dear Dr. Anderson:

Subject: Renovations at Pensava Research Farm
TMK: 2-2-056: 056
Waialae, South Hilo District, Hawaii
02-172/epo

Thank you for reviewing and offering comments to the Draft Environmental Assessment prepared for the subject project. We offer the following responses to your comments.

Safe Drinking Water Branch

1. No response.
2. UIC program staff has informed the drainage design consultant that the proposed drywells are not considered injection wells (See attached correspondence).
3. A wastewater disposal system is not proposed for the project.

Wastewater Branch

There are no plans to construct a wastewater disposal system for the proposed project. Animal waste generated at the training arena will be disposed following procedures established for the research farm.

Thank you for participating in the environmental assessment review process. Your comments and our responses will be included in the Final Environmental Assessment.

Sincerely,
GERALD PARK URBAN PLANNER
Gerald Park
Gerald Park
Principal

c: M. Murakami, URBH



STATE OF HAWAII
DEPARTMENT OF HEALTH
HONOLULU, HAWAII 96820

April 5, 2002

Mr. Matt Rosemar
Wasley S. Segawa & Assoc., Inc.
Civil & Structural Engineers
101 Silva Street, Suite 201
Hilo, Hawaii 96720-4785

Dear Mr. Rosemar:

SUBJECT: DESIGN DETAIL FOR MODIFIED DRAINAGE WELL

We have reviewed your drainage well drawing faxed to us on April 1, 2002, for the UH-Hilo Penava Research Farm project.

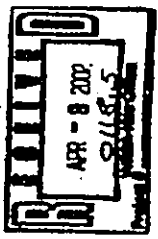
Based on the design dimensions given, the depth of the drainage structure appears to be 8 feet and the inside diameter of the concrete rings is shown as 8 feet. Therefore, the drainage structure is not an injection well by definition. However, we recommend below that clarifying wording, or similar wording of your preference, be added to the drawing to prevent the inadvertent construction of an injection well.

1. Maximum excavation depth is 8 feet, do not over-excavate;
2. Inside diameter is 8 feet, do not reduce; and
3. Maximum total length of stacked precast concrete rings is 6 feet, do not exceed.

If you have any questions about this subject, please call Chauncey Hew of the Safe Drinking Water Branch at 388-4288 (Honolulu), or call direct toll free from Big Island at 974-4000, ext. 64288.

Sincerely,
William Wood
William Wood, P.E., CEM
Safe Drinking Water Branch
Environmental Management Division
C/wh

DISTRIB
CD - CD
CL - CL
CO - CO
LG - LG
MF - MF
MV - MV
RS - RS
ST - ST
SW - SW
X - X





GERALD PARK
Urban Planner

Planning
Land Use
Research
Environmental
Studies

1400 Kaimalihi Street
Suite 876
Honolulu, Hawaii
96814-3071

Telephone:
808 942-7484
Facsimile:
808 942-7485
e-mail:
geraldpark@aol.com

August 26, 2002

Bruce S. Anderson, Ph.D., Director
Department of Health
State of Hawaii
PO Box 3378
Honolulu, Hawaii 96801

Dear Dr. Anderson:

Subject: Renovations at Panosera Research Farm
TMK: 2-2-056: 056
Waialua, South Hilo District, Hawaii
02-172/epo

Thank you for reviewing and offering comments to the Draft Environmental Assessment prepared for the subject project. We offer the following responses to your comments.

Safe Drinking Water Branch

1. No response.
2. UIC program staff has informed the drainage design consultant that the proposed drywells are not considered injection wells (See attached correspondence).
3. A wastewater disposal system is not proposed for the project.

Wastewater Branch

There are no plans to construct a wastewater disposal system for the proposed project. Animal waste generated at the training arena will be disposed following procedures established for the research farm.

Thank you for participating in the environmental assessment review process. Your comments and our responses will be included in the Final Environmental Assessment.

Sincerely,

GERALD PARK URBAN PLANNER

Gerald Park
Gerald Park
Principal

c: M. Mitrabani, UHH

STATE OF HAWAII
DEPARTMENT OF HEALTH
WATER BUREAU
HONOLULU, HAWAII 96820



STATE OF HAWAII
DEPARTMENT OF HEALTH
WATER BUREAU
HONOLULU, HAWAII 96820

April 5, 2002

Mr. Matt Rosewater
Masley R. Segura & Assoc., Inc.
Civil & Structural Engineers
101 S. Iwa Street, Suite 201
Hilo, Hawaii 96720-4788

Dear Mr. Rosewater:

SUBJECT: DESIGN DETAIL FOR MODIFIED DRAINAGE WELL

We have reviewed your drainage well drawing faxed to us on April 1, 2002, for the UH-Hilo Panosera Research Farm project.

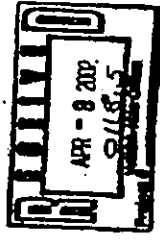
Based on the design dimensions given, the depth of the drainage structure appears to be 8 feet and the inside diameter of the concrete rings is shown as 8 feet. Therefore, the drainage structure is not an injection well by definition. However, we recommend below that clarifying wording, or similar wording of your preference, be added to the drawing to prevent the inadvertent construction of an injection well.

1. Maximum excavation depth is 8 feet, do not over-excavate;
2. Inside diameter is 8 feet, do not reduce; and
3. Maximum total length of stacked precast concrete rings is 6 feet, do not exceed.

If you have any questions about this subject, please call Chauncey Rev of the Safe Drinking Water Branch at 385-4288 (Honolulu), or call direct toll free from Big Island at 974-4000, ext. 84188.

Sincerely,
William W. Wood
WILLIAM WOOD, P.E., CEM
Safe Drinking Water Branch
Environmental Management Division
C/Arch

DISTRIB
CD - CD
DL - GL
GC - MB
LG - MT
MF - NF
WV - SK
RS - PS
ST - VK
SW - WS
X - MC



111-118-1111
1911 P.1011 P.48

REXNAUER J. CAVITTANO
DIRECTOR



STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
205 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813-2437
TELEPHONE (808) 586-1100
FACSIMILE (808) 586-1100

GERNEVIEVE SALMONSON
DIRECTOR



August 7, 2002

Mr. Michael Murakami
University of Hawai'i at Hilo
200 West Kawili Street
Hilo, Hawai'i 96720

Mr. Gerald Park
Gerald Park Urban Planner
1400 Ryercraft Street, Suite 876
Honolulu, Hawai'i 96814

Dear Messrs. Murakami and Park:

We have reviewed the draft environmental assessment entitled: "Pana'ewa Research Farm Renovation" and dated May 2002, for various site improvements in the judicial district of south Hilo at Tax Map Keys 2.2-56, portion of parcel 56. We believe that the document is very well-written and we offer the following comments for your responses and consideration.

1. **GUIDELINES FOR SUSTAINABLE BUILDING DESIGN IN HAWAII:** We ask that you consider implementing some of the techniques discussed in the enclosed guidelines for sustainable building design.
2. **USE OF GLASPHALT IN ROADWAY:** Please discuss the extent to which you will consider using glassphalt in paving the roadway.
3. **INDIGENOUS AND POLYNESIAN INTRODUCED PLANTS FOR USE IN PUBLIC LANDSCAPING:** As provided for by State law, we ask that you consider the use of native, indigenous and polynesian introduced plants in your landscaping.

The above guidance documents are available at our website, <http://www.state.hi.us/health/ocqc/index.html>. If there are any questions, please call Leslie Segundo at 586-4185. Thank you for the opportunity to comment.

Sincerely,

Genevieve Salmonson
GERNEVIEVE SALMONSON
DIRECTOR



GERALD PARK
Urban Planner

Planning
Land Use
Research
Environmental
Studies

1400 Ryercraft Street
Suite 876
Honolulu, Hawaii
96814-3021

Telephone:
(808) 942-7484
Facsimile:
(808) 942-7485
e-mail:
geraldpark@aol.com

August 26, 2002

Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813-2437

Dear Ms. Salmonson:

Subject: Renovations at Panaewa Research Farm
TMK: 2-2-056: 056
Waialae, South Hilo District, Hawaii

Thank you for reviewing and offering comments to the Draft Environmental Assessment prepared for the subject project. We offer the following responses to your comments.

1. Sustainable Building Design

The building to be used by the equine program is a covered, open-sided, pre-fabricated steel structure.

2. Glassphalt in Roadway

The proposed driveway to the horse training area and roadway circling the arena will not be paved. Asphalt concrete is proposed only for paving a small area for two handicapped parking stalls.

3. Indigenous Plants in Landscaping

There are no plans to landscape areas surrounding the covered training arena at this time. The use of indigenous plant materials will be considered if the area is to be landscaped in the future.

Your comments and our responses will be included in the Final Environmental Assessment. The participation of the Office of Environmental Quality Control in the environmental review process is appreciated.

Sincerely,

GERALD PARK URBAN PLANNER
Gerald Park
Gerald Park
Principal

c: M. Murakami, UHH