BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII

RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

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

'99 AUG -3 P3:30

July 30, 1999

To: The Honorable Bruce S. Anderson, Director
Department of Health

Attention: Genevieve Salmonson, Director
Office of Environmental Quality Control

From: Raynard C. Soon, Chairman
Hawaiian Homes Commission

Subject: Finding Of No Significant Impact (FONSI) For KSBE East Hawaii Campus, Tax Map Key No. (3) 2-1-13:154 And 02 (Por.), Panaewa, South Hilo, Hawaii

The Department of Hawaiian Home Lands (DHHL) has reviewed the comments received during the 30-day public comment period which began May 8, 1999, on the draft Environmental Assessment for the KSBE East Hawaii Campus development.

At its meeting held July 30, 1999, the Hawaiian Homes Commission granted the determination of Finding of No Significant Impact for the Final Environmental Assessment, dated June 1999. Please publish this notice in the August 8, 1999, OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and four copies of the Final Environmental Assessment report. Should you have any questions, please call Linda Chinn, Acting Land Management Branch Manager, at 587-6432.

Enc.

c: KSBE
PBR Hawaii

1999-08-23-HA-FEA-

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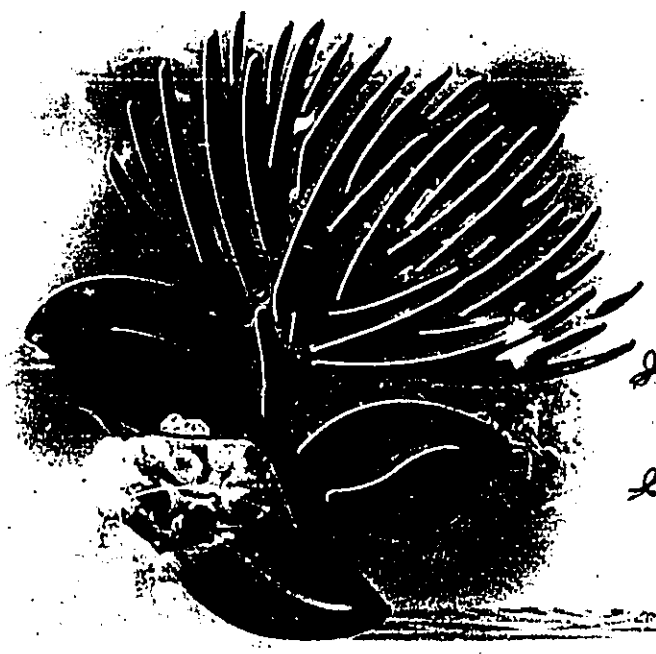

KAMEHAMEHA SCHOOLS
BERNICE PAUAHI BISHOP ESTATE
EAST HAWAII CAMPUS

Final Environmental Assessment

Prepared for:

Prepared by:

PBR HAWAII

June 1999

KAMEHAMEHA SCHOOLS
BERNICE PAUAHI BISHOP ESTATE
EAST HAWAII CAMPUS

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June 1999

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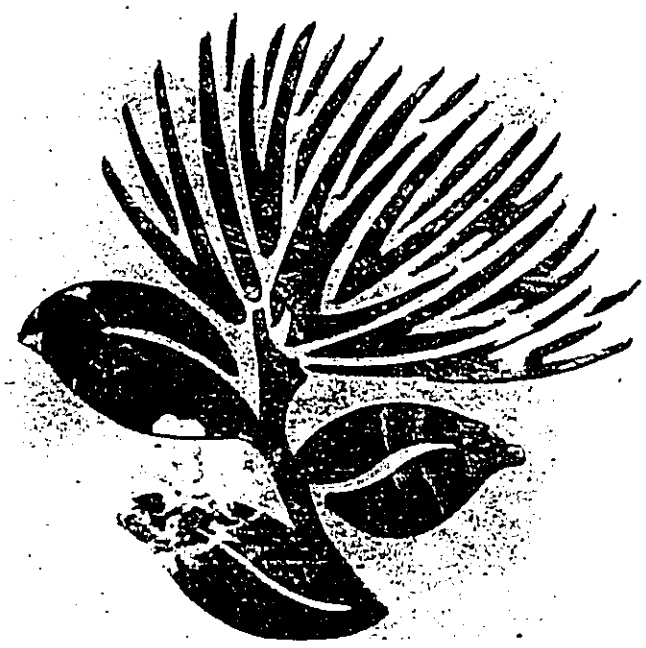


Office of Environmental Quality Control

(OEQC) Publication Form

Office of Environmental Quality Control
The Environmental Notice PUBLICATION FORM (ver. 6-98)
(For instructions see other side)

1 **Project Name:** Kamehameha Schools Bernice Pauahi Bishop Estate East Hawaii Campus
Island: Hawaii Island
District: Panaewa, South Hilo
Tax Map Key Number: (3) 2-1-13:02 Portion and 154

2 **Type of Action:** ____ agency action ____ applicant action
Type of Document: ___ draft EA XX final EA ___draft EIS ___final EIS Other____
Legal Authority: ____ State law (HRS 343)
Applicable sections: XX use of state or county lands or funds
____ use of conservation district lands
____ use of shoreline area
____ use of historic site or district
____ use of land in the Waikiki district
____ amendment to county general plan
____ reclassification of conservation lands
____ construction or modification of helicopter facilities
___ Federal law (NEPA)
___ County law (ROH CH. 25 or other ordinance)
___ Other: _____

Agency determination: ___ Anticipated FONSI XX FONSI
___ EIS Prep. Notice ____ Final EIS Acceptance

3 Proposing Agency or Applicant: Kamehameha Schools Bernice Pauahi Bishop Estate
Address: 567 South King Street, Room 617
Honolulu, Hawaii 96813
Contact: Mr. Yukio Takemoto Phone: (808)541-5356

4 Approving Agency or Accepting Authority: Department of Hawaiian Home Lands
Address: Post Office Box 1879
Honolulu, Hawaii 96805
Contact: Linda Chinn, Land Management Division Phone: (808)587-6432

5 Consultant: PBR HAWAII - Honolulu Office PBR HAWAII - Hilo Office
Address: 1001 Bishop Street, Suite 101 Aupuni Street, Suite 310
Honolulu, Hawaii 96813 Hilo, Hawaii 96720
Contact: Vincent R. Shigekuni Contact: James M. Leonard, AICP
Phone: (808)521-5631 Phone: (808)961-3333

6 Public Comment Deadline: June 7, 1999
Permits required prior to implementation: Special Permit and other related construction permits
Project Summary (name of file on attached disk): OEQC Form in WordPerfect Format
Public Library where document will be available: Hilo Public Library and Keaau Library
This form prepared by: Sue Keohokapu Phone: (808)961-3333

Project Summary:

The approximately 176 acre parcel is located in Panaewa, South Hilo, Hawai'i about 4.5 miles from downtown Hilo, adjacent to the Department of Hawaiian Homes Lands (DHHL) Panaewa Farm Lot Subdivision and the South Hilo-Puna District Boundary. The property is currently owned by DHHL which has issued a long-term lease for use of the property to Kamehameha Schools Bernice Pauahi Bishop Estate (KSBE). KSBE has also entered into an agreement with the DHHL to acquire the subject property by means of a land exchange. The property is planned as the site of KSBE's permanent East Hawai'i Campus. Although the initial campus is planned to accommodate approximately 200 students in grades preK-8, the full 176 site has been master planned to allow for the potential expansion of the school to include a high school component.

Letter of Authorization

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII

RAYNARD C. SOON
INTERIM CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

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

March 31, 1999

Ms. Virginia Goldstein, Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Ms. Goldstein:

Subject: Letter Of Authorization To Prepare And Process Special Permit Application, Kamehameha Schools East Hawaii Campus, Panaewa, Hilo, Island Of Hawaii
Tax Map Key No. (3) 2-1-13:154

The Department of Hawaiian Home Lands is the fee simple owner of the subject property. The Hawaiian Homes Commission, at its regular monthly meeting of December 22, 1998, approved the issuance of a 65-year general lease to Kamehameha Schools Bishop Estate (KSBE) to operate its East Hawaii Campus on the subject property. KSBE is authorized to apply for a Special Permit for the subject property and to prepare and process an Environmental Assessment, in order to provide for the proposed Kamehameha School East Hawaii Campus development to be constructed on the subject property.

Should you have any questions, please call me at 586-3801 or Linda Chinn, Acting Land Management Branch Manager at 587-6432.

Aloha,

Raynard C. Soon, Interim Chairman
Hawaiian Homes Commission

c: KSBE

1.0
Introduction

1.0 INTRODUCTION

1.1 Site Location/Ownership

The approximately 176 acre parcel is located in Pana'ewa, South Hilo, Hawai'i, about 4.5 miles from downtown Hilo, adjacent to the Department of Hawaiian Home Lands (DHHL) Pana'ewa Farm Lot Subdivision and the South Hilo-Puna District Boundary. (See Figures 1 and 2, Location and Project Site Maps). The parcel is described as including Tax Map Key (TMK) parcel (3)2-1-13:154 and a portion of 02.

The property is currently owned by DHHL which has issued a long-term lease for use of the property to Kamehameha Schools Bernice Pauahi Bishop Estate (KSBE). KSBE has also entered into an agreement with the DHHL to acquire the subject property by means of a land exchange. Although the acquisition through a land exchange has been approved by both the DHHL Commission and KSBE Board of Trustees, completion of the land exchange transaction will require approval by the U.S. Secretary of Interior which is anticipated in late 1999.

1.2 Existing Conditions and Surrounding Uses

The parcel is relatively level with an overall slope of about 2 percent and elevations ranging from 100± feet mean sea level (msl) to 140± feet (msl). The geophysical conditions consist of primarily undulating Pāhoehoe and 'A'ā lava flows with a thin layer of organic soils, primarily in the southern portion. The southern portion of the site, which was subject to previous lease agreements with Puna Papaya and AMFAC, was cleared in the 1980's for orchard use. Generally, the property is covered with a first and second generation growth typical to the area, which is dominated by melochia in the formally cultivated area and a mixed canopy of waiawī (strawberry guava), melastoma, and 'ōhi'a in the undisturbed area with the occasional cluster of hala. Other native trees, such as lama, hāpu'u, kōpiko, and kōlea, are uncommon but occasionally found in clefts and outcroppings.

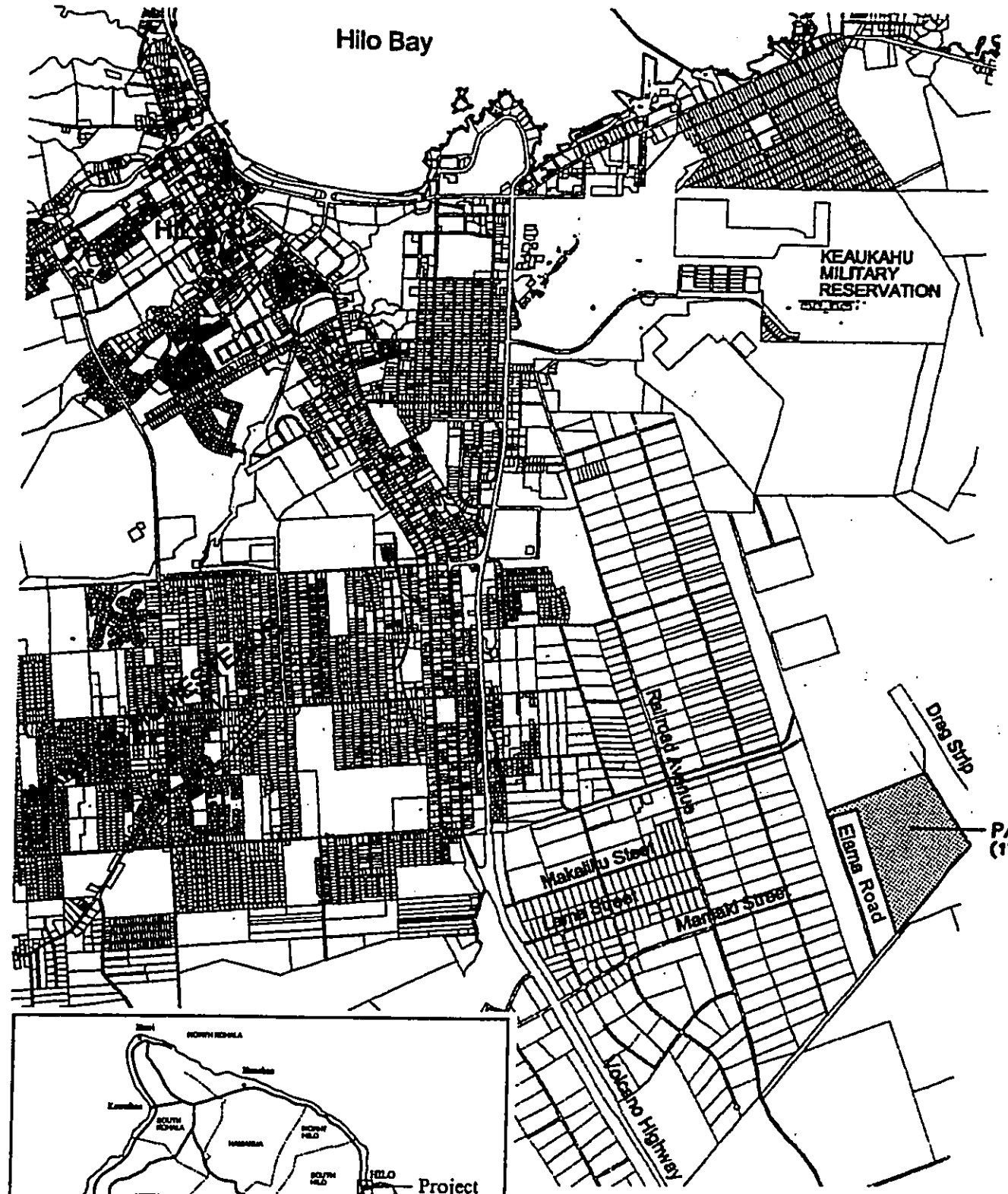


Figure 1
Location Map

EAST HAWAII CAMPUS

KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE — HILO, HAWAII

AREA SCALE — 100 Acres — NORTH — LINEAL SCALE (FEET) 3000 0 2000 4000 8000

DATE: 3/31/99

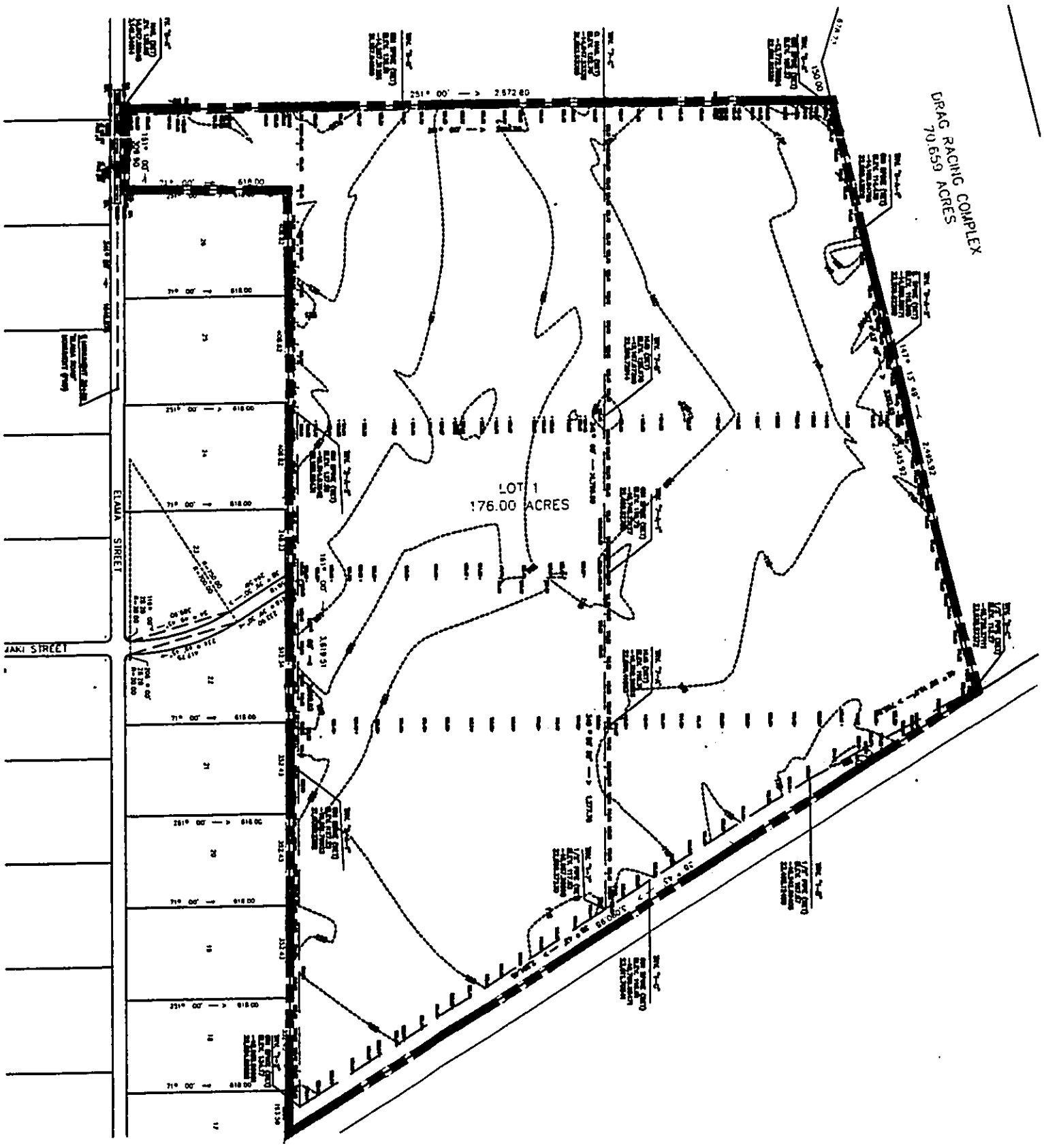


Figure 2
Project Site Map

EAST HAWAII CAMPUS

KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE — HILO, HAWAII

AREA SCALE: 1 Acre; 1/2 ac | 1/2 ac

NORTH

LINEAL SCALE (FEET): 200 0 200 400 700

DATED 3/31/99

The subject property is currently vacant and largely overgrown. Nearby uses include the DHHL agricultural farm lot subdivision to the west, the Mauna Loa Macadamia Nut Corp. orchards to the south, the Hilo Drag Racing Complex to the east and open DHHL lands to the north. Access to the property is provided directly from Ēlama Road and from an unimproved road right-of-way extending from Māmaki Street, as well as potentially from the South Hilo-Puna Boundary Road, which is indicated on the Hilo Road Alignment, Rights-of-way, and Zoning Map as a 80-foot standard road that would extend from Volcano Highway to the area of Kings Landing.

1.3 Project Objectives

The subject property is planned as the site of KSBE's permanent East Hawai'i Campus. Although the initial campus is planned to accommodate a preschool and approximately 200 students in grades K-8, the full 176 acre site has been master planned to allow for the potential expansion of the school to include a high school component.

1.4 Purpose of this Document

Because the subject property is currently owned by DHHL, the proposed use constitutes a "use of State lands", one of the listed actions under Chapter 343, Hawai'i Revised Statutes (HRS) requiring the preparation of an Environmental Assessment. This Environmental Assessment (EA) has been prepared pursuant to the requirements of Chapter 343, HRS. The EA is also intended to serve as a supplement to a Special Use Permit application, the approval of which would be required prior to the development of the proposed project.

2.0
Project Description

2.0 PROJECT DESCRIPTION

2.1 Long-Range Concept Plan

While the KSBE plans call for an elementary and middle school, as noted, the entire site was master planned to allow for an orderly educational development of the entire property. This effort would assure that, should a future decision be made to expand the program and/or student body of the campus, appropriate facilities necessary to support that expansion could be accommodated on the site. In addition to being proactive in planning for this option, a full site master plan maximizes the development potential of the site by capitalizing on site efficiencies and thereby minimizing the overall cost of development. A Long-Range Conceptual Plan for the full campus development, including the high school facilities, is shown in Figure 3.

Campus Layout

The campus is planned with the primary access being provided via a private road directly opposite Māmaki Street through the existing Pana'ewa Farm Lots immediately west of the campus site (hereinafter referred to as the "main entry"). The entry road would connect to a loop road, which would contain most of the elementary, middle and high school facilities, including any shared facilities (such as the chapel, performing arts center, K-8 cafetorium, playcourts, and swimming pool). Outside of the loop road would be the preschool, high school athletic fields, high school dormitories, operations and maintenance facilities and caretaker's residence. A second access to Ēlama Street would be developed via the "flag" which abuts that street (hereinafter referred to as the Ēlama Street entry").

In laying out the specific land use areas on the campus, a key consideration was the potential expansion of various campus components. The elementary and middle schools are sited in the southeastern portion of the

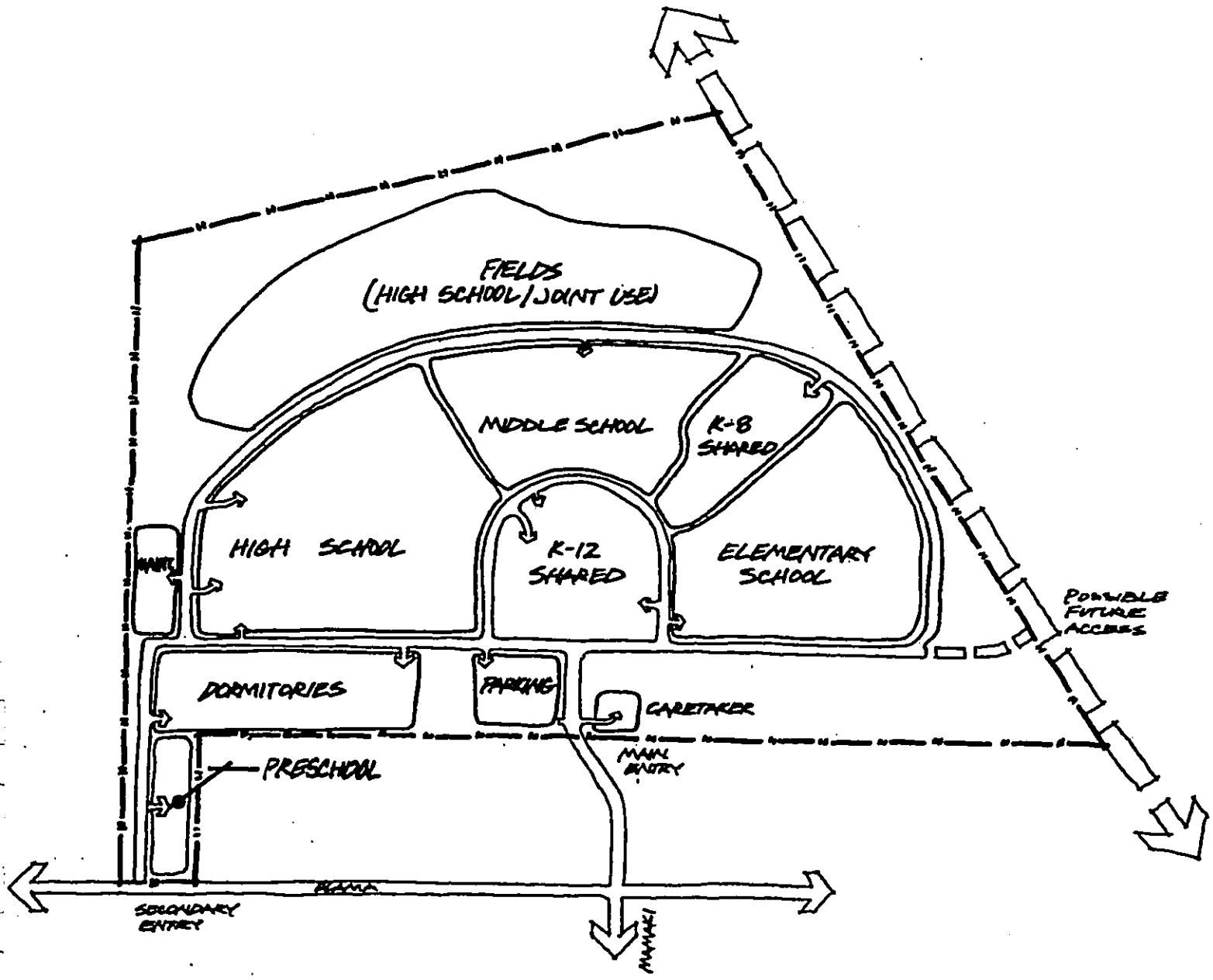
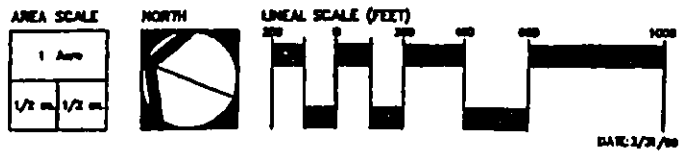


Figure 3
Long Range Conceptual Plan

EAST HAWAII CAMPUS

KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE — HILO, HAWAII



campus (the previously cultivated area) to capitalize on the existing soils and thinner vegetation in this area, which make this portion of the property more conducive to development. The elementary school is also located closer to the main campus entry.

Immediately east of the elementary school is the middle school. The high school is planned immediately north of the middle school and the center of the campus. The three schools are to be located in close proximity to one another to promote the mutual use of common facilities such as the chapel, performing arts facility, and administration building, yet have defined boundaries to maintain a sense of identity between the respective schools on campus.

Within the Long Range Conceptual Plan, the major athletic facilities are located along the eastern boundary, bordering the drag strip, to provide a buffer between this potential noise source and the more noise sensitive uses (such as the classrooms and administrative facilities). Because of the location of the drag strip, the dormitories are sited on the opposite side of the property, along the western edge of the campus.

The preschool and operations and maintenance facilities are located close to Ēlama Road entry to reduce traffic on the loop road. The caretaker's residence is sited on the western boundary, between the main entry and the elementary school.

To respond to the rural setting of the Pana'ewa area, a lei of open space serves as a buffer between the campus and adjacent uses along all edges of the property. The buffer will also insure that the vegetated character of the site, as viewed from adjoining properties, will be maintained.

Main Entry

The entry to the campus from Māmaki Street (and Ēlama Road) will be accented by entry signage and plantings of native shrubs and trees. The two-lane driveway would pass between two adjoining Pana'ewa Farm Lots,

which will be buffered by landscaping. Upon entering the Main Gate to the campus, signage, plantings of native shrubs and trees, and a guard house guide one into the campus.

The Heart of the Campus

When the campus is fully developed, the first building one will see upon entering the campus will be the chapel, a landmark building that will help define the "heart" of the campus. This building will overlook an open space and central gathering area at the center of the campus, and major pedestrian "malls" will link the heart of the campus to other campus facilities. The malls will provide direct pedestrian and emergency vehicular access to the elementary, middle, and high schools. Small courtyards, which serve as gathering areas on the campus, would be located along these malls. The courtyards would include seating for students to gather and socialize. The courtyards would also serve as nodes or intersections of pedestrian pathways which extend from the malls to facilities in other portions of the campus.

Circulation

The proposed land uses on campus can be grouped into eight "zones": 1) elementary school, 2) middle school, 3) shared elementary and middle school facilities (cafetorium, p. e. facilities), 4) the "shared" facilities (Chapel, K to 12 Administration, and Performing Arts facilities), 5) high school, 6) athletic fields, 7) residential (dorms and caretaker's residence) and 8) preschool and operations and maintenance facilities. In order to provide accessibility and service to the eight campus zones, the zones could be separated by service roadways or the major pedestrian malls that would be wide enough to accommodate service and emergency vehicles. This separation of the service roads and pedestrian malls will promote safer pedestrian circulation and limited disruption to campus activities within each zone. It is for this reason that the largest parking lots are planned on the perimeter of the entry to the campus. Parking lots have been strategically placed near the entry to serve a number of purposes. First,

locating a majority of the on-campus parking in close proximity to the main entry, close to both the public spaces (Chapel, K-12 Administration, and Performing Arts) and private spaces (classrooms and educational facilities) will help to limit the number of vehicles within the main campus area and encourage walking. In addition, parking located in this area will divide the public and private realms and allow the parking to serve more than one facility (for the chapel, amphitheater, performing arts facility, and recreational facilities) as well as parking for classroom activities during the regular school day. During occasional high activity events (such as sporting events) limited access parallel parking could also be permitted along portions of the loop road.

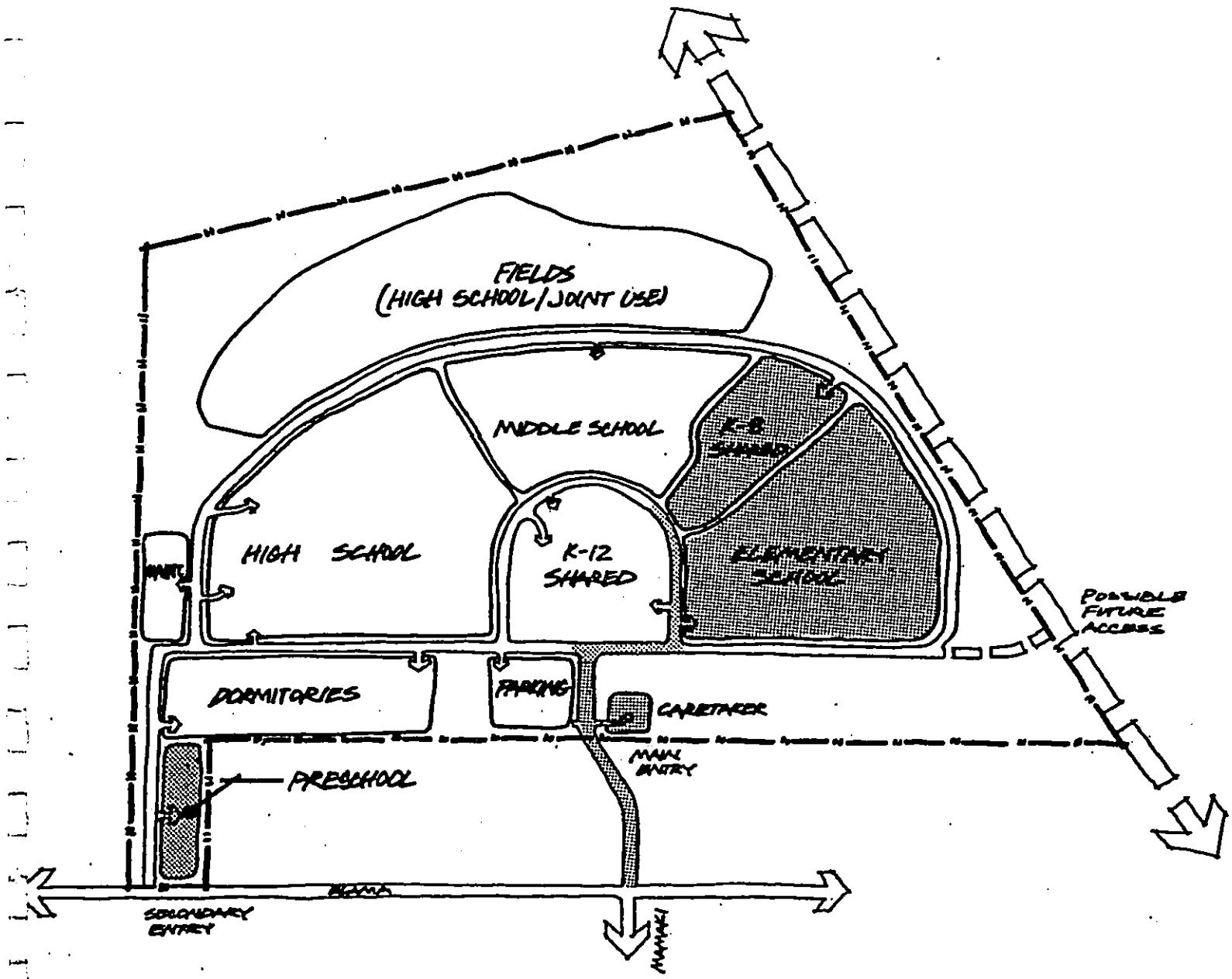
2.2 Initial Campus Development

While the Long Range Concept Plan for the site demonstrates the potential for a future K to 12 campus, the initial campus development is planned to serve a preschool and approximately 200 students, with one class per grade, kindergarten through eighth grade. The location of the initial campus development, shown in Figure 4, is of great importance due to the long-range consequences of future expansion. Increasing the number of classes per grade level, or adding grade levels could be done in small or large increments, the extent and timing of which are not known at this time.

The location and flexibility for growth of the initial campus facilities will help to minimize disruption to the on-going educational activities of the school as a result of any future campus development.

The initial campus will consist of the following nine facilities:

1. A Four Classroom Building to house one class each of kindergarten, first, second, and third grades.



LEGEND

Initial Campus Development

Figure 4
Initial Campus Development

EAST HAWAII CAMPUS

KAMEHAMEHA SCHOOLS BISHOP ESTATE HILO, HAWAII

AREA SCALE NORTH LINEAL SCALE (FEET)

2. A Four Classroom Building to house one class each of fourth and fifth grades, with the third room for art and science and the fourth room for technology.

3. Two Specialty Classroom Buildings to house sixth, seventh, and eighth grade classrooms along with art, science, teen health and computer lab facilities.

4. A Media Center for the school's library and technological control operations.

5. An Administration Building to house the school administration, meeting rooms and a Health Room.

6. A Gymnasium sized to hold campus wide functions, with adjacent locker rooms and support spaces.

7. A Cafetorium with kitchen facilities; a custodial service center (maintenance facility) for the campus; a multi-purpose student dining room to serve as an auditorium space with a small stage; and with instructional spaces for the band and music program.

8. A Caretaker's House sited at the edge of the campus strategic to the main entry to provide security for the campus.

9. A Preschool located near the Ēlama Road entry.

The architectural design of the buildings, in keeping with the historic design of the KSBE Kapālama Campus, will be in the territorial Hawaiian style with pitched roofs and light-colored plastered walls.

Additionally, the Guidelines for Sustainable Building design, as provided by the Office of Environmental Quality Control (OEQC) will be taken into consideration in the planning and design of the campus planning.

2.3 Description of the Facilities

Classroom Buildings

These two buildings will be one story structures with similar floor plans. If the elementary school were to grow in the future to its maximum capacity of 512 students, these buildings together could house four first grade classes and four second grade classes. They are located next to each other, with space for a third similar building to house an additional four kindergarten classrooms.

The Specialty Classroom Buildings

These buildings will provide general classrooms for six, seventh and eighth grades, along with specialty classrooms for art and science, and a technology lab. The general classrooms could one day be converted into additional specialty classrooms to accommodate a larger elementary school.

Media Center Building

The Media Center with library and technological control operations will accommodate the initial K - 8 student population of 200 students, and will be sized to provide room for growth and/or changes in curriculum and programs which may arise over time.

The Administration Building

This building will serve as the main entrance for the initial campus development. It will house all the administrative functions for the Initial Campus and be flexible enough to adapt to the changing needs of the campus over time.

Gymnasium

The gymnasium would include a regulation basketball court with approximately 300 bleacher seats on each side. The main court area would be divisible into two smaller practice courts. Support spaces, such as restrooms, locker/showers, first aid, laundry, and storage rooms, would also be provided in an adjacent support building.

Cafetorium

The Cafetorium will be sized to seat approximately 400 for dining, with an assembly seating capacity of approximately 800. The kitchen for the initial campus will be sized to serve 200, with accommodation for future growth. Service to the kitchen will occur at the side of the building closest to the loop service road, and covered lānai will be provided for protected, exterior dining opportunities with views across the campus.

The one-story Cafetorium Building will also house a multi-purpose music room for the K - 8 band, orchestra, and choral programs.

Caretaker's House

The Caretaker's House will be located near the main entry. This location will provide visibility out over the approach driveway and is strategically located near the initial campus to provide a level of security for the site.

Preschool

The Preschool will be located near the Ēlama Road entry to minimize traffic at the main entry.

2.4 Implementation Schedule

KSBE's temporary campus is currently located on DHHL lands in Keaukaha, Hilo, approximately seven miles from the project site. However, because of the term limits to the lease agreement and the size of the temporary campus, KSBE's options for the continued use the temporary Keaukaha site are severely limited. KSBE has added additional classrooms to the elementary school campus and plans to add one additional classroom in 1999, at which time the temporary campus will be completely built out.

In order to meet the needs for the elementary and middle schools, KSBE plans to initially construct its seventh and eight grade classrooms and supporting facilities on the project site. Construction of the initial classrooms (7th and 8th grade), the preschool and supporting facilities are planned for early 2000 so as to be available for use by the fall of 2000. This would be soon followed by the completion of construction of the initial campus development.

The area required for the initial campus development (approximately 20 acres) will be mass graded as part of the first phase of construction. This will facilitate the phased construction of the buildings and supporting infrastructure with minimal disruption to the students and the day to day operation of the school. All nine buildings of the initial campus development with preschool and grades kindergarten through eight are planned to be completed by July 2001 so as to be available for the start of the 2001-2002 school year.

As noted, the timing and extent of further expansion beyond the initial campus development, is not known at this time. However, should a decision be made to provide an additional high school component and expand the capacity of the elementary and middle schools, full development

of the campus is anticipated to occur as the need arises and resources permit.

3.0
Description of the Affected Environment

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.1 Physical Environment

3.1.1 Climate

The climate of the region is generally warm and humid with average daily temperatures ranging from 68 to 80 degrees Fahrenheit in the winter months and 72 to 87 degrees in the summer months, and average rainfall ranges from 125 to 150 inches per year, with the winter months receiving the majority of the rainfall. Winds are dominated by trades from the northeast with southwestern winds associated with "Kona" storms occurring predominately in the winter months. In the absence of the trades or storm conditions, winds occasionally become light and variable and, at times, the diurnal heating and cooling of the Island gives rise to onshore sea breezes during the day and offshore land breezes at night.

Potential Impacts and Mitigation Measures

As the project will not have a significant impact on the microclimate of the area, no mitigation measures are warranted. However, the relatively high rainfall in this area warrants the inclusion of covered walkways into the design of the campus. In addition, for the comfort of students, teachers and staff, all of the facilities accept for the gymnasium and caretaker's house will be air conditioned.

3.1.2 Topography/Geology

The parcel is relatively level with an overall slope of about 2 percent and elevations ranging from 100± feet mean sea level (msl) in the northeast

corner to approximately 140± feet (msl) in the northwestern corner. The geology of the site is classified as Ka'ū Basalt which consists of lava flows, vent deposits, littoral deposits, and tephra-fall deposits of tholeiitic basalt and rare transitional basalt of Mauna Loa Volcano. In some areas the topography, following the underlying lava flows, is undulating with a number of localized depression and lava blisters.

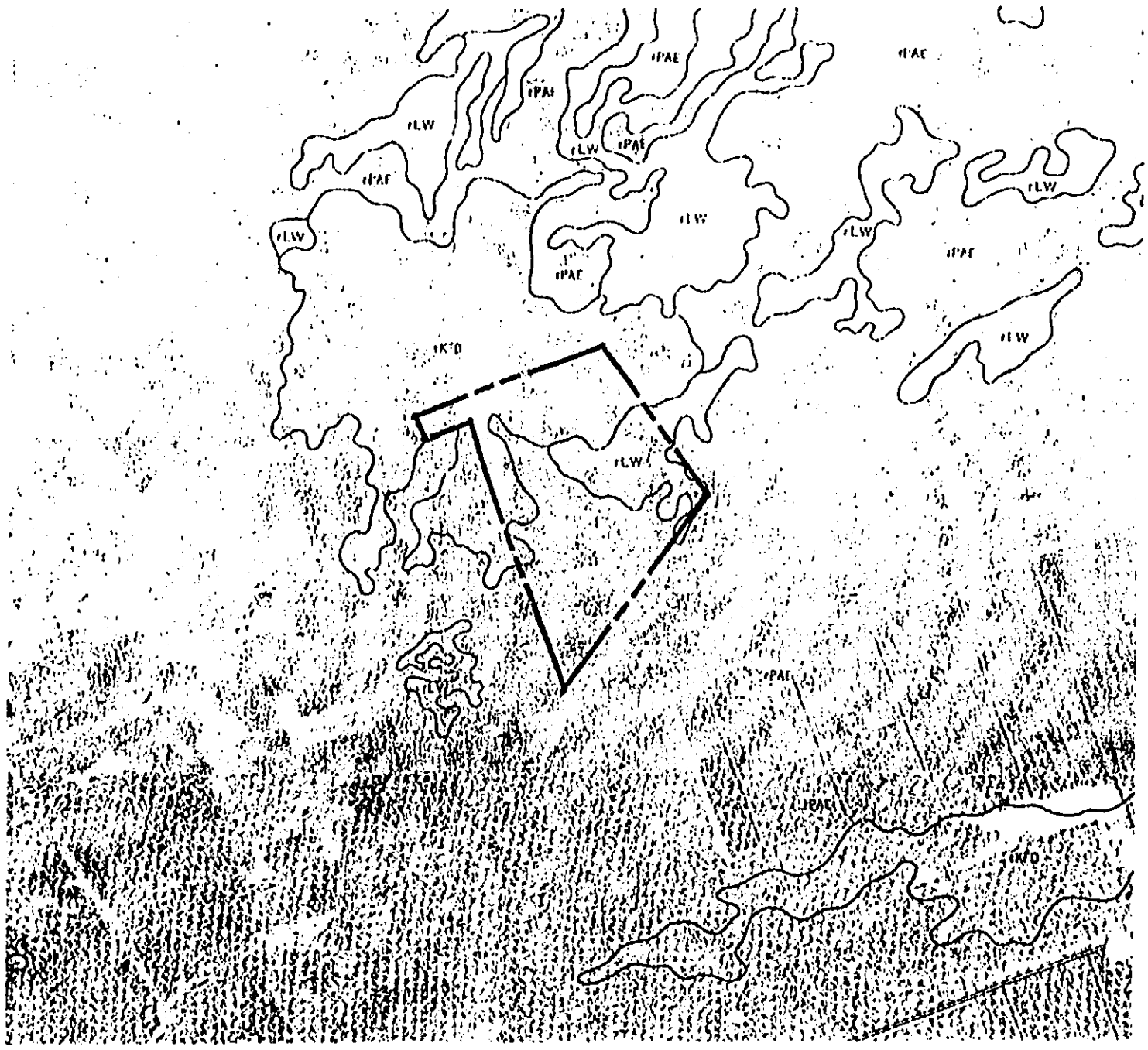
Potential Impacts and Mitigation Measures

The proposed campus development will generally follow the existing topography in order to minimize the grading requirements during construction. As such, the existing topography and geology will not be significantly affected by the proposed development and other than adherence to State and County codes and standards for construction, mitigation measures do not appear warranted.

3.1.3 Soils and Agricultural Potential

According to the Soil Conservation Service (SCS), most of the soils on the site are classified as Pāhoehoe Lava Flows, Keaukaha Extremely Rocky Muck and Pāpa'i Extremely Stony Muck as shown in Figure 5. The Pāhoehoe Lava Flows soil type is described by the SCS as having a billowy, glassy surface that is relatively smooth, although in some areas the surface is rough and broken and there are hummocks and pressure domes. Although the SCS describes this soil type as having no soil covering, the site is heavily overgrown with vegetation.

A portion of the site also contains soils classified as Keaukaha Extremely Rocky Muck. The Keaukaha series consists of well-drained, thin organic soils overlying Pāhoehoe lava bedrock. These soils are undulating to rolling and follow the topography of the underlying lava flows. Rock crops occupy



LEGEND

rLW - Lava Flows Pāhoehoe

rKFD - Keaukaha

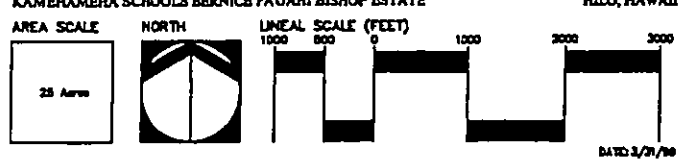
rPAE - Papai

Source: U.S. Department of Agriculture, Soil Conservation Service & University of Hawaii, August 1992

Figure 5
Soil Survey Map

EAST HAWAII CAMPUS

KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE — HILO, HAWAII



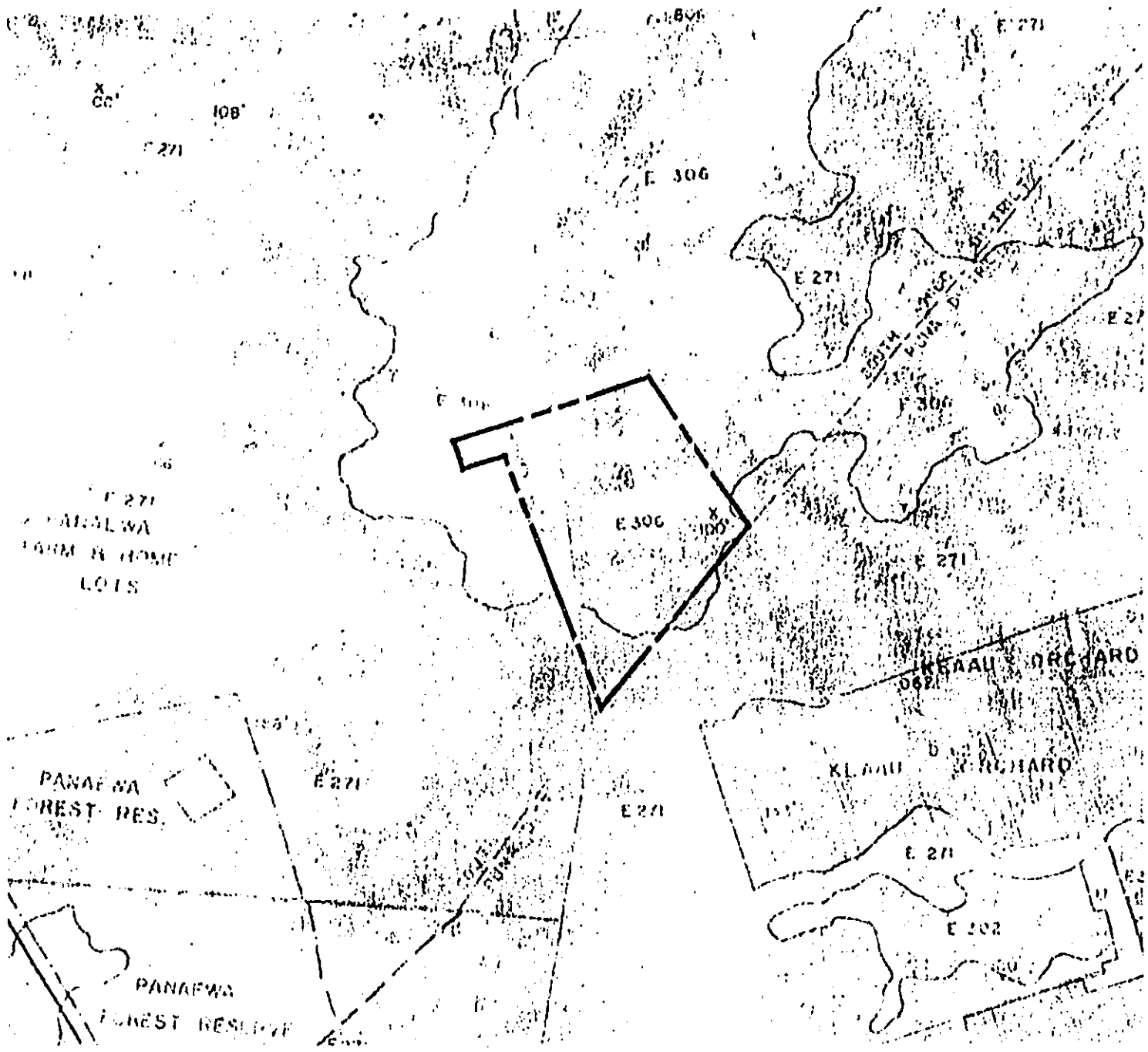
about 25 percent of the area. In a representative profile, the surface layer is very dark brown muck about 8 inches thick. The soil above the lava is rapidly permeable. The Pāhoehoe lava is very slowly permeable, but water moves rapidly through the cracks. Runoff is medium, and the threat of erosion hazard is slight.

The Pāpa'i series consists of well-drained, thin, extremely stony organic soils over fragmented 'A'ā lava. In a representative profile, the surface layer is very dark brown extremely stony muck about 8 inches thick. Permeability is rapid, runoff is slow, and the threat of erosion hazard is slight.

Agriculturally, the Detailed Land Classification, Island of Hawai'i (University of Hawai'i, Land Study Bureau, 1972) classifies the subject lands as E306 and E271, as shown in Figure 6. These classifications indicate the soil's unsuitability for agricultural purposes. None of the land within the project site are classified by the Agricultural Land of Importance to the State of Hawai'i (ALISH) system as either "Prime" or "Unique Agricultural Land." The southern portion is classified as "Other Important Agricultural Land," as shown in Figure 7, an indication of the previous orchard use in this area. The remainder of the property is unclassified (neither "Prime," "Unique" or "Other Important Agricultural Land.")

Potential Impacts and Mitigation Measures

As noted, little soil is present on the site and those soils that are present generally do not provide a suitable base for agricultural production. Those areas of the project site that had been subject to previous agricultural (orchard) activities are now largely overgrown. Given the agricultural limitations of the existing soil conditions, and the extent of other more



LEGEND

E 306 - Almost Bare Pāhoehoe

E 271 - ʻAʻā

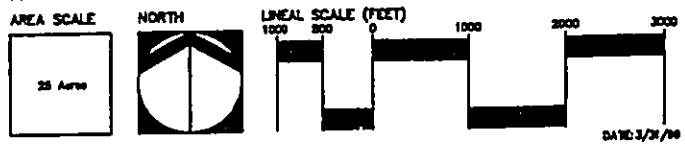
Source: Land Study Bureau, University of Hawaii - State of Hawaii, May 1967

Figure 6
Detailed Land Classification Map

EAST HAWAII CAMPUS

KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE — HILO, HAWAII

AREA SCALE — NORTH — LINEAL SCALE (FEET) 1000 800 0 1000 2000 3000



LEGEND

- Unclassified
- Other Important Agriculture Land
- Existing Urban Development

Source: Department of Agriculture-State of Hawaii, January 1977

Figure 7
ALISH Map

EAST HAWAII CAMPUS

KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE — HILO, HAWAII

AREA SCALE — NORTH — LINEAL SCALE (FEET) 1000 500 0 1000 2000 3000

DATED 3/31/86

suitable agricultural lands in the region, the curtailment of potential agricultural use on the site is not considered a significant impact.

As noted above, those soils that are present on site tend to have a high permeability and low potential for erosion hazard. It is anticipated that soils will need to be imported to the site for landscaping purposes. If left unprotected, exposed soils could be subject to erosion as a result of excessive wind or water runoff. An erosion and sedimentation plan will need to be prepared and approved by the Department of Public Works as part of the permitting procedures for the project. Other measures to protect against wind erosion during construction periods include water spraying and planting of ground cover as soon as possible following grading and grubbing activities. With adherence to County regulations and standards and implementation of standard control measures, further mitigation measures are not warranted.

3.1.4 Drainage/Flood Zones

The site is generally flat to moderately sloped with slopes ranging from 1 to 5 percent. Although the property is generally flat, the site has localized depressions and lava blisters characterized by a rolling and undulating topography. A site survey revealed no drainage features on the property and there are no flood ways or areas inundated by 100-year or 500-year floods indicated by the Flood Insurance Rate Maps on file with the Hawai'i County Department of Public Works.

Due to geology of the site, permeability on site is generally rapid and any run off would move in a sheet flow pattern in the eastern direction.

Potential Impacts and Mitigation Measures

The proposed development will potentially result in storm water runoff as a result of the construction of school buildings and paved surfaces (parking areas, roads, and pathways). Standard engineering practices would be adhered to as part of the design and construction of campus facilities, including the use of on-site dry wells and retention areas to dispose of run-off on site in compliance with State and County regulations. In that the project site is not located in a flood zone and there are no natural drainage features on site, the proposed campus development is not expected to impact or be impacted by flooding or drainage patterns in the area. Therefore, mitigation measures, other than standard engineering practices and adherence to County and State codes and standards with regards to flood and erosion control, are not warranted.

3.1.5 Natural Hazards

In regards to seismic risk, the entire island of Hawai'i has a Zone 3 Seismic Probability Rating. Zone 3 areas are at risk from major earthquake damage, especially to structures that are poorly designed or built. In comparison, of Oahu has a Zone 2A rating and Maui has a Zone 2B, indicating the frequency and severity of seismic occurrence of an island that includes an active volcano.

The United States Geologic Survey has identified lava flow hazard zones for the island of Hawai'i. The current map divides the Island into zones that are ranked on a scale of ascending risk from 1 to 9 based on the probability of coverage by lava flows. These zones are based chiefly on the location and frequency of both historic and prehistoric eruptions and also take into account the larger topographical features of the volcanoes that will affect the distribution of lava flows. Along with most of the Hilo area, the area in

which the site is located is designated as Lava Flow Hazard Zone 3. Zone 3 is considered less hazardous than Zone 2 (which is adjacent to and down slope of active risk zones), because of greater distance from recently active vents and/or because the topography makes it less likely that flows will cover these areas. The site is situated on a lava flow that occurred between 750 and 1,500 years ago. The nearest historic flow approached Hilo in 1880, terminating in the area of what is now the University of Hawai'i at Hilo Research and Technology Park, approximately four miles from the project site.

In terms of potential risks from flooding, as noted above, no drainage features or floodways are designated on the Flood Insurance Rate Maps on file with the County Department of Public Works.

Potential Impacts and Mitigation Measures

The proposed project is not located in any hazard zone requiring special design consideration or protection. The project is not subject to greater earthquake hazards than other areas of the Island of Hawai'i. Therefore, special mitigative measures to protect against potential natural hazards, other than those specified in the Uniform Building Code are not warranted.

3.1.6 Flora

A botanical reconnaissance survey of the project site was conducted by Ron Terry, Ph.D. and Layne Yoshida, B.A. in March 1999. According to the Botanical Reconnaissance Report (Appendix A) and shown in Figure 8, the property is characterized by two distinct vegetation types, one found on the portion used in the recent past for agriculture (about 35 percent of the property area), and another portion that is relatively undisturbed (about 65 percent). The formerly disturbed land (the southern portion of the property)

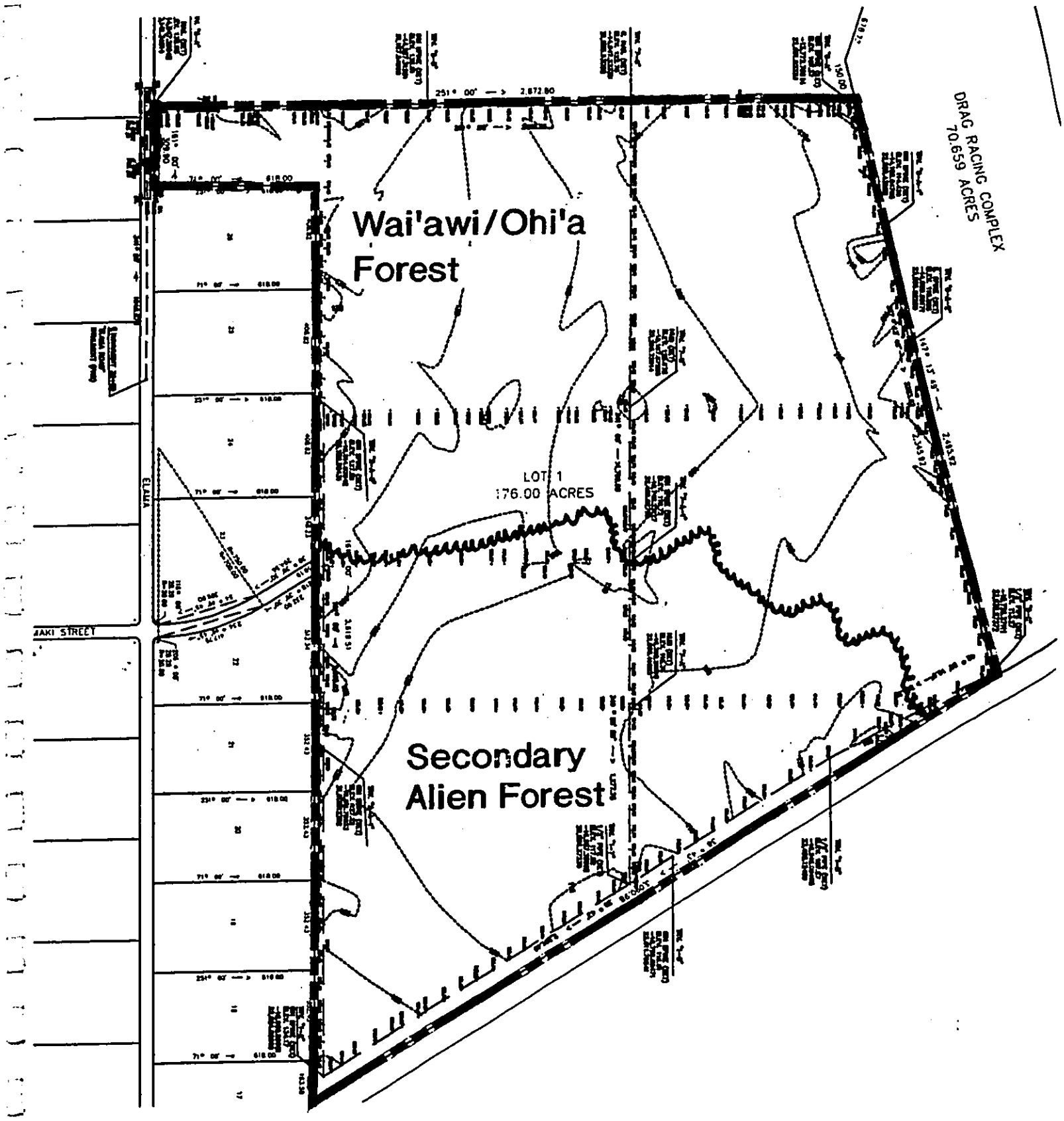


Figure 8
Vegetation Map

EAST HAWAII CAMPUS

KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE — HILO, HAWAII

AREA SCALE — NORTH — LINEAL SCALE (FEET)

Source: Ron Terry, Phd.

now contains a secondary forest dominated by melochia, which forms an upper canopy averaging 20 to 40 feet high. The understory is dominated by alien shrubs, herbs and grasses, although some native sedges, grasses and ferns are also present.

The undisturbed area (northern and central portions of the property) can be characterized as dominated by waiawī, which forms a dense canopy layer of 15 to 25 feet, broken by scattered individuals of the native 'ōhi'a, which are usually 30 to 50 feet in height. In some areas, melochia overtops the waiawī. Melastoma is also a common canopy element. Isolated clusters of hala are also scattered in the canopy. Other native trees, such as lama, hāpu'u, kōpiko, and kōlea are uncommon but sometimes found in the clefts and ridges. Small patches dominated by uluhe fern are also scattered throughout the forest.

No plant species classified as listed, proposed or candidate threatened and endangered species by the U.S. Fish and Wildlife Service were detected on the property, and according to the Botanical Assessment, it is unlikely that any are present.

Potential Impacts and Mitigation Measures

The vegetation on site consist primarily of exotic and introduced species. No mitigative measures are warranted as the site is not a habitat for any endangered or threatened species.

3.1.7 Fauna

A biological reconnaissance survey was conducted by Tim Ohashi, a certified wildlife biologist, in March 1999 (Appendix B). During the reconnaissance survey nine species of birds were encountered, including Japanese White-eye (Zosterops japonica), Northern Cardinal (Cardinalis

cardinalis), Spotted Dove (Strepopelia chinensis), Common Myna (Aridotheres tristis), Zebra Dove (Geopelia striata), Melodious Laughing Thrus (Garrulax canorus), House Finch (Carpodacus mexicanus), Chestnut Mannikin (lonchura punctulata), and the Ringed-neck Pheasant (Phasianus colchinus) which, though not observed, was heard crowing from off the property. Other mammals found on the property included feral pig (Sus scrofa), small Indian mongoose (Herpestes auropunctatus), cat (Felis catus), and feral dogs (Canus familiaris). Although not observed, the rat (Rattus rattus) and house mouse (Mus musculus) are assumed to also occur on the site.

All animal species observed on site or thought to be present are exotic species common to the area and the Islands. No native Pueo (owl), Hawaiian hawk, or hoary bat were observed during the faunal survey.

Although the site is within the known distribution area of these species and the habitat on site and on adjacent parcels could support these species, no bat roost sites or hawk or owl nesting areas were observed. These species have been known to adapt to introduced vegetation and, if present in the area, clearing of introduced forest habitats may, in fact, have a positive impact on the foraging habitats for local bat, owl and hawk populations.

In sum, the biological reconnaissance survey found no unique habitats important to native animal species and no evidence of there being any animal species classified as listed, proposed or candidate threatened and endangered species by the U.S. Fish and Wildlife Service were detected on the property.

Potential Impacts and Mitigation Measures

Due to the lack of unique habitats important to native animal species or any evidence of any animal species classified as listed, proposed or candidate threatened and endangered species, no mitigation measures related to the proposed development appear warranted.

3.1.8 *Air and Noise Quality*

Because of the lack of significant stationary sources of man-made air pollutants and the relatively low level of vehicular traffic in the project area, it is presumed that the air quality of the project area is good and meets all applicable Federal and State standards. The nearest air quality sampling station is located in Pi'ihonua, Hilo, near the Hilo Medical Center and is too far from the project site to provide meaningful data.

The existing noise environment of the proposed site is dominated by the natural sounds of wind moving through the vegetation and sound of the wildlife (birds) in the area. There are no significant human-generated noise sources in the project area with the exception of the neighboring Hilo Drag Racing Complex which generates significant noise levels for relatively short periods of time. The racing activities at the drag strip are nearly exclusively scheduled for Saturdays and Sundays and can extend until 9:00 p.m.

The Hilo International Airport is also located approximately two miles to the north and include an Air National Guard Base facility. According to the Department of Transportation, Airports Division, the project site is not in the flight path for the Hilo International Airport. Although not significantly impacted by the noise of approaching aircraft, helicopters based at the airport have been reported to travel over the project area. Coordination with the State Department of Transportation, Airports Division will insure that

helicopter operators are aware of the campus location in order to modify helicopter flight patterns accordingly.

Potential Impacts and Mitigation Measures

Air and noise quality will potentially be impacted by short-term construction related activities which can potentially generate fugitive dust and noise generated from the operation of construction equipment. The noise generated will be temporary and generally confined to day-time hours. Following construction, the primary noise generated by the project will be from vehicular traffic and school activities. Vehicular and school activities would generally be limited to daylight hours and will generate some noise slightly above the ambient conditions generally during the daylight hours. It is expected that all noise levels would be well within State standards. To mitigate potential noise impacts, landscape buffers are planned as part of the campus design to help buffer the potential impacts from adjacent noise sources (drag racing strip) and to provide a buffer between the school campus and the existing and potential residences located to the west. Because noise impacts to nearby residents are expected to be insignificant and well within State standards, mitigation measures are not warranted.

Short-term air quality impacts associated with construction can be mitigated through dust control measures such as water spraying and planting of ground cover as soon as practical following clearing and grubbing. Because the project is not expected to cause long-term adverse air-quality impacts, mitigation measures are not warranted.

3.1.9 Scenic and Open Space Resources

The site has little scenic value other than as an open space (undeveloped) area. Due to the nearly level terrain and dense vegetation both on and

surrounding the property, the site is largely obscured from surrounding properties and views from the site are limited to distant views of Mauna Kea and Mauna Loa during clear conditions. No sites or vistas of natural and scenic beauty, as listed in the County General Plan, are present or visible from the project site.

Potential Impacts and Mitigation Measures

No impacts to existing scenic views or scenic resources are anticipated as a result of the proposed development, therefore, mitigation measures are not warranted.

3.2 Socio-Economic and Cultural Environment

3.2.1 Socio-Economic

The subject parcel is located adjacent to the DHHL Pana'ewa Farm Lots. Area residents, which are of Hawaiian ancestry, generally work in Hilo which is the business and employment center of East Hawai'i. Surrounding lands also include open DHHL lands, the Hilo Drag Racing Complex and the Mauna Loa Macadamia Nut Corp. orchards. The DHHL Pana'ewa subdivision includes approximately 275 agricultural lots ranging from 3 to 10 acres in size. Of these, according to DHHL records, approximately 132 lots are improved and occupied. Along Ēlama Road, in the area abutting the property, there are 10 lots of approximately 5 acres in size, three of which are currently occupied.

Potential Impacts and Mitigation Measures

The proposed project is located on currently vacant land, and will not result in the displacement of any residence or business, nor will the project have

a significant impact on surrounding land values since the site is largely surrounded by open public lands, orchards, and agricultural lots which are occupied by DHHL lessees who are largely exempted from County property taxes. Furthermore, in that the proposed initial campus development represents, for the most part, a relocation of the existing KSBE campus located in Keaukaha, and further expansion would likely to take place gradually over a 15-20 year period, the project will not be a significant employment generator. Construction related employment, as well, is expected to take place over the same 15-20 year period and would not be of a scale to impact housing demand in the region. The project will, therefore not result in any significant long-term secondary population or development impacts.

The primary impact to area residence will be the increase to traffic along area roads, especially during the peak morning and afternoon periods. However, according to the traffic analysis conducted for the project, because the existing roads in the area are well below their capacity, the impact to the traffic conditions in the area as a result of the initial campus development (up to 400 students) will not be significant. Should the campus be expanded further to include a high school component, further traffic analysis should be conducted at that time to assess the potential impact to area traffic and recommend mitigation measures to offset such impacts.

3.2.2 Archaeological and Cultural Resources

An Archaeological Inventory Survey which was conducted for the project by Scientific Consultant Services, Inc. (Appendix C). As part of the survey, the project area was thoroughly searched for indications of archaeological sites, features or other surface remnants. The southern half of the property was found to have been extensively bulldozed with numerous dirt roads criss-crossing this portion in a grid-like pattern. Large mounds of rock and dirt

are visible along both sides of these roads. Vegetation has grown over these bulldozed piles and throughout the project area.

In the northern half of the property, bulldozing was found to be much less extensive than in the southern portion. Also, the vegetation was found to be much thicker here than in the southern half of the property. In this portion there is an undulating terrain and several collapsed Pāhoehoe surface blisters. None of the surface blisters were found to have been modified. Likewise, no parts of the undulating terrain showed any signs of artificial landscape modification.

The archaeological investigation found no archaeological sites in the project area. If any sites had existed, the report concludes that they were probably modified or destroyed by past land alterations activities such as the bulldozing related to agricultural activities. The archaeological report notes that the project site occupies a relatively unproductive area between the "coastal" and "upland agricultural" zones, which helps explain the lack of any archaeological features found in the area. Additionally, research of historic land records found no land claims for the project area.

Potential Impacts and Mitigation Measures

Based on the findings of the Archaeological Inventory survey, no impacts to any features of archaeolcgical or cultural significance are anticipated as a result of the proposed development and no further archaeological work is recommended. In terms of cultural resource practices, as indicated by the Archaeological Inventory Survey, no culturally significant sites (Heiau, burial, shrines, etc.) are known to exist within the project site. Also, according to the Office of Hawaiian Affairs (OHA) there is no knowledge of the site as having significance as an area for native gathering practices.

Additionally, the current property owner, DHHL has no knowledge of native gathering occurring on the property and has not been approached for permission to use the property for such purposes. Therefore, the proposed action not expected to have any impact on existing cultural resources or practices.

3.3 Public Facilities and Infrastructure

3.3.1 *Roads/Circulation*

Regional access to the site from points south (Kea'au, Puna) is provided by way of Volcano Highway (Highway 11), Lama Street, and Māmaki Street. Access from points north (Hilo) would be from Railroad Avenue and Māmaki Street. Māmaki Street ends at a "T" intersection with Ēlama Road, however, a 50-foot unimproved road right-of-way provides for the potential extension of Māmaki Street to the project site. The project site is also directly accessible from Ēlama Road.

Māmaki Street and Ēlama Road are 50-foot rights-of-way with two 10-foot lanes with 6-foot wide paved shoulders and 9-foot grassed swales. Railroad Avenue has two 12-foot lanes and 8-foot wide paved shoulders within a 70-foot right-of-way, which could ultimately be able to accommodate two lanes in each direction. The improved portion of Railroad Avenue presently ends south of Māmaki Street. A railroad right of way continues as a dirt road south from this terminus, however, there is a berm at the terminus of Railroad Avenue which constricts access to the railroad right of way. Railroad Avenue continues north, terminating at Leilani Street near the County of Hawai'i base yards. Several other streets, including Puainako Street and Maka'ala Street, connect Railroad Avenue to the rest of Hilo.

Potential Impacts and Mitigation Measures

A Traffic Assessment (Appendix D) was prepared for the proposed project by the project traffic engineer, Julian Ng, Inc., to identify the potential impacts of the proposed development on traffic conditions in the project area and to recommend potential mitigation measures, where warranted.

According to the traffic assessment, the initial campus development, without the high school component but assuming some expansion of grades Kindergarten to Eight up to 400 students, is not expected to have a significant impact to traffic conditions as traffic volumes on Māmaki Street and Railroad Avenue are well below capacity. The study notes that the most significant impact would be at the intersection of Lama Street and Volcano Highway. Because of the high volume of traffic along Volcano Highway, left turns onto Volcano Highway during peak periods would be difficult at this intersection. The study notes, however, that signalization of this intersection would not be warranted. It is expected that much of the Puna-bound traffic would "backtrack" to the signalized intersections at Kawailani Street or Puainako Street. The addition of an auxiliary deceleration lane for right turns from the northbound highway to Lama Street is recommended to accommodate potential traffic impacts beyond the initial campus development (200 students).

The study also notes that, since all KSBE students currently attending school at the temporary Keaukaha campus coming from the Puna direction ride the KSBE school bus and a similar level of bus ridership can be expected to continue at the Pana'ewa campus, the potential traffic impacts from right-turn movements onto Lama Street and Makalika Street would be minimized. Because of the limited turning radii from Volcano Highway to Lama Street and to Makalika Street, school buses would be routed through

the signalized intersection at Puainako Street, where the highway speed is lower and an auxiliary deceleration lane is already provide for right turns.

As noted, it is not know if or when the campus would be expanded to include a high school component. The preliminary analysis indicates that full use of the campus may have a significant impact on traffic conditions, requiring further access improvements to Volcano Highway and improvements to area roadways. However, such impacts can not be accurately projected without a more definitive development timetable for this component. Because of the uncertainties regarding the timing of this component, it is recommended that, should the campus be expanded to include a high school component, a detailed traffic study be conducted at that time as part of the planning for the high school to address the potential traffic impacts and proposed mitigation measures.

3.3.2 Domestic Water

There is a 12-inch Department of Water Supply (DWS) water main located along Railroad Avenue. From Railroad Avenue, a 12-inch water line extends along Māmaki Street and connects to an 8-inch water line that runs the length of Ēlama Road fronting the subject parcel. The water source is from the Pana'ewa Deep Wells and the storage reservoir is on Haihai Street with an overflow elevation at elevation 479.

Potential Impacts and Mitigation Measures

Based on preliminary engineering analysis, the 12-inch water line should be sufficient to meet the fire protection and domestic water needs of the campus. Additionally, based on preliminary discussions with the Department of Water Supply, there are sufficient water resources in the service area to meet the needs of the full campus development. However,

service pressures in the area may exceed the expected 150 pounds per square inch (psi,) requiring the appropriate pressure reduction measures such as the use of a pressure reducing values, to be integrated as part of the water system for the proposed project.

3.3.3 Drainage

As noted above, no natural or man made drainage features exist on the site. However, the County Waiākea Drainage Project terminates in an area approximately 2,300 feet to the north where drainage flows are directed to open State lands.

Potential Impacts and Mitigation Measures

All project generated run-off will be disposed of on-site so as not to impact any surrounding properties. Although there be an increase to the onsite run-off, existing drainage patterns will be maintained. Concrete drain inlets will be installed to collect storm runoff within the campus and transport it into various drainage systems. The collected runoff will be disposed of on-site by means of dry wells and/or drainage retention areas integrated as part of the campus design.

Since the site is located mauka of the Underground Injection Control (UIC), the dry wells may require UIC Permit approval by the State Department of Health to mitigate any potential impacts to groundwater sources.

3.3.4 Wastewater

No municipal sewer systems are available at the project site.

Potential Impacts and Mitigation Measures

Project generated effluent will be treated by a septic tank and ground disposal onsite via a leaching field. The sewage disposal system will be designed and constructed in a manner meeting approval of the DOH.

3.3.5 Electrical Power and Telecommunications

A 12.47 KV 3 phase line is available along Ēlama Road, adjacent to the property boundary. Telephone service is also available from lines along Ēlama Road. Electrical power would be provided by Hawai'i Electric Light Company (HELCO) and telephone and communication services would be provided by Sandwich Isle Communications Inc.

Potential Impacts and Mitigation Measures

According to utility representatives, electrical and telephone service is readily available to the site and the utilities have sufficient capacity to meet the projected needs of the full campus development. Onsite improvements will be coordinated with HELCO and Sandwich Isle Communications Inc. engineers to insure that adequate service is available in sequence with the phased development of the campus. Based on the availability of present service capabilities and planned improvements to the electrical and telephone utilities, significant impacts are not expected to result from the proposed project.

3.4 Public Services

3.4.1 Police and Fire Facilities

Police Service

The project area is serviced by the Hilo Police Station, however, due to site's location near the Hilo/Puna boundary, the Kea'au Police Station also provides service to the area. The Hilo Police Station is located approximately 5 miles from the project site and has approximately 30 - 45 patrol officers divided into three shifts providing 24-hour coverage. The Kea'au Police Station is located approximately 3.5 miles from the project site and has approximately 21 officers divided into three shifts providing 24-hour coverage.

Potential Impacts and Mitigation Measures

It is expected that any increase in requests for police services will be relatively minor and not cause and increase in County police manpower requirements. An onsite caretaker will also provide a level of security to the campus from the early stages of development. Additionally, KSBE plans to hire private security personnel to help provide on-campus security both during and after school hours.

Fire Services

The project area is serviced by the Kawailani Fire Station, however, because this site being located near the Hilo/Puna boundary line, the Kea'au Fire Station would also provide services to this area. The Kawailani Fire Station is located approximately three miles from the project site and the Kea'au Fire Station is located approximately 3.5 miles from the project

site. Both are equipped with an ambulance and each station has approximately 15 firefighters and EMT's divided into three shifts providing 24-hour coverage.

Potential Impacts and Mitigation Measures

Given the location of existing fire stations, and the fact that the new facilities will be constructed in accordance with County Fire Code requirements, it is expected that any increased demand can be accommodated by existing and planned fire protection services and facilities.

After project build-out, significant impacts to the level of fire protection services provided in the project area are not expected as facilities would remain adequate to serve the area requirements.

3.4.2 Parks and Recreational Facilities

Malama Park, the nearest County park facility, is located approximately 0.5 miles from the project site. Malama Park has playground equipment, tennis and basketball courts, and a baseball field. According to the County Department of Parks and Recreation, there are approximately 54 recreational sites located in the Hilo region which consists of parks (regional, community, and neighborhood), gymnasiums, beaches, and pools. The Ho'olulu County Park serves as a regional park complex for the Hilo area providing, baseball, softball, tennis, skateboarding and swimming facilities in addition to the Afook Chinen Civic Center and Edith Kanaka'ole Stadium which serve multi-purpose functions.

Recreational facilities planned as part of the initial campus development include a gymnasium and outdoor playing fields.

Potential Impacts and Mitigation Measures

The location of the campus at the proposed Pana'ewa site is not expected to have any impact on the recreational facilities in the area as recreational opportunities will be more readily available to students on campus. Although the school recreational facilities are intended to support KSBE educational activities, these facilities will provide additional recreational and artistic venues for KSBE students that can be enjoyed by the whole community and thus serve as a positive adjunct to the recreational opportunities in the region. As such the net affect on the recreational resources in the region is expected to be positive. Mitigation measures, therefore, are not warranted.

3.4.3 Health/Emergency Facilities

The nearest Health/Emergency Care Facilities is the Hilo Medical Center located approximately 7-8 miles from the project site.

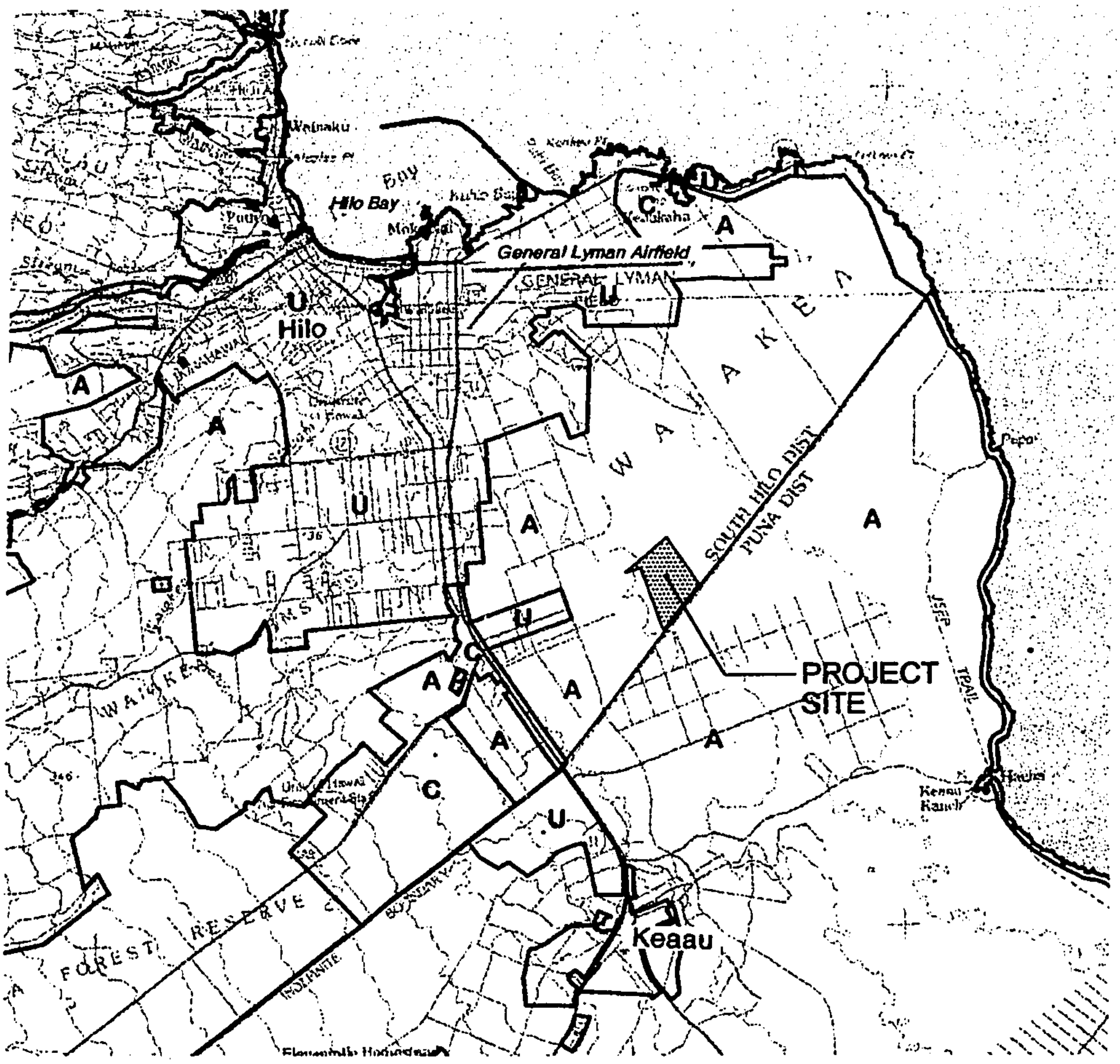
Potential Impacts and Mitigation Measures

In that the faculty, staff, and students at the campus are expected to be residents of East Hawai'i, the proposed use is not expected to add to the current demand for medical facilities and services in the region. Mitigation measures, therefore, are not warranted.

3.5 Relationship to Land Use Controls and Policies

3.5.1 State Land Use Districts

The site is located within the State Agricultural Land Use District as shown in Figure 9. Approval of a Special Permit (Section 205-6, HRS) is required



LEGEND

U - Urban

R - Rural

A - Agriculture

C - Conservation

Source: State of Hawaii, Department of Planning & Economic Development, December 1974

Figure 9
State Land Use Boundary Map

EAST HAWAII CAMPUS

KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE HILO, HAWAII

AREA SCALE NORTH LINEAL SCALE (FEET)

4000 2000 0 4000 8000 12000

400 Acres

for development of a school facility within the State Agricultural Land Use District. In that the project area exceeds 15 acres in size, the Special Permit would be processed through the County Planning Department, reviewed by the County Planning Commission and approved by the State Land Use Commission (SLUC).

Alternately, the applicant could petition the SLUC for an amendment to the State Land Use District Boundaries, seeking to include the project site as part of the SLUC Urban District. This would then need to be followed by the submittal and processing of a Change of Zone or Use Permit Petition through the County of Hawai'i. This alternate entitlement process would be expected to take up to two years to complete. In that the applicant seeks to initiate the initial campus development in the early part of the year 2000, it is anticipated that the Special Permit entitlement process, while providing similar County and State review and approval of the project, would provide a more efficient entitlement process that would be more in keeping with the applicant's overall development objectives.

A Special Permit Petition, if pursued, would need to address the particular requirements of Chapter 205-6, HRS and Chapter 15-15-95 of the Hawai'i Administrative Rules (HAR), including justification of the proposed action as adhering to the guidelines for determining an "unusual and reasonable use" within the State agricultural district.

3.5.1.1 State Land Use Special Permit Guidelines

Development of the Kamehameha Schools East Hawai'i campus under a special permit is an "unusual and reasonable" use within the Agricultural District, pursuant to the guidelines contained in 15-15-95(b) Hawai'i Administrative Rules. In this instance a special permit would be a more

appropriate procedure for approval of the campus than a district boundary amendment.

The Proposed Use Is Not Contrary to the Objectives of the State Land Use Law and Regulations.

The subject property is not of significant agricultural importance and lacks the characteristics that are conducive to intense agricultural cultivation. Therefore use of the property for the proposed action would not be contrary to the objectives of the State Land Use Law and Regulations, as the proposed use will not remove either prime or unique agricultural lands from civilization.

The Proposed Use Will Not Adversely Affect Surrounding Properties.

The proposed campus development has been planned with appropriate buffer areas to minimize the potential impacts from and to adjoining DHHL farm lots to the West, the Mauna Loa Macadamia Nut orchids to the South, the Hilo drag racing complex to the East, and open DHHL lands to the North.

The Proposed Use Will Not Unnecessarily Burden Public Services and Facilities.

The traffic assessment conducted for the project (Appendix D) noted that because surrounding roads are currently operating well below capacity and KSBE plans to continue its extensive use of bus service to transport students to and from the campus, the initial campus development is not expected to have a significant impact on area roadways. Water service to the project site is currently available from an existing 12-inch line that extends to the campus from Māmaki Street and there are sufficient water

resources in the service area to meet the needs of campus development. Waste water disposal and drainage systems will be designed in accordance with State and County regulations.

Unusual Conditions, Trends and Needs Have Arisen Since the District Boundaries Were Established.

It is not uncommon for school facilities, particularly on the island of Hawai'i, to be located in the State Land Use Agricultural District. Issuance of a special permit rather than a boundary change for a school is a means of accommodating school construction while retaining the surrounding neighborhood within the State Land Use Agricultural District. In 1997, the State Land use Commission approved a special permit for construction of the Kea'au High School campus, approximately four miles from the project site. In establishing the original district boundaries, planners did not identify and site all necessary support facilities such as public and private schools.

The Land Upon Which the Proposed Use If Sought Is Unsuited for the Uses Permitted Within the Agricultural District.

There is little soil present on the site and the soils that are present provide a limited base for agricultural production. DHHL proposes to exchange the subject property for more productive agricultural land in Pāhoehoe, Hawai'i, which new lands will developed as farm lots. Schools are permitted as conditional use under Hawai'i County zoning regulations for this district upon approval for a special permit.

3.5.2 County General Plan

The site is designated on the County General Plan, Land Use Pattern Allocation Guide (LUPAG) maps for "Orchard" use. There is no specific General Plan designation for schools. As with other public facilities, schools are sited in relationship to their ability to serve the needs of the community. Therefore, a school would be consistent with any General Plan designation as long as it complies with the goals and objectives of the County of Hawai'i General Plan. Although the goals and objectives of the County General Plan pertaining to educational facilities are generally in reference to public school facilities, the proposed facility would be in concert with the Standards for Educational Facilities (General Plan, Page 8) which states:

"In proposed communities, sufficient acreage shall be reserved for school facilities. Sites shall be free from flooding and drainage problems, excessive slope and shall incorporate appropriate street and driveway design and location to minimize traffic interference, pedestrian hazard and to enable safe and easy access for vehicles, bicycles and pedestrians."

3.5.3 Hilo Community Development Plan

The Community Development Plan only addresses the relationship to the community of publicly owned educational facilities. Private educational facilities are not addressed in the plan. From a land use perspective, the Hilo Community Development Plan designates the subject property for agricultural use, consistent with the current State Land Use, County General Plan and Zoning designations.

3.5.4 County Zoning

The project site is zoned Agricultural (A-20a). Schools are permitted use within the Agricultural district provided that a Special Permit is issued under the provisions of Chapter 205, HRS. As noted above, approval of a Special Permit will be sought from the State Land Use Commission to allow for the proposed campus development.

The height limit in the County Agricultural District is 45 feet. It is anticipated, however, that future structures such as gymnasiums, a theater, and chapel will exceed this height limit. To allow for those uses that may exceed the height limitation, approval of a variance from the height limitations will need to be obtained, either through the Special Permit and Plan Approval process or by means of a Variance application.

3.5.5 County Special Management Area

The proposed project is outside the County Special Management Area (SMA). As such, the proposed project would have no impact on the County Special Management Area and approval of a SMA Use Permit is not required for the proposed development.

4.0
Alternatives

4.0 ALTERNATIVES

4.1 Alternative Sites

Prior to selecting the subject property as a potential site for the East Hawai'i Campus, KSBE had initially investigated all available KSBE properties that were proximate to Hilo, the geographic center of KSBE's projected student population. Those vacant KSBE lands in East Hawai'i which met the locational and size requirements were initially evaluated, based on a broad range of planning criteria.

Through this initial site assessment process the approximately 1,403 acre KSBE owned property at Kalalau, just north of Hilo, was identified as being most suited as a potential site for the proposed campus. On further site analysis, however, the site was found to have geotechnical limitations that would make the development of a campus cost prohibitive.

A broader site selection process was then undertaken which included other privately and State owned properties that were proximate to Hilo and met the minimum acreage requirements. Through a preliminary evaluation process, a list of nine sites were narrowed to five potential sites which were further evaluated based on selected engineering, environmental, and planning criteria. It was through this extensive selection process that the subject parcel was identified as a potential campus site. In addition to having few of the environmental constraints that characterized many of the other sites under consideration, the subject parcel was identified as having the preferable locational and size characteristics that would support a campus development having minimal impacts on surrounding uses. The subject parcel was also found to have many of the site characteristics being sought, including positive planning characteristics, a relative lack of developmental constraints, ease of access, and proximity to existing utilities.

4.2 Alternative Campus Plans

As part of the initial planning for the subject parcel, several alternative conceptual plans for the campus were prepared and evaluated based on meeting the overall planning guidelines for the campus which include:

- Meeting the educational program requirements,
- Achieving an ideal functional relationship between the various campus uses,
- Providing for the near and long-term area requirements for the elementary, middle and high schools, as well as other shared and support facilities,
- Providing for an efficient and safe circulation system,
- Minimizing potential development costs through an efficient campus design,
- Providing a sense of organization and identity to the overall campus layout, and
- Providing for a compatible use of the site.

The selected alternative provided a conceptual layout to guide the further planning and to serve as a basis for the Long Range Development Plan for the proposed KSBE campus. In addition to meeting the above planning guidelines, the selected alternative provides for an efficient use of the site which would minimize the potential impacts to the existing natural conditions while providing sufficient buffer areas to the adjacent uses. In this sense, the selected alternative represents the most favorable approach in terms of minimizing potential impacts to the existing site conditions and the adjacent uses.

4.3 "No-Action" Alternative

The "no-action" alternative would result in the parcel remaining in its current vacant state which would yield little or no benefit to either the lessee (KSBE), the lessor (DHHL), or the State and County, and would curtail KSBE's options to provide expanded educational opportunities in East Hawai'i. The no-action alternative would also preclude KSBE from meeting its program objectives and would deprive the County and State from the tax revenues that would be derived from the construction of the proposed campus.

5.0
Determination

5.0 DETERMINATION

In accordance with Chapter 343, Hawai'i Revised Statutes, this Environmental Assessment has examined the environmental and technical aspects of the proposed project. In considering the significance of potential environmental effects, the sum of effects on the quality of the environment were considered and the overall and cumulative effect of the action were evaluated. Every phase of the proposed action, the expected consequences, both primary and secondary, and the cumulative as well as the short- and long-term effects of the action were considered.

As result of these considerations, it is determined that the proposed action will not significantly impact the environment, based on the significance criteria listed in 11-200-12 of the Environmental Impact Statement Rules and addressed below. Therefore, a "Finding of No Significant Impact" (FONSI) is recommended for this project.

6.0
Findings and Reasons Supporting this Determination

6.0 FINDINGS AND REASONS SUPPORTING THIS DETERMINATION

6.1 Significance Criteria

The determination that proposed development of the KSBE East Hawai'i Campus is not expected to cause significant impacts to the environment is based on an evaluation pursuant to the significance criteria listed in the Environmental Impact Statement Rules (11-200-12), as discussed below:

The proposed project will not involve an irrevocable commitment to loss or destruction to any natural or cultural resources. The proposed Site does not contain any significant natural resources. No features of archaeological or cultural significance have been found on site nor are they likely to be found based on the lack of historical or prehistoric settlement and the prior agricultural activity on much of the site.

The proposed project will not curtail the range of beneficial uses of the environment. The site is vacant land surrounded by urban and agricultural uses. The proposed use will serve to enhance the beneficial uses of the environment by providing opportunities for educational development in a landscaped campus environment that will integrate the native plantings and trees common to the area as part of the landscape plan.

The proposed project will not conflict with the State's long-term environmental policies. The proposed project will not conflict with the environmental policies set forth in the State Plan and Chapter 344, Hawai'i Revised Statutes in that the project will not damage sensitive natural resources nor emit excessive noise or contaminants.

The proposed project will not negatively impact the economic and social welfare of the community or State. The proposed project will have a positive impact of the social and economic environment by providing some short-term construction related jobs and continued long-term educational related employment, and by enhancing the educational opportunities for students in East Hawai'i of native Hawaiian ancestry.

The proposed project will not have a significant affect on public health. The project will not have a significant impact on air and noise quality levels and will not generate pollutants that would impact surrounding lands or the region.

The proposed project will not involve substantial secondary impacts, such as population changes or effects on public facilities. The project will not induce future development or population changes since it does not provide excess infrastructure capacity, attract visitors or new residents, or generate significant new employment opportunities.

The proposed project will not involve a substantial degradation of environmental quality. There will be no significant degradation of air, water, or noise quality.

The proposed project is individually limited and does not involve a commitment to a larger action. The long-range potential development for the KSBE East Hawai'i Campus and its potential impacts on the environment has been considered in this assessment.

The proposed project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat. The site is not a known habitat for endangered or threatened flora or fauna species.

The proposed project will not detrimentally affect air or water quality or ambient noise levels. The proposed project will not include any significant sources of air emissions or noise levels that would violate existing Federal or State standards. Wastewater flows will be disposed via an approved sewerage disposal system. The drainage system will be designed in compliance with County and State regulations to protect the groundwater quality and not adversely impact downstream properties. Sitework will be in accordance with grading permit conditions to minimize erosion, non-point source pollution, and dust.

The proposed project does not affect or is likely to suffer damage by being located in an environmentally sensitive areas (e.g coastal area, tsunami zone, flood plain). The project is located approximately four miles from the shore and is not located within the 100-year flood plain or other environmentally sensitive areas.

The propose project does not affect scenic vistas and view planes identified in County or State plans or studies. The project site is not listed in the County General Plan or other State plans or studies as including a site or vista of natural beauty. Additionally, because the site is relatively level and obscured from the surrounding properties by the onsite and surrounding vegetation, existing views of the site will be largely unaffected by the proposed campus development.

The proposed project will not require substantial energy consumption. The construction and operation of the campus will not require substantially more energy consumption than would be required for projects of a similar type and scale. Energy conservation techniques, such as use of day lighting and energy efficient lighting, waste heat recovery with centralized air-conditioning, and the use of proper building orientation and

landscaping, where practical, to reduce heat loads, will be evaluated as part of the facility planning and design of the proposed facilities.

7.0
List of Permits and Approvals Required

7.0 LIST OF PERMITS AND APPROVALS REQUIRED

The following is a list of permits and approvals that will be required prior to and in the course of the proposed campus development.

State of Hawai'i	Approving Agency
Chapter 343 Compliance	Office of Environmental Quality Control
Special Permit Application	State Land Use Commission
NPDES Permit	Department of Health
UIC Compliance	Department of Health
Wastewater Disposal System	Department of Health

County of Hawai'i	Approving Agency
Subdivision Approval	Planning Department
Plan Approval	Planning Department
Grading Permit	Department of Public Works
Construction with a Right-of-Way	Department of Public Works
Driveway Permit	Department of Public Works
Building Permit	Department of Public Works

8.0
Agencies Consulted

8.0 AGENCIES CONSULTED

The following agencies and organizations have been consulted during the Environmental Assessment Process:

State of Hawai'i
- Department of Education
- Department of Health
- Department of Land and Natural Resources
  - Historic Preservation Division
- Department of Transportation
  - Airport Division
  - Highways Division
- Office of Hawaiian Affairs
- Office of Environmental Quality Control
- State Land Use Commission

County of Hawai'i
- Fire Department
- Planning Department
- Police Department
- Department of Public Works
- Department of Parks and Recreation
- Department of Water Supply

The Draft EA for this project was submitted to the Office of Environmental Quality Control (OEQC), and the notice of its availability appeared in the OEQC Environmental Notice on May 8, 1999. The deadline for comments on the Draft EA was June 7, 1999. During the 30-day review period, three (3) comment letters were received. Copies of the comment letters and responses are included in Appendix E.

9.0
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Laws, Ordinances, Resolution, Administrative Rules

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Hawai'i Administrative Rules, Chapter 11-200, Department of Health, Environmental Impact Statement Rules.

Hawai'i County Code, Chapter 25 (Zoning)

County of Hawai'i, *General Plan*, Ordinance No. 89-142 (An Ordinance Adopting the County of Hawai'i General Plan and Repealing Ordinance No. 439, as amended).

Appendix A
Botanical Reconnaissance Report

BOTANICAL RECONNAISSANCE

TMK (3rd) 2-1-13:154 (por.)

WAIAKEA, SOUTH HILO, HAWAII

by Ron Terry, Ph.D., and Layne Yoshida, B.A.
March 1999

Introduction

This report describes the result of a botanical reconnaissance of a 176-acre portion of a property identified as TMK (3rd) 2-1-13:154, which is under lease to Kamehameha Schools Bishop Estate (KSBE) from the Hawaii State Department of Hawaiian Home Lands (DHHL). The property is bounded by the Hilo Drag Strip on the northeast, the South Hilo/Puna Boundary on the southeast, a row of DHHL Panaewa Farm lots fronting Elama Street on the southwest, and an unmarked lot boundary on the northwest (Fig. 1). The botanical survey was undertaken at the request of PBR Hawaii, on behalf of KSBE, which is planning to develop a campus on the site.

Methodology

An initial reconnaissance of the property in early February 1999 indicated an extremely dense understory of alien shrubs that precluded "one-hundred percent" visual survey. Subsequently, after studying maps and a large-scale true color airphoto or the project area, our team developed a methodology for studying the property. Fieldwork, conducted on February 27-28, 1999, consisted of systematic ground survey of several dozen representative transects of varying lengths, with special attention to clefts and outcrop ridges, which generally offer potentially better native species habitat.

The primary objective of the survey was to determine whether any rare or endangered plant species were present on the parcels. The secondary objectives were to compile a plant species list that would include the all plant species encountered, to characterize the general ecosystems present, and to develop recommendations related to preservation or management of certain areas or vegetation types.

Vegetational Context

The property is located in an area known as Panaewa, near the southeast corner of the ahupua`a of Waiakea, at an elevation of about 100 feet above mean sea level (see Fig. 1). The original

vegetation of all of Waiakea was Lowland Wet Forest[1], but much land has been cleared for farming, residences, and urban development. A large extent of mostly uncleared forest occupies a swath of land roughly two miles wide, extending from the edge of the Hilo urban area (marked by the airport, quarry, and drag strip) about three miles northeast to the coast. Although this forest has never been extensively cleared, it has been significantly invaded by alien species in most locations. It typically contains a scattered canopy layer of `ohi`a lehua (*Metrosideros polymorpha*) with a variable understory consisting of combinations of the natives hala (*Pandanus tectorius*), uluhe (*Dicranopteris linearis*) hapu`u (*Cibotium chamissoi* and *C. splendens*), and sometimes kopiko (*Psychotria hawaiiensis*), lama (*Diospyros sandwicensis*), and kolea (*Myrsine spp.*), along with the aliens wai`awi or strawberry guava (*Psidium cattleianum*), melochia (*Melochia umbellata*), melastoma (*Melastoma candidum*), and often many others. The alien component in the understory may be so dense as to form the true canopy, through which `ohi`a trees protrude.

Vegetation and Flora of the Subject Property

The study site basically shows two vegetation types, one found on the portion used in the recent past for agriculture (about 40 percent of the property area), and another portion that is relatively undisturbed (about 60 percent) (see Fig. 1). A small extent of miscellaneous disturbed vegetation is present around some of the property edges.

The formerly disturbed land now contains a secondary forest dominated by melochia, which forms an upper canopy averaging 20 to 40 feet high. The understory is dominated by alien shrubs, herbs and grasses, although some native sedges, grasses and ferns are also present.

The undisturbed area can be characterized as dominated by wai`awi, which forms a dense canopy layer of 15-25 feet, broken by scattered individuals of the native `ohi`a, which are usually 30-50 feet high. In some areas melochia overtops the wai`awi. Melastoma is also a common canopy element. Isolated clusters and individuals of hala are also scattered in the canopy. Other native trees, such as lama, hapu`u, kopiko, and kolea, are uncommon but sometimes present in clefts and outcrop ridges. Small patches dominated by uluhe fern are scattered throughout this forest type.

The field survey included a systematic search for less common elements of healthy native lowland forests. Somewhat surprisingly, no individuals of the *Peperomia*, *Freycinetia*, or *Alyxia* genera were observed. This is apparently related to the extreme domination of the understory by invasive alien species. Other examples of this forest type nearby frequently contain species from some of these genera.

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[1] see Gagne, W., and L. Cuddihy. 1990. "Vegetation," pp. 45-114 in W.L. Wagner, D.R. Herbst, and S.H. Sohmer, eds., *Manual of the Flowering Plants of Hawaii*. 2 vols. Honolulu: University of Hawaii Press.

A complete list of all species observed on the property is attached as an Appendix to this report.

Threatened and Endangered Species

As discussed above, a principal objective of the survey was to search for species classified as listed, proposed or candidate threatened and endangered species by the U.S. Fish and Wildlife Service. None were detected on the property, and it is unlikely that any are present.

Recommendations

The basically alien nature of the vegetation means that the property has fairly low value in terms of native species or ecosystem conservation. However, many of the individuals and small groves of native trees have aesthetic value, and there is some potential for forest restoration. Inasmuch as the property is being considered as a campus for Native Hawaiian children, who may have interest in and derive benefit from forest restoration activities, the following ideas are recommended for consideration:

- Preservation of patches of the wai`awi/`ohi`a forest for landscaping, particularly where the understory contains hala, uluhe, and/or other native trees.
- Experimental native forest restoration programs to remove aliens and encourage native tree growth in the wai`awi/`ohi`a forest. The non-profit organization Ha`ola Inc (959-2726), has experience in restoration in the Panaewa area.

KSBE WAIAKEA BOTANICAL ASSESSMENT
SPECIES LIST

Pandanaceae

**Pandanus tectorius* S. Parkinson ex

Poaceae

Andropogon virginicus L.
Brachiaria mutica (Forssk.) Stapf
Oplismenus hirtellus (L.) Beauv.
Panicum maximum Jacq.
Paspalum conjugatum Bergius
Pennisetum purpureum Schumach.
Rhynchelytrum repens (Willd.) Hubb.
Sacciolepis indica (L.) Chase
Schizachyrium condensatum (Kunth) Nees
Themeda villosa (Poir.) A. Camus

Zingiberaceae

Hedychium sp. (material small and sterile)

DICOTYLEDONS

Asteraceae

Ageratum conyzoides L.
Conyza bonariensis (L.) Cronq.
Erechtites hieracifolia (L.) Raf. ex DC
Pluchea odorata (L.) Less.
Wedelia trilobata (L.) Hitchc.

Begoniaceae

Begonia sp.

Buddleiaceae

Buddleia asiatica Lour.

Caryophyllaceae

Drymaria cordata (L.) Willd. ex Roem.
Silene gallica L.

Combretaceae

Terminalia myriocarpa Van Heurck & Mull. Arg.

Ebenaceae

**Diospyros sandwicensis* (A. DC) Fosb.

FERNS

Dicksoniaceae

**Cibotium splendens* (Gaud.) Krajina
**Cibotium chamissoi* Kaulf.

Gleicheniaceae

**Dicranopteris linearis* (Burm.) Underw.

Polypodiaceae

Blechnum occidentale L.
Cyclosorus dentatus (Forsk.) Ching
Microsorium scolopendria (Burm.) Copel
Nephrolepis exaltata (L.) Schott.
**Pleopeltis thunbergiana* Kaulf.
**Sphenomeris chusana* (L.) Copel

ANGIOSPERMS

MONOCOTYLEDONS

Agavaceae

Cordyline fruticosa (L.) A. Chev.

Araceae

Monstera deliciosa Liebm.
Philodendron sp. (sterile specimen)

Commelinaceae

Commelina diffusa N. L. Burm.

Cyperaceae

Cyperus halpan L.
Cyperus sp. (seedling to small to identify)
**Machaerina mariscoides* (Gaud.) J. Kern
**Scleria testacea* Nees

Dioscoreaceae

Dioscorea sp. (seedling)

Orchidaceae

Arundina graminifolia (D. Don) Hochr.
Phaius tankervilleae (Banks ex L'Her.) Blume

Euphorbiaceae

Macaranga mappa (L.) Mull. Arg.

Fabaceae

Chamaecrista nictitans (L.) Moench
Desmodium cajanifolium (Kunth) DC
Desmodium sandwicense E. Mey.
Desmodium triflorum (L.) DC
Mimosa pudica L.

Lamiaceae

Hyptis pectinata (L.) Poit.

Lauraceae

Persea anerucana Mill.

Magnoliaceae

Michelia alba DC

Melastomataceae

Clidemia hirta (L.) D. Don
Heterocentron subtriplinervium (link & Otto) A. Braun & C. Bouche
Miconia calvescens DC
Melastoma malabathricum L.

Moraceae

Cecropia obtusifolia Bertol.
Ficus microcarpa L. fil

Myrsinaceae

**Myrsine lessertiana* A. DC

Myrtaceae

**Metrosideros polymorpha* Gaud.
Psidium cattleianum Sabine
Psidium guajava L.

Onagraceae

Ludwigia octovalvis (Jacq.) Raven

Passifloraceae

Passiflora foetida L.

Rosaceae

Rubus rosaefolius Sm.

Rubiaceae

Hedyotis biflora (L.) Lam
Paederia scabens (Lour.) Merr.
**Psychotria hawaiiensis* (A. Gray) Fosb.

Sterculiaceae

Melochia umbellata (houtt.) Stapf

Ulmaceae

Trema orientalis (L.) Blume

Urticaceae

Pipturus albidus (Hook. & Arnott) A. Gray

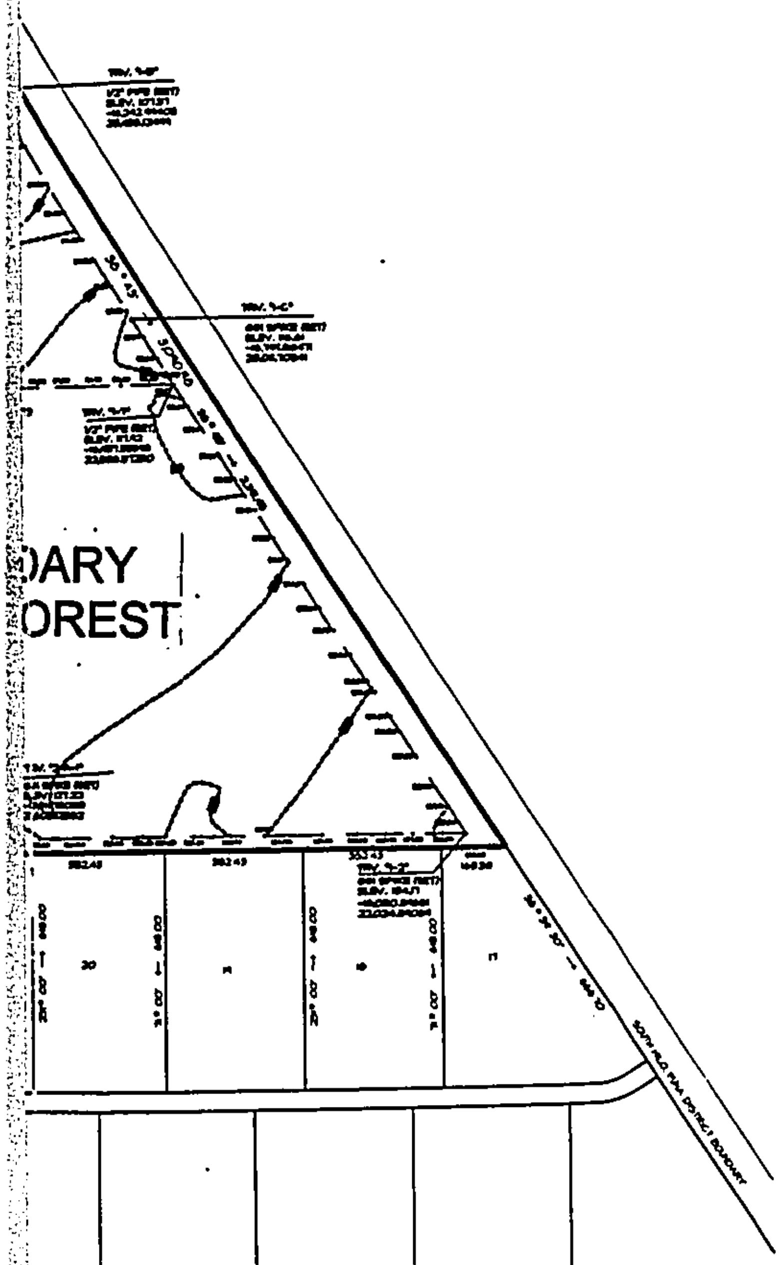
Verbenaceae

Stachytarpheta jamaicensis (L.) Vahl

* Denotes Indigenous taxons
All unmarked taxons are exotic

The nomenclature for the angiosperms follows "Manual of the Flowering Plants of Hawaii" by Wagner, Herbst and Sohmer, except for the weedy species not listed it that text. The nomenclature for these species were taken from several sources.

The nomenclature for the ferns follows several different texts.



FIGURE

OPPORTUNITIES & CONSTRAINTS
EAST HAWAII CAMPUS

KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE — HILO, HAWAII

AREA SCALE: 2 Acres — NORTH — LINEAL SCALE (FEET): 200 100 0 200 400 800

PREPARED BY:
IMATA AND ASSOCIATES, INC.
1750 KALAKAUA AVENUE SUITE 115
HONOLULU, HAWAII 96826

DRAG RACING COMPLEX
70.659 ACRES

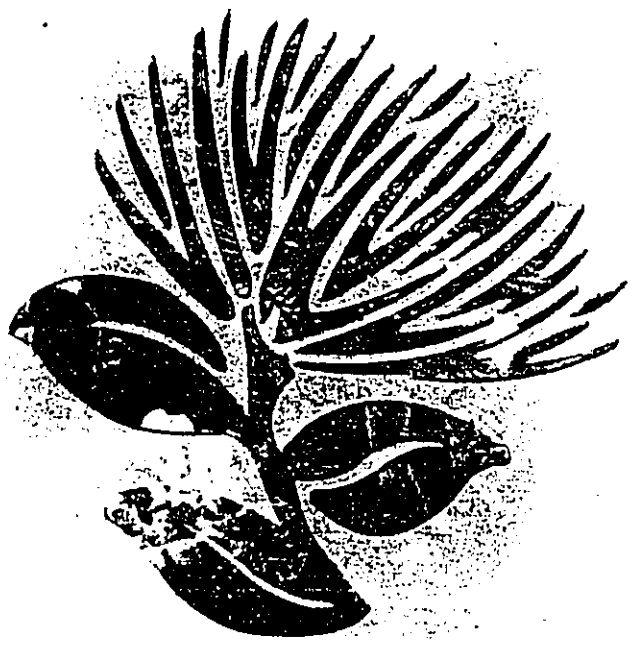
WAI`AWI/`OHI`A
FOREST

LOT 1
176.00 ACRE

SECONDARY
ALIEN FOREST

ELAMA STREET

MAUKAI STREET



Appendix B

Biological Reconnaissance Survey

PANAEWA SITE, EAST HAWAII CAMPUS
WILDLIFE SURVEY
WAIAKEA, SOUTH HILO, HAWAII

Prepared for:
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March 19, 1999

1.0 Introduction

A wildlife survey was conducted on March 7-9, 1999 on a forested parcel of land being considered for the East Hawaii Campus by Kamehameha Schools Bernice Pauahi Bishop Estate in Panaewa on the island of Hawaii. The purpose of the survey was to provide an assessment of the wildlife on the property, and particularly to identify any native or threatened and endangered species.

2.0 Description of Property

The survey was conducted on a 73 ha (approximately 176 acres) forested lot identified on the Tax Map Kep as 2-1-13:154. The site is located between Panaewa Farm Lots Phase 3 to the west, the boundary line between the South Hilo and Puna Districts to the southwest, a drag racing complex to the east, and a Department of Hawaiian Home Lands (DHHL) parcel to the north. The elevations on the proposed site ranged ranged from 33 to 44 m above sea level. Native rainforest vegetation was present on the northern two-thirds of the parcel and on the adjacent DHHL parcel to the north. Sparse ohia (*Meterosideros polymorpha*) was the dominant tree, with dense growths of the introduced strawberry guava (*Psidium cattleianum*) forming a secondary canopy and tangles of the native uluhe (*Dicranopteris linearis*) covering much of the open understory. According to 1992 aerial photography, the native forest in the southern portion of the property was cleared for crops. The area has since been covered by stands of the introduced tree melochia (*Melochia umbellata*) that have grown up to 20 to 30 m in height, with an understory of fern and grasses. The parcel had been bulldozed recently to create transects. Most of the Panaewa Farm Lots to the west were still in forest, only a few had been cleared for residences. Land to the southwest of South Hilo and Puna boundary line was in flower and palm tree crops. The drag race complex provided grassy field habitat to the north.

3.0 Method

A site inspection in the early afternoon was made on March 7, 1999 for orientation purposes. The high density of understory vegetation precluded efficient survey routing through the forest vegetation. The bulldozed transects were therefore used to access the parcel and ten count stations were established at selected intersections. The use of the transects allowed for an even distribution of sampling throughout the

property. Opportunistic observations were made while walking along the transects. The counts were conducted from 06:54 to 09:38 hrs. All birds seen and heard were recorded. Searches for flying bats during the dawn period station counts were made and incidental observations of wildlife were made while walking between count stations. Evening observations from 18:00 to 19:00 hrs. were made specifically for flying owls and bats on March 9, 1999 by driving along the Elama Road and making stand observations in some adjacent cleared house lots.

4.0 Results

Introduced Birds

There was some light rain before the counts and during part counts for stations 4 to 5 on March 8, 1999. The weather became clear and sunny for the remaining count stations. Only nine species of birds were encountered during the survey (Table 1). No native species were found.

Japanese White-eye (*Zosterops japonica*) - Japanese white-eyes were the most abundant bird found on the parcel. They were detected on every station. White-eyes were often observed in the ohia foliage probably foraging for insects. White-eyes are ubiquitous and can be found in many different habitats. They will also feed on nectar and fruit and do well in just about any land use having suitable vegetative components.

Northern Cardinal (*Cardinalis cardinalis*) - The northern cardinals prefer dense stands of forest and shrub. They were very vocal. Perhaps due to the clearing of the forest along the transects, there appeared to be a great deal of interaction between males. Pairs of cardinals were common. Cardinals were the second most abundant species on the property, occuring on every count station.

Spotted Dove (*Streptopelia chinensis*) - Spotted doves probably used the trees on the parcel primarily for roosting prior to establishment of the transects and foraged in nearby farm and house lots or along the roads. During the survey spotted doves and other species were also found on the ground foraging along the newly bulldozed transects.

Common Myna (*Acridotheres tristis*) - Common mynas were relatively abundant, transiting the parcel as they moved to more open areas surrounding the property.

Zebra Dove (*Geopelia striata*) - Zebra doves were using the cleared transects to forage on the ground. They also would have used the parcel primarily as roosting and nesting habitat, foraging in nearby farm and house lots and along roads.

Melodious Laughing Thrush (*Garrulax canorus*) - The melodius laughing thrush is also called the hwamei. These birds inhabit very dense forested lands. It had a very high frequency of occurrence and relatively high numbers. They were very vocal but could only be seen when they crossed roads or transects.

House Finch (*Carpodacus mexicanus*) - House finches are more likely to occur in grasslands or edges of forests. Nonetheless, perhaps due to the grass fields and open farm and house lots nearby, house finches or linnets were fairly common on the parcel, occuring on most of the stations.

Chestnut Mannikin (*Lonchura punctulata*) - Chestnut mannikins were observed in grasses or flying overhead. The parcel did not present sufficient habitat for the mannikin, although in later months as grasses grow along the cleared transects, more mannikins will probably be present.

Ring-necked Pheasant (*Phasianus colchicus*) - The single ring-necked pheasant cock was heard crowing from off the property. The vegetation on the parcel was much too dense and heavily wooded to support ring-necked pheasants, but the surrounding areas were suitable.

Comments on Native Species

No native honeycreepers (family Drepanididae) or other native forest bird species were found on the site. The current elevational range of honeycreepers, like the amakihi (*Hemignathus virens*), on the island of Hawaii is now generally above 650 m above sea level (Kern and Van Riper III 1984). While the some of the native habitat is still present in the lowlands, it is generally accepted that stresses brought about by introduced plants, animals, diseases and parasites have eliminated lowland populations of native forest birds (Scott et.al. 1988).

Pueo or Short-eared Owl (*Asio flammeus*) - The pueo is a native short-eared owl that inhabits forests and grasslands on all the islands. Only the population on Oahu is listed as endangered by the state of Hawaii. No owls were observed during the survey, however, the habitat of the area could support foraging pueo and the introduced common barn owl. Pueo nest on the ground, in grasses, therefore the parcel does not have pueo nesting habitat.

Hawaiian Hawk (*Buteo solitarius*) - The Hawaiian hawk or *'Io* occurs only on the island of Hawaii and is currently a federally listed endangered species. It has the ability to feed and nest in forests of introduced species and feed on introduced animals. It still occupies 95 percent of its historic range (Scott et.al. 1988) and is commonly seen around Hilo (HAS 1996). No 'io were observed during the wildlife survey of the parcel, however, the habitat and area are suitable for supporting Hawaiian hawks.

Hawaiian Hoary Bat (*Lasiurus cinereus semotus*) - The Hawaiian hoary bat is a federally listed endangered species. The habitat in the area of the proposed site is suitable for bats. No bats were observed during the bird counts or the dusk observation period on March 9, 1999, however, March and April appear to be the months that bats are least likely to be encountered according to historical records (Kepler and Scott 1990). Most bat sightings occur from August to December. Bats are commonly seen below 500 m elevation and in introduced vegetation. They are normally not present in closed canopy forests as is present on much of the parcel but they are frequently seen along edges of these forests, among exotic trees, and in orchards. Bats occur island-wide and have been sighted from Hilo to Kilauea. Fewer bats occur on this wet side of the island of Hawaii than they do on the drier leeward side of the island (Kepler and Scott 1990).

Mammals

Feral pig (*Sus scrofa*) tracks were found along the bulldozed transects. Due to the extremely dense stands of strawberry guava, it is doubtful that the pigs were able to use much of the native forest portion of the property having strawberry guava before the transects were bulldozed. The pigs probably range throughout the mosaic of native and introduced forest stands, adjacent croplands and house lots in the area.

Small Indian Mongoose (*Herpestes auropunctatus*) - The mongoose was observed on two occasions while traveling along the transect and during a station count. Both individuals appeared large, but it is not possible to differentiate sexes in the field. The area is very suitable for mongoose that use dense foliage as cover.

Cat (*Felis cattus*) - A cat scat was found on one of the transects.

Feral Dogs (*Canis familiaris*) - Free-ranging dogs were encountered in the area, but not on the proposed site. Most of the dogs probably belong to people, but they roam unrestricted. At least six were seen along Elama Road.

Rodents - The rat (*Rattus* spp.) and house mouse (*Mus musculus*) probably occur on site. Trapping is required to verify their presence, but they are not considered important in an environmental analysis because they are introduced commensal species.

5.0 Conclusions

The property and adjacent parcels support a native ohia forest, however, as expected, no native forest birds were observed on site. No threatened or endangered wildlife were observed. Although the pueo, the endangered Hawaiian hawk and endangered hoary bat were not observed during the survey, the parcel is within current known distributions of these species populations and the habitat on site and in adjacent parcels could support the species. Neither bat roost sites or hawk nesting trees were found during the survey. Pueo nest on the ground, usually in grass and, therefore, the parcel is not suitable for its nesting, but the adjacent parcels may be. It is not possible, given the limited observations made during the current survey to make a definitive statement regarding these three species' occurrence in the area. What is known about these species, however, is that they have been able adapt to introduced vegetation and animals. The clearing of introduced forest habitat in these lowlands may have a positive impact on increasing foraging habitats of local populations of bats, owls and the hawk if roost sites are not destroyed and nesting trees are not cut down.

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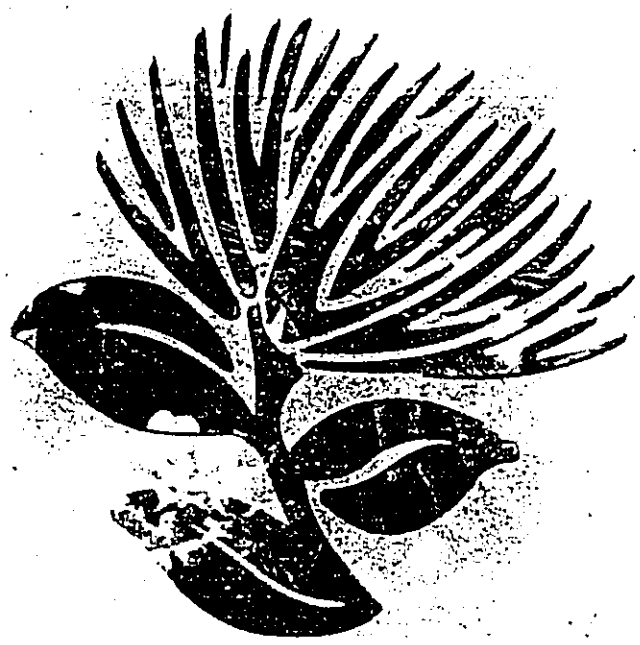
Table 1. Panaewa Site for East Hawaii Campus, results from 10 count stations March 8, 1999.

Species	Total number	Average per station	Frequency (no. of stations)
Ring-necked pheasant	1	0.01	1
Chestnut mannikin	5	0.05	3
House finch	18	1.8	9
Melodius laughing thrush	20	2	9
Zebra dove	23	2.3	8
Common myna	25	2.5	7
Spotted dove	32	3.2	10
Northern cardinal	41	4.1	10
Japanese white-eye	53	5.3	10



Appendix C

Archaeological Inventory Survey

SCS Project Number 168-1

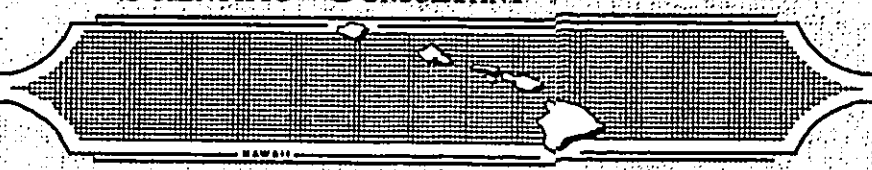
ARCHAEOLOGICAL INVENTORY SURVEY OF THE 176-ACRE PANA`EWA CAMPUS SITE, WAIAKEA AHUPUA`A, HILO DISTRICT, ISLAND OF HAWAI`I (TMK: 2-1-13: 154)

Prepared by:
Mike T. Carson, M.A.

March 1999

Prepared for:
PBR Hawaii, Inc.

SCIENTIFIC CONSULTANT SERVICES, Inc.



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ABSTRACT

As agreed with Vincent Shigekuni representing PBR Hawaii, Scientific Consultant Services (SCS) has conducted an archaeological investigation of the 176-acre Pana`ewa Campus Site (TMK:2-1-13:154) in the Hilo District, Island of Hawai`i. Investigation included archaeological Inventory Survey to identify the presence or absence of archaeological sites in the project area, research in ethnohistoric records, and research in previous relevant archaeological work. Archaeological Inventory Survey has determined that no significant archaeological sites or features are present in the project area of the Pana`ewa Campus Site. Additional research has formulated an assessment of past traditional land use in the project area. No further archaeological work is recommended for this land parcel.

The archaeological investigation was conducted by Field Director Mike T. Carson with Field Technician John Risedorf, under the general direction of Principal Investigator Dr. Robert L. Spear. Consultation with the client and with the Hawaii State Historic Preservation Office was instrumental in completing this investigation and the resulting report.

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INTRODUCTION

As agreed with Vincent Shigekuni representing PBR Hawaii, Scientific Consultant Services (SCS) has conducted an archaeological investigation of the 176-acre Pana`ewa Campus Site (TMK: 2-1-13:154) in the Hilo District, Island of Hawai`i (Figure 1). This report is intended to satisfy requirements of an archaeological Inventory Survey for the project area, including information about the physical setting, traditional and historic setting, archaeological setting, research design, results of investigation, and conclusions. This investigation has determined that no significant archaeological sites or features are present in the project area of the Pana`ewa Campus Site. No further archaeological work is recommended for this land parcel.

PHYSICAL SETTING

LOCATION

The project area is the Pana`ewa Campus Site, occupying 176 acres of the Waiakea Ahupua`a in the Hilo District of Island of Hawai`i (TMK: 2-1-13: 154). The project area is situated about 6.5 kilometers inland from the ocean on the windward side of Hawai`i Island. The elevation if this land parcel varies from 30 m amsl to 40 m amsl (meters above mean sea level). In this setting, access to marine resources is restricted, but a variety of inland resources are present.

WATER SOURCES

The microclimate of the project area is humid and warm, and most rainfall occurs during the winter months. Median annual rainfall is 31,750 mm to 38,100 mm, providing an abundant and predictable supply of fresh water for a variety of agricultural practices.

The natural drainage flow of the project are is a sheet flow pattern in the northeasterly direction along a gentle (1 to 2 percent) slope. Numerous small stream beds can be observed. No flood zones or wetlands are present in the project area, but thin soil and sediment deposits are often saturated during periods of heavy rainfall. The permeability of underlying basalt bedrock is sufficient to alleviate any flooding hazards.

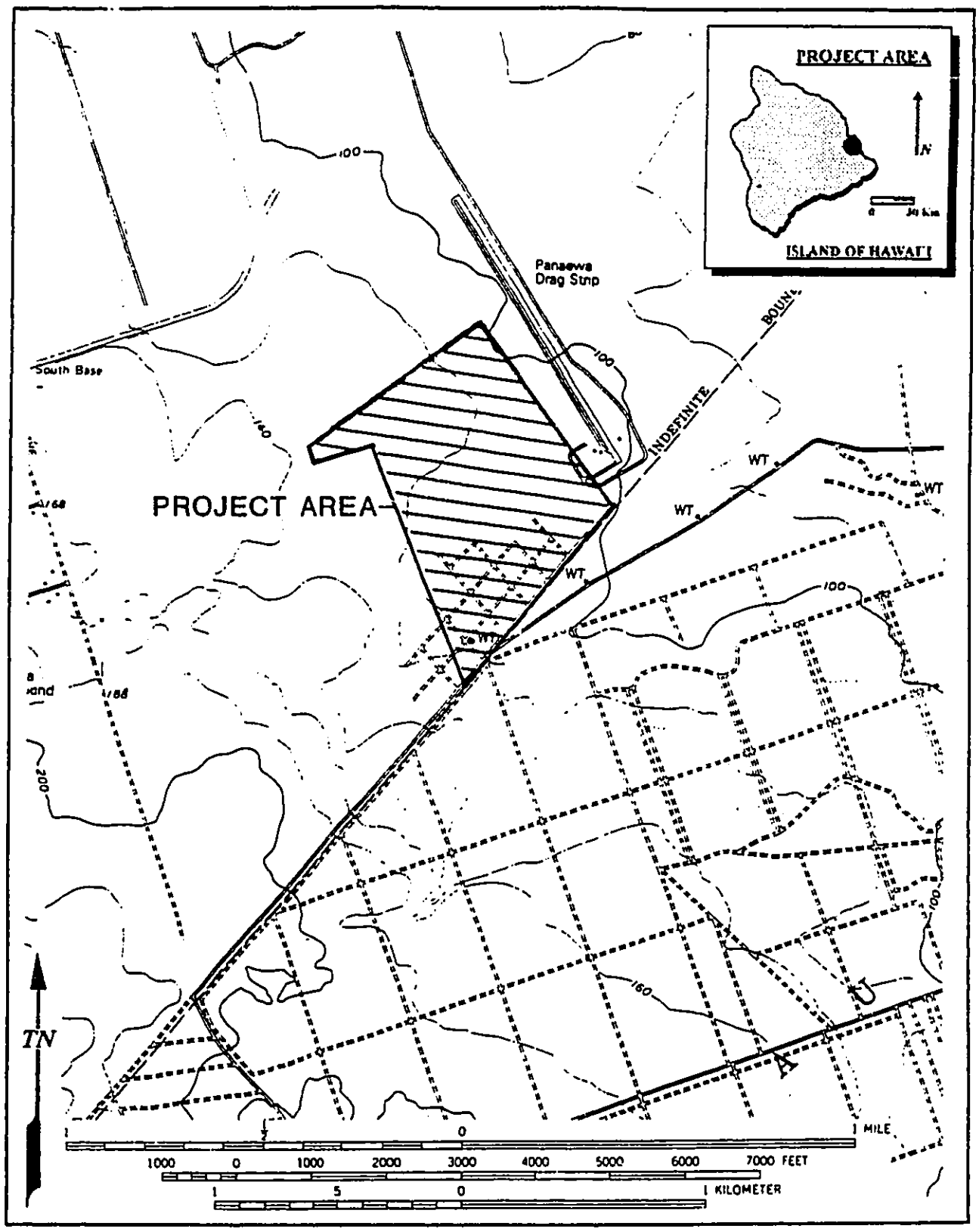

Figure 1: USGS Hilo Quadrangle Showing Project Area.

The availability of water and the low risk of inundation may be considered suitable for traditional Hawaiian agricultural and habitation practices. However, these practices may or may not have occurred in the project area, as was further clarified by the current archaeological investigation.

GEOLOGY AND PEDOLOGY

The geology of the project area is described as Ka`u Basalt. Geologic formations include lava flows, vent deposits, littoral deposits, and tephra-fall deposits. The basalt material is described as tholeitic with a component of rare transitional basalt of the Mauna Loa Volcano.

Lava flows in the project area are classified as predominantly Pahoehoe Lava Flows with limited occurrences of `A`a Lava Flows (Foote *et al.* 1972). Exposed outcrops of these lava flows occupy approximately 25 percent of the project area, whereas the majority of the lava flows are covered by soil or sediment. The Pahoehoe is billowy in form, and they contain several hummocks and pressure domes. Field research found many surface blisters, where pressure domes had collapsed. Only very few and spatially limited occurrences of `A`a were identified.

Soil classification of the project area has identified two soil types, including Keaukaha Extremely Rocky Muck and Papa`i Extremely Stony Muck (Foote *et al.* 1972). Both of these soil types are thin (generally 0.15 m to 0.25 m in thickness) and well drained. The Keaukaha material overlies Pahoehoe bedrock, and the Papa`i material overlies `A`a bedrock.

Two observations about the geology and pedology were important for the current archaeological investigation. First, the soil characteristics are appropriate for a variety of traditional Hawaiian agricultural practices. Second, the numerous collapsed lava blisters could have been utilized for various habitation activities. However, no agricultural features were found, and none of the collapsed surface blisters were found to have been modified by human agency.

VEGETATION

The project area was found to be overgrown (Figure 2). Vegetation overgrowth was greatest in areas where bulldozing activity was evident. Vegetation has grown over bulldozed

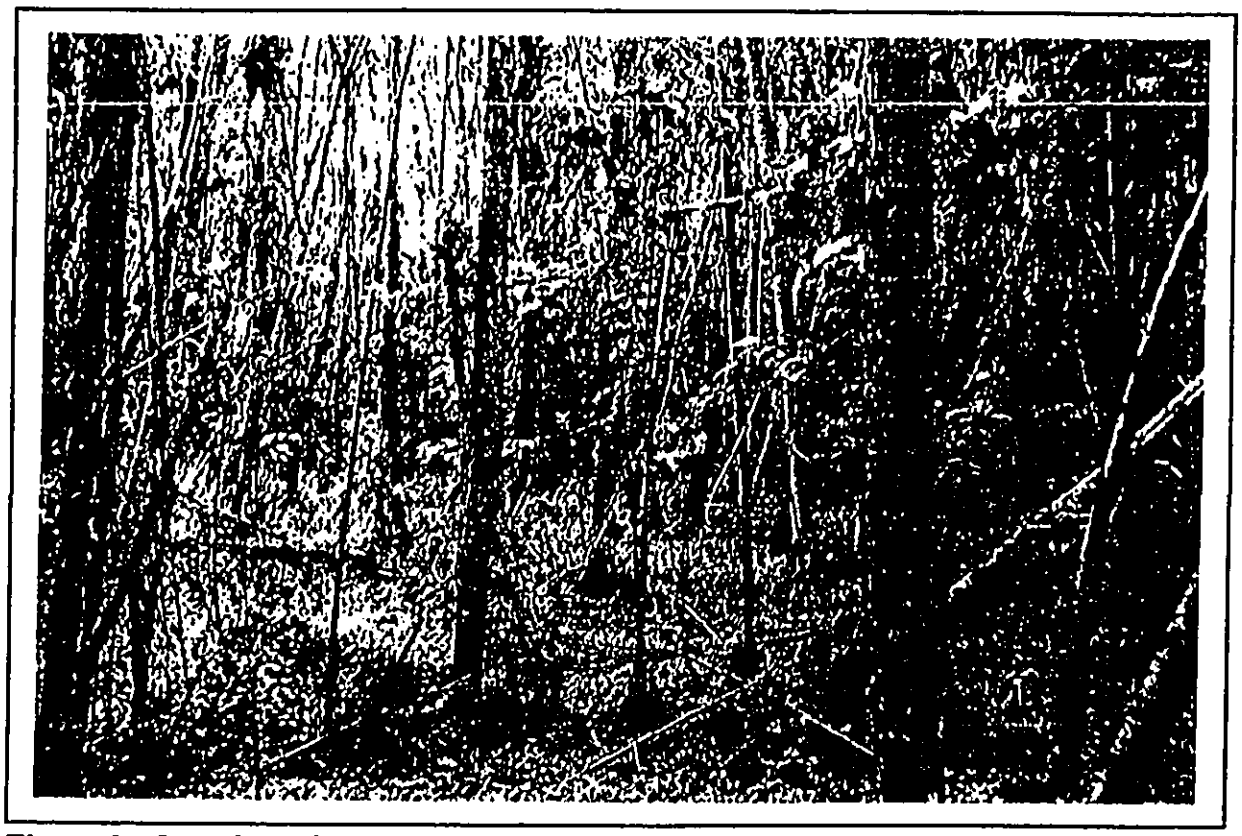

Figure 2: Overview of Vegetation Growth in the Project Area. View to East.

material, and the present growth stages of this vegetation appear to have begun less than 50 years ago.

Observed vegetation included mostly common sword fern (*kupukupu* or *Nephrolepis exaltata*) and strawberry guava (*waiawi-`ula`ula* or *Psidium cattleianum*). A few stands of *`ohi`a* (*Metrosideros polymorpha*) and hibiscus (*hau* or *Hibiscus tiliaceus*) were also observed, as were some isolated occurrences of ti plant (*ki* or *Cordyline fruticosa*) and screw pine (*hala* or *Pandanus tectorius*).

Other than the strawberry guava, the observed vegetation was found to be consistent with commonly seen indigenous Hawaiian plants. No vegetation growth was found to be indicative of past traditional Hawaiian agricultural fields, gardening areas, or other land use practices.

TRADITIONAL AND HISTORIC SETTING

Traditional Hawaiian settlements in the Hilo District were centered around Hilo Bay. These settlements included numerous and extensive permanent habitation complexes, religious monuments, and chiefly residences. This center of activity is thought not to have affected the project area, located several kilometers away from Hilo Bay. The project area relates more closely to Waiakea Bay, but in any case the project area is located far inland from the coast. No permanent habitation is expected in the project area. However, a limited amount of agricultural practices may have been important in the project area.

Traditional agricultural practices in Waiakea Ahupua`a (the location of the project area) are described by Handy and Handy (1972: 538-539). These practices primarily included two cultivation techniques, found to correlate with ecological variables. In the marshes around Waiakea Bay, taro (*kalo* or *Colocasia esculenta*) was planted in a way known as *kanu kipi*, involving the creation of long mounds built to raise the crops above the water level of the marsh. Further inland, such as in the project area, dryland cultivation of taro was practiced in places where sufficient soil could be found.

Based on early historic accounts of the lands between Hilo and Kumukahi Point, McEldowney (1979) proposed that traditional land use followed an ecological zonation model. Five ecological zones were characterized primarily by differences in elevation and implied changes in resources such as water availability, soil regimes, birds, and plants. The five zones are described as coastal (0 to 15 m amsl), upland agriculture (15 to 490 m amsl), lower forest (490 to 820 m amsl), rainforest (820 to 1640 m amsl), and subalpine/montane (1640 + m amsl). In this model, the project area (at 30 to 40 m amsl) falls in the lower portion of the "upland agricultural zone." McEldowney (1979) interprets land use in this zone as having involved extensive dryland cultivation, whereas habitation would have been centered at the lower (coastal) zone.

Although agricultural practices were possible in the project area, more productive agricultural lands were located further inland. In this scenario, the project area seems to occupy a space between coastal habitation and inland agricultural zones. A limited number of habitation features might be expected in the project area, due to the location of the project area near the interface of the "coastal" and "upland agricultural" zones.

Historic land records are often helpful to reconstruct patterns of past land use, but unfortunately this strategy was not productive for the project area. No land claims are registered for the project area, and therefore no information is available about claims to past use of the land. The project area was in the past leased to AMFAC Agribusinesses, Inc., but records are unclear as to whether or not the project area was significantly altered by modern cultivation practices (Patrick McCoy, personal communication). If an agricultural industry was installed in the project area, then most previously existing archaeological sites (if such did indeed exist) would most likely have been modified or destroyed. The absence of land claims in the project area may be interpreted as an indication that past traditional land use was not as significant as in other areas.

ARCHAEOLOGICAL SETTING

Prior to the current investigation, no previous archaeological investigation has been conducted in the project area. Traditional land use patterns indicate, though, that the project area may have been used for a limited amount of dryland agricultural practices. The primary cultivated crop was probably taro (*kalo* or *Colocasia esculenta*), grown with dryland techniques. Other traditionally important inland resources possibly included timber and birds.

An examination of traditional land use allows the formulation of expected archaeological patterns in the project area. McEldowney (1979) describes possible site types as including scattered houses and adjacent garden and tree plots, utilized lava tubes, and agricultural features. Furthermore, McEldowney (1979) describes the distribution of sites as including widespread dryland agricultural features across the landscape, whereas wetland features would have been centered around streams.

If agricultural practices were prevalent in the project area , then the resulting archaeological record would be expected to include several mounds, modified outcrops, and terraces as well as possibly some land division walls. The extent of formalization of agricultural fields would be expected to parallel the degree of intensity of the associated agricultural practices. The lack of traditional land claims in the project area indicates that the intensity of past activity here was rather low when compared to other areas. In this setting, access to the

project area probably took place on a recurrent temporary basis, implying that permanent habitation took place elsewhere and not in the project area. However, a few temporary habitation shelters might be expected in the form of terraces, C-shaped wall enclosures, or modified lava blister cavities.

RESEARCH DESIGN

The primary objective of the current project was to identify possible archaeological sites in the project area and to assess their significance. Archaeological fieldwork involved thorough survey of the project area, inspecting the land for indications of archaeological sites, features, and other products of human agency. The entire project area was examined by two field workers, walking across the terrain in transects 5.00 m apart. All identified lava blister cavities were thoroughly inspected for signs of artificial modification and for the presence of possible cultural deposits. No archaeological sites were encountered, so no other work tasks were necessary.

RESULTS OF INVESTIGATION

No archaeological sites were found in the project area, but many signs of modern land-alteration were evident. The southern half of the property was found to have been extensively bulldozed to accommodate numerous unimproved dirt roads cross-cutting this portion of the property roughly in a grid pattern. Mounds of rock and dirt are visible along both sides of these roads as well as around other areas that were previously bulldozed (Figure 3). Vegetation has grown over these bulldozed piles and throughout the project area. Judging by the present growth stages of this vegetation, the present overgrowth began less than 50 years ago.

In the northern half of the property, bulldozing was found to be much less extensive than in the southern portion. Also, the vegetation is much thicker here than in the southern half of the property. Here, the landscape is characterized by undulating terrain and several collapsed *pahoehoe* surface blisters. None of the surface blisters have been modified by human agency. Likewise, no parts of the undulating terrain show any signs of artificial landscape modification.

Figure 3: Example of Bulldozed Land Disturbance in the Project Area. View to North.

CONCLUSIONS

Archaeological investigation found no archaeological sites in the project area. If any sites existed here in the past, then they were probably modified or destroyed by past land alteration activities such as bulldozing and the creation of dirt roads. No further archaeological work is recommended.

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Appendix D

Traffic Assessment Report

▸TRAFFIC ASSESSMENT REPORT

KAMEHAMEHA SCHOOLS
BERNICE PAUAHI BISHOP ESTATE

EAST HAWAII CAMPUS

▸HILO, HAWAII

▸prepared for:

PBR Hawaii

Kamehameha Schools Bernice Pauahi Bishop Estate

▸prepared by:

Julian Ng, Incorporated
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▸ April, 1999

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Traffic Assessment Report
Kamehameha Schools Bernice Pauahi Bishop Estate East Hawaii Campus
Hilo, Hawaii

April, 1999

Introduction

The Kamehameha Schools Bernice Pauahi Bishop Estate (KSBE) has proposed to construct a new campus in the Panaewa area of Hilo. The 176-acre site is located approximately 4½ miles from downtown Hilo. An initial development to serve 200 students in kindergarten (K) through grade 8 has been proposed. The campus, however, will be master-planned for 1,710 students in grades K-12. The site would have its primary access across Mamaki Street at Elama Road.

A traffic study was done to analyze the traffic impacts of the proposed development of the initial development for 200 students. The potential impacts of ultimate development of the site have also been identified. This report summarizes the findings of the traffic study. The analyses included estimates of peak hour traffic volumes without the project and of the changes in traffic volumes due to the proposed project; peak hour conditions on the affected streets were determined and any needed mitigation measures have been identified.

Peak hour conditions at significantly affected intersections were evaluated. Operating conditions are described by a level of service (LOS) which is determined using analyses methods described in the *Highway Capacity Manual*[1]. At unsignalized intersections, the volumes of the uncontrolled movements affect the capacity available for the other movements which must yield or stop. The analyses of unsignalized intersections used the procedure from the December 1997 update of the *Highway Capacity Manual* to identify average delays and levels of service for each controlled movement. At the signalized intersection of Kanoelehua Avenue and Puainako Street, planning level analyses provided a comparison of future without project and future with project conditions.

The Levels of Service (LOS) are defined using the letters A through F; criteria from the December 1997 update of the *Highway Capacity Manual* are:

	Average Delay (seconds per vehicle)	
LOS	Unsignalized Intersection	Signalized Intersection
A	≤10 seconds	≤10 seconds
B	>10 and ≤15 seconds	>10 and ≤20 seconds
C	>15 and ≤25 seconds	>20 and ≤35 seconds
D	>25 and ≤35 seconds	>35 and ≤55 seconds
E	>35 and ≤50 seconds	>55 and ≤80 seconds
F	>50 seconds	>80 seconds

[1] Transportation Research Board, National Research Council, *Highway Capacity Manual - Third Edition*, Washington, D.C., 1994, and as updated, December 1997.

Existing Traffic Conditions

The project site is located in the Panaewa area of Hilo, approximately 4½ miles southeast of downtown Hilo (Exhibit 1). The site is located in an area which consists primarily of agricultural lots that are at least 1 acre in size. Volcano Highway is a divided four-lane highway with a posted speed limit of 55 miles per hour; other roadways in the area are two-lane undivided roadways with operating speeds between 20 miles per hour and 35 miles per hour.

Traffic counts taken by the State Department of Transportation show 24-hour two-way volumes of 30,000 vehicles on Volcano Highway on *weekdays in September and October*, 1998. Peak hours typically occurred 7:15 to 8:15 AM and 4:45 to 5:45 PM. Table 1 summarizes the daily and peak hour volumes from the count.

Table 1
STATE TRAFFIC COUNT DATA
State Route 11

counts taken:	September, 1998		October, 1998	
direction of travel	south	north	south	north
Kanoelehua Avenue, south of Puainako Street				
24-hour weekday	15,000	17,255	13,076	15,712
AM Peak Hour	522	2,320	467	2,515
PM Peak Hour	1,495	1,052	1,411	986
Kanoelehua Avenue, north of Makalika Street				
24-hour weekday	n/a	n/a	13,277	17,661
AM Peak Hour	n/a	n/a	473	2,312
PM Peak Hour	n/a	n/a	1,200	1,342
Mamalahoa Highway, south of Kilauea Avenue				
24-hour weekday	16,968	17,064	15,414	16,488
AM Peak Hour	795	2,611	554	2,120
PM Peak Hour	1,793	1,229	1,388	1,245

Source: State of Hawaii, Department of Transportation, Highways Division

Future Traffic Conditions

Total daily traffic on Mamalahoa Highway between Hilo and Keaau has been increasing at an average rate of about 1½ percent per year. Peak hour volumes, however, have been stable and existing peak hour volumes were assumed to represent future volumes on Mamalahoa Highway. Future traffic on the local streets were estimated assuming full buildout of the agricultural subdivisions. Exhibit 2 shows the future traffic assignments without the project traffic.

The unsignalized intersection analyses show that, without the proposed project, all of the intersections in the area would operate with minimal delay to vehicles which stop or which must yield to oncoming traffic. Table 2 shows the results of the analyses.

Table 2
UNSIGNALIZED INTERSECTION CONDITIONS
2005 Without Project

	AM Peak Hour		PM Peak Hour	
	Delay *	LOS	Delay *	LOS
Mamaki Street at Elama Road				
eastbound approach	8.7	A	8.8	A
northbound left turns	7.3	A	7.3	A
Mamaki Street at Auwae Road				
southbound left turns	7.3	A	7.3	A
westbound approach	9.5	A	9.7	A
eastbound approach	9.6	A	9.5	A
northbound left turns	7.3	A	7.3	A
Mamaki Street at Railroad Avenue				
southbound left turns	7.5	A	7.4	A
westbound approach	8.9	A	8.9	A
Lama Street at Railroad Avenue				
eastbound approach	7.6	A	7.5	A
northbound left turns	9.3	A	9.3	A
Makalika Street at Railroad Avenue				
eastbound approach	7.5	A	7.5	A
northbound left turns	9.4	A	9.3	A

* average delay in seconds per vehicle

Project Traffic Impact

Several estimates of the traffic generated by the project have been made. Trip generation factors[2] published by the Institute of Transportation Engineers (ITE) for elementary school, middle school, and high school were used with projected enrollment in a composite estimate; ITE rates for private schools were also used. A separate estimate was made by simulating traffic movements based on the characteristics of the proposed school; these characteristics include the availability of after-school programs and activities, bus service, and possibly housing on campus for some students with the ultimate development.

2 Institute of Transportation Engineers, *Trip Generation, 6th Edition*, Washington, D.C., 1997.

The proposed project consists of the development of a school campus for Kamehameha Schools. The first phase of the project will provide facilities for 200 students in nine grade levels, from kindergarten to eighth grade. The entire site is planned for ultimate development of a larger school, to include additional classrooms for K-8 and a high school. At full development, the campus could accommodate 1,710 students in thirteen grade levels, from kindergarten to twelfth grade, and may include dormitory space. The traffic estimates are shown in Table 3.

Table 3
PROJECT TRAFFIC GENERATION

	AM Peak Hour		PM Peak Hour	
	Entering	Exiting	Entering	Exiting
First Phase				
ITE rates, composite	80	60	50	60
ITE rates, private school	110	75	60	70
simulation	120	90	50	70
Ultimate development of campus				
ITE rates, composite	450	255	195	295
ITE rates, private school	945	630	505	590
simulation	690	465	345	510

The traffic estimates from the simulation were distributed according to the existing and expected distribution of residence location of the student body and of the faculty and staff. The existing elementary school campus (located in Keaukaha) includes eight students from Keaukaha and Panaewa, four from Hamakua, 49 from Hilo, and 45 from Puna. A bus provided by the school transports the students from Puna to and from school. An increase in the proportion of student from Puna is expected in the future. The traffic volumes due to the project's first phase are added to the year 2005 base case peak hour traffic assignment (Exhibit 3).

With the existing street system, access to the site would be from Railroad Avenue and Mamaki Street. All of the traffic generated by the project would use Railroad Avenue, between Lama Street and Mamaki Street, and Mamaki Street, between Railroad Avenue and the project site. The maximum impact of the first phase of the proposed project on these streets is estimated to be 120 vehicles per hour in the peak direction.

Beyond the intersection of Railroad Avenue and Lama Street, the origin or destination of each trip would affect the travel route. Any traffic entering from the Keaau direction (Puna) would be expected to turn right from Volcano Highway onto Lama Street, proceed in an easterly direction to Railroad Avenue, and turn right onto Railroad Avenue. School buses, however, would have a difficult time turning onto the narrow streets and are assumed to be routed to Railroad Avenue via Kanoelehua Avenue, Puainako Street. Traffic from Hilo, Keaukaha, or Hamakua have several possible routes; the traffic assignment assumed that these trips would use Puainako Street, Makalika Street, or Lama

Street to travel to Railroad Avenue. Traffic volumes leaving the campus were assigned in a similar, reversed, fashion.

The unsignalized intersection analyses show that the proposed project will have a minor impact on the intersections in the immediate vicinity of the proposed project; these intersections will continue to operate with minimal delay to vehicles which stop or which must yield to oncoming traffic. Table 4 shows the results of the analyses.

Table 4
UNSIGNALIZED INTERSECTION CONDITIONS
2005 With Project

	AM Peak Hour		PM Peak Hour	
	Delay *	LOS	Delay *	LOS
Mamaki Street at Elama Road				
southbound left turns	7.3	A	7.3	A
westbound approach	10.2	B	10.1	B
eastbound approach	10.6	B	10.0	A
northbound left turns	7.3	A	7.3	A
Mamaki Street at Auwae Road				
southbound left turns	7.3	A	7.3	A
westbound approach	10.5	B	10.4	B
eastbound approach	11.1	B	10.3	B
northbound left turns	7.3	A	7.3	A
Mamaki Street at Railroad Avenue				
southbound left turns	7.7	A	7.5	A
westbound approach	9.3	A	9.3	A
Lama Street at Railroad Avenue				
eastbound approach	7.8	A	7.6	A
northbound left turns	9.6	A	9.5	A
Makalika Street at Railroad Avenue				
eastbound approach	7.8	A	7.6	A
northbound left turns	9.7	A	9.5	A

* average delay in seconds per vehicle

Beyond the intersections addressed above, the project impact would be minimal, as traffic will have several roadways from which to access the site. Peak hourly volumes in the peak direction will be less than 100 vehicles per hour. Nevertheless, project impacts were evaluated at two other intersections where existing conditions may affect project traffic. Traffic arriving from the Puna direction is expected to enter with a right turn onto Lama Street. In addition, some of the traffic from the Hilo direction is expected to turn left across the northbound lanes of the highway into Makalika Street and into Lama Street. Peak hour traffic assignments at the intersection of Volcano Highway and Lama Street are shown in Exhibit 4.

Table 5 shows the results of the unsignalized intersection analyses at the intersection of Lama Street and Volcano Highway. Left turns out of Lama Street are very difficult despite the presence of a wide median because of the high volume of northbound traffic on the highway; a vehicle waiting to turn left would also delay any vehicle wishing to turn right toward Hilo that may follow. The volume of traffic on the side street, however, would not satisfy minimum requirements for signalization.

Table 5
UNSIGNALIZED INTERSECTION CONDITIONS
Lama Street at Volcano Highway

	AM Peak Hour		PM Peak Hour	
	Delay *	LOS	Delay *	LOS
2005 Without Project				
southbound left turns	12.0	B	9.2	A
westbound approach	**	F	**	F
2005 With Project Traffic				
southbound left turns	12.3	B	9.2	A
westbound approach	**	F	**	F

* average delay in seconds per vehicle
** calculated delay exceeds 150 seconds

The results of this analysis indicate that any traffic leaving the project area wishing to go to Puna should travel farther north to enter the highway or Kanoelehua Avenue at an existing signalized intersection. The nearest traffic signal is at Kawailani Street; however, it is narrow and several tight turns are necessary to reach Kawailani Street. The next street at which a signal exists is Puainako Street, which has been extended to Railroad Avenue and would be the logical choice for accommodating entry into the southbound lanes of the highway (or Kanoelehua Avenue).

Signalized intersection analyses indicate that the intersection of Kanoelehua Avenue and Puainako Street would only be minimally affected by the proposed project, as shown in Table 6.

Table 6
SIGNALIZED INTERSECTION ANALYSIS
Kanoelehua Avenue and Puainako Street

	Average Delay (seconds), LOS			
	AM Peak Hour		PM Peak Hour	
2005 Without Project	41.9	D	49.5	D
2005 With Project Traffic	43.8	D	50.5	D
with all project left turns to Puna	45.6	D	50.8	D

Other Considerations

Although the analyses show no problems at the Mamaki Street intersections with Auwae Road and Elama Road, the higher volumes on Mamaki Street that would result with the proposed project may be better served if Mamaki Street had the right-of-way and the traffic approaching on the other streets were stopped. However, this condition would occur only during the peak hours, since the proposed project is not expected to have much traffic impact during other hours. The average delay when all vehicles using the intersections are considered would decrease significantly with this change.

However, observations in the field indicate that sight distance may be a problem if Auwae Road traffic were stopped. As an alternative, an all-way stop at the intersection could be considered. An analysis of the all-way stop indicates that the total average delay (average delay when all traffic using an intersection is considered) at the intersection would be less than with the existing arrangement, as summarized in Table 7.

Table 7
UNSIGNALIZED INTERSECTION ALTERNATIVES
Mamaki Street

	Overall Intersection Delay (sec.)	
	AM Peak Hour	PM Peak Hour
Mamaki Street and Elama Road		
Mamaki Street stopped (existing layout)	9.1	7.9
Elama Road stopped	2.5	3.5
all-way stop	8.4	7.8
Mamaki Street and Auwae Road		
Mamaki Street stopped (existing layout)	9.6	8.6
Auwae Road stopped	2.3	3.1
all-way stop	8.4	7.8

The impact of the project can also be evaluated using the threshold for requiring a traffic study suggested by the Institute of Transportation Engineers, specifically:

> a traffic access/impact study (should) be conducted whenever a proposed development will generate 100 or more *added* (new) peak direction trips to or from the site during the adjacent roadways' peak hours or the development's peak hour.[3]

---

3 Institute of Transportation Engineers, *Traffic Access and Impact Studies for Site Development*, Washington, D.C., 1991.

In evaluating the peak hour traffic generation, trip distribution, and traffic assignments for the proposed first phase of the campus that serves 200 students in grades K-8, the limit of the project's significant impact to traffic would be between the site entry (the intersection of Mamaki Street and Elama Road) and the intersection of Railroad Avenue and Lama Street, based on the criterion of 100 or more added vehicles in the peak direction during a peak hour.

Analyses of the intersections farther from the site than the intersection of Railroad Avenue and Lama Street confirm that there would be minimal impacts due to the proposed project. The analyses show that the intersections closer to the project will also have minimal impacts; the proposed project will obviously increase peak hour traffic at these locations, but impacts to traffic conditions are not expected to be significant, because non-project traffic is small.

Further evaluation of the traffic generation and trip distribution analyses indicate that a K-8 school would have minor impacts to traffic beyond the intersection of Railroad Avenue and Makalika Street with an enrollment as high as 400 students. While this enrollment could be expected to double the project impact at each intersection, levels of service would be no different than with the proposed first phase (200 students) only.

The additional traffic that may result from development beyond the first phase of 200 students, however, would require roadway improvements to provide an easier route into the site from the Puna direction. These improvements may include corner widening at the intersection of Lama Street and Volcano Highway and the addition of a deceleration lane for northbound right turns from the highway.

Potential Impact of Full Use of the Planned Campus

The ultimate development of the campus could accommodate 1,710 students. As indicated previously, peak hour traffic impact would be significant, with nearly 700 vehicles being attracted to the campus in the AM Peak Hour. Project traffic based on the simulation is summarized in Table 8.

Table 8
PROJECT TRAFFIC GENERATION
Ultimate Development of Campus

	AM Peak Hour		PM Peak Hour	
	Entering	Exiting	Entering	Exiting
Total traffic generated	690	465	345	510
from/to Panaewa	35	25	15	25
from/to other parts of Hilo	275	185	140	205
from/to Puna	380	255	190	280

The full use of the campus will result in large increases in traffic volumes on the existing streets in the area. While Mamaki Street and Railroad Avenue may have the capacity to accommodate traffic to and from the Hilo direction, the large volume of traffic to and from the Puna direction would require roadway improvements, including a new signalized intersection with Volcano Highway or some other improvements to permit a high volume of traffic to enter the southbound lanes of the highway.

If a new signal is to be placed on Volcano Highway, the most logical location would be the intersection of Volcano Highway and Stainback Highway, which is opposite Mamaki Street. This alternative would require the widening and extension of Mamaki Street from Volcano Highway to Railroad Avenue, which may have adverse impacts to existing residences along the western portion of Mamaki Street and the existing park.

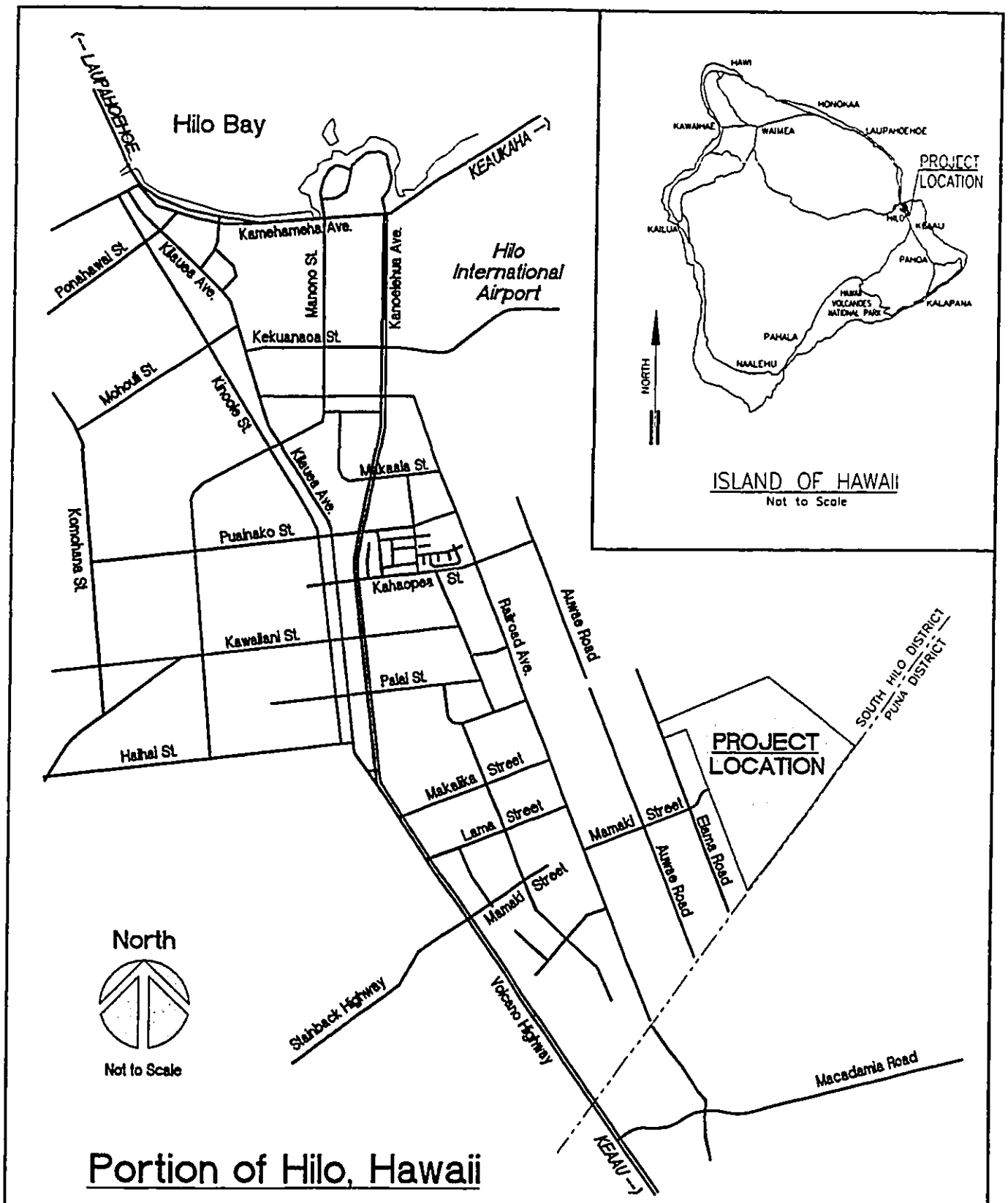
Another alternative is the construction of a new roadway along the South Hilo/Puna district boundary from Volcano Highway to the project site. The connection of Elama Road, Auwae Road, and Railroad Avenue to this new roadway could provide a number of routes between the site and the highway, thereby minimizing the impact on any one street. The connection to Volcano Highway would need to be coordinated with the connection of the Keaau Bypass Road.

Conclusions and Recommendations

The first phase of the proposed project is not expected to have a significant impact to traffic. Existing traffic volumes on Mamaki Street and Railroad Avenue, as well as on other streets in the area, are well below capacity. While the traffic from the proposed project will be a large part of the future traffic on these streets, the two-lane roadways and unsignalized intersections would be adequate.

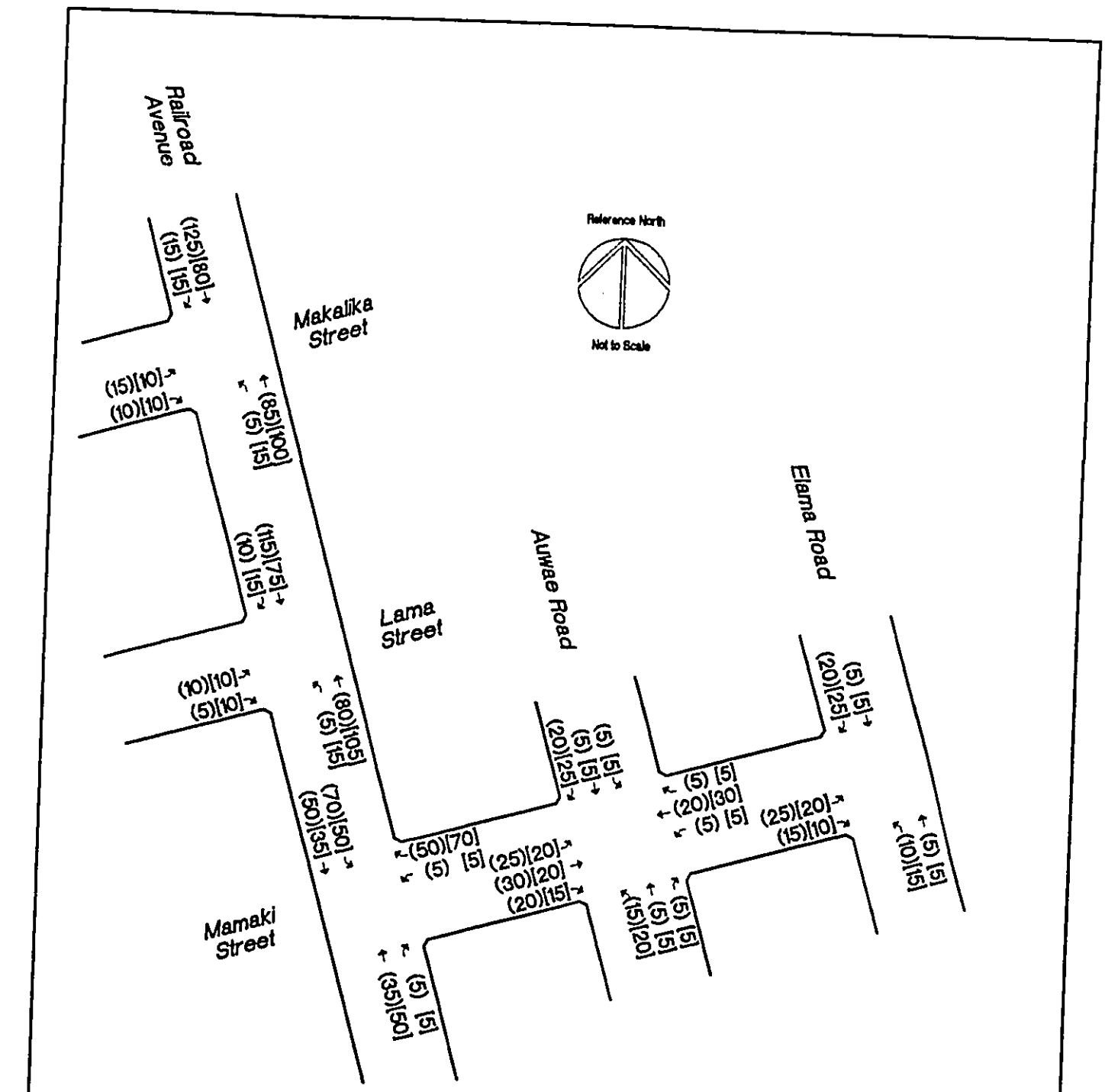
The most significant impact to traffic would be at the intersection of Lama Street and Volcano Highway. Traffic leaving the site destined for Puna could be expected to use Lama Street to turn left onto Volcano Highway. However, the analyses show that there is insufficient capacity due to the high volumes on the highway and there would be major delays to traffic on Lama Street. Signalization of the intersection, however, would not be warranted and other improvements to facilitate this movement would not be feasible. Much of the Puna-bound traffic from the site would be expected to backtrack to Kawailani Street or Puainako Street to utilize the existing traffic signals to enter Kanoelehua Avenue and proceed south onto Volcano Highway. The existing signalized intersection should have sufficient capacity to accommodate the additional traffic.

Full use of the campus will have significant impacts on traffic. Improvements for access from the Puna direction will be needed, and impacts to Railroad Avenue north of Mamaki Street may be significant. A detailed traffic study should be conducted as part of the planning for development beyond the first phase.



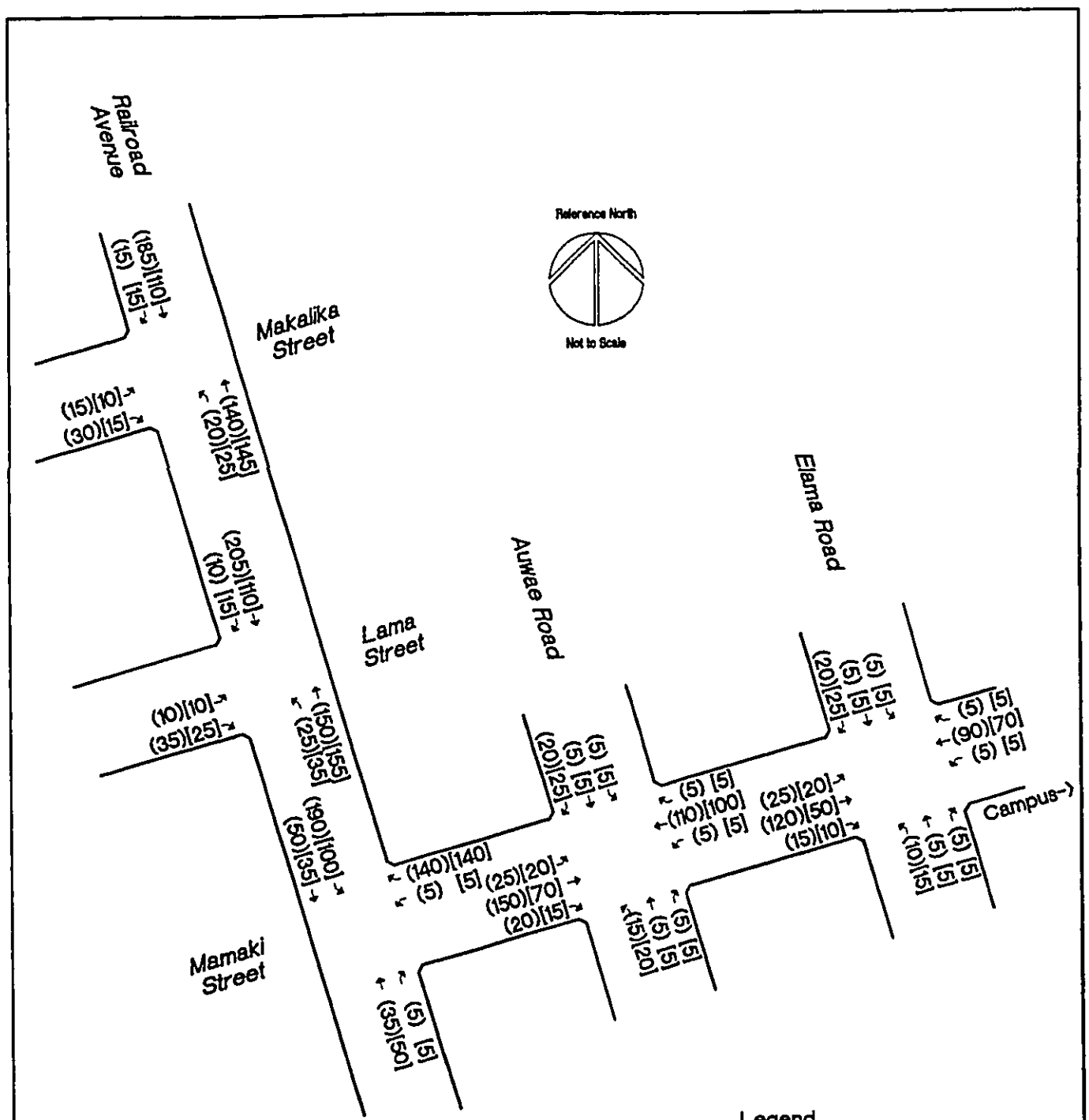
Traffic Assessment Report KSBE East Hawaii Campus	Project Location and Vicinity Map	Exhibit 1
Prepared for: PBR Hawaii and Kamehameha Schools/Bishop Estate Prepared by: Julian Ng, Incorporated	Not to Scale April 1999	

TRAF-F.SKD 4/21/99 0337



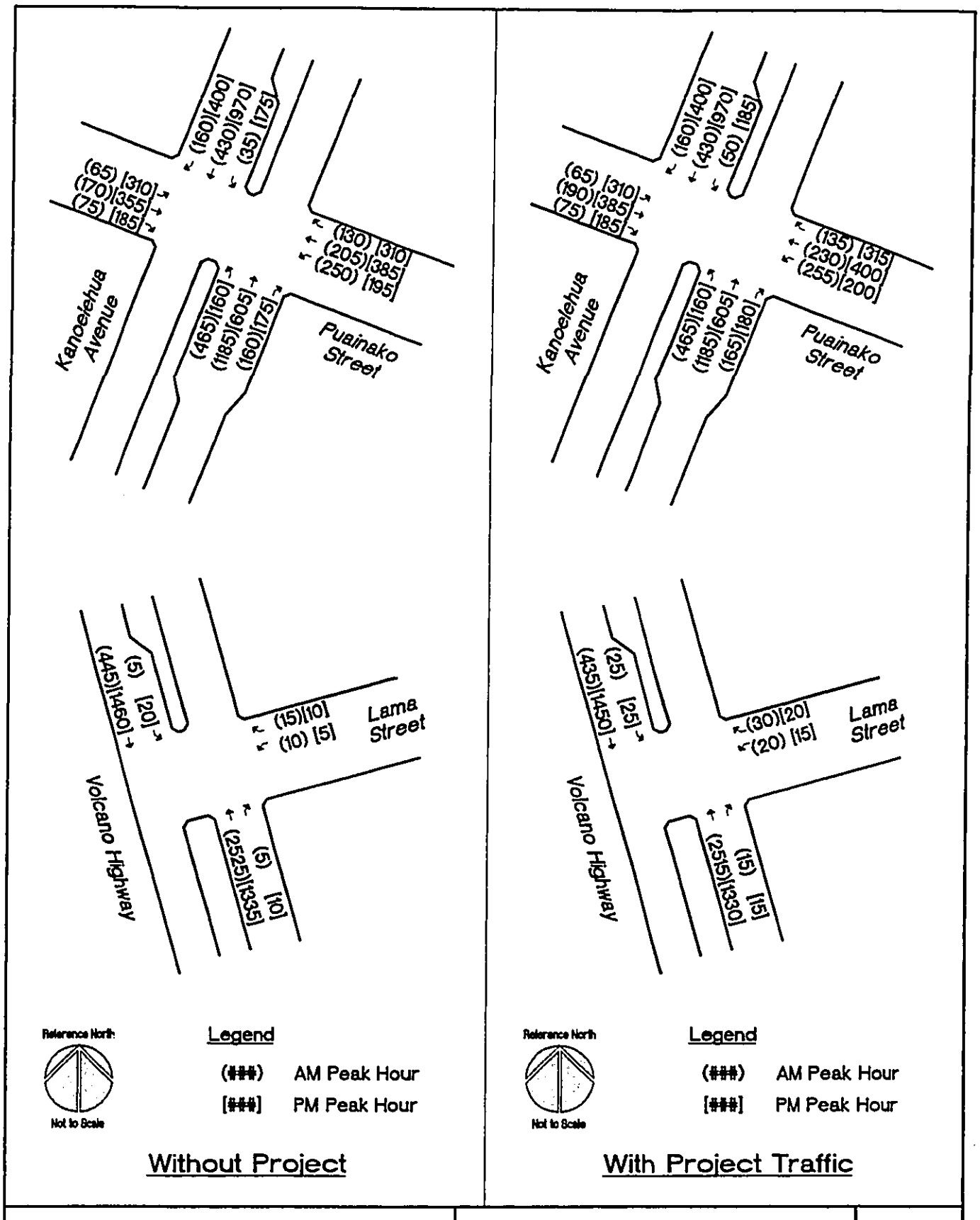
Traffic Assessment Report KSBE East Hawaii Campus	2005 Traffic Assignment Without Project	Exhibit 2
Prepared for: PBR Hawaii and Kamehameha Schools/Bishop Estate Prepared by: Julian Ng, Incorporated	Not to Scale April 1999	

TRAF-F.SKD 4/24/99 03:37



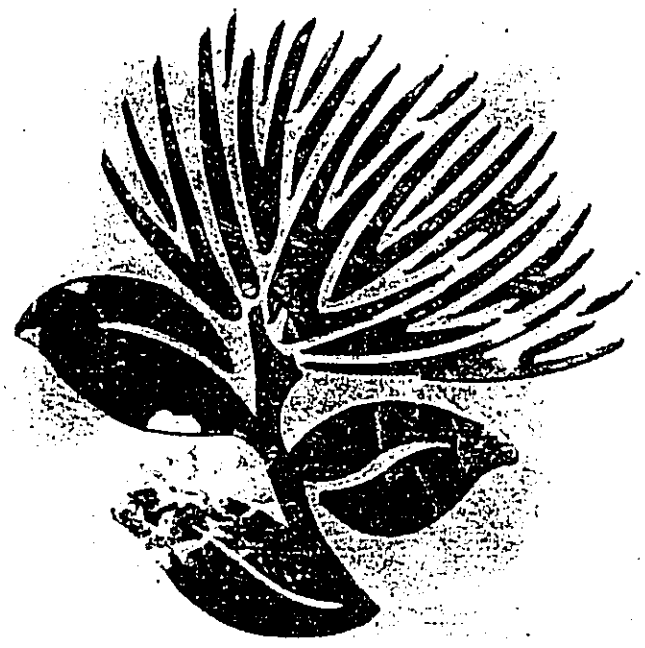
Traffic Assessment Report KSBE East Hawaii Campus	2005 Traffic Assignment With Project (First Phase)	Exhibit 3
Prepared for: PBR Hawaii and Kamehameha Schools/Bishop Estate Prepared by: Julian Ng, Incorporated	Not to Scale April 1999	

TRAF-F.SKD 4/24/99 03:37



Traffic Assessment Report KSBE East Hawaii Campus	2005 Traffic Assignment Other Intersections	Exhibit 4
Prepared for: PBR Hawaii and Kamehameha Schools/Bishop Estate Prepared by: Julian Ng, Incorporated	Not to Scale April 1999	

TRAF-F.SKD 4/21/99 03:37



Appendix E

Comment Letters Received from Agencies and Organizations

BENJAMIN J. CAYETANO
GOVERNOR

ESTHER UEDA
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, HI 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827

May 17, 1999

Ms. Linda Chinn
Land Management Division
Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, Hawaii 96805

Dear Ms. Chinn:

Subject: Draft Environmental Assessment (DEA) for the Kamehameha Schools Bernice Pauahi Bishop Estate East Hawaii Campus

We have reviewed the DEA for the subject project and have the following comments:

1) We confirm that the project site, as represented on Figure 1, is designated within the State Land Use Agricultural District. We suggest that the Final EA include a map showing the project site in relation to the State land use districts.

2) We understand that the DEA is intended to serve as a supplement to a special permit application for the subject project, and that in the event the County of Hawaii Planning Commission recommends approval of said permit, the entire record in this matter will be forwarded to the Land Use Commission for final disposition.

   We suggest that the Final EA include an assessment of the subject project in relation to the special permit guidelines for determining an "unusual and reasonable" use within the Agricultural District, as specified in §15-15-95(b), Hawaii Administrative Rules. We also note that when the special permit application is filed it should include a discussion of why a special permit would be more appropriate than a district boundary amendment in this instance.

3) We note that the project site is in the vicinity of two previously approved special permits. They include LUC

Docket No. SP82-356/Department of Parks and Recreation for motorcycle training and competition facilities and Docket No. SP73-159/Toyama Gardens Hawaii Corp. dba Nani Maui Gardens for aboretum and commercially-related uses.

We have no further comments to offer at this time. We appreciate the opportunity to comment on the subject DEA.

Should you have any questions, please feel free to call me or Bert Saruwatari of our office at 587-3822.

Sincerely,

ESTHER UEDA
Executive Officer

EU:aa

cc: KS/BE
PBR Hawaii
OEQC

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII

RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

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

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

May 27, 1999

Ms. Esther Ueda, Executive Officer
Land Use Commission
Post Office Box 2359
Honolulu, Hawaii 96804-2359

Dear Ms. Ueda:

Subject: Draft Environmental Assessment (DEA)
Kamehameha Schools Bernice Pauahi Bishop Estate
East Hawaii Campus
Tax Map Key: (3)2-1-13:02 Portion and 154

Thank you for your comments to the subject Draft Environmental Assessment (DEA). Please be assured that your comments will be addressed within the Final Environmental Assessment (FEA) as follows:

1. Per your suggestion, an exhibit showing the site in relation to the State Land Use Districts will be included in the FEA, and

2. The FEA will include a discussion as to why a Special Permit rather than a District Boundary Amendment is being pursued for this project.

We appreciate your notifying us of special permits that have been granted for other actions in the vicinity of the project site as the Commission's findings on these actions may have a bearing on the Special Permit request for the subject project.

Again, we appreciate your efforts in reviewing and commenting on the DEA. A copy of your letter and this response will be included in the FEA.

Should you have any questions, please call Linda Chinn, Acting Land Management Branch Manager, at 587-6432.

Aloha,

Raynard C. Soon, Chairman
Hawaiian Homes Commission

c: KSBE
PBR Hawaii - Hilo Office

PHONE (808) 594-1888

FAX (808) 594-1865

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

June 2, 1999

Mr. Yukio Takemoto
Kamehameha Schools Bernice Pauahi Bishop Estate
567 South King Street, Room 617
Honolulu, Hawaii 96713

EIS #314

Re: Draft Environmental Assessment for the Kamehameha Schools/Bernice Pauahi Bishop Estate East Hawaii Campus, Panaewa, South Hilo, Hawai'i, TMK 2-1-13:154

Dear Mr. Takemoto:

Thank you for the opportunity to review the draft Environmental Assessment (DEA) for the Kamehameha Schools/Bernice Pauahi Bishop Estate East Hawaii Campus. The Kamehameha Schools/Bishop Estate (KSBE) proposes to build a school on property which is currently owned by the Department of Hawaiian Home Lands (DHHL). DHHL has issued KSBE a long-term lease for use of the property and has also entered into an agreement with the DHHL to purchase the subject property by means of a land exchange.

The school will be built in phases over the next fifteen to twenty years. The initial phases will serve approximately 200 students in one class per grade, kindergarten through the eighth grade. At completion the school will include a middle and high school and will serve approximately 1,710 students.

The Office of Hawaiian Affairs has long been opposed to the sale or exchange of ceded lands. However, it is our understanding that lands exchanged with DHHL will become equivalent to ceded lands and a part of the ceded land inventory. In this instance, we would not be opposed to the exchange of lands between DHHL and KSBE.

If you have any questions, please contact Lynn Lee, EIS Planner at 594-1936.

Sincerely,

Colin Kippen
Deputy Administrator

C. Sebastian Aloot
Land and Natural Resources Division Officer

cc: Board of Trustees
OHA East Hawaii Community Affairs Office
Linda Chinn – DHHL
Vincent Shigekuni – PBR
James Leonard - PBR

KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE
June 18, 1999

Mr. Colin Kippen, Deputy Administrator
Office of Hawaiian Affairs
711 Kapi'olani Boulevard, Suite 600
Honolulu, Hawaii 96813

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
KSBE EAST HAWAII CAMPUS, PANAEWA,
SOUTH HILO, HAWAII, TMK 2-1-13:154 AND 02 (POR.)

Dear Mr.Kippen:

Thank you for your letter of June 2, 1999 in which you provide comments to the Draft Environmental Assessment (EA) for KSBE's Permanent East Hawaii Campus. We certainly appreciate your supportive comments regarding the proposed land exchange with the Department of Hawaiian Home Lands. It is our strong belief that the proposed land exchange, which was approved by both the DHHL Commission and KSBE Board of Trustees, will be beneficial to all concerned by providing DHHL with lands better suited for agricultural use and KSBE with lands that are nearly ideally suited for the proposed campus development.

Regarding the nature of the campus development, we should point out that the timing for the initial campus development is all that is known at this time. The initial campus development, which will accommodate approximately 200 students in grades kindergarten through eight, is planned to be completed by July 2001. Should a decision be made to provide an additional high school component and/or expand the capacity of the elementary and middle schools, further development of the campus would occur as the need arises and resources permit, the timing of which is unknown at this time.

Again, thank you for your input into the environmental review process. A copy of your letter and this response will be included with the Final Environmental Assessment.

Sincerely,

Yukio Takemoto
Principal Executive

cc: C. S. Aloot (OHA)
L. Chinn (DHHL)
G. Salmonson (OEQC)
J. Leonard (PBR)
V. Shigekuni (PBR)

567 SOUTH KING STREET HONOLULU, HAWAI'I 96813 TELEPHONE (808) 523-6200 FAX (808) 534-3848

Our Business is Education

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

June 3, 1999

Mr. Yukio Takemoto
Kamehameha Schools Bernice Pauahi Bishop Estate
567 South King Street, Room 617
Honolulu, Hawai'i 96813

Dear Mr. Takemoto:

The Office of Environmental Quality Control has reviewed the draft environmental assessment (DEA) entitled "Kamehameha Schools Bernice Pauahi Bishop Estate East Hawaii Campus, Tax Map Key (3)2-1-3-13:02 Portion and 154, Panaewa, South Hilo, Hawaii Island" prepared by PBR Hawaii, May 1999. We submit the following comments for your consideration and response.

NOISE

As noted on pages 19 and 20, the project site has two potential noise generators: the Hilo Airport and its flight paths two miles to the north and the Hilo Drag Racing Strip just north east of the project site. In the final environmental assessment, indicate if the proposed campus is within the flight path for the Hilo Airport. For reference, the Environmental Protection Agency has an outdoor limit of 55 dB L_{dn} and an indoor limit of 45 dB L_{dn} for protection against speech interference and sleep disturbance for residential, educational and health care areas. [1] Please consult with the Department of Transportation Airports discuss noise levels and their effects from overflying aircraft. Please also discuss if any noise data for the drag strip exists and discuss the effects, if any, on school activities.

CULTURAL RESOURCES

Page 23-24 provides discusses archaeological/cultural resources from a historical perspective. A historical view may overlook the fact that cultural practices are dynamic and ongoing. Please consult with the Office of Hawaiian Affairs to determine if native gathering (of medicinal plants, of other flora/fauna, etc.) is occurring at the present time. A copy of the Environmental Council's Guidelines for Assessing Cultural Impacts is included for your information.

SUSTAINABLE BUILDING DESIGN

Hawaii law calls for efforts to conserve natural resources, promote efficient use of water and energy and encourage recycling of waste products. To meet these goals, special care must be taken to plan a project from the very beginning to include sustainable building design concepts. Enclosed are draft guidelines for

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[1] Cited in Table 15.2 of *Environmental Assessment: A Practical Guide*, by Betty B. Marriott, McGraw Hill Books, 1997.

sustainable building design in Hawai'i. We recommend that you consider the design elements contained within the enclosed checklist and discuss in the environmental assessment any specific sustainable design elements (e.g., landscaping with existing native plants on site, incorporation of natural ventilation using trade winds, etc.) your project will entail.

EARLY CONSULTATION

Please indicate the agencies, individuals, and organizations consulted in the preparation of the draft environmental assessment.

If you have any questions, please call Mr. Leslie Segundo, Environmental Health Specialist at 586-4185. Thank you for the opportunity to comment on your project.

Sincerely,

Genevieve Salmonson

GENEVIEVE SALMONSON
Director

Enclosures

c: Mr. Vincent R. Shigekuni, PBR Hawaii
Mr. James Leonard, PBR Hawaii
Ms. Linda Chinn, Department of Hawaiian Home Lands

KAMEHAMEHA SCHOOLS BERNICE PAUAHI BISHOP ESTATE

June 18, 1999

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

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
KSBE EAST HAWAII CAMPUS, PANAEWA,
SOUTH HILO, HAWAII, TMK 2-1-13:154AND 02 POR.

Dear Ms. Salmonson:

Thank you for your letter of June 3, 1999 in which you provide comments to the Draft Environmental Assessment (EA) for the KSBE Permanent East Hawaii Campus. We would like to respond to your comments in the order they are presented.

NOISE

According to the Department of Transportation, Airports Division, the project site is not in the flight path for the Hilo International Airport. Additionally, although there is no noise data available for the Hilo Drag Strip complex, the activities at this facility are confined to weekends when classes will not be in session and, therefore, not expected to be disruptive of school activities.

CULTURAL RESOURCES

Per your suggestion, our planning consultant, PBR HAWAII, contacted the Office of Hawaiian Affairs which indicated that they had no knowledge of native gathering practices occurring in the area of the project site. Additionally, the current property owner, DHHL, has no knowledge of native gathering occurring on the property and has not been approached for permission to use the property for such purposes.

SUSTAINABLE BUILDING DESIGN

Thank you for providing the draft guidelines for sustainable building design. We will forward a copy to the project architect so that such measures can be considered in the planning and design of the campus facilities. It is worth noting that many of the elements listed in your letter are being considered as part of the initial campus planning, including landscaping with the use of native plants and the use of vegetation and natural ventilation, where appropriate, to reduce cooling loads.

AGENCY CONSULTATION

A separate section indicating those individuals, agencies and organizations consulted in the preparation of the Draft EA will be included within the Final EA.

We appreciate your comments and suggestions. They have been most helpful and will be addressed in the Final EA, as indicated above. In addition, a copy of your letter and this response will be included with the Final EA.

Sincerely,

Yukio Takemoto
Principal Executive

cc: L. Chinn (DHHL)
J. Leonard (PBR)
V. Shigekuni (PBR)