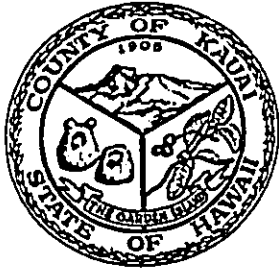


BRYAN BAPTISTE
MAYOR

GARY HEU
ADMINISTRATIVE ASSISTANT



COUNTY ENGINEER
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DEPUTY COUNTY ENGINEER
TELEPHONE 241-6640

RECEIVED

03 AUG 22 P3:02

AN EQUAL OPPORTUNITY EMPLOYER
COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
4444 RICE STREET
MO'IKEHA BUILDING, SUITE 275
LIHU'E, KAUAI, HAWAII 96766-1340

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

August 18, 2003

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

**FINDING OF NO SIGNIFICANT IMPACT (FONSI) AND FINAL ENVIRONMENTAL
ASSESSMENT FILING**
Kapaa-Kealia Bike and Pedestrian Path Basis of Design Project, Kapaa, Kauai, Hawaii

The County of Kauai (County), Department of Public Works (DPW) has reviewed the Final Environmental Assessment (EA) for the subject project along with comments received on the Draft EA for the subject project during the 30-day public comment period that ended on December 23, 2002.

Consequently, the County DPW has determined that this project will not have significant environmental effects, and has issued a Finding of No Significant Impact (FONSI). Please publish this FONSI determination for this project in the September 23, 2003 issue of the OEQC *The Environmental Notice*.

We have enclosed the following items for your use in this publication notice:

1. One copy of the OEQC Publication Form with project summary (project summary emailed to your office and hardcopy enclosed); and
2. Four (4) copies of the Final Environmental Assessment.

Should you have any questions, please contact Mr. Douglas Haigh of our department at (808) 241-6650. Thank you.

Sincerely,

Wynne M. Ushigome
Deputy County Engineer

cc: Ronald A. Sato, SSFM International, Inc.

SEP 23 2003

FILE COPY

2003-09-23-KA-FEA-

(KAPA'A-KEALIA BIKE & PEDESTRIAN PATH)
BASIS OF DESIGN PROJECT

Kapaa, Kauai, Hawaii

FINAL
ENVIRONMENTAL ASSESSMENT

August 2003

Submitted Pursuant To:

National Environmental Policy Act (NEPA)
42 U.S.C. 4332 (2) (c);
Section 4(f) of the Department of Transportation Act
49 U.S.C 303; And
Chapter 343, Hawaii Revised Statutes

By The:

U.S. Department of Transportation, Federal Highway Administration;
State of Hawaii, Department of Transportation, Highways Division; And
County of Kauai, Department of Public Works

**KAPA'A-KEALIA BIKE & PEDESTRIAN PATH
BASIS OF DESIGN PROJECT
Kapaa, Kauai, Hawaii**

**FINAL
ENVIRONMENTAL ASSESSMENT**

August 2003

Submitted Pursuant to the
National Environmental Policy Act (NEPA), 42 U.S.C. 4332 (2) (c);
Section 4(f) of the Department of Transportation Act, 49 U.S.C 303; And
Chapter 343, Hawaii Revised Statutes

By the
U.S. Department of Transportation, Federal Highway Administration;
State of Hawaii, Department of Transportation, Highways Division;
And
County of Kauai, Department of Public Works

8/6/03

Date of Approval

Myron A. Tsunogami

For County of Kauai, Department of Public Works

AUG 22 2003

Date of Approval

Rodney Haraga

For State of Hawaii, Department of Transportation

SEP 08 2003

Date of Approval

Abraham Wong

For U.S. DOT, Federal Highway Administration

The following persons may be contacted for additional information concerning this document:

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Department of Public Works
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Lihue, Kauai, Hawaii 96766-1340
Phone: 241-6600

The Department of Public Works (DPW) of the County of Kauai is proposing to develop a multi-use path for bicyclist, pedestrians, and other users along the coastline from Kapa'a to Kealia on the Island of Kauai. A 10 to 12-foot-wide path is planned improving an existing asphalt-paved path in the Kapa'a Town area, and pavement improvements to an existing cane haul road that extends from Kapa'a to Ahihi Point in the northern Kealia area. Other amenities such as comfort stations, parking areas, and picnic shelters are planned along this path to support users along with other recreational users. The total length of this study corridor is approximately 4.3 miles from Kapa'a to Ahihi Point, and generally includes the area from the shoreline up to the highway. Impacts associated with these improvements are generally associated with short-term construction activities and some long-term effects associated with the physical environment which will be mitigated by various proposed measures in consultation with appropriate agencies.

**FEDERAL HIGHWAY ADMINISTRATION
FINDING OF NO SIGNIFICANT IMPACT**

FOR

**KAPA'A-KEALIA BIKE & PEDESTRIAN PATH
BASIS OF DESIGN PROJECT**

Kapaa, Kauai, Hawaii

The Federal Highway Administration (FHWA) has determined that the proposed development of a multi-use path with amenities for bicyclist, pedestrians, and other users along the coastline from Kapa'a to Kealia on the Island of Kauai will not have any significant impact on the human environment. This Finding of No Significant Impact is based on the attached Final Environmental Assessment (Final EA) which has been independently evaluated by the FHWA and determined to adequately and accurately discuss the environmental issues and impacts of the proposed project. It provides sufficient evidence and analysis for determining that an environmental impact statement is not required. The FHWA takes full responsibility for the accuracy, scope, and content of the attached FEA.

SEP 09 2003

Date

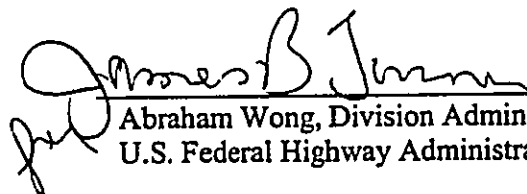

Abraham Wong, Division Administrator
U.S. Federal Highway Administration

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Appendix C	Coastal Evaluation For The Kapa`a-Kealia Bikepath Master Plan And Environmental Assessment Prepared By: Sea Engineering, Inc. (September 2002)
Appendix D	Aquatic Resources Survey For The Kapa`a-Kealia Bikepath, Kaua`i Prepared By: AECOS, Inc. (August 29, 2002)
Appendix E	Botanical Report Proposed Kapa`a To Ahihi Point Bicycle Path Island of Kaua`i Prepared By: Ron Terry, Ph.D., and Patrick Hart, Ph.D. (August 2002)

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- Appendix F** **A Survey of Avian and Terrestrial Mammalian Species Conducted for the Kapa`a to Kealia Bike and Pedestrian Path Kawaihau District, Kaua`i**
Prepared By: Rana Productions, Ltd. (August 2002)
- Appendix G** **Archaeological Inventory Survey For The Proposed Kapa`a/Kealia Bike And Pedestrian Path, Kapa`a And Kealia, Kawaihau District, Kaua`i Island, Hawaii**
Prepared By: Cultural Surveys Hawai`i, Inc. (September 2002)
- Appendix H** **Cultural Impact Assessment For The Proposed Kapa`a/Kealia Bike And Pedestrian Path, Kapa`a And Kealia, Kawaihau District, Kaua`i Island, Hawaii**
Prepared By: Cultural Surveys Hawai`i, Inc. (December 2002)

CHAPTER 1 INTRODUCTION

1.1 PURPOSE FOR ENVIRONMENTAL ASSESSMENT

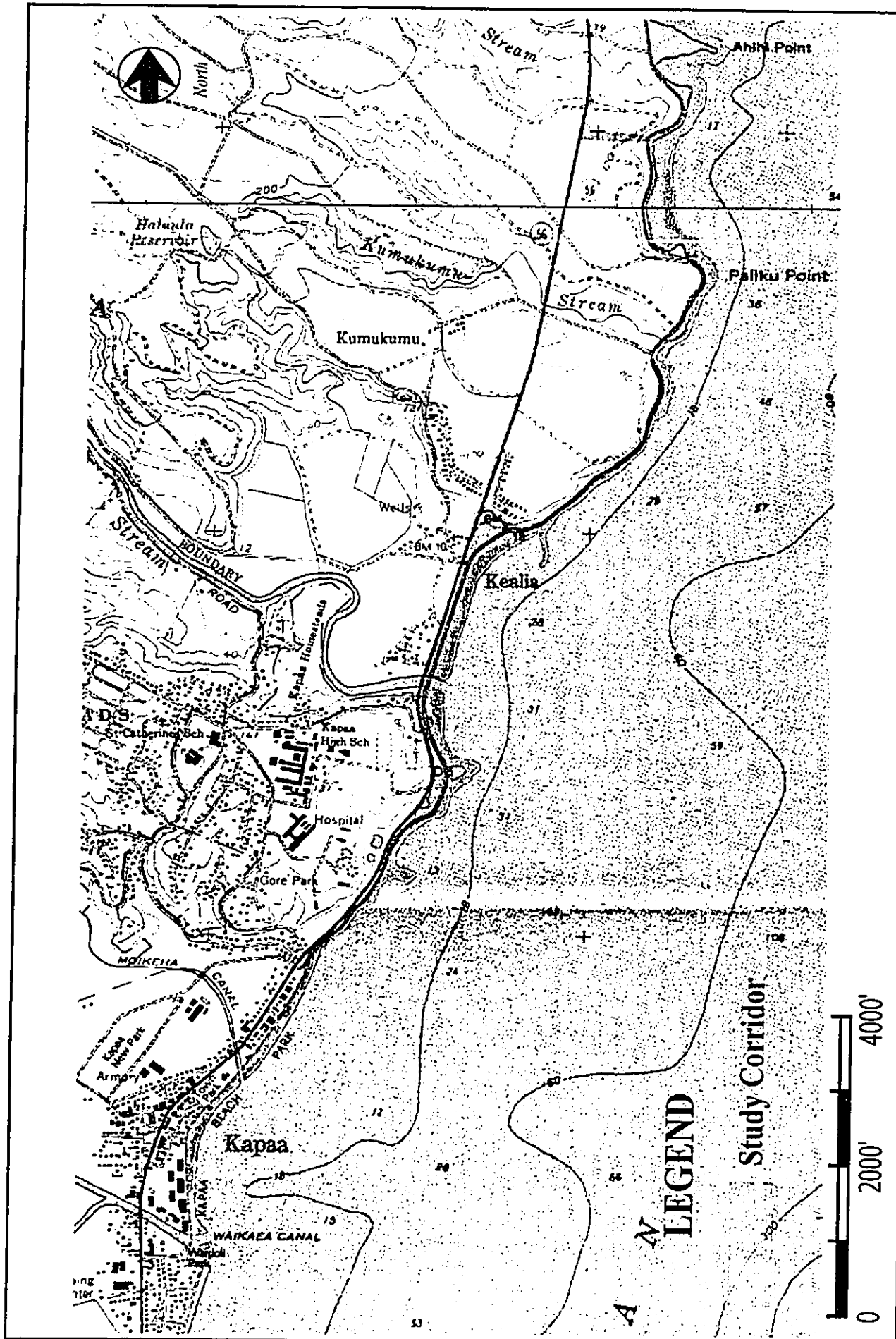
The Department of Public Works (DPW) of the County of Kauai is proposing to develop a multi-use path for bicyclist, pedestrians, limited equestrian, and other users along the coastline from Kapa'a to Kealia on the Island of Kauai. This project is referred to as the "Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project." In order to implement this project, the County DPW is developing a "basis of design" for the improvements that will establish design criteria to be used for the project's design and implementation by the eventual contractor team selected for this project.

A 10 to 12-foot-wide multi-use path is planned which would involve incorporating an existing asphalt-paved and unimproved paths in the Kapa'a Town area, and pavement improvements to an existing cane haul road that extends from Kapa'a to Ahihi Point in the northern Kealia area. Improvements to existing cane haul road bridges along the coastline would also be conducted in establishing this path. Other amenities such as comfort stations, parking areas, picnic shelters, and rest areas are also planned along this path to support path users along with other recreational users.

To examine impacts of alternative path routes and alternative locations of related amenities, a project study corridor has been established. The total length of this study corridor is approximately 4.3 miles from Kapa'a to Ahihi Point, and generally includes the area from the shoreline up to the highway. Figure 1.1 shows the study corridor's location and general vicinity in the towns of Kapa'a through Kealia. Tax Map Keys of properties associated with the study corridor are:

- 4-5-02: 001;
- 4-5-07: 001;
- 4-5-08: 001;
- 4-5-11: 001, 003, 045, and 053;
- 4-5-12: 001 and 002;
- 4-5-13: 001, 002, and 028;
- 4-6-14: 034, 036, 090, 091, and 092;
- 4-7-03: 001; and
- 4-7-07: 029.

The multi-use path would allow the County to utilize their existing lands and rights-of-way under their jurisdiction to provide alternative transportation routes, and the community with a safe area for bicycle, pedestrian, and other non-motorized activities along the path. Further, the community will benefit from safe access to the shoreline and related path amenities made available. Lastly, the project allows the County to expand its multi-use paths planned for development along the eastern coast of Kauai, and will provide the community with additional needed amenities at County parks. Table 1.1 provides a summary of pertinent information associated with the project.



**KAPAA-KEALIA BICYCLE & PEDESTRIAN
PROJECT LOCATION MAP**

Figure 1.1

*Kapaa-Kealia Bike & Pedestrian Basis of Design Project
County of Kauai, Department of Public Works*

Source:
SSFM International, Inc.



Table 1.1 Summary Information

Project Name:	Kapa'a-Kealia Bike and Pedestrian Path Basis of Design
Applicant:	County of Kauai Department of Public Works 4444 Rice Street Lihue, Hawaii 96766 Contact: Mr. Doug Haigh
Authorized Agent:	SSFM International, Inc. 501 Sumner Street, Suite 502 Honolulu, Hawaii 96817 Contact: Mr. Ronald A. Sato, AICP
County Accepting Authority:	Department of Public Works, County of Kauai
Federal Funding Agency:	U.S. Department of Transportation, Federal Highway Administration
Project Description:	Development of a multi-use pathway from Kapa'a to Kealia within an established corridor. The project will involve incorporation of an existing asphalt paved path in the Kapa'a area, improvements to an existing cane haul road extending from Kapa'a to Ahihi Point in the Kealia area, and providing related path amenities such as a comfort stations and parking areas.
Project Location:	The project corridor is located in the Kawaihau Planning District of the Island of Kauai. This corridor is approximately 4.3 miles long, and will involve path widths of about 10 to 12 feet.
Land Ownership:	The lands within the project corridor are owned or under the jurisdiction of the County of Kauai. A section of this property is in the process of being transferred via Executive Order to the County from the State. However, the County already has a right-of-entry to conduct work and improvements within this section.
Tax Map Key:	(4) 4-05-002: 001; 4-05-007: 001; 4-05-008: 001; 4-05-011: 001, 003, 045, and 053; 4-05-012: 001 and 002; 4-05-013: 001, 002, and 028; 4-06-014: 034, 036, 090, 091 and 092; 4-07-003: 001, and 4-07-007: 029.
State Land Use:	Urban, Agricultural, and Conservation Districts
County General Plan:	Park and Open Uses
County Zoning:	Open
SMA Designation:	The project corridor is within the Special Management Area.

Joint Federal and State Environmental Document

This project is being partially funded by both the Federal Highway Administration (FHWA) and the County of Kauai. The shoreline property within the entire corridor being used for the improvements is owned by the County of Kauai and under the jurisdiction of the DPW. As a result, improvements proposed for this project involves the use of County funds and lands making it subject to the environmental documentation requirements prescribed under Chapter 343, Environmental Impact Statements, Hawaii Revised Statutes (as amended) and Title 11, Chapter 200 (Environmental Impact Statement Rules) of the State Department of Health's Administrative Rules, as amended (State of Hawaii 1996).

Improvements proposed for the path will also involve the use of Federal funds making this project subject to environmental requirements prescribed under the National Environmental Policy Act (NEPA). These improvements have not been "Categorically Excluded" under the NEPA compliance regulations for the FHWA, U.S. Department of Transportation (23 CFR, Chapter I) due to the shoreline environment and resources potentially being affected by the improvements. Therefore, an Environmental Assessment under NEPA is also required for this project.

A Draft Environmental Assessment (Draft EA) was prepared in conformance to both State and Federal regulatory requirements to address the probable impacts on the surrounding environment resulting from the project. This document examined the project corridor, alternative path routes, and related amenities. This Draft EA was published in the November 23, 2002 issue of the State Office of Environmental Quality Control's *The Environmental Notice*. The 30-day public comment period for the review of that Draft EA ended on December 23, 2002. This Final Environmental Assessment (Final EA) has subsequently been prepared by incorporating and addressing public comments received on the published Draft EA. A Finding of No Significant Impact (FONSI) is warranted for this project under the State's environmental process.

The FHWA will review comments received on this published Draft EA, and then make a determination whether a FONSI is issued for this project under NEPA. If issued, a Decision Notice would be prepared and published documenting this determination.

Proposing Agency and Accepting Authority

The FHWA will serve as the lead Federal Agency, or Administrator, responsible for the Environmental Assessment's preparation in compliance with NEPA documentation and processing requirements. Since this project is also Federally-funded, it is considered a Federal Action subject to Section 106 consultation under the National Historic Preservation Act and the Advisory Council on Historic Preservation's implementation procedures prescribed by 36 CFR, Part 800 (NARA 2000). Under these regulations, the Section 106 consultation process can be integrated with an environmental document prepared under NEPA. Therefore, the "Agency Official" responsible for conducting this consultation will be the FHWA, and this consultation effort will be integrated with this environmental review process.

Under the State environmental review process, this project is considered an "Agency Action" because a department of the County DPW is initiating the project. As a result, the County Department of Public Works will serve as the Applicant initiating this process. The County DPW will also serve as the "Accepting Authority" for this Environmental Assessment as the authorized representative for the Governor of the State of Hawaii.

1.2 BACKGROUND ON EXISTING LAND USE DESIGNATIONS

1.2.1 State Land Use District

Under Chapter 205, Hawaii Revised Statutes (HRS), all lands in the State of Hawaii are classified by the State Land Use Commission (LUC) into four major land use districts which are referred to as State Land Use Districts. These four land use districts are the Urban, Rural, Agricultural, and Conservation districts. The boundaries of these districts are shown on maps referred to as State Land Use District Boundary Maps.

The LUC's Land Use District Boundary Maps for Anahola (Map K-9) and Kapa'a (Map K-10) indicated that various portions of the project's proposed path and amenities were located within the State's Urban, Agricultural, or Conservation Districts. Figure 1.2 shows the project corridor in relation to the State Land Use District Boundary Districts.

As shown on this figure, the shoreline corridor from the County's Lihi Park at Waika'ea Canal north up to Kapaa Stream (also referred to as Kealia River) is within the State's Urban District. From Kapaa Stream north to Ahihi Point, the corridor from the shoreline up to the cane haul road is located within the State's Conservation District. From Kapaa Stream up to a point south of Paliku Point, this Conservation District boundary limit extends up to the mauka (inland or western) edge of the cane haul road right-of-way. North of this area, the Conservation District boundary limit extends up to the makai (seaward or eastern) edge of the cane haul road. A boundary interpretation determination from the LUC, dated October 18, 2002, confirms this descriptive extent of the Conservation District boundary along this section. A copy of this determination letter is included in Appendix B.

Portions of the project located within the Agricultural District are situated at two separate sites. The first is at Kealia Beach where a northern area mauka (inland) of the cane haul road is located within the Agricultural District. The Conservation District only extends up to, and inclusive of, the cane haul road. The section of Kealia Beach property from the cane haul road up to Kuhio Highway is also within the Agricultural District. The other portion of the project within the Agricultural District is associated with the existing public parking and shoreline access within the Kealia Kai subdivision development north of Kealia Beach.

1.2.2 State Conservation District

Pursuant to Chapter 205, HRS, lands designated by the LUC as Conservation District, are under the jurisdiction of the State Board of Land and Natural Resources (BLNR). The BLNR has the authority to establish zones (also known as subzones) within lands designated as Conservation District (Chapter 183C, HRS). Figure 1.3 shows these subzones in relation to the project corridor.

Permitted uses within subzones are delineated in the BLNR's Administrative Rules, Section 13-5-23 of Title 13, Chapter 5, Hawaii Administrative Rules (HAR). As shown on Figure 1.3, portions of the study corridor are situated within the State's Limited Subzone designation. The objective of the Limited Subzone is to limit uses where natural conditions suggest constraints on human activities (Section 13-5-12(a), HAR, 1994).

This includes the section from Kapaa Stream north to an area just south of Paliku Point. The next section in this subzone designation is from Ahihi Point north to Anahola. It should be noted that the section between the area south of Paliku Point up to Ahihi Point has not yet been given a subzone designation by the BLNR. Confirmation of this subzone designation has been received from the State Department of Land and Natural Resources in a letter dated November 14, 2002 and included in Appendix B.

1.2.3 County of Kauai General Plan

The *County of Kauai General Plan* was recently revised by the County in 2000 (adopted under Ordinance No. 753, November 30, 2000), and serves as a document providing guidance for land use regulations, locating and characteristics of new developments and facilities, and planning for County and State facilities and services (County 2000). Under the *General Plan's* Land Use Maps for the Kawaihau Planning District, the path's project corridor is designated as "Park," "Residential Community," and "Open" uses. Figure 1.4 shows the project corridor in relation to the Kawaihau Planning District Map along with the area land use designations.

1.2.4 County of Kauai Zoning Districts

The project corridor is located within the Kawaihau District of the Island of Kauai. As a result, the County's zoning maps for this area were reviewed to identify current zoning district classifications for the corridor and surrounding areas. Based upon these zoning maps, the project study corridor is zoned "Open" corresponding to the County's beach parks and open shoreline area.

1.2.5 Special Management Area

Under Chapter 205A (Coastal Zone Management), HRS, the County is given authorization to regulate land uses located within the established Special Management Area for the Island of Kauai. Review of the County of Kauai's Special Management Area Map for the Kawaihau District determined that the project is located entirely within the SMA boundary from the Kapa'a to Kealia area.

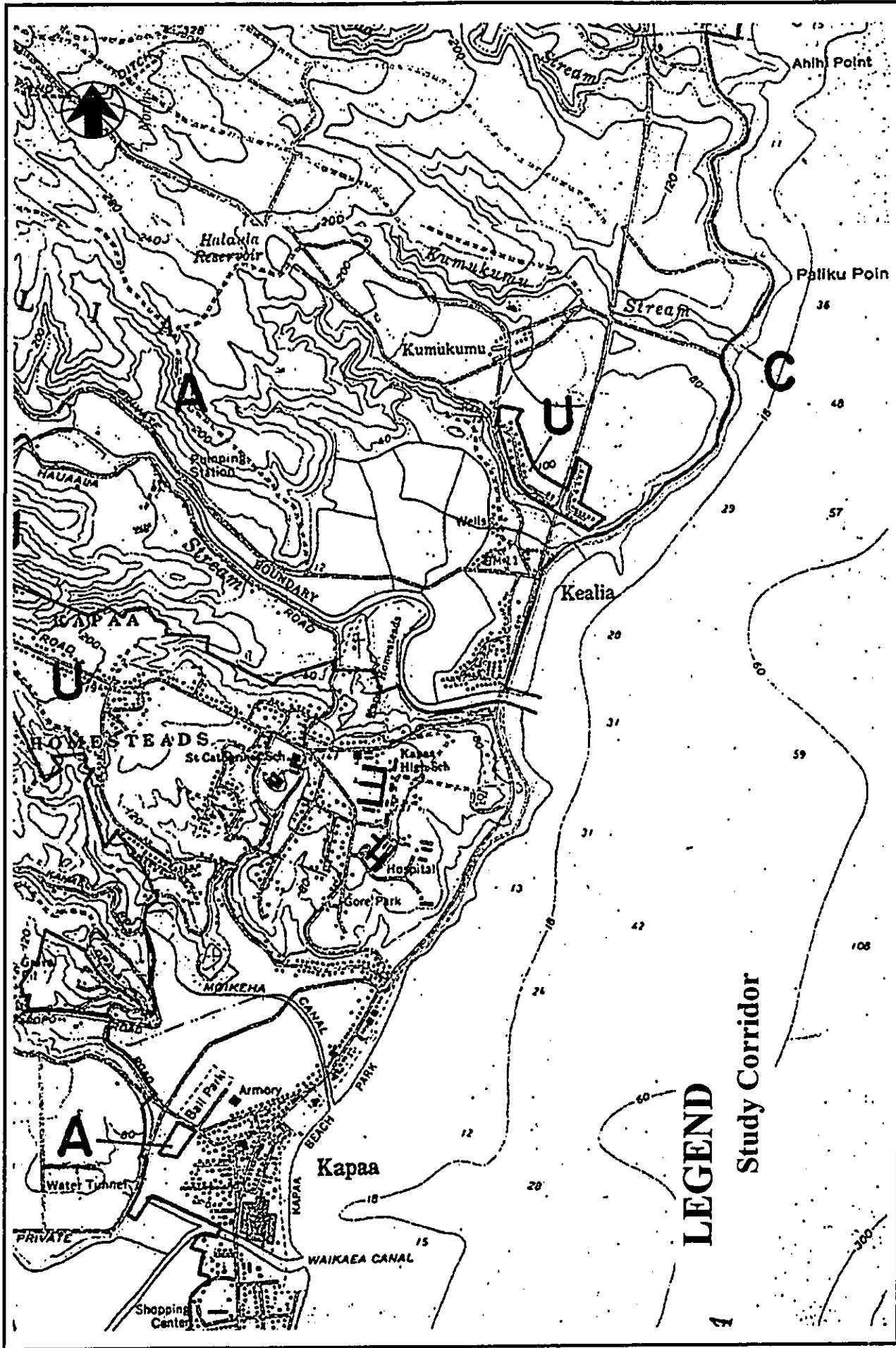


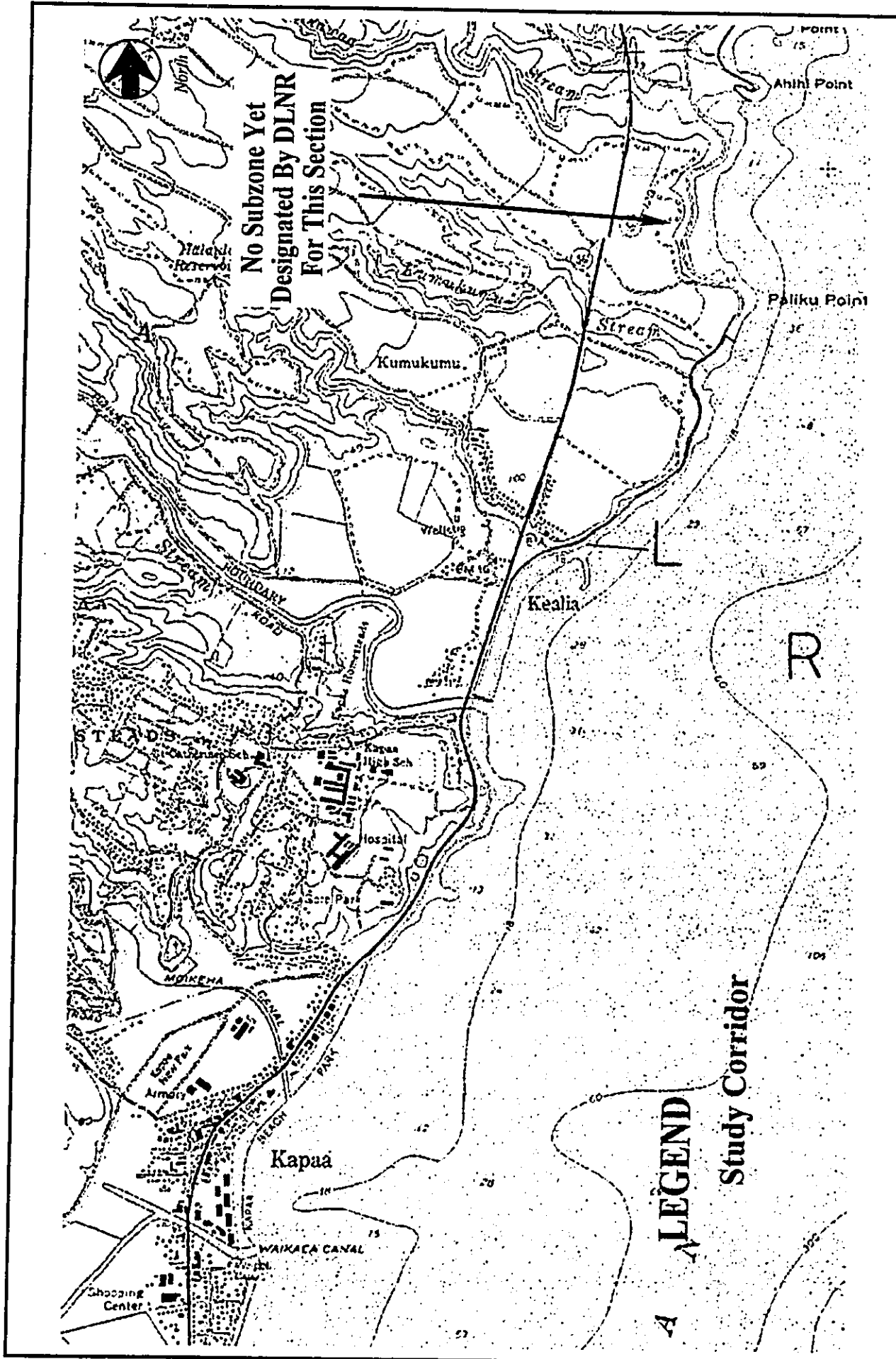
FIGURE 1.2

STATE LAND USE DISTRICT BOUNDARY MAP



Source:
State Land Use Commission

Kapaa-Kealia Bike & Pedestrian Basis of Design Project
County of Kauai, Department of Public Works



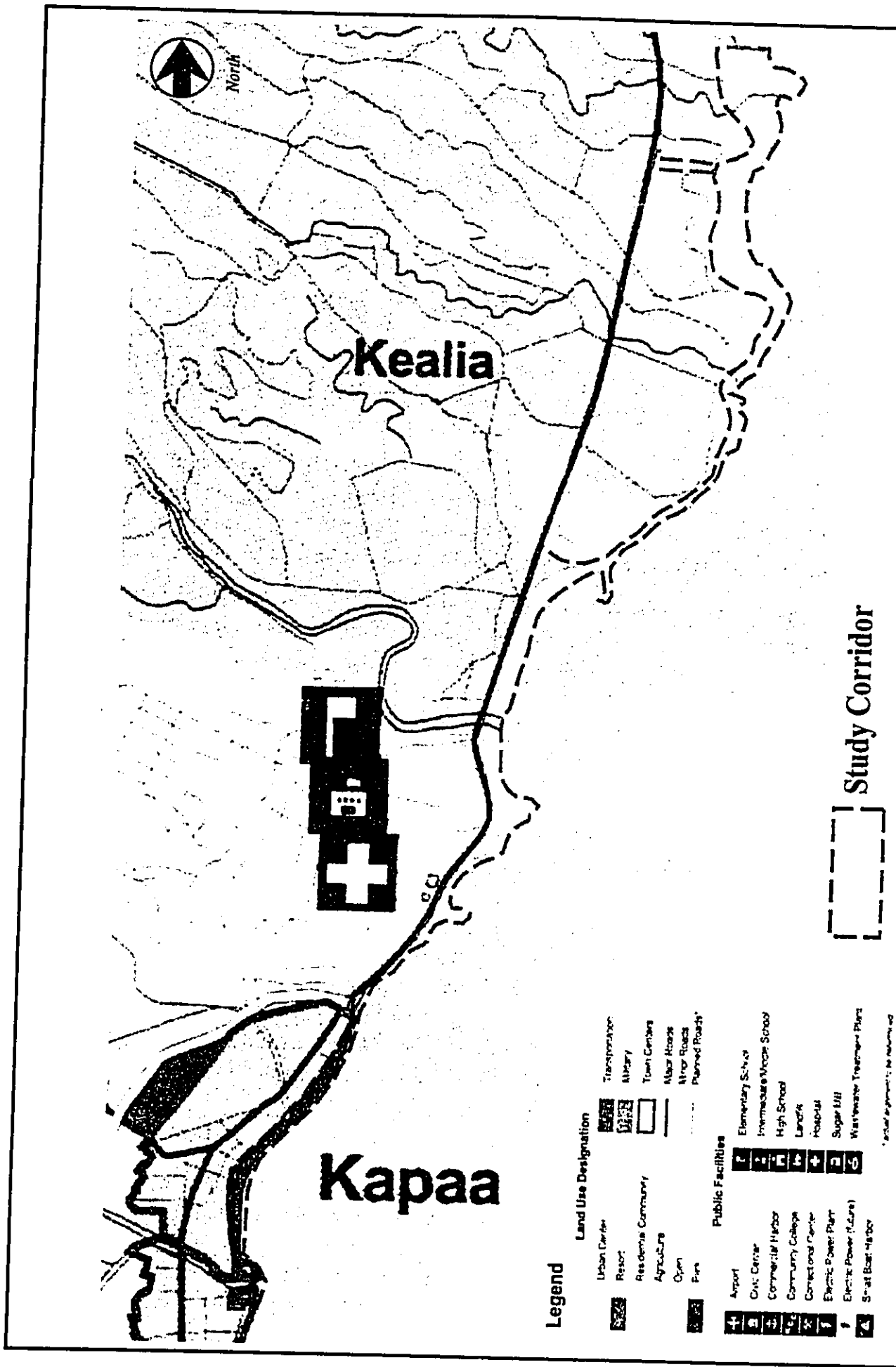
CONSERVATION DISTRICT SUBZONE BOUNDARY MAP

FIGURE 1.3



Source:
DLNR - Land Division

Kapaa-Kealia Bike & Pedestrian Basis of Design Project
County of Kauai, Department of Public Works



**KAUAI GENERAL PLAN
KAWAIIHAU PLANNING DISTRICT LAND USE MAP**

FIGURE 1.4

*Kapaa-Kealia Bike & Pedestrian Basis of Design Project
County of Kauai, Department of Public Works*



Source: Kauai General Plan (2000)

CHAPTER 2 PROJECT DESCRIPTION

2.1 PROJECT LOCATION AND VICINITY

The Kapa'a-Kealia Bike and Pedestrian Path study corridor is located on the eastern coastline of the Island of Kauai in the County's Kawaihau planning district. This district generally includes the eastern shoreline communities extending north from Wailua, through Kapa'a, Kealia, and up to Anahola. The area includes inland (mauka) properties from the shoreline up to the Lihue-Koloa and Kealia Forest Reserves.

Throughout this study corridor, the coastline is a dominant feature. This coastline is the location of many recreational activities including various types of fishing, surfing, windsurfing or kite-surfing, beach activities, as well as bicycling and hiking/walking along an existing cane haul road. Running parallel to this shoreline corridor and existing cane haul road is Kuhio Highway.

Figure 1.1 previously showed the entire corridor on a large scale USGS base map. However, the project's study corridor has been divided into three corridor sections for ease of description and analysis of impacts in this document. These study sections are: 1) Kapa'a Town, 2) Kealia Beach, and 3) Kealia Kai Subdivision. Based on general characteristics of the area, each segment includes areas that share a common characteristic (i.e., urban areas, rural area, open area, etc.). Greater descriptions of these study corridors are provided.

Kapa'a Town Section

The Kapa'a Town section reflects the more urbanized portion of the Kapa'a area associated with this project. The area consists of several urban developments such as resorts, residences, and community facilities along the shoreline as well as the commercial area situated along Kuhio Highway. This highway serves as the primary north-south thoroughfare for vehicles. Kapa'a Town has a rich history and today is a major urban/resort area on the eastern portion of Kauai. This Kapa'a Town corridor starts from Lihi Park which is located on the southern end of the Waika'ea Canal. This section includes the shoreline area proceeding north past Mo'ikeha Canal and up to the undeveloped area just north of the Otsuka Furniture Store. This northern terminus of the section is located near the Kawaihau Road intersection with the highway, and is before the start of the existing cane haul road path.

Kealia Beach Section

The Kealia Beach section covers the area immediately north of Kapa'a Town up to the northern end of Kealia Beach where the Kealia Landing formation is. This section of the study corridor can be generally characterized as the beginning of a transition from the more urbanized and commercialized area of Kapa'a Town to the undeveloped rural coastline area of Kealia. This coastline area includes Kealia Beach as the major feature along with the rugged shoreline.

Kealia Kai Subdivision Section

Proceeding north from Kealia Beach is the Kealia Kai Subdivision section which is the third and final section of the project corridor. This section covers the area north of Kealia Beach from the Kealia Landing up to Ahihi Point, and includes the County's shoreline area fronting the Kealia Kai Subdivision that is being developed. Kuna Bay, or what is commonly referred to as "Donkey Beach," is located towards the northern portion within this section.

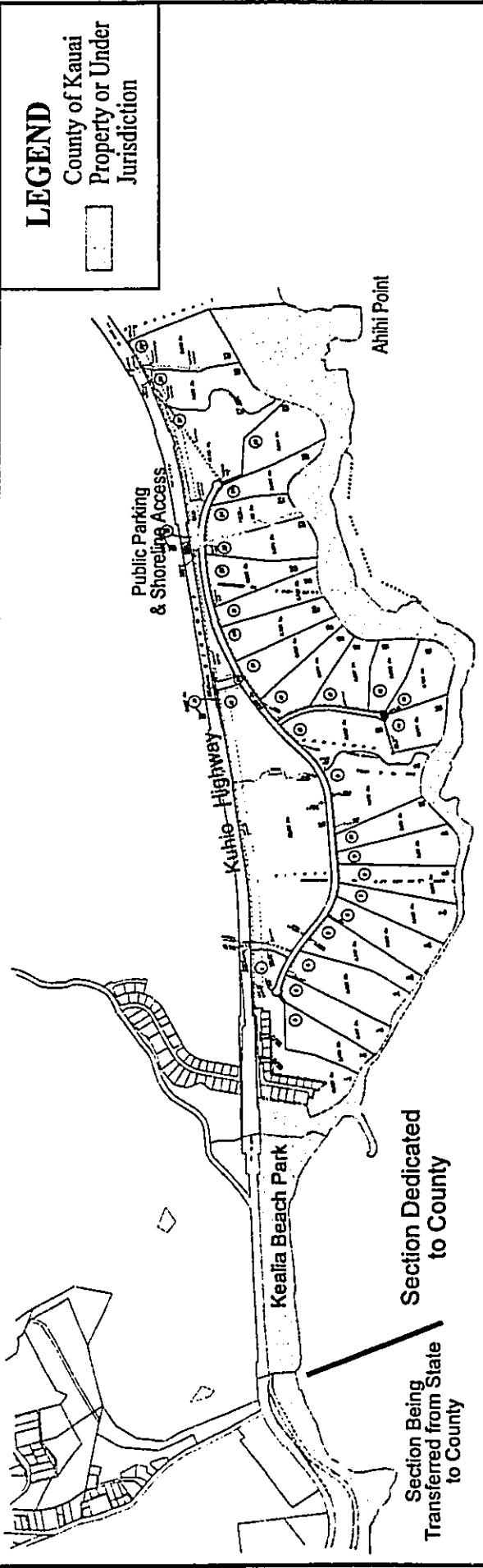
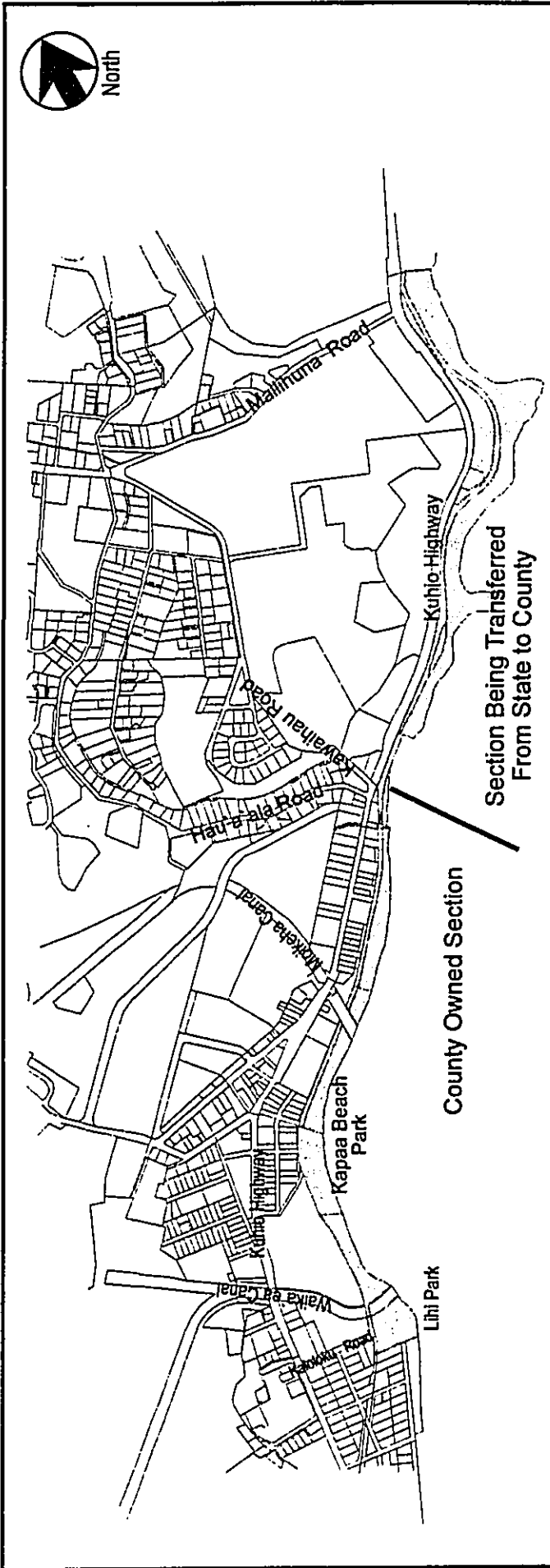
Having been recently dedicated to the County by the landowner, this section currently continues the open or rural character found in the Kealia Beach section. But, it can be characterized as being undeveloped and less utilized by the general public since recreational use has generally been low along this coastline. However, as lots are developed with the Kealia Kai Subdivision, the coastline will have residential estates in close proximity of the proposed path.

2.2 PROPERTY OWNERSHIP

The study corridor consists of lands that are either owned or under the jurisdiction of the County of Kauai. Jurisdiction of the lands stems from a number of land transactions, including conveyance through Executive Orders, and dedication of land by private landowners.

Overall, the County has ownership of the shoreline property within the entire study corridor, spanning approximately 4.3 miles in length. The approximate acreage of all County lands affected by this project within this corridor is 104.81 acres. Properties inland (mauka) of this corridor are owned by either the State of Hawaii or private landowners. Figure 2.1 identifies the County property owned within this corridor, and further discussion of this property is provided. Table 2.1 provides a summary of these properties by Tax Map Key number and acreage.

Table 2.1 Listing of County Property Associated with Project			
Property Description (TMK)	Acreage	Location	Ownership Status
1. 4-05-002: 001	2.83	Lihl Park	E.O. to County
2. 4-05-007: 001	2.50	Waika'ea Bridge, Kapaa Beach	E.O. to County
3. 4-05-008: 001	2.35	Kapaa Beach	E.O. to County
4. 4-05-011: 001, 003, 045, and 053	3.65	Kapaa Beach & Park Site	E.O. to County
5. 4-05-012: 001, and 002	5.38	Kapaa Beach	E.O. to County
6. 4-05-013: 001, 002, and 028	1.30	Kapaa Beach (north end of town)	Parcel 001 (0.39 acres) E.O. to County; E.O. being processed for other parcels
7. 4-06-014: 034, 036, 090, 091, and 092	20.46	Shoreline north of Kapaa Town up to Kealia Beach	E.O. being processed
8. 4-07-003: 001	7.24	Kealia Beach Park	Dedicated to County
9. 4-07-007: 029 (newly created)	59.10	Below Kealia Kai Subdivision	Dedicated to County
Totals	104.81		



LEGEND

County of Kauai

Property or Under Jurisdiction

FIGURE 2.1

Source:
Tax Map Key & County of Kauai

COUNTY PROPERTIES WITHIN PROJECT CORRIDOR

Kapaa-Kealia Bike & Pedestrian Basis of Design Project
County of Kauai, Department of Public Works

2.2.1 Property Subject to Executive Orders

The shoreline properties from, and inclusive of, Lihi Park to the northern edge of Kapa'a Town are primarily owned by the County of Kauai. The State of Hawaii previously held ownership to this property within this study corridor. However, ownership was conveyed to the County for use as the Kapa'a Beach Park and recreation paths through a series of Executive Orders (Executive Order Nos. 1128, 1162, 1187, 1206, 2068, and 2887). These properties total about 17.10 acres.

For the Kealia Beach study corridor section, a portion of the shoreline property from the northern end of Kapa'a Town northbound to Kapaa Stream, including the existing Kapaa Stream cane haul road bridge (or commonly known as Kapa'a Stream), was recently conveyed from the State of Hawaii to the County of Kauai through an Executive Order. This Executive Order is still being processed by the State, however, the County of Kauai already has a right-of-entry for this segment allowing them to implement improvements associated with this project. These properties being conveyed to the County total about 21.37 acres.

2.2.2 Property Dedicated to the County

The remaining portion of the Kealia Beach corridor section (primarily Kealia Beach Park itself) was recently dedicated to the County by a private landowner to fulfill one of the conditions of the Special Management Area Use Permit and Subdivision Application issued by the County for the Kealia Kai Subdivision. This dedicated property totals 7.24 acres.

In the Kealia Kai Subdivision segment, the project corridor includes lands that were dedicated to the County by the private landowner of the Kealia Kai Subdivision. This land dedication was also to fulfill the same condition of the Special Management Area Use Permit and Subdivision Application mentioned prior. This dedication of land included approximately 59.10 acres of land generally located at Ahihi Point along with a portion of the gulch for which Homaikawaa Stream runs through in reaching the shoreline. In addition, a public shoreline access trail and public parking lot along Kuhio Highway have been dedicated to the County from the landowner.

2.3 EXISTING SURROUNDING USES

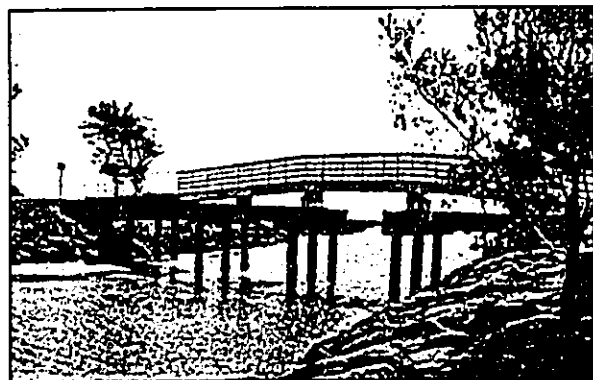
A discussion of the existing uses present along this coastline within the study corridor is provided. This discussion is divided into the three project sections established for this entire corridor. Several photographs of the existing and surrounding uses within the study corridor are provided in Appendix A of this document.

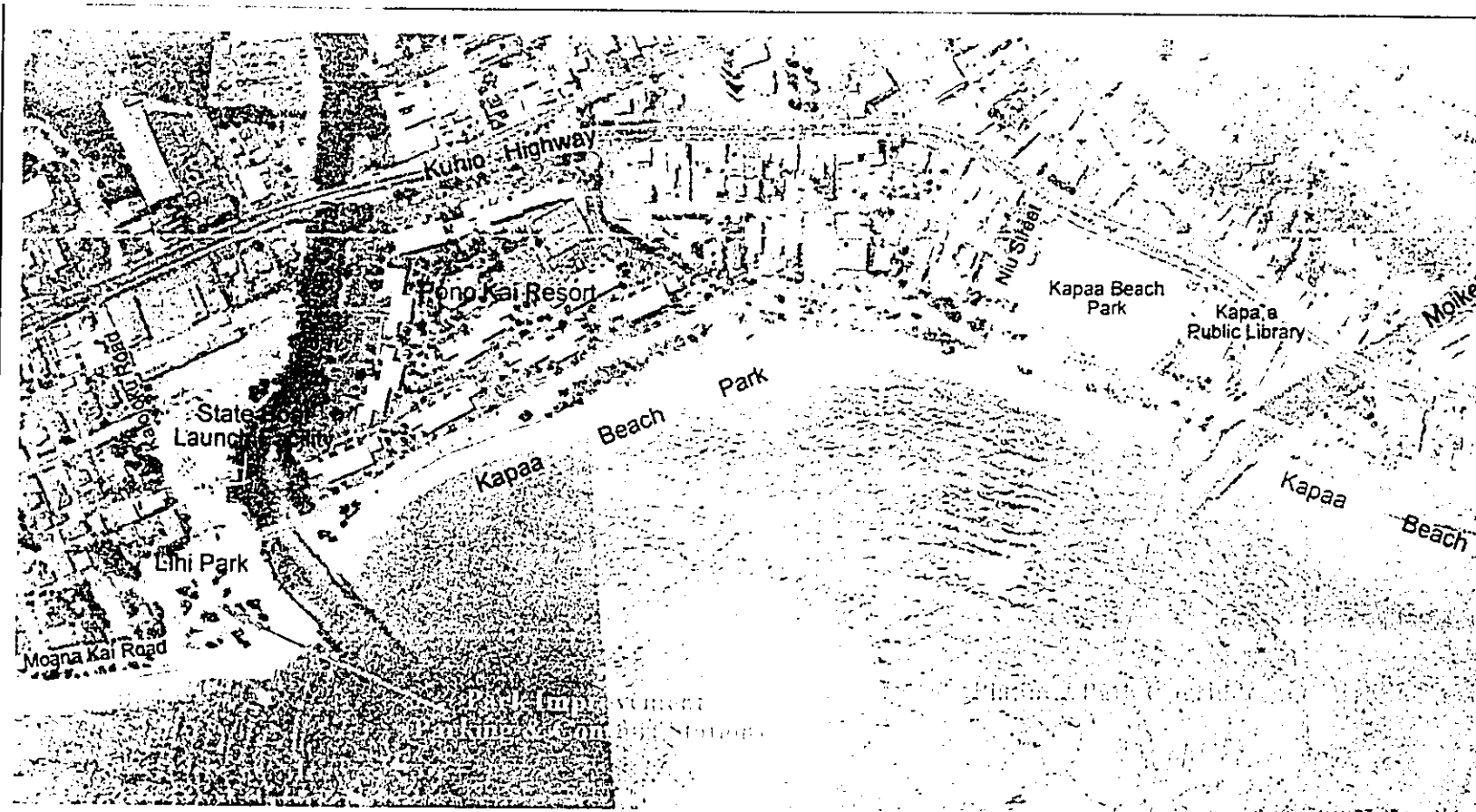
2.3.1 Kapa'a Town Section

Within the Kapa'a Town section of the project (from Lihi Park to the northern edge of Kapa'a Town), there are several major urbanized land uses along with public facilities present. This section consists of mixed uses including a resort, single-family residences, a few businesses, and various public facilities generally located on the mauka (inland) side of the planned path. The area makai (seaward) of the path consists of open space beach park area used for recreational activities. This entire stretch of beach situated north of the Waika'ea Canal is referred to as Kapa'a Beach Park.

Further inland along the highway, existing uses consist of a greater urbanized mix of residences with commercial businesses associated with the town center. This section also includes the crossing of Waika'ea and Mo'ikeha Canals. Figure 2.2 includes an aerial photo identifying major uses within this corridor section. A brief description of these major uses proceeding from south to north is provided.

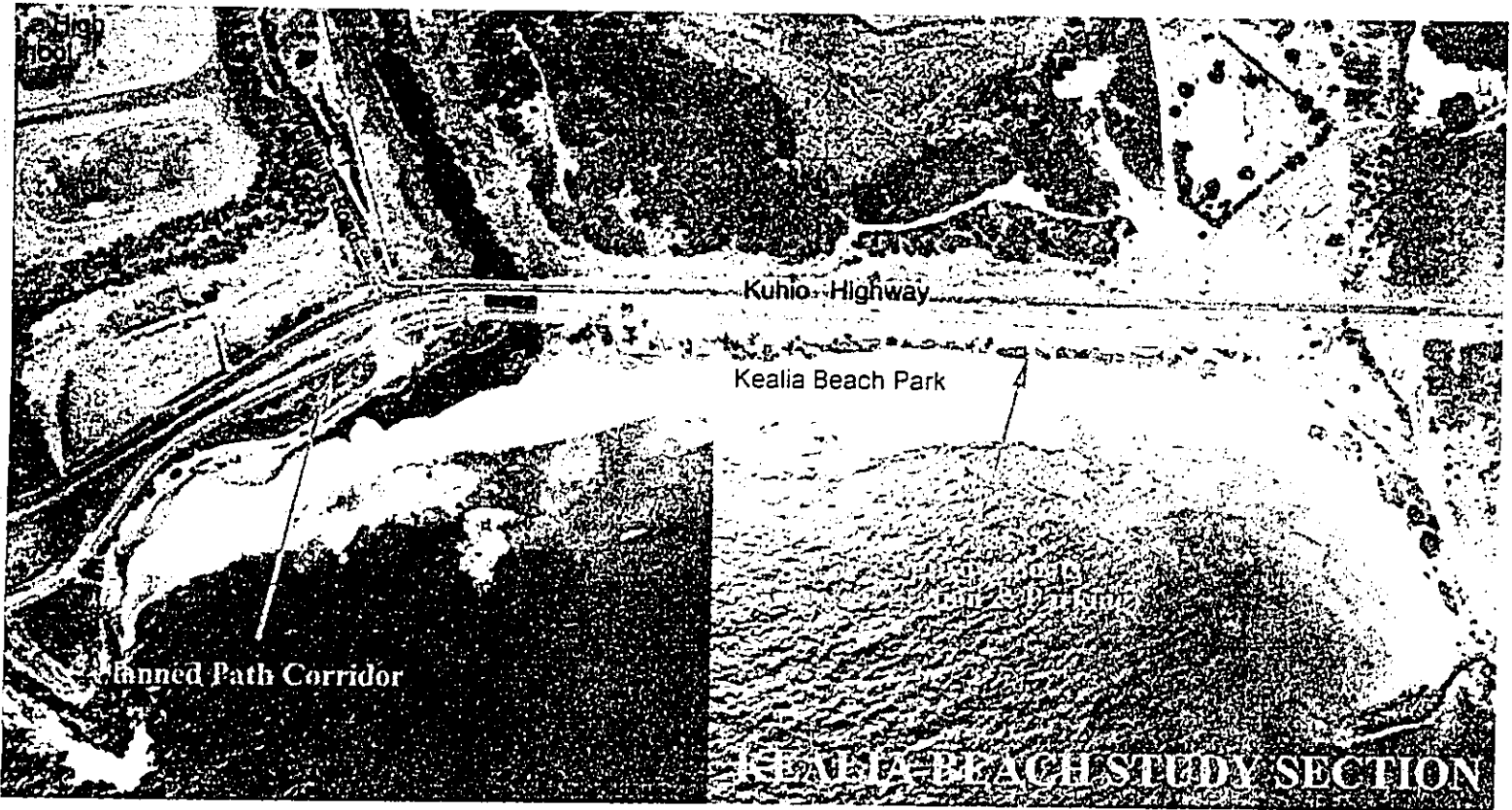
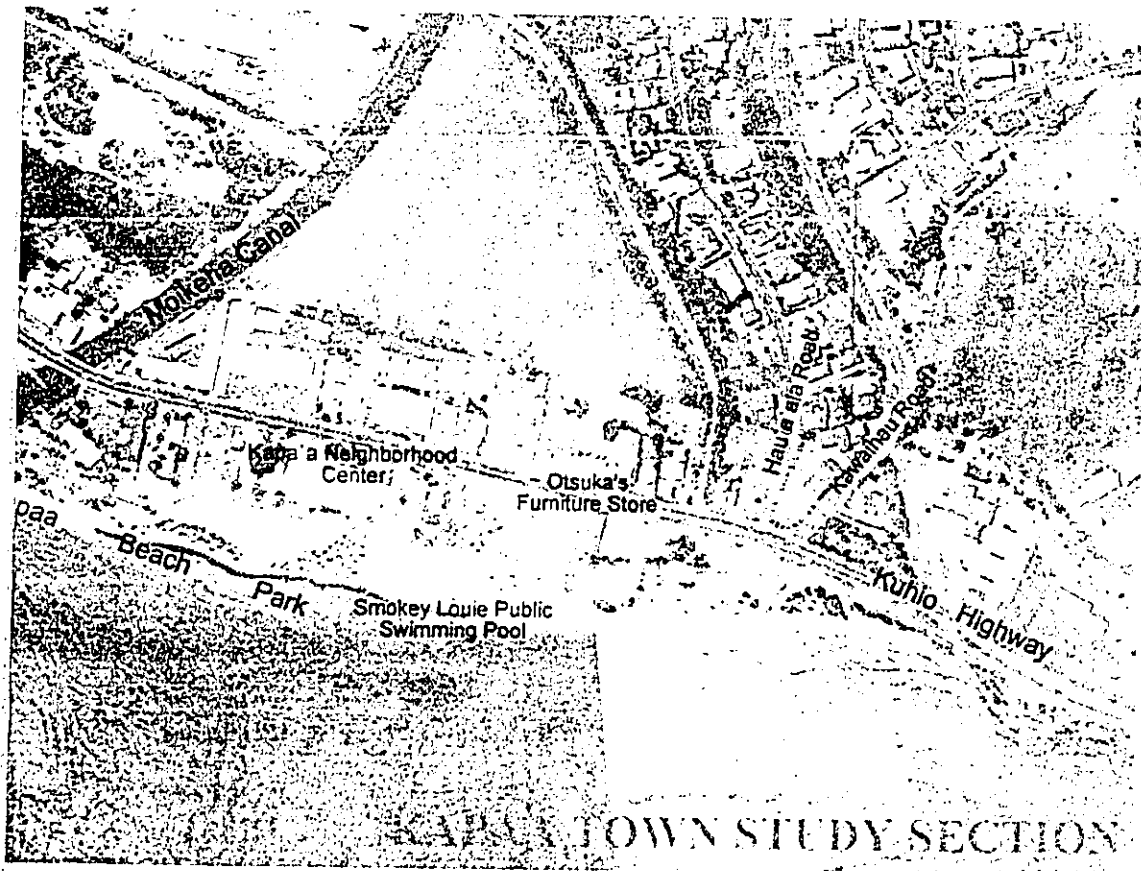
- State DLNR Boat Launch. This is a State-owned boat launch facility located on the southern end of Waika'ea Canal which includes parking, a shed used as a gathering place for boaters, washdown area, portable comfort stations, and boat launch situated above the canal bridge. Access to this boat launch is from Kaloloku Road.
- Lihi Park. This is a County-owned park of about 2.6 acres located on the southern end of Waika'ea Canal makai of the State's boat launch facility (see photo). This park is undeveloped, but has a few picnic tables with trash cans under the trees present. This park is used for various recreational activities such as fishing in the canal or along the beach, picnicking, etc. Visitors access this park from either Kaloloku Road or Moana Kai Road. People also use a dirt path through this park to access the shoreline area along Moana Kai Road which includes Baby Beach.
- Waika'ea Canal Bridge. This is a County-owned bridge (see photo) that has been improved to allow bikes and pedestrians to cross over this canal.
- Existing Bike and Pedestrian Path. From Waika'ea Canal, there is an existing asphalt paved path about 6 feet wide along the shoreline that is currently used by bicyclists and pedestrians (see photo). This path is located within the County beach park property and extends northbound up to the County swimming pool where it terminates.





KAPA'A TOWN AND KEALIA BEACH STUDY CORRIDOR

*Kapaa-Kealia Bike & Pedestrian Basis of Design Project
County of Kauai, Department of Public Works*



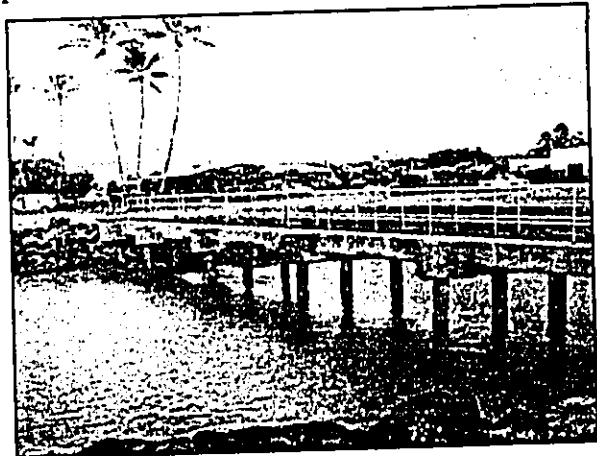
CORRIDOR SECTIONS

FIGURE 2.2

Source:
SSFM International, Inc.



- Pono Kai Resort. This timeshare resort of about 12 acres in size is located on the northern end of Waika'ea Canal.
- Kapa'a Beach Park. This County park of 2.8 acres is located along Niu Street and is used for soccer leagues and other recreational activities (see photo). Park facilities include a parking lot, two pavilions, and a comfort station next to a police substation along Niu Street. The existing paved path stops at this parking lot and continues again at the northern end.
- Kapa'a Public Library. This is a State public library located adjacently north of the Kapa'a Beach Park.
- Mo'ikeha Canal Bridge. This County-owned bridge crossing the canal (see photo) has been improved for bikes and pedestrians using the path. This bridge is also used for fishing within the canal by the public. People presently park along the canal at open areas near the highway or along the shoreline makai of the library parking lot.
- Kapa'a Neighborhood Center. This is a community center located along Kou Road, and is used for various community activities and meetings.
- Smokey Louie Public Swimming Pool. This County-owned pool is located along the shoreline across from the neighborhood center at the end of Kou Road.



2.3.2 Kealia Beach Section

This corridor section predominantly contains open space areas along the coastline as the path moves away from the urbanized Kapa'a Town area towards Kealia Beach. Figure 2.2 included an aerial photo of this section and identified major features. This section includes the beginning of the existing cane haul road that is planned to be used for the path. This cane haul road varies from about 13 to 18 feet wide and runs northbound up to the project's terminus at Ahihi Point.

The southern end of this section consists of undeveloped area just north of the Otsuka Furniture Store. A few picnic tables are located under trees in this area, and large boulders are present along the cane haul road to prevent vehicles from driving onto this road (see photo).



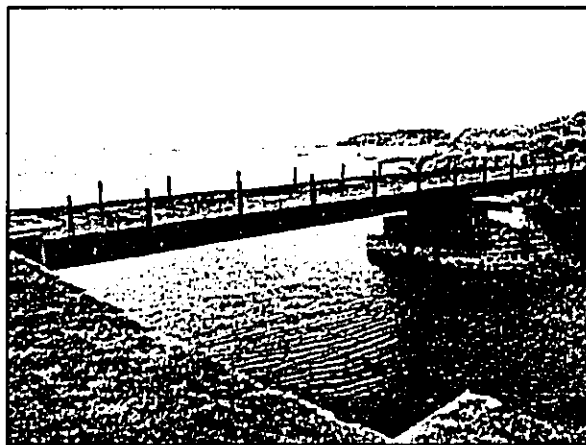
Proceeding north from this area, there are no major land uses or structures present along the shoreline. The cane haul road runs along the rocky shoreline at a lower elevation from Kuhio Highway (see photo). Immediately mauka (inland) of the highway are a few churches. On the bluff above the highway is the State operated Samuel Mahelona Hospital.



Further north, the cane haul road and highway approach a rocky point (see photo) which forms the southern boundary of Kealia Beach Park. Near this point is the State DOT maintained lookout and parking area known as Kealia Lookout. This rocky point is known to be a common spot for fishing activities. The cane haul road generally moves away from the highway running closer to the shoreline before transitioning back to the highway at Kealia Beach Park. The Roman Catholic Church maintains a cemetery mauka of the highway in the area just before the intersection of Kuhio Highway with Mailihuna Road. A sand/gravel area across (makai) this Mailihuna Road intersection is occasionally used by the public for parking and vehicle access along the beach.



Just past this intersection is the Kapaa Stream which has two bridges. One bridge is for the State DOT's Kuhio Highway serving vehicular traffic. The other is the former cane haul road bridge which is presently used by bikes and pedestrians although boulders are present blocking the ends of this bridge (see photo). The southern end of Kealia Beach Park near this river mouth is commonly used for surfing and fishing activities.



Kealia Beach Park is a long strip of beach located just makai of the highway which provides scenic views of this coastline from the highway. The cane haul road travels along this stretch between the park and Kuhio Highway (see photo). Strip parking occurs along gravel and dirt areas of



this park from Kapaa Stream up to northern end. The only facilities present at this beach park are a temporary lifeguard stand and a few picnic tables. At the northern end of this beach is another heavily used unpaved parking area located at the foot of a hill (see photo). This portion of the beach is more heavily used for swimming, picnicking, surfing, fishing, and other beach activities.



2.3.3 Kealia Kai Subdivision Section

This final corridor section can similarly be characterized as having predominantly open space areas along the coastline. The project would follow the cane haul road path up to the Ahihi Point area through this section. Figure 2.3 includes an aerial photo of this section and identifies major features.



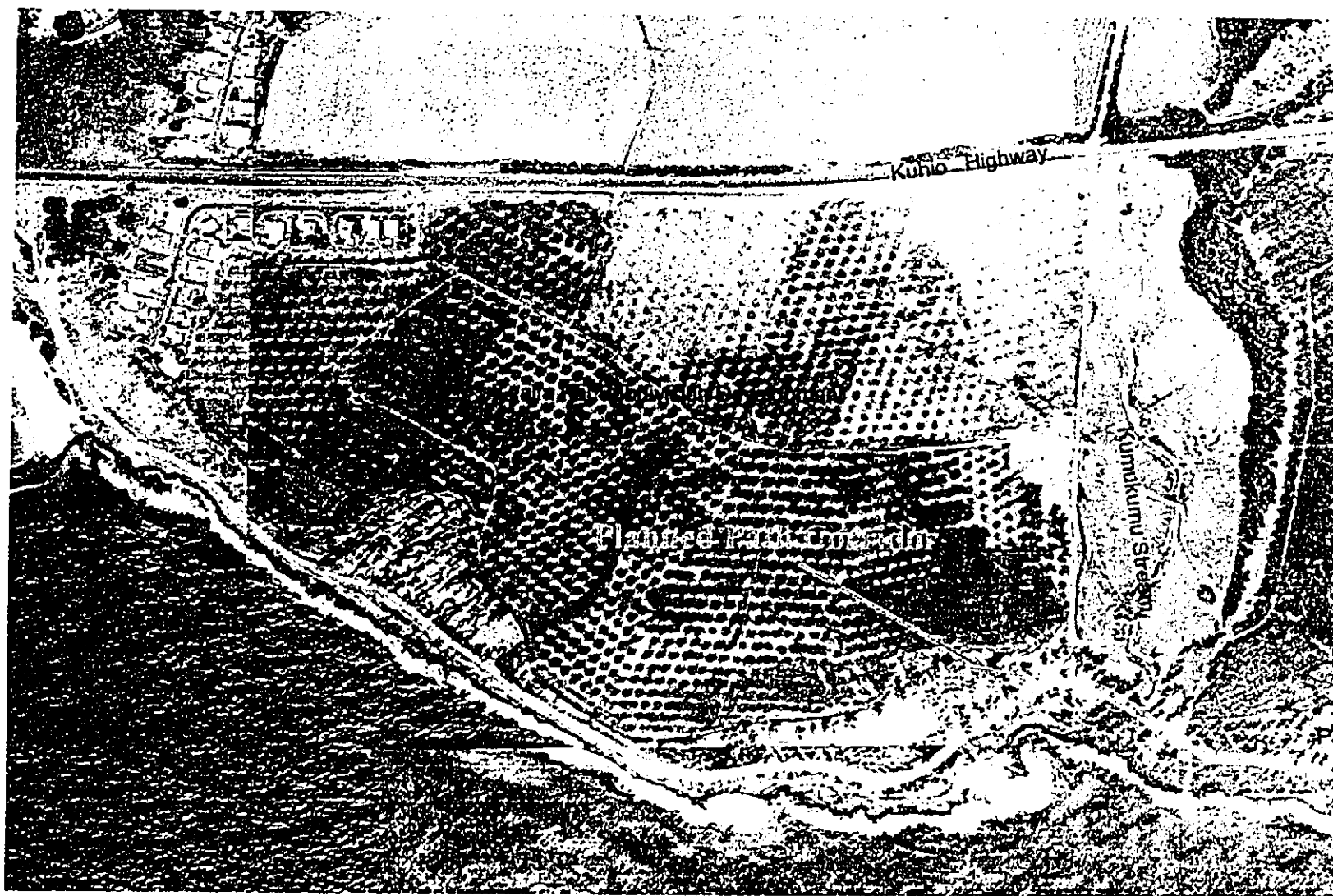
North of Kealia Beach, the path is routed along the undeveloped coastline (see photo). Lands mauka of the cane haul road are undeveloped and part of the Kealia Kai subdivision being developed as large estate lots. This subdivision includes all mauka lands up to the Ahihi Point area. Further north, the path encounters Kumukumu Stream and an area where a former cane haul bridge over this stream was washed out due to the Anahola Floods of the 1980's (see photo). Further north of this stream is a plantation era concrete structure overlooking the ocean known as the "Pineapple Dump" which was used to dump pineapple or tops into the ocean.



The path would then proceed from that area toward and around Paliku Point. An area north of this point along the beach has been reserved as a culturally sensitive area restricting public access. Past Paliku Point, the path would travel past Kuna Bay (also known as Donkey Beach) at a considerable distance inland from the beach (see photo). This large beach is not as actively used as Kealia Beach due to its remoteness and lack of easy vehicular access. Activities occurring at this beach include fishing, surfing, swimming, and other recreational activities.

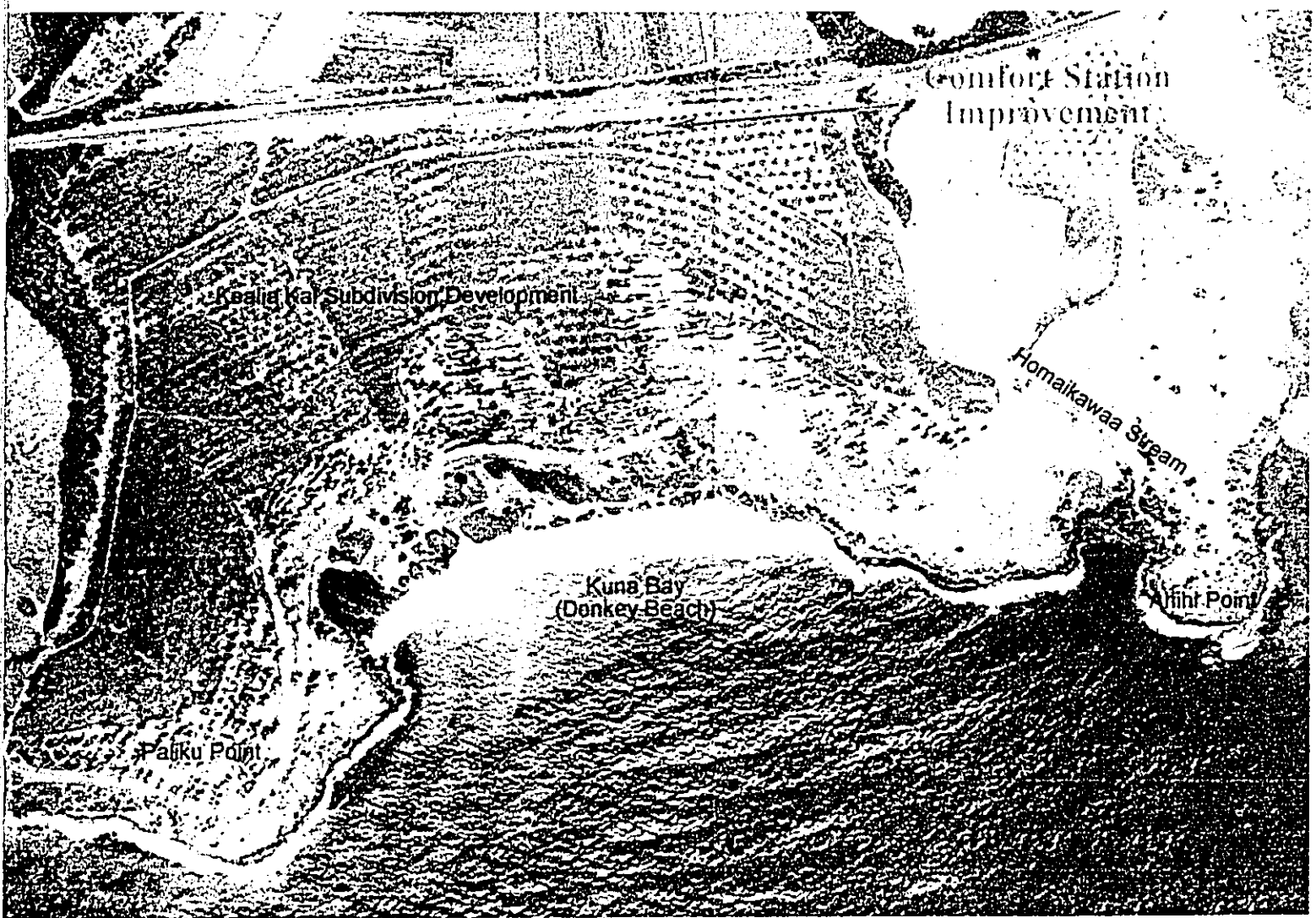


DOCUMENT CAPTURED AS RECEIVED



KEALIA KAI SUBDIVISION STUDY CORRIDOR

*Kapaa-Kealia Bike & Pedestrian Basis of Design Project
County of Kauai, Department of Public Works*



ORRIDOR SECTION

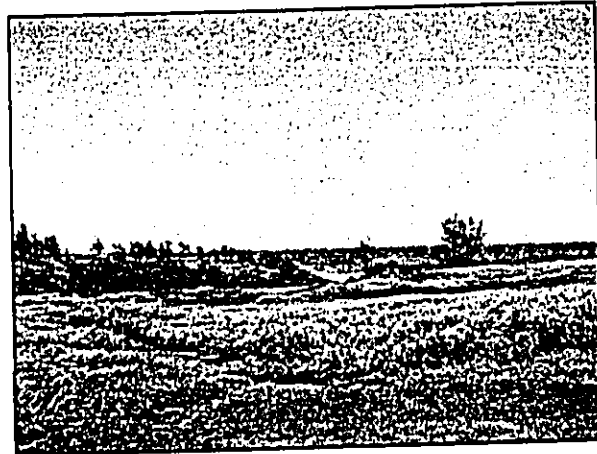
Source:
SSFM International, Inc.

FIGURE 2.3



A public shoreline access and parking lot are available within this subdivision as provide by the developer. A small parking lot of about 25 stalls is located along Kuhio Highway. An unpaved shoreline trail of about 12 feet wide runs from this parking lot to the cane haul road through the subdivision development providing public access to the shoreline.

North of Kuna Bay is a gulch where Homaikawaa Stream runs through from upland areas to the shoreline (see photo). The cane haul road travels mauka in this area back towards the highway. A cane haul road bridge crossing this stream has also been washed out like Kumukumu Stream Bridge. Ahihi Point is located at the end providing views of the coastline further north towards Anahola and Kuna Bay to the south.



2.4 PROJECT NEED AND OBJECTIVES

The coastlines of Kauai provide residents and visitors with an opportunity to experience various types of recreational activities such as swimming, picnicking, jogging, bicycling, surfing, windsurfing, and fishing, as well as enjoying scenic coastal views. With the eastern area of Kauai primarily used for agricultural pursuits, access to the coastline to engage in such activities has been limited. Closing of agricultural plantations and reduced agricultural operations has created an opportunity to provide residents with additional recreational activities using these lands.

The project corridor currently allows residents and visitors to enjoy the coastline area. However, a majority of this area, especially the cane haul road from the northern end of Kapa'a town to Ahihi Point, is unimproved or deteriorating from decades of agricultural use and coastal erosion from waves. Existing bridges are in need of repair or renovation due to deterioration and a few are washed out needing to be rebuilt.

Therefore, the objectives for this project are to improve the existing path route so that it can become more accessible to a variety of users of different skill levels and ages. Improvements would make this path safer to users due to its deteriorating condition, and provide sufficient right-of-way to accommodate multiple uses. This improved pathway would also provide an alternative transportation route for bicyclists besides the highway within the study corridor. This alternative route would help bicyclists travel within and around the narrow and congested corridor of Kapaa Town and out to Kealia Beach and the subdivision.

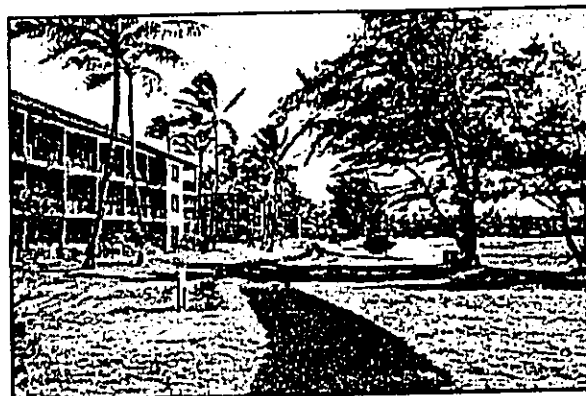
Lands dedicated to the County, either by Executive Orders or via private landowners, set forth that portions of the dedicated lands are to be used for a bicycle/pedestrian path. Portions of the lands within the corridor are designated as park lands (i.e., Kapa'a Beach Park, etc.). Thus, the proposed project will allow the County to utilize existing lands and rights-of-way under its jurisdiction for use as a multi-use path.

Implementing this project also creates an opportunity to provide needed recreational facilities for path users along with the general public such as parking, showers, comfort stations, etc. There is also a need for supporting facilities at beach parks within the study corridor to serve public recreational activities along this shoreline. Finally, implementation of this project would be consistent with the State DOT's Bike Plan for the island which identified a need for the improvement route being proposed.

2.4.1 Limitations with Existing Bicycle/Pedestrian Path

Conditions of Existing Path

The condition of the existing path in the Kapa'a Town area is relatively good. The asphalt-paved path and surrounding area has been maintained by the County as well as surrounding private landowners. The path continues north of the Pono Kai Resort (see photo) until the Kapa'a Beach Park parking lot. The path then begins again on the other side of the parking lot and continues north to the Kapa'a Neighborhood Center. Although paved, sections along this path are covered with dirt and sand. Beyond the neighborhood center, the path continues north, terminating at a grassy area near the County swimming pool. Although this path is in relatively good shape, it needs to be wider to better accommodate the multiple uses desired for this path by the County.



The cane haul road condition located north of the town is deteriorating (see photo). There are a number of ruts and potholes in this aging surface. Ponding also occurs on the cane haul road due to inadequate drainage and unevenness of the asphalt surface. Runoff from the highway and mauka areas has also eroded portions of the cane haul road at certain areas exacerbating its deterioration.



The deteriorating condition of the cane haul road continues as it proceeds towards Kealia Beach Park and beyond. In the area of Kealia Beach Park, dirt and gravel have fill in the numerous holes and cracks in the path. The path thus reflects more of an unpaved dirt trail than suitable bike and pedestrian path. Beyond Kealia Beach Park (see photo), as the cane haul road fronts the Kealia Kai Subdivision, the asphalt surface has similarly deteriorated resulting in being covered with dirt and

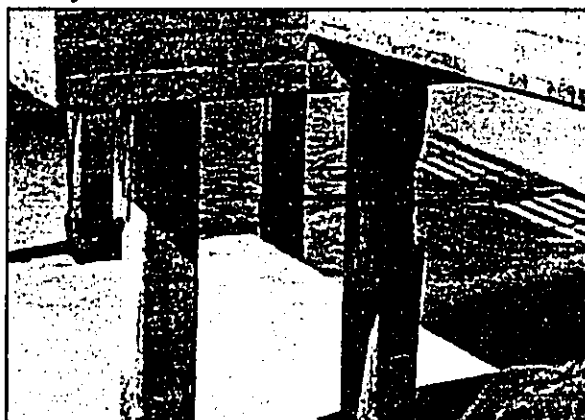


gravel from erosion and deterioration. As this cane haul road proceeds toward Ahihi Point, the path reflects more of an unpaved dirt road. Currently, many people utilize existing paved path in Kapa'a Town and the cane haul road, thus, there is a need to provide an improved paved path to accommodate these users.

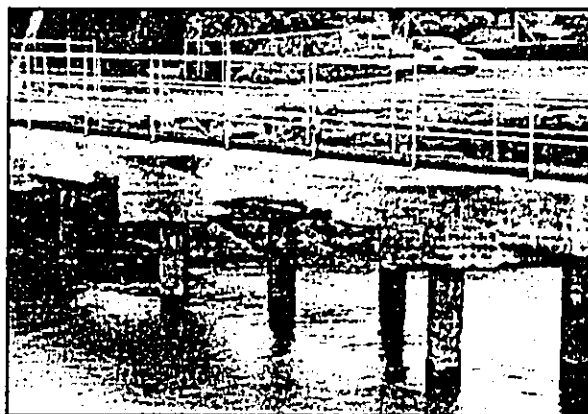
Conditions of Existing Bridge Structures

Along the planned path, there is a need to improve existing bridge structures and replace bridges that have been washed out in order to provide a continuous path for users. A bridge deck of about 12-feet wide is planned so that it may accommodate multi-users of the path. At Kumukumu Stream, this bridge structure had been previously washed out leaving only a concrete abutment wall at one end. Similarly, the Homaikawaa Stream Bridge had been washed out leaving only remnants of the original concrete structure. Therefore, a new bridge would need to be constructed at Kumukumu Stream. In the future, a bridge would similarly be needed to cross Homaikawaa Stream if the path is extended further north to Anahola.

At Waika'ea Canal, the south end of the bridge consists of a timber-framed deck supported on transverse concrete piers. The north end of the bridge consists of a concrete slab poured over the longitudinal and transverse piers. The transverse piers are supported by pre-cast concrete piles. The concrete piers appear to be in good condition for its age, however, they are severely spalled (fragments breaking off) due to corrosion of the reinforcing steel (see photo).



The Mo'ikeha Canal Bridge consists of an asphaltic concrete topping over concrete longitudinal and transverse piers. The transverse piers are supported by pre-cast concrete piles. In contrast to the Waika'ea Bridge, both the piers and piles at Mo'ikeha Canal are severely spalled due to corrosion of the reinforcing steel (see photo).



The existing two-span Kapaa Stream Bridge (cane haul road) consists of structural steel girders and stringers spanning from the abutments at each end to a center pier supported on a grouted CRM foundation. Closely spaced sections of train rail over the stringers form the deck which is paved with asphaltic concrete. The steel members on this bridge are severely corroded, and the stringers sag between intermediate supports along the girders. The center pier foundation also appears to have experienced large rotation settlement at one time in the past, but the bridge superstructure may have been reset and does not show signs of the same settlement.

2.4.2 Need to Support Existing Recreational Activities

There is a need for more recreational amenities such as parking areas, comfort stations, showers, and pavilions to serve the public conducting recreational activities along this shoreline. There is a lack of adequate facilities at beach parks within the study corridor. Thus, such improvements would support bike, pedestrian, and other users of the path by providing conveniently located rest areas, water, and restrooms over the 4.3 mile path.

At Lihi Park, there is a lack of recreational support facilities right now with only a few picnic tables and trash cans available. This park is frequently used by the public for recreational activities associated with Waika'ea Canal, Baby's Beach, and the overall shoreline for fishing, swimming, etc. This park site could also serve as a conveniently located staging area or activity point serving path users between here and Kealia Beach Park to the north. Therefore, the development of path amenities is needed at this site.

At Kealia Beach Park, there is similarly a lack of recreational support facilities. This beach park is heavily used by the public for surfing, swimming, etc. and is in strong need of showers and restrooms. With the path routed along this beach, such facilities would conveniently support path users as well as beach users. This location is also conveniently located along the entire 4.3 mile corridor since it provides a suitable half-way point along the path corridor for users wishing to rest or use facilities.

Other support facilities identified during public informational meetings conducted included the need for more parking at the Kealia Lookout area for recreational users such as fisherman. Fishing activities are conducted along the entire shoreline with particular areas having higher use than others. The need for a comfort station at the Kealia Kai Subdivision area was also identified. Based upon input from County agencies, it was suggested that a location at the existing public shoreline parking area was appropriate.

2.4.3 Need for Alternative Transportation Modes and Routes

An improved path would provide Kauai residents and visitors with a safe thoroughfare for bicycle riding, walking, jogging, and possibly other forms of non-motorized activities along this shoreline. It appears that interest in bicycling have increased over the years, and with bicyclists having little or no riding space in the Kapa'a-Kealia area, providing paths for bicyclists to travel on would implement plans that the County and State DOT have for increasing the amount of bikeways.

Use of the shoreline for various recreational activities conducted in this area is also popular, especially during weekends and holidays. Improvement to the existing pathway or creation of alternative pathways will provide users with an alternative route or transportation mode to access the shoreline. Improvement of the path will also provide safer conditions for users of different skill levels and age. As a transportation route alternative, the proposed path will provide residents with an alternative route to and from their residences in the Kapa'a to Kealia corridor.

Improvements to the existing path or creation of alternative paths within the study corridor would be in line with the dedication of the cane haul road in the Kealia Kai Subdivision area to the County. Such paths would also be consistent with Executive Orders dedicating lands to the County for Kapa'a Beach Park. Thus, the improvements planned would be consistent with ownership requirements and conditions associated with the County's property along this coastline.

2.4.4 Need for Increased Safety

Safety for bicyclists and pedestrians (joggers, etc.) is another concern supporting the need for this project. Kuhio Highway serves as the primary highway facility serving vehicular traffic between the Kealia and Kapa'a areas. This highway is a two-lane highway with paved shoulders on both sides, but no dedicated or striped bike lane. Bicyclists and joggers that utilize Kuhio Highway from north of Kapa'a Town to Kealia must contend with vehicular traffic traveling at over 50 miles per hour. The lack of paved and grade separated sidewalks for joggers and dedicated bike lanes along this section of the highway create a potential safety hazard for these users.

Vehicular parking is also an issue in the congested town of Kapa'a, where Kuhio Highway goes through. Although the speed limit is generally 25 mph in this section of town, there are no available shoulders for bicyclists to use. Traffic congestion through this corridor also restricts the flow and movement of bicyclists.

Therefore, the proposed multi-use path will provide a safe alternative transportation route between Kapa'a and Kealia. Within Kapa'a Town, bicyclists can use the path to travel along the entire project corridor without conflicting with vehicular traffic on the highway. There are also many mauka-makai access roads at various locations along this path allowing them to get to residences, community facilities, or businesses located along the highway if needed. North of Kapa'a Town, the proposed path would provide users with a safe alternative route separated from vehicular traffic along the highway.

2.4.5 Implementation of Bike Plan

According to *Bike Plan Hawaii: A State of Hawaii Master Plan* (DOT 1994), the proposed bicycle/pedestrian path is indicated as a "Future Proposed Bike Path." The plan shows the proposed path from Kapa'a to Kealia as part of a bike path that extends from Nawiliwili to Anahola, and this path is situated within the project's study corridor. The plan states that this coastal bike path "could provide an excellent alternative for bicyclists commuting between Kapa'a and Lihue, bypassing many congested and narrow roadway sections" (DOT, 1994). Implementation of this project will allow the County to increase its bicycle/pedestrian paths along the eastern coast of Kauai, and will provide the community and visitors with additional amenities in County parks.

Bike Plan Hawaii: A State Master Plan, was initially developed in 1977 and updated in 1994. The update was done as the general public increased their awareness of concerns regarding the environment, health and need for greater energy conservation, and the State Legislature requested that the State DOT to seek ways to reduce bicycle related accidents through education efforts, road

and bikeway facilities improvements, mapping of all available bike trails, and greater public dissemination of bicycling benefits and opportunities.

For the County of Kauai, *Bike Plan Hawaii* noted that in 1994 the island only had 3.8 miles of existing bikeway. The plan proposed development of approximately 173 bikeway miles distributed along both the general circumference of the island, and in more urbanized sections. The plan indicated that in the Kapa'a area, roadways would have to be widened along with acquisition of sufficient right-of-way in order to allow future bikeway development. However widening of existing roadways and acquisition of sufficient right-of-way would be quite costly.

2.5 DESCRIPTION OF PROJECT

The Kapa'a-Kealia Bicycle and Pedestrian Path Project will consist of developing a multi-use path along the eastern coastline of Kauai from Kapa'a to Kealia. The proposed path would have an estimated length of approximately 4.3 miles. Currently, the County is undergoing a basis of design process which will determine the design parameters for developing the path's design. This process includes the identification and selection of a path route and conceptual plans of related amenities within the project corridor. Hence, all alternatives for path route, amenity locations, constraints and requirements are being assessed under this environmental review process in order to evaluate the impacts of the proposed path project.

2.5.1 Design Criteria

This section discusses the general design criteria and parameters that were considered in developing the multi-use path improvements and amenities related to the proposed path. These general design criteria are divided into two categories which are technical-related criteria, and physical environment-related criteria.

Technical-Related Criteria

General technical-related criteria, primarily deals with guidelines, policies, and design standards established by the American Association of State Highway and Transportation Officials (AASHTO), FHWA, Manual of Uniform Traffic Control Devices (MUTCD), and the County of Kauai. These technical standards cover such items as width of the path, slope of the path, foundations for the related amenities, drainage of the site, and other construction matters. Because the proposed path and related amenities will be partially funded by the FHWA, AASHTO guidelines and standards for a multi-use path (*Guide for the Development of Bicycle Facilities*) would be incorporated, and designs generated for the path and related amenities should reflect this. Related amenities would meet County building standards or codes including waterlines and other utility improvements (AASHTO 1999).

Initial plans for the path improvement are proposed to be similar to the on-going Lydgate State Park bike path project which involves a concrete path approximately 10 to 12 feet in width and 6 inches in depth. The path proposed under this project is for a 10 to 12-foot-wide path, which is consistent with guidelines and standards for paths established by AASHTO.

Path improvements would address the need for safety, emergency access, maintenance, and development requirements such as conformance with requirements of the Americans with Disabilities Act (ADA). In addition, the County has design and maintenance guidelines established for recreational paths that were developed as part of the Lydgate Park improvements. These guidelines would also be incorporated.

As part of the technical design, path user needs were also considered so that the various needs could be considered. The proposed path will be a multi-use path because it will support a variety of different users such as pedestrians, bicyclists, etc. Examples of the types of users considered are:

- pedestrians. This is normally the largest group of path users, and would include people of all ages walking or jogging along the path quite often in pairs. This also includes people with leashed dogs walking or jogging along the path.
- Parents with Strollers. This is another group which would likely utilize the path due to its location and character especially within Kapa'a Town.
- Users with Disabilities. The design of the path needs to comply with ADA requirements in making this path accessible to users with disabilities.
- Bicyclists. There were various categories of bicyclists considered as part of the path development. This includes skilled recreational and commuting cyclists who prefer traveling on roads, at higher speeds, and using the fastest most direct route. Less skilled cyclists are generally uncomfortable with vehicular traffic and prefer sharing paths with pedestrians. Family recreation cyclists include both skilled and less skilled users riding with children, at slower speeds, and typically more for recreation. Youth cyclists consist of children under the age of 13 primarily interested in recreation. Given the route and location of the proposed path along the shoreline, it is anticipated that skilled recreational and commuting cyclists may not be a large majority of bicyclists using it.
- Skaters. The group includes skate boarders, skaters, and roller bladers who need a smooth hard path for their use.
- Equestrians. Design features associated with a multi-use path are different for this user group since equestrians generally prefer a separate, soft-surfaced trail. Railing heights on bridges need to be taller, bridges would need to be wider to accommodate them, and rest areas possibly designed with tie-ups and water troughs. Coordination with equestrian groups on Kauai would be included in the design phase.

Physical and Environmental Criteria

Physical characteristics of the shoreline environment, available right-of-way, along with various environmental factors (archaeology, fauna, etc.) were incorporated as criteria used in developing path improvements and amenity locations and siting. The topography along the project corridor ranges from relatively flat areas, particularly in Kapa'a Town, to steeper sloped areas having large cuts within land areas. The topography of the existing paved path section in town and cane haul road is already relatively flat with slight grades due to its historic use as a cane haul road. This topography was also looked at for areas where there is no existing path or cane haul road. Likewise,

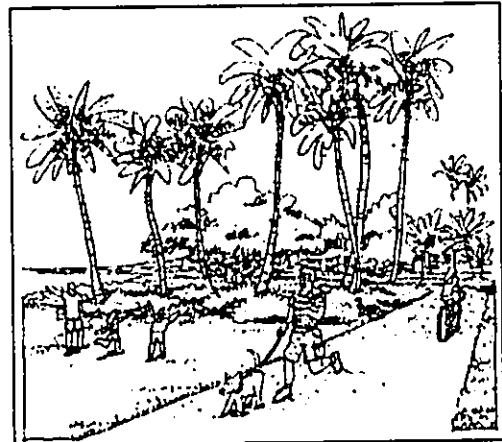
the siting of related path amenities such as pavilions were intended to utilize existing flatter areas to minimize cut and fill of areas. Other physical characteristics considered included shoreline erosion, drainage patterns and flooding, streams, etc.

Environmental factors considered included archaeological sites such as historic surface features and subsurface features. Design criteria took available information into account in the alternatives developed particularly those associated with the siting of path amenities. Other factors considered included items such as botanical resources, faunal species, aquatic resources as they influence stream crossings, and social factors (homes and businesses along the shoreline).

Future highway improvements by the State DOT were also incorporated into the conceptual plans developed since they would affect the siting of path amenities and path route. Existing recreational activities conducted along the shoreline were also considered in the path alternatives developed to minimize disruptions or interference with those activities. One particular example was the parking lot at Kapa'a Beach Park where the current path is routed through.

2.5.2 Kapa'a Town Segment

Within this section of the project corridor, improvements would generally consist of widening the existing path, improving existing bridge crossings, and providing path amenities. These improvements are discussed in more detail by groupings and graphically shown on Figures 2.4 and 2.5.

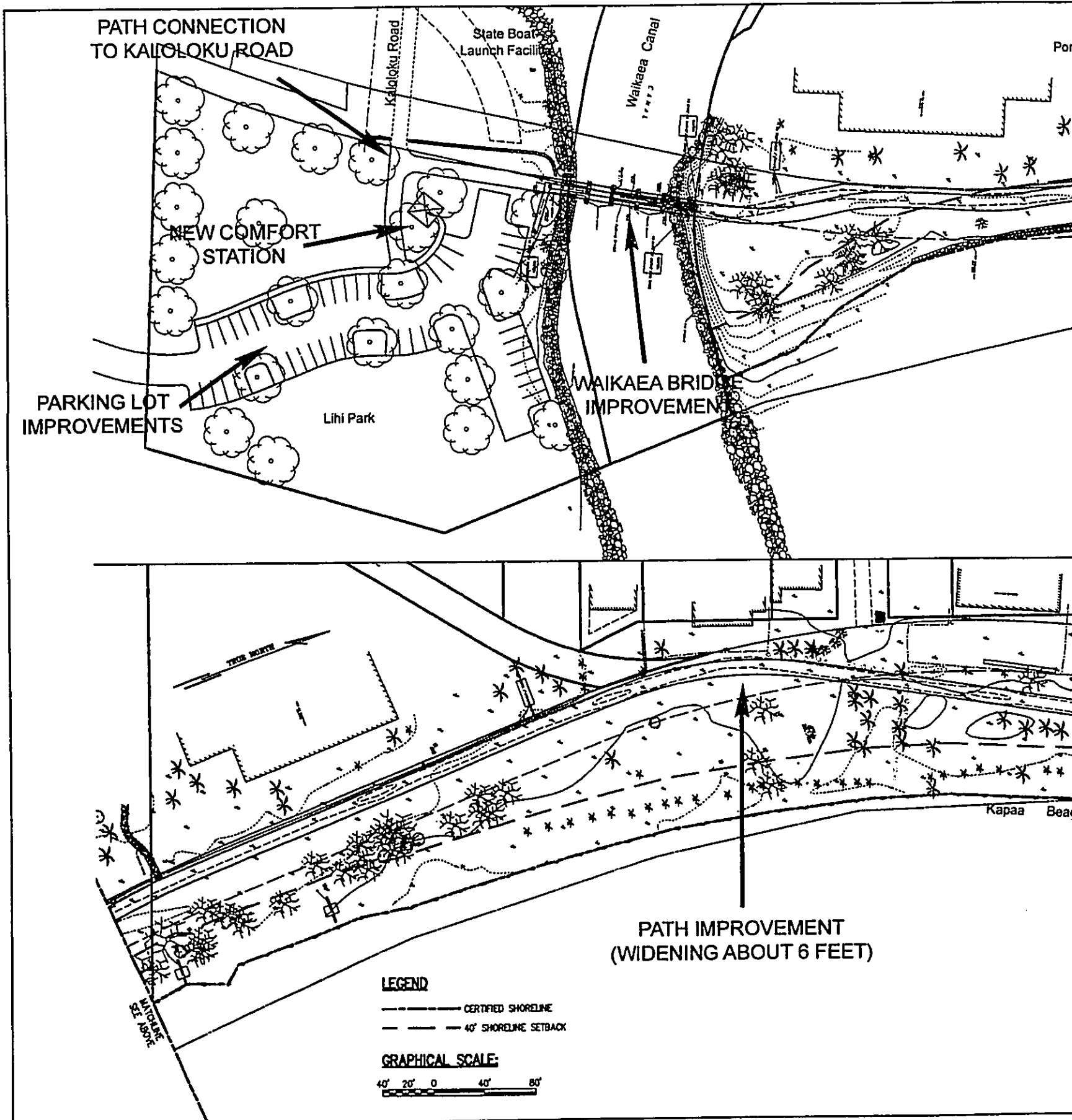


Path Improvements

The multi-use path would start from Lihi Park and proceed north toward Kealia. A mauka (inland) connection from this park site would be created to Kaloloku Road to provide a direct link for users from the path to Kuhio Highway. The County's right-of-way for Kaloloku Road extends from the highway makai (eastbound) down to Lihi Park although the asphalt paved portion of this road terminates just before the park site. Consequently, this unpaved section of the road would be improved to provide path users with a direct connection to the highway from this park site.

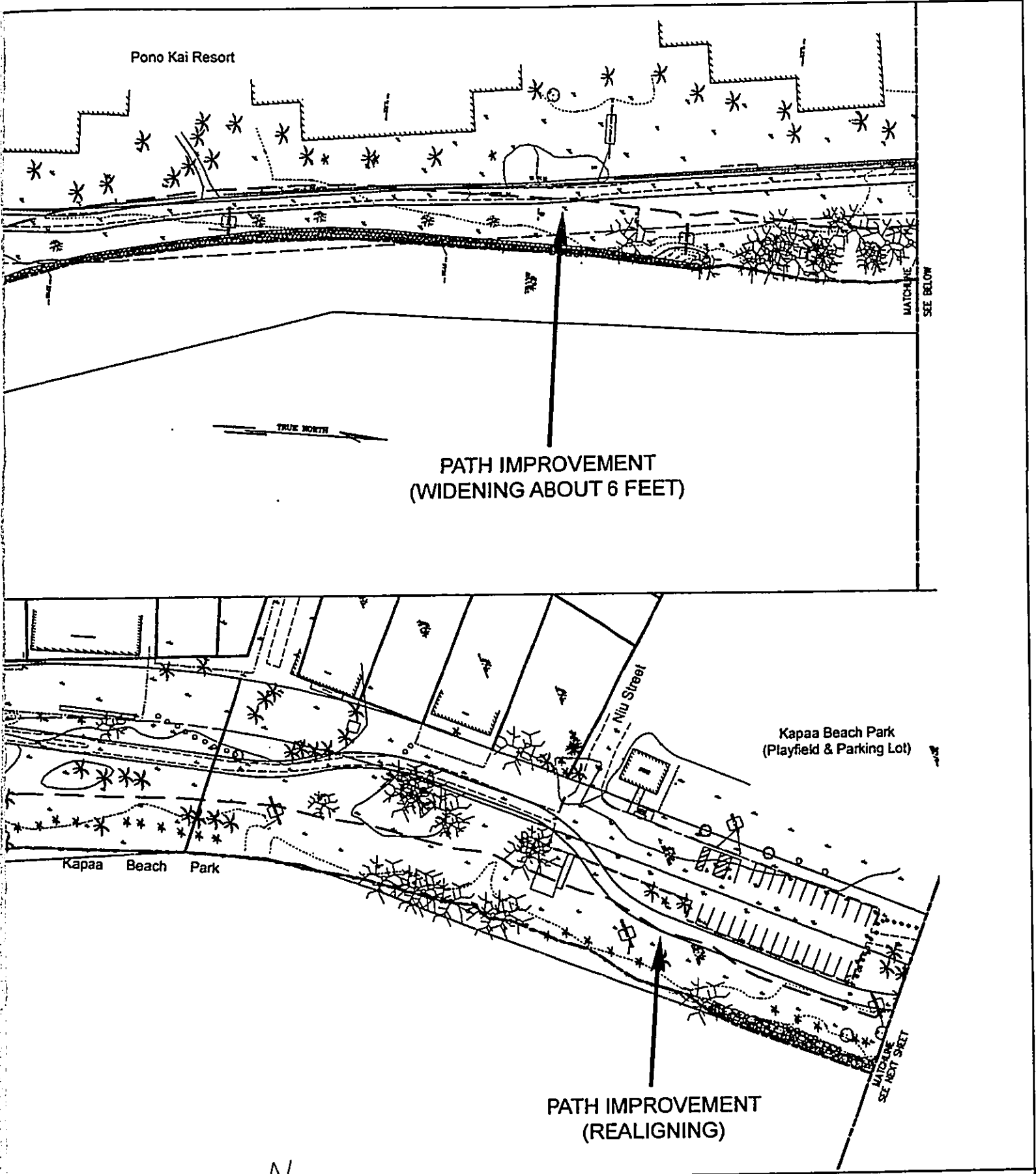
Beginning from the northern end of Waika'ea Canal, the multi-use path is planned to follow the alignment of the existing paved path in this area. This existing paved path would thus need to be widened up to 12 feet from its present width of about 6 feet. Widening of this path would occur on the makai (seaward) side of the existing path since inland (mauka) properties are privately owned. Figure 2.4 shows this widening improvement.

This path is planned to be changed from an asphalt path to a concrete path. However, the actual pavement material used would be developed as part of the project's design given construction costs. A typical section of this multi-use path is also provided. To retain the existing character of the area, earth tone or other natural colors would be incorporated into the pavement design.



PROPOSED IMPROVEMENTS WITHIN KAPAA TOWN

Kapaa-Kealia Bike & Pedestrian Basis of Design Project
 County of Kauai, Department of Public Works

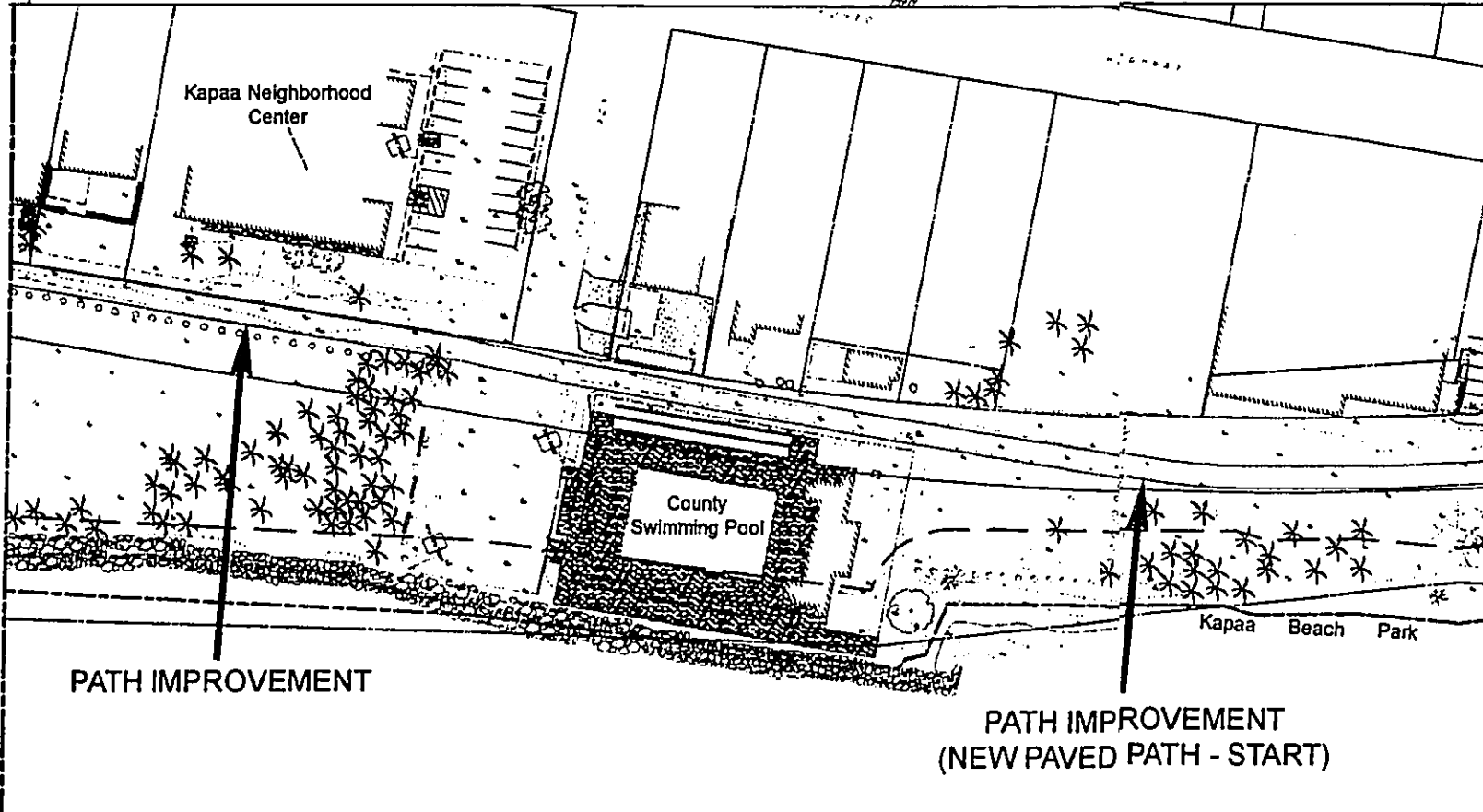
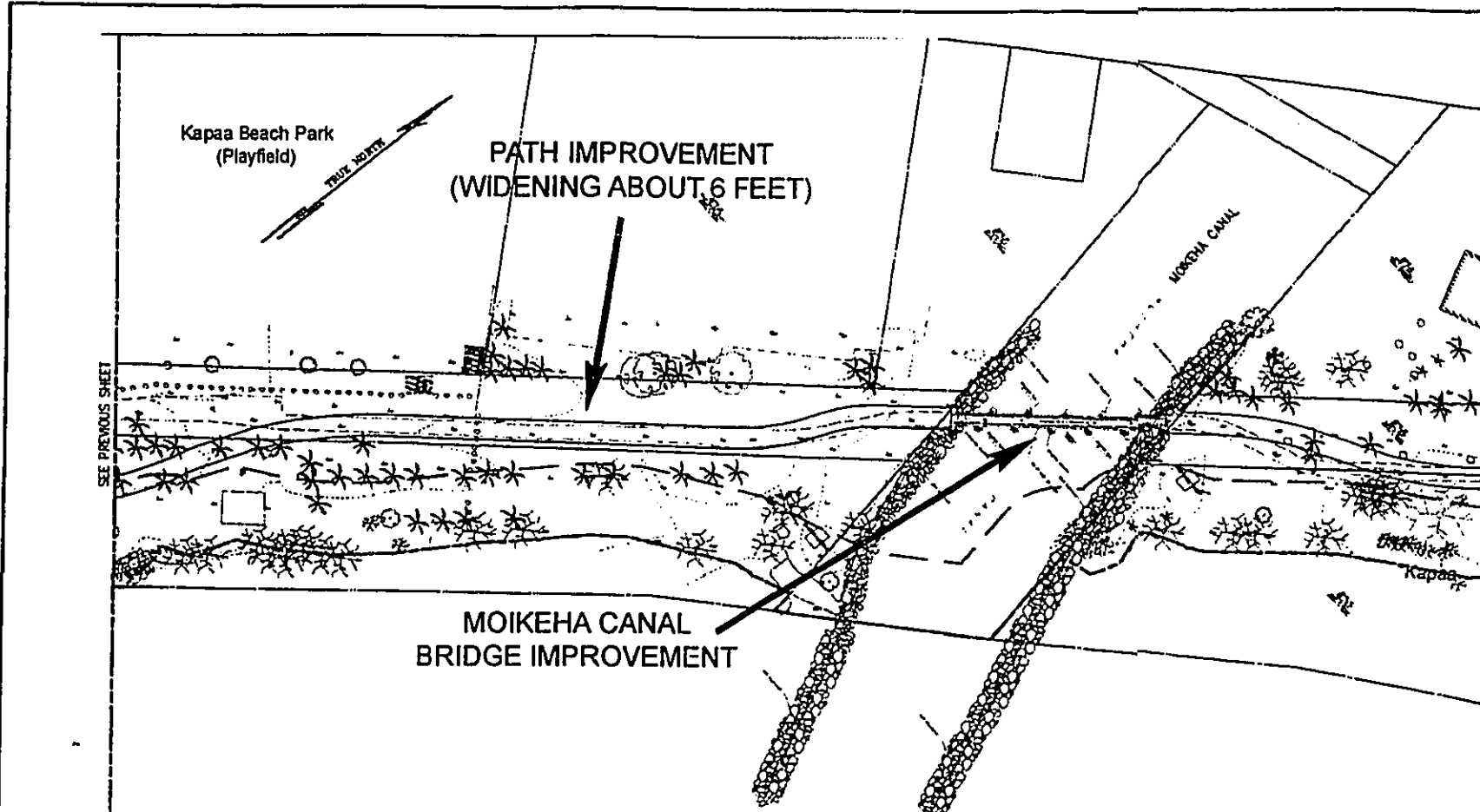


LA TOWN (SECTION I)

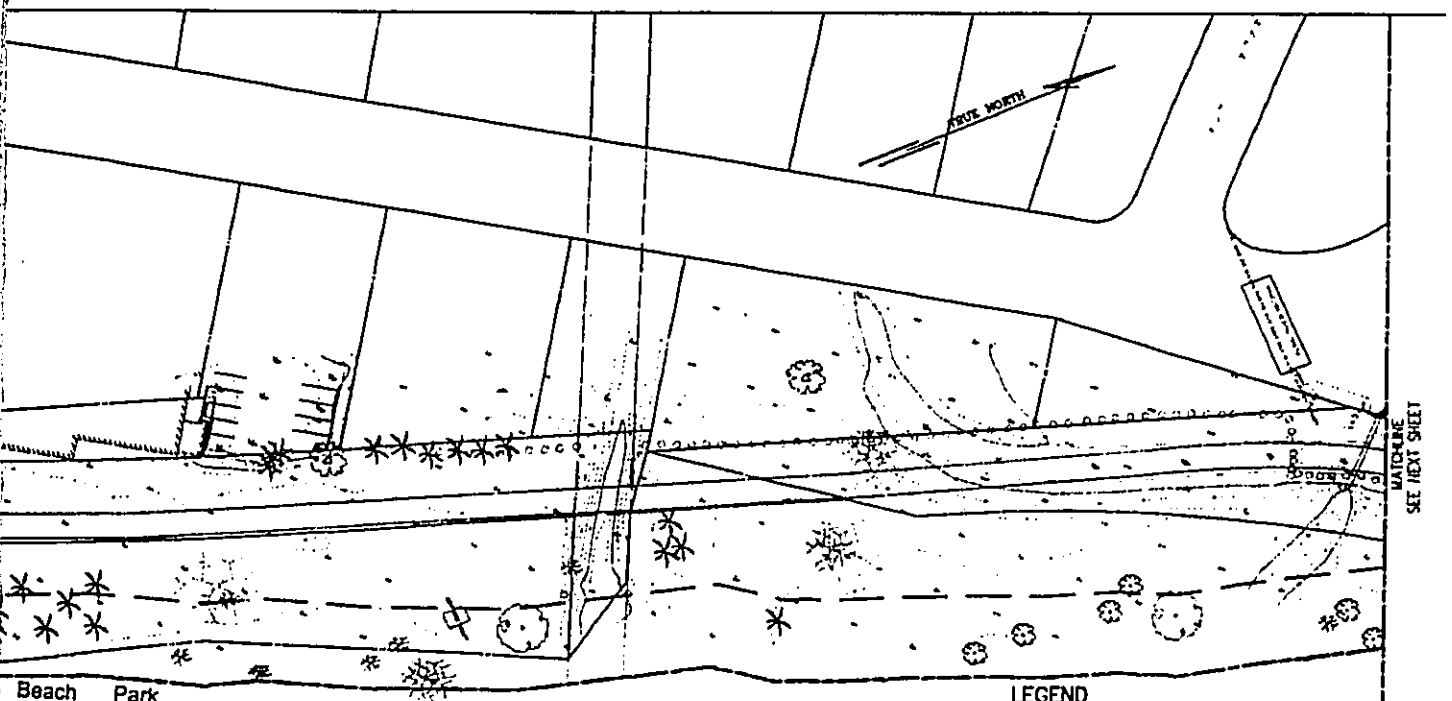
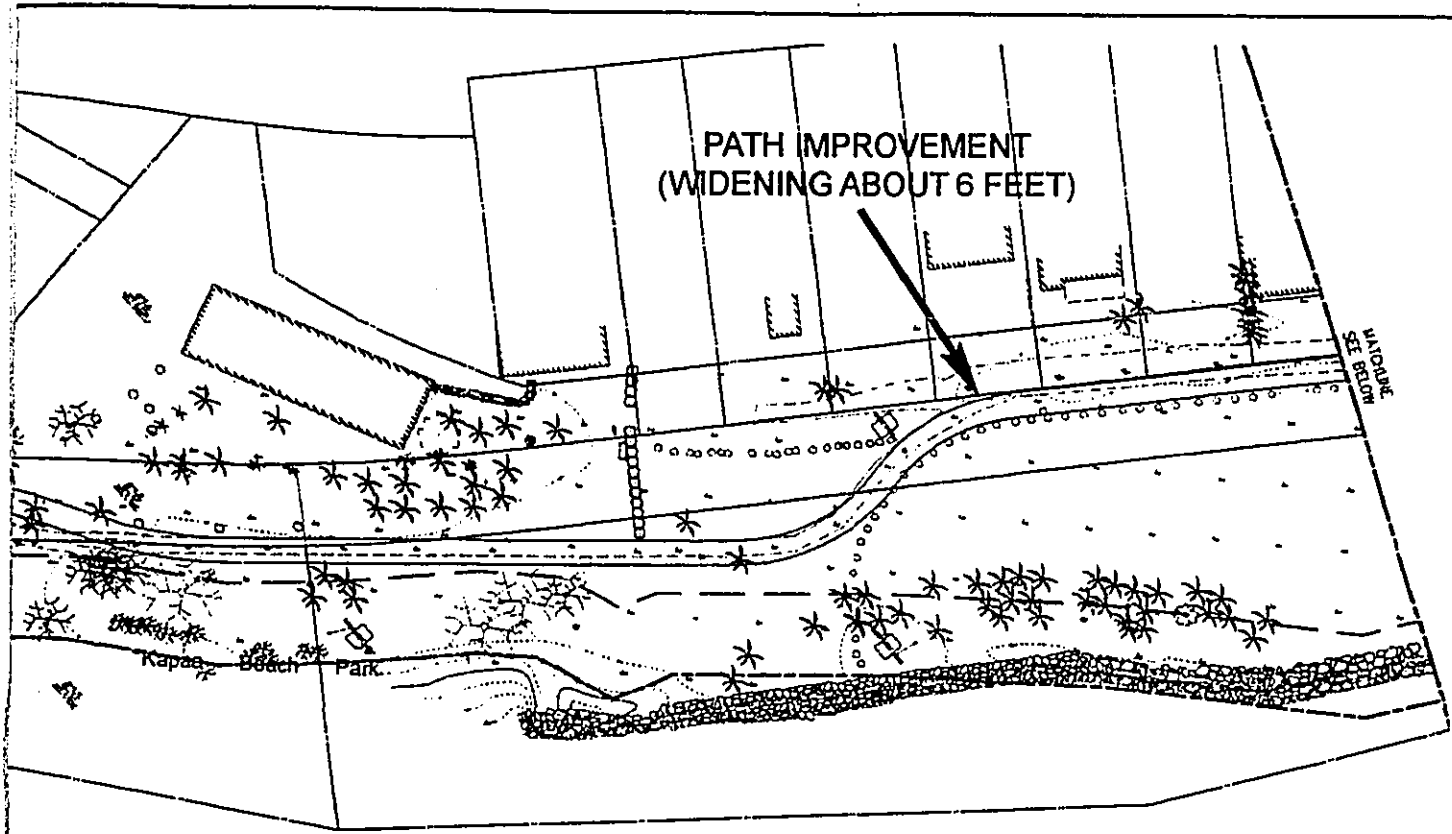
FIGURE 2.4

Source:
SSFM International, Inc.





PROPOSED IMPROVEMENTS WITHIN KAPAA TOWN (



LEGEND

- CERTIFIED SHORELINE
- 40' SHORELINE SETBACK

GRAPHICAL SCALE:

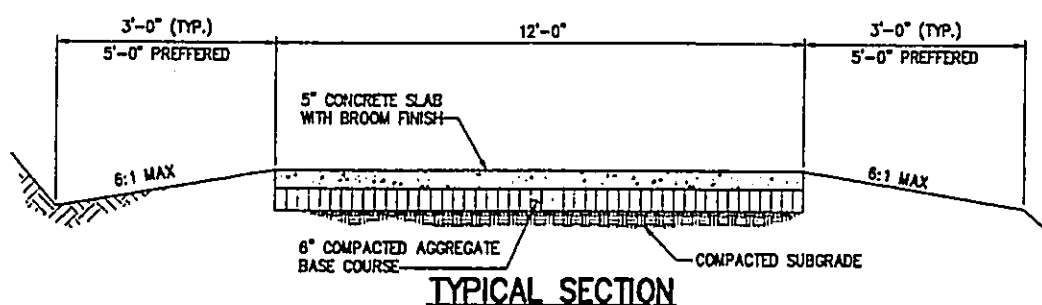


A TOWN (SECTION II)

FIGURE 2.5

Source:
SSFM International, Inc.





Necessary guardrails along the path would also try to incorporate fence materials and designs which complement the natural surroundings. Appropriate signage would be developed as part of the project's design to minimize conflicts by path users. In addition, the design of this path would be consistent with the County's design and maintenance guidelines developed for the recreational path being constructed at Lydgate Park (MDG, Inc. 2002).

As the path reaches the Kapa'a Beach Park site (also referred to as Kapaa Town Park), two alternative routes were considered due to the existing parking lot. This parking lot is heavily used on weekends due to soccer games or other league activities occurring at the ball field. Alternative A (Parking Lot Path Route) would have continued the path along its present alignment through the parking lot.

A second alternative (Alternative B Shoreline Path) developed is to reroute the path in front of the existing southern pavilion and makai of the parking lot before connecting back to the existing path alignment after the northern end of the parking lot. This alternative is planned to be implemented, and is shown in greater detail on Figures 2.4 and 2.5. This alternative would reduce path user conflicts with vehicles entering and exiting the parking lot.

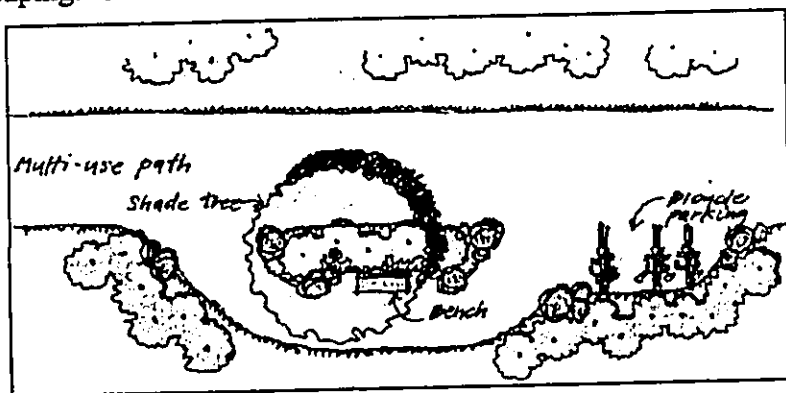
From this park, the proposed path route would continue following the existing path up to the County's swimming pool at Kou Street. The path would cut through the existing parking lot there serving pool users. The path would then be routed through an existing corridor situated between the swimming pool facility and residences (Figure 2.5). Vehicular access to these homes is used along this corridor via Kou Street, and would continue with the project.

A small gravel area immediately north of the pool (photo at right) is also used occasionally by the public for parking when fishing along the shoreline. Vehicular access to this gravel parking area would continue with this project. Thus, this short path section would be designed to serve both path users, vehicles for residents of the adjacent homes, and vehicular access to beach parking for the public. Necessary signage will be provided to notify the public of this multiple use.



The existing paved path currently ends at this swimming pool, therefore, the path route north of this would involve creating a new 12-foot-wide path from this area up to the cane haul road. As previously shown on Figure 2.5, this path would be extended generally following the County's mauka property line bordering the Otsuka's Furniture Store through the grassed area.

Towards the northern end of this project section is an open area with existing tables. This general area is planned to be improved to serve as a rest area for path users. A typical conceptual plan of this is shown to the right. Rest areas would typically include a bench (either wooden or concrete), bike racks, and some landscaping. Other rest areas within Kapa'a Town are not planned since there are existing park sites and facilities already present within this section which could conveniently serve as rest areas for path users. However, the project's design would determine the need for and location of rest areas within this section along with the entire project corridor.



Bridge Improvements

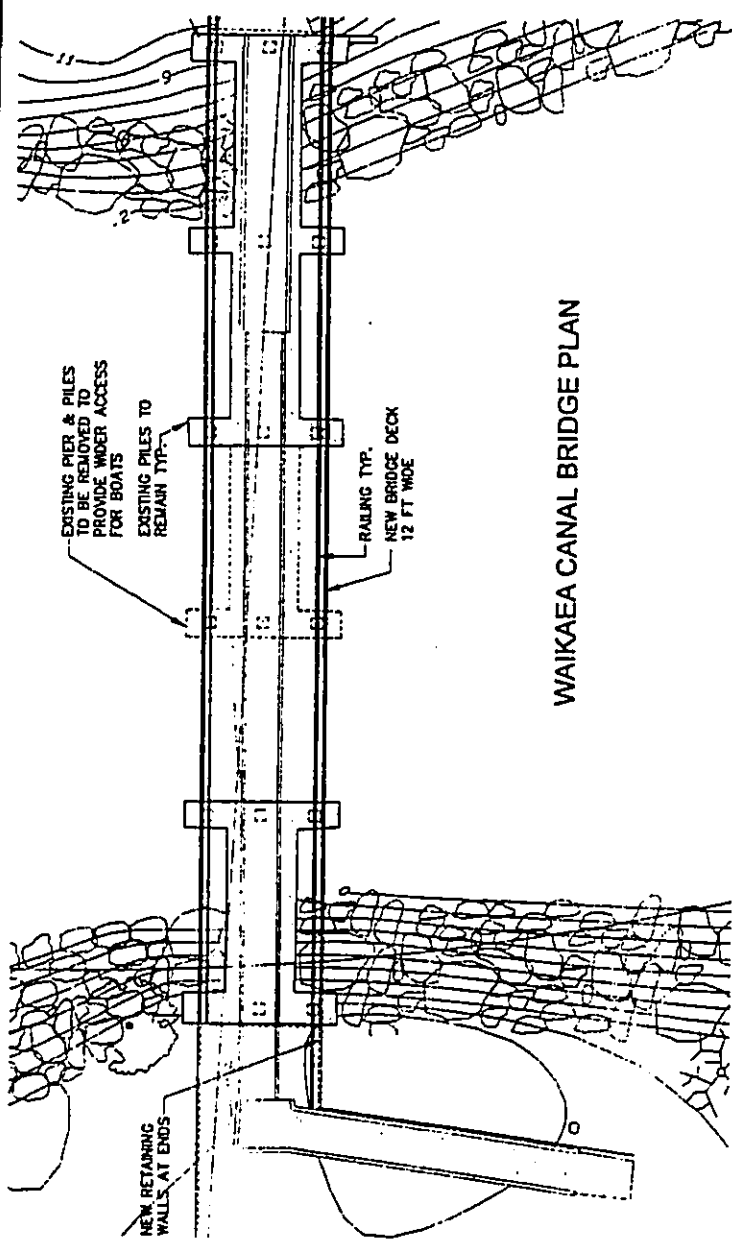
Bridge improvements would be needed at both Waika'ea Canal and Mo'ikeha Canal within this project corridor due to severe spalling of piers and piles from corrosion.

Waika'ea Canal Bridge

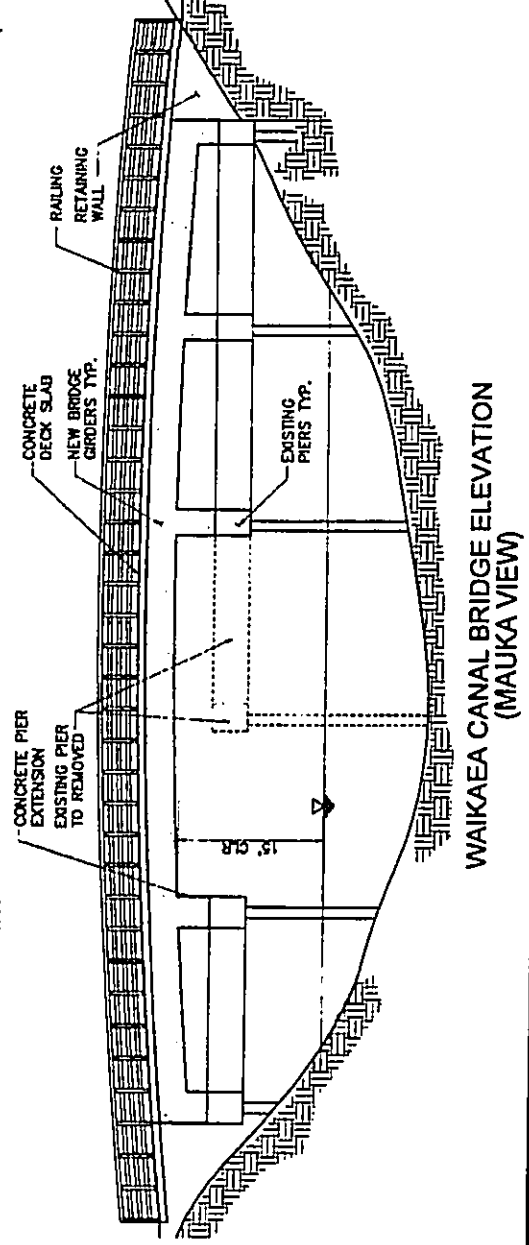
At Waika'ea Canal, two alternative bridge improvements were considered which are Alternative A (Deck Widening) and Alternative B (Pier Removal). The first alternative would involve widening the existing bridge deck to 16 feet (12 feet plus 2 feet shoulder on each side). This new deck would be constructed of pre-cast concrete girders and slab spanning between the abutments to minimize maintenance in the highly corrosive conditions. Figure 2.6 shows a conceptual plan view of this deck widening along with a typical section of this bridge deck.

For pier improvements, a fiberglass wrap repair system for the damaged piles should be considered. This repair system would minimize the encroachment into the clear space between piles for boats passing under this bridge from the boat launch. Another option would be repairing piles by installing concrete jackets with epoxy coated reinforcing around the piles extending from the pier soffits (undersides of pier) down to two feet below the waterline.

Alternative B was developed based upon input received from the State Department of Land and Natural Resources (DLNR), Division of Boating and Ocean Recreation (DOBAR) suggesting that the bridge be raised and one of the piers removed. Boaters launching from this canal have expressed concerns to DOBAR about the height clearance and spacing between piers in traveling under this bridge. Since newer boats have increased in height and width, passing under this bridge has made it more difficult especially when sand builds up in the canal.



WAIKAEA CANAL BRIDGE PLAN



WAIKAEA CANAL BRIDGE ELEVATION (MAUKA VIEW)

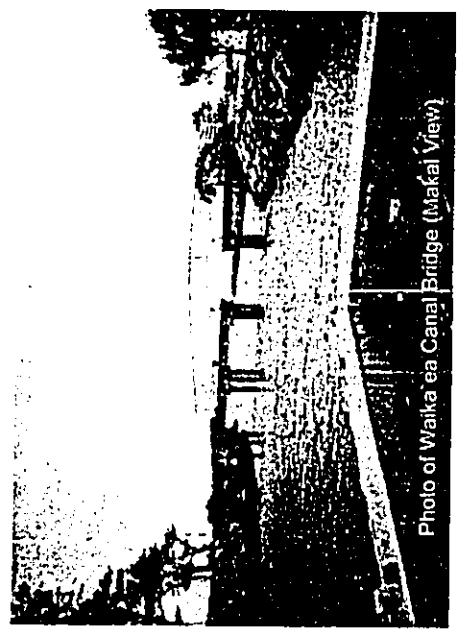
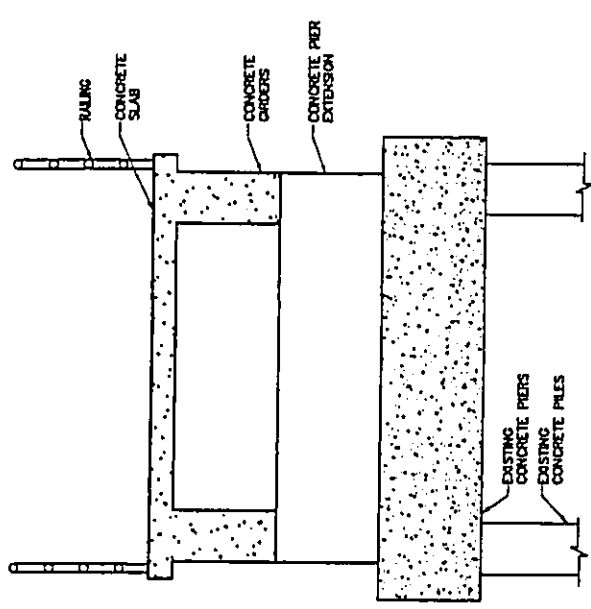


Photo of Waikaea Canal Bridge (Makal View)



TYPICAL SECTION AT WAIKAEA CANAL

WAIKA'EA CANAL BRIDGE IMPROVEMENT

Figure 2.6

Kapaa-Kealia Bike & Pedestrian Basis of Design Project
County of Kauai, Department of Public Works

Source:
SSFIM International, Inc.



To address this concern, consideration was given to removing the middle pier and piles to widen the access under the bridge. This will increase the middle girder span to approximately 40 feet. Raising the clearance under the bridge to provide 15 feet clearance to the water level would involve adding new bridge girders. Figure 2.6 showed a conceptual elevation view of this improvement which is planned to be implemented. Improvements to the deck and remaining piers would be the same as under Alternative A. Due to the increased height of this bridge, the ramp on the Lihi Park side would need to be lengthened from current conditions to meet ADA grade requirements.

Mo'ikeha Canal Crossing

At Mo'ikeha Canal, bridge improvements would involve widening the existing bridge deck to 16 feet. The new deck is planned to be constructed of concrete slabs over the existing piers. Figure 2.7 shows a conceptual plan view of this deck widening, elevation, and typical section. Consideration for the bridge width would include wider spacing of about 3 feet on each side over portions of the canal to allow continued fishing from this bridge while minimize conflicts with path users. Railings may also include providing larger openings to allow ease for people fishing from this bridge depending upon building code requirements.

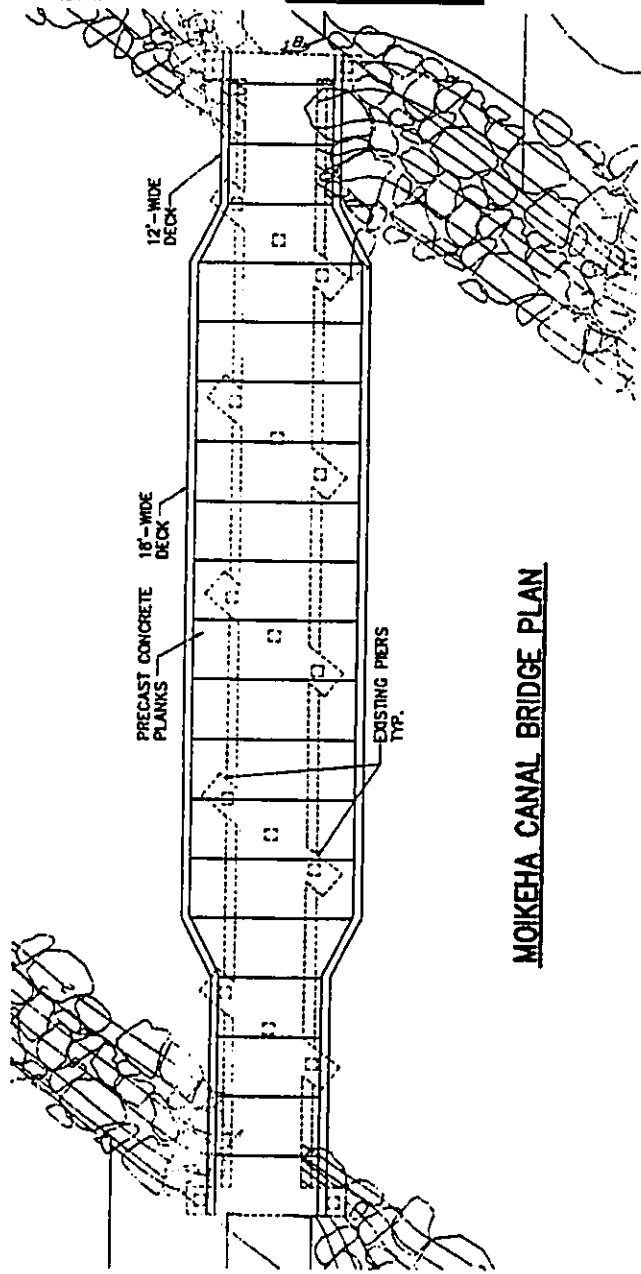
The piles should be repaired by installing concrete jackets with epoxy coated reinforcing around the piles extending from the pier soffits down to two feet below the waterline. The spalled soffits of the piers should be repaired by removing the corroded reinforcing steel and patched with concrete to protect the steel from further corrosion.

Path Amenities

A preliminary conceptual plan, previously shown on Figure 2.4, was developed for Lihi Park to provide improvements to this undeveloped park site. The actual siting of facilities in this park would be determined by the selected contractor design team. Providing amenities at this park site was desired to serve path users along with the general public since it provides a logical starting or ending point for the multi-use path. Given the path's connection to the highway from this park through Kaloloku Road, this park site would serve as an important activity node for this project.

This conceptual plan reflects the Waika'ea Canal Bridge being raised to provide a 15-foot height clearance. As a result, the bridge landing needs to be lengthened to meet ADA grade requirements. This conceptual plan incorporated the County's Division of Parks and Recreation's desired improvement plans for the park, and consists of the following features:

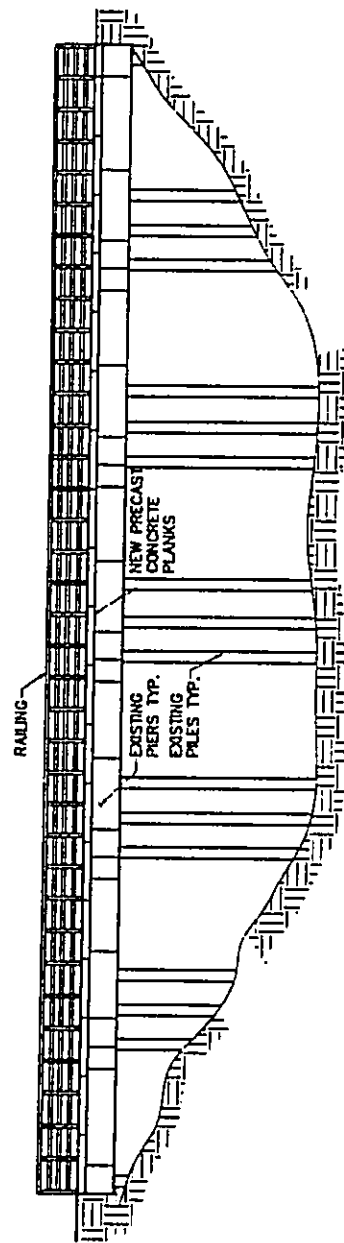
- A parking lot for about 35 to 45 vehicles would be located within this park site. Parking would be provided along the canal and within the area now used as an unpaved path to Moana Kai Road.



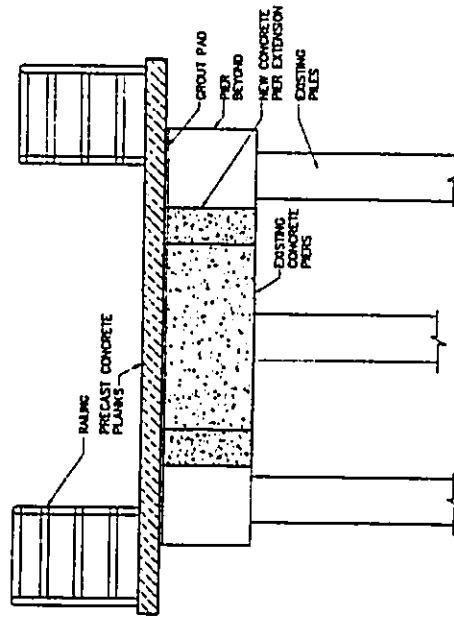
MOIKEHA CANAL BRIDGE PLAN



Photo of Moikeha Canal Bridge (Maiala View)



MOIKEHA CANAL BRIDGE ELEVATION



TYPICAL SECTION AT MOIKEHA CANAL BRIDGE

MOIKEHA CANAL BRIDGE IMPROVEMENT

Figure 2.7

*Kapaa-Kealia Bike & Pedestrian Basis of Design Project
County of Kauai, Department of Public Works*

Source:
SSFM International, Inc.



- The ramp from Waika'ea Bridge would be extended into the park site. This ramp length would be increased from its current length due to the increased height clearance of the bridge and need to meet ADA grade standards. The ramp would then change to a path and provide a direct connection to Kaloloku Road for users accessing the highway.
- Access to this site will be modified from current conditions under this concept. Vehicles would now enter from Moana Kai Road instead of Kaloloku Road which predominantly serves the boat launch facility. Either a rock wall or large boulders would be used to restrict vehicles from the boat launch area from entering the park site. These parking improvements were intended to separate the State boat launch site from the County's park, and prevent vehicles from driving through this park site to Moana Kai Road.
- Provide a comfort station having about 6 to 8 stalls. Showers could be located as part of this facility. Either septic tanks with a leach field can be used for wastewater disposal of this facility or a low water organic system could be incorporated as an alternative treatment system if appropriate. Other amenities could include racks for parking bikes.

2.5.3 Kealia Beach Section

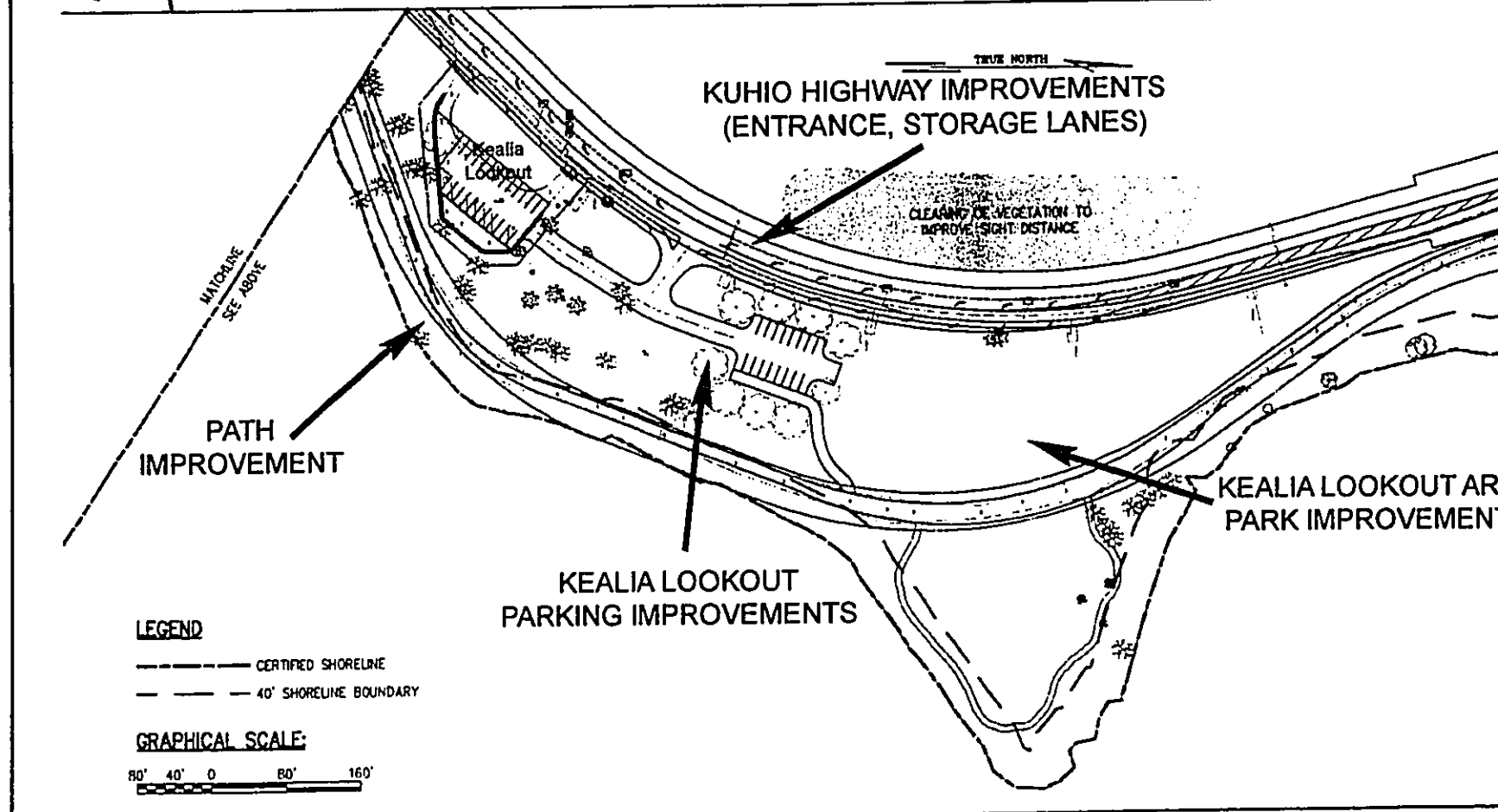
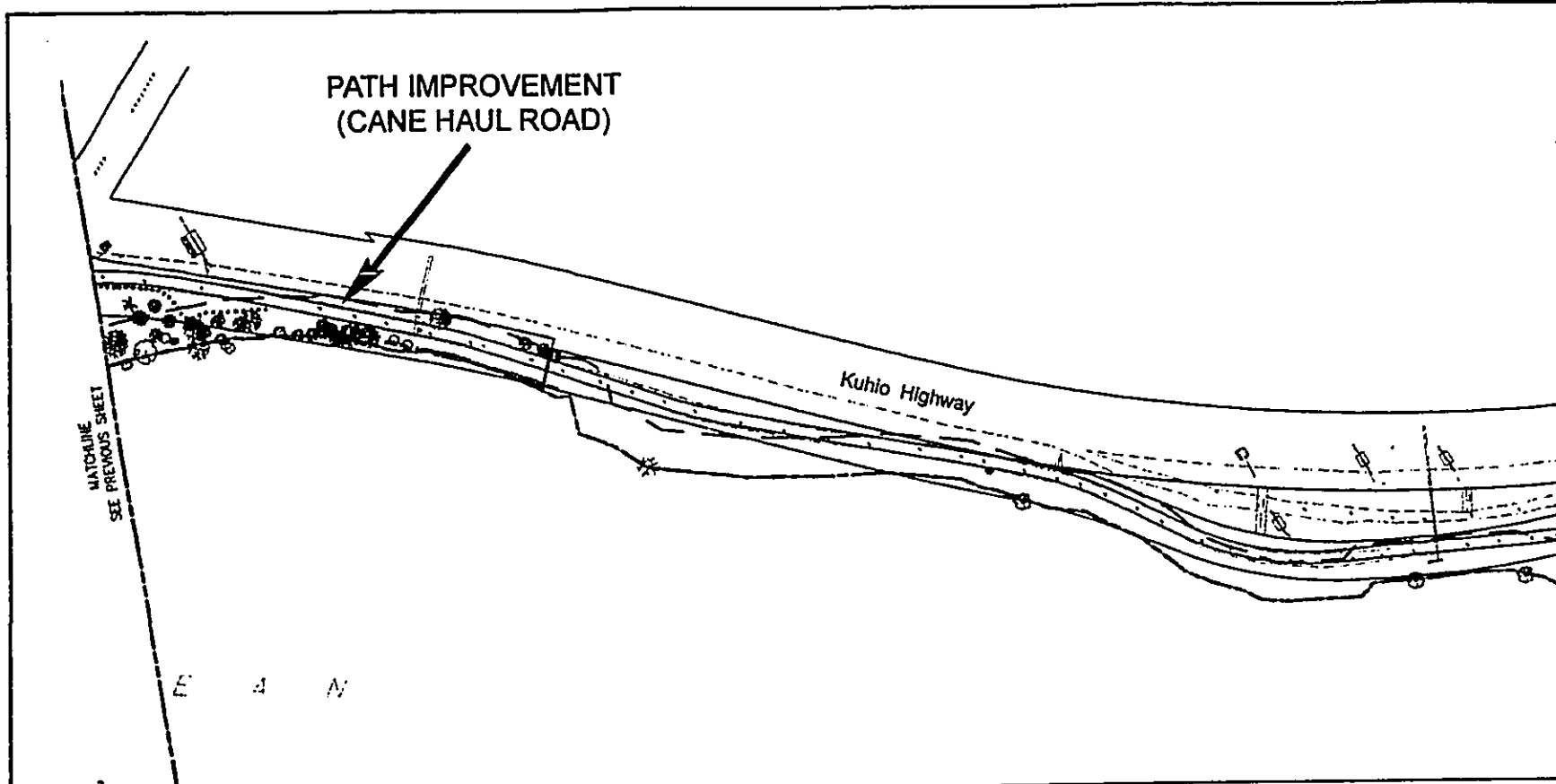
Within this section of the project corridor, improvements would generally consist of improving the existing cane haul road, improving Kapa'a Stream Bridge, and providing path amenities. These improvements are discussed in more detail by groupings.

Path Improvements

Starting from the northern end of Kapa'a Town just past Otsuka's, the multi-use path would follow the alignment of the existing cane haul road through this area. The cane haul road is about 18 feet wide through this section but varies based upon the path's erosion and vegetation overgrowth. A 10 or 12-foot wide multi-use path along with additional space for shoulders is planned using available space within this corridor. Figures 2.8 and 2.9 graphically show the path's route.

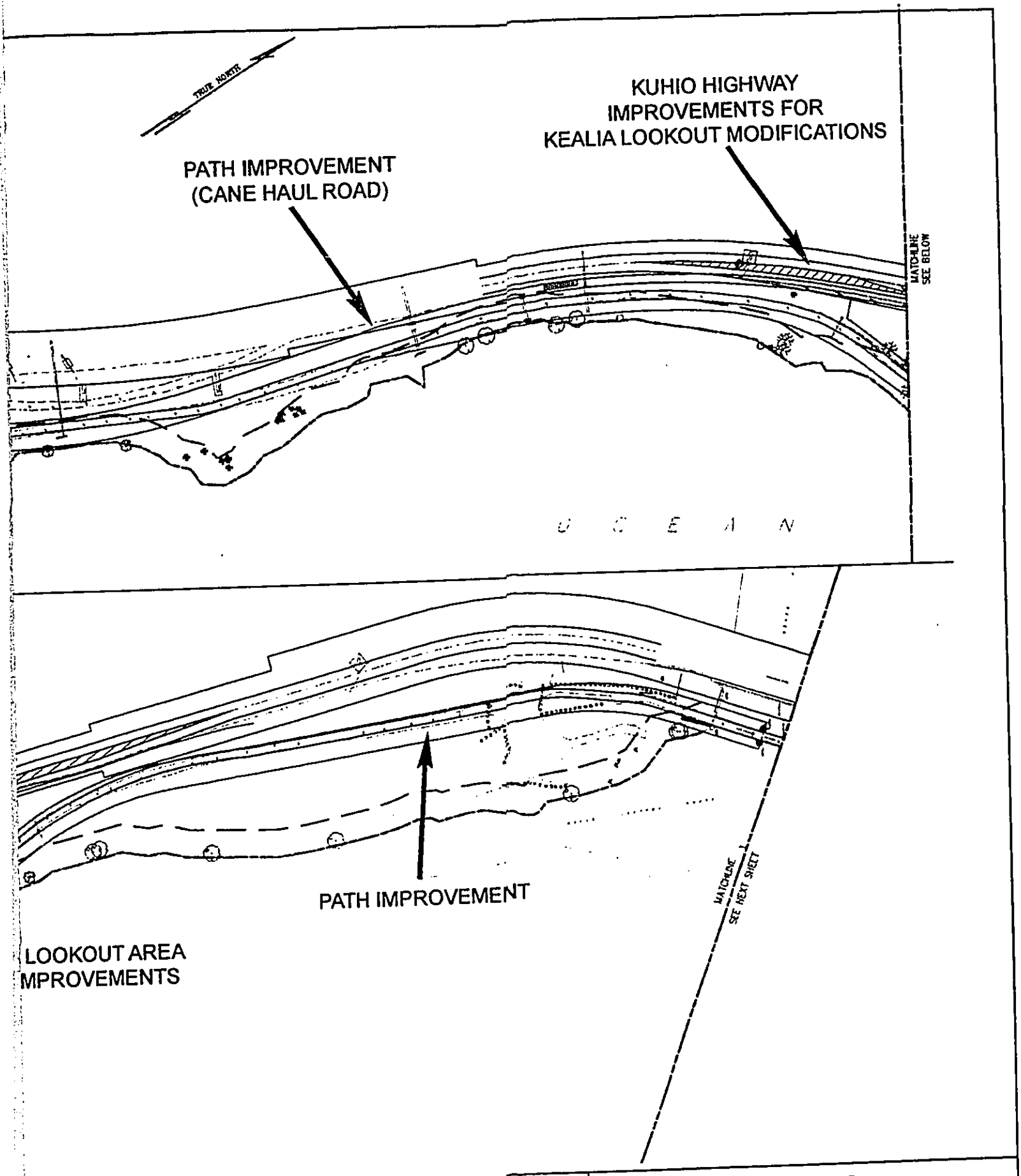
The path would utilize the cane haul road past a stretch of shoreline where the sand beach transitions to a rocky shoreline. Portions of this shoreline is well vegetated with small trees, shrubs and grasses, indicating that the shoreline is well protected by the reef, is relatively stable, and may be subject to erosion only during severe storms. However, a section of this path across from the church is close to the shoreline and has a potential for coastal erosion affecting the path (Sea Engineering, Inc. 2002). At some areas, this path is situated above the shoreline at elevations of 15 to 25 feet above mean sea level (see photo). Guardrails for safety may thus be needed along these sections which extend up to the point past the Kealia Lookout. A typical section of this path with guardrail is provided, and the project's design will determine the location and design specifics.





PROPOSED IMPROVEMENTS WITHIN KEALIA BEACH

*Kapaa-Kealia Bike & Pedestrian Basis of Design Project
County of Kauai, Department of Public Works*

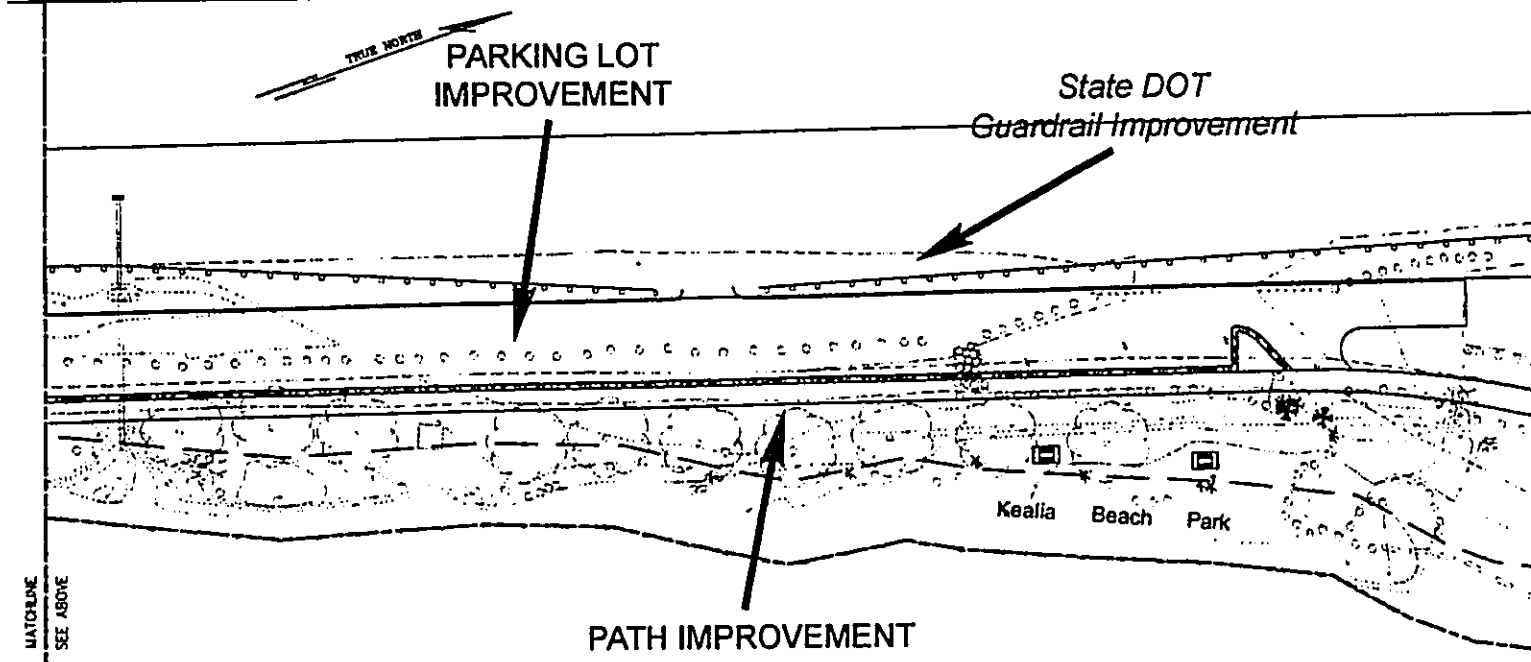
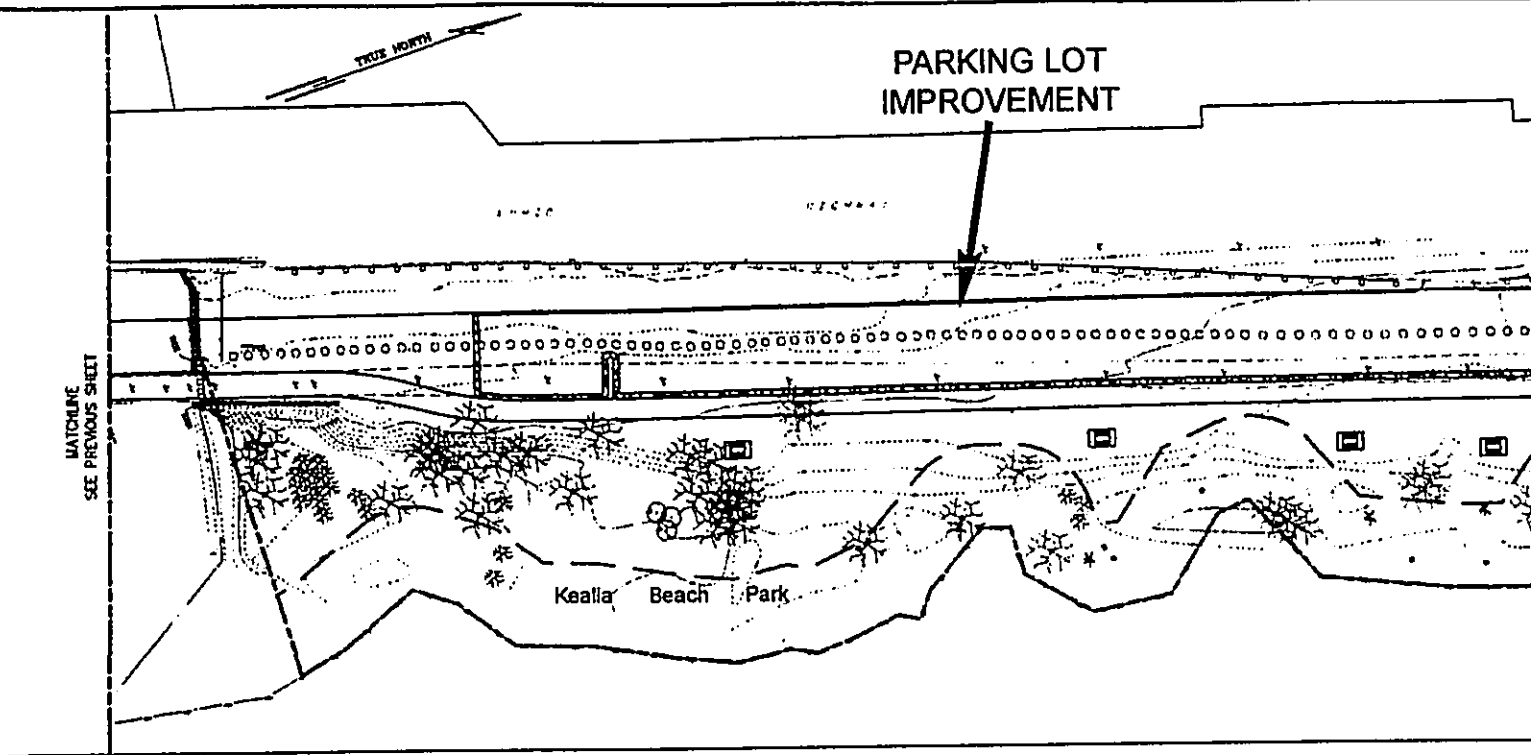


A BEACH (SECTION I)

FIGURE 2.8

Source:
SSFM International, Inc.





LEGEND

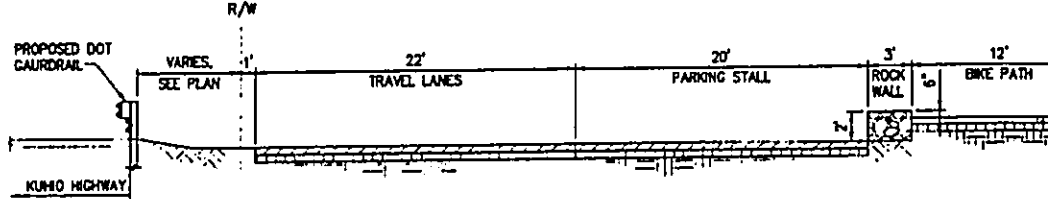
— CERTIFIED SHORELINE

- - - 40' SHORELINE SETBACK

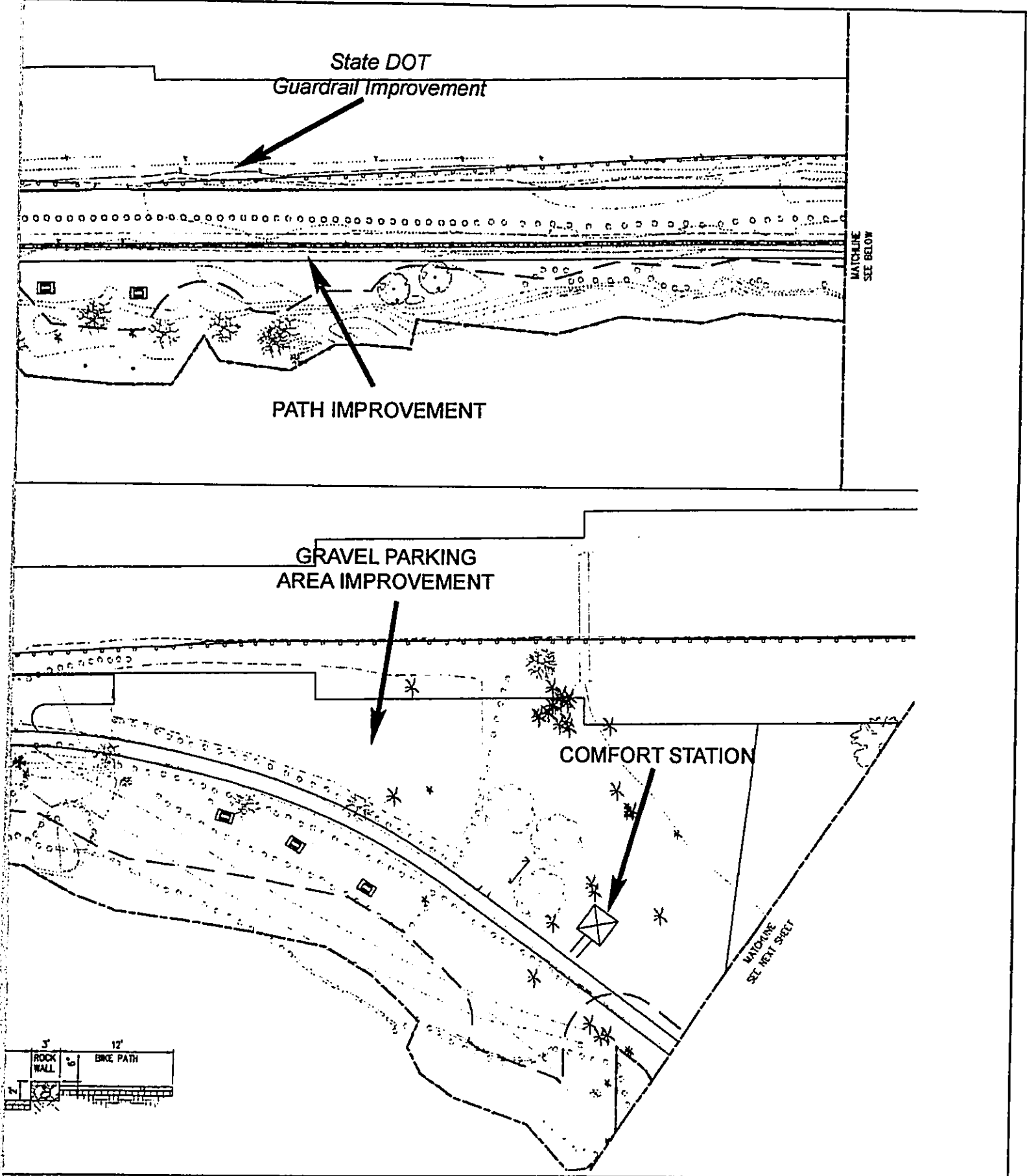
[] PICNIC SHELTER

GRAPHICAL SCALE:

40' 20' 0 40' 80'



PROPOSED IMPROVEMENTS WITHIN KEALIA BEACH

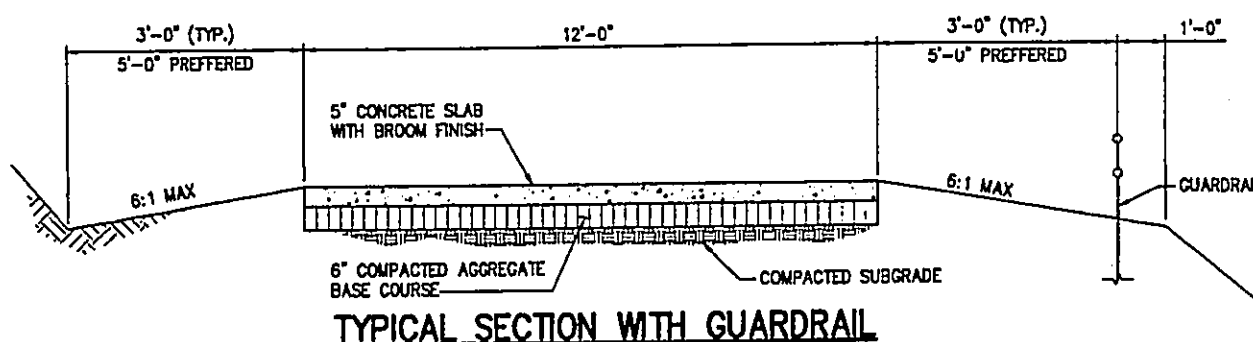


BEACH (SECTION II)

FIGURE 2.9

Source:
SSFM International, Inc.





Near the rocky point past the State DOT Kealia Lookout, a path rest area is planned for path users. This rest area would be conveniently located about mid-way between Kapaa town and Kealia Beach. Other rest areas may be provided along this section, and the number and location would be determined as part of the project's design. As the path proceeds to Kealia Beach, it winds further inland a considerable distance away from the shoreline.

At the southern end of Kealia Beach, across (makai of) from Mailihuna Road, there is an existing dirt road crossing the cane haul road which is used by the public to access shoreline areas for fishing or other recreational activities. Continued access to this southern portion of Kealia Beach will be provided with this project. Therefore, the path would be designed to allow vehicles to continue crossing over to shoreline areas using the dirt access road while minimizing conflicts with path users.

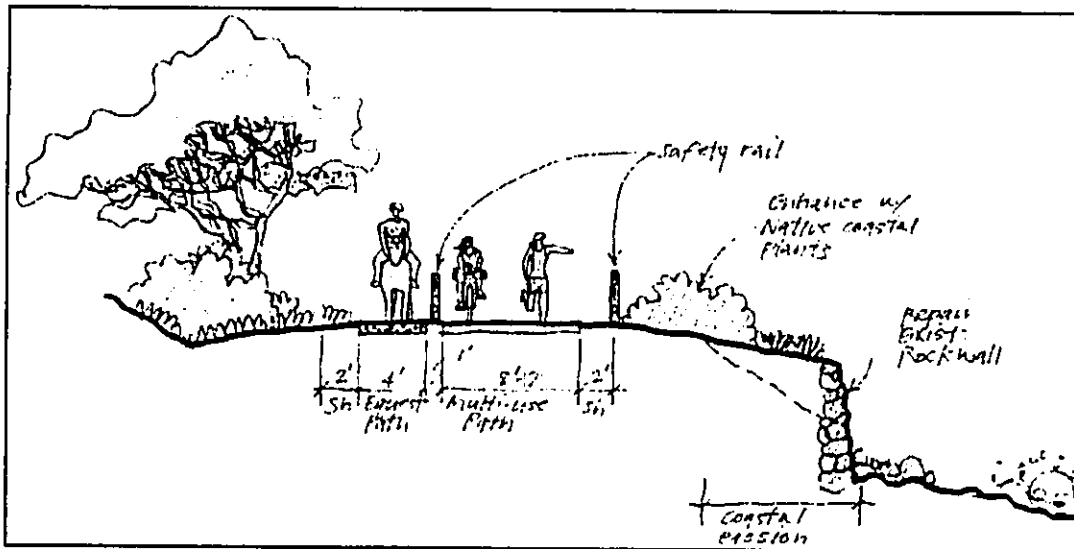
Along Kealia Beach Park north of Kapaa Stream, the cane haul road is routed between the unpaved parking area and beach park while being separated by rock boulders. The proposed path is intended to utilize this cane haul road path through Kealia Beach. However, the State DOT has plans to add guardrails along Kuhio Highway over the entire stretch of Kealia Beach and limit vehicle access to two locations.

The width between the State DOT right-of-way and mauka edge of the cane haul road is only between 25 to 40 feet. The northern end of the beach park has the wider space available. Thus, this space is not wide enough to allow both parking and two-way vehicular traffic since a minimum of about 42 feet is needed. Therefore, areas along the makai edge of the cane haul road up to the vegetation line will be needed to provide additional space for parking after the guardrail project is implemented. To minimize using this additional area, a narrower 10-foot-wide path may be provided instead of 12 feet. This path would then continue past Kealia Landing toward the next corridor section (Kealia Kai Subdivision).

Equestrian Use Along Path

Requests by some groups to allow equestrian use along the path have been considered. Such requests were for only allowing this use along the path from the end of Kapa'a town to Ahihi Point since this corridor is less urbanized. Consequently, the County has considered equestrian use along the path as an alternative for assessment purposes.

Information provided by the Kauai Health and Heritage Coastal Trails Committee (Heritage Trails Committee) along with equestrian trail guidelines from other states indicated that an undeveloped "trail" along the path is normally used for equestrian use. This equestrian trail consists of a 4-foot-wide unpaved bridle path along side the multi-use path. The bridle path should be separated from the edge of the multi-use path by five (5) feet or more for safety among users except in areas where the corridor is constrained. A landscaped barrier or other man-made natural looking buffers could be used as part of the 5-foot separator. Constrained corridors would require a safety rail separating users. As a result, a minimum width of 25 feet including a minimum of 2 feet on each side for shoulder areas is required to accommodate equestrian use. Constrained corridors would require a width of 21 feet, and a conceptual plan depicting how such a path (constrained corridor) may look is provided below.



The AASHTO *Guide for the Development of Bicycle Facilities* (AASHTO 1999) states that the minimum recommended two-directional paved shared-use path is 12 feet for paths expected to receive more than occasional mixed use (bicycles, pedestrians, etc.). This 12-foot-wide path is safer and more enjoyable. However, 10 feet is acceptable where space restrictions due to corridor width are a consideration. The County's objective for this multi-use path is 12 feet, but considerations were evaluated for having 10-foot-wide paths if needed to accommodate equestrian users.

The AASHTO Guide does state that it is not desirable to mix horse riding and bicycle traffic on the same shared path. Bicyclists are often not aware of the need for slower speeds and additional operating space near horses. Horses can be startled easily and may be unpredictable if they perceive approaching bicyclists as a danger. In addition, pavement requirements for bicycle travel are not suitable for horses. Other considerations would also apply to skaters, roller bladders, and pedestrians (children, parents with strollers, senior citizens) using the path. Thus, safety among path users would be a concern with the County to prevent conflicts and accidents with bicyclists and pedestrians. Consequently, a bridle trail separate from the shared use path was considered to accommodate equestrian use to prevent user conflicts and potential liability.

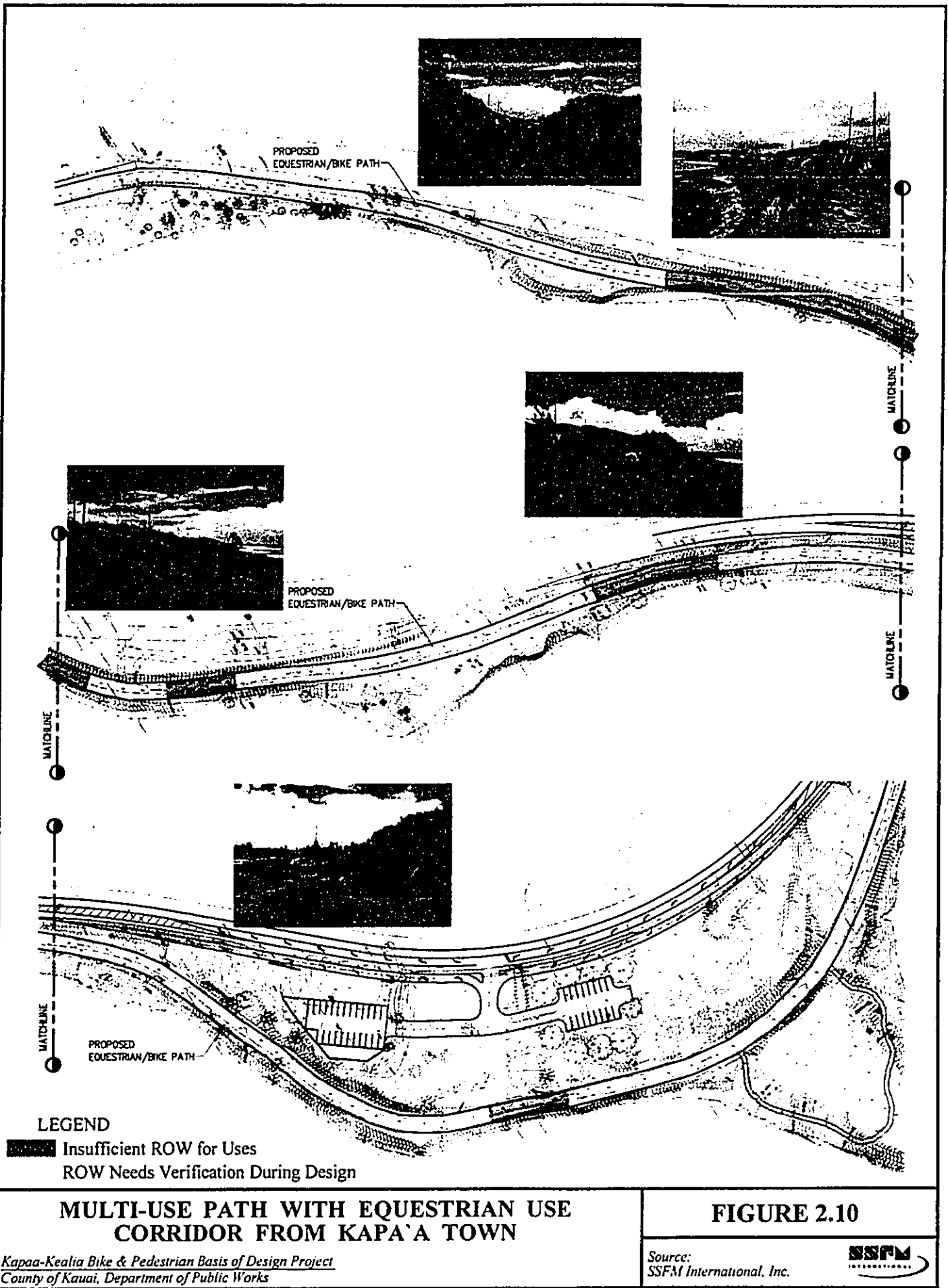
Based upon available topographic data, it appears there are a few sections within this Kealia Beach study section that may not have sufficient right-of-way available to accommodate equestrian use. These sections are shown on Figure 2.10 and include a total of five sections that are south of the Kealia Lookout, fronting the lookout, and north of the lookout. Constraints include insufficient County right-of-way mauka of the cane haul road, shoreline erosion of makai sections of the cane haul road, and steep embankments that would require significant cuts, fill, and retaining walls. Options to accommodate this use would thus be to include a shared path through these sections.

At Kealia Beach Park, equestrian use could be accommodated by providing a bridle path along the makai (seaward) end of the multi-use path. However, this bridle path would need to be located makai of the vegetation line present along the existing cane haul road because the concrete path and parking improvements would need to use available space up to this vegetation line due to the State DOT guardrail improvement. This would require creating a bridle path along the sand area next to (makai of) the vegetation line.

Based upon public input received on the Draft EA, the County plans to accommodate equestrian use along a portion of the path. This would occur only from the northern end of Kealia Beach up to the project's terminus at Ahihi Point. This section of the path route is not as heavily used by the public now as compared to the section between Kealia Beach Beach and Kapaa Town. Therefore, the potential for user conflicts should be lower. However, if use along this northern section of the path increases in the future causing significant conflicts among users, the County will have to reevaluate accommodating equestrian use in consultation with the community.

Greater discussion of necessary improvements to accommodate this equestrian use is provided in the Kealia Kai Subdivision section of the project. Details of these improvements would need to be developed during the design phase in consultation with the Heritage Trails Committee and equestrian groups. Within this Kealia Beach section, the following improvements would occur:

1. The gravel parking area at the northern end of Kealia Beach Park would be allowed for use as a parking area for trailers to use and obtain equestrian access onto the path.
2. An unpaved path from this parking area would be established as a route for equestrian users to get onto the path to minimize conflicts with other path users and general public.
3. Necessary signage will be provided in this northern area of the beach park to notify the public of the change in users along the path.
4. An unpaved bridle path of 4-feet along with 5 feet of separation from the paved path would be provided where available. The paved multi-use path width would need to be reduced to 8 to 10 feet depending upon available right-of-way.
5. The design team and County will consult with the Heritage Trails Committee, equestrian groups, and other path user groups to address path design, use, and protocol along this shared path which includes addressing horse droppings and maintenance.



Considerations for Shore Protection

There were only two sections along the planned path subject to potential shoreline erosion concerns. One section of about 300 feet is located near Kawaihau Road where the existing cane haul road generally begins. The second section is about 700 feet long and located just past (north) the Kealia Beach jetty fronting the Kealia Kai Subdivision development.

Alternatives have been identified for consideration to protect this shoreline along the proposed path subject to coastal erosion concerns. These alternatives included providing seawalls, revetments, moving the path further inland, or performing no hardening measures to protect the shoreline. The two alternatives of moving the path further inland or providing seawalls were eliminated from consideration. Chapter 4 discusses these alternatives considered in more detail.

The no action alternative (no coastal hardening) is a viable and the preferred alternative planned at this time. One reason for this is because the erosion hazard does not appear to be severe. At Kapaa Beach, there is also a fringing reef approximately 1,000 feet wide that offers substantial protection from storm wave erosion. The shoreline seaward of the path is also well vegetated, indicating that it is relatively stable.

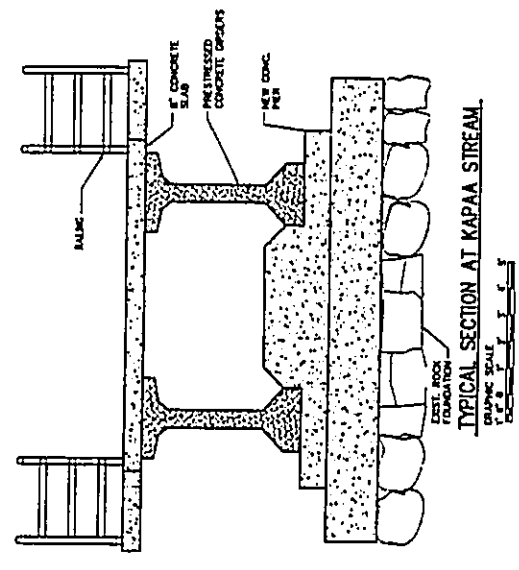
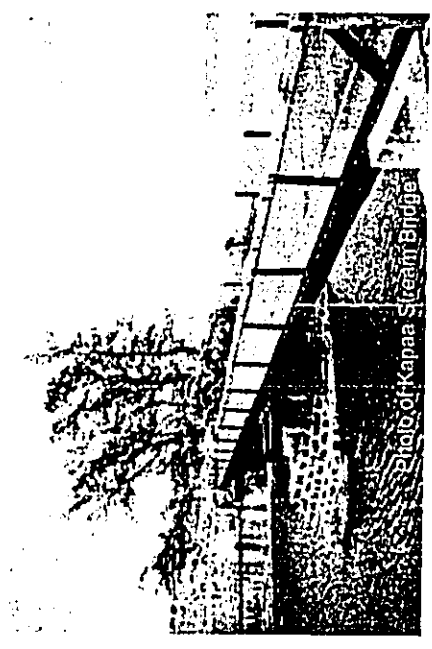
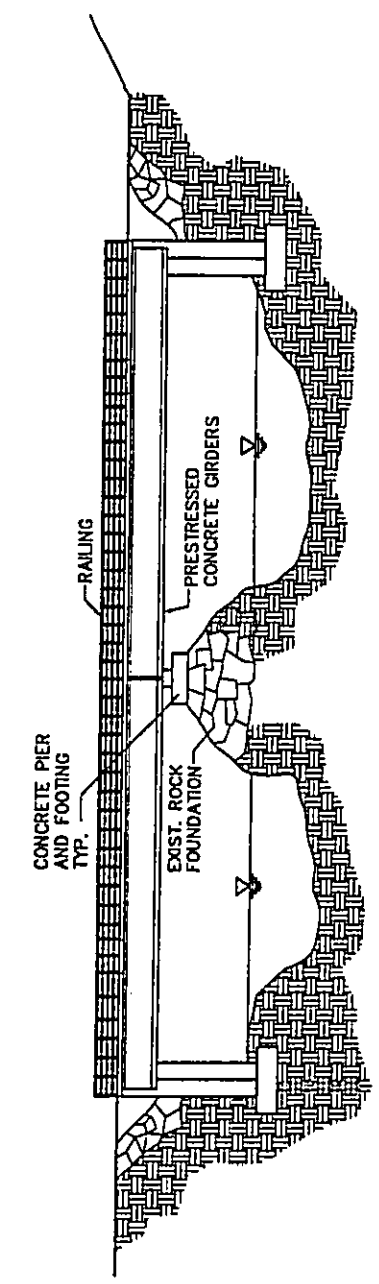
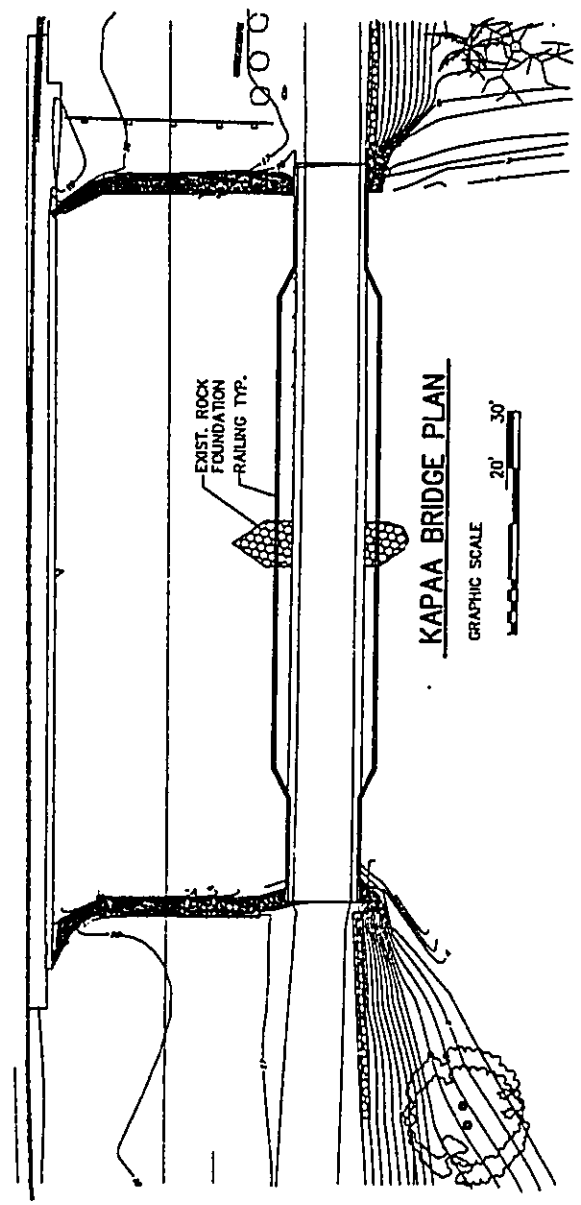
The concern at Kapaa Beach is that the proposed route is located close to the shoreline and there is a 7-foot high vertical sea wall that is in poor condition and exposed to wave action. Consequently, if funding is available, a riprap revetment could be considered and provided along this sea wall. A conceptual revetment design to protect against an annual large wave event would require a riprap revetment of stone weighing 35 to 350 pounds, extending to the +6 elevation.

Bridge Improvements

The Kapa'a Stream Bridge (or also known as Kealia River Bridge) is the only bridge structure present within this study section. Due to the corrosion problems associated with this bridge, the existing steel superstructure is planned to be removed and replaced with new pre-cast pre-stressed concrete girders and slab spanning between the abutments and the existing center pier. The new deck will be at least 16 feet wide and constructed of concrete framing members to minimize maintenance in these highly corrosive conditions. Flares will be added to this bridge on both sides to allow fishing from this bridge while minimizing conflicts with path users using a similar design showed for Moikeha Canal Bridge. Figure 2.11 shows a conceptual plan view of this deck, elevation, and typical section.

Path Amenities

Path amenities in this section would consist of providing a new parking area at the Kealia Lookout and park improvements at Kealia Beach.



KAPAA STREAM BRIDGE IMPROVEMENT

FIGURE 2.11

*Kapaa-Kealia Bike & Pedestrian Basis of Design Project
County of Kauai, Department of Public Works*



Source:
SSFM International, Inc.

Kealia Lookout Area

Based on public comments received, a concept for an additional parking area with about 20 to 25 stalls near the Kealia Lookout was developed in consultation with the State DOT, Kauai District. This parking area was requested for individuals who access the point area for fishing and other ocean-related activities. Parking in this area would also serve as another access point for path users desiring to start their jogging or bicycling activities from this point rather than other locations, or for users wishing to rest at this area. Figure 2.8 previously showed this preliminary conceptual plan.

Based upon consultation with the State DOT, a new vehicular access point from Kuhio Highway would be created further north from the Kealia Lookout. As shown on the conceptual plan, a new common access will be provided to serve both the lookout and path parking lot. With this new access, the existing access at the Kealia Lookout will be closed. This new common access was determined to be a better solution for both the State DOT and County instead of creating another access from the highway for a new parking lot for path users.

Highway improvements associated with this new access would include providing a left-turn storage lane, refuge lane, acceleration and deceleration lanes, and signage. In addition, the speed limit around this bend is planned to be reduced to 35 mph from the existing 40 mph speed limit to improve sight distance. This lookout area is just outside of Kapaa town which is 25 mph, therefore, a reduced speed limit should provide safer traffic conditions and transition from Kealia. Some clearing of vegetation mauka of the highway on properties owned by the State DLNR and Department of Education (Kapaa High School) would also be needed to improve sight distance around this bend.

Other amenities planned would be improving the flat open area north of the new parking lot to serve as a rest area for path users. Improvements would include landscaping and providing tables with benches, bike racks, etc. A foot path would be provided from this general area to the multi-use path and point for recreational users. Appropriate coordination would be conducted with the State DOT during the project's design to address maintenance responsibilities, etc. associated with this new common access point and parking. A reinternment site will also be established in this area, and consultation with the Kauai/Niihau Islands Burial Council will be conducted by the design team to design this reinternment site.

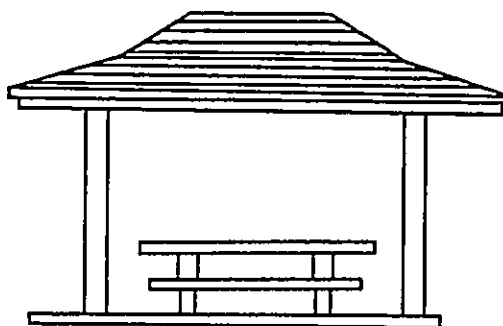
Kealia Beach Park

Kealia Beach Park is conveniently located about mid-way along the multi-use path from Kapa'a town to Ahihi Point and would therefore serve as a logical site for providing amenities serving path users. A conceptual plan was thus developed for Kealia Beach Park to provide needed facilities for this presently undeveloped but heavily used park.

The siting of facilities is conceptual and was limited by a drainageway running from the highway to the shoreline in this area. In addition, the State DOT's guardrail project created a constraint on existing parking occurring along the highway. Consequently, consultation with the

State DOT, Kauai District was conducted in developing the planned parking improvements and access points to the highway. Figure 2.9 previously showed a preliminary conceptual plan for this site which includes the improvements described below. However, the final plan implemented for this park would be developed by the selected design/build contractor team.

1. The State DOT's guardrail project would limit vehicular access to this beach park to two locations. The first access point would be about 600 feet north of Kapaa Stream while the second access is located across from the Kealia Road intersection with the highway. As part of their guardrail project, the DOT will provide left-turn storage lanes, refuge lanes, and acceleration and deceleration lanes at these two access points. However, a left-turn storage lane at the Kealia Road intersection will need to be provided by the County as part of this project since the improvement cost is beyond the DOT's resurfacing/guardrail project budget. The left-turn storage lane will require widening the highway on the makai side which requires some filling within the DOT's right-of-way.
2. A strip parking area would be created between the highway and new multi-use path. This parking area would accommodate between 120 and 140 vehicles as under existing conditions there. A lot width of about 42 to 45 feet would be created to allow 90 degree parking and two-way travel lanes for vehicles. This parking area would either be paved or left unpaved with minor surface improvements. Access across the multi-use path would also be provided to allow cars to continue parking along the northern corner of this beach park.
3. A gravel parking area bounded by large rocks is located in this area and currently used by beach park users. Due to subsurface archaeological features associated with this area, no facilities are planned for this area. This area is planned to have additional gravel placed on top to improve its use for parking and minimize impacts to subsurface layers from vehicle traffic. Access to this lot would be provided from the strip parking area along the highway. Some paving of portions may be provided for ADA parking and access to the multi-use path.
4. About nine (9) small picnic shelters would be sited at various locations along the entire Kealia Beach Park site. Such picnic shelters are already provided at other park sites on the Island of Kauai. These shelters consist of a picnic table placed on a foundation, and covered with an arched roof. Column structures holding the roof would be either attached to the foundation or include a footing about 18-inches below the surface. The height of this shelter would be about 12 feet high. A side elevation plan showing this picnic shelter is provided.



5. A comfort station having a total of about 6 to 8 stalls will be provided. Showers could be located as part of this facility. A septic tank with a leach field can be used for wastewater disposal of this facility or a low water organic system could be incorporated as an alternative treatment system if appropriate.

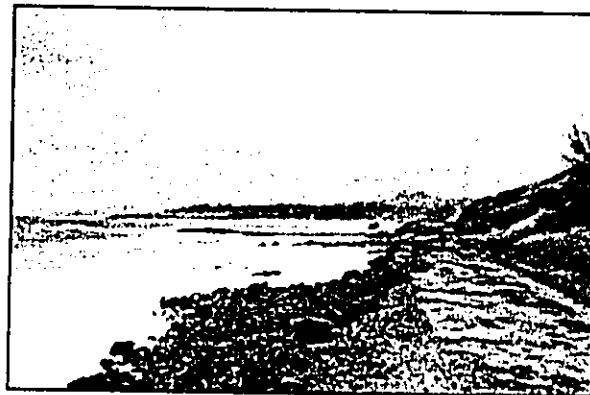
2.5.4 Kealia Kai Subdivision Section

Within this final section of the corridor, the project would generally consist of improving the existing cane haul road, replacing the washed out Kumukumu Stream Bridge, and providing path amenities. These improvements are discussed in more detail by groupings.

Path Improvements

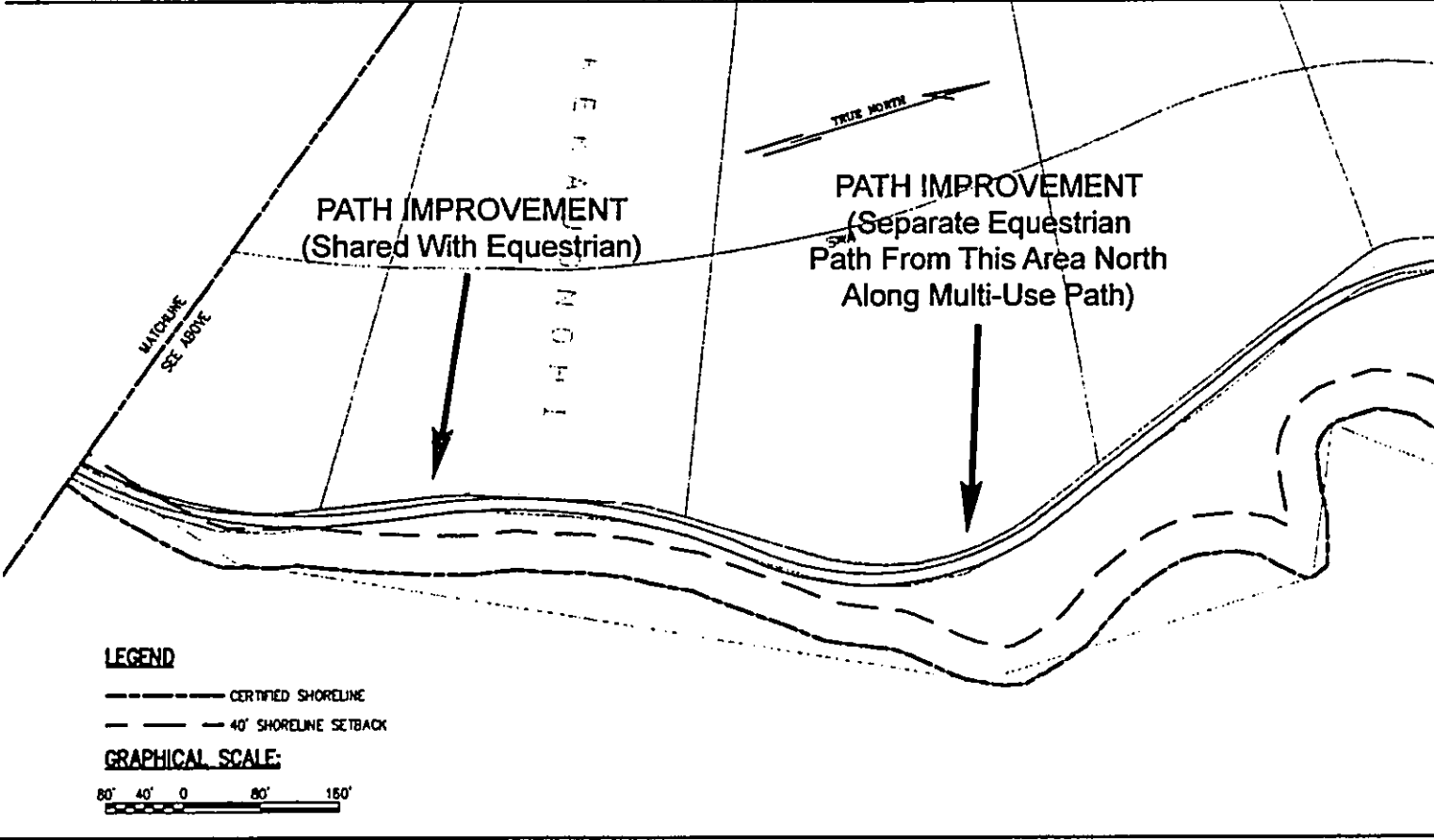
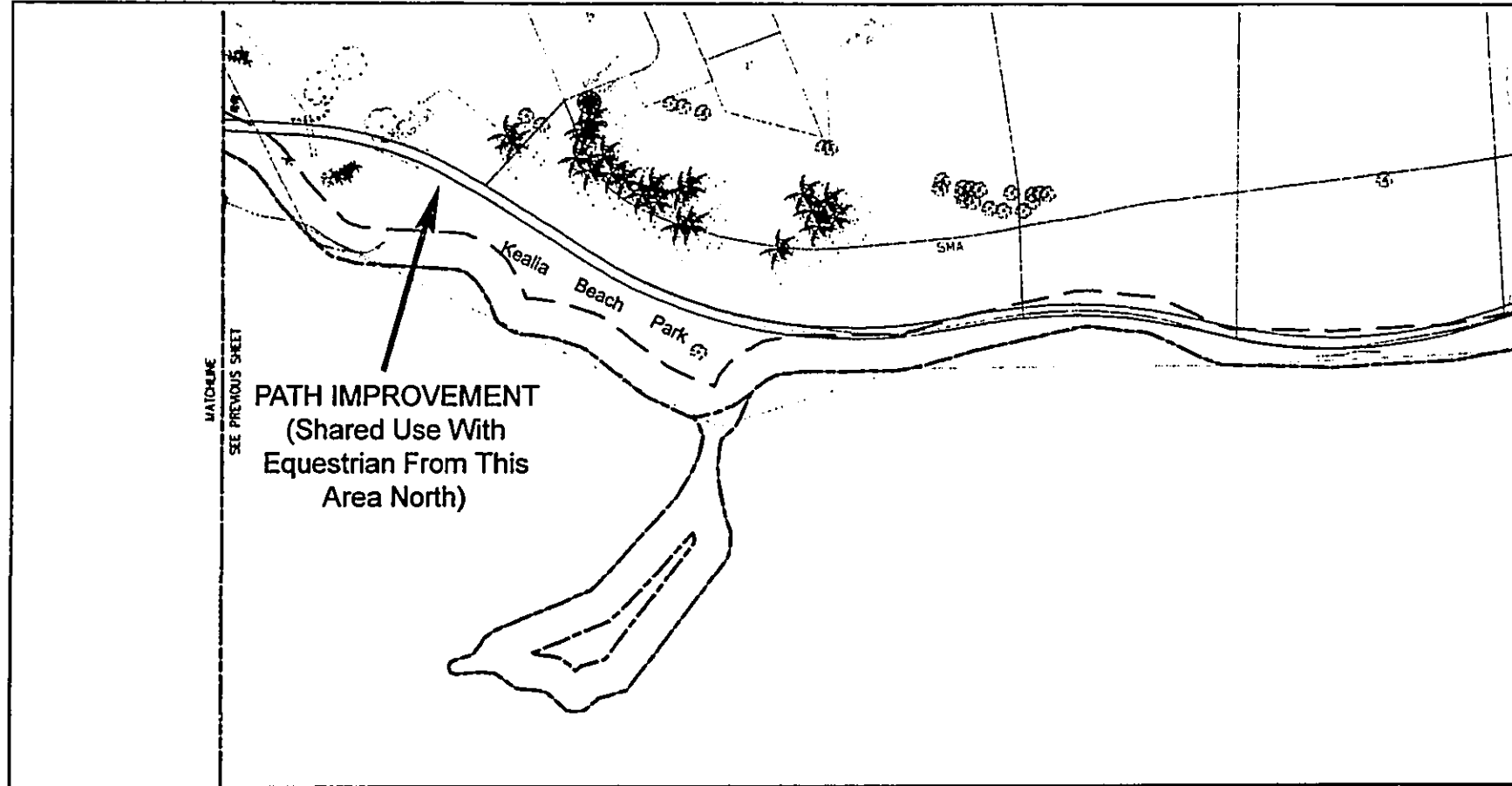
Starting from the northern end of Kealia Beach past Kealia Landing, the multi-use path would follow the alignment of the existing cane haul road as it proceeds north. The cane haul road appears to be about 18 feet wide but varies based upon the amount of coastal erosion along the path and vegetation overgrowth. A 10 to 12-foot wide multi-use path would be provided along with shoulder using available space. However, shared use with equestrian activities along some sections would result in an 8-foot-wide multi-use path being provided as discussed later. Figures 2.12 and 2.13 graphically show the path's route through this section. The typical sections previously showed for the path would similarly apply along this section.

As the path proceeds northbound from Kealia Beach, the existing corridor is characterized by steep slopes on the mauka end associated with the Kealia Kai Subdivision and fairly high drop in grade to the shoreline on the makai end (see photo). Thus, site rails may be needed along various stretches of this section for safety. Topographic data of this coastline corridor is not available for this section, so the specific design requirement would need to be determined by the selected contractor design team.



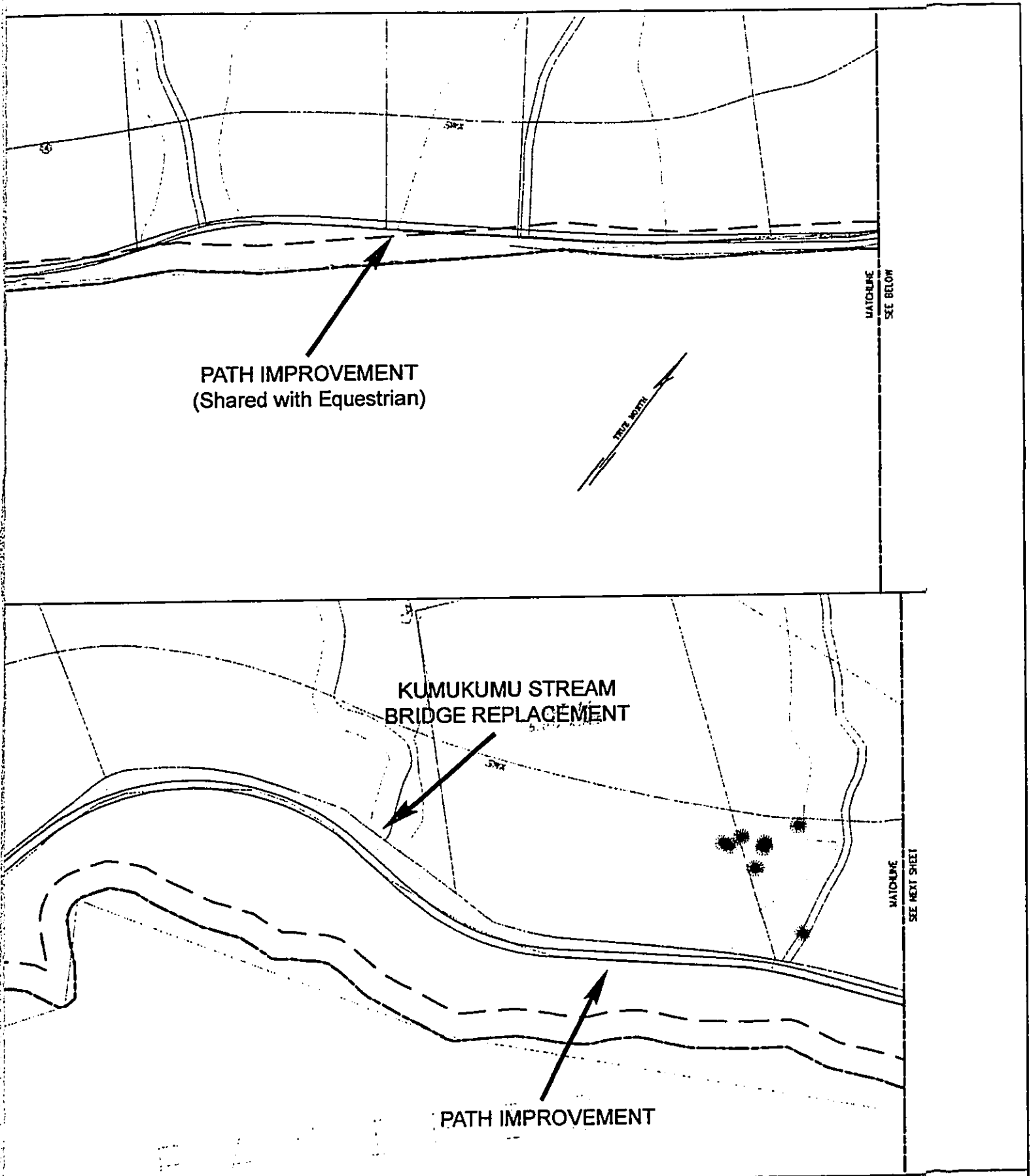
As the path approaches Kumukumu Stream, the route moves inland away from the shoreline. There would be no concerns with coastal erosion from this point north to Ahihi Point. This path would then proceed past Kuna Bay and eventually terminate at a point just before the gully where Homaikawaa Stream crosses. From this point, an existing foot trail can be used to reach Ahihi Point. A rest area would be provided at the location where the shoreline access intersects the path.

Future plans may include extending this path across Homaikawaa Stream and further north to Anahola. However, lands in Anahola are owned by the State Department of Hawaiian Home Lands who have no immediate plans or schedule to permit this path be extended into Anahola at this time. This future path may either proceed along the cane haul road into Anahola or connect back to Kuhio Highway. A new bridge structure would also be needed to cross Homaikawaa Stream.



PROPOSED IMPROVEMENTS WITHIN KEALIA KAI (

*Kapaa-Kealia Bike & Pedestrian Basis of Design Project
 County of Kauai, Department of Public Works*

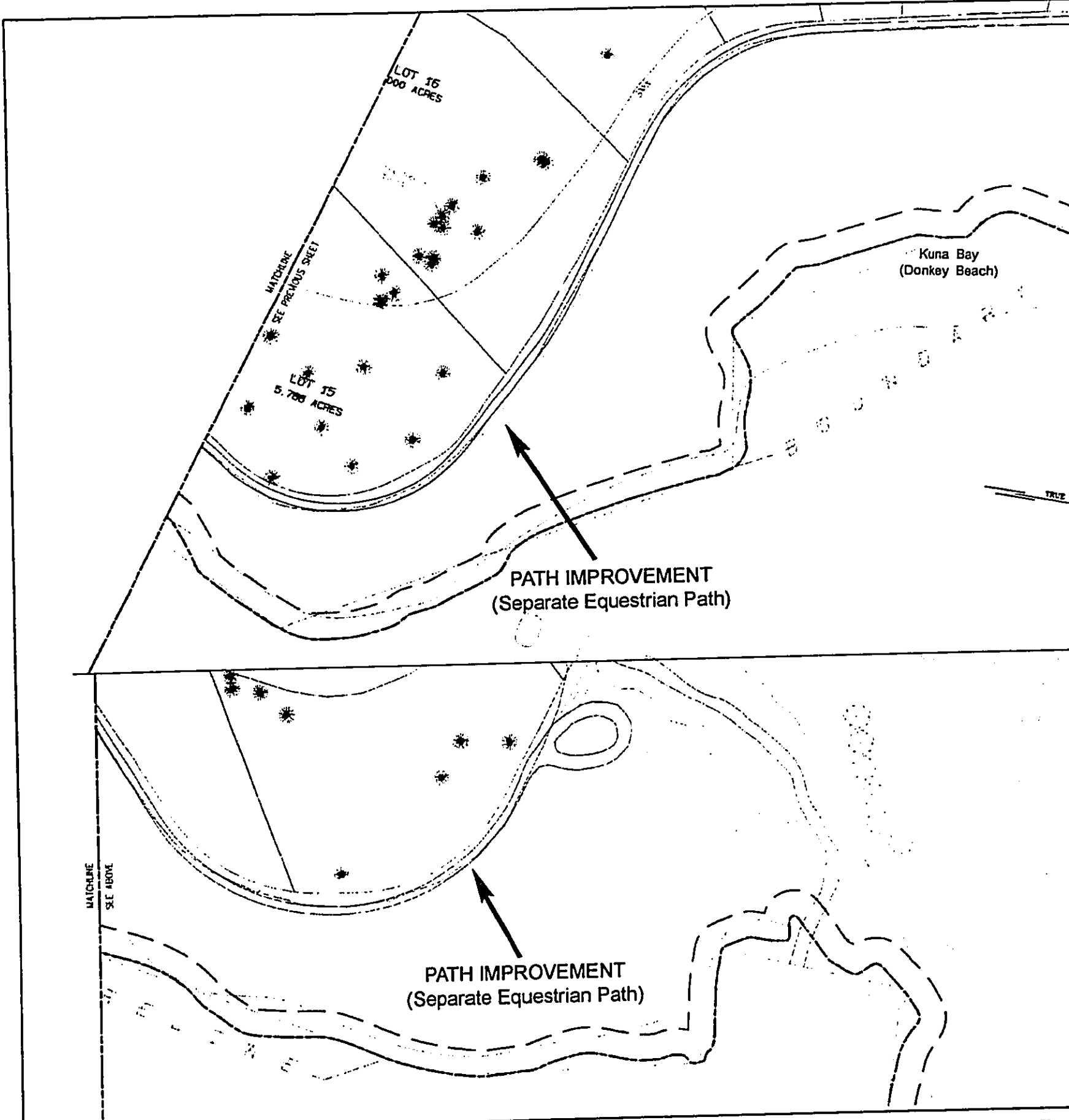


LIA KAI (SECTION I)

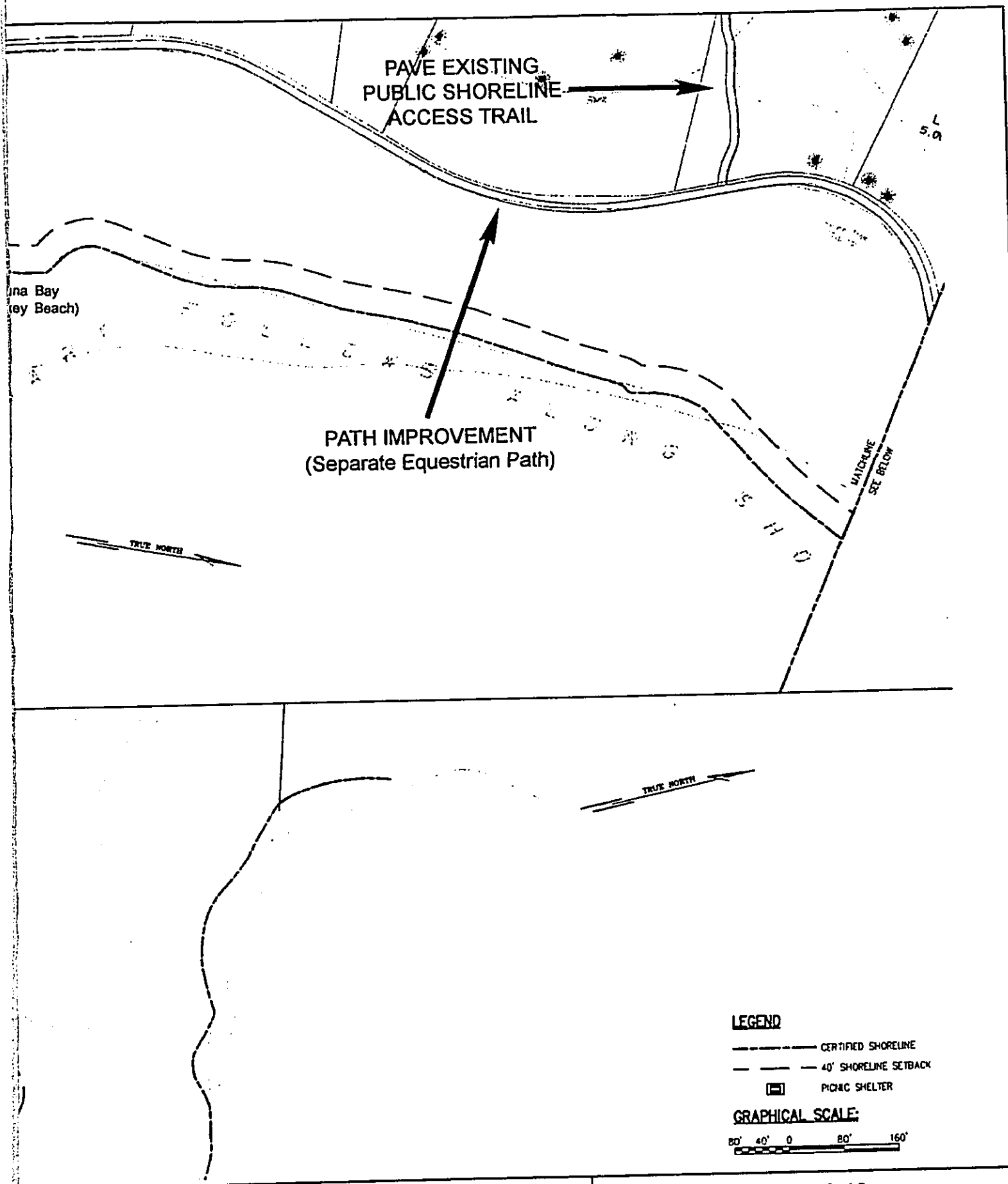
FIGURE 2.12

Source:
SSFM International, Inc.





PROPOSED IMPROVEMENTS WITHIN KEALIA KAI



LIA KAI (SECTION II)

FIGURE 2.13

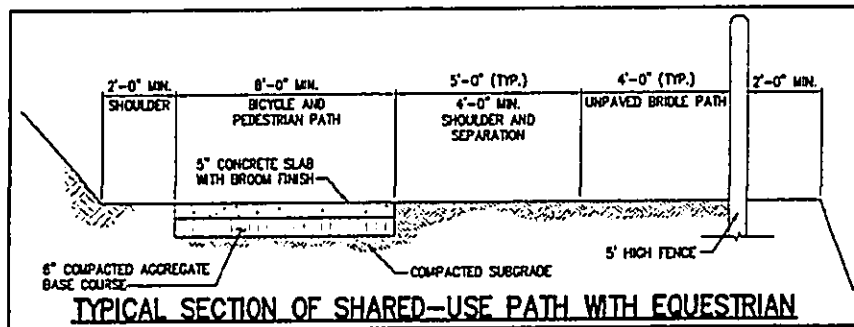
Source:
SSFM International, Inc.



Equestrian Use Along Path

The County plans to accommodate equestrian use along this path from the northern end of Kealia Beach up to the project's terminus at Ahihi Point since this section of the path route is not as heavily used by the public now. For the narrow section of the path from Kealia Beach up to about Kumukumu Stream, a shared path would be provided since there isn't enough right-of-way (25 feet needed) to provide separate paths. North of this area, the path route moves further inland so there is sufficient space to provide a separate bridle path with separation along the multi-use path.

Due to limited right-of-way along the corridor from Kealia Beach, the path width would be reduced to about 8 feet as shown on the typical section graphic. This would allow 4 feet for the unpaved bridle equestrian path, shoulders (minimum 2 feet on each side), and a few feet for separation.



Crossing of Kumukumu Stream by equestrian users would be provided on a separate trail along the makai side of the new bridge to be constructed. The design details for this shared path would be developed during the design phase. This would include consultation with the Heritage Trails Committee, equestrian groups, and other path user groups on necessary signage, path design, use, and protocol along this shared path which includes addressing horse droppings and maintenance.

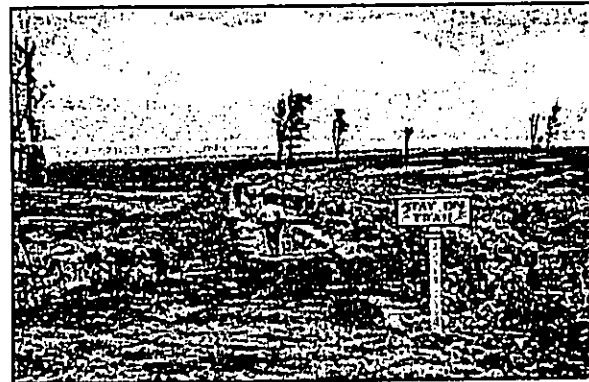
Considerations for Shore Protection

There is a section of shoreline, about 600 to 700 feet long located north of the Kealia Beach jetty, that is subject to coastal erosion. A riprap revetment would not be useful because the existing boulder beach already constitutes a natural riprap revetment in this area. Natural protection is provided by a near shore basalt shelf along the southern half of this section and by a boulder beach along the northern half. The bank on the northern half appears to be more susceptible to wave erosion.

However, the natural boulder beach provides some protection from wave attack. Furthermore, the old cane haul road there has not failed or been extensively damaged. Therefore, the project's design would include measures to control surface runoff at this site to provide natural protection helping the shoreline become stable into the foreseeable future. No shoreline hardening is planned along this section at this time.

Shoreline Public Access

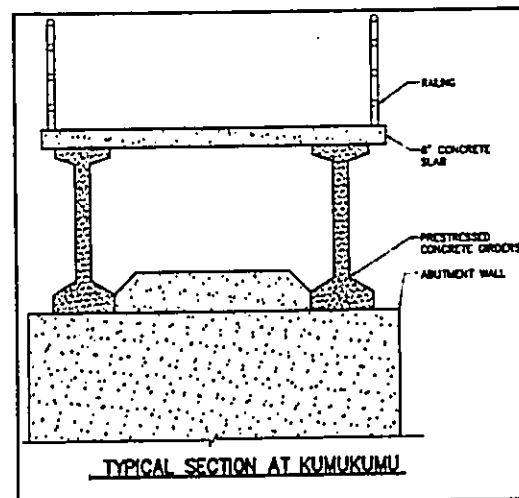
An existing public shoreline access (see photo) is established through the Kealia Kai Subdivision. This shoreline access starts from a public parking area located along Kuhio Highway, and proceeds makai (seaward) through the subdivision to the cane haul road where the path would be established. This public access is about 12 feet wide and would be paved under this project.



There are no plans to provide equestrian use along this public shoreline access at this time. Existing constraints include a limited right-of-way through the subdivision preventing both a 12-foot-wide paved path and unbridled path with separation. Reducing the paved path width is also not practicable because the County's Police and Fire Departments require a paved path allowing for access to the multi-use path by their vehicles.

Bridge Improvements

The Kumukumu Stream Bridge is the only bridge structure affected by the project within this section. This former cane haul road bridge was washed out leaving only a concrete abutment wall at one end. A new bridge would be constructed, and the existing abutment considered for reuse. A typical section of this bridge is shown (exhibit to the right). A new abutment wall will be required at the other end. The new superstructure is planned to consist of pre-cast pre-stressed concrete girders spanning between abutments along with a concrete slab deck.



Path Amenities

The only path amenity planned within this section would consist of a comfort station at the existing public parking area along Kuhio Highway. This would be a smaller comfort station having about 2 to 4 stalls. This station would be sited within the existing parking lot, as a result a few parking stalls would be lost. A septic tank with a leach field can be used for wastewater disposal of this facility or a low water organic system could be incorporated as an alternative treatment system if appropriate.

Landscaping

Landscaping along the entire path route would be considered and provided where appropriate. Landscaping would also be provided for path related amenities planned along the project corridor such as at pavilions, comfort stations, rest areas, etc. The selected design/build contractor would develop the actual landscaping plans for this project.

Landscaping will also be provided for a culturally sensitive area located south of Kuna Bay near the shoreline extending mauka up to an area below the planned path. This landscaping and other related improvements (ex. signage, documentation of land maps, etc.) would be implemented as recommended in a preservation plan (CSH 2000a) adopted for this culturally sensitive area by the State Historic Preservation Division (SHPD) and Kauai/Niihau Islands Burial Council based upon consultation efforts with these groups. The planting of vegetation would restrict path users from encroaching onto this culturally sensitive area. The selected contractor will need to consult with the SHPD and island burial council regarding appropriate implementation of treatment plan measures.

In addition, a Preservation Plan addressing interpretive signage to be provided along the multi-use path will be developed and submitted to the SHPD for review and approval in accordance with a Memorandum of Agreement between the County and SHPD. Consultation with the SHPD, Kauai Historic Preservation Review Commission, and Heritage Trails Committee will be conducted under the Memorandum of Agreement stipulations in developing interpretive signage associated with this Preservation Plan.

2.5.5 Development Schedule and Construction Cost Estimates

The County of Kauai is projecting to initiate this project in the summer of 2003, and completing the project in 2006. Although exact phasing has not been determined at this time, it is anticipated that the project may be phased in two part and completed over a three year period. The northern section of the proposed path (Kealia Kai Subdivision Segment and portion of Kealia Beach Segment) would be the first phase implemented, and the remainder of the project (remaining portion of Kealia Beach Segment and Kapa'a Town Segment) developed in the second phase.

Based on the proposed phasing, it is estimated that the total project cost is approximately \$10.7 million. The County has sought and will receive Federal funds to conduct design work, obtain permits, and implement development of this multi-use path, path amenities, and associated improvements. Matching County funds are in the form of the appraisal value of the lands dedicated to the County by the private landowner of the Kealia Kai Subdivision.

2.5.6 Listing of Required Permits

A listing of required discretionary land use approvals and ministerial permits for this project is provided.

Federal Permits

1. Department of Army Permit (Section 404), Nationwide Permit
2. Department of Army Permit (Section 10), Nationwide Permit

State of Hawaii Permits

1. Conservation District Use Permit
2. National Pollutant Discharge Elimination System (NPDES) Permit
3. Construction Noise Variance – if required

4. Stream Channel Alteration Permit
5. 401 Water Quality Certification
6. Coastal Zone Management Area Consistency Determination

County of Kauai Approvals and Permits

1. Special Management Area Permit
2. Shoreline Setback Variance
3. Flood Zone Permit
4. Grubbing/Grading Permit
5. Building Permit

CHAPTER 3 ALTERNATIVES CONSIDERED

This chapter discusses alternatives associated with the multi-use path project that were identified and considered. Alternatives discussed include: 1) not implementing development of the project, otherwise referred to as the No-Action Alternative, 2) proceeding with the proposed project, and 3) other alternatives considered but which have been eliminated due to constraints or other reasons. Based upon the alternatives considered, the discussion of probable impacts in the remaining chapters of this document will address those associated with the No-Action Alternative and Proposed Project.

3.1 NO-ACTION ALTERNATIVE

The no-action alternative would entail not proceeding with development of the proposed multi-use path and related amenities. Under this scenario, no development would take place within the study corridor, and the existing asphalt-paved path within Kapa`a Town and cane haul road would continue to be utilized by the public under its current condition.

This scenario would also mean that the current pathways would not be improved, and in the case of the cane haul road, further deterioration would probably occur. Additionally, proposed amenities would not be constructed, which would result in County parks along the proposed path to continue having inadequate facilities such as comfort stations.

3.2 PROPOSED PROJECT ALTERNATIVE

Under this alternative, a proposed multi-use path and associated amenities as described in Chapter 2 would be developed.

Improvements would be made to the existing path in Kapa`a Town, and the cane haul road in the Kealia Beach and Kealia Kai Subdivision segments to provide a concrete path. Renovations or improvements would also be performed on the bridges spanning Waika`ea Canal, Mo`ikeha Canal, and Kapa`a Stream, and a new bridge would be constructed across the washed out Kumukumu Stream.

Comfort stations and other amenities would be constructed at Lihi Park, Kealia Beach, and the County-maintained parking lot on Kuhio Highway at the Kealia Kai Subdivision. Improvements would also be performed on the public access trail leading to the cane haul road from the County-maintained parking lot. Additionally, parking areas would be developed at Lihi Park and new parking areas at Kealia Lookout would be added.

3.3 OTHER ALTERNATIVES ELIMINATED FROM CONSIDERATION

Alternatives that were initially considered and eliminated from further consideration are presented in this section. These alternatives were eliminated based on safety or public health concerns, conflicts with the physical environment, or based on public sentiment. The eliminated alternatives are discussed by corridor sections.

3.3.1 Multi-Use Path Alternatives Eliminated

Alternatives to utilizing the existing path route in Kapaa Town and cane haul road to the north up to Ahihi Point were considered. However, these alternatives were eliminated from consideration because they were not practicable and would result in unique problems for the County in terms of costs and impacts to the community and environment. A summary of these avoidance alternatives eliminated is provided.

1. Alternative A - Kuhio Highway Path Route. This alternative would establish a path along Kuhio Highway from the Lihi Park site up to Ahihi Point. This alternative was eliminated because Kuhio Highway within Kapa'a Town does not have any available right-of-way to support a 12-foot-wide multi-use path. To establish such a path would require widening the highway and displacing many homes and businesses causing significant impact and construction costs. All of this property is privately owned and would need to be acquired by the County to implement. North of Kapa'a Town, there is available undeveloped land, however, this property would need to be acquired by the County at considerable costs.
2. Alternative B - Alternative Path Route Along Shoreline. This alternative would involve creating another path route within the County's property along the shoreline for use as a path and avoid using the existing paved path and cane haul road. This alternative was eliminated because there are several sections along the route close to the shoreline which do not have sufficient right-of-way to allow for another path. Sections north of Kapa'a Town to the Kealia Lookout and from Kealia Beach to Kumukumu Stream do not have enough area. New bridges would also need to be created crossing Waika'ea Canal, Mo'ikeha Canal, Kapaa Stream, and Kumukumu Stream to accommodate another path at substantial costs and impact to the areas affected.

3.3.2 Kapa'a Town Section Alternatives Eliminated

Path Route Through Kapa'a Beach Park Site

Within this segment, the routing of the path through Kapa'a Beach Park presented a number of alternatives. The existing path is routed through the park's parking lot causing path users to walk, jog, run, or bike through the parking lot conflicting with vehicles. An alternative considered was to route the path through the mauka (inland) side of the parking lot. However, this alternative route was eliminated primarily due to user conflicts with traffic and safety concerns.

In order to route the path inland of the parking lot, the path would be required to cross Niu Street. This would result in bicyclists, pedestrians, and other path users having possible conflict with vehicular traffic entering the Kapa'a Beach Park parking lot from this street. In addition, this inland route would have to pass through a grass area along the side of the current field. This grassed area is used by parents and visitors to view games occurring at the field. Thus, this path would have a significant effect on these field activities conflicting with games and spectators.

Path Route Along Kapa'a Neighborhood Center

Near the Kapa'a Neighborhood Center, an alternative was to have the proposed path be routed along the shoreline through an open grass field in the area. The alternative was developed to reduce potential path user conflicts with the neighborhood center and provide a more scenic route closer to the shoreline.

This alternative was eliminated based on public comments and field visits to the area. During public informational meetings on the project, the public felt that the open grass field should not be divided by a multi-use path since many people utilize the field for picnics, outdoor activities (i.e., Frisbee throwing, playing catch), and use by the neighborhood center. Field visits to the area confirmed usage of the grass area, specifically during the weekends.

Staging Area for Equestrian Use Near Otsuka's

In the open area located adjacently north of the Otsuka Furniture Store, a staging area (i.e., parking area, etc.) for equestrian riders was requested from public meetings held. However, this alternative was eliminated from consideration due to property ownership, and future transportation plans currently being developed by the State DOT for their permanent bypass road.

The property in this area that would be affected is owned by the State of Hawaii. There is also a private landowner who owns a parcel among the State parcels next to Kuhio Highway. The State recently conveyed property to the County of Kauai by Executive Order for use as a bicycle/pedestrian path and addition to Kapa'a Beach Park. But, this was land associated with the cane haul road, and lands to the east (makai) of the cane haul road. The proposed staging area was proposed to be developed on lands west (mauka or inland) of the cane haul road.

Further, discussions with the DOT, Highways Division on Kauai determined that plans for the Kapa'a By-Pass Road were being developed, and their northern point of connection to Kuhio Highway would be this particular area under consideration for a staging area. In addition, the appropriateness of allowing equestrian use along the proposed path is still being considered by the County. Therefore, this staging area was eliminated from further consideration. However, the County may reassess developing this amenity in the future if the issues of land ownership and confirmation of plans and route of the Kapa'a By-Pass Road are established allowing this.

3.3.3 Kealia Beach Section Alternatives Eliminated

Development of path amenities at Kealia Beach Park was considered being sited in an area that presently consists of a gravel parking area. This site is a triangular shaped area situated in the northern end of the park. It is mauka of the cane haul road near the park's main entrance from the highway at the foot of the hill.

A pavilion with comfort station, paved parking lot, and other path amenities were planned in this gravel parking area. However, based on archeological subsurface testing of this site, cultural deposits were discovered on the site including a human burial. Therefore, the siting of these amenities at this location was eliminated from consideration resulting in another location to minimize and avoid impacting this archaeological site.

A second alternative was to provide a comfort station at a site located next to the temporary lifeguard station at Kealia Beach. This site is in close proximity of the beach and shoreline, and along a parking area fronting the beach. This site was eliminated from consideration due to its close proximity to the coastline, and impacts on parking in this area. Parking spaces would have to be removed from this area to accommodate this comfort station, and it would create conflict with vehicle movement between this area and the highway which is already narrow.

An open pavilion of about 1,000 to 1,500 square feet in size was planned. This would have tables for use by the public along with other amenities such as bike racks. However, this pavilion will no longer be provided based upon concerns received by the public. Concerns received were on the potential nuisances caused by people loitering or hanging out at such a facility, drinking, or possibly serving as a location for drug activities.

3.3.4 Kealia Kai Subdivision Section Alternatives Eliminated

Kumukumu Stream

The bridge spanning Kumukumu Stream was washed out in the 1980's by the Anahola Floods. Today, only remnants of the bridge exist. People traveling along this cane haul road are now able to pass this section by accessing privately-owned lands to the west (inland), and walking down into and past the stream itself.

An alternative considered for this stream crossing was to continue this temporary path of traversing the stream by providing a path route inland of the washed out bridge. However, this alternative was eliminated since it would involve crossing into privately-owned lands. In addition, building a path across this stream would impact the stream's flow of water and possible aquatic resources. Consequently, a bridge spanning this stream using the former washed out bridge was determined to be more appropriate.

Comfort Station at Kuna Bay/Donkey Beach

Alternative sites for a comfort station at Kuna Bay were considered. One site identified as a location for a comfort station was an area adjacent to Kuna Bay, east or makai of the existing cane haul road. However, this site was eliminated from consideration as it will impact views of the Kuna Bay from lands above, and also because of the lack of water and other infrastructure for the comfort station in this area. Water lines would need to be extended a considerable distance just to serve this comfort station.

CHAPTER 4 PHYSICAL AND BIOLOGICAL ENVIRONMENT

This chapter discusses the existing physical and biological environment in the project area, and the probable impacts resulting from the proposed project. Mitigative measures, if necessary, are also discussed.

4.1 CLIMATE, TOPOGRAPHY, AND SOILS

The island of Kauai has a total land area of about 553.3 square miles, and is the fourth largest island in the Hawaiian chain. Climate on the Island of Kauai, as well as within the State of Hawaii, can be characterized as having low day-to-day and month-to-month variability. Differences in the climate of various areas are generally attributable to the island's geologic formation and topography creating miniature ecosystems ranging from tropical rain forests to dryer plains along with corresponding differences in temperature, humidity, wind, and rainfall over short distances (Dept. of Geography 1998). Thus, the climate of this island is predominantly mild and equitable throughout the entire year. This climate is due to the island's location on the northern fringe of the tropics within the belt of cooling northeasterly trade winds (CWRM 1990).

The climate of the island's Kawaihau Planning district, which includes the communities of Kapa'a and Anahola, is predominantly warm with moderate rainfall and generally similar to that of the Lihue area. The average annual daily temperatures recorded in Lihue ranged between 71 and 80 degrees Fahrenheit in the year 2000 with an average annual temperature of 76.2 degrees. The average annual rainfall recorded at the Lihue and Moloaa stations (south and north of project corridor) are about 43 and 51 inches, respectively. Rainfall recorded at these stations in the year 2000 was 18 and 26 inches which is lower than the normal average (NOAA 2000).

The predominate surface wind occurring in the Kapa'a and Anahola districts is the prevailing trade winds from the northeast direction which usually dominate from April to November. Winds from the south are infrequent occurring only a few days a year and mostly in the winter associated with "Kona" storms. Wind speeds in these districts are predominantly in the 13 to 24 miles per hour range for much of the time (Department of Geography 1983).

4.1.1 Topography

The Island of Kauai consists of a single great shield volcano that is deeply eroded and partly veneered with much later volcanics. The Kauai shield has a volume of about 4,200 cubic kilometers and rises 5,100 meters above the surrounding sea floor (Macdonald, Abbott, and Peterson 1983).

The project is situated on the eastern end of the island, and the path is generally routed along the coastline from the areas of Kapa'a to Kealia. As a result, the topography along the existing path in Kapa'a Town and cane haul road proceeding to the north is generally fairly level with small to moderate slopes. Within Kapa'a Town, elevations range from about 5 to 7 feet mean sea level (msl)

along the shoreline up to 10 to 15 feet along the path and mauka adjoining properties. Towards the northern end of Kapa'a Town, elevations approaching the beginning of the cane haul road increase to about 15 to 20 feet msl.

The topography in the area north of Kapa'a Town increases through this section as the path approaches Kealia Beach. Elevations increase to about 40 to 50 feet msl at Kuhio Highway with the cane haul road located makai of this at about 20 to 25 feet msl still continuing on a fairly level approach. Steeper slopes are associated with areas situated both above (mauka) and below (makai) this cane haul road. This cane haul road also cuts through several embankments in this section. At Kealia Beach, the topography changes back to the fairly open and level character. Elevations along the cane haul road various from 15 to 20 feet msl with the adjacent Kuhio Highway situated at a slightly higher elevation (about 20 to 25 feet msl).

North of Kealia Beach, the topography of the surrounding area changes back to that similar to the section just north of Kapa'a Town. It is characterized by steep embankments present both mauka and makai of the cane haul road at it passes along a narrow stretch of shoreline. The elevation along this cane haul road is about 40 feet msl. At Kuna Bay, the topography along the path generally opens up with less steep grades associated with surrounding properties. Steeper embankments are present along the mauka Kealia Kai subdivision property while gradual slopes are present makai of the cane haul road proceeding toward the ocean. The path in this segment of the corridor also traverses through a few valleys which have associated streams (Kumukumu and Homaikawaa).

4.1.2 Soils

The U.S. Department of Agriculture, Soil Conservation Service's *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii* includes general soil maps developed for this Kapa'a to Kealia region based upon soil surveys taken (SCS 1972). These soil maps show the soil associations developed which are classified by soil series and soil phase.

Soils situated along the project corridor consist of several types which are generally distinct to a particular segment of the entire 4.3 mile corridor. Within the Kapa'a Town area starting from Lihi Park, the soils consist mainly of Mokuleia fine sandy loam (Mr) and Beaches (BS). Between the urbanized town area and Kealia Beach, soils consisted of Badland (BL), Rock outcrop (rRO), and some Lihue silty clay, 25 to 40 percent slopes, eroded (LhE2). Kealia Beach consists of Beaches soil type. Moving toward the Kealia Kai section of the study corridor, the soil types consist of various types of soils. Finally, Ahihi Point is comprised of Rough broken land (rRO). A summary of these various soil types are provided.

1. Badland (BL). Consisted of steep to very steep, nearly barren land, ordinarily not stony. The soil forming material was generally soft or hard saprolite. Runoff was very rapid, and geological erosion was active.
2. Beaches (BS). Occurred as sandy, gravelly, or cobbly areas on the island. These beaches consisted mainly of light-colored sands derived from coral and seashells. Beaches have no value for farming.

3. Rock outcrop (rRO). Consisted of areas where exposed bedrock covered more than 90 percent of the surface. The rocks outcrops were mainly basalt and andesite. This land type was gently sloping to precipitous.
4. Rough broken land (rRO). Consisted of very steep land broken by numerous intermittent drainage channels. In most places it was not stony. It occurred in gulches and on mountainsides with slopes of 40 to 70 percent. Runoff was rapid and geologic erosion was active. These soils were variable being 20 to more than 60 inches deep over soft weathered rock. In most places some weathered rock fragments were mixed with the soil material. Small areas of rock outcrop, stones, and soil slips were common.
5. Ioleau Series. Consisted of well-drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock, probably mixed with volcanic ash. They were gently sloping to steep with elevations ranging from 100 to 750 feet msl. Representative profiles of the Ioleau silty clay loam, 12 to 20 percent slopes (IoD2) soil type showed the surface layer being dark brown and yellowish-red silty clay loam about 15 inches thick. The subsoil was about 40 to 60 inches thick, consisted of dark-brown and dark reddish-brown silty clay that has subangular blocky structure, and was very compact in place. The substratum was soft weathered rock. Permeability was slow to moderately slow, runoff rapid, and the erosion hazard was moderate to severe.
6. Koloa Series. Consisted of well-drained soils on slopes of old volcanic vents and upland ridges on the island of Kauai. These soils were underlain by hard rock at a depth of 20 to 40 inches. They developed in material weathered from basic igneous rock. They were gently sloping to moderately steep with elevations ranging from nearly sea level up to 300 feet msl. Representative profiles of the Koloa stony silty clay, 15 to 25 percent slopes (KcD) soil type showed the surface layer being dark reddish-brown stony silty clay about 7 inches thick. The subsoil was about 13 inches thick, consisted of dark-red and dark reddish-brown stony silty clay that has subangular blocky structure. The substratum was hard rock. Permeability was moderately rapid, runoff medium, and the erosion hazard was moderate to severe.
7. Lihue Series. Consisted of well-drained soils on uplands on the island of Kauai. These soils developed in material weathered from basic igneous rock. They were gently sloping to steep with elevations ranging from nearly sea level up to 800 feet msl. Representative profiles of the Lihue silty clay, 25 to 40 percent slopes, eroded (LhE2) soil type showed the surface layer being dusky-red silty clay about 12 inches thick. The subsoil, more than 48 inches thick, consisted of dark-red and dark reddish-brown, compact silty clay that had subangular blocky structure. The substratum was soft, weathered rock. Permeability was moderately rapid, runoff rapid, and the erosion hazard was severe.
8. Mokuleia Series. Consisted of well-drained soils along the coastal plains on the island of Kauai. These soils formed in recent alluvium deposited over coral sand. They were shallow and nearly level with elevations ranging from nearly sea level up to 100 feet msl. Representative profiles of the Mokuleia fine sandy loam (Mr) soil type showed the

surface layer being very dark grayish-brown clay loam about 16 inches thick. The next layer consisted of dark-brown and light-gray, single-frain sand and loamy sand. The surface layer was neutral in reaction, and the underlying material was moderately alkaline. Permeability was moderately rapid in the surface layer and rapid in the subsoil. Runoff was very slow, and the erosion hazard slight (SCS 1972).

4.1.3 Impacts on Soils and Topography

Short-term impacts would be associated with construction activities conducted for the project. This would include path development alternatives along with the construction of path amenities such as parking, comfort station, and pavilion.

Under the No Action Alternative, the existing paved path in Kapa'a Town and cane haul road to the north would remain as is, and no path amenities would be provided. Therefore, there would be no short-term impacts associated with the construction activities. Consequently, this section primarily discusses the probable short-term construction related impacts resulting from project.

Path improvements are not expected to have a significant impact on the existing topography or physical character of this current path, cane haul road, and immediate surrounding area. The topography associated with the path corridor is already relatively flat having served as a transportation route for plantation era operations. As a result, path improvements would mainly involve widening and repaving the existing section in Kapa'a Town with concrete and resurfacing the cane haul road with concrete. The existing public shoreline access through the Kealia Kai subdivision has a steeper topography. However, improvements would only involve paving this existing path and thus involve minimal changes to the topography and grade conditions.

Existing bridge crossings would generally be improved to allow for a wider deck of about 12 feet wide. Other bridges (Kumukumu and Homaikawaa) have been washed out, thus, improvements utilizing these crossings would not significantly change these areas.

Construction of path amenities would involve some excavation and grading work for establishing building pads along with trenching for water line connections and wastewater disposal. However, the locations being considered for these amenities already have relatively flat topographies which shouldn't involve extensive grade modifications. Parking areas being considered for improvement similarly have relatively flat topographies that wouldn't require significant grade changes. Therefore, construction activities should result in minimal changes to the present topography and physical characteristics of the adjacent area. Design plans developed for the path, bridges, and amenities would try to achieve a balanced cut and fill condition to minimize disturbances to the area's topography and soils as practical.

Construction of the path and amenities would inevitably involve some land disturbing activities that may result in some soil erosion. However, this erosion potential should be relatively low due to the type of improvements associated with this project which is mainly providing a multi-use path. Areas planned for path amenities are relatively small in size resulting in small areas of disturbance.

A few existing areas along the cane haul road path are already experiencing some land erosion due to surface runoff coming from inland areas and the highway. Path improvements would include landscaping or other measures developed during the project's design to mitigate such erosion and its effect on the path.

To minimize potential short-term erosion impacts during construction activities, various best management practices identifying appropriate erosion control measures would be developed for implementation during the project's design. Erosion control measures which could be considered to further lessen short-term erosion impacts may include: use of temporary berms and cut-off ditches; use of temporary silt fencing and screens; thorough watering of graded areas after construction activity has ceased for the day and on weekends; or sodding or planting slopes immediately after grading work has been completed. A Grading Plan will also be prepared during the project's design which would be submitted to pertinent agencies for their review and approval.

Pertinent measures would be developed during the design of this project that would comply with the County's erosion and sedimentation control regulations. The appropriate measures will be included in an Erosion Control Plan prepared and submitted to the County for ministerial approval. Other mitigative measures would be specified as part of applicable National Pollutant Discharge Elimination System (NPDES) permits obtained for the project as well. Grading activities will also be performed in accordance with permit provisions from the County and State Department of Health.

Effects From Equestrian Users

An unpaved bridle path provided along the concrete paved multi-use path for equestrian use may contribute to potential increased soil erosion and sedimentation along the path. Dirt and gravel associated with the unpaved bridle path would likely be loosened from use by horses over time which may allow for increased soil erosion during periods of moderate to heavy rain. Surface runoff from the highway and mauka properties along the path would travel across the path toward the ocean potentially carrying this loosened soil and gravel and contributing to erosion.

4.2 NATURAL HAZARDS

This section addresses those natural and urban-related hazards applicable to the project site. Of the potential natural hazards, earthquakes, hurricane, and tsunami and flooding hazards are addressed. There are no other known potential urban-related hazards applicable to the project area planned within this study corridor such as airport clear zones, nuisances, hazardous wastes, or other site safety issues associated with urban use.

4.2.1 Earthquake Hazards

Earthquakes in the Hawaiian Islands are primarily associated with volcanic eruptions resulting from the inflation or shrinkage of magma reservoirs beneath which shift segments of the volcano (Macdonald, Abbott, and Peterson 1983). The Island of Kauai is periodically subject to episodes of seismic activity of varying intensity. Available historical data indicates that the number of major

earthquakes occurring on Kauai have generally been less and of lower magnitude compared with other islands such as Hawaii (DBEDT 2001, Furumoto, et al. 1973). However, earthquakes cannot be predicted with any degree of certainty or avoided, and an earthquake of sufficient magnitude (greater than 5 on the Richter Scale) may cause damage to the path and associated amenities.

Although difficult to predict, an earthquake of sufficient magnitude causing structural or other damage to this project may occur in the future. However, except for the Island of Hawaii, the Hawaiian Islands are not situated in a highly seismic area subject to numerous earthquakes (Macdonald et al. 1983). Most of the earthquakes that have occurred were volcanic earthquakes causing little or no damage (USGS 1997). Moreover, the seismic risk classification of the Island of Kauai is generally low with a rating of Zone 1.

Although the possibility of earthquakes on Kauai has been lower than other islands, potential damage to the path along with amenity structures (comfort station, pavilion, etc.) constructed may occur from an earthquake of sufficient magnitude. However, damages to these structures will be minimized by complying with appropriate Federal and County design standards. Thus, the risk of potential damage to the path and amenities proposed will not be more than other existing land uses or infrastructure facilities on the island.

4.2.2 Hurricane Hazards

In any given year, one or more hurricanes can be expected to occur in the central North Pacific Ocean. Although hurricanes occur infrequently in the immediate vicinity of Hawaii, they do occasionally pass near the islands. The Island of Kauai has historically received a greater threat of damage from hurricanes as compared to other islands. Recent examples included Hurricane Iwa, which passed within 30 miles of Kauai in 1982, and Hurricane Iniki, which passed directly over Kauai in 1992.

A hazard mitigation report prepared by the Federal Emergency Management Agency after Hurricane Iniki in 1992 determined that nine hurricanes approached within 300 nautical miles (about one day's travel time) of the Hawaiian Island's coastlines between 1970 and 1992. Most hurricanes affecting the islands have focused on Kauai. Based upon a tracking of hurricanes since 1950, there appears to be no geographical or meteorological reasons why hurricanes miss the other islands but tend to steer toward Kauai (FEMA 1993).

The three major elements of a hurricane making it hazardous are: 1) strong winds and gusts, 2) large waves and storm surge, and 3) heavy rainfall (FEMA 1993). All of these elements could affect the multi-use path and amenities constructed since they would be located along the coastline. Of the three hazardous elements, only the path amenities (comfort stations, pavilions) have the potential for receiving the most damage since these involve above ground structures. Bridge improvements constructed for this path would also be subject to potential damage from these elements as evidenced by existing bridges already washed out.

Under the No Action Alternative, the existing path, cane haul road, and bridges would continue to be subject to damage from a hurricane of sufficient strength. With the improvement alternatives being considered, they would also be subject to similar exposure and damage. To minimize potential damages, the improvements would be designed and constructed in accordance with appropriate County and Federal design standards. Thus, the risk of potential damage from hurricane hazards would be similar to other existing developments on the Island of Kauai.

4.2.3 Tsunami Inundation and Waves

A coastal evaluation was conducted by Sea Engineering, Inc. to assess the existing shoreline condition and characteristics and wave hazards and shore protection needs. A copy of this report is included in Appendix C of this document.

Waves

The prevailing Hawaiian wave climate can be described by four primary wave types: 1) northeast tradewind waves, 2) North Pacific swell, 3) south swell, and 4) Kona storm waves. The project area is partially sheltered from the south swell and Kona storm waves by the island, and is thus mainly exposed to the North Pacific swell and northeast tradewind waves.

The North Pacific swell is produced by severe winter storms in the Aleutian area of the North Pacific and may arrive in Hawaiian waters throughout the year. But it is largest and most frequent during the winter months of October through March. This North Pacific swell approach direction is from the west through north, with typical deepwater wave heights of 4 to 10 feet. Some of the largest waves reaching the Hawaiian Islands are of this type. The project's windward shoreline is partially sheltered from the approach of this swell so only the more northerly of these swells would affect the project's coastline.

Northeast tradewind waves may be present in Hawaiian waters throughout the year, but are most frequent in summer months, when they dominate the wave climate on windward shores. They result from the strong tradewinds blowing from the northeast quadrant over long fetches of ocean. Typical deepwater tradewind waves have heights of 3 to 10 feet (Sea Engineering, Inc. 2002).

Tsunami Inundation

The Hawaiian Islands have a history of destructive tsunamis. Since 1819, 22 severe tsunamis have occurred, with wave heights at varying locations in Hawaii ranging from 4 to 60 feet. Four tsunamis have occurred in recent history in 1946, 1957, 1960 and 1964. The 1946 and 1960 tsunami wave heights were 18 and 6 feet at Kealia, respectively, and ranged from 25 to 12 feet and 4.5 to 7 feet around Kapa'a, respectively (Loomis 1990).

The Flood Insurance Rate Maps (FIRM), Community Panel Number 150002 0135 C (revised March 4, 1987) and 150002 0070 C (revised March 4, 1987) for the study corridor were reviewed to determine the existing floodways. Based upon these FIRMs, the path corridor is located within several designated floodways. Figure 4.1 shows the path corridor in relation to these FIRMs.

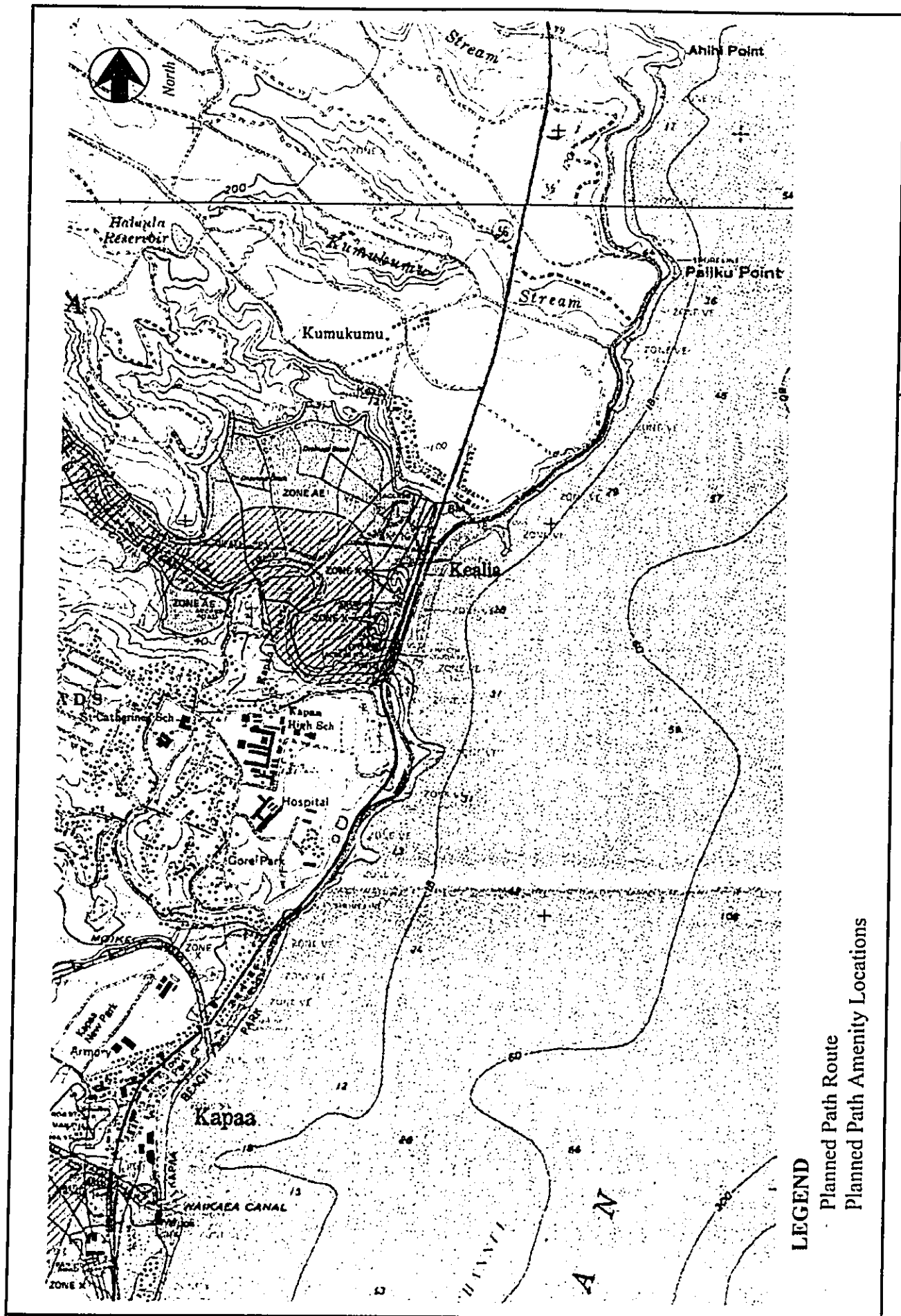


Figure 4.1

FLOOD ZONES WITHIN STUDY CORRIDOR

*Kapa'a-Kealia Bike & Pedestrian Basis of Design Project
County of Kauai, Department of Public Works*

*Source:
Federal Emergency
Management Agency (1987)*



The FIRM maps showed that the shoreline along most of the path corridor is classified Zone VE with a base flood elevation ranging from 9 to 22 feet. The Zone VE is a "Coastal High Hazard Area where wave action and/or high velocity water can cause structural damage in the 100-year flood," and is primarily identified as an area where a 3-foot or greater wave height could occur.

Lihi Park and Waika'ea Canal are also within this Zone VE classification. The shoreline area from the Kapa'a Beach Park, through Mo'ikeha Canal, and up past the cane haul road is also within Zone VE. From this point all the way north to Ahihi Point is similarly designated Zone VE along the shoreline generally reaching up to and including several portions of the cane haul road.

Effects From Tsunami Inundation and Waves

Under the No Action Alternative, the existing path in Kapa'a Town and cane haul road would continue to be used by the public with no improvements made to these facilities. These paths are already located within the Zone VE flood area and would continue to be subject to these same hazard risks. Thus, portions of this path and cane haul road could become inundated and receive damage from a storm with sufficient strength and wave velocity. Activities at both Lihi Park site along with most of Kealia Beach Park would similarly be subject to these flood hazards.

With the project, improvements would generally consist of widening the existing paved path in Kapa'a Town, improving the cane haul road, and renovating existing bridges. No major structures would be located along this path with the exception of bridge improvements. The final design of bridge improvements would need to be coordinated with the U.S. Corps of Engineers and County which includes obtaining Department of Army permits. Due to the path being located along the shoreline, there are no downstream structures or sensitive land uses of concern which may be negatively affected by these improvements. The path should not be greatly affected by a tsunami or severe flooding, nor would the improvement contribute to increased damages from such events.

Structures built for comfort stations are planned to be located along the shoreline and could thus be susceptible to some damage from a tsunami. Facilities planned at Kealia Beach Park would be sited outside of the floodway as designated on the FIRMs which generally tends to reach up to the cane haul road. As a result, these structures would not contribute to or negatively effect designated floodways in this area. The entire Lihi Park site and surrounding homes are located within the floodway as indicated on the FIRM. As a result, structures designed for this park would need to have a flood study done to evaluate design requirements, and comply with the County Flood Code.

Due to the size and type of structures proposed, they are expected to have minimal impact on this floodway. Comfort stations would only have about 1,000 to 2,000 square feet of floor area. There are no other land uses such as homes or businesses located downstream of these facilities which may be affected. These structures would be designed and built in conformance to County building codes and design standards to minimize its susceptibility to damage. As a result, the potential for damage to these structures would be similar to other existing uses and structures (ex. homes, buildings, etc.) in the surrounding area.

4.2.4 Coastal Erosion

Kapaa Town Section

The shoreline in Kapaa Town between Waikaea Canal and Kawaihau Road to the north consists of 6,000-foot-long calcareous sand beach typically 30 to 40 feet wide. A wide fringing reef is present that is up to 1,500 feet wide north of the Moikeha Canal. This shoreline has a history of beach erosion, and seawalls and revetments have been built along portions of the beach to protect the backshore.

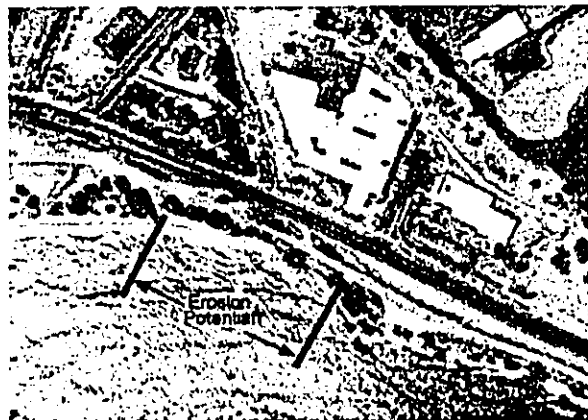
About 60 feet of erosion between 1950 and 1988 immediately north of Waika'ea Canal has occurred, and a rock wall about 500 feet long has since been built to protect the shoreline. Moving north up the coastline, the severity of this coastal erosion decreases with distance and is more stable although there were still some evidence of erosion. A riprap revetment about 150 feet long has been built along the shoreline about 300 feet south of Moikeha Canal. The beach north of Moikeha Canal has a recent history of severe erosion, and a 900-foot-long revetment was constructed in 1964 to prevent further erosion. The beach north of the revetment has accreted since 1953 (Sea Engineering, Inc. 2002).

Under the No Action Alternative, there would be no change or effect on the coastal erosion processes occurring. With the project, the multi-use path improvements implemented along this section would be located well inland from the shoreline. As a result, path improvements should not affect shoreline erosion occurring or be subject to coastal erosion problems.

Kealia Beach Section

Along Kapaa Beach, just north of Kawaihau Road, there is a short stretch of shoreline where the sand beach transitions to a rocky shoreline, and the path route is located immediately next to the shoreline (see photo). This shoreline section is well vegetated with small trees, shrubs and grasses indicating that the shoreline is well protected by the reef, is relatively stable, and may be subject to erosion only during severe storms. However, this is an area of concern from shoreline erosion since the existing cane haul road to be used for the multi-use path is located close to the shoreline.

There is also evidence of erosion at the base of the bank even though there is vegetation seaward of the bank. Along much of this shoreline section, there is also a failing vertical rock wall, with evidence of erosion from wave effects along the inland side of the wall and at the base on the seaward side. The reason for concern is because the wall is in poor condition and its complete failure would leave an unstable bank exposed to possible wave erosion. Land runoff is also contributing extensively to the shoreline erosion in this area (Sea Engineering, Inc. 2002).

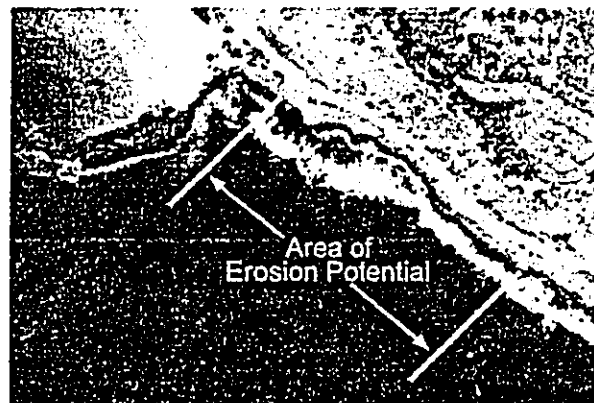


From this area to Kealia Beach, the shoreline is characterized by rocky/dirt banks sloping steeply down to basalt boulder, and mixed basalt/coral cobble beaches, with interspersed outcropping of basalt along the waterline. The existing cane haul road is situated landward of this rocky bank at a typical elevation of 15 to 25 feet above mean sea level. Bluffs in this area were well-vegetated, and showed no evidence of active wave erosion since the boulder and cobble beaches form a natural riprap that protects the base of the bluffs. Wave erosion along this reach was not evident since it bank erosion appears to be more of a land runoff problem.

Kealia Beach is a 4,000-foot long pocket beach, bounded on the south by a rocky point and on the north by a small jetty. Aerial photographic analysis along the beach indicated erosion of between 21 and 45 feet between 1950 and 1988. There were no indications of chronic or ongoing erosion observed along the beach during a site visit. The beach was wide and relatively flat, with a vegetation line well established with grass, naupaka, small trees and bushes. The proposed multi-use path is located a safe distance behind the vegetation line and should not be subject to erosion concerns along the shoreline (Sea Engineering, Inc. 2002).

Kealia Kai Subdivision Section

The shoreline fronting the Kealia Kai Subdivision is characterized by basalt boulder and cobble beaches, and backed by steeply sloping dirt and rocky banks. There is no fringing reef offshore. The proposed path using the existing cane haul road is located on top of a bank typically at an elevation of 15 to 25 feet msl. There is a section of this shoreline about 600 to 700 feet long that is an area subject to coastal erosion (see photo). This section is generally located north of the Kealia Beach jetty, and the planned path is located at or near the edge of a steep bluff along the shoreline.



This section is generally located north of the Kealia Beach jetty, and the planned path is located at or near the edge of a steep bluff along the shoreline.

Along the southern half, there is a basalt shelf that extends 100 to 150 feet seaward of the shoreline. This shelf causes waves to break along its seaward edge, and thus shelters the shoreline from wave effects. The path is at an elevation of about 17.5 feet msl, along a 9-foot-tall dirt and rock bank. At the base of the bank, a basalt boulder and cobble beach extends to the basalt shelf at the waterline. Most of this reach is well vegetated which is evidence that it is relatively stable and well protected by the basalt shelf and boulder beach. The edge of the cane haul road has been eroded in a few locations which appear to be due mostly to surface runoff from inland areas.

The northern half of this section shows evidence of wave erosion. There is no basalt shelf, and waves break closer to shore. The bike path is located at an elevation of about 23 feet msl, above a dirt and rock bank about 12 feet high. A basalt boulder and cobble beach extends from the base of the bank at an elevation of about 11 feet to a basalt rock outcrop extending into the water at an elevation of about 4 feet msl. There is no vegetation on the bank along this reach, indicating that it is not as stable and may be directly impacted by large waves.

Coastal Erosion Protection Measures

Alternatives have been identified for consideration to protect the two identified shoreline areas of Kapaa Beach near Kawaihau Road and at the Kealia Kai subdivision (north of Kealia Beach) from coastal erosion concerns. These alternatives included providing seawalls, revetments, moving the path inland, or not providing coastal hardening improvements. The two alternatives of moving the path further inland or providing seawalls were eliminated from consideration as discussed below.

1. **Seawalls.** Seawalls are vertical or sloping reinforced concrete or masonry walls used to protect the land from wave damage. A seawall is a proven, long lasting, relatively low maintenance protection method. They require limited horizontal space along the shoreline. However, the near vertical faces of seawalls result in very little wave energy dissipation resulting in scour at the base of the wall. Seawalls are not flexible structures, and their structural stability is dependant on the stability of their foundation.
2. **Retreat Inland.** This alternative would require relocating the path further inland away from the shoreline. However, there is a lack of available room to relocate the path further inland since it would encroach onto the State highway right-of-way. In addition, the steep elevation change between the existing cane haul road and highway in these areas would require extensive cut and fill.

The no action alternative (no coastal hardening) is a viable and preferred alternative planned for this project at this time. One reason for this is because the erosion hazard does not appear to be severe. At Kapaa Beach, there is also a fringing reef approximately 1,000 feet wide that offers substantial protection from storm wave erosion. The shoreline seaward of the path is also well vegetated, indicating that it is relatively stable.

The main problem at Kapaa Beach is that the proposed route is located close to the shoreline and there is a 7-foot high vertical sea wall that is in poor condition and exposed to wave action. Consequently, if funding is available, a riprap revetment would be considered and provided along this sea wall. A revetment is a sloped structure built of wave resistant material. The most common method of revetment construction is to place an armor layer of basalt boulders over an underlayer and bedding layer designed to distribute the weight of the armor layer. A conceptual revetment design to protect against an annual large wave event would require a riprap revetment of stone weighing 35 to 350 pounds, extending to the +6 elevation (Sea Engineering, Inc. 2002).

At the Kealia Kai Subdivision site, a riprap revetment would not be useful because the existing boulder beach already constitutes a natural riprap revetment. Natural protection is provided by a nearshore basalt shelf along the southern half and by a boulder beach along the northern half. The bank on the northern half appears to be more susceptible to wave erosion. However, the natural boulder beach provides some protection from wave attack. Furthermore, the old cane haul road there has not failed or been extensively damaged. Therefore, the project's design would include measures to control surface runoff at this site to provide natural protection helping the shoreline become stable into the foreseeable future.

4.3 AQUATIC RESOURCES AND WATER QUALITY

A biological survey was conducted by AECOS, Inc. (AECOS) to assess aquatic resources and identify potential sources of water quality and aquatic habitat degradation resulting from the proposed project. A field reconnaissance was conducted on July 26, 2002 for: Homaikawa'a Stream (intermittent), Kumukumu Stream (State Perennial Stream ID No. 2-2-02), Kapa'a Stream (2-2-04), Mo'ikeha Canal (2-2-05), and Waika'ea Canal (2-2-06). Water quality measurements were made, and selected parameters were measured to characterize the aquatic environments present. A copy of this report is included in Appendix D.

4.3.1 Existing Stream Environments

Waika'ea Canal

Waika'ea Canal is a straightened and hardened canal that flows through Kapa'a town and discharges into the ocean between boulder jetties. This canal has boulder riprap banks and a sand bottom. There is a boat launching ramp and dock located nearby the existing cane haul road bridge used by pedestrians and bicyclists. Lihi Park is an undeveloped park area located along the southern side of this canal.

Mo'ikeha Canal

Mo'ikeha Canal is also a straightened and hardened (rock riprap banks) canal that flows through Kapa'a town and discharges into the ocean between boulder jetties much like those built for the Waika'ea Canal. Large boulders line the banks, but the canal has a sand bottom. Downstream of Kuhio Highway, two bridges cross the canal which include the former rail road bridge and the cane haul road bridge that is presently used by pedestrians and bicyclists. The canal was approximately 82 feet wide at the highway bridge.

Kapa'a Stream

Kapa'a Stream, also referred to as Kealia River, is located north of Kapa'a Town and cuts through the southern end of Kealia Beach. This perennial stream flows underneath Kuhio Highway and the cane haul road bridge crossing. The banks of the stream have been hardened underneath these bridges, and there was a small boat launching ramp below the cane haul road bridge along the right bank. Fishermen occasionally launch here and then motor upstream to fish for exotics such as small-mouth bass (*Micropterus dolomieu*) and bluegill (*Lepomis macrochirus*).

Underneath the bridges, this estuary is about 82 feet wide and over 3 feet deep in the center of the stream. The channel substratum was sand and the bridge abutment walls were concrete. Downstream of these bridges, the estuary widens where it crosses Kealia Beach and enters the ocean. Upstream, the stream remains about the same width as it meanders through the valley. The Hawaii Stream Assessment ranks Kapa'a Stream as "outstanding" and notes special areas associated with Kapa'a Stream, Mo'ikeha Canal, and Waika'ea Canal (HCPSU 1990).

Kumukumu Stream

Kumukumu Stream is the southernmost stream or gulch crossed by the cane haul road within the Kealia-Kai Subdivision area. This stream is perennial flowing and its path winds through an open grassy field through the subdivision development. The stream characteristic located above (mauka of) the former cane haul road crossing was 3 to 6 feet wide and approximately 6 inches deep. The grassy banks were gently sloping and the stream incised some 6 to 10 feet.

A former cane haul bridge used to span this stream, but was washed out from a prior storm leaving only the bridge abutments. The cane haul road now fords the stream above a 10-foot escarpment that drops into a pool and then into an estuary that opened to the ocean. This characteristic was similar to, although larger than, the estuary of Homaikawa'a Stream. The estuary was quite wide where it entered the ocean, however, there was no obvious stream channel because the stream first flowed through a dense stand of umbrella sedge (*Cyperus alternifolia*). A deep (30-inch) pool was located above the stand of umbrella sedge. A green sea turtle (*Chelonia mydas*) was observed foraging near Kumukumu Stream, and it was likely that others feed in the area and possibly nest on sand beaches in the area.

Homaikawa'a Stream

Homaikawa'a Stream is located just south of Ahihi Point. During the survey, the stream consisted of a dry gulch leading to an estuarine pool. The existing path fords the narrow gulch above a step that leads to the pool, more or less open to the ocean, depending upon the tide. Runoff flows through this gulch into the ocean only during storm events. The pool below the path is about 16 feet wide and 4 inches deep. The mouth widens to about 98 feet where it enters the ocean.

Stream Survey Findings

All of the streams surveyed contain some habitat for native fauna, although natives were observed in only two sites (Homaikawa'a Stream and Kapa'a Stream) during the July 2002 survey. Although Mo'ikeha and Waika'ea canals have been altered through improvements, native amphidromous fauna might live in or migrate through their lower reaches because they are always connected to the ocean. Kumukumu Stream also provides adequate habitat for native amphidromous fauna, although none were observed during the survey. None of the observed aquatic species were listed as threatened or endangered.

A thick mat of at least four species of algae were observed at Homaikawaa Stream. The stringy green alga (*Cladophora sp.*) was prominent and *Spyrogyra sp.*, *Mougetia sp.*, and *Phormidium sp.* were also present. A listing of the aquatic fauna observed in the lower and/or estuarine reaches of the streams is provided in Table 4.1. Native aquatic species recorded consisted of two species of 'o'opu, an endemic snail, juvenile 'aholehole, and mullet, as well as various nearshore marine fishes and invertebrates noted in the estuarine areas. State regulations extend protection to species of 'o'opu from net fishing activities. Fishermen also reported seeing blue gill, koi (*Cyprinus carpio*), perch, and snapper in the estuarine reach of Kapa'a Stream.

Table 4.1 Aquatic Biota Observed Or Reported In Surveyed Streams

Species Description	Common Name	Status	Abundance	Stream
INVERTEBRATES				
MOLLUSCA, GASTROPODA				
LITTORINIDAE				
<i>Littorina</i> sp.	periwinkle	Indigenous	Abundant	Mo'ikeha, Waika'ea
NERITIDAE				
<i>Neritina vespertinus</i> Sowerby	hapawal, adults and eggs	Endemic	Abundant	Kapa'a
<i>Nerita picea</i> (Recluz)		Indigenous	Abundant	Mo'ikeha, Wakaiea
SIPHONARIIDAE				
<i>Siphonaria normalis</i>	pulmonate limpet	Indigenous	Common	Mo'ikeha
THIARIDAE				
<i>Melanoides tuberculata</i> (Müller)	melanid snail	Naturalized	Common	Kapa'a
MOLLUSCA, BIVALVIA				
CORBICULIDAE				
<i>Corbicula fluminea</i> Müller	Asiatic flume clam	Naturalized	Common	Kapa'a
MYTILIDAE				
<i>Brachidontes crebristriatus</i> (Conrad)	mussel	Indigenous	Abundant	Mo'ikeha
ARTHROPODA, CRUSTACEA				
GRAPSIDAE				
<i>Grapsus tenuicrustatus</i>	a'ama	Indigenous	Occasional	Mo'ikeha, Waika'ea
PAGURIDAE				
indet.	hermit crab, unauna		Occasional	Mo'ikeha
PALAEEMONIDAE				
<i>Macrobrachium</i> lar (Fabricus)	Pacific island prawn	Naturalized	Uncommon	Homaikawa'a, Kumukumu, Kapa'a
ARTHROPODA, INSECTA				
ODONATA, COENAGRIONIDAE				
<i>Ischnura ramburi</i> (Selys-Longchamps)	damselfly	Naturalized	Uncommon	Kumukumu
ODONATA, LIBULELLIDAE				
<i>Crocothemis servilla</i> Drury	Asian dragonfly	Naturalized	Uncommon	Homaikawa'a, Kumukumu, Kapa'a
<i>Orthemis ferruginea</i> (Fabr.)	dragonfly	Naturalized	Uncommon	Homaikawa'a
<i>Pantala flavescens</i> (Fabricius)	globe skimmer	Indigenous	Uncommon	Homaikawa'a
ODONATA, AESCHNIDAE				
<i>Anax junius</i> (Drury)	green damer	Indigenous	Uncommon	Kumukumu
VERTEBRATES				
VERTEBRATA, PISCES				
ACANTHURIDAE				
<i>Acanthurus nigrofuscus</i> (Forsskal)	dusky surgeonfish	Indigenous	Occasional	Mo'ikeha
<i>Acanthurus triostegus</i>	manini	Indigenous	Common	Mo'ikeha, Waika'ea
BLENNIIDAE				
indet.			Occasional	Mo'ikeha
CARANGIDAE				
indet.	papio	Indigenous	Occasional	Kapa'a, Waika'ea
CHAETODONTIDAE				
<i>Chaetodon lunula</i> (Lacepede)	raccoon butterflyfish	Indigenous	Common	Mo'ikeha
<i>Chaetodon miliaris</i> (Quoy & Gaimard)	lemon butterflyfish	Endemic	Common	Mo'ikeha

Table 4.1 Aquatic Biota Observed Or Reported In Surveyed Streams (continued)

Species Description	Common Name	Status	Abundance	Stream
CICHLIDAE				
<i>Sarotherodon melanotheron</i>	black-chin tilapia	Naturalized	Uncommon	Kapa'a
GOBIIDAE				
<i>Awaous guamensis</i> (Valenciennes)	'o'opu nakea	Indigenous	Uncommon	Homaiakawa'a, Kapa'a
<i>Stenogobius hawaiiensis</i> Watson	'o'opu naniha	Endemic	Uncommon	Kapa'a
KUHLIIDAE				
<i>Kuhlia sandwicensis</i> (Steindachner)	'aholehole	Endemic	Abundant	Homaiakawa'a, Kumukumu, Kapa'a, Waika'ea
LUTJANIDAE				
<i>Lutjanus fulvus</i> (Bloch & Schneider)	to'au	Naturalized	Occasional	Mo'ikeha
MUGILIDAE				
<i>Mugil cephalus</i>	(mullet)			
<i>Mugil cephalus</i>	'ama'ama	Indigenous	Occasional	Kapa'a
MULLIDAE				
<i>Mulloidichthys</i> sp.	(goatfishes)			
<i>Mulloidichthys</i> sp.	'oama	Indigenous	Present	Mo'ikeha, Waika'ea
OSTRACIONTIDAE				
<i>Ostracion meleagris</i> Shaw & Nodder	(trunkfishes)			
<i>Ostracion meleagris</i> Shaw & Nodder	moa	Indigenous	Occasional	Mo'ikeha
POECILIIDAE				
<i>Gambusia affinis</i> (Baird & Girard)	mosquitofish	Naturalized	Common	Kapa'a
<i>Poecilia mexicana</i> (Steindachner)	Mexican molly	Naturalized	Common	Kapa'a
<i>Poecilia reticulata</i> Peters	guppy, rainbowfish	Naturalized	Common	Homaiakawa'a, Kapa'a
POMOCENTRIDAE				
<i>Abudefduf abdominalis</i> (Quoy & Gaim.)	(damselfishes)			
<i>Abudefduf abdominalis</i> (Quoy & Gaim.)	mamo	Indigenous	Common	Mo'ikeha
<i>Abudefduf sordidus</i> (Forsk.)	kupipi	Indigenous	Present	Mo'ikeha
SPHYRAENIDAE				
<i>Sphyrna</i> cf. barracuda.	barracuda	Indigenous	Occasional	Kapa'a, Mo'ikeha, Waika'ea
ZANCLIDAE				
<i>Zanclus cornutus</i> (L.)	Moorish idol	Indigenous	Occasional	Mo'ikeha
VERTEBRATA, AMPHIBIA				
BUFONIDAE				
<i>Bufo marinus</i>	marine toad, tadpole	Naturalized	Common	Kumukumu, Kapa'a
RANIDAE				
<i>Rana catesbeiana</i> Shaw	bullfrog, tadpole	Naturalized	Abundant	Kapa'a

Source: AECOS, Inc. 2002

Status:

Naturalized. An introduced or exotic species.
Indigenous. A native species also found elsewhere in the Pacific.
Endemic - A native species found only in the Hawaiian Islands.

Abundance categories:

R - Rare - only one or two individuals seen.
U - Uncommon - several to a dozen individuals observed.
O - Occasional - regularly encountered, but in small numbers.
C - Common - Seen everywhere, although generally not in large numbers.
A - Abundant - found in large numbers and widely distributed.
P - Present - noted as occurring, but quantitative information lacking.

4.3.2 Water Quality Characteristics of Streams

Water samples were collected from four of the streams at stations both above and below each existing bridge or ford. No samples were collected from Homaikawa'a Stream. Some parameters were measured by field meter and others in water samples collected in appropriate containers and taken to a laboratory for testing. The primary purpose of these water quality data was to characterize the existing aquatic environments.

Four of the samples (Kumukumu Upper and Lower, and Kapa'a Upper and Lower) were collected in freshwater reaches of the streams (salinity = 0 ppt). Four other samples (Mo'ikeha Upper and Lower, and Waika'ea Upper and Lower) were collected in estuarine reaches of the streams (salinity ranges between 1 and 33 ppt).

The analyses of the water quality data collected from the five streams on July 26, 2002 showed fairly high nutrient, turbidity, and temperature levels. Table 4.2 identifies the results of the water quality data. The pH values (6.6 to 8.8) for all sampling sites fell within the appropriate ranges established by the State Department of Health (stream - 5.5 to 8.0, estuarine - 7.0 to 8.6, and coastal - 7.6 to 8.6) (DOH, 2000).

Station Description	Time Sampled	Temp. (C)	Cond. (µmhos/cm)	Dissolved Oxygen (mg/l)	Dissolved Oxygen (% sat)	Turbidity (ntu)
Waika'ea Canal Upper	1415	28.0	17	5.51	77	7.8
Lower	1425	28.2	22	6.22	90	8.0
Mo'ikeha Canal Upper	1345	28.3	32	6.01	92	8.0
Lower	1350	28.4	33	6.15	94	8.0
Kapa'a Stream Upper	1140	26.5	0	5.32	66	7.1
Lower	1154	29.4	0	6.21	81	7.2
Kumukumu Stream Upper	1020	28.0	0	5.70	73	6.6
Lower	1025	27.9	0	5.61	72	6.6
Station Description	Time Sampled	TSS (mg/l)	Ammonia (µg N/l)	Nitrate nitrite (µg N/l)	Total Nitrogen (µg N/l)	Total Phosphorus (µg P/l)
Waika'ea Canal Upper	2.56	2.5	23	23	211	27
Lower	2.08	3.1	17	17	2333	14
Mo'ikeha Canal Upper	5.48	7.8	18	18	223	34
Lower	5.75	8.7	17	17	222	28
Kapa'a Stream Upper	1.44	3.1	< 1	< 1	89	5
Lower	2.89	1.9	< 1	< 1	107	7
Kumukumu Stream Upper	1.44	3.1	< 1	< 1	89	5
Lower	2.89	1.9	< 1	< 1	107	7

Source: AECOS, Inc. 2002

The percent saturation of dissolved oxygen (DO) for Kapa'a Lower, Mo'ikeha Upper and Lower, and Waika'ea Upper and Lower meet the value established by the State Department of Health (DOH) (stream >80%, estuarine and coastal >75%). The DO levels at Kapa'a Upper and Kumukumu Upper and Lower were below the State criterion (66%, 73%, and 72%, respectively) and may be indicative of sluggish exchange in these estuarine waters.

Most of the temperature values recorded (24.5° C - 29.4° C) appear to be elevated. There were not enough trees or other large plants on any of the stream banks to provide much shade to these streams. A recent statewide (Oahu, Hawaii, and Kauai) survey of 15 streams found the average daytime temperature in the lower reaches of streams (included some estuarine reaches) to be 25.7° C (AECOS 2002).

Values recorded for turbidity were generally higher than the expected values based upon the geometric mean criterion established by the State DOH (stream - 2.0 ntu, estuary - 1.5 ntu, coastal - 0.20 ntu), but the TSS values were below the geometric mean criterion (TSS: stream - 10.0 mg/l, estuary and coastal - no standard). However, this was a typical outcome. TSS criteria values are not as stringent as turbidity criteria in the State standards. The very high turbidity (18.63 ntu) and TSS (16 mg/l) levels at Kapa'a Lower may have been caused by bottom silt being stirred up by bass fishermen.

The nutrient values measured for these streams were not unusually high for streams draining urban and agricultural lands, although most were above the geometric mean criteria established by the State DOH as indicated below. Kumukumu Stream appears to have the best water quality of the streams with respect to nutrient concentrations.

State of Hawaii Geometric Mean Criteria For Nutrients (HAR §11-54).

	Ammonium (µg N/l)	Nitrate + nitrite (µg N/l)	Total N (µg N/l)	Total P (µg P/l)
Stream	ns	30.0	180.0	30.0
Estuary	6.00	8.00	200.00	25.00
Coastal	2.50	3.50	110.00	16.00

4.3.3 Effects on Aquatic Resources and Water Quality

Under the No Action alternative, no path improvements or amenities would be constructed. However, existing bicyclists and pedestrians would continue to use the path and cane haul road for activities. Consequently, there should be no major change or impacts to the existing aquatic resources within the surveyed streams or the present water quality associated with them.

With the project, improvements would be made to the existing bridges crossings over the Waika'ea Canal, Mo'ikeha Canal, and Kapa'a Stream. Such bridge improvement alternatives being considered would consist of improving existing pier structures and general bridge structure, and providing 12-foot wide paths for public use. These streams provide adequate habitat for native amphidromous fauna, therefore, care must be taken to ensure that bridge improvements to these stream crossings do not impede the flow of water or the migration of these species from upstream

areas to the ocean. The improvements planned across these streams would not impede such flow of water and prevent migration of these species to the ocean. Consequently, the bridge improvements being considered should have minimal or minor effect on these fauna primarily associated with short-term construction activities.

The bridge that used to cross Kumukumu Stream has been washed out, thus, a new bridge crossing would be provided as part of this project for the path. This stream also provides habitat for native amphidromous fauna so care must be taken to ensure that the bridge does not impede the flow of water or the migration of these species from the stream to the ocean. This new bridge would be designed to span the width of this stream channel so that it wouldn't impede the flow of water and migration of species. Therefore, this improvement should similarly have minimal effect.

The possible future extension of this path further north would travel across the dry bed of Homaikawa'a Stream. If a multi-use path is provided, the ford across Homaikawa'a Stream should be improved by constructing it with concrete, replacing the washed out bridge along the cane haul road, or providing a new bridge across the stream at another location. The construction of bridges or hardened fords would have a positive effect in reducing the erosion and sedimentation that is presently occurring. This hardened path would also reduce impacts that pedestrians, bicyclists, and horses are currently having on the nearshore environment in these areas.

To minimize impacts to these streams, aquatic resources, and their water quality, appropriate best management practices would be developed during the project's design. Such measures should be designed to trap or reduce runoff and stabilize stream banks preventing construction activities from decreasing the water quality of these streams. All banks should be re-vegetated to prevent erosion once the bridge path is completed. An opportunity would also exist to consider re-vegetating many areas with native coastal plants which would enhance the experience for path users. Bridge design plans would be coordinated with both the County and the U.S. Corps of Engineers since it would likely require a Department of Army Permit and associated 401 Water Quality Certification from the State DOH. Similarly, best management practices would also be developed for path amenities planned along the path and at Lihi Park and Kealia Beach Park to minimize runoff into the nearby ocean.

The improved path will likely support increased pedestrian, bicycle, and possible horse traffic (being considered as a path use) along the surveyed streams and ocean shoreline. Potential littering by users could create potential problems that may have an effect on the water quality of streams, or more particularly the estuarine and near shore environments. This could be mitigated by the strategic placement and regular maintenance of trash receptacles along the path such as at the various rest areas planned, parking sites, and comfort stations.

The use of the pathway by horses also raises some concern with impacts on the surrounding environment. Horse droppings can become a source of considerable nutrients to the streams along this path affecting water quality. However, if stream banks are vegetated near the bridges, these plants can serve as a filter to reduce the nutrient load entering the water. Since the sharing of the

paved path with horse riders is not likely, unpaved horse trails along the path would be used. Such foot traffic by horses would loosen rocks and sediment along the path contributing to additional erosion and sediments entering streams and the ocean during storm events. Carefully consideration would thus need to be given in the planning of landscape vegetation and drainage along the path to address the use of such horse trails.

4.4 BOTANICAL RESOURCES

A survey of botanical resources associated with the study corridor was performed by Ron Terry, Ph.D., and Patrick Hart, Ph.D. (Terry & Hart 2002). The objectives of the survey were to: 1) provide a general description of the vegetation along the corridor; 2) identify any State or Federally listed threatened or endangered plant species on or along the path study corridor; and 3) identify areas of potential environmental problems or concerns and propose appropriate mitigation measures. A copy of this report is included in Appendix E of this document.

A survey corridor of about 65 feet wide flanking the existing path was surveyed. All species within the corridor were recorded. In the other areas, all native species as well as some alien species were recorded since many landscaped plants and assorted weeds were present as well.

4.4.1 Description of Existing Botanical Resources

The original natural vegetation along this coastal area can be classified as Coastal Dry Shrubland consisting of scattered herbs, grasses, vines, shrubs, and trees that are mostly indigenous but not endemic to Hawai'i. The vegetation associated with this area of Kaua'i has been altered in places by ground disturbance such as grading, construction, dumping, and more fundamentally changed by alien species invasion. A total of 78 plant species were recorded. A listing of these species is provided in Table 4.3 along with the botanical report included in the Appendices.

Certain areas flanking the proposed path are well endowed with a diverse range of native species. Such areas offer particularly good native assemblages in terms of either purity or diversity. Two areas in particular were: 1) the point overlooking Kealia Beach from the south, and 2) the makai slopes of the path between Kealia Beach and Kuna Bay (Terry & Hart 2002).

Table 4.3
Plant Species Detected Along Study Corridor

Scientific Name	Family	Common Name	Life Form	Status
<i>Abutilon grandifolium</i>	Malvaceae	Halry abutilon	Herb	A
<i>Acalypha</i> sp.	Euphorbiaceae	Acalypha	Shrub	A
<i>Alternanthera pungens</i>	Amaranthaceae	Khaki weed	Herb	A
<i>Alysicarpus vaginalis</i>	Fabaceae	Alysicarpus	Herb	A
<i>Antigonon leptopus</i>	Polygonaceae	Mexican creeper	Vine	A
<i>Asystasia gangetica</i>	Acanthaceae	Chinese violet	Vine	A
<i>Atriplex semibaccata</i>	Chenopodiaceae	Australian saltbush	Shrub	A
<i>Bacopa monnieri</i>	Scrophulariaceae	Water hyssop	Herb	I
<i>Boerhavia coccinea</i>	Nyctaginaceae	None	Herb	A

Table 4.3 (continued)
Plant Species Detected Along Study Corridor

Scientific Name	Family	Common Name	Life Form	Status
<i>Boerhavia repens</i>	Nyctaginaceae	Alena	Herb	I
<i>Brachiaria mutica</i>	Poaceae	California grass	Grass	A
<i>Calotropis gigantea</i>	Asclepiadaceae	Crown flower	Shrub	A
<i>Canavalia cathartica</i>	Fabaceae	Mauna loa	Vine	A
<i>Canavalia sericea</i>	Fabaceae	Silky jack bean	Vine	A
<i>Casuarina equisetifolia</i>	Casuarinaceae	Iron wood	Tree	A
<i>Chamaesyce hirta</i>	Euphorbiaceae	Garden spurge	Herb	A
<i>Chamaesyce hypericifolia</i>	Euphorbiaceae	Graceful spurge	Herb	A
<i>Chloris barbata</i>	Poaceae	Swollen finger grass	Grass	A
<i>Coccoloba uvifera</i>	Polygonaceae	Sea grape	Tree	A
<i>Cocos nucifera</i>	Arecaceae	Coconut	Tree	A
<i>Commelina diffusa</i>	Commelinaceae	Honohono	Herb	A
<i>Conyza bonariensis</i>	Asteraceae	Hairy horseweed	Herb	A
<i>Cordia subcordata</i>	Boraginaceae	Kou	Tree	A
<i>Crotalaria sp.</i>	Fabaceae	Rattlepod	Herb	A
<i>Cynodon dactylon</i>	Poaceae	Bermuda grass	Grass	A
<i>Cyperus latifolia</i>	Cyperaceae	Umbrella grass	Sedge	A
<i>Desmanthus virgatus</i>	Fabaceae	Slender mimosa	Shrub	A
<i>Eleusine indica</i>	Poaceae	Goose grass	Grass	A
<i>Ficus macrophylla</i>	Moraceae	Large-leaf fig	Tree	A
<i>Heliotropium curassavicum</i>	Boraginaceae	Seaside heliotrope	Herb	I
<i>Hibiscus tiliaceus</i>	Malvaceae	Hau	Tree	I
<i>Ipomoea imperati</i>	Convolvulaceae	Hunakal	Vine	I
<i>Ipomoea obscura</i>	Convolvulaceae	Koali ai	Vine	A
<i>Ipomoea pes-caprae</i>	Convolvulaceae	Pohuehue	Vine	I
<i>Jacquemontia ovalifolia sandwicensis</i>	Convolvulaceae	Pa'u-o-hi'laka	Vine	E
<i>Lantana camara</i>	Verbenaceae	Lantana	Shrub	A
<i>Leucaena leucocephala</i>	Fabaceae	Haole koa	Tree	A
<i>Lycium sandwicensis</i>	Solanaceae	'Ohelo kai	Herb	I
<i>Macroptilium lathyroides</i>	Fabaceae	Cow pea	Vine	A
<i>Malvastrum coromandelianum</i>	Malvaceae	False mallow	Shrub	A
<i>Medicago polymorpha</i>	Fabaceae	Bur clover	Herb	A
<i>Mimosa pudica</i>	Fabaceae	Sensitive plant	Herb	A
<i>Morinda citrifolia</i>	Moraceae	Noni	Tree	A
<i>Musa x paradisiaca</i>	Musaceae	Banana	Tree	A
<i>Pandanus tectorius</i>	Pandanaceae	Hala	Tree	I
<i>Panicum maximum</i>	Poaceae	Gulnea grass	Grass	A
<i>Phyllanthus debilis</i>	Euphorbiaceae	Phyllanthus	Herb	A
<i>Pistia stratioides</i>	Araceae	Water lettuce	Herb	A
<i>Plantago major</i>	Plantaginaceae	Broad-leaved plantain	Herb	A
<i>Pluchea carolinensis</i>	Asteraceae	Sourbush	Shrub	A
<i>Pluchea indica</i>	Asteraceae	Indian pluchea	Shrub	A
<i>Portulaca oleracea</i>	Portulacaceae	Pig weed	Herb	A
<i>Portulaca pilosa</i>	Portulacaceae	None	Herb	A
<i>Prosopis pallida</i>	Fabaceae	Keawe	Tree	A
<i>Rhizophora mangle</i>	Rhizophoraceae	Red Mangrove	Tree	A

Table 4.3 (continued)
Plant Species Detected Along Study Corridor

<i>Scientific Name</i>	<i>Family</i>	<i>Common Name</i>	<i>Life Form</i>	<i>Status</i>
<i>Ricinus communis</i>	Euphorbiaceae	Castor bean	Tree	A
<i>Scaevola taccada</i>	Goodeniaceae	Naupaka kuahiwi	Shrub	I
<i>Schinus terebinthifolius</i>	Anacardiaceae	Christmasberry	Shrub	A
<i>Senna sp.</i>	Fabaceae	Senna	Shrub	A
<i>Sesuvium portulacastrum</i>	Alzooaceae	'Akulikuli	Herb	I
<i>Sida fallax</i>	Malvaceae	'Ilima	Shrub	I
<i>Solanum americanum</i>	Solanaceae	Popolo	Shrub	I
<i>Sonchus oleraceus</i>	Asteraceae	Sow thistle	Herb	A
<i>Sporobolus virginicus</i>	Poaceae	'Aki'aki	Grass	I
<i>Stachytarpheta jamaicensis</i>	Verbenaceae	Jamaica vervain	Shrub	A
<i>Syzygium cumini</i>	Myrtaceae	Java plum	Tree	A
<i>Terminalia catappa</i>	Combretaceae	Tropical almond	Tree	A
<i>Tetragonia tetragonioides</i>	Alzooaceae	New Zealand Spinach	Herb	A
<i>Thespesia populnea</i>	Malvaceae	Milo	Tree	I
<i>Tournefortia argentea</i>	Boraginaceae	Tree heliotrope	Tree	A
<i>Vigna marina</i>	Fabaceae	Nanea	Vine	I
<i>Vitex rotundifolia</i>	Verbenaceae	Pohinahina	Shrub	I
<i>Vitex trifolia</i>	Verbenaceae	Pohinahina	Shrub	I
<i>Waltheria indica</i>	Sterculiaceae	'Uhaloa	Herb	I
<i>Wedelia trilobata</i>	Asteraceae	Wedelia	Shrub	A
<i>Yucca sp.</i>	Agavaceae	Yucca	Tree	A

A = alien, E = endemic, I = indigenous, End = Federal and State listed Endangered Species
Source: Terry & Hart 2002

Assessment Of Existing Conditions

The vegetation flanking the proposed path consists of remnant, and in some areas post-disturbance successional, strand and coastal communities. The presence of alien species ranges from negligible to dominant. In terms of cover percentage, the most prominent native components are herbs, grasses and vines, including *Ipomoea pes-caprae* (beach morning glory or pohuehue), *Jacquemontia ovalifolia sandwicensis* (pa'u-o-hi'iaka, an endemic subspecies), *Boerhavia repens* (alena), *Scaevola taccada* (naupaka), *Sesuvium portulacastrum* ('akulikuli), *Vitex rotundifolia* (pohinahina), *Sida fallax* (ilima), *Sporobolus virginicus* ('aki'aki grass). Somewhat less common but either widely scattered or prominent in certain locations are *Heliotropium curassavicum* (seaside heliotrope), *Ipomoea imperati* (hunakai), *Waltheria indica* ('uhaloa), and *Vigna marina* (nanea).

Large shrubs and trees were not present directly adjacent to the proposed path for much of its length, but were usually found close by. *Tournefortia argentea*, the alien tree heliotrope that was very common on shores throughout Hawai'i, was the most common tree followed by the indigenous milo (*Thespesia populnea*) and hau (*Hibiscus tiliaceus*).

No proposed or listed threatened or endangered species were observed during the survey, although it should be noted that even careful survey may miss cryptic species, seedlings, and stressed or obscured plants. However, based on the setting of this coastal study corridor and the results of this survey, the study corridor is not likely to contain any significant population of threatened or endangered plant species (Terry & Hart 2002). A comment letter from the U.S. Fish and Wildlife Service (FWS), dated September 26, 2002, and included in Appendix B, as part of Section 7 consultation efforts similarly indicated they did not have any more information on known threatened or endangered plant species within the study corridor.

4.4.2 Probable Impacts on Botanical Resources

Under the No Action Alternative, there would be no impact because the existing vegetation would generally remain along the project corridor.

With the proposed path and amenities, this improvement should not have a negative impact on the botanical resources present along the path corridor. The various amenity alternatives being considered would similarly not negatively impact resources. None of the plants identified were a threatened or endangered species, or a species of concern. Furthermore, all of the plants can be found in similar vegetation types throughout the island and within the State of Hawai'i.

The remnant strand and coastal plant communities, although not uncommon, do have conservation value for preserving native species and communities, for preventing erosion and sedimentation of adjacent areas, and for conservation education. The following recommendations to minimize impacts and maximize the potential conservation benefit of the path were identified for inclusion as part of the project's design.

- The improved path should be located along the same alignment as the current paved path in the Kapa'a Town area and along the cane haul road up to Kealia Kai subdivision to the greatest degree practical.
- The improved path offers excellent interpretation opportunities for native plant education. In the interest of preserving the biota in the area and fostering interest in native plants in general, educational signs could be installed and maintained along the path.
- During construction, care should be taken to restrict the footprint of construction to the minimum area necessary and repair any damage to native plant communities.
- A landscaping plan should be prepared by parties knowledgeable in native plants and conservation biology. This plan should incorporate primary native species and avoid using any alien plants that have potential to naturalize in the area (Terry & Hart 2002).

4.5 AVIFAUNAL AND FERAL MAMMALS

An ornithological and mammalian survey of the study corridor was performed by Rana Productions, Ltd. The primary purpose of this survey was to determine if there were any federally listed endangered, threatened, proposed, or candidate avian or mammalian species on, or in the immediate vicinity of the multi-use path corridor. In addition, the probability of any usage of the site by these listed species given the existing habitat the site currently supports was evaluated. A copy of this report is included in Appendix F of this document.

Survey Methods

A three-day ornithological and mammalian field survey of the property was conducted from July 24th through the 26th, 2002. With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or 'ope'ape'a as it is known in Hawaiian, all terrestrial mammals found on the Island of Kaua'i were alien species. The survey of mammals was limited to visual and auditory detection, and by searching for animal tracks and sign. Visual scans were also made for bats during crepuscular periods on the evenings of the 24th and 25th of July, 2002.

A total of 22 count stations were established along the corridor. Counts were concentrated between 6:30 a.m. and 10:00 a.m., the peak of daily bird activity. An additional two hours were spent on site during the evenings and mornings in an attempt to detect nocturnally flying seabirds and owls over-flying the area. Additionally, the existing public shoreline access running through the Kealia Kai subdivision was walked to determine if there was any significant difference in the faunal makeup along its length compared to path route.

4.5.1 Description of Existing Mammalian and Avian Species

Mammalian Species Present

Endangered Hawaiian hoary bats were seen on both nights, and a total of five animals were observed during the survey. One adult endangered Hawaiian monk seal (*Monachus schauinslandi*), was seen hauled out on the beach just north of Paliku Point on July 25, 2002. Within the project corridor, numerous domestic dogs (*Canis f. familiaris*) were encountered all of which were accompanying joggers and walkers currently using the pathway. Signs and scats of cats (*Felis catus*) and horses (*Equus caballus*) were also recorded along the corridor (Rana Productions, Ltd. 2002).

The findings of the mammalian survey were consistent with the results of other recent surveys (1995–2001) conducted within the lowland areas of Kaua'i. The detection of the endangered Hawaiian hoary bat within the study corridor along this coastline was not unexpected. This species is regularly seen in and around Kapa'a, as well as most of the lowland areas on the Island of Kaua'i. Although no live rodents were detected, it is likely that roof rats (*Rattus r. rattus*), Norway rats (*Rattus norvegicus*), European house mice (*Mus domesticus*) and possibly Polynesian rats (*Rattus exulans hawaiiensis*) use various resources within the study corridor. All of these introduced rodents are deleterious to native ecosystems and their dependant faunal components (Rana Productions, Ltd. 2002).

Avian Species Present

A total of 412 individual birds of 17 species, representing 14 separate families, were recorded during station counts. Table 4.4 includes a listing avian species along with their status and relative abundance.

Table 4.4 Avian Species Detected During Station Counts			
Common Name	Scientific Name	Status	Relative Abundance*
PETRELS & SHEARWATERS - Procellariidae			
Dark-rumped Petrel (Hawaiian)	<i>Pterodroma phaeopygia sandwichensis</i>	Endangered, endemic sub-species	Incidental observation/not counted but seen along corridor
Wedge-tailed Shearwater	<i>Puffinus pacificus</i>	Indigenous, resident species	0.09
Newell's Shearwater	<i>Puffinus auricularis newelli</i>	Threatened, endemic sub-species	Incidental observation/not counted but seen along corridor
TROPICBIRDS - Phaethonidae			
White-tailed Tropicbird	<i>Phaethon lepturus dorothea</i>	Indigenous, resident species	0.05
HERONS - Ardeidae			
Cattle Egret	<i>Bubulcus ibis.</i>	Alien Species	1.50
PHEASANTS & ALLIES - Phasianidae			
Red Junglefowl	<i>Gallus gallus.</i>	Alien Species	0.55
RAILS & ALLIES - Rallidae			
Common Moorhen (Hawaiian)	<i>Gallinula chloropus sandvicensis</i>	Endangered, endemic sub-species	0.05
PIGEONS & DOVES - Columbidae			
Spotted Dove	<i>Streptopelia chinensis</i>	Alien Species	0.14
Zebra Dove	<i>Geopelia striata.</i>	Alien Species	2.95
MIMIC THRUSHES & ALLIES - Mimidae			
Northern Mockingbird	<i>Mimus polyglottos.</i>	Alien Species	0.05
SILVEREYES - Zosteropidae			
Japanese White-Eye	<i>Zosterops japonica.</i>	Alien Species	0.14
STARLINGS - Sturnidae			
Common Myna	<i>Acridotheres tristis.</i>	Alien Species	3.36
BLACKBIRDS & ALLIES - Icteridae			
Western Meadowlark	<i>Sturnella neglecta</i>	Alien Species	0.41
CARDULINE FINCHES & ALLIES - Fringillidae			
House Finch	<i>Carpodacus mexicanus frontalis.</i>	Alien Species	2.68
SALTATORS, CARDINALS & ALLIES -			
Red-crested Cardinal.	<i>Paroaria coronata.</i>	Alien Species	0.86
Northern Cardinal	<i>Cardinalis cardinalis.</i>	Alien Species	0.18
OLD WORLD SPARROWS - Passeridae			
House Sparrow	<i>Passer d. domesticus</i>	Alien Species	4.27
WAXBILLS & ALLIES - Estrildidae			
Chestnut Munia	<i>Lonchura atricapilla</i>	Alien Species	1.27
Java Sparrow.	<i>Padda oryzivora</i>	Alien Species	0.18
* Relative abundance = No. of birds/No. of stations			
Source: Rana Productions, Ltd.			

Of the various species detected during station counts, one Common Moorhen (*Gallinula chloropus sandvicensis*), or 'alea 'ula as it is known in Hawaiian, was seen foraging along the Kapa'a Stream makai of the old railway bridge. However, there was no suitable nesting habitat for this species located below (makai) either the Kuhio Highway Bridge or the cane haul bridge crossing this stream. This Common Moorhen is an endemic (i.e. native and unique to Hawai'i), sub-species of this near cosmopolitan species, and is listed as an endangered species under Endangered Species Act of 1973, as amended (ESA), and by the State of Hawai'i under its endangered species program.

Two other species which are indigenous (native to Hawai'i but also found elsewhere naturally) were identified during the field survey. These were the Wedge-tailed Shearwater (*Puffinus pacificus*), or 'ua 'u kani, and White-tailed Tropicbird (*Phaethon lepturus dorothea*), or koa 'e kea. During the course of crepuscular and nocturnal visits to the project site, two additional seabird species were recorded flying over the study corridor. These were the endangered endemic Hawaiian subspecies of the Dark-rumped Petrel (*Pterodroma phaeopygia sandwichensis*), or 'ua 'u, and the threatened endemic sub-species of the Newell's Shearwater (*Puffinus auricularis newelli*), or 'a 'o (Rana Productions, Ltd.).

Avian diversity and densities along the study corridor were relatively low. Four species accounted for 71 percent of the total of all birds recorded during station counts. These species were the Zebra Dove (*Geopelia striata*), Common Myna (*Acridotheres tristis*), House Finch (*Carpodacus mexicanus frontalis*), and House Sparrow (*Passer d. domesticus*). The most common avian species was the House Sparrow, which accounted for 23 percent of the total number of birds recorded.

The findings of the avian survey were consistent with the findings of other recent surveys conducted within the lowland areas of Kaua'i between 1995 and 2001. The detection of listed seabird species over-flying the study corridor was not unexpected. Both the endangered Dark-rumped Petrel and the threatened Newell's Shearwater cross the northern, eastern, and southern coastline of Kaua'i across a broad front and in relatively large numbers during the breeding season. A comment letter from the U.S. FWS, dated September 26, 2002, and included in Appendix B, as part of Section 7 consultation efforts indicated they did not have any more information on known threatened or endangered avian or mammalian species within the study corridor.

4.5.2 Effects on Mammalian and Avian Species

Under the No Action Alternative, there should be no major changes or negative effects to the present types of mammalian and avian species occurring within the study corridor. No improvements to the current path and cane haul road would be implemented and existing residents would continue to use these paths for recreational use. Therefore, residents would continue to take their dogs for walks on the path. Other mammals such as feral cats, rodents, and mongooses, would continue to be present in the area. Existing avian species would similarly continue to utilize this coastline area.

Project Effects on Mammalian Species

With the project, existing mammalian species present within the study corridor are not expected to be negatively affected. Development of the path along with the amenity alternatives being considered should not drastically alter the existing environment. The majority of mammals present consist of alien species such as rodents or feral animals which are harmful to native avian and plant communities.

Hawaiian hoary bats do occur along this coastline and possibly foraging for resources within these areas. These bats are uniquely adapted to avoid collision with man-made and natural obstacles by navigating and locating their prey using ultrasonic echolocation. Therefore, development of the path and amenities should not have a negative impact on this species which may continue to forage for rodents and insects present along this coastline.

Project Effects on Avian Species

Development of the project is similarly not expected to have a negative impact on the avian species identified to occur within this coastline area. The majority of species present along the corridor were alien species (71% of total recorded) consisting of the Zebra Dove, Common Myna, House Finch, and House Sparrow.

The Dark-rumped Petrels and Newell's Shearwaters do occur within the study corridor and along the entire coastline. However, there are no known nesting colonies, nor appropriate nesting habitat for either listed seabird species within or close to the area of the path project. The principal potential impact to these birds is the threat of being downed after becoming disoriented by exterior lighting from path amenities such as comfort stations. The primary cause of mortality in both these species is thought to be predation by alien mammalian species at the nesting colonies. Collision with utility structures is considered to be the second most significant cause of mortality of these seabird species in Hawaii.

These nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting. When disoriented, seabirds often collide with manmade structures, and if they are not killed outright, the dazed or injured birds are easy targets of opportunity for feral mammals. To reduce the possibility of these species being disoriented by external lights and colliding with man-made structures, it was recommended that any external lighting planned at path amenities (comfort stations) be shielded. No lighting along the path is planned. This mitigation would minimize the threat of disorientation and downing of Dark-rumped Petrels, and Newell's Shearwaters.

To minimize degradation to the water quality of near-shore waters that support both listed aquatic reptiles and waterbirds, spoils generated by construction activities should not be allowed to enter any of the streams, canals, or near-shore waters adjacent to the proposed pathway. Best Management Practices (BMP's) should be developed and implemented during the construction phase of this project to minimize discharges from entering such waters.

4.6 AIR QUALITY

Air quality issues most applicable to this project would concern only short-term construction related emissions such as fugitive dust emissions. This project only involves providing path improvements and amenities such as parking improvements, comfort stations. Consequently, these improvements would not generate air pollutants regulated under both State and Federal standards such as sulfur dioxide, particulate matter, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone and lead. Carbon monoxide emissions are primarily associated with vehicular traffic which would not be generated by this project. Consequently, this section addresses short-term construction related emissions resulting from the project.

Short-Term Construction Related Emissions

Under the No Action Alternative, the existing paved path in Kapa'a Town and cane haul road to the north would remain as is, and no path amenities would be provided. Therefore, there would be no short-term impacts on the ambient air quality resulting from the construction activities.

With the project, short-term impacts on air quality along the study corridor may result from construction activities associated with the path and amenities alternatives being considered. However, such impacts are not expected to be significant because they would only be short term and best management practice measures are available to minimize emissions.

Two potential types of pollutants are fugitive dust emissions from vehicular movement and soil excavation, and exhaust emissions from on-site construction equipment. Fugitive dust emissions associated with grading and dirt-moving activities are difficult to estimate accurately. However, the EPA provides a rough estimate of 1.2 tons of uncontrolled fugitive dust emissions per acre per month under conditions of "medium" construction activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions from this project should likely be near that level or lower since this coastline area of Kauai receives a higher amount of rainfall than dryer areas.

An effective dust control plan for the project construction phase should be implemented to minimize any air quality impacts. Emissions can be controlled by watering active work areas, using wind screens, keeping adjacent paved roads clean, and covering open-bodied trucks. Other dust control measures could include limiting the disturbed area at any given time and/or mulching or chemically stabilizing inactive areas that have been worked.

Open-bodied trucks would be covered at all times in motion if they are transporting materials that could blow away. Tire washing may also limit haul trucks tracking dirt onto paved streets from unpaved areas within the property. Paving of parking areas and/or the establishment of landscaping early in the construction schedule can also lower potential fugitive dust emissions.

Emissions from the engine exhausts of on-site mobile and stationary construction equipment would also have some impact on air quality. Nitrogen oxide emissions from diesel engines can be relatively high compared to emissions from gasoline-powered equipment. However, the standard for

nitrogen dioxide is set on an annual basis and will not likely be violated by emissions from short-term construction equipment. Carbon monoxide emissions from diesel engines are low and should be relatively insignificant compared to vehicular emissions on nearby roadways.

Slow-moving construction vehicles traveling on roadways and commuting construction workers could also obstruct the normal flow of traffic, indirectly increasing overall vehicular emissions. This impact can be mitigated by moving heavy construction equipment during periods of low traffic volume and arranging schedules of commuting construction workers to avoid peak traffic hours in the project vicinity. Thus, the potential impact from these vehicles should be mitigated by implementing these measures which would be further determined as part of the project's design. Measures developed would also be designed to make construction activities comply with the State Department of Health's (DOH) Administrative Rules Title 11, Chapter 60 (Air Pollution Control).

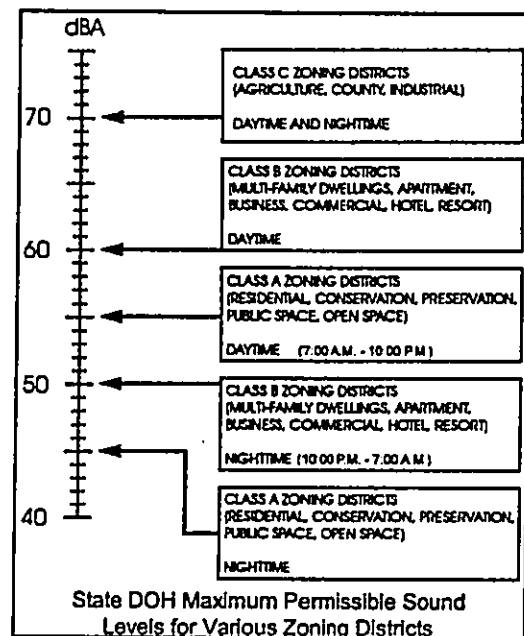
4.7 NOISE

Noise issues most applicable to this project would only concern short-term construction related noise generated by equipment and activities. This project only involves providing path improvements and amenities such as parking improvements, comfort station. Consequently, these improvements and activities should not generate noise levels exceeding State and Federal guidelines and standards. Consequently, this section addresses short-term construction related noise levels resulting from the project.

Noise Standards And Guidelines

The State Department of Health (DOH) has established guidelines and standards for assessing environmental noise impacts and has set noise limits as a function of land use.

The (DOH) defines three classes of zoning districts and specifies corresponding maximum permissible sound levels due to stationary noise sources such as air-conditioning units, exhaust systems, generators, compressors, pumps, etc., and equipment related agricultural, construction, and industrial activities. These levels are enforced for any location at or beyond the property line and shall not be exceeded for more than 10 percent of the time during any 20-minute period. The noise limits which apply are a function of the zoning and time of day.



Construction Noise

Under the No Action Alternative, the existing paved path in Kapa'a Town and cane haul road to the north would remain as is, and no path amenities would be provided. Therefore, there would be no short-term impacts on existing noise levels resulting from the construction activities.

Noise from construction activities are regulated under Title 11, Chapter 46 (Community Noise Control) of the State DOH's Administrative Rules. Under these regulations, the project corridor and immediate surrounding areas fall under several of the zoning district classifications shown on the chart above. These various district classifications along the corridor are identified.

1. **Kapa'a Town Section.** Within this urbanized corridor of the project, surrounding properties generally fall under both the Class A and B zoning districts. The Class A classification applies to properties zoned residential, conservation, preservation, public space, and open space types of land uses. Class B classification applies to properties zoned multi-family, apartment, business, commercial, hotel, and resort land uses. As a result, the maximum permissible noise levels for these properties under Class A is 55 dBA at the property line during daytime (7:00 a.m. to 10:00 p.m.) and 45 dBA during nighttime (10:00 p.m. to 7:00 a.m.) hours. For Class B, it is 60 dBA at the property line during daytime and 50 dBA during nighttime hours.
2. **Kealia Beach Section.** Within this transition corridor from the Kapa'a Town to Kealia Beach, surrounding properties generally fall under the Class A zoning districts. The maximum permissible noise levels for this segment is 55 dBA at the property line during daytime and 45 dBA during nighttime hours.
3. **Kealia Kai Section.** From Kealia Beach, surrounding properties include the Kealia Kai subdivision development which falls under the Class C zoning districts. The Class C classification applies to properties zoned agricultural, country, industrial, or of other similar land uses. The maximum permissible noise levels for this segment is 70 dBA at the property line during both daytime and nighttime hours (DOH 1996).

The project would involve some excavation, grading, and construction of the path, bridges, and new buildings as part of path amenities along with supporting infrastructure that may generate some audible noise. Actual noise levels produced would depend on the methods employed throughout construction. Earthmoving equipment such as bulldozers and diesel-powered trucks would be the loudest equipment used during construction. Typical ranges of construction equipment noise vary between 70 and 95 dBA. Earthmoving equipment, such as bulldozers and diesel powered trucks, will probably be the noisiest equipment used during construction. Construction equipment would be equipped with mufflers as required under DOH regulations.

Any noise impact from these construction activities would be relatively short-term and minor. The majority of work would involve improvements and development of the path. Path amenities are generally limited to only a few areas which are Lihi Park, Kealia Lookout (parking improvement), Kealia Beach, and the parking lot for public shoreline access at the Kealia Kai subdivision (comfort station). Most of these areas are already used extensively by the public for recreational activities.

In cases where construction noise exceeds, or is expected to exceed, the maximum permissible noise level allowable to property line limits, a permit would be obtained from the DOH to allow these activities. This permit includes restrictions to help mitigate potential noise impacts resulting from short-term construction activities. Such restrictions would be followed by the contractor. Specific permit restrictions included as conditions under this permit for construction activities are:

- No permit shall allow construction activities generating noise levels beyond the maximum permissible sound level at the property line before 7:00 a.m. and after 6:00 p.m. of the same day, Mondays through Friday.
- No permit shall allow construction activities generating noise levels beyond the maximum permissible sound level at the property line before 9:00 a.m. and after 6:00 p.m. on Saturdays.
- No permit shall allow construction activities generating noise levels beyond the maximum permissible sound level at the property line on Sundays and holidays.

4.8 HISTORIC, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

An archaeological inventory survey was conducted for the study corridor by Cultural Surveys Hawaii, Inc. (CSH), and a copy of this report is included in Appendix G. The work associated with the archaeological inventory survey included coordination with the State Historic Preservation Division (SHPD) and consisted of the following typical procedures:

1. A complete ground survey of the entire project area for the purpose of site inventory. All sites were located, described, and mapped with evaluation of function, interrelationships, and significance. All sites identified were assigned State site numbers.
2. Limited subsurface testing with a backhoe was conducted to determine if subsurface deposits were located within specific locations of the project area, and. Samples from these excavations were analyzed for chronological information, and an evaluation done of their significance.
3. Research historic and archaeological information including search of historic maps, written records, and Land Commission Award documents. Research focused on the specific area with general background on the *ahupua`a*, district, and settlement patterns.
4. Prepared an inventory survey report which includes recommendations based on all information generated and specify steps needed to mitigate the impact of development on archaeological resources.

Field inspection and subsurface testing within the study corridor was accomplished in August 2002. Sub-surface testing occurred at Lihi Park and Kealia Beach Park, and consisted of the excavation of a total of 13 backhoe trenches. The trenches were excavated below the water table or to a sterile stratum layer. Documentation included scale section profiles, sediment descriptions, and photographs of exposed trench sections. Sediment samples were collected, inventoried, and catalogued. Charcoal for radiocarbon analysis was also collected from discreet charcoal pockets in the excavated trench walls and sent to Beta Analytic Inc. for C14 analysis.

4.8.1 Historical Background

The proposed path traverses through the ahupua'a of Kapa'a and Keālia which are part of the ancient Puna District. Legends, traditional accounts and wahi pana point to this area being rich in pre-contact history, although it seems much of this history has been lost. The accounts, though few in number, indicated that there were at least two places along the proposed path associated with legends and wahi pana. These include Ka lulu o Mo'ikeha, near the Mo'ikeha Canal, and Kuahiahi, near the rocky headland in north Kapa'a.

Late Prehistoric Through 1800s

Historic records list a number of heiau situated in Kapa'a and Keālia suggesting the region was at one time much more significant than is portrayed by the kuleana records of the late 1840s and early 1850s. The specific locations of most of these heiau are unknown, however, there are a few which carry the same names as wahi pana known to be located in the vicinity of the project area. These heiau include Kuahiahi (Keahiahi, Kaahiahi) at the rocky headland at the north end of Kapa'a and KaluluoMo'ikeha in Kapa'a. Oral accounts attest to a heiau in the vicinity of Kūna Bay, although no further information was obtained.

Historic accounts suggest a fairly sparse population in Kapa'a with Hawaiians living in a series of small settlements, probably along the alanui aupuni (the Kūhio Highway) which traversed a narrow sand berm. The river valley of Keālia hosted a larger population with kuleana claims mostly dispersed along the Keālia River. There was one Land Commission Award adjacent to the project area at the north end of Keālia Beach, and subsurface testing in this locale has yielded evidence of human occupation ranging from pre-contact times to the plantation era. According to historic documents, the plateau areas north of Keālia Valley were sparsely inhabited, while areas bordering Kumukumu and Homaikawa'a Streams hosted the largest settlements.

The earliest successful economic enterprise by a Westerner in these ahupua'a was the Krull Ranch and Dairy which operated in the Kumukumu area in the 1860s. This Krull Dairy was situated near Waipahe'e which is located well mauka (west) of the proposed coastal bike path. In 1877, the Makee Sugar Plantation was established and consisted of a mill and landing at Kapa'a as part of the plantation infrastructure.

Following the move of the Kapa'a mill to Keālia in 1885, a railroad was built from Makee Landing to Keālia with another railroad arm leading across the Mo'ikeha drainage, up Lehua Street, and into the mauka regions of Kapa'a. The Mauka Mo'ikeha Railroad Bridge (State Site No. 50-30-08-2078, Feature D) and the Old Kealia Railroad Bridge/Cane Haul Road (State Site No. 50-30-08-789A, Sub-Feature 1) represent a part of the first railroad system constructed about 1891 to transport sugar cane.

The Makee Sugar Plantation, operating out of Keālia, attracted hundreds of immigrant workers, first the Portuguese and Japanese and later, Filipinos. Kapa'a and Keālia towns sprung up around these immigrant groups. In addition, there were several plantation camps in Keālia, including in the plateau lands of Kumukumu and Hōmaikawa'a as well as homesteads in the Kapa'a, Wailua and Kapahi areas. Many of the residential lots adjacent to proposed path in the Kapa'a area were auctioned off as Kapa'a Town Lots in the first part of the 20th century.

1900s To Present

The pineapple industry made its debut in Kapa'a in 1913, with the opening of Hawaiian Cannery Companies, Ltd. A cannery was constructed on land north of Waika'ea Canal and adjacent to the existing County path. This cannery was in business for almost 50 years and made use of the railroad track to transport pineapple to Ahukini Landing for shipment and also to send pineapple waste to the "pineapple dump" north of Keālia.

In 1920, Ahukini Terminal & Railway Company extended the railroad from the Mo'ikeha Canal area in Kapa'a to the Ahukini Landing in Hanama'ulu which became the new central terminal for shipping of agricultural goods. Lihue Plantation took over the Ahukini Terminal & Railway Company and the Makee Plantation in 1934.

By the late 1950s, the railroad gave way to truck roads for transportation of agricultural goods. A good portion of the railroad alignment in Kapa'a was abandoned, however, a cane haul road was constructed near the intersection of Haua'ala Road with Kūhio Highway. Lihue Plantation eventually went out of business at the end of the 20th century and the cane haul road was abandoned.

As an economic force, tourism has taken the place of agriculture in the last several decades. The old railroad alignment in the Kapa'a Town area was converted into a bike and pedestrian path in the 1980's extending from the Waika'ea Canal to the County's (Smokey Louie) Swimming Pool. The path was paved with asphalt and minor modifications were made to the Waika'ea Railroad Bridge and Makai Mo'ikeha Railroad Bridge. This entire route, including the paved path and the old cane haul road, has since been used by pedestrians, bicyclists, motorcyclists, and horse-back riders (CSH 2002).

4.8.2 Previous Archaeological Research

A considerable amount of prior archaeological studies have been conducted for both the Kapa'a Ahupua'a and Keālia Ahupua'a. The historic background data indicates that both Kapa'a and Keālia were overshadowed by the more prominent neighboring ahupua'a of Wailua to the south.

However, their prehistoric settlement pattern was somewhat similar. Coastal permanent habitation inland agriculture was the general pattern. In Kapa'a, the inland agriculture and habitation loci was the perimeter of the large marshy area backshore of the coastal sand dune beach berm. In Keālia, the inland agricultural and associated habitation was focused on a river valley and tributary system.

A listing of the various studies and historic properties identified are provided in tables included in the Inventory Survey Report in Appendix G. The pattern of archaeological sites identified in these areas is summarized.

Kapa'a Ahupua'a Pattern of Sites

The pattern of archaeological studies conducted in the Kapa'a Ahupua'a was somewhat skewed with a dozen projects in urban Kapa'a Town and very little work along the coast. Major archaeological sites have been found in the Kapa'a Town area including extensive cultural layers with burials and other cultural features underlying Kuhio Highway near All Saints Gym and near the older part of Kapa'a Town between Waika'ea Canal and Kapa'a Beach Park, makai of Kuhio Highway

The mauka-makai extent of these cultural layers has not been clearly defined. These extensive cultural deposits associated with pre-historic and early historic habitation were known to exist in a relatively narrow sand berm that makes up the physiogeography of Kapa'a. The areas mauka of Kapa'a Town were marshy although much of it has been filled in recent decades.

The five kuleana awarded during the Māhele were located adjacent to the present highway. Studies of more mauka areas were located towards the mauka fringe of the sand berm approaching more marshy conditions, and have generally reported no significant or minimal findings. Less than 1.5 km to the south of Waika'ea Canal was another extensive subsurface, cultural deposit which was associated with a pre-contact fishing encampment located at the southern boundary of Waipouli adjacent to Uhalekawa'a Stream (Waipouli Stream) and the ocean.

Keālia Ahupua'a Pattern of Sites

Two inadvertent burial finds were documented in a large sand deposit at the bend of the Keālia River (also known as Kapa'a Stream) and were assigned State Site # 50-30-08-1851. Sand dune burials and an associated cultural layer were also documented at Kuna Bay (also known as Donkey Beach). An archaeological inventory survey was conducted for this area from Kealia Beach to Ahihi Point for the Kealia Kai subdivision development which provided much information for the northern section of this project (CSH 2000).

Plantation era infrastructure and agricultural features have also been noted in the coastal section of Keālia. Surveys of large inland areas of Keālia have documented extensive commercial agricultural landscape alterations. Sites such as traditional Hawaiian habitation and associated agricultural features have been noted in valley areas where plantation era cultivation did not occur.

4.8.3 Results of Surface and Subsurface Inventory

The surface survey and subsurface testing resulted in the documentation of seven sites within the project's study corridor. Two of the sites had been previously identified in study conducted for the Kealia Kai subdivision development and consisted of: 1) State Site No. 50-30-08-789 with several associated Features, and 2) Site No. 50-30-08-790, Feature B (CSH 2000).

Sites Identified From Previous (Kealia Kai Subdivision) Inventory Survey

The previously identified site, State Site # 50-30-08-789, Feature A refers to the plantation-era Cane Haul Road. The 'Haul Cane' road was a 1950's modification of an existing railroad alignment. Road width, bridges, and culverts were modified to handle the large cane haul trucks. A prime example of this modification was the bridge over Kapa'a Stream, referred to as State Site # 50-30-08-789, Feature A, Subfeature 1. This original bridge was built (ca. 1890's) for the plantation railroad, then modified for truck traffic in the 1950's, and most recently this bridge has been utilized as a part of the existing pedestrian/bike path.

Other plantation related features situated within the study corridor associated with Site -789 include the following identified below. These features were determined to be not particularly good examples of their respective site and feature types. Their information content has been adequately recorded during the inventory survey and was not recommended for preservation.

1. Feature B (Kealia Landing). This landing is situated at the northern end of Kealia Beach and is constructed of large basalt boulders formerly used for laborers and donkeys to load sugar onto ships.
2. Feature C (Dynamite Storage Bunker). Located north of the Kealia Landing, this bunker is cut into the side of the slope along the mauka side of the cane haul road. Lined with cult basalt blocks with mortar and steel reinforcements, this was evaluated to be a dynamite storage locker used during plantation times.
3. Feature G (Kumukumu Stream Bridge). This bridge has been washed out leaving only remnants of the structure, but was associated with the cane haul road and other plantation era features.
4. Feature H (Pier). This pier is located along the makai side of the cane haul road and consists of a cement structure extending out over the ocean cliff and into the water. This pier was used for the dumping of pineapple into the ocean as part of plantation activities and is locally referred to as the "Pineapple Dump."
5. Feature I (Homaikawaa Stream Bridge). This bridge has been washed out leaving only remnants of the structure, but was associated with the cane haul road and other plantation era features.
6. Feature L (Wall). This wall is located mauka of Ahihi Point and was constructed of large basalt boulders. It was likely that this wall was built during plantation times and functioned as a boundary wall.

7. Feature M (Retaining Wall). This retaining wall consisting of basalt cobbles is located on a ridge at Ahihi Point, and was likely built during plantation times based on the construction techniques used.
8. Feature N (Ditch). This ditch at Ahihi Point is about 35 meters long and 7.5 meters wide, and intersects Feature L (wall). It possibly served to control runoff from the ridge up slope or was excavated as part of a path or cart way used to load cane onto vehicles (CSH 2000).

Feature B of Site -790, consists of a foxhole depression situated about 8 meters makai of the existing cane haul road. This feature is of World War II era features and was significant for providing information regarding U.S. military defensive tactics. This feature was determined to be a not particularly good example of their respective feature type with no interpretive value. Their information content has been adequately recorded during the inventory survey and no further work is required.

Sites Identified From New Surface Survey

Four other sites were documented as part of the surface survey conducted for this project. These sites include: 1) the old Kaua'i Belt Highway Bridge foundation (State Site # 50-30-08-2075); 2) a petroglyph (State Site # 50-30-08-2076); 3) concrete steps (State Site # 50-30-08-2077); and 4) the remnants of the old railroad alignment (State Site # 50-30-08-2078).

The Old Kaua'i Belt Highway bridge remnants, State Site # 50-30-08-2075, were situated between the existing Kuhio Highway Bridge and the existing cane haul road bridge at Kapa'a Stream. The remnants were not within the proposed path corridor, but due to their proximity they were documented and allotted a State site number. The Belt Highway was an early 20th century (ca. 1912) undertaking by the Territory of Hawai'i. Similar era belt highways were built throughout the territory with the Hana Highway on Maui and its remaining early 20th century bridges probably the best existing example.

A petroglyph, State Site # 50-30-08-2076, was located within Kapa'a on a boulder at the water's edge. The petroglyph motif consisted of three dots arranged in a triangle with a spiral design adjacent to, and to the right of the dots. The basalt boulder in which the motif(s) was pecked was approximately 85 cm. in diameter and was regularly wave-washed due to its shoreline location. The dots and spiral were very clear with sharp edges, essentially showing no signs of wear that would be expected especially on a boulder at the water's edge. Based on the lack of wear, no record of the petroglyph boulder in past studies, and fine, clear edges (due probably to the use of a metal tool) the petroglyph was posited to be modern. However, due to the possibility of the petroglyph dating more than 50 years old, it was prudent to allot it a State site number. The petroglyph boulder was situated well makai of the existing bike path (i.e. cane haul road), and should not be affected by the project.

The concrete steps, State Site # 50-30-08-2077, were part of a plantation era pavilion at Kapa'a Beach. Based on background research, the pavilion was extant from ca. 1930 to 1960. The steps were located on the makai side of the railroad alignment (State Site # 50-30-08-2078) presently being

utilized as a bike and pedestrian path. The steps were just remnants, however they do represent links to transportation and recreation activities of the Kapa'a Town during the height of the cannery and plantation era.

Old Railroad Alignment Remnants

The railroad alignment, State Site # 50-30-08-2078, includes the rail grade bed and bridge supports. This railroad was initiated in the late 1800's for plantation(s) transportation needs. The railroad functioned until the 1950's when the plantations shifted to trucks as their primary means of transporting cane. The railroad alignment in the project area has subsequently been modified for truck traffic and is currently used for pedestrian/bike usage.

In the project corridor there were five bridges or bridge remnants (i.e. State Site # 50-30-08-2078, Features A-E). Two of the five bridge features were foundation remnants only (i.e. Site -2078 Features B & E). The other three bridges still span canals with bridge supports and bridge surfaces. Two of the five bridges, Sites -2078 Feature A and C, at Waika'ea Canal and Mo'ikeha Canal, respectively, have been modified for use as part of the existing bike path.

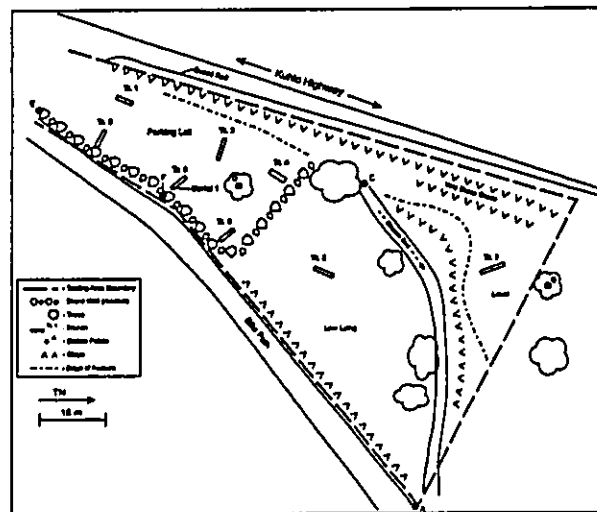
The railroad alignment, located north of Otsuka's Furniture Store, near the intersection of Kuhio Highway and Haua'ala Road, has been converted into the cane haul road (i.e. State Site # 50-30-08-789 Feature A). The modifications included widening of alignment, concrete culverts, and large boulder embankments. The existing path now used by bikes and pedestrians utilizes both the railroad alignment and the converted cane haul road.

Sites Identified From Subsurface Testing

Subsurface testing was conducted at Lihi Park (south of Waika'ea Canal) and Kealia Beach Park where path amenities such as parking and comfort stations are planned. A total of 13 backhoe trenches were excavated during the survey with 8 trenches occurring at Kealia Beach and 5 trenches at Lihi Park.

Kealia Beach Trench Results

The Kealia site tested is comprised of an existing gravel-covered parking area, a low drainage swale, and a grass-covered level area in the northwest corner, adjacent to Kuhio Highway. Of the eight trenches (see exhibit), six (Trenches 1-5 & 8) were excavated within the gravel parking lot while one was in the low drainage swale (Trench 6) and the other in the level grass-covered corner (Trench 7). The trenches (1-5 & 8) in the existing parking area all contained evidence of a buried cultural layer which has been allotted State Site # 50-30-08-2074. A number of features were observed, including a human burial (State Site # 50-30-08-2074, Feature A) in Trench 5.



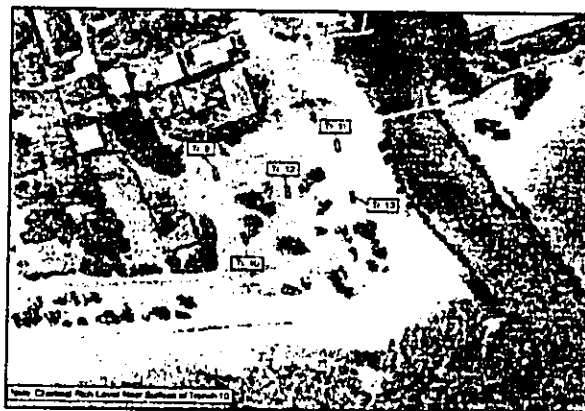
The buried cultural layer (Site -2074) was encountered in the test trenches (Trenches 1-5 & 8) that were excavated in the existing gravel paved parking lot. This cultural layer consisted of culturally-enriched sand containing pit features, midden, charcoal, historic era trash and building foundations, and a human burial. The burial was encountered in Trench 5, in a discrete burial pit that extended from the cultural layer (i.e. Stratum IV) into the underlying sterile sand layer (i.e. Stratum V). The burial was only partially exposed, and thus there was no detailed burial style data (e.g. flexed, extended, etc.) or osteological analysis (see Site Description State Site # 50-30-08-2074 Feature A). Standard notification procedures were followed (i.e. SHPD and Kaua'i/Ni'ihau Island Burial Council) upon encountering the burial, which was left in situ.

A charcoal sample from an imu or fire pit feature within the cultural layer was sent for radiocarbon analysis. Unfortunately, the resulting calibrated age was "A.D. 1650 - beyond 1960" which did not provide for good interpretative data. However, based on absence of historic artifacts within the feature or from within the portion of the cultural layer that the pit originated, a late prehistoric to early historic time frame was posited for the fire pit event.

Portions of the cultural layer have been impacted by historic era activities. Background data indicated a mid-1800's Land Commission Award house lot in the vicinity of the testing area and later plantation era structures. No direct evidence, such as trash pits with artifacts datable to the mid-1800's, was observed. However, the dated charcoal sample could be associated with this time frame. Concrete and basalt boulder steps were encountered in Trench 3. The steps and foundation had cut through and obliterated the cultural layer indicating plantation era impacts to the subsurface site. Based on the evidence, the buried cultural layer, State Site -2074, contained both prehistoric and historic components, and the presence of the burial suggests that more may be present. Oral accounts attest to plantation related structures, including residences in the area up until the 1960's.

Lihi Park Trench Results

Five trenches (Trenches 9 to 13) were excavated within the Lihi Park area that is used for parking and socializing on the beach either under the trees or using the park benches. The soil sequence observed at Lihi Park was as anticipated consisting of coralline beach sand, although Trench 11 did have waterlogged clay sediments below 2 meters of sand.



Testing indicated that the stratigraphic sequence was primarily beach or Jaucus sands. Charcoal-stained pit features and a lens containing charcoal chunks were encountered, though in each case, modern trash was also present. Trenches 10 and 12 contained charcoal, modern trash, and in the case of Trench 10 some marine shell midden. In both cases the layer did not appear to be an intact prehistoric (or early historic) cultural layer. Modern materials were mixed within these deposits and the charcoal and midden were possibly from recent beach use.

The only divergence from the sand sequence was found in Trench 11 which was the closest trench to Waika'ea Canal. Stratum II in Trench 11 was dark bluish gray clay which extended below the present water table level representing terrestrial soils deposited in a low energy environment. Waika'ea Canal is a modern channelized drainage feature. However, Stratum II in Trench 11 indicated a broader estuary, or muliwai, for the Waika'ea drainage prior to its channelization.

No clearly prehistoric or early historic cultural layer or human burials were encountered. Based on these observed characteristics, no state site designating a traditional cultural layer was warranted. However, the sandy soil type and proximity to other cultural layers with associated burials (e.g. State Site 50-30-08-1848 and -1849) suggests similar features may be within the Lihi Park locale.

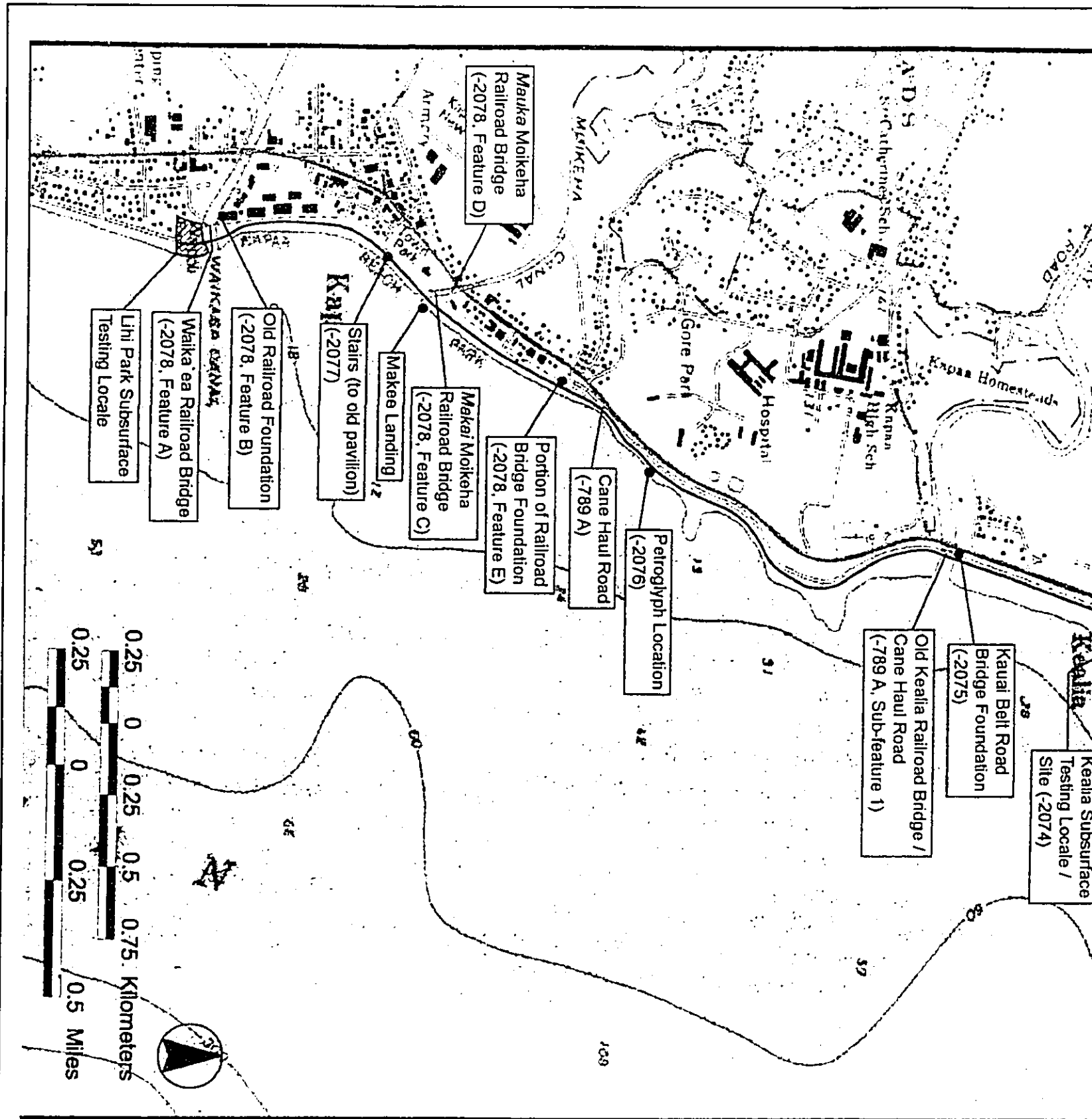
4.8.4 Significance Evaluation of Historic Properties

Significance evaluation of these sites were based on the criteria of the Hawaii State and National Registers of Historic places which define five broad criteria for defining a cultural site as significant. A listing of these criteria is provided below along with a summary of the criteria given to the project corridor sites.

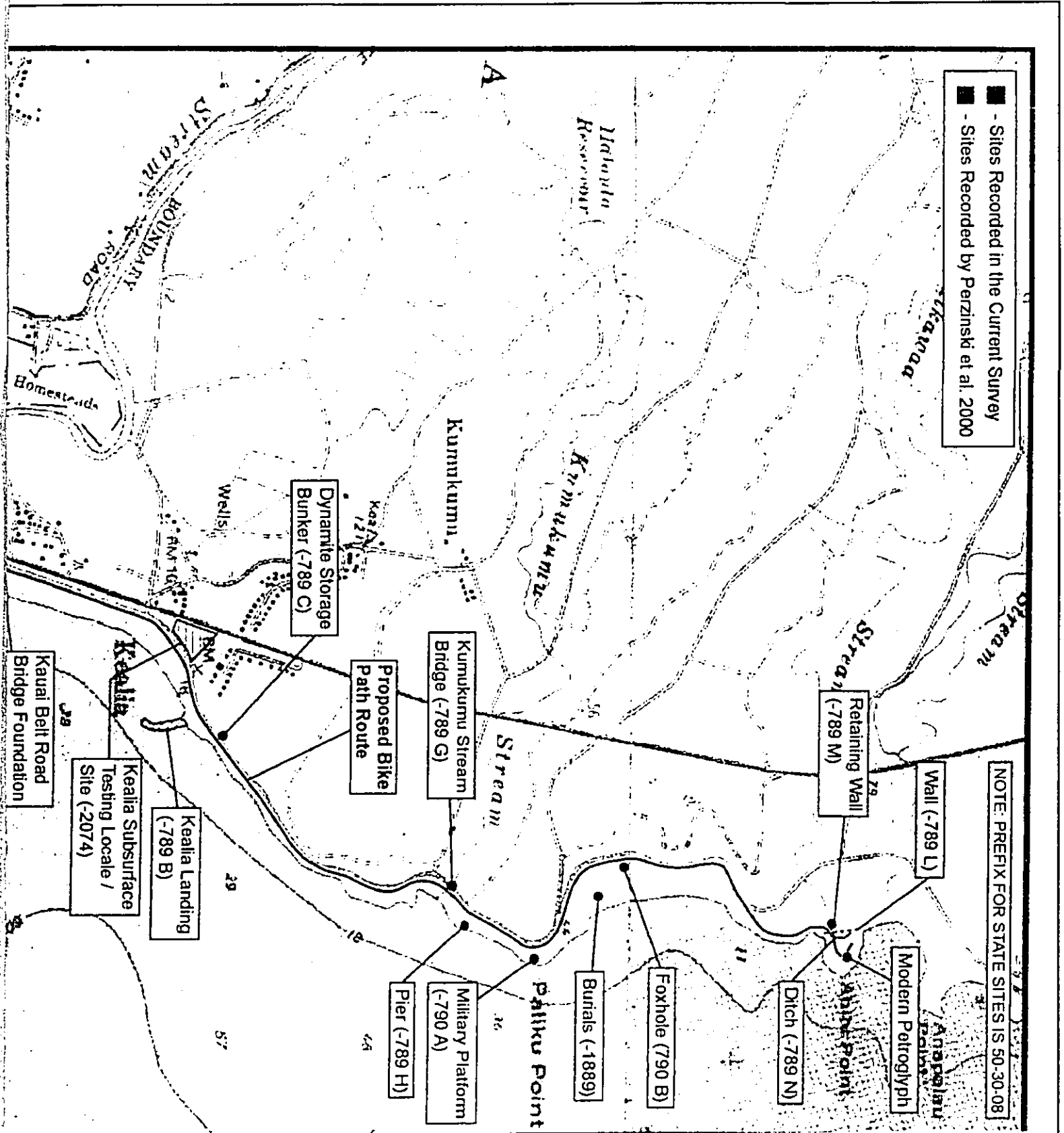
- A. Site reflects major trends or events in the prehistory or history of the state or nation.
- B. Site is associated with the lives of persons significant in our past.
- C. Site is an excellent example of a site type.
- D. Site has yielded or is likely to yield information important to prehistory or history.
- E. Site has traditional cultural significance to an ethnic group.

The inventory survey, including subsurface testing, has resulted in the identification and documentation of six sites. Figure 4.2 shows the locations of these sites within the study corridor. As previously discussed, these sites ranged from a buried cultural layer with an associated human burial (Site -2074) to a possibly modern petroglyph (Site -2076). Some of these sites were associated with plantation era infrastructure including transportation type Site -789 (cane haul road), and railroad alignment Site -2078. Table 4.5 lists all identified sites along with the State site number, site type, site function, probable age, significance assessments, and recommendations. These recommendations were reviewed and approved by SHPD (letter dated March 21, 2003 in Appendix B-4) as part of their acceptance of the archaeological inventory survey report for this project.

1. State Site # 50-30-08-789 Feature A. This had been previously assessed under Criterion D for the informational content regarding the changing transportation infrastructure of the plantation era. However, the integrity relating to any single time period of the plantation era has been compromised by periodic revamping, modernization, and use as a cane haul road until the 1980's. The present study also indicates that Criterion D applies to the segment within the project study corridor. No further historic preservation research was warranted for the alignment of the road itself.



ARCHAEOLOGICAL SITES IDENTIFIED WITHIN ST



WITHIN STUDY CORRIDOR

FIGURE 4.2

Source:
Cultural Surveys Hawaii, Inc.



State Site No. 50-30-08-	Site Type	Site Function	Probable Age	Significance	Recommendations
789	Historic road	Transportation	Historic, ca. 1950's to present	D	NFW
789 Feature A	Bridge (Kealia)	Transportation	1890's to present	D	HAER
789 Feature B	Landing (Kealia)	Transportation	1890's to present	D	NFW
789 Feature C	Storage Bunker	Transportation	1890's to present	D	NFW
789 Feature G	Bridge (Kumukumu)	Transportation	1890's to present	D	NFW
789 Feature H	Pier	Transportation	1890's to present	D	NFW
789 Feature I	Bridge (Homaikawaa)	Transportation	1890's to present	D	NFW
789 Feature L	Wall	Transportation	1890's to present	D	NFW
789 Feature M	Retaining Wall	Transportation	1890's to present	D	NFW
789 Feature N	Ditch	Transportation	1890's to present	D	NFW
790, Feature B	Foxhole	Military	World War II	D	NFW
2074	Cultural layer	Habitation, burial	Precontact	D, E	Data Recovery/ Preservation
2074 Feature A	Human Burial	Burial	Precontact		Preservation
2075	Highway Bridge foundation	Transportation	Historic, ca. A.D. 1912	D	NFW
2076	Petroglyph	Symbolism, art	Historic	D, E	Preservation
2077	Concrete steps	Related to old pavilion	Historic	D	NFW
2078	Railway alignment	Transportation	Historic, ca. 1890's to 1950's	A, D	NFW
2078 Feature A	Railroad bridge	Transportation	Historic	A, D	HAER
2078 Feature B	Railroad foundation	Transportation	Historic	A, D	NFW
2078 Feature C	Historic railroad bridge	Transportation	Historic	A, D	HAER
2078 Feature D	Historic railroad bridge	Transportation	Historic	A, D	NFW
2078 Feature E	Historic railroad bridge	Transportation	Historic	A, D	NFW

HAER denotes Historic American Engineering Record documentation
NFW denotes "No Further Work"
Source: Cultural Surveys Hawaii (February 2003)

Features B, C, G, H, I, L, M, and N. These features had been previously assessed under Criterion D for the informational content regarding the plantation era structures, technology, lifestyle, and changing transportation infrastructure. No further historic preservation research was warranted for these features.

2. State Site # 50-30-08-790, Feature B. This foxhole depression was assessed under Criteria D for its information content regarding U.S. military defensive tactics. This simple feature had no interpretive value, and no further work is required.

3. State Site # 50-30-08-2074. This buried cultural layer was assessed under Criteria D and E. Criterion D applies since Site -2074 has yielded significant data related to coastal occupation within Kealia, and by inference, Eastern Kaua'i. The site (-2074) also has the potential to yield additional significant information.

Criterion E applies to Site -2074 due to the presence of the human burial in Trench 5. Based on previous research in the Kealia area, burials are not uncommon and the present discovery further evidences the prospect of more unmarked burials in coastal Kealia.

This buried cultural layer was recommended for further research if the project plans include any subsurface work which may impact this site. The human burial documented within the site was recommended for preservation, and will need to be presented to the Kaua'i/Ni'ihau Island Burial Council for review, consultation, and approval in accordance with Title 13, Subtitle 13, Chapter 300 of the Hawaii Administrative Rules. This would include preparation of a burial treatment plan.

4. State Site # 50-30-08-2075. The remnant bridge foundation of the Old Belt Highway was assessed solely under Criterion D for its informational content. The inventory survey report provided historic background information, locational references, photographs, and a written description of the ca. 1910 bridge remnants. The site also has the potential to yield additional architectural and engineering information. The bridge remnants are however a link to past transportation infrastructure, thus, the SHPD should be consulted if any modifications to the bridge foundation is anticipated.
5. State Site # 50-30-08-2076. Petroglyphs have generally been assessed under Criteria D and E, with Criterion D related to the information and Criterion E related to the cultural significance. In this case, there was the possibility of the petroglyph being modern based on observed characteristics which would negate the symbolic figures as a significant historic property. However, since the age was uncertain, it was felt more prudent to deal with the petroglyph as an historic property and assess it under Criteria D and E. This petroglyph was recommended for preservation, and no further research warranted.
6. State Site # 50-30-08-2077. The basalt boulder and concrete steps of an old plantation era Kapa'a Beach Park pavilion, was assessed solely under Criterion D. Criterion D applied in that basic data such as construction style, location, and plantation era association has been documented for this site. Sufficient data of this site was presented in the inventory survey report and no further research warranted.
7. State Site # 50-30-08-2078. The rail line and associated infrastructure was assessed under Criteria A and D. Criterion A applies because the plantation era railroad reflects major economic transportation and socio-political trends in Hawai'i's history. The plantation style organization eventually came to dominate Hawai'i's economics, including the Kapa'a/Keālia area of Kaua'i. The railroads, like Site -2078 were integral to the plantations.

This railroad alignment has been modified significantly over time. Modifications of bridges (Features -2078A and -2078C) for the existing path were evidence of such recent alterations. The cane haul road was a major modification to the alignment, an alteration significant enough to warrant giving the cane haul road its own State site number. Consequently, it was recommended that HAER documentation occur for the Waika'ea Canal Bridge (Feature A) and Mo'ikeha Bridge (Feature C). No further research was warranted for railroad Features B, D, and E provided that the project improvements won't use or directly impact these features. If any alterations to these features are planned, the architectural staff of SHPD should be contracted prior to any undertaking.

4.8.5 Effects on Historic Properties

Under the No Action Alternative, there would be no improvements constructed and subsequently no effects to historic properties identified along the study corridor. However, the County would still need to implement the requirements prescribed under Title 13, Subtitle 13, Chapter 300, HAR to address the treatment of the burial encountered at Kealia Beach. This would include the preparation of a burial treatment plan for review and approval by the Kaua'i/Ni'ihau Islands Burial Council.

With the project, mitigative measures are needed to prevent adverse effects on historic properties resulting from the improvement alternatives being considered. Consequently, a Memorandum of Agreement (MOA) has been developed stipulating the mitigative measures to be implemented, and a copy of this is included in Appendix B-3. This MOA has been agreed to by the SHPD and FHWA, and concurred by the County and State Office of Hawaiian Affairs.

Path Alignment Improvements

No further research work is warranted for the railroad alignment and cane haul road (Sites -789 and -2078) that would be utilized by the proposed path. Between Lihi Park and the County's swimming pool, this path route is paved and already being used by bicyclists and pedestrians. The remainder of the cane haul road from this pool to Ahihi Point has undergone numerous changes over time, and is also actively utilized as a bike and pedestrian path. Path improvements would thus consist of widening sections, paving the path, and providing fencing and other accessory improvements to support users.

Project improvements should not affect the boulder petroglyph (Site -2076) located along the shoreline at Kapa'a Beach Park which is recommended for preservation. A basalt boulder and concrete steps site (Site -2077), dynamite storage bunker (Site -789, Feature C), and foxhole (Site -790, Feature B) are also located along the path route. However, these sites should not be affected since path improvements would generally be limited to the existing cane haul road route, and "no further work" was recommended for these sites. However, if alterations to these features are necessary, the architectural staff of SHPD should be consulted prior to any construction activities.

The use of the existing railroad and cane haul road alignment should also minimize the potential of encountering burials or cultural layers. However, to mitigate potential impacts to such subsurface sites, archaeological monitoring in accordance with an approved monitoring plan will be conducted during construction activities as stipulated under the MOA. This includes path sections from Waika'ea Canal to the beginning of the cane haul road near Kawaihau Road, and from the southern end of Kealia Beach up to Kealia Beach Landing if paving improvements to the cane haul road is extensive and has the potential of excavating into underlying sand deposits.

The existing public shoreline access which runs through the Kealia Kai subdivision would be paved as part of path improvements. However, this improvement would not affect any historic sites based upon the inventory survey report for the Kealia Kai Subdivision development (CSH 2000).

Near Ahihi Point, the proposed path is planned to terminate before crossing Homaikawaa Stream to get to this point. Thus, no current improvements are planned which would affect the sites located at Ahihi Point. The sites on this point include petroglyph #2 (a modern petroglyph) and State Site # 50-30-08-789, Features L, M, and N which are plantation era features. An existing foot path is available now and would continue to provide user access from the cane haul road to the point. Thus, the project should have no affect on these sites.

Improvements Affecting Historic Bridge Features

Path improvements would involve modifications to several bridges which have been identified as features of the historic railroad alignment and cane haul road. Within Kapa'a Town, path improvements would not adversely affect the Waika'ea Canal's mauka bridge foundation (Feature -2078B) or the mauka Mo'ikeha Railroad Bridge (Feature -2078D). These bridges have already been modified significantly over time which includes creating the current path crossing being used by the public. Within the Kealia Beach corridor, planned improvements should not adversely affect the Kapaa Stream railroad bridge supports and structure (Feature -789A, Subfeature 1). However, Historic American Engineering Record (HAER) documentation will be performed for these bridges as stipulated under the MOA. In addition, consultation will be conducted with the Kauai Historic Preservation Review Commission and SHPD regarding design plans developed.

The railroad bridge foundation remnant (Feature -2078E) just north of Otsuka's in Kapaa Town may be used as part of the path route crossing a drainage ditch through this particular area. Because this remnant foundation is in moderate to poor preservation condition, no further work was recommended. Therefore, path improvements that may affect this should not be adverse. However, the architectural staff of SHPD would be consulted prior to any construction activities if design plans would alter this foundation.

The project would include constructing a new bridge crossing Kumukumu Stream at the location of the existing washed out Kumukumu Stream Bridge (Feature -789G). Due to the condition of this washed out bridge, no further work is required since its information content was adequately recorded in an inventory survey report for the Kealia Kai subdivision development (CSH 2000). Therefore, a new bridge constructed will not have an adverse effect on this site.

Similarly, the existing washed out Homaikawaa Stream Bridge (Feature -789I) may be improved in the future by the County if the path is extended further north from its currently proposed terminus area. Given the same findings and determination for this bridge as with Kumukumu Stream Bridge, there should be no adverse effect to it.

Path Amenities Affecting Historic Sites

Various path amenities such as parking areas, comfort stations, and picnic shelters have the potential to impact historic sites based upon the project's inventory survey and previous archaeological studies conducted within the Kapa'a to Kealia coastline. Subsurface testing at Lihi Park did not encounter burials, but the potential exists especially if extensive subsurface work is conducted for the comfort station, sewer and water line extensions, and parking lot improvements. To mitigate potential impacts, archaeological monitoring in accordance with an approved monitoring plan will be conducted during construction activities as stipulated under the MOA.

Parking and path amenity improvements are planned adjacent to the State DOT's Kealia Lookout along Kuhio Highway. Planned improvements should not have an adverse effect on historic properties that may be present in this area. However, a field inspection by an archaeologist will be conducted as part of parking lot plans developed during the design phase.

At Kealia Beach Park, appropriate mitigative measures would be implemented to address proposed improvements which include parking, a comfort station, and about nine picnic shelters. The triangular shaped gravel parking area would remain as open parking with the exception of ADA parking stalls provided to minimize subsurface work. A data recovery plan will be developed and implemented if design plans include any subsurface work which affects Site -2074.

The human burial (Site -2074, Feature A) documented within the existing gravel parking area was recommended for preservation. A burial treatment plan will need to be prepared to address preservation of this site and presented to the Kaua'i/Ni'ihau Islands Burial Council for review, consultation, and approval in accordance with Title 13, Subtitle 13, Chapter 300 of the Hawaii Administrative Rules as part of the project's design.

Siting location for the comfort station is proposed to be further northeast along the cane haul road to minimize impacts on potential cultural layers or burials that may be present in the area. In addition, picnic shelters are planned to be provided along Kealia Beach Park. The project's design will determine the actual location for such facilities along with utility line locations for water and wastewater disposal. To mitigate potential impacts on subsurface sites, an archaeological monitoring plan will be developed and implemented during construction activities. In the event that significant historic properties (e.g. burials, cultural layers, artifacts, etc.) are encountered during construction activities for any portion of this project, all work must stop and the SHPD notified.

Other Mitigative Measures Being Implemented

As part of the MOA stipulations established, the County will implement other measures to address SHPD comments and concerns with potential impacts to historic properties in the area. The provisions of a previously approved burial treatment plan (CSH 2000a) for State Site (-1899) in the vicinity of Kuna Bay (also referred to as Donkey Beach) will be implemented. These provisions include a boundary survey of a preserve created under this preservation plan, and the development and implementation of a landscaping plan to protect the site.

A Preservation Plan will also be prepared which addresses interpretive signage that is to be provided along the multi-use path. Development of this plan will involve consultation with the SHPD, Kauai Historic Preservation Review Commission, and Kauai Health and Heritage Coastal Trails Committee to develop the interpretive signage in accordance with the timeframe established under the stipulations of the MOA.

4.8.6 Traditional and Cultural Practices

A traditional and cultural practices assessment was performed for the project by Cultural Surveys Hawaii, Inc. and is included in Appendix H of this document. This study assessed the potential impacts of the project on traditional cultural practices, including native Hawaiian gathering rights and involved the following:

1. Examination of historical documents, Land Commission Awards, and historic maps to identify traditional Hawaiian activities including gathering of plant, animal, and other resources or agricultural pursuits as may be indicated in the historic record.
2. Review existing archaeological information pertaining to sites present on the property to reconstruct traditional land use activities, and identify and describe the cultural resources, practices and beliefs associated with the parcel.
3. Conduct oral interviews with persons knowledgeable about the historic and traditional practices in the project area and region.

Background information associated with the first two tasks were discussed in sections 4.8.1 and 4.8.2 of this chapter. More detailed discussion of this information is included in the traditional and cultural practices assessment report in the Appendices.

Community Consultation

Consultation was conducted with several agencies, organizations, and community members to comment on the project based on their general knowledge of the project area along with potential cultural properties and historic sites in the area. Consultation efforts lead to the identification of 48 potentially knowledgeable informants who might either have direct personal knowledge of the project area or be sources of referral. Forty-two parties were actually contacted of which only one declined to comment. These 41 parties who were willing to speak on traditional cultural practices in the vicinity of the project area were the primary sources of information. Extended formal interviews were held with six of these informants.

Evaluation of Specific Areas of Cultural Concern

Three of the previously identified archaeological sites from section 4.8.3 were interpreted as having cultural significance. These were: 1) Site 1899 which designated multiple burials at Paliku Beach (Kuna Bay) in coastal Kealia; 2) Site 2074 which was a cultural layer including a known human burial at Kealia Beach; and 3) Site 2076 which was a petroglyph along the shoreline in central Kapa'a Town.

Burials at Kuna Bay have been reported by other archaeological studies, and were the subject of a Burial Treatment Plan reviewed and approved by the Kaua'i/Ni'ihau Islands Burial Council (KIBC) and the SHPD. The burial found during the inventory survey for this project is now technically considered as "previously identified" and falls under the jurisdiction of the KIBC and the SHPD. It is anticipated that mitigation of this and other burials will be through a Preservation Plan to be reviewed and approved by the KIBC and a monitoring program to be reviewed and approved by the SHPD.

Several informants did express general concerns for the possibility of native Hawaiian burials in the sandy soils of the project corridor although no specific locations of burials were related. General areas of particular concern for native Hawaiian burials included: 1) Lihi Park/Waika'ea Canal outlet area, 2) the vicinity of the Mo'ikeha Canal outlet, and 3) the Kuna Bay area. These concerns would be addressed through previous and future Preservation Plans, along with a monitoring program developed for construction work.

The Site 2076 petroglyph consisting of a small spiral and three dots pecked into a boulder is thought to be modern, but this could not be proved. Because of the possibility this is a traditional Hawaiian site, the petroglyph boulder has been recommended for preservation.

Hunting

No concerns for hunting within the project corridor were reported by any informants. General maps of pig, goat and black-tailed deer distribution on Kaua'i showed no populations of these game species present within the project area. Hunting for pigs generally occur farther inland. None of the informants spoke of bird hunting. Therefore, basically there are no hunting opportunities in this highly developed coastal setting.

Marine Resources

The entire project corridor may be understood as coastal and thus potential adverse impacts to marine resources were a commonly expressed concern by informants. Traditionally, the ocean area was a fundamental resource for Hawaiian families for the gathering of food and for recreation as well as spiritual expression. The ocean fronting Kapa'a and Keālia continues to be frequented by the local population for fishing and gathering.

In the Kapa'a area, kama'aina made reference to several types of fishing including shoreline casting, fish trapping, throw net, hukilau, lamalama or torching, and "poking tako." Some of these were no longer practiced such as the hukilau method of fishing. Several of the species of the limu

eating fish such as kala, uhu and nenu were found on this reef. One informant recalled a time when the shoreline was black with moi li'i.

A commonly expressed view was that marine resources had been greatly degraded within living memory. Several parties felt that there was far less in the way of marine resources available now than when they were young. Quite a variety of explanations were offered for this including over-fishing (more fishing pressure than the ecosystem can support), the taking of undersized fish and octopus, the lack of enforcement of fish and game laws, the proliferation of exotic Tilapia which eat or out compete more desirable species, run-off, pollution, and junk in the water. Clearly this coastline previously supported extraordinary populations of the highly-prized moi fish (*Threadfish*, *Polydactylus sexfilis*) which are no longer present like their former abundance. The memory of the moi and what amounts to a mourning for their passing was one of the strongest remembrances of the past at Kapa'a and Keālia.

Although several informants felt that fishing is now inferior to what it was in the past, there were strongly felt concerns that development of the path should not adversely impact what resources remain. This was the most wide-spread concern expressed regarding the path project.

The nature of the possible adverse impact of the path project on marine resources was rarely explored, but there appear to have been two common perceptions. The first was that the decline in marine resources resulted from a direct increase in fishing pressure, and secondly that pollution and trash were at least partly responsible for this decline. A common belief was that improved coastal access means more fishermen and subsequently less fish. This assumption appears to follow virtually any improvement in coastal access and would appear difficult to mitigate unless some further regulation of fishing were an option.

Plant Resources

The vast majority of the project area has been graded and/or paved and few native plants are present except where they have been planted as landscaping. The only plants referred to within the project area that were used in the context of traditional cultural practices were 'uhaloa and Koali. The leaves, bark and roots of 'uhaloa are still used as a popular traditional treatment for sore throats. Koali roots were used as a poultice for bruises and broken bones.

While 'uhaloa is still commonly used, it is one of the most ubiquitous of all native Hawaiian plants. This species is particularly hardy and successful in disturbed environments. No concern was expressed for any particular localized populations of 'uhaloa in this corridor, and no adverse impact to the traditional Hawaiian use of 'uhaloa by the development of the project is anticipated. No concern was also expressed for any particular localized populations of Koali-'awa, and no adverse impact to the traditional Hawaiian use of Koali-'awa by the development of the project is anticipated.

General concern was expressed by some informants for the preservation of native plants in the project area and vicinity, particularly naupaka and Kamani. The primary concern here was that these plants serve to control coastal erosion.

River Resources

The project corridor crosses three streams of note which are Waika'ea Canal, Mo'ikeha Canal, and Kapa'a Stream. Informants spoke of utilizing the streams for recreation, sources of rocks for imu, and for fishing resources including 'oama (young goatfish), 'ōpae (shrimps), 'o'opu (Eleotridae and Gobiidae), 'ama'ama (mullet), small moi, and the historically introduced Samoan crabs, midaka (small fish), koi (carp) bass and frogs. While a common theme among informants was again the degradation of fishing in their own lifetimes due to the factors already identified, there was a widespread concern that further degradation of riparian environments should be avoided.

Development of the path project would appear to have a very limited potential impact on these riparian resources and might actually facilitate enforcement. Attention to minimizing impacts to streams during path construction and the maintenance of trash associated with path use should address these expressed concerns.

Sacred Sites

With the exception of burial sites and possibly the petroglyph site previously discussed, no religious or sacred sites have been designated within the project corridor. A detailed discussion of the heiau of Kapa'a and Kealia was presented in the archaeological inventory survey report. The exact locations of many of these former heiau are unknown.

The indicated locations of two of the heiau correlate with the locations of wahi pana which are known to be in the vicinity of the project area: Kuahiahi and Kaluluomō'ikeha. Kuahiahi is the rocky headland at the north end of Kapa'a where the first Kapa'a School was once located. Kaluluomō'ikeha is thought to be the general area near the Mo'ikeha Canal and the present day Coral Reef Hotel.

Recommendations

Consulted parties expressed concerns primarily over two issues: potential adverse impact to burials and potential adverse impact to marine and stream resources.

Iwi Kūpuna

The nature of the project is such that subsurface impacts should be relatively modest. A burial treatment plan to address the burial encountered at Kealia Beach and a monitoring program is recommended to mitigate potential impacts to ancestral remains (iwi kūpuna). The siting of any path amenities (comfort stations, parking lots) involving subsurface impacts should be located away from known burials and/or sandy deposits to the extent feasible to address these traditional cultural concerns. Thus, the siting of facilities at Kealia Beach away from the gravel parking area helps address this concern.

Close consultation should be initiated with the Kaua'i/Ni'ihau Islands Burial Council, the SHPD Burials Program, and any recognized lineal and cultural descendants in order to address these cultural concerns. Efforts to identify lineal and cultural descendants at this site should move forward

sooner rather than later so that any recognized lineal and cultural descendants may be part of the decision-making process for the known burial and any inadvertent finds that may occur during the project's construction. As a result, this effort should be conducted early in the project's design.

Marine and Riparian Resources

Several informants expressed concerns regarding possible impacts of the project to marine and riparian resources, primarily fish stocks. The perceived possible impacts appeared to be of two kinds: possible environmental degradation associated with the path's construction, and use and increased fishing pressure resulting from improved access.

Establishment of the path project would involve relatively little environment alteration since the existing path and cane haul road would be improved and utilized. Thus, efforts to minimize impacts such as run-off and erosion polluting the streams and coastline would address these traditional cultural concerns. Best management practices would be incorporated in the project's design and coordinated with agencies for review and approval to address these concerns. Design plans would also address improvements which do not impact native vegetation (naupaka, kamani, etc.) that may serve to curb erosion. Consideration would also be given to planting more native vegetation if and where appropriate for erosion control.

The impact of "trash" and "pollution" resulting from improved user access should be quite modest on impacting marine resources. But trash is the visible link between the forces of modernity (increasing population, disposable long-lasting litter) and environmental degradation. Therefore, the County would address such concerns through adequate maintenance of the path.

4.9 VISUAL RESOURCES

This section addresses the project's impact on visual resources in the project corridor. In order to examine the possible impacts, existing important visual resources in the Kapa'a and Kealia areas were identified. Visual resources consists of scenic resources such as major land forms, open spaces, viewing points, scenic drives, and other physical features that create the visual quality of the area.

Existing Visual Resources

The *Kauai General Plan (County 2000)* identifies important scenic resources such as major land forms, open spaces, viewing points, scenic drives, etc. Consequently, the Kawaihau Planning District Heritage Resources map was reviewed to identify such resources that may be affected by the project. Those resources identified include:

- Kuhio Highway was identified as a scenic roadway corridor from the Kealia Lookout up to Anahola.
- The coastline area makai of the highway was identified as open space generally from Kealia Beach north to Ahihi Point.
- There were no natural, historic, cultural, or scenic features within the study corridor that would be affected by the project.

Effects On Visual Resources

Non-development of the project would result in no change to the existing visual character of the project corridor which would continue to consist as is.

Development of the path project is not anticipated to have significant impacts on the view planes of the coastline from the highway nor adversely effect important public viewing points or visual resources. Path improvements would only involve widening the existing path in Kapa'a Town and improving the cane haul road. As a result, this improvement would not impact views from the highway or scenic views along the shoreline.

Guardrails provided along various sections of the path are needed for safety due to the path being located on elevated ridges overlooking the ocean. These guardrails should not negatively impact the view of the surrounding area. Furthermore, these sections of the path affected are situated either at lower elevations from the highway (Kapa'a Town to Kealia Lookout) or would not be seen from the highway (Kealia Kai Subdivision section).

Construction of path amenities such as pavilions or picnic shelters and comfort stations should not have an adverse effect on views of the shoreline from the highway. These facilities are relatively small in size and would be designed to be compatible with the surrounding environment and character. Heights of these facilities would be within the applicable zoning district standards.

4.10 COMPLIANCE WITH FEDERAL CONSULTATION REQUIREMENTS

Development of project would be Federally funded through the U.S. Department of Transportation, Federal Highway Administration. Consequently, this project is subject to various Federal regulations which need to be complied with. This section discusses the applicability and efforts which have been taken in complying with those pertinent requirements.

4.10.1 Section 106 Consultation, National Historic Preservation Act

This project is considered a Federal "undertaking" and is thus subject to Section 106 consultation under the National Historic Preservation Act, as amended (NHPA) (16 U.S.C. 470(f)). Section 106 consultation procedures are defined by the Advisory Council on Historic Preservation (ACHP) under their regulations 36 CFR Part 800, Protection of Historic Properties.

Section 106 consultation requires Federal agencies to take into account the effects of their undertakings on historic properties. The FHWA is serving as the Agency Official initiating this Section 106 consultation process for this project. The environmental review process was thus used to facilitate consultation efforts with consulting parties in assessing the project's impact on historic properties. The information provided in the published Draft EA was used to facilitate consultation efforts with consulting parties in assessing the project's impact on historic properties. Comments received on that Draft EA were considered in evaluating the project's effect on historic properties resulting in the completion of this Final EA document.

Identification And Consultation With Consulting Parties

Efforts were conducted to initiate consultation with several native Hawaiian organizations and pertinent government agencies which included the SHPD, Office of Hawaiian Affairs, Department of Hawaiian Home Lands, and Kauai/Niihau Islands Burial Council. A listing of native Hawaiian organizations was compiled based upon information obtained from the SHPD. Using this list, solicitation letters with project information were sent in August 7, 2002 to these parties giving them 30 days to provide any comments.

Public notice of the project and initiation of Section 106 consultation efforts was also published in The Garden Island newspaper on August 4, 2002. This notice was published in this local newspaper of general circulation on the Island of Kauai to notify the general public and other potential Hawaiian organizations of these consultation efforts being initiated.

On September 4, 2002, follow-up letters were again sent to those who didn't respond to the initial solicitation letter. These follow-up letters informed parties of the project, the forthcoming publication of the Draft EA document for public review, and whether they would like to receive a copy of the Draft EA. A few comment letters were received and copies of these responses along with memos of consultation with individuals are included in Appendix B of this document. Comments received identified no major issues, concerns, or opposition associated with the project or property in terms of archaeological or cultural matters.

A meeting with the County DPW, SHPD representative, Planning Department, and member of the burial council was also held in October 2002 to discuss the status of the County's efforts to implement preservation plan (burial treatment plan) measures for a cultural preserve established at Kuna Bay. Based upon this meeting, it was recommended that implementation of the preservation plan be included along with developing a long-term preservation plan for other identified historic sites within the Kealia Kai Subdivision area in the vicinity of the project. The County has decided to incorporate these items with this project as recommended.

Kauai/Niihau Islands Burial Council Presentation

A presentation was made to the Kauai/Niihau Islands Burial Council on August 21, 2002 to provide them information on the project and solicit their input as part of this Section 106 consultation process. A discussion of comments received along with County plans to address them is provided in Section 9.3 of this document.

In summary, comments received touched upon: 1) the status of County's plans for implementing preservation measures at Kuna Bay, 2) funding for this project, 3) minimizing effects on burials from the path and comfort stations, and 4) effects on illegal parking currently occurring near the existing cane haul road at Kealia Beach. The project's design and implementation would include measures to address these concerns, and involve continued coordination with the island burial council.

Kauai Historic Preservation Review Commission Meeting

A presentation before the Kauai Historic Preservation Review Commission was held on September 5, 2002 as part of Section 106 consultation efforts. A briefing on the project was provided and comments from Commission members were obtained. A discussion of comments received along with County plans to address them is provided in Section 9.3 of this document.

Comments received touched upon: 1) whether bridge improvements would meet Federal standards, 2) changes to bridge structures, incorporating the historical integrity, and providing information on this in the environmental assessment, 3) status of County's plans for implementing preservation measures at Kuna Bay, 4) archaeological monitoring of construction activities, and 5) providing interpretive signage along the path. The Commission moved and agreed to accept the project in concept at this time. A summary of their comments is provided in a memo from the Planning Department included in Appendix B.

Consultation with Publication of Draft EA

Copies of the Draft EA document were provided to several Hawaiian organizations. All comment letters and responses received along with memos of consultation with individuals are included in Appendix B of this document. Based upon the comments received from these consultation efforts along with the publication of the Draft EA, no major issues or concerns associated with the project were raised.

Identification Of Historic Properties And Assessment

Section 4.8 discussed the results of archaeological inventory survey conducted for the project within the study corridor. Other archaeological studies conducted within the study corridor were also incorporated. The "area of potential effects" was determined to consist of the study corridor along the proposed path. This corridor includes the area from the shoreline up to properties immediately mauka (inland) of the existing path through the Kapa'a Town section. Within the Kealia Beach section, this corridor includes the area from the shoreline up to Kuhio Highway. Within the Kealia Kai Subdivision section, the corridor includes the area from the shoreline up to the cane haul road area. The public shoreline access from the highway to the cane haul road within this subdivision was also included.

The inventory survey results determined that there were several historic sites present within this study corridor and area of potential effects. These properties included features such as cultural deposits, human burials, World War II era features, and plantation era features primarily associated with the cane haul road. Section 4.8 discussed these features in greater detail.

The inventory survey work conducted for these sites, along with previously identified sites reported from other surveys, determined that most of the sites affected had all the available information collected, and no further work was required. However, there were some sites identified which may require further work such as data recovery, burial treatment plan, archaeological monitoring plan, and archival documentation (HAER).

Determination On Historic Properties

Various mitigative measures are planned to be implemented as part of this project's design phase and construction as identified in Section 4.8. This would include continued consultation with the SHPD, island burial council, and historic preservation review commission to keep them apprised of the project and mitigation measures being implemented.

Based upon consultation with the SHPD, a Memorandum of Agreement, or MOA, was required to make sure necessary mitigative measures would be implemented to avoid adverse effects on historic properties. Consequently, a Memorandum of Agreement has been developed and executed which includes stipulations identifying mitigative measures to be implemented as shown in Appendix B. This MOA was developed in consultation with and review by pertinent parties which included the SHPD, island burial council, Kauai Historic Preservation Review Commission, and State Office of Hawaiian Affairs.

4.10.2 Section 7 Consultation, Endangered Species Act

This project is considered a Federal "action" and is thus subject to Section 7 consultation under the Endangered Species Act, as amended November 1988 (ESA). This project is not considered a "major construction activity" and "informal consultation" is being conducted with the U.S. Fish and Wildlife Service (FWS) under these requirements. This consultation is being conducted to ensure that the project is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

Consultation efforts conducted with the FWS have included: 1) transmitting a pre-assessment consultation letter as part of the Draft EA's preparation asking for any comments on the project, and 2) providing a letter dated August 8, 2002 requesting information clarifying the presence of listed species and designated critical habitat that may be affected by the project under the informal consultation process. This letter also included copies of the preliminary botanical and faunal studies for their review and information. A comment letter received from the FWS, dated September 26, 2002, indicated they didn't have any more information on known threatened or endangered plant species within the study corridor.

A Draft EA was also provided to the FWS and National Marine Fisheries Service (NMFS) for their review and comments as part of the State's environmental review process. The information helped facilitate consultation efforts with FWS in assessing the project's impact. No comments were received from the FWS or NMFS on the Draft EA.

Preliminary Assessment Of Effects

Sections 4.4 and 4.5 discussed the results of botanical and faunal studies conducted for the project within the study corridor. The botanical study determined that the project would not have a significant negative impact on botanical resources present. None of the plants identified were a threatened or endangered species, or a species of concern.

Existing mammalian species present within the study corridor are not expected to be significantly affected. The majority of mammals present consist of alien species such as rodents or feral animals which are harmful to native avian and plant communities. Hawaiian hoary bats do occur along this coastline and possibly foraging for resources within these areas. These bats are uniquely adapted to avoid collision with man-made and natural obstacles by navigating and locating their prey using ultrasonic echolocation. Therefore, development of the path and amenities should not have a significant negative impact on this species which may continue to forage for rodents and insects present along this coastline.

Development of the project was similarly not expected to have a significant negative impact on the avian species identified to occur within this coastline area. The majority of species present along the corridor were alien species (71% of total recorded) consisting of the Zebra Dove, Common Myna, House Finch, and House Sparrow. The Dark-rumped Petrels and Newell's Shearwaters do occur along this shoreline corridor. The potential impact that this project poses is the increased threat that these birds could be downed after becoming disoriented by exterior lighting that may be required in conjunction with the complexes. To reduce the potential for interactions between these birds with external lights and man-made structures, it is proposed that any external lighting planned be shielded.

Determination On Endangered Species

The FWS and NMFS were provided information on this project to evaluate the effects which may be beneficial, insignificant, or discountable as part of their responsibilities under Section 7 of the ESA. No federally endangered, threatened, or candidate species, significant wetlands, or other Federal trust resources under their jurisdiction occur at the project site or would be negatively impacted by the project. Based upon these study results, the project should not jeopardize the continued existence of listed species identified to occur within the overall project area.

For the Dark-Rumped Petrels and Newell's Shearwaters present along this coastline, external lighting associated with man-made structures (ex. comfort station) would be shielded. The guidelines published by the State DLNR to address light problems for Shearwaters would be incorporated into the project's design for pertinent structures to avoid harm to these species. Based upon these study results, consultation efforts, and implementation of mitigative measures, a finding that no federally listed species are likely to be affected by the proposed project is warranted.

4.10.3 Executive Order 11990 Protection Of Wetlands

Executive Order 11990 was issued to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. This Order requires Federal agencies, in their planning actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The botanical survey conducted of the project site determined that there were no wetlands present within the study corridor that would be affected by the project improvements. Consequently, the project would not affect or result in the loss or destruction of wetland.

4.10.4 Executive Order 11988 Floodplain Management

Executive Order 11988 requires Federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains. It also requires agencies to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. The path corridor is along the shoreline and subsequently located within designated floodplains based upon the FIRM for the area. As discussed in section 4.2 of this document, the planned improvements should not have a significant impact on these floodplains nor would it significantly alter floodplains located in the surrounding area.

These improvements would generally consist of widening the existing paved path in Kapa'a Town, improving the existing cane haul road, and renovating existing bridges. No structures would be located on this path with the exception of bridge improvements. The final design of bridge improvements would need to be coordinated with the U.S. Corps of Engineers and County which includes obtaining Department of Army permits. Due to the path being located along with shoreline, there are no downstream structures of uses of concern which may be negatively affected by these improvements. Therefore, the path should not significantly contribute to increased damages from such a hazard event.

Facilities planned at Kealia Beach Park would be sited outside of the floodway as designated on the FIRMs which generally tends to reach up to the cane haul road in this area. As a result, these structures would contribute to or negatively impact designated floodways in this area.

At Lihi Park, the entire park site and surrounding homes are located within the floodway as indicated on the FIRM. As a result, structures designed for this park would need to assess and evaluate flood conditions as part of the design requirements. Due to the size and type of structures proposed, they are not expected to have a significant impact on this floodway.

4.10.5 Coastal Zone Management Act

The Coastal Zone Management Act (CZM Act) encourages the management of coastal areas and provides grants for maintaining coastal zone areas. It requires Federal agencies to be consistent with the enforceable policies of state coastal zone management programs when conducting activities affecting a coastal zone. It is intended to ensure that Federal activities are consistent with state programs for the protection and, where possible, enhancement of the nation's coastal zones.

The State's Coastal Zone Management policies and regulations are prescribed under Chapter 205A, HRS. The coastal zone management area is defined to include all lands of the State and the area extending seaward from the shoreline to the limit of the State's management authority. As a result, the project corridor is within this CZM area and subject to being consistent with the CZM program objectives and policies. In summary, the project would be consistent with these objectives and policies as discussed later in this document under the chapter covering the project's consistency with plans and policies.

4.10.6 Section 4(f) Evaluation of the DOT Act

Section 4(f) of the Department of Transportation Act 49 U.S.C. 303 and 23 U.S.C. 138 (referred to as Section 4(f)) permits the use of publicly owned park land, recreational area, wildlife and waterfowl refuge, or land of an historic site for a transportation project only if: 1) there is no prudent and feasible alternative to using that land; and 2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use. The purpose for this Section 4(f) requirement is to preserve significant parkland recreation areas, refuges, and historic and archaeological sites by limiting the circumstances under which such land can be used for transportation projects.

When a project uses resources protected by Section 4(f), an evaluation must be prepared which evaluates alternatives. The intent is to demonstrate that there is no feasible and prudent alternative to the use of the Section 4(f) resource. Thus, the alternatives evaluation should address location alternatives and design shifts that avoid the resource or lands. Supporting information must demonstrate that such alternatives result in unique problems such as unusual factors or when the costs or community disruption reach extraordinary magnitude. The term "use" applies when:

- Land is permanently incorporated into a transportation facility;
- There is a temporary occupancy of land that is adverse in terms of preservation of the resource; or
- The project's proximity to the site substantially impairs those functions that qualify the site as a Section 4(f) resource even though no land is permanently or temporarily acquired (constructive use).

Description of Section 4(f) Resources

The proposed project would be located a shoreline corridor that has several Section 4(f) resources present. Since the improvements are recreational in nature within the County's shoreline property, they would inevitably involve the use of various recreational facilities and park land.

These recreational lands and resources are described in greater detail under Section 2.3 (existing surrounding uses) and Section 7.2 (recreational facilities). In addition, there are several archaeological and historic sites present within the study corridor which may be affected by the project's improvements. These sites were described in greater detail under Section 4.8 (historic, archaeological and cultural resources). Figures 4.3 and 4.4 graphically identify these resources within the project corridor.

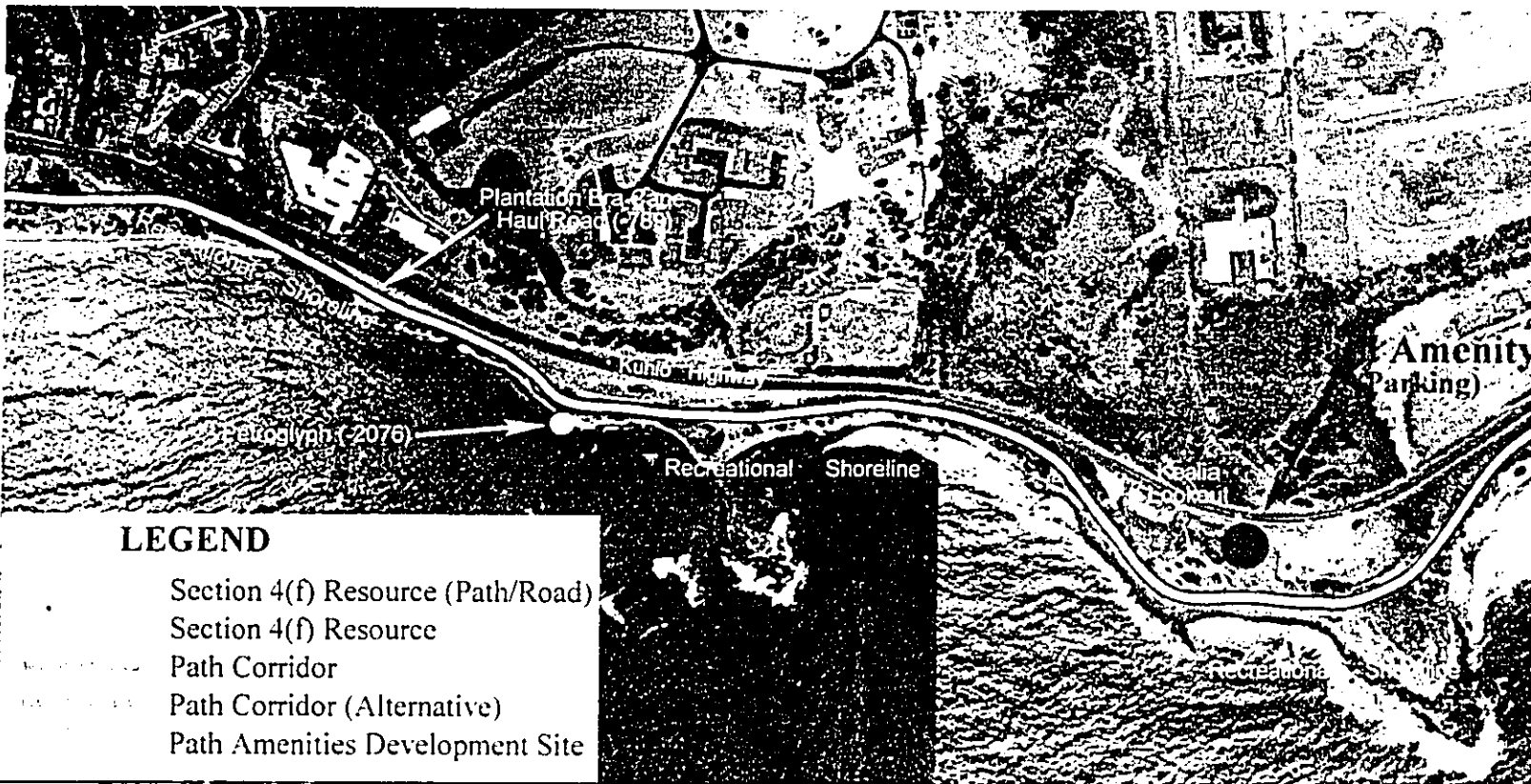
Recreational Resources

Recreational resources within the project corridor that would be affected by the project include park sites and other facilities which are listed below by study corridor sections.

Kapa'a Town Segment

- Waika'ea Canal boat launch facility
- Waika'ea Canal Bridge used as part of the existing path
- Lihi Park

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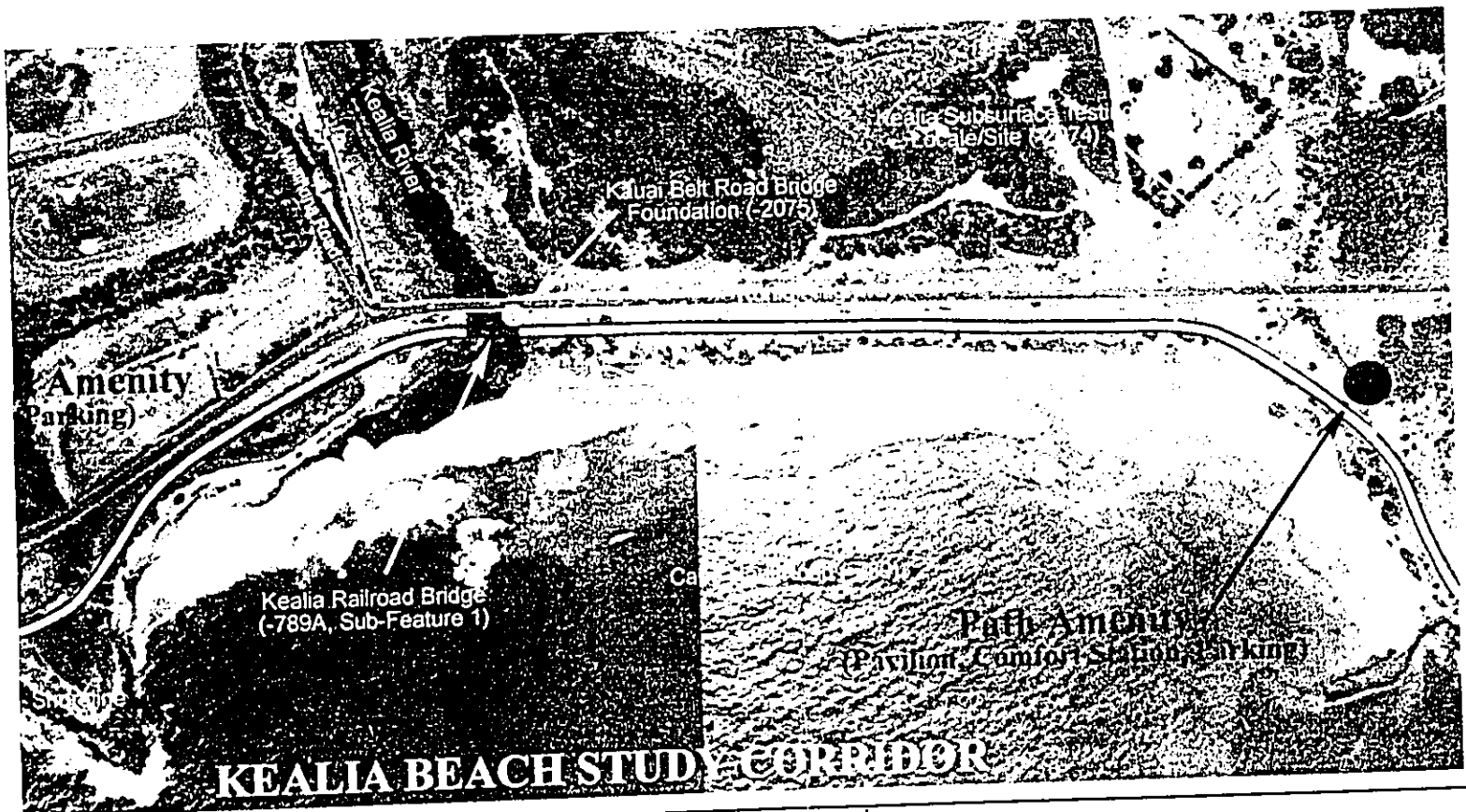
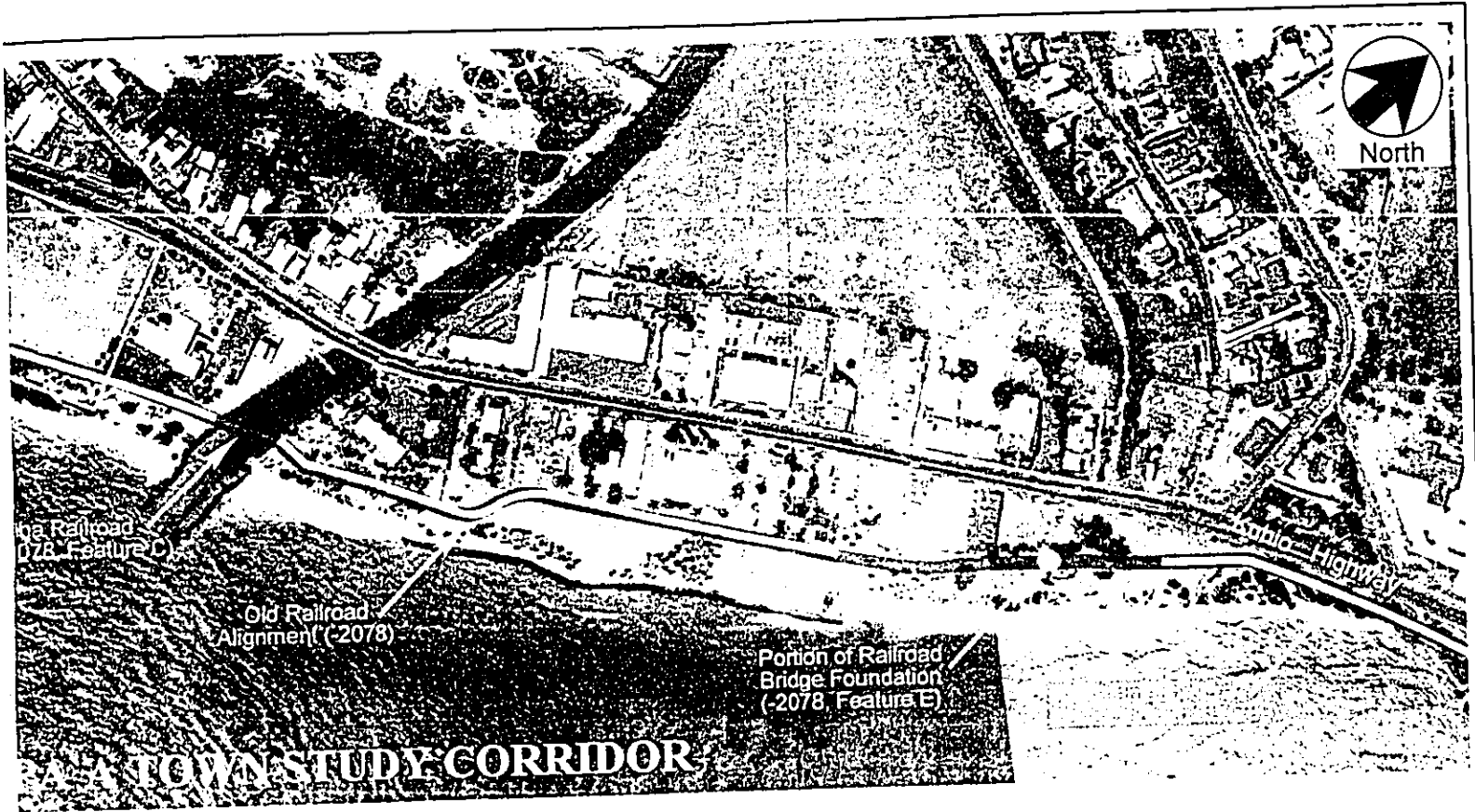


LEGEND

- Section 4(f) Resource (Path/Road)
- Section 4(f) Resource
- Path Corridor
- Path Corridor (Alternative)
- Path Amenities Development Site

SECTION 4(f) RESOURCES WITHIN KAPA'A AND KEALIA BEACH STUDY CORRIDOR

*Kapaa-Kealia Bike & Pedestrian Basis of Design Project
County of Kauai, Department of Public Works*



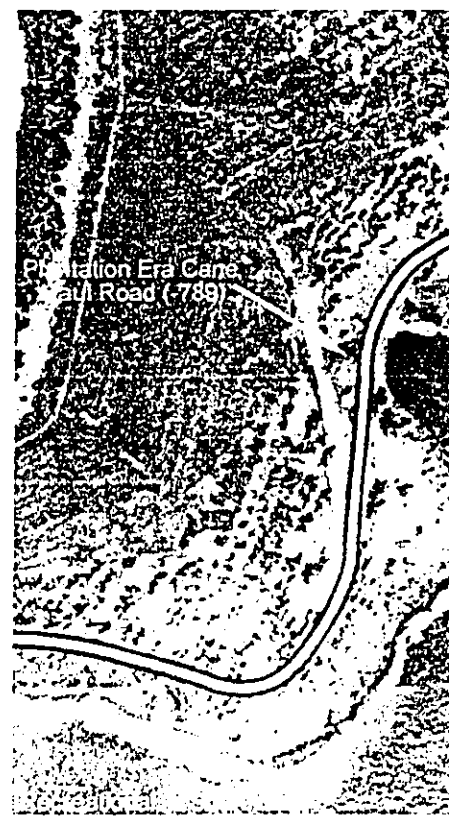
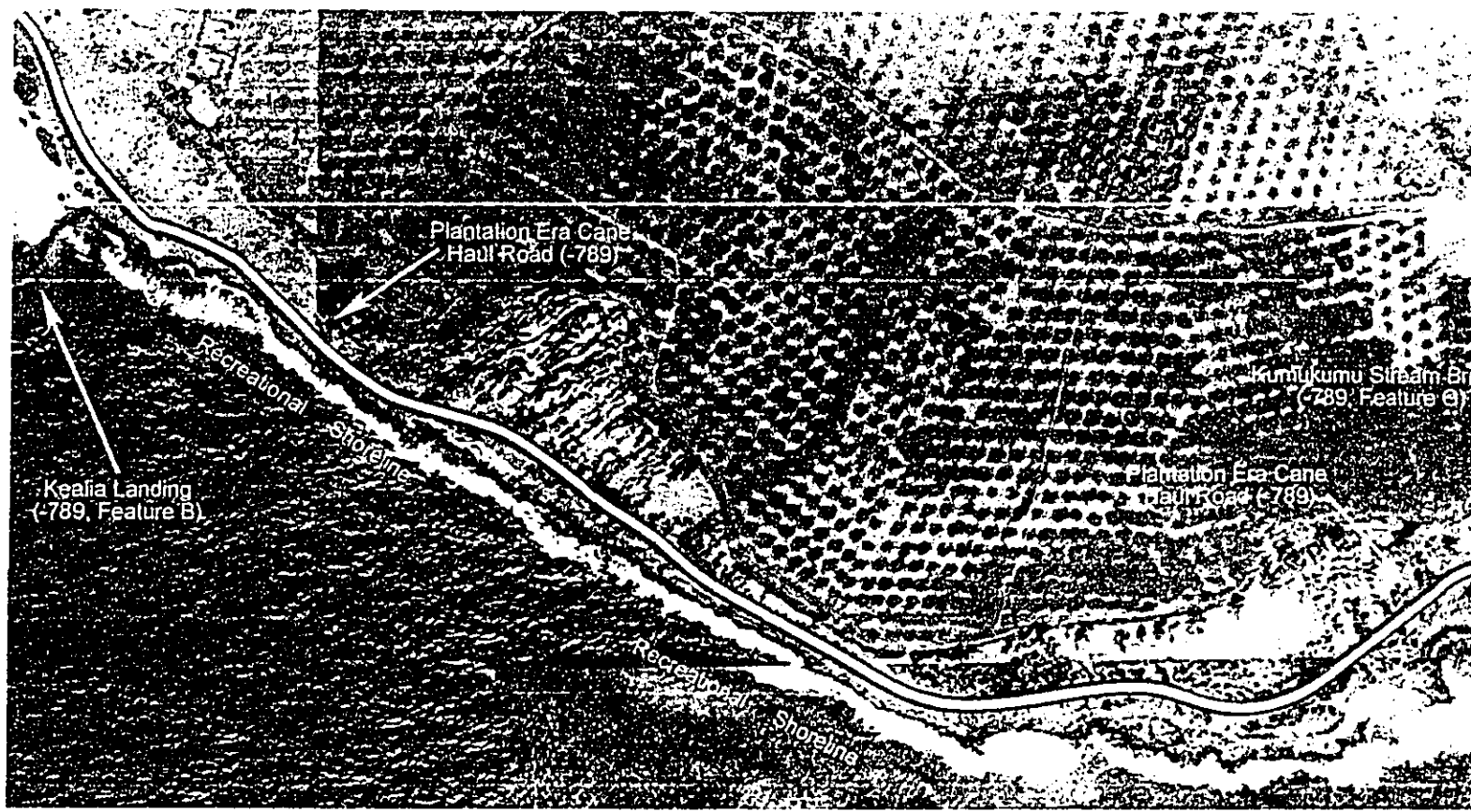
**KAPA'A TOWN
CORRIDORS**

Source:
Cultural Surveys Hawaii, Inc.

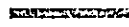
FIGURE 4.3



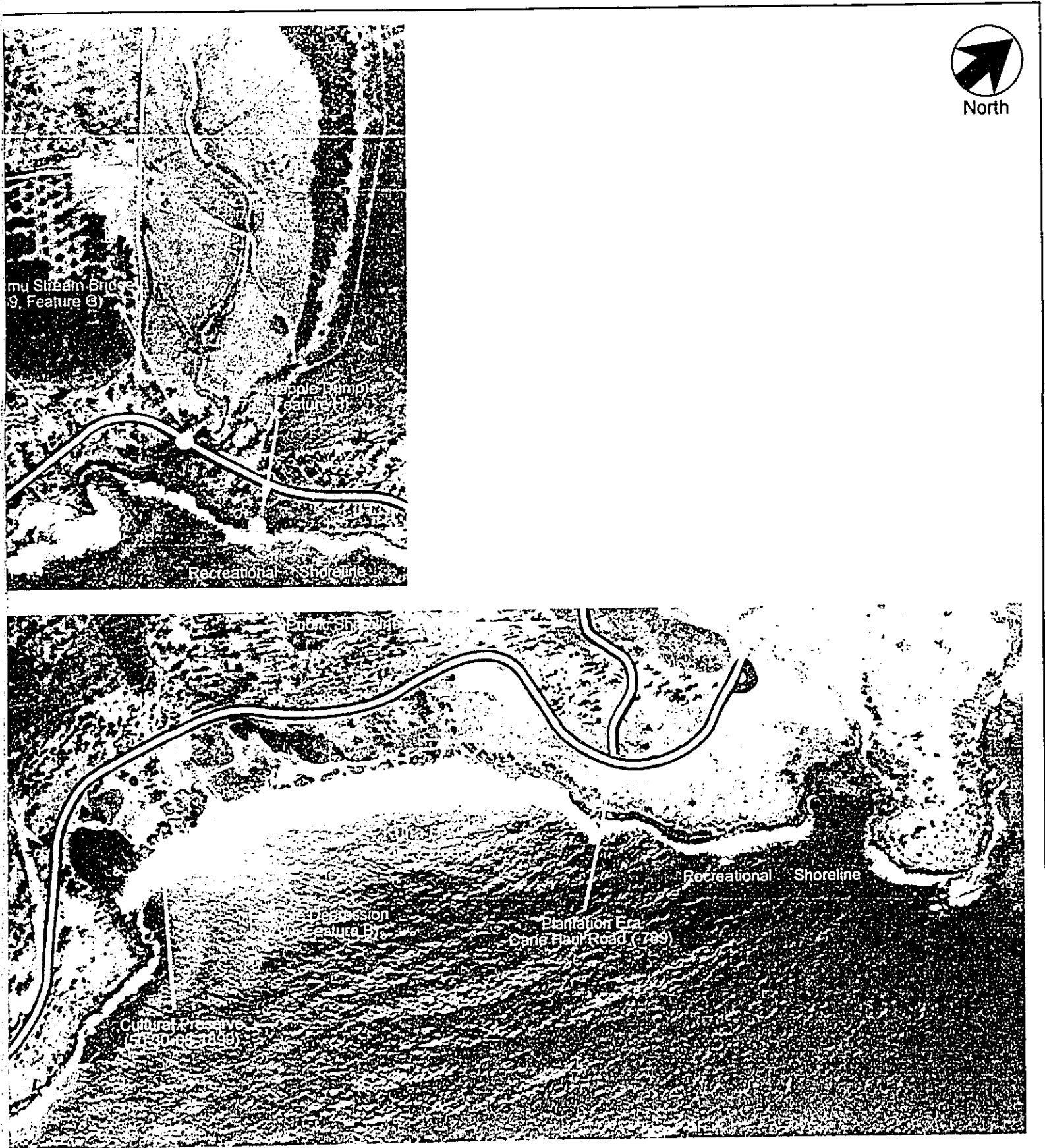
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LEGEND

- Section 4(f) Resource (Path/Road)
- Section 4(f) Resource
-  Path Corridor

SECTION 4(f) RESOURCES WITHIN KEALIA KAI SUBDIVISION



BDIVISION STUDY CORRIDOR

FIGURE 4.4

Source:
Cultural Surveys Hawaii, Inc.



- Kapa'a Beach Park
- Kapa'a Beach Park
- Mo'ikeha Canal Bridge used as part of the existing path

Kealia Beach Segment

- Shoreline from Kapa'a Town up to Kealia Beach
- Kealia Lookout
- Kapaa Stream Bridge used as part of the existing path
- Kealia Beach Park

Kealia Kai Subdivision Segment

- Shoreline from Kealia Beach up to Kuna Bay
- Kuna Bay (Donkey Beach)
- Shoreline from Kuna Bay up to Ahihi Point
- Public shoreline access and parking within Kealia Kai Subdivision

Kapaa Beach Park has been identified as a property that has been developed with grants through the Land and Water Conservation Fund Act which is used to acquire or improve parks and recreation areas. Section 6(f) of the DOT Act prohibits the conversion of such property to a non-recreational purpose unless replacement lands are provided of equal value, location and usefulness. The proposed improvements will not conflict with Section 6(f) because it would not involve replacing portions of Kapaa Beach Park with a non-recreational use. Improvements planned within this beach park would enhance and support existing recreational activities.

Historic and Archaeological Sites

Historic and archaeological resources within the project corridor that may be affected would include the following sites which are listed below.

1. Site # 50-30-08-789 refers to the plantation-era Cane Haul Road (this cane haul road is located throughout the entire study corridor).
 - Feature A (Kapaa Stream Bridge)
 - Feature B (Kealia Landing)
 - Feature G (Kumukumu Stream Bridge)
 - Feature H (Pier)
 - Feature I (Homaikawaa Stream Bridge)
2. Site # 50-30-08-790, Feature B consists of a World War II era foxhole depression situated about 8 meters makai of the existing cane haul road.
3. Site # 50-30-08-1899 designated as a cultural preserve near Kuna Bay (Donkey Beach)
4. Site # 50-30-08-2074 which is a cultural layer at Kealia Beach
 - Feature A (Human Burial)
5. Site # 50-30-08-2075 which is the old Kaua'i Belt Highway Bridge foundation.
6. Site # 50-30-08-2076 which is a petroglyph along the shoreline
7. Site # 50-30-08-2077 which is concrete steps at Kapa'a Beach Park

8. Site # 50-30-08-2078 which is remnants of the old railroad alignment
 - Feature A (Waika'ea Railroad Bridge)
 - Feature C (Mo'ikeha Railroad Bridge)
 - Feature E (Portion of railroad bridge foundation)

Alternatives to Proposed Action

The proposed route of the multi-use path is using the existing paved path and cane haul road (Site #50-30-08-789 and Site #50-30-08-2078) since this path is already established and used by the public. This action would also be located within existing beach park sites (Kapa'a Beach Park, Kealia Beach Park) and other open shoreline park areas which are used for various recreational activities. Archaeological sites are also located along this route.

Alternatives to this path route specifically for this Section 4(f) evaluation were considered which included avoiding use of this path, shoreline and beach park areas, and archaeological sites along the path. However, these alternatives were eliminated from consideration because they were not practicable and would result in unique problems for the County in terms of costs and impacts to the community and environment.

The No Action alternative was eliminated because it would not meet the County's purpose and need for this project which are: 1) to improve the existing path route so that it can become more accessible to a variety of users, 2) make this path safer for users due to its deteriorating condition, 3) provide sufficient right-of-way to accommodate multiple uses, and 4) provide an alternative transportation route for bicyclists within the study corridor. As discussed in Chapter 2, improvements are subsequently needed in order to provide safer conditions and make the path more accessible to individuals of different skill levels and age. Maintenance activities of the existing path route would not be sufficient to address existing deficiencies and provide the necessary conditions to meet the project's need and objectives.

Alternatives to avoid use of the existing path or County-owned property along the shoreline were also considered and eliminated as discussed below.

1. Alternative A - Kuhio Highway Path Route. This would establish a path along Kuhio Highway from Lihi Park up to Ahihi Point. This alternative was eliminated because Kuhio Highway within Kapa'a Town does not have any available right-of-way to support a 12-foot-wide path. To establish such a path would require widening the highway and displacing many homes and businesses causing significant impact and construction costs. These properties are privately owned and would need to be acquired by the County. North of Kapa'a Town, there is available undeveloped land, however, this is all privately owned and would also need to be acquired at considerable costs.
2. Alternative B - Alternative Path Route Along Shoreline. This alternative would involve creating another path route within the County's property along the shoreline for use as a path and avoid using the existing paved path and cane haul road. This was eliminated

because there are several sections along the route close to the shoreline which do not have sufficient right-of-way to allow for another path. Sections north of Kapa'a Town to the Kealia Lookout and from Kealia Beach to Kumukumu Stream do not have enough area. New bridges would also need to be created crossing Waika'ea Canal, Mo'ikeha Canal, Kapaa Stream, and Kumukumu Stream to accommodate another path at substantial costs and impact to the areas affected.

Efforts to Minimize Harm to Resources

Consequently, use of the existing paved path and cane haul road is the most logical and reasonably practicable alternative. The path and cane haul road are already being used as a bike and pedestrian path. Furthermore, the plans would improve and enhance these existing paths so that they can be better used by the public and be made available to a wider range of users. Path improvements would have the least harm to the environment and other Section 4(f) resources such as park areas and historic sites. Under a FHWA Memorandum (HEV-11), dated May 23, 1977, bikeway and pedestrian projects such as this proposed project are covered under a negative declaration / Section 4(f) statement and determination.

The project will also include repair and renovation work affecting some historic bridges. These bridges are: 1) Waikaea Canal Bridge, 2) Moikeha Canal Bridge, and 3) Kapaa Stream Bridge. Kumukumu Stream Bridge was identified as a historic site, but requires "no further work" or mitigation since it has been washed out necessitating the need for a new bridge being built.

As discussed in Chapter 2, improvements to these bridges will require repair work for deteriorating piers or other associated structures. Rehabilitation of these former cane haul bridges would not be feasible since their decks need to be renovated to accommodate path users. Furthermore, some of these existing decks have already been modified from their original historic structure. Mitigative measures to be implemented for these bridges have been developed as stipulated under the executed MOA. Historic bridges for this project are covered under a programmatic Section 4(f) determination and approval with FHWA as indicated in Appendix B.

The Kapaa-Kealia proposed improvements, design concepts, probable impacts, and mitigative measures proposed were also reviewed and evaluated independently as part of this project's environmental review process. Consequently, these improvements are consistent with the County's designated use of the coastline properties. Furthermore, planning and consultation with agencies have been conducted to minimize harm to Section 4(f) resources as documented in this document. Therefore, the improvements proposed within these Section 4(f) resources are the most prudent and feasible alternative, and considerable planning efforts and agency coordination have been taken to minimize harm to these resources.

CHAPTER 5 ECONOMIC AND SOCIAL FACTORS

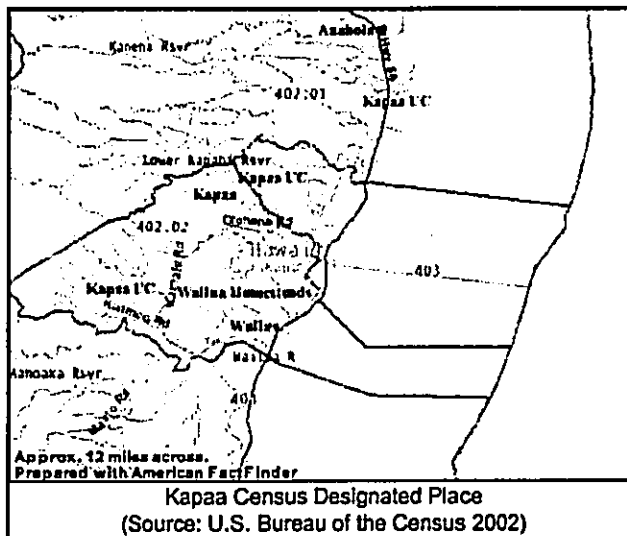
This chapter discusses the project's probable impact on economic and fiscal factors associated with the State and County, as well as social factors such as changes in resident population, housing, and character of the community.

5.1 EXISTING SOCIAL AND ECONOMIC CONTEXT

Kapa'a is a historic town noted for its "western plantation style architecture and walk able, small town character." As an agricultural town, Kapa'a was primarily a sugar cane plantation town, and today has become a commercial center for the island's east side. Both locals and tourists utilize the Kapa'a area, with many small businesses thriving due to the high patronage of local community members and tourists that frequent the area.

5.1.1 Population and Demography

The County of Kauai has a total population of 58,463 persons based upon the recent 2000 Census data. Kapa'a is the County's second most populous town, behind Wailua. In 2000, the Kapa'a Census Designated Place (CDP) had a total population of 9,472 persons. The Kapa'a CDP has 3,129 households and the median age of residents is 35.2 years, which is slightly lower than the County (38.4 years), and the State (36.2 years). Table 5.1 provides more data on the demography of the Kapa'a CDP in relation to both the County and State. Ethnically, Kauai County's population is mixed, like the rest of the State. However, persons with Asian and Caucasian ancestry are especially numerous representing 31.7 percent and 27.8 percent of the population, respectively.



5.1.2 Housing

The housing stock for the Kapa'a CDP presently accounts for a little over 14 percent (3,362 units) of the County total and about 0.7 percent of the State total. Table 5.2 shows housing information for this CDP along with the entire County. This Kapa'a CDP has a higher percentage of occupied housing than the overall County at about 86 percent. This situation is largely because visitor units form only a small part of the housing stock (as indicated by the Census category "Vacant for seasonal or recreational use"). Kapa'a CDP and Kauai County household sizes are small compared to the State, due in part to the overall aging of the local population.

Description	Kapa'a CDP		Kauai County		State of Hawaii	
	No.	%	No.	%	No.	%
Total Population	9,472		58,463		1,211,537	
Age:						
0 - 5 years	655	7.0%	3,605	6.1%	78,163	6.5%
5 - 19 years	9,143	25.3%	13,147	22.5%	249,088	20.6%
20 - 64 years	22,492	57.3%	33,642	57.5%	723,685	59.7%
65 + years	6,823	10.4%	8,069	13.8%	160,601	13.3%
Median Age	35.2 years		38.4 years		36.2 years	
Persons in Households	9,352		57,831		1,175,755	
Persons in General/Group Quarters	120		632		35,782	
No. of Households	3,129		20,183		403,240	
No. of Persons Living Alone	638		4,321		88,153	
Average Family Size	3.44		3.34		3.42	
Average Household Size	2.99		2.87		2.92	

Source: U.S. Census, Bureau, Census 2000

Description	Kapa'a CDP	Kauai County	State of Hawaii
Housing Stock	3,632	25,331	460,542
Occupied Units	3,129	20,183	403,240
Percent occupied	86.2%	79.7%	87.6%
Vacant	503	5,148	57,302
For seasonal use, etc.	292	3,850	25,584
Percent for seasonal use	9.3%	19.1%	5.6%
Rental Vacancy Rate	4.6%	6.1%	8.2%
Owner-occupied Units	1,728	12,384	227,888
(Percent of occupied units)	55.2%	61.4%	56.5%
Average population			
Per household	2.99	2.87	2.92
Family	3.44	3.34	3.42

Source: U.S. Census Bureau, Census 2000

5.1.3 Economy

Kauai County has transformed over time from a plantation economy to a mixed one. Tourism, diversified agriculture, construction, and local small businesses have replaced sugar as the basis of the economy. Kapa'a does not have its own harbor or airport. However, the island's main harbor of Nawiliwili and the primary airport in Lihue service the entire island, and is in close proximity to Kapa'a. Unemployment in the County of Kauai is currently about 5.4 percent (DLIR 2002).

Industries

The largest industries in terms of jobs are in trade (retail and wholesale) and services. Hotels accounted for some 3,800 jobs in June 2002, while eating and drinking establishments accounted for 3,100 jobs. Agriculture on the other hand accounted for approximately 600 jobs County-wide as of June 2002.

In a study completed by the State Department of Labor and Industrial Relations, it was projected that by the year 2008, service and production occupational groups will account for approximately 50 percent of the total projected job growth for the County, whereas agricultural occupation, including forestry and fishing, will lose ground. It is projected that the service industry will post the highest gains in terms of job openings.

Income

Personal income of County residents has been increasing over time, but not as fast as the State as a whole. The per capita disposable personal income level for residents of the County has fallen below income levels for the State as a whole since the mid-1970s. Since that time, this gap has also slowly widened where it is now about \$8,000 lower to approximately \$28,000 for the State and \$20,000 for the County.

The 2000 Hawaii Health Survey indicated that 21.9 percent of the County population was below the poverty line, while only 14.1 percent of the statewide population was. The same source indicated the median household income in the County as 78.0 percent of the State's median. The State median household income was \$41,137 while the County was \$32,084. Both the extremely low- and low- income groups (up to \$30,000) also form a much larger share of the County population than for the State as a whole.

5.2 ECONOMIC AND FISCAL FACTORS

This section discusses both the short and long-term effects of the project on both the County and State's economic and fiscal factors. Development of the bicycle/pedestrian path will have different impacts in relation to the County of Kauai and the State of Hawaii. In discussions of jobs and income, three broad types are distinguished:

- *Direct* jobs are immediately involved with construction of a project or with its operations.
- *Indirect* jobs are created as businesses directly involved with a project purchase goods and services in the local economy.
- *Induced* jobs are created as workers spend their income for goods and services.

Given the nature of this project, the main economic effect of the project would be construction related such as new construction jobs and income. The path and project amenities developed would not generate new direct operational jobs as compared to new commercial or retail developments.

The County may require a few additional maintenance staff under their division of parks and recreation to assist current staff with maintenance activities in this district. However, the need for additional staffing would primarily be associated with the maintenance of path amenities such as comfort stations and pavilions constructed. This would only occur at Lihi Park, Kealia Beach Park, and the public parking area at Kealia Kai Subdivision if the alternative plans being considered are implemented. The path may require additional full-time County personnel since it would require some periodic maintenance. Consequently, perhaps one or two additional staff may be required. This small number should not have a significant impact on the County's economic condition.

5.2.1 Construction Related Employment And Income

No Action Alternative

Under this alternative, the proposed project would not be constructed. As a result, there would be no additional construction jobs or income generated for County residents.

Project Effects

Construction of the project should have a positive economic impact associated with the creation of short-term construction related jobs over a few years. The preliminary estimated construction cost for the project was estimated to be approximately \$10.7 million. However, construction costs would vary depending upon the design plans developed by the selected design/build construction design team.

Construction of the path and selected path amenities would create several short-term construction jobs over a few years (estimated 36 months) for the entire project. Construction is scheduled to begin in 2004, with the first phase of the path beginning from the Ahihi Point area and working southbound to Kealia Beach and then through Kapa'a Town.

Construction Jobs

Direct construction jobs would typically consist of on-site laborers, tradesmen, mechanical operators, supervisors, etc. These new jobs created would also generate additional personal income for construction workers. Personal income is defined as the wages paid to the direct construction workers or operational employees associated with a development. It is anticipated that these construction jobs would likely be filled by residents from the Island of Kauai employed within the construction industry. Direct construction jobs created would also stimulate indirect and induced employment within other industries on the island such as retail, restaurants, material distributors, and other related businesses supporting the construction industry.

Based upon the construction budget and 3-year time frame for completion, it was estimated that the project would create a total of about 80 direct new jobs over the entire construction period resulting in about 25 to 27 new direct construction jobs annually. This would generate a total of another approximately 100 indirect and induced jobs over the entire construction period or about 32 to 34 jobs annually. Thus, a total employment impact of about 57 to 61 jobs annually (direct, indirect, induced) would be generated by this project, or approximately 180 total over the entire

construction period. These jobs would create a relatively small but positive impact in employment for the island as well as state-wide.

Construction Personal Income

These new construction jobs would generate additional personal income for construction workers totaling approximately \$1.29 million per year or \$3.88 million over the entire project. Personal income is defined as the wages paid to the direct construction workers associated with a development. It is anticipated that these construction jobs would likely be filled by residents of the island of Kauai or within the State employed within the construction industry. Indirect and induced income would also be generated on the order of \$1.13 million a year, or \$3.38 million over the entire project. This additional income would have a minor positive impact to County and State residents.

5.2.2 Fiscal Factors

Under the No Action Alternative, there would be no major change to government revenues and expenditures associated with the project since the existing path, cane haul road, and park sites would remain as is. Consequently, fiscal impacts discussed in this section are focused primarily on the impacts associated with the project which are construction related.

Fiscal impacts associated with this project would primarily involve some additional tax revenue generated to the State. Tax revenue sources for State government are composed primarily of general excise taxes (GET) on development costs and construction materials, along with corporate income tax. In addition, GET taxes on indirect and induced income spent stimulated by the spending of direct income would also contribute new revenues to the State. Thus, these tax revenues are one-time or short-term increases in revenue since they are only associated with construction activities. The \$10.7 million construction budget expended by the County for construction of the project would therefore generate a minor positive increase in tax revenue to the State.

County revenues are primarily limited to tax revenues on privately-owned property and improvements. This project is therefore expected to have minimal effect on the current or future levels of County tax revenues being generated. The improvements planned would all occur within County property, thus, there would continue to be no property taxes generated from these lands. This project is not expected to generate any new in-migrant residents to the Island of Kauai to fill short-term construction related jobs. Thus, there would not be any impact on State and County operational expenditures for public services serving this community and surrounding areas.

5.3 SOCIAL IMPACT FACTORS

5.3.1 Population and Housing

Under the No Action alternative, the County's resident population was projected to increase over time up to between 65,260 (low) to 74,320 (high) persons by the year 2020 (Planning Department 2000). Without the path improvements, there would be no effect on the projected resident population growth or corresponding increased housing units.

Similarly, with the proposed project, the improvements to the path and amenity alternatives being considered would not have a significant effect on this projected resident population growth and corresponding housing units. The project would not generate any new in-migrant residents to the Island of Kauai affecting the future population growth trends projected. Improvements planned would all be within the County's existing property, so there would be no acquisition of private property or homes affected by this project.

The improvements would make the Kapa'a to Kealia shoreline corridor more attractive in terms of available recreational facilities and activities for area residents. However, this feature alone is not expected to have a significant affect in influencing the relocation or in-migration of new persons to the island from other islands within the State or outside the State of Hawaii.

The proposed improvements would not result in a disproportionately high impact on minority populations or low-income populations in the study corridor. This includes short-term construction related effects, long-term, and cumulative effects as discussed in various sections of this document. Consequently, this project would be consistent with Executive Order 12898 regarding Environmental Justice. The path improvements would not require the acquisition or displacement of any homes and the associated effects on resident populations from such actions. The path and amenity improvements would be available to the general public for use since it is located within County property, and would be designed to meet ADA standards opening the use of this facility to a wider range of people of various age, gender, and abilities.

5.3.2 Project Effect on Community Character

This recreational project is not expected to significantly impact the existing character of this Kapa'a and Kealia community. The improvements are intended to support the various recreational activities that are already occurring along this shoreline. It would also make the path safer for public use, and create opportunities for a wider range of the public (children, families, handicap, etc.) to utilize these resources and facilities.

The types of improvements planned would be relatively minor size and scale in changing the existing conditions along the shoreline. Path improvements would generally enhance the existing path in Kapa'a Town and the cane haul road to the north to support current activities already occurring. Path amenities developed would similarly provide needed and desired support facilities for path users along with the general public already using Lihi Park and Kealia Beach Park for recreational activities. The parking, comfort stations, showers, and pavilions planned would be compatible with the areas they are being sited on since these are already heavily used beach parks. Thus, the open and rural character associated with these beach parks would be retained with these improvements.

CHAPTER 6 INFRASTRUCTURE FACILITIES

This chapter addresses the project's probable effect on existing infrastructure facilities serving the project and surrounding area.

6.1 WATER FACILITIES

The County Department of Water provides water supply serving the Kapa'a to Anahola districts within the study corridor. The main water mains are routed along Kuhio Highway with distribution lines extending into smaller subdivisions.

Under the No Action alternative, there would be no improvements implemented. Thus, there would be no effect on the County's existing water system and demands.

With the project, the only improvements affecting water demand and facilities would be the improvements associated with path amenities. This would include comfort stations and pavilions which may have showers or drinking fountains. These improvements would be located at Lihi Park, Kealia Beach Park and at the public parking area in the Kealia Kai Subdivision.

The total projected average daily water demand generated by these facilities is about 10,500 gallons per day. This additional demand should have minimal impacts on the County's existing water system. Depending upon the actual sizing of facilities, water line extensions of between 1-inch and 3-inch lines would be required to connect to current water mains. During the project's design, appropriate design plans would be coordinated with the County DWS for review and approval.

6.2 WASTEWATER FACILITIES

The only areas within the project corridor that would require wastewater facilities are at Lihi Park, Kealia Beach Park and at the public parking area in the Kealia Kai Subdivision. These facilities would be needed to serve comfort stations planned.

There are presently no existing wastewater facilities located on these project sites. Existing County sewer lines are available in the Kapa'a Town area. However, no sewer lines are located in the Kealia Beach and Kealia Kai Subdivision area.

Effects on Wastewater System

Under the No Action alternative, there would be no improvements implemented. Thus, there would be no effect on the County's existing wastewater system and demands.

With the project, the only improvements affecting wastewater demand and facilities would be the improvements associated with comfort stations. The total average daily water demand projected to be generated by these facilities was about 10,500 gallons per day which would be the approximate amount of wastewater generated. If economically feasible and practicable based upon the facility's

design, a sewer line extension could be provided to serve the Lihi Park improvements. However, it is likely all these facilities would be treated using a septic tank and leach field system. If practicable, alternative low water organic treatment systems can be provided. This wastewater generated should have minimal impact on the environment and County's existing wastewater system. During the project's design, appropriate design plans would be coordinated with the County DPW and State DOH for review and approval.

6.3 DRAINAGE FACILITIES

Within the Kapa'a Town area, drainage facilities along the shoreline consist of the Waika'ea Canal and Mo'ikeha Canal which both serve this urbanized town area. Another small unlined drainage ditch is located north of Otsuka's. Drainage along the path in this section predominantly consists of surface runoff sheet flowing across the existing path towards the ocean. There are no drainage improvements at Lihi Park.

Within the Kealia Beach section, Kapaa Stream serves as the major drainage basin for this area. An unlined drainage ditch is located at the northern end of Kealia Beach where path amenities are planned. This drainage ditch is from runoff carried from Kuhio Highway in this area towards the shoreline. Remaining areas along this section consists of surface runoff sheet flowing across the existing cane haul road towards the ocean.

Within the Kealia Kai Subdivision section, Kumukumu Stream and Homaikawaa Stream serve as major drainageways serving this area. Other smaller naturally created drainage ditches are present along this corridor which formerly served agricultural lands that are now being developed as the subdivision. Remaining areas along this section consists of surface runoff sheet flowing across the existing cane haul road towards the ocean.

Effects on Drainage

Under the No Action alternative, there would be no drainage improvements implemented, thus, existing drainage patterns and natural pathways would continue.

Construction of the path would involve improvements to the existing path in Kapa'a Town and the cane haul road to the north. Since these paths are already generally established impervious surfaces, the project should have minimal effects on surface runoff patterns and infiltration. Only widening of the existing path by about 6 feet in the town area would increase the amount of impervious path surface. Thus, there should be minimal changes to the pre-development runoff quantities and patterns along this path.

Construction of path amenities at would create additional impervious surfaces due to paved parking areas, picnic shelters, and comfort stations. These areas consist of Lihi Park, parking at Kealia Lookout, Kealia Beach, and the public parking area at the Kealia Subdivision. These improvements would increase the pre-development runoff quantities and slightly modify existing drainage patterns at these areas. The specific runoff quantities and changes to drainage patterns

would be developed during the design of the project. However, the increases in runoff from these sites should not be significant since the areas being developed are relatively small. Drainage facilities will be designed in accordance with the County Storm Drainage Standards and submitted for agency review and approval.

6.4 SOLID WASTE

The County maintains an island-wide system of solid waste collection and disposal. The Kekaha Landfill, Phase II is the primary disposal site for solid waste serving the island. Refuse transfer stations are located throughout the island, and the Kapa'a station is the closest station serving the study corridor.

Under the No Action Alternative, there would be no solid waste material generated from the study corridor since no facilities would be developed. Trash generated by the public would continue to be disposed of at trash cans provided at various locations along the shoreline.

Construction of the path and amenities will generate solid waste typical of normal construction related activities over a short time period. Generated wastes will consist primarily of vegetation, rocks, and other debris resulting from the clearing and grubbing of the area. The contractor will be required to remove all debris from the site, and properly dispose them at the landfill in conformance with County regulations. Such activities are expected to have a minor impact on County solid waste facilities.

User of the path would generate a need for more trash receptors at various locations along the path to prevent rubbish from being openly discarded along the shoreline. Improvements at Kealia Beach Park and Lihi Park would include providing additional trash receptors for the public. Consequently, the County may need to hire a few additional staff to maintain this path since it would be opened up further north from the Kealia Beach area. However, this project is not expected to create a significant increase in rubbish since the public is already using these beach parks and path.

6.5 TRANSPORTATION FACILITIES

Existing Transportation Facilities

Kuhio Highway is a State Department of Transportation (DOT) operated highway generally running along the coastline. Within the study corridor, this highway is the primary highway in this district providing vehicular access through the Kapa'a Town area up to Anahola. Kuhio Highway is a three-lane State arterial highway from its junction with Kapule Highway and Kamoia Road in Waipouli. From Waika'ea Canal, this highway becomes a two-lane road with on-street parking provided through Kapa'a Town. From the northern end of Kapa'a Town up through Anahola, Kuhio Highway is a two-lane arterial highway. Within Kapa'a Town, the posted speed limit is 25 mph which increases to 50 mph north of the town to Anahola.

In 1995, a temporary "bypass route" was opened to traffic during daylight hours to help alleviate traffic congestions through the Kapa'a Town corridor. This route utilizes the former cane haul road running mauka of Kapa'a Town.

The County of Kauai has several roadways within the study corridor under their jurisdiction. These roads primarily provide vehicular access to properties located above (mauka) and below (makai) Kuhio Highway. Most of these roadways are located within the Kapa'a Town area since shoreline access north of the town to Kealia Beach and the Kealia Kai subdivision are directly from Kuhio Highway.

Some roadways of note related to the project include Kaloloku Road which provides access to the boat launch area at Waika'ea Canal. Many residents also travel through Lihi Park from Kaloloku Road to access the shoreline area on Moana Kai Road. Niu Street provides access from the highway to Kapa'a Beach Park and the parking lot along the shoreline where the existing path cuts through. Kou Street provides access to the Kapa'a Neighborhood Center and County's swimming pool.

Planned Improvements to Transportation Facilities

There are several improvements planned by the State DOT to existing transportation facilities which may have an effect on the path improvements and amenity alternatives. The State DOT plans to extend the temporary cane haul bypass road further north around Kapa'a New Park to Kuhio Highway, in the vicinity of Hauaala Road and Kawaihau Road, in the future. This bypass section extension would only be for southbound traffic, and design is in progress. Construction is scheduled for the year 2004.

The long planned permanent bypass road project for this region is still in the planning stages and may be many years before it is actually constructed due to anticipated construction costs. Kuhio Highway is proposed to be widened to 4 lanes from the area of Gore Park/Mahelona Hospital to Kapaa Stream Bridge as part of the bypass road project. Kapaa Stream Bridge would also be widened to 4 lanes but shouldn't impact the nearby cane haul road bridge. The intersection of Kuhio Highway with Mailihuna Road may also be signalized. No bike lanes are planned for this widening project due to space constraints.

Preliminary plans are to connect this bypass road routed mauka of Kapa'a Town back to Kuhio Highway at the intersection of Kawaihau Road. This intersection is proposed to become a new "T" intersection with Kuhio Highway lining up with Kawaihau Road and the new bypass road forming the cross road. These improvements may involve the taking of some property on the makai (ocean) side of Kuhio Highway in the vicinity of Kawaihau Road and Hauaala Road to accommodate this intersection improvement. However, no plans are determined yet as to the exact alignment or how much land area will be needed.

Guardrails are also planned to be installed on the makai side of Kuhio Highway along Kealia Beach. This would be done to restrict access into and out from Kealia Beach Park to two designated driveways along this beach park. The first access point would be about 600 feet north of Kapaa

Stream while the second access is located across from the Kealia Road intersection with the highway. As part of their guardrail project, the DOT will provide left-turn storage lanes, refuge lanes, and acceleration and deceleration lanes at these two access points. However, a left-turn storage lane at the Kealia Road intersection will need to be provided by the County as part of this project since the improvement cost is beyond the DOT's resurfacing project budget. The left-turn storage lane will require widening the highway on the makai side which requires some filling within the DOT's right-of-way. The guardrail project is scheduled for bid-out in the later half of 2003.

Effects on Transportation Facilities

The improvements planned as part of this project would not have any direct impact on the State's Kuhio Highway or County roadways since they primarily involve improvements to the existing path and cane haul road. Furthermore, this path would not cross the highway or roadways. The path amenity alternatives being considered would similarly not affect these highway and roadway facilities since they would be located along the shoreline within County property.

The planned parking area connecting to the State's Kealia Lookout would affect this State DOT jurisdictional property since vehicle access to the new parking lot would be from this lookout. Based upon consultation with the State DOT, it was agreed that a new common vehicular access point from Kuhio Highway would be created further north to serve both the lookout and path parking lot. With this new access, the existing access at the Kealia Lookout will be closed. Highway improvements would include providing a left-turn storage lane, refuge lane, acceleration and deceleration lanes, and signage. In addition, the speed limit around this bend is planned to be reduced to 35mph from the existing 40 mph speed limit due to sight distance conditions. Some clearing of vegetation mauka of the highway would also be needed to improve sight distance around this bend.

Short-term construction activities associated with the project may require temporary lane closures to some County roadways or disruptions to portions of Kuhio Highway from construction equipment depending upon the construction methods implemented by the contractor. However, if necessary, a traffic control plan would be developed and coordinated with County and State agencies for their review and approval. Police officers or security personnel may also be hired to assist with implementing traffic control in the area during such construction activities.

Future highway improvements have affected the development of project alternatives and siting of path amenities. The future permanent bypass road connection with Kuhio Highway at Kawaihau Road may involve acquiring some makai property bringing the highway close to the proposed path route. Although no firm highway plans have been developed, the path would make a transition through this section from the existing path to the cane haul road. The path's route would be within the County's property and should not impact the future design of this bypass road. If County property needs to be acquired by the State DOT due to additional right-of-way requirements, appropriate mitigative measures would need to be developed by the State DOT since this County project would be completed before this future bypass road.

A potential opportunity also exists to provide another bike path segment from the planned path onto this new bypass road at this particular junction. This would allow both bicyclists and cyclists to utilize and transition to and from the planned path with the future bypass road. However, this option would need to be programmed into the bypass road planning and design which is still years away from implementing.

The guardrails planned along Kuhio Highway at Kealia Beach would create a significant change to vehicle access patterns at this park. This plan would eliminate the commonly used existing access into and out from the park at the foot of the hill (northern end of beach). As a result, path amenity conceptual alternatives developed have incorporated the new single access being permitted. Therefore, the improvements planned should not conflict or impact the State DOT's guardrail plans.

At Lihi Park, the improvements planned would restrict cars from cutting through this park to get to Moana Kai Road from Kaloloku Road. As a result, people traveling to Baby's Beach and Lihi Park would need to access these areas from other existing County roadways. Kaloloku Road only extends to the boat launch area where this paved road terminates. This change in vehicular access should not have a significant impact because it would not cut off access to Lihi Park, Baby's Beach, and the shoreline. The public will need to adjust to this new traffic pattern, but will still be able to access these areas from existing County roads.

CHAPTER 7 PUBLIC FACILITIES AND UTILITIES

This chapter addresses the probable impact on public facilities and utilities in the project area resulting from the PBARC Project.

7.1 ELECTRICAL AND COMMUNICATION FACILITIES

There are currently no electrical or communication facilities serving the existing path running through Kapa'a Town nor the cane haul road from the town to Ahihi Point. There are also no electrical or communication facilities serving Lihi Park, Kealia Lookout, Kealia Beach, and the public shoreline access parking area at the Kealia Kai subdivision. There are also no electrical poles located along the path that would need to be relocated due serve planned improvements.

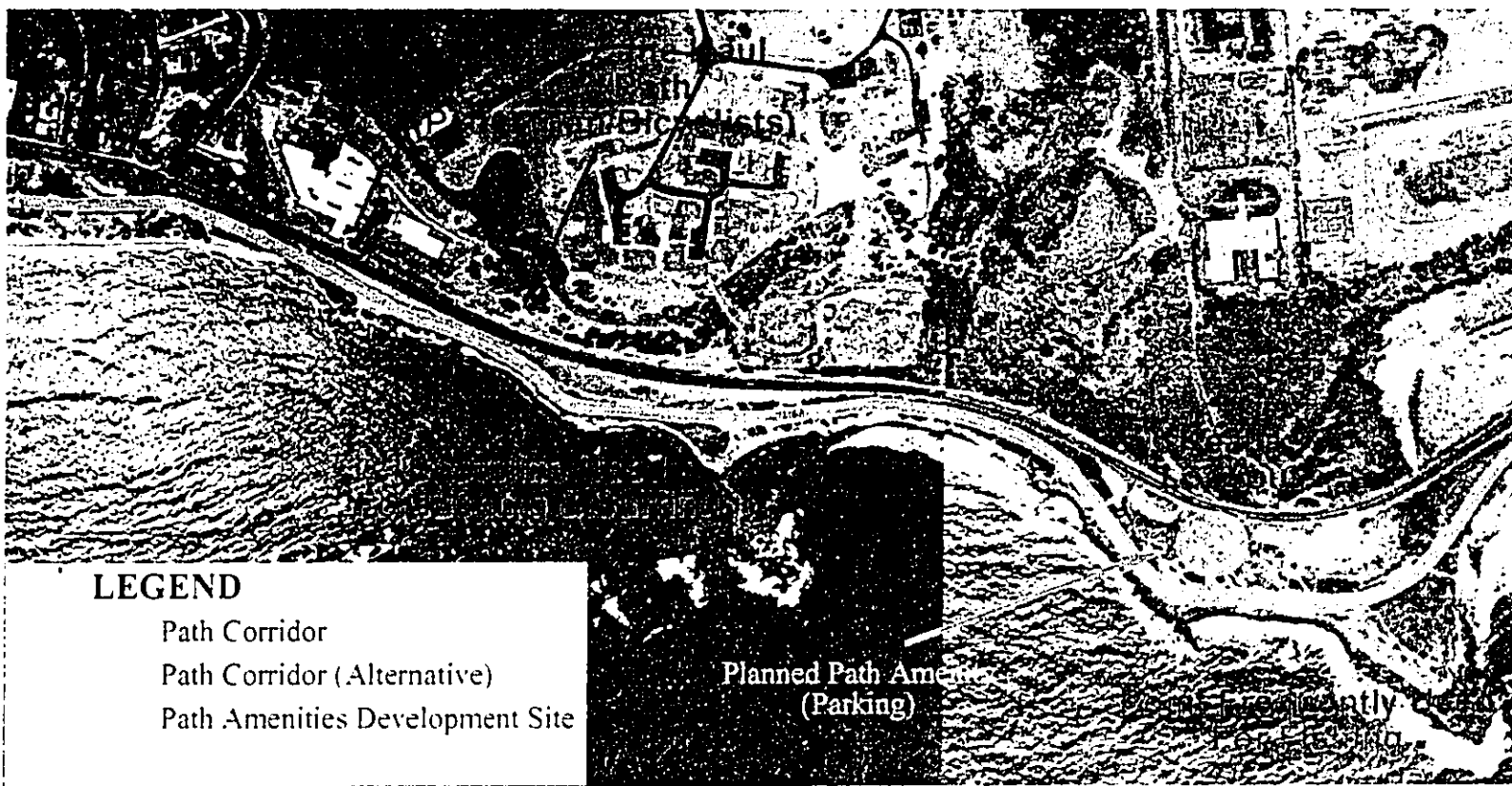
Under proposed improvements to the path, there would be no need for electrical or communication facilities. The path is not planned to be lighted, nor are telephone booths planned along the path. Thus, the path improvement would not impact existing electrical or communication facilities or place additional demand for such services.

At Lihi Park and Kealia Beach, comfort stations are planned as path amenities. At this time the lighting of these facilities is not planned, however, there is the possibility of providing some lighting at these facilities. The specific design of these structures would be determined by the selected contractor design team. If lighting is provided, there would be a slight increase in demand for electricity, however, this increase would have minimal or no impact on the existing electrical company. Any external lighting planned would need to be shielded to mitigate potential impacts to nocturnally flying seabirds (Dark-rumped Petrels, and Newell's Shearwaters). Similarly, if telephone booths are provided, this equipment would be provided by the phone company and have minimal impact on their facilities or service.

7.2 RECREATIONAL FACILITIES

7.2.1 Existing Recreational Facilities

There are a number of existing recreational facilities and activities occurring within the study corridor area, including use of an existing asphalt-paved path, and the cane haul road as a bicycle/pedestrian path. A description of this proposed path is first provided since this runs through the entire project corridor. A discussion of the other various recreational facilities and activities within each of the corridor section is then provided. Most of these facilities were also discussed under section 2.3 of this document. Figures 7.1 and 7.2 identify these facilities and activities by corridor section.

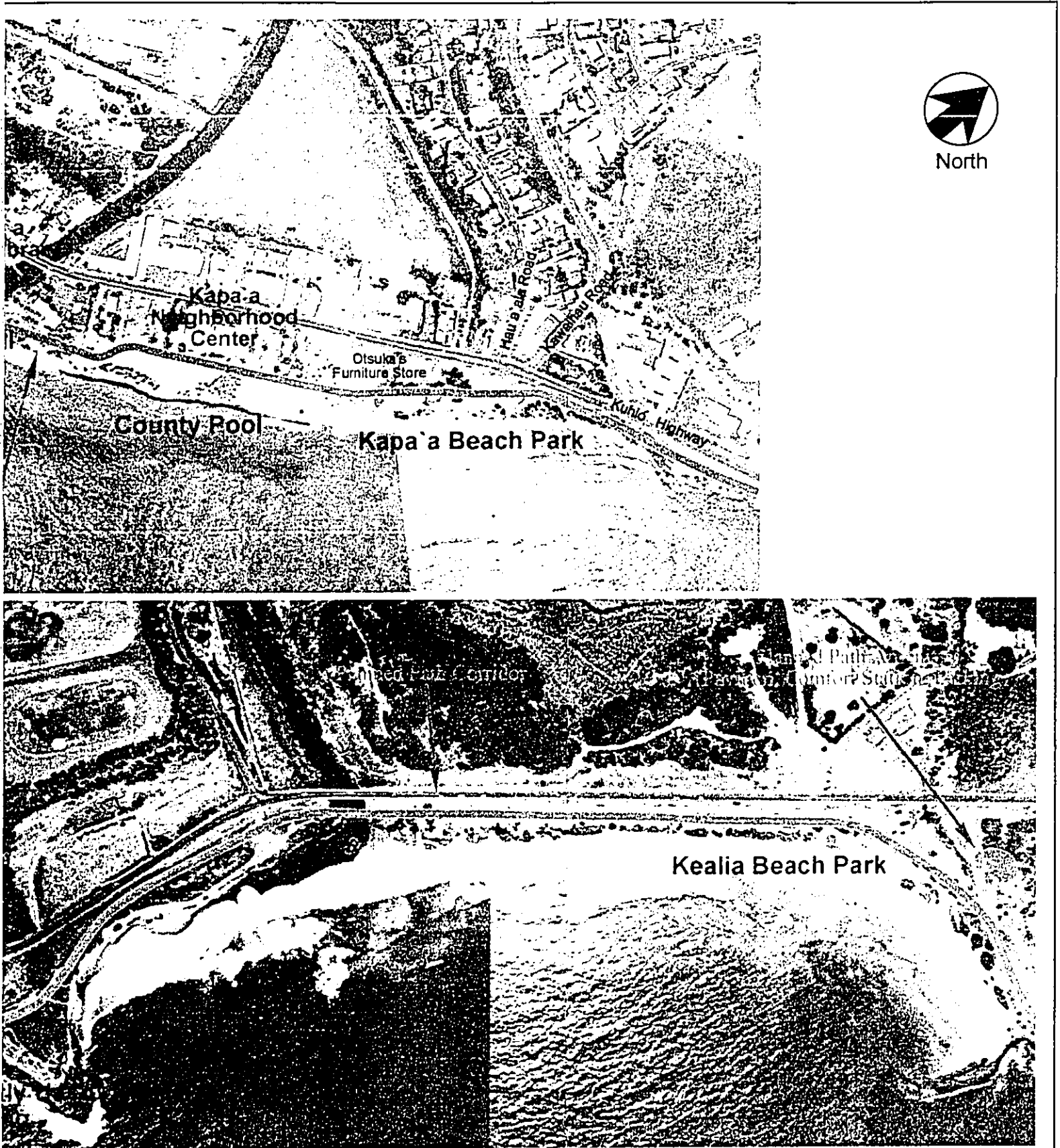


LEGEND

- Path Corridor
- Path Corridor (Alternative)
- Path Amenities Development Site

Planned Path Amenities (Parking)

RECREATIONAL FACILITIES IN KAPA'A TOWN AND KEALIA BEACH

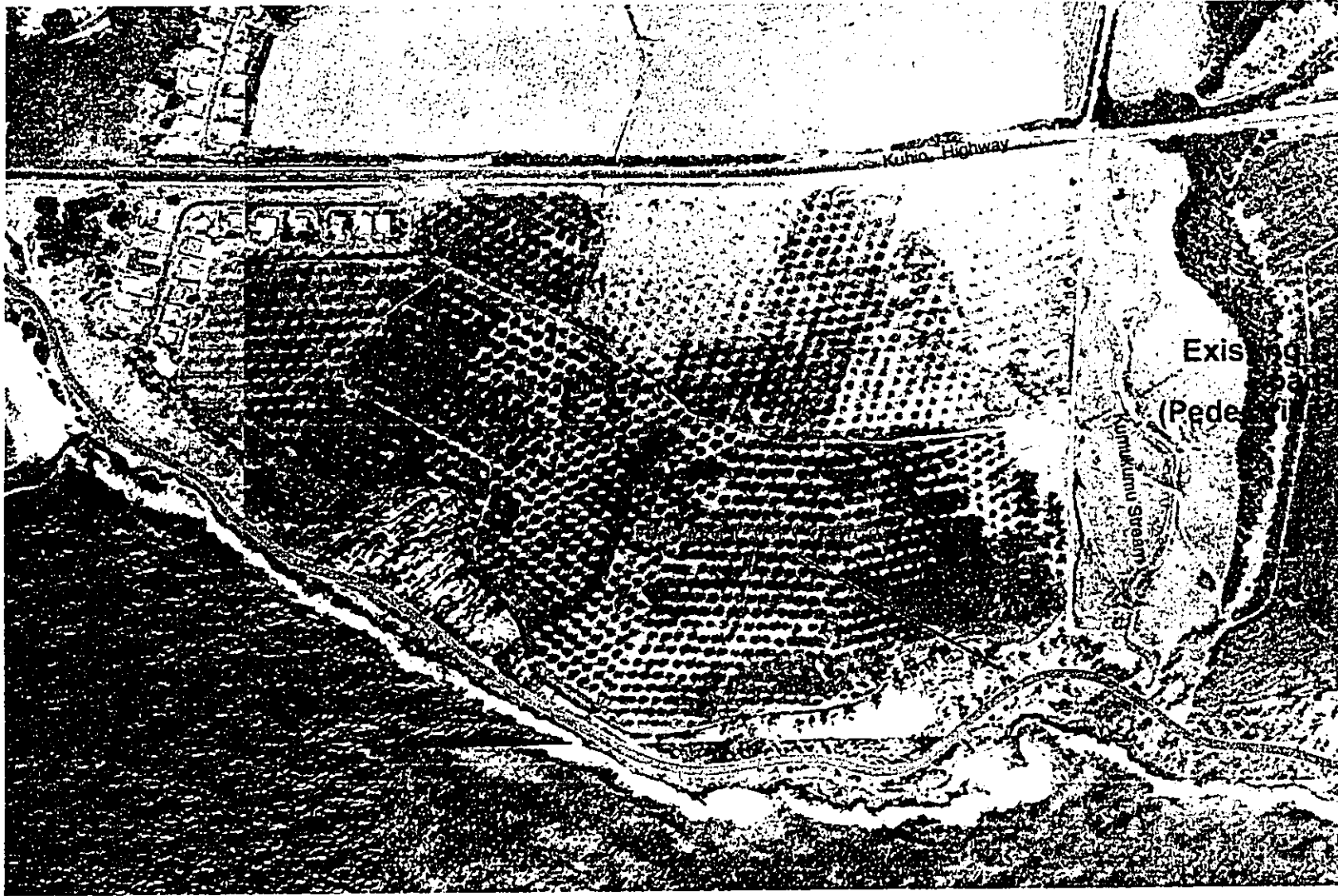


RIES IN
ACH SECTIONS

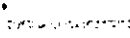
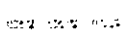
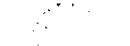
Source:
SSFM International, Inc.

FIGURE 7.1

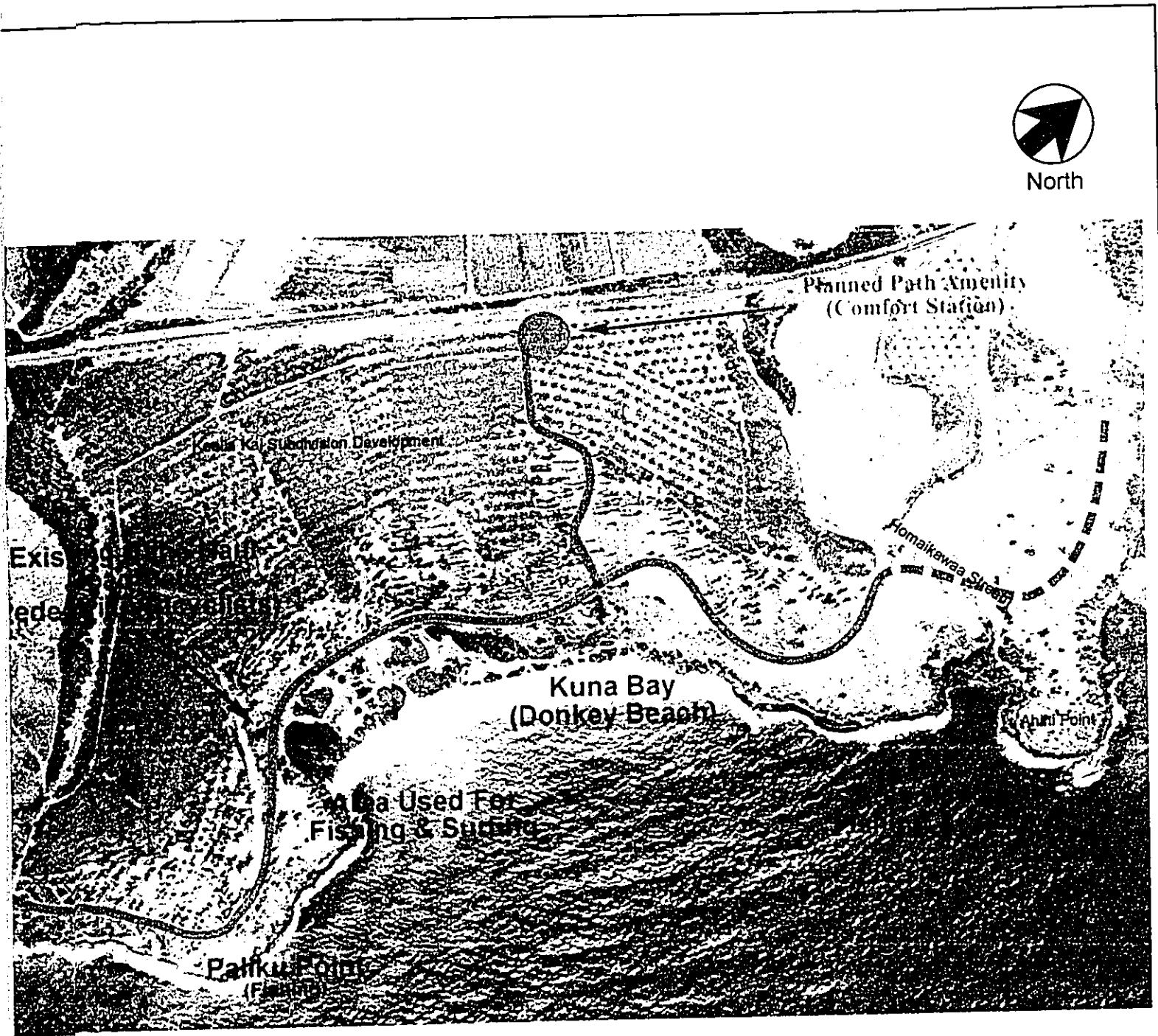




LEGEND

-  Path Corridor
-  Potential Path Corridor (Future)
-  Path Amenities Development Site

RECREATIONAL FACILITIES IN KEALIA KAI SUBDIVISION



AI SUBDIVISION SECTION

Source:
SSEM International, Inc.

FIGURE 7.2



Existing Bike and Pedestrian Path

The asphalt-paved path proposed for the multi-use path project begins on the northern side of Waika'ea Canal and fronting the Pono Kai Resort condominiums and runs through most of the Kapa'a Town area. This path is approximately 6 feet in width, and is used by bicyclists, runners, joggers, and walkers. Skateboarders, and roller skaters also utilize this path, although infrequently. Individuals accessing the shoreline to fish, swim, or surf, also traverse the path to get to their activity area. This existing pathway consisting of the asphalt-paved path and cane haul road is being utilized by a number of individuals for different activities.

From the Pono Kai Resort, the path continues in a northerly direction to the parking lot of Kapa'a Park where it terminates. The path starts again on the opposite side of the parking lot, continuing to join with a paved road in the vicinity of the Kapa'a Neighborhood Center. The path continues to its termination behind the Kapa'a Community Swimming Pool.

Further north past Otsuka's, a cane haul road is present. Spanning from the northern portion of Kapa'a Town to Ahihi Point, this cane haul road is used primarily by bicyclists and pedestrians for walking or jogging along the path. Due to the current deteriorating condition of this cane haul road, use of this road by others is limited. Individuals accessing fishing spots along the shoreline also utilize or traverse the cane haul road. Although prohibited, four-wheel drive motorized vehicles and motor bikes also occasionally travel along the cane haul road.

Kapa'a Town Segment

Waika'ea Canal is the location of an existing boat launch ramp and dock area. Maintained by the Division of Boating and Recreation, State Department of Land and Natural Resources, this area is the sole boat launch ramp area on the eastern side of Kauai. This boat launch facility includes parking, a shed used as a gathering place for boaters, washdown area, and boat launch situated above the canal bridge. Access to this boat launch is from Kaloloku Road.

Adjacent to the boat launch ramp area is Lihi Park which is a County-owned park of about 2.6 acres. This park is undeveloped, but has a few picnic tables with trash cans under the trees present. This park is used for various recreational activities such as fishing in the canal or along the beach, picnicking, swimming, windsurfing, and boating activities, etc. Visitors currently access this park from either Kaloloku Road or Moana Kai Road. People also use a dirt path through this park to access the shoreline area along Moana Kai Road which includes Baby Beach. Bicyclists also use Lihi Park as a starting area for leisure bike rides.

Waika'ea Canal Bridge is a County-owned bridge that has been improved to allow bikes and pedestrians to cross over this canal. Kapa'a Beach Park is a County-owned beach park that extends along most of the entire shoreline area in this Kapa'a town area from this bridge. This beach park generally extends from the Waika'ea Canal north to the County's swimming pool. As with Lihi Beach Park, this beach area is used for similar recreational activities such as fishing, swimming, snorkeling, picnicking, etc.

Kapa'a Beach Park is a County-owned park of about 2.8 acres located along Niu Street that used for soccer leagues and other recreational activities. Park facilities include a parking lot, two pavilions, and a comfort station situated next to a police substation along Niu Street. Kapa'a Public Library is a State public library located adjacently north of the Kapa'a Beach Park.

Mo'ikeha Canal Bridge is a County-owned bridge crossing this canal and has been improved for bikes and pedestrians using the path. This bridge is used for fishing activities within the canal and along the shoreline by the public. People presently park along the canal at open areas near the highway at along the shoreline makai of the library parking lot.

Kapa'a Neighborhood Center is community center is located along Kou Road, and is used for various community activities and meetings. The Smokey Louie Public Swimming Pool is a County-owned pool located along the shoreline across from the neighborhood center at the end of Kou Road. There are also a few open grassed fields south and north of this pool utilized as play areas for parents with children, Frisbee players, families or groups having picnics, and practicing hula halau.

Kealia Beach Segment

Within this segment, the coastline provides a number of recreational activities, including fishing, swimming, surfing, and windsurfing. However, developed recreational and community facilities are not present. The initial portion of this segment primarily offers various fishing spots along the coastline and underlying reefs. Further north, beach-related recreational activities dominate within the segment, in the vicinity of Kealia Beach.

The State DOT maintained Kealia Lookout is located near a rocky point which forms the southern boundary of Kealia Beach where the Kapaa Stream empties into the ocean. This rocky point is known to be a common spot for fishing activities. A sand/gravel area across (makai) this Mailihuna Road intersection is occasionally used by the public for parking and vehicle access along the beach.

Kealia Beach is a long strip of beach located just makai of the highway providing scenic views of this coastline. Strip parking occurs along gravel and dirt areas of this beach park from Kapaa Stream up to northern end of the park. The southern section of this beach is commonly used for surfing and fishing activities. The only facilities present at this beach park are a temporary lifeguard stand and a few picnic tables. At the northern end of this beach is another heavily used unpaved parking area located at the foot of a hill. This portion of the beach is more heavily used for swimming, picnicking, surfing, fishing, and other beach activities.

Kealia Kai Subdivision Segment

Recreational activities within this segment include jogging and walking along the existing cane haul road, bicycling, fishing, and beach activities. Fishing is done from a number of areas along this segment, particularly around Paliku Point at the site of the "Pineapple Dump," where fishers have installed pole holders on the structure itself, and surrounding rocky area, and also on the southern portion of Kuna Bay (Donkey Beach).

Kuna Bay is an undeveloped, somewhat secluded beach within this segment. Access to this beach is either along the cane haul road from Kealia Beach, from Anahola homestead lots to the north, or via a public shoreline access path that begins at a County parking lot located at Kuhio Highway at the northern end of the Kealia Kai Subdivision. This large beach is not as actively used as Kealia Beach due to its remoteness and lack of easy vehicular access. Activities occurring at this beach include fishing, surfing, swimming, and other recreational activities.

Ahihi Point is located at the northern portion of the study corridor, and provides hikers and walkers, as well as bicyclists with dirt trails to traverse. The point itself sits on a bluff above the coastline and provides panoramic and scenic views of the eastern coastline of Kauai.

7.2.2 Effects on Recreational Facilities

Without development of the project, there would be no impact on existing recreational facilities along this corridor since the existing path and cane haul road would remain as is. The public would continue to use these paths for pedestrian or bicycling activities. However, the condition of the cane haul road along with washed out bridge at Kumukumu Stream would continue to restrict other potential path users such as families, skaters, etc. The lack of needed facilities at Kealia Beach Park and Lihi Park would also continue for beach users.

With the project, the existing paved path in Kapa'a Town and cane haul road would be improved to serve as a multi-use path. The entire path route would be improved making access along this entire 4.3 mile corridor accessible. In addition, the paved path would make it more easily available to other potential path users such as families, children, skaters, etc. This path would also be available to a wider range of bicyclists from skilled recreational and commuting cyclists to less skilled, family recreation, and youth cyclists. Consequently, this project would have a positive impact on these user groups enhancing these facilities which are already being used to some extent.

Construction activities along this path would result in portions of it being temporarily closed while being built. Specific path lengths affected at a time and its duration would be determined during the project's design and implementation by the contractor. However, temporary closure of sections should have only a minor impact since path users can still travel along the corridor using alternative routes past affected sections. Similarly, improvements of existing bridges would temporarily close them during construction. However, there are alternative paths across these bridges or path users can avoid affected bridges.

At Waika'ea Canal Bridge, renovation improvements would temporarily close access through this canal for boaters using this boat launch. Specific time periods would be determined by the selected design / build team as part of the project's design. However, appropriate notice of construction closures would be provided to the public and State DLNR, DOBAR to minimize confusion and conflicts with boaters. These activities should have an overall minor impact since boaters may utilize other boat launch areas during the temporary closure. Furthermore, existing boaters would benefit from the improvements done for this bridge once completed.

Amenity improvements associated with the path would also provide needed support facilities at such sites as Kealia Beach Park and Lihi Park which are already heavily used by the public. These facilities such as picnic shelters, comfort stations, and showers would enhance these park sites and would be located at appropriate locations along the path for path users as well.

Effects with Equestrian Users

Adding equestrian use along the multi-use path would involve mixing two types of uses along the project corridor. However, limited right-of-way space along various sections of the path creates a physical constraint limiting the appropriateness and practicability of including this user group. A 4-foot-wide unpaved bridle path along with 5 feet or more as a buffer for safety between users would be needed. The multi-use path is intended to be 12-feet-wide and include at least another 4 feet for shoulders on each side depending upon the terrain and need for guardrails. Thus, an available corridor of about 25 feet or more would be needed to accommodate both users.

The cane haul road path along the narrow shoreline corridor currently has between 13 and 18 feet of space. These limited areas include the section from Kapa'a Town through Kealia Beach and up to an area south of Kumukumu Stream. Thus, there would be a severe shortage of space along this path to accommodate both groups.

Efforts to provide enough space through these sections would need to involve widening the corridor on the mauka side since there is no available room on the makai side of the cane haul road which drops several feet to the ocean. Extensive grade changes to an already steep embankment would thus be necessary. At Kealia Beach, there is no room on the mauka side due to its present use as parking for vehicles which would be further restricted by the State DOT's guardrail plans. As a result, the bridle path would need to be located on the makai side encroaching onto the sandy beach.

One option considered was to reduce the multi-use path width from 12 feet. The AASHTO *Guide for the Development of Bicycle Facilities* states that the optimum minimum recommended two-directional paved shared-use path is 12 feet for paths expected to receive more than occasional mixed use (bicycles, pedestrians, skaters). However, 10 feet is acceptable where space restrictions due to corridor width are a consideration. Unfortunately, reducing the path to 10-feet would still not provide enough space along the narrow corridors.

Another option considered would be to eliminate the minimum 5-foot buffer between the unbridled path and multi-use path allowing shared use of the path by both. However, this would raise additional concerns with safety among users due to the close mixing of uses. The AASHTO Guide states that it is not desirable to mix horse riding and bicycle traffic on the same shared path. Bicyclists are often not aware of the need for slower speeds and additional operating space near horses. Horses can be startled easily and may be unpredictable if they perceive approaching bicyclists as a danger. Pavement requirements for bicycle travel are also not suitable for horses. Other considerations would also apply to skaters, roller bladders, and pedestrians (children, parents with strollers, senior citizens) using the path.

Other concerns include health and sanitary concerns associated with horse droppings along the path. This unpaved bridle path use may contribute to potential increased soil erosion and sedimentation along the path. The clean-up and maintenance for such droppings would create a considerable concern with County maintenance staff. These droppings would also contribute to waste pollutants on nearby receiving waters during rainfall if not cleaned up. Thus, this would contribute to water quality issues and pollution of the ocean environment impacting fishing resources as indicated under the cultural assessment interviews.

After considering community input and the existing physical constraints of the corridor, the County plans to accommodate equestrian use along a limited section of the proposed path. This would occur from the northern end of Kealia Beach up to the project's terminus at Ahihi Point. This Kealia Kai section of the path route is not as heavily used by the public now, therefore, the potential for user conflicts should be lower.

For the narrow section of the path from Kealia Beach up to about Kumukumu Stream, a shared path would be provided since there isn't enough right-of-way (25 feet) to provide separate paths. However, the County will reevaluate this accommodation in the future in consultation with the community if conflicts arise among path users due to increased use. North of Kumukumu Stream, the path route winds further inland so there is sufficient space to provide a separate bridle path with separation along the multi-use path.

Based upon available right-of-way along the narrow corridor from Kealia Beach, the path width would likely be reduced to about 8 feet. This would allow 4 feet for the unpaved bridle equestrian path, shoulders (minimum 2 feet on each side), and a few feet for some type of divider. Crossing of Kumukumu Stream by equestrian users would be provided on a separate trail along the makai side of the new bridge constructed. The details of necessary improvements for this shared path would be developed during the design phase. This would include consultation with the Heritage Trails Committee, equestrian groups, and other path user groups on necessary signage, path design, use, and protocol along this shared path which includes addressing horse droppings and maintenance.

7.3 MEDICAL FACILITIES

The only medical facility situated within the study corridor is the Samuel Mahelona Memorial Hospital. Samuel Mahelona Memorial Hospital is the oldest operating hospital on Kauai, and is located above (mauka of) Kuhio Highway on the ridge just north of Kawaihau Road. Today, this hospital serves as an important asset to the community offering long-term care/nursing services, outpatient services for radiology, laboratory, physical therapy, and occupational therapy. This hospital has an acute psychiatric unit with a limited number of acute/skilled nursing facility swing beds and also a walk-in clinic. Long-term care facilities include a 67-bed unit which includes a specially designed Alzheimer's room. The psychiatric service has a locked, 9-bed unit (SHPDA 2001).

Effects on Medical Facilities

Without the project, there should be no impact on this existing medical facility. Bicyclists, pedestrians, and other users of the path would continue conducting their activities along with other recreational activities occurring along the coastline such as fishing, swimming, surfing, etc.

Construction of the path and amenity alternatives being considered are not expected to have minimal impact on this existing medical facility. This facility is situated up on a ridge a distance away from the current cane haul road and shoreline. Potential disturbances from construction noise, fugitive dust emissions, and construction traffic should not negatively affect the hospital's operations and services being provided to patients. Necessary permits would be obtained from the contractor, if required, to address construction noise and best management practices implemented. Activities conducted in this area would also be relatively short-term since it would only involve path improvement and a possible parking lot near the Kealia Lookout.

This facility and patients there should not be negatively affected by activities conducted on the path and along the shoreline which already are occurring. Even without the project, the public is free to conduct various types of recreational activities along this shoreline. There is the potential for additional medical services being required for the public resulting from accidents or emergencies occurring from recreational activities along this coastline. However, potential additional medical services are not expected to significantly change from that which is already occurring, and should not adversely impact the hospital's staff or facility's ability to accommodate them.

7.4 EDUCATIONAL FACILITIES

The path project is situated within an area that includes educational facilities associated with Kapa'a Elementary School and Kapa'a Middle School which shares a campus with Kapa'a High School. Kapa'a Middle and High School are located on a bluff overlooking the coastline, between Kapa'a town and Kealia Beach.

Kapa'a High School is operating under School/Community-Based Management and serves students along the entire northeastern coastline of the island. This area starts from the Wailua community and extends through Waipouli, Kapa'a, Kealia, Anahola, Kilauea, Kalihiwai, Princeville, and up to Haena. This school serves a very diverse student population of various ethnic backgrounds. The socio-economic status of families within these communities range from low income to affluent. Student enrollments since the year 1999 have decreased slightly from 1191 to 1041 students in 2001. This school had about 69 teachers in 2001 and classroom space was rated as adequate in comparison with State standards (DOE 2001).

Kapa'a Middle School is operating under a School/Community-Based Management system and serves students in the same region as the high school. Student enrollments since the year 1999 have decreased slightly from 1191 to 1041 students in 2001. This school had about 69 teachers in 2001 and classroom space was rated as adequate in comparison with State standards (DOE 2001).

Kapa'a Elementary School serves students in Kindergarten to sixth grade from the Kawaihau District, which includes the Wailua Homesteads and the area east of the Wailua River to Moloaa Stream. The school's population represents a wide range of socio-economic levels and ethnicity. A unique feature of Kapa'a Elementary School is the Schools-Within-School (SWS) model. Student enrollments since the year 1999 have decreased slightly from 1076 to 993 students in 2001. This school had about 75 teachers in 2001 and classroom space was rated as adequate in comparison with State standards (DOE 2001b).

Effects on Educational Facilities

Without the project, there should be no impact on these existing educational facilities. Bicyclists, pedestrians, and other users of the path would continue conducting their activities along with other recreational activities occurring along the coastline such as fishing, surfing, etc.

Construction of the path and amenities are expected to have minimal impact on educational facilities and staff. These school facilities are situated up on a ridge a distance away from the current cane haul road and shoreline. Potential disturbances from construction noise, fugitive dust emissions, and construction traffic should not negatively affect the schools' operations and educational services being provided to students.

Necessary permits would be obtained from the contractor, if required, to address construction noise and best management practices implemented. Activities conducted in this area would also be relatively short-term since it would only involve path improvement and a possible parking lot near the Kealia Lookout. These schools should not be negatively affected by activities conducted on the path and along the shoreline which already are occurring. Even without the project, the public is able to conduct various types of recreational activities along this shoreline. Furthermore, the principals of both Kapaa High School and Kapaa Elementary School will be notified and consulted with as part of this project's design so that any concerns can be addressed.

7.5 POLICE PROTECTION

The County of Kauai Police Department has three stations, located approximately 25 miles apart. The main station and administrative headquarters is situated in Lihue. Smaller stations at Waimea and Hanalei are co-located with fire stations. A small substation is located along Niu Street adjacent to the Kapa'a Beach Park. For the fiscal year 2001, the County of Kauai again experienced a decrease in the total crime rate of 4.8 percent. Total crime totaled 6,760 in the year 2000 verses 6,433 last year. However, serious crime rate had an increase of 2.3 percent.

To ensure continued levels of public safety, a new County police headquarters is under construction. The new facility will house the Kauai Police Department, Kauai County Civil Defense, and the Kauai County Prosecuting Attorney's Office. It is being constructed on an 18.5-acre site owned by the County of Kauai. The new facility is expected to have a total area of 58,000 to 60,000 gross square feet for the Main Police Station/Emergency Operating Center and 9,400 square feet for the Office of Prosecuting Attorney.

Effects on Police Facilities

There would be no effects on the Department's facilities or their staff's ability to provide protective services under the No Action Alternative since the project would not be implemented.

The project is not expected to have a significant impact on the Department's ability to continue providing protective services for area residents and the general public. Daily patrols of the coastline area should not be disrupted or negatively impacted by recreational activities conducted along the path and at sites developed with the amenity alternatives being considered such as parking and comfort stations.

Short-term construction activities associated with the project may require temporary lane closures to some County roadways or disruptions to portions of Kuhio Highway from construction equipment depending upon the construction methods implemented by the contractor. However, if necessary, a traffic control plan would be developed and coordinated with County agencies for their review and approval. Police officers may also be hired to assist with implementing traffic control in the area during such construction activities. However, these added services should not negatively impact the Department's operations.

Previous input received from Department staff indicated a desire to have mauka-makai access routes to the path being improved to allow for emergency access. They didn't require lateral access along the entire path, but shoreline access so their vehicles can reach the shoreline. Within Kapa'a Town, there are already existing roadways providing direct access to the shoreline, so no access improvements are necessary. The Kapa'a Town to Kealia Beach section of the path project is located close to Kuhio Highway and the shoreline so no additional access paths are necessary.

From Kealia Beach to Ahihi Point, there is no paved mauka-makai access for Department vehicles. This project will include paving the recently dedicated public shoreline access provided by the Kealia Kai subdivision developer through their property. This improvement would run from the public parking area along Kuhio Highway through the unpaved path to the existing cane haul road. Consequently, this improvement will provide a paved path for vehicles to reach the shoreline area near the planned path.

7.6 FIRE PROTECTION

The Kauai Fire Department has a main station and administrative headquarters located in Lihue. Other fire stations are located in Waimea, Hanapepe, Kalaheo, Koloa, Kapa'a, and Hanalei. The County has a unified, island-wide system of fire protection and rescue services. A new facility is under construction in Kapa'a Heights on a site near Mahelona Hospital. Satellite stations typically have two to three men per station and provide quick response to medical calls.

Effects On Fire Facilities

There would be no effects on the Fire Department's facilities or their staff's ability to provide protective services under the No Action Alternative because the path and amenities would not be improved.

The project is not expected to have a significant impact on the Department's ability to continue providing fire protection services for area residents and the general public. Department operations and activities should not be disrupted or negatively impacted by recreational activities conducted along the path and at sites developed with the amenity alternatives being considered such as parking, pavilion, and comfort stations.

As with the Police Department, previous input received from Fire Department staff also indicated a desire to have mauka-makai access routes to the path being improved to allow for emergency access. They similarly didn't require lateral access along the entire path, but shoreline access so their vehicles can reach the shoreline. Within Kapa'a Town, there are already existing roadways providing direct access to the shoreline, so no access improvements are necessary. The Kapa'a Town to Kealia Beach section of the path project is located close to Kuhio Highway and the shoreline so no additional access paths are necessary.

From Kealia Beach to Ahihi Point, there is no paved mauka-makai access for Department vehicles. This project will include paving the recently dedicated public shoreline access provided by the Kealia Kai subdivision developer through their property. This improvement would run from the public parking area along Kuhio Highway through the unpaved path to the existing cane haul road. Consequently, this project will provide a paved path improving the ability for vehicles to reach the shoreline area near the planned path.

There is the potential for additional emergency or medical services being required for the public resulting from accidents or emergencies occurring from recreational activities along this coastline which would involve assistance from this Department. However, potential additional services are not expected to significantly change from than that which is already occurring, and should not adversely impact the staff's ability to accommodate them. Even without the project, the public is already able to conduct various types of recreational activities along this shoreline for which this project would support.

7.7 SECONDARY AND CUMULATIVE IMPACTS

7.7.1 Secondary Impacts

Secondary impacts, or indirect effects, are effects which are caused by an action and are later in time or farther removed in distance, but are still reasonably foreseeable. Such effects may include growth inducing impacts and other effects related to changes in land use patterns, population density or growth rate, and related effects on air, water, and other natural systems. The proposed multi-use path project and associated amenity alternatives being considered are expected to have minimal secondary impacts on resident population, land use patterns, public facilities and infrastructure, and the natural environment.

Construction of this project is expected to generate only minor short-term impacts associated with these activities. Creation of short-term construction jobs are not expected to generate a substantial number of workers in-migrating to the Island of Kauai to fill these jobs. It is anticipated that qualified local contractors on Kauai or within the State of Hawaii would likely be used for the project's construction. These workers would thus have minimal if any effect on the County's residential population or housing demand.

Because this project primarily involves improvements to the County's recreational facilities, minimal secondary effects to the County's infrastructure are expected. The public already utilizes the existing path and cane haul road for bicycling, jogging, or other activities. Furthermore, shoreline areas and beach parks within the corridor such as Kealia Beach and Lihi Park are already heavily utilized. Thus, path improvements and amenities planned would provide needed facilities making such areas more attractive to the public, accessible, and convenient for various users. Increased use of these recreational facilities would not generate substantial secondary effects increasing infrastructure demands, necessitating off-site improvements, constraining public facilities, or influence population growth. The project objectives are intended to enhance the County's facilities making them more enjoyable, accessible, and convenient for the general public to use.

This project should not affect the County's residential population growth projected within the region, and thus not generate the associated secondary effects on infrastructure, public facilities, and housing. Although the path improvements and associated amenities would enhance recreational facilities in this area, these improvements would not greatly influence decisions for people choosing to in-migrate to Kauai or this district. Such decisions would be more appropriately based upon economic factors (jobs), housing supply and costs, schools, etc.

Additional water demand generated for comfort stations, showers, or other related path improvements is relatively low and is not expected to create a need for expanding existing off-site transmission lines or reservoirs. Only extensions of water lines from these facilities would be needed to connect to existing County transmission lines.

A minor positive secondary effect from this project would be improvements to Kuhio Highway near the Kealia Lookout due to the creation of additional parking and a modified access driveway to this area. After consultation with the State DOT, Kauai District Office, improvements to this highway would include clearing of vegetation along the highway to improve sight distance around the bend near the existing lookout, left-turn storage lane, refuge lane, and acceleration and deceleration lanes. Lowering the speed limit around this bend would also be proposed. All these improvements would increase safety for drivers traveling around this bend and accessing the lookout and amenity area created for the multi-use path.

7.7.2 Cumulative Impacts

Cumulative impacts are effects on the environment which result from the incremental impact of a project when added to past, present, and reasonably foreseeable future actions. The cumulative impacts associated with the multi-use path project would include assessing the various

implementation phases of the project to evaluate it, and incorporating other known planned improvements within the study corridor that would effect or be affected by the project.

The assessment results discussed in this document incorporated the two phases planned to be implemented for the multi-use path project which involves the area from Lihi Park to Kealia Kai Subdivision. This assessment included improvements to both the path and path amenities. The future third phase planned from the Kealia Kai Subdivision north past Ahihi Point to Anahola is not known when it will be implemented, however, the study area was incorporated in the assessment.

Other improvements planned for implementation by others within the study corridor were also incorporated into the project development and assessment. These developments were mainly associated with highway improvements by the State DOT. They included guardrail plans being initiated along the highway fronting Kealia Beach Park, and preliminary plans for intersection improvements north of Otsuka's Furniture Store associated with the new permanent bypass road through Kapaa.

Therefore, the discussion of impacts presented within this document has included the cumulative effects associated with the project and other reasonably foreseeable future actions being implemented. Since the project improvements occur along the shoreline within the County's property, other than State DOT highway improvements, there were no other developments being implemented which would affect the multi-use path project. The assessment results in this document show that there are no major cumulative impacts associated with this project.

CHAPTER 8 CONFORMANCE WITH PLANS AND POLICIES

This chapter discusses the project's conformance with the State Land Use District regulations, State Environmental Policy, Coastal Zone Management Program, and the County's General Plan goals and policies as well as its Zoning District standards.

8.1 STATE LAND USE DISTRICT

Pursuant to Chapter 205, HRS, all lands in the State of Hawaii are classified by the State Land Use Commission (LUC) into four major land use districts which are referred to as State Land Use Districts. These four land use districts are the Urban, Rural, Agricultural, and Conservation districts. The boundaries of these districts are shown on maps referred to as State Land Use District Boundary Maps. The State Land Use Commission's Land Use District Boundary Maps for Anahola (Map K-9) and Kapa'a (Map K-10) indicate that various portions of the project's proposed path and amenities are located within the State's Urban, Agricultural and Conservation Districts. These boundaries were shown on Figure 1.2.

The shoreline corridor from the County's Lihi Park at Waika'ea Canal north up to Kapaa Stream is within the State's Urban District. From Kapaa Stream north up to 'Ahihi Point, the corridor from the shoreline generally up to the cane haul road is located within the State's Conservation District. The Conservation District includes the cane haul road from Kapaa Stream up to an area south of Paliku Point. From this area north to Ahihi Point, the Conservation District boundary only extends up to the makai (seaward) edge of the cane haul road. Confirmation of this has been obtained from a boundary interpretation determination received from the LUC and included in Appendix B.

Portions of the project located within the Agricultural District are situated at three separate sites as shown on Figure 1.2. The first site is the Kapaa Stream mouth extending from the shoreline up to the highway. The second area is located near Kealia Beach where an area mauka (inland) of the cane haul road is located within the Agricultural District. The third area includes the existing public parking lot on Kuhio Highway and the shoreline access path within the Kealia Kai subdivision in the vicinity of Kuna Bay.

State Urban District

Permitted uses within the State Land Use Districts are prescribed under Title 13, Chapter 205 (Land Use Commission), HRS, and the State Land Use Commission's Administrative Rules prescribed under Title 15, Subtitle 3, Chapter 15, Hawaii Administrative Rules. Land uses within Urban Districts are governed by the ordinances or regulations of the county within which the urban district is situated. The proposed multi-use path project is consistent with the County's zoning ordinances which are discussed later.

State Agricultural District

Under the Land Study Bureau's detailed land classification system, soils within the portions of the study corridor designated as Agricultural District are as follows. Soils in the area of Kapa'a Stream have an overall master productivity rating of "C". Soils in the northern area of Kealia Beach, mauka of the cane haul road, have overall master productivity ratings of "D" and "E". Soils in the area of the public access trail have overall master productivity ratings of "B", "C" and "D" (LSB 1967). These productivity ratings represent all but the highest soil classification within a hierarchy of ratings where "A" identifies the best agricultural lands for productivity, and "E" the lowest.

Under Chapter 205, HRS, Agricultural District lands having an overall master productivity rating of "A" or "B" are restricted to uses as set forth in §205-4.5 (a). Amongst the permitted uses delineated in this section are "Public and private open area types of recreational uses including day camps, picnic grounds, parks, and riding stables, but not including dragstrips, airports, drive-in theaters, golf courses, golf driving ranges, country clubs, and overnight camps." (§205-4.5(a)(6), HRS). Furthermore, the "Retention, restoration, rehabilitation, or improvement of buildings or sites of historic or scenic interest" is listed as a permitted use within this section (§205-4.5(a)(8), HRS).

Further review of Chapter 205 indicates that Agricultural District lands having an overall master productivity rating of "C," "D," "E," or "U" shall be restricted to uses permitted in the Agricultural District as set forth in §205-5(b) (§205-4.5(c), HRS). Section 205-5(b), HRS, states that within the Agricultural District, uses compatible to the activities described in §205-2, HRS, as determined by the Land Use Commission, shall be permitted, provided that each county may further define accessory agricultural uses and services by zoning ordinance.

The multi-use path project represents an open area type recreational use that will improve and enhance an area of both historic and scenic interest along the eastern coast of Kaua'i for the benefit of the regional population as well as visitors to the area. Consequently, the improvements proposed would be permitted uses within the Agricultural District as stated in Chapter 205, HRS.

State Conservation District

Conservation District designated lands fall under the jurisdiction of the State Board of Land and Natural Resources (BLNR). The BLNR has the authority to establish zones (also known as subzones) within lands designated as Conservation District. Permitted uses within subzones are delineated in the BLNR's Administrative Rules, Section 13-5-23 of Title 13, Chapter 5, HAR.

A portion of the project area is classified as being within the "Limited" subzone based upon review of the DLNR's subzone maps. However, the northern most section of the project corridor from the Paliku Point area to Ahihi Point has not yet been given a subzone designation. The objective of the "Limited" subzone is to limit uses where natural conditions suggest constraints on human activities (§13-5-12(a), HAR, 1994). Land uses permitted in this subzone include: "Land uses undertaken by the State of Hawaii or the counties to fulfill a mandated government function, activity, or service for public benefit and in accordance with public policy and the purpose of the

conservation district. Such land uses may include transportation systems, water systems, communications systems, and recreational facilities" (§13-5-22(b)(P-6), HAR). A Conservation District Use Permit would be required in conjunction with the development of this project.

The proposed project would be a permissible use within this "Limited" subzone classification and consistent with the subzone objective and permitted uses. This corridor consists of lands that are owned or under the jurisdiction of the County of Kauai, and has conditions mandating that portions of dedicated lands be used for a bicycle/pedestrian path. The project would allow the County to provide alternative transportation routes, and to provide the community with a safer path for bicycle, pedestrian, and other non-motorized activities along the path. Further, the community will benefit from safe access to the shoreline and related activities.

8.2 CHAPTER 344, STATE ENVIRONMENTAL POLICY

This section discusses the project's conformance and consistency with the pertinent goals, policies, and guidelines described under Chapter 344, HRS, State Environmental Policy.

Environmental Policy

1. *Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State's unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain condition under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawaii.*

The project is consistent with this policy as it will conserve important natural resources along the eastern coastline of Kaua'i, including open space, shoreline and near-shore resources, and visual and scenic resources. Path improvements and amenities would support recreational activities already occurring along this shoreline and provide needed facilities. These improvements would be designed and constructed to minimize effects on natural resources, control pollutants during construction by implementing best management practices, and include review by approval by pertinent regulatory agencies. Further, the State's unique natural environment will be safeguarded as development of the project will foster conditions where man and nature can co-exist, while fulfilling a portion of the island's and State's social and economic requirements.

2. *Enhance the quality of life by:*
 - A. *Setting population limits so that the interaction between the natural and artificial environments and the population is mutually beneficial.*
 - B. *Creating opportunities for the residents of Hawaii to improve their quality of life through diverse economic activities which are stable and in balance with the physical and social environments.*

- C. *Establishing communities which provide a sense of identity, wise use of land, efficient transportation, and aesthetic and social satisfaction in harmony with the natural environment which is uniquely Hawaiian.*
- D. *Establishing a commitment on the part of each person to protect and enhance Hawaii's environment and reduce the drain on nonrenewable resources.*

The project is consistent with these policies as the proposed path is not anticipated to increase the population of the Kawaihau District or the island of Kaua'i. No dwelling units, hotel accommodations, or other forms of permanent living spaces are proposed for this project. Furthermore, the project will improve the quality of life for residents as it creates opportunities to take part in construction and diversified eco-tourism activities such as natural and cultural history interpretation. The economic activity generated by this project will be in balance with the physical and social environments of the Kawaihau District. The project will also greatly enhance the communities served by providing a sense of identity, promoting the wise use of land and shoreline resources, promoting efficient and alternate forms of transportation, preserving aesthetic qualities of the unique and scenic natural environment, and increasing social satisfaction in harmony with the natural environment which is uniquely Hawaiian. Lastly, the project will encourage a commitment on the part of each person who benefits from the use of the increased recreational and passive use activities to protect and enhance Hawaii's environment and reduce the drain on nonrenewable resources.

Guidelines

1. Population

- A. *Recognize population impact as a major factor in environmental degradation and adopt guidelines to alleviate this impact and minimize future degradation.*
- B. *Recognize optimum population levels for counties and districts within the State, keeping in mind that these will change with technology and circumstance, and adopt guidelines to limit population to the levels determined.*

The project is consistent with these guidelines as the project is not anticipated to increase population in the Kawaihau District. As discussed in this document, the project will not include construction of dwelling units, hotel or short-term accommodations, or other permanent or temporary housing.

2. Land, water, mineral, visual, air, and other natural resources.

- A. *Encourage management practices which conserve and fully utilize all natural resources.*
- B. *Promote irrigation and waste water management practices which conserve and fully utilize vital water resources.*
- C. *Encourage management practices which conserve and protect watersheds and water sources, forest, and open space areas.*

- D. *Establish and maintain natural area preserves, wildlife preserves, forest reserves, marine preserves and unique ecological preserves.*
- F. *Maintain an integrated system of state land use planning which coordinates the state and county general plans.*

The path project is consistent with these guidelines. Best management practices during and after construction of the path and related amenities will encourage conservation of natural resources, including those of water resources and open space. Watersheds and water sources proximate to the proposed path and amenities will be protected during construction through strict adherence to all applicable regulations. To minimize degradation to the water quality of near-shore waters, spoils generated by construction activities would not be allowed to enter any of the streams, canals, or near-shore waters adjacent to the proposed pathway. Best Management Practices would be developed and implemented during the construction phase of this project to minimize discharges from entering such waters. With the possible exception of the comfort stations planned at Lihī Park and Kealia Beach Park, the improvements will not require the use of additional electricity, thereby conserving fossil fuel resources and avoiding the pollution associated with the use of such resources. Natural area preserves, wildlife preserves, forest reserves, marine preserves and other unique ecological preserves will be maintained as the project site is located away from these ecological areas. As discussed in this Draft EA, the project is not anticipated to significantly impact such ecological areas.

3. *Flora and fauna*

- A. *Protect endangered species of indigenous plants and animals and introduce new plants or animals only upon assurance of negligible ecological hazard.*
- B. *Foster the planting of native as well as other trees, shrubs, and flowering plants compatible to the enhancement of our environment.*

Development of the path and related amenities is not expected to have a significant negative impact on endangered avifauna and mammals present along the study corridor as discussed in Chapter 4 of this document. None of the plants identified within the study corridor were a threatened or endangered species, or a species of concern, and all can be found in similar vegetation types throughout the island.

Mammalian species present within the study corridor are also not expected to be negatively affected since development of the project should not drastically alter the existing environment. The majority of mammals present consist of alien species such as rodents or feral animals which are harmful to native avian and plant communities. The path and amenities should not have a negative impact on Hawaiian hoary bats which may continue to forage for rodents and insects present along this coastline.

The majority of avian species present along the corridor were alien species, thus, the project is similarly not expected to have a negative impact. For the Dark-rumped Petrels and Newell's Shearwaters that do occur within the study corridor and along the entire

coastline, mitigative measures would be implemented. Any external lighting planned at path amenities would be shielded, and no lighting along the path is planned. This mitigation would minimize the threat of disorientation and downing of these birds. Best Management Practices would also be developed and implemented during the construction phase to minimize discharges of pollutants from entering shoreline waters and minimize degradation to the water quality.

4. *Parks, recreation and open space*

- A. Establish, preserve and maintain scenic, historic, cultural, park and recreation areas, including the shorelines, for public recreational, educational and scientific uses.*
- B. Protect the shorelines of the State from encroachment of manmade improvements, structures, and activities.*
- C. Promote open space in view of its natural beauty not only as a natural resource but as an ennobling, living environment for its people.*

The project will be consistent with these guidelines as development of the path and related amenities will enhance and preserve scenic and open space characteristics of this coastline. It would also preserve historic and culturally sensitive areas within the area, improve existing park areas, provide increased recreation area for a variety of uses, and improve accessibility and enjoyment of unique shoreline resources. Furthermore, improvements undertaken will be in accordance with all applicable State and County regulations to ensure that structures and activities do not unnecessarily encroach upon the shoreline. Appropriate coordination with the SHPD has been and will continue to be conducted on this project and throughout construction. Input received as part of the Section 106 consultation process will help address any historic and cultural issues.

5. *Economic Development*

- A. Encourage industries in Hawaii which would be in harmony with our environment.*
- B. Promote and foster the agricultural industry of the State; and preserve and conserve productive agricultural lands.*
- C. Encourage all industries including the fishing, aquaculture, oceanography, recreation, and forest products industries to protect the environment.*
- E. Establish visitor destination areas with planning controls which shall include but not be limited to the number of rooms.*
- F. Promote and foster the aquaculture industry of the State; and preserve and conserve productive aquacultural lands.*

The project will be consistent with these economic development guidelines as the new path and related amenities will promote and foster the eco-tourism industry on the island of Kauai. According to the County of Kaua'i's *General Plan*, there were 2,110 visitor units in the Kawaihau District in 1999. Furthermore, occupancy rates in the Kawaihau District are consistently 5 points below the island-wide average and substantial growth in

the district appears unlikely. It is possible that the project will increase the attractiveness of the Kawaihau District to potential visitors and may result in higher average occupancy rates, thus benefiting the local and regional economy. Also, this recreational project will protect the environment by conserving valuable natural resources, including those found within the streams, beaches, shoreline areas and near-shore environment occurring within the project area.

6. Transportation

- A. *Encourage transportation systems in harmony with the lifestyle of the people and environment of the State.*
- B. *Adopt guidelines to alleviate environmental degradation caused by motor vehicles.*
- C. *Encourage public and private vehicles and transportation systems to conserve energy, reduce pollution emission, including noise, and provide safe and convenient accommodations for their users.*

The proposed path is consistent with these guidelines as it will encourage the use of alternative transportation modes such as bicycling, skating, and walking for residents traveling between Kapa'a Town and Kealia in a safe and convenient manner. The use of such alternative transportation modes would in turn help alleviate environmental degradation caused by motor vehicles such as reducing pollution emission and noise in the area. Furthermore, the improvements planned would not have any direct impact on the State's Kuhio Highway or County roadways since they primarily involve improvements to the existing path and cane haul road which are located away from these roadway facilities. Path amenity planned would also not affect these highway and roadway facilities since they would be located along the shoreline.

7. Energy

- A. *Encourage the efficient use of energy resources.*

This project is consistent with this guideline as it will encourage the use of alternative non-motorized transportation modes, which may in turn reduce the consumption of fossil fuels and other non-renewable resources associated with vehicular transportation. With the exception of the comfort stations, the improvements will not require the use of additional electricity, thereby conserving fossil fuel resources and avoiding the pollution associated with the use of such resources.

8. Community life and housing

- A. *Foster lifestyles compatible with the environment; preserve the variety of lifestyles traditional to Hawaii through the design and maintenance of neighborhoods which reflect the culture and mores of the community.*
- B. *Develop communities which provide a sense of identity and social satisfaction in harmony with the environment and provide internal opportunities for shopping, employment, education, and recreation.*
- C. *Encourage the reduction of environmental pollution which may degrade a*

community.

- D. Recognize community appearances as major economic and aesthetic assets of the counties and the State; encourage green belts, plantings, and landscape plans and designs in urban areas; and preserve and promote mountain-to-ocean vistas.*

The project is consistent with these guidelines as it will foster a lifestyle compatible with the environment by providing increased passive and active recreational opportunities along the shoreline in the project area. Through appropriate design and construction, the project will reduce pollution to the greatest extent possible. Lastly, the path will greatly enhance the aesthetics of the communities served by the project, provide a strengthened sense of place and community identity and protect valuable coastal scenic and open space view planes.

9. Education and culture

- A. Foster culture and the arts and promote their linkage to the enhancement of the environment.*
- B. Encourage both formal and informal environmental education to all age groups.*

Path improvements will increase accessibility to existing parks and recreation areas being linked by the path so that users of all ages and ability levels may use them safely. These improvements will provide new opportunities for a wide range of users to participate in formal and informal environmental education activities within the project area. Furthermore, the path improvements may encourage further study of native Hawaiian culture and arts and promote their linkage to the enhancement of the environment, especially as this relates to the utilization of shoreline resources by early Hawaiians.

10. Citizen participation

- A. Encourage all individuals in the State to adopt a moral ethic to respect the natural environment; to reduce waste and excessive consumption; and to fulfill the responsibility as trustees of the environment for the present and succeeding generations.*
- B. Provide for expanding citizen participation in the decision making process as it continually embraces more citizens and more issues.*

Workshops have been held to gather input from affected user groups, community members, and stakeholders in the project area. In addition, the environmental review process undertaken for this project allows for sufficient public and government agency input to express concerns and comments associated with the project. Such opportunities include pre-assessment consultation and review of the Draft EA. Thus, the public consultation process incorporate within this environmental review process provides decision-makers with a diverse array of information to consider in evaluating this project.

8.3 CHAPTER 205A - COASTAL ZONE MANAGEMENT

This section addresses the project's conformance with applicable objectives, and policies of the Coastal Zone Management Program, set forth in Chapter 205A-2, Hawaii Revised Statutes.

A. Objectives:

1. *Provide coastal recreational opportunities accessible to the public.*
2. *Protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.*
3. *Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.*
4. *Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.*
5. *Provide public or private facilities and improvements important to the State's economy in suitable locations.*
6. *Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.*
7. *Improve the development review process, communication, and public participation in the management of coastal resources and hazards.*
8. *Stimulate public awareness, education, and participation in coastal management.*
9. *Protect beaches for public use and recreation.*
10. *Implement the State's ocean resources management plan.*

A discussion of this project's conformance and consistency with the various applicable policies developed for each objective is provided. In summary, the multi-use path project would be consistent with applicable policies. Therefore, the project would be consistent with these Coastal Zone Management objectives.

B. Policies:

1. *Recreational Resources:*
 - a. *Improve coordination and funding of coastal recreational planning and management; and*
 - b. *Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:*
 - (i) *Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;*
 - (ii) *Requiring replacement of coastal resources having significant recreational value, included but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;*

- (iii) *Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;*
- (iv) *Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;*
- (v) *Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;*
- (vi) *Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;*
- (vii) *Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and*
- (viii) *Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of section 46-6.*

The project is consistent with all of these policies as it represents a joint County and Federal effort to fund and develop a multi-use path along the eastern coastline of Kaua`i. The project will conserve the natural resources of this unique coastline and provide diverse recreational opportunities including, but not limited to, bicycling, running/jogging, walking, skating, fishing, surfing, windsurfing, horseback riding and passive enjoyment. Furthermore, the project will increase accessibility to the shoreline, provide needed facility improvements such as comfort stations, picnic shelters, and increased parking areas, and will improve the overall safety of the area by improving existing bridge crossings and pathways. Lastly, construction of the path and related amenities will comply with applicable rules and regulations designed to control or reduce pollution, including point and non-point source water pollution, to conserve the both the natural resources and the recreational value of the affected coastline.

2 *Historic Resources:*

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

An archaeological inventory survey was performed for the project which included incorporating the results of other studies conducted in the area. Consultation with SHPD and other community groups have also been conducted as part of Section 106 consultation efforts to identify historic properties and obtain input and comments. As discussed in this document, appropriate measures will be implemented to mitigate impacts on historic resources within the study corridor. Information obtained as part of archaeological work would provide further information and data on the history of the area which may include providing interpretative signage. Thus, the efforts conducted as part of the planning and assessment of this project is consistent with these policies.

3. *Scenic and open space resources:*

- a. *Identify valued scenic resources in the coastal zone management area;*
- b. *Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline; and*
- c. *Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and*
- d. *Encourage those developments which are not coastal dependent to locate to inland areas.*

The project is consistent with these policies as the proposed path and related amenities will be compatible with their visual environment and will preserve the unique and valuable scenic beauty of this coastline. With the exception of needed amenities planned at Kealia Beach and Lihi Park, the majority of the project would be improvements to the existing path. As a result, view planes to and from the shoreline will not be negatively impacted. Furthermore, the path improvements and related amenities will preserve existing open space and provide increased opportunities for the enjoyment of the scenic coastline by the general public. The path project is coastal dependent by nature. Unlike other types of larger developments, however, the path and its amenities are not only compatible with but also conducive to the continued preservation of this important coastal area.

4. *Coastal Ecosystems:*

- a. *Improve the technical basis for natural resource management;*
- b. *Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;*
- c. *Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and*

The path project will be consistent with these policies. To minimize degradation to the water quality of near-shore waters best management practices would be implemented during the construction phase of this project. Such measures would be developed during

the design of this project, and would comply with the County's Erosion and Sedimentation Control regulations. Other mitigative measures would be specified as part of applicable National Pollutant Discharge Elimination System (NPDES) permits obtained for the project as well.

5. *Economic uses:*

- a. *Concentrate coastal dependent development in appropriate areas; and*

The project is consistent with this policy. The multi-use path project is coastal dependent by nature. Unlike other types of larger developments, however, the path and its amenities are not only compatible with but also conducive to the continued preservation of this important coastal area.

6. *Coastal hazards:*

- a. *Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;*
b. *Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards.*

The path project will be consistent with these policies. Development of the path, including the bridge improvements and amenities such as parking areas, comfort stations and picnic shelters, may be subjected to potential damage from hurricanes, tsunami, flood and erosion. However, all improvements will be designed and constructed in conformance with County, State and Federal design requirements and standards to minimize such risks. Furthermore, the path improvements and related amenities will, to the extent possible, be built mauka of the 40-foot shoreline setback. Should it be necessary to construct improvements within the shoreline setback area, a Shoreline Setback Variance(s) would be obtained and all appropriate measures taken to minimize risk of damage to the development.

7. *Managing development:*

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

The project is consistent with these policies as it will be developed in accordance with all applicable laws, rules and regulations. Furthermore, appropriate coordination with agencies is being conducted in a coordinated manner to minimize overlapping or

conflicting permit requirements. Lastly, the potential impacts of the proposed project have been communicated to the public through community meetings and will continue to be discussed throughout the environmental review and planning processes.

8. *Public participation:*

- b. *Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities.*

As indicated previously, the project complies with this stated policy as two community meetings have been held to inform affected users and the general public about the impacts and benefits of the path and to gather input to assist in the planning and design process. Furthermore, the public will continue to participate in the environmental review process in accordance with state and federal law.

9. *Beach protection:*

- a. *Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion; and*
- c. *Minimize the construction of public erosion-protection structures seaward of the shoreline.*

The project complies with these policies as the path improvements and related amenities are planned, to the extent possible, to be constructed mauka of the 40-foot shoreline setback. Should it be necessary to locate a portion of the path or any of the amenities less than 40 feet from the certified shoreline boundary, a Shoreline Setback Variance will be obtained, and all conditions pursuant to such a variance will be followed.

Erosion of the shoreline along the path alignment is concern in some areas, particularly in the area north of Kapa'a Town and north of Kealia Beach. It is possible that revetments may be constructed to prevent further erosion in these areas if funding is available. However, the construction of erosion-protection structures will be minimized to the greatest extent possible and are intended to protect the path from future coastline erosion. If such structures are necessary, they will be designed and constructed to comply with all applicable federal, state and county regulations.

10. *Marine resources:*

- a. *Exercise an overall conservation ethic, and practice stewardship in the protection, use and development of marine and coastal resources;*
- b. *Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial; and*
- c. *Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency.*

The project will be consistent with these policies. Development of the path and related amenities will not negatively affect marine and coastal resources, and appropriate design measures incorporated to minimize impacts to affected streams and near-shore waters. Both the initial construction and the long-term management of the path will be designed and planned to minimize impacts to the biota of the area, including, but not limited to, endangered and threatened mammalian and avian species, as well as endemic and indigenous avian, botanical and aquatic species. Furthermore, the construction of the project will be designed to minimize impacts to archaeological and historic resources occurring in the project area. Lastly, the development of the project will provide economic benefits including, but not limited to, the creation of short-term construction jobs, the possible expansion of eco-tourism activities in the project area and a possible revitalization of the tourism industry within the Kawaihau District.

8.4 COUNTY OF KAUA'I GENERAL PLAN

The *County of Kaua'i General Plan* was recently revised, and adopted under Ordinance No. 753 on November 30, 2000. The General Plan establishes policy for the long-range development, conservation, use and allocation of land, water, and other resources in the County of Kaua'i. The General Plan includes vision statements which describes the desired state of the County 20 years in the future. Furthermore, the General Plan contains policies intended to achieve that vision as well as specific implementing actions that set forth recommended courses of action to carry out the policies. This section discusses the project's conformance and consistency with pertinent policies and implementing actions from the *County of Kaua'i General Plan*.

Consistency with Applicable Policies and Implementing Actions

A. *Heritage Resource Map*

1. *Policies:*

- (a) *The Heritage Resource Map depicts natural, cultural and scenic resources that are important to the County of Kaua'i and that are intended to be conserved. The mapping of important landforms, streams and other physical elements represents the general location of the resource. The mapping of historic and archeological sites, other features and Scenic Roadway Corridors is intended to be representational, not precise.*
- (b) *Important landforms shall be designated as "Open" on the GP Land Use Map and shall be zoned accordingly, in order to protect steep slopes and streams from erosion and to protect landforms from development that might affect scenic views.*
- (d) *Projects undertaken with State or County lands or funds shall be designed to conserve heritage resources.*

The Kawaihau Planning District Land Use Map shows lands within the project study corridor as being designated for Park and Open uses. The Kawaihau Planning District Heritage Resources Map corresponds with these designations. Additionally, the Kawaihau Planning District Heritage Resources Map designates a portion of Kuhio Highway between Kapa'a Town and Anahola as a scenic roadway corridor, and identifies selected historic and archaeological sites in the area as heritage resources. The project will be consistent with this land use map along with the heritage resource map since it represents an appropriate use of open and park designated lands. The project will conserve valuable natural and heritage resources along this portion of the coastline, including scenic view planes along the coast and from the designated scenic roadway corridor, designated historic and archaeological heritage sites, open space, streams and water quality, and shoreline and near-shore resources.

B. Scenic Views

1. Policies:

- (a) *In developing public facilities and in administering land use regulations, the County shall seek to preserve scenic resources and public views. Public views are those from a public place, such as a park, highway, or along the shoreline.*
- (b) *The County shall observe the following general principles in maintaining scenic resources:*
 1. *Preserve public views that exhibit a high degree of intactness or vividness.*
 2. *Preserve the scenic qualities of mountains, hills and other elevated landforms, qualities such as the silhouette against the horizon and the mass and shape of the landform.*
 3. *Preserve the scenic qualities of lowland/open space features, such as the shoreline, the edge of a coastal bluff, a marsh, a fishpond, or a historic or cultural property. Structures should not impede or intrude upon public views of the feature and should not alter the character of the immediate area around the land feature, historic or cultural property.*

The project will be consistent with all of these policies. As discussed in this document, the project will preserve scenic views from existing beach parks, along the coastline served by the existing path and cane haul road, and from the public highway. The amenities planned for the project such as comfort stations will be designed to be non-intrusive, low-scaled buildings in keeping with the coastal environment.

C. Historic and Archaeological Sites

1. Policies:

- (a) *Preserve important archaeological and historic sites and provide: 1. a buffer area between the site and adjacent uses; and 2. public pedestrian access, as appropriate to the site.*

The project would be consistent with these policies since necessary measures would be implemented in the project's design and construction to mitigative potential effects on historic sites as discussed in this document. Project improvements will also include implementing preservation plan recommendations for a cultural preserve already established near Kuna Bay. Additional preservation plans developed for this project would include consultation with SHPD and the burial council to determine measures and buffer zones from the path project. Pedestrian access will be enhanced in this area by the improvements, and interpretive signage may be included to provide information for path users. Thus, the efforts conducted as part of the planning and assessment of this project is consistent with these policies.

D. Watersheds, Streams and Water Quality

1. Policies

(a) *New Development*

1. *Reduce average annual post-development sediment in runoff (total suspended solids), so that it is no greater than pre-development levels.*
2. *Maintain post-development peak runoff rate and average volume at levels similar to pre-development.*

(b) *Site Development. Plan, design and develop sites to:*

1. *Protect areas that are particularly susceptible to erosion and sediment loss – i.e., stream banks;*
2. *Promote the use of permeable surfaces for driveways and parking and limit increases of impervious areas.*
3. *Limit land disturbance activities such as clearing and grading, and cut and fill to reduce erosion and sediment loss; and*
4. *Avoid disturbance of natural drainage features and vegetation.*

(c) *Construction Site Erosion and Sediment Control*

1. *Reduce erosion and, to the extent practicable, retain sediment onsite during and after construction.*
2. *Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.*

The project would be consistent with these policies by incorporating best management practices in the design of facilities. The nature of this project already involves minor improvements to an existing path and cane haul road which would not contribute large

amounts of impervious surfaces and associated runoff. Improvements would also include measures to address existing coastal erosion occurring in some areas due to present surface runoff conditions. Path amenities such as comfort stations would only contribute small areas of new paved surfaces, and the design of these facilities would incorporate improvements to address drainage and runoff. Design plans would comply with the County's erosion and sedimentation control requirements and other best management practices would be developed in obtaining necessary permits such as a NPDES permit.

E. Coastal Lands

1. Policies:

- (a) *Actively acquire shoreline lands and access-ways to shoreline areas for public use.*
- (b) *When developing public facilities or granting zoning, land use permits, or subdivision for development along the coast, the first priority shall be to preserve and protect sandy beaches.*
 - 1. *Strips of land along the shoreline that have been placed in the State Conservation District or in the County Open zoning district are intended to serve as a buffer from coastal erosion. Structures should be sited inland of these coastal buffers on lands that are appropriately zoned.*
 - 2. *When development is proposed along a sandy beach, hazards of long-term coastal erosion should be assessed and used to determine appropriate setbacks.*
- (c) *For coastal areas suffering erosion, promote and provide for beach re-nourishment in conjunction with property owners and the State Department of Land and Natural Resources. Discourage the construction of shoreline protection structures (seawalls, revetments).*
- (d) *Following are general guidelines for coastal development, including resorts and residential subdivisions, but excepting harbors and other uses which are specifically dependent on locating near the water:*
 - 1. *Provide a permanent pathway laterally along the coast, located in the buffer zone mauka of the shoreline (e.g., Waipouli Resort pathway).*
 - 2. *Site buildings to preserve view corridors from roads or public places to the ocean and from the ocean mauka.*
 - 3. *Provide public parking and convenient access to the ocean.*

The project is consistent with these policies since it involves improvements addressing coastal erosion, preserving beaches and coastal areas, and utilizing acquired shoreline property. The County has recently acquired large shoreline property from Kealia Beach to Ahihi Point, and this project would provide easier access to these areas. The improvements planned would also facilitate protection of shoreline areas and beaches

since it involves recreational support facilities associated with the multi-use path and amenities at Kealia Beach and Lihi Park. Planning for this project has included addressing coastal erosion and its affect on the path, and the appropriate siting of facilities outside of hazards areas to the extent practicable. Although beach nourishment is not applicable to this project, consideration has been given to alternative shoreline protection measures for the path which presently includes not providing any shoreline hardening. Finally, this project would improve the shoreline path already being utilized by the public increasing accessibility to a wider range of users. Public parking improvements along the shoreline would be provided, and facilities would appropriately sited to preserve view corridors from the highway.

F. Native Hawaiian Rights

1. Policy:

(a) *Under the State Constitution and the County Charter, the County of Kaua`i is empowered to promote the health, safety and welfare of all inhabitants without discrimination as to ethnic origin. As part of carrying out its responsibilities under the Constitution and the Charter, the County recognized the rights of native Hawaiians and the laws concerning lands and waters that have been established through the State Constitution, State and federal laws, and State and Federal court decisions. No County ordinance or rule shall modify or diminish these rights:*

- 1. Kuleana lands, water rights and access rights provided under the Kuleana Act of 1850, as recognized in current statutes, rules and court decisions.*
- 2. Konohiki and hoa`aina fishing rights, provided under the 1839 Law of Kamehameha, as modified by subsequent legislative acts and court decisions.*
- 3. Traditional and customary rights of Native Hawaiians, such as for access and gathering, provided under the State Constitution and Hawai`i Revised Statutes, as interpreted by the courts (i.e., the PASH case).*
- 4. Burial rights provided under the Hawai`i Historic Preservation act and the federal Native American Graves Repatriation Act.*
- 5. Preservation of historic properties and archaeological resources provided under the federal Archaeological Resources Protection Act of 1979; the National Historic Preservation Act of 1966; and the Hawai`i Historic Preservation Act.*

The project will be consistent with these policies as it will not diminish any native Hawaiian rights specified by the referenced laws and court cases. As it will improve access to this area of the coastline, the proposed path improvements and amenities may actually increase opportunities for native Hawaiians to practice their traditional and customary rights along the shoreline. Studies conducted and discussed in this document show the proposed improvements should not have an adverse effect on historic sites, and necessary mitigative measures will be implemented to ensure this in compliance with the identified regulations.

G Visitor Activities, Parks and Natural Areas

1. Policies:

(a) *Manage beach parks, resource parks, rivers, beaches and other natural areas according to the following policies, in order of priority (County and State):*

1. *Conserve resources.*
2. *Provide for use by the general public – i.e., individuals, families, ohanas.*
3. *Allow for group use (including commercial tours and equipment rentals) within conservation limits.*

(b) *To enhance the visitor's experience of Kaua'i and to provide meaningful jobs and income to Kaua'i residents, the County shall develop or support development of the following programs by Federal, State, or private agencies:*

1. *Interpretation of natural areas, historic and archaeological sites, traditional agricultural and cultural practices, towns and communities.*

(c) *Improve facilities, maintenance, and management of activities at State and County parks.*

1. *Ensure adequate levels of park maintenance, repair, and hygiene and to improve signage and interpretation of natural and cultural features.*

The project will conserve the natural resources of this unique coastline, provide increased accessibility to the shoreline, and allow for more diverse recreational opportunities to local residents and visitors. These improvements would thus support the County's management of this shoreline area. Interpretative signage would also be incorporated in the project's design as practicable to enhance the visitors' along with resident's experience along the coastline. This project would improve existing path facilities for the County, and provide needed facilities such as comfort stations at Kealia Beach, Lihi Park, and Kuna Bay for the public improving sanitary conditions there.

I. Open Lands

1. Policies:

(a) *The intent of the Open designation is to preserve, maintain or improve the natural characteristics of non-urban land and water areas that:*

1. *Are of significant value to the public as scenic or recreation resources;*
 2. *Perform essential physical and ecologic functions important to the welfare of surrounding lands, waters, and biological resources;*
 3. *Have the potential to create or exacerbate soil erosion or flooding on adjacent lands;*
 4. *Are potentially susceptible to natural hazards such as flood, hurricane, tsunami, coastal erosion, landslide or subsidence; or*
 5. *Form a cultural, historic or archaeological resource of significant public value.*
- (b) *Lands designated Open shall include: important landforms such as mountains, coastal bluffs, cinder cones, and stream valleys; native plant and wildlife habitat; areas of predominantly steep slopes (20 percent or greater); beaches and coastal areas susceptible to coastal erosion or hurricane, tsunami, or storm-wave inundation; wetlands and flood plains; important scenic resources; and known natural, historic and archaeological resources. Open shall also include parks, golf courses, and other areas committed to outdoor recreation.*
- (c) *Lands designated Open shall remain predominantly free of development involving buildings, paving and other construction. With the exception of kuleanas and other small lots of record, any construction that is permitted shall be clearly incidental to the use and open character of the surrounding lands.*

The project is consistent with these policies because it supports the desired uses and intent of the Open land use designation. As indicated previously, the Kawaihau Planning District Land Use Map indicates that lands within the project study corridor are designated for Park and Open uses for which the project is a permitted use. The project will preserve and maintain the natural characteristics of this coastline and conserve natural resources such as open space, streams and water quality, and shoreline and near-shore resources. Furthermore, the project will be designed to mitigate potential damage from coastal hazards. Lastly, construction of the path improvements and related amenities will be incidental to the recreational uses provided by the development of the project and will not impact the character of surrounding lands in those areas designated for Open uses.

J Scenic Roadway Corridors

1. Policies:

- (a) *The purpose of designating Scenic Roadway Corridors is to conserve open space, scenic features, and views within and along Kaua'i's most heavily-traveled routes. The policy of conservation recognizes the vital function of these roadways in meeting the public need for transportation. It also recognizes the legitimate desire of private landowners to make economic use other lands. The intent of this policy is to establish basic principles for*

roadway design and land use within these scenic corridors and to provide a basis for County action to establish programs and regulations to implement them.

- (b) *Scenic Roadway Corridors are primarily designated in areas between towns where surrounding lands are primarily designated Agriculture and Open. Where a Scenic Roadway Corridor is designated within a town or adjoins an area planned for urban use, the primary intent is to promote setbacks, landscaping, and views of scenic features. Scenic Roadway Corridors are intended to provide design guidance but not to restrict the principal land uses of urban areas.*

The Kawaihau Planning District Heritage Resources Map designates a portion of Kuhio Highway between Kapa'a Town and Anahola as a scenic roadway. The proposed path improvements and related amenities will be designed to be unobtrusive and in keeping with the coastal environment. Consequently, the project will preserve scenic view planes from the designated scenic roadway corridor and will provide the public improved access to the shoreline.

K. Bikeways

1. Policy:

- (a) *Support funding to develop Kaua'i's bikeway system to provide for alternative means of transportation, recreation and visitor activities (economic development).*

According to *Bike Plan Hawaii: A State of Hawaii Master Plan* (DOT 1994), the proposed multi-use path is indicated as a "Future Proposed Bike Path." The plan shows the proposed path from Kapa'a to Kealia as part of a bike path that extends from Nawiliwili to Anahola, and this path is situated within the project's study corridor. The plan states that this coastal bike path "could provide an excellent alternative for bicyclists commuting between Kapa'a and Lihue, bypassing many congested and narrow roadway sections." Implementation of this path project will therefore allow the County to increase its bicycle/pedestrian paths along the eastern coast of Kauai, and will provide the community and visitors with additional amenities in County parks.

L. Water Supply

1. Policies:

- (a) *Develop a long-range plan to guide expansion, improvement, and rehabilitation of County water systems.*
- (b) *Coordinate planning of future water system development and rate structures with General Plan policies and guidelines.*
- (c) *Support compact development by giving priority to water supply improvements for existing and planned Urban Center, Residential Community, and Resort areas, while also supporting development in already-established Agricultural Communities.*

The County Department of Water currently provides water supply service to the Kapa'a to Anahola districts within the study corridor. The main water mains are routed along Kuhio Highway with distribution lines extending into smaller subdivisions. The only project improvements affecting water demand and facilities would be the improvements associated with path amenities. This would include comfort stations which may have showers or drinking fountains. During the project's design, appropriate design plans would be coordinated with the County DWS for review and approval.

M. Wastewater Treatment

1. Policies:

- (a) *County and private utilities shall develop and operate wastewater collection, treatment and disposal systems as necessary to serve urban areas for the purposes of safeguarding public health, potable water supplies, and the quality of stream and ocean waters.*

The only areas within the project corridor that would require wastewater facilities are for comfort stations at Lihi Park, Kealia Beach Park and at the public parking area in the Kealia Kai Subdivision. These facilities would provide needed service to the public since there are presently no comfort stations available.

N. Drainage and Flood Control

1. Policies:

- (a) *Regulations and drainage improvements shall be consistent with the following principles:*
1. *Use natural drainageways for storm runoff waterways wherever possible.*
 2. *Avoid channelization or alteration of natural drainageways.*
 3. *Avoid diversion of storm runoff from one basin to another.*
 4. *Require detention basins in new developments, in order to maintain pre-development stormwater flow rates. Requirements shall be based on the two-year storm but may be increased.*
 5. *To conserve land, develop detention basins in conjunction with park or open lands and design for multiple uses.*
 6. *Protect buildings from the 100-year flood.*
 7. *Where there are no downstream drainage systems or if the downstream systems lacks sufficient capacity, require retention facilities sufficient to maintain 100-year storm flows at pre-development rates and conditions.*

The path improvements and related amenities will be constructed to minimize potential damage from coastal flood hazards and erosion. Although some of the drainageways in the project area have been channelized or hardened, the improvements currently proposed will not include any further channelization. The path and amenity facilities will be

designed in accordance with County standards and regulations which include addressing runoff, erosion control, and flood protection.

O. Energy

1. Policies:

- (a) *Require new buildings to incorporate economically-feasible design and equipment to save energy.*

New comfort stations provided as part of this project would already require minimal new energy consumption, and would be designed to save energy to the extent practicable. Path improvements are not planned to include energy generating equipment such as lighting.

P. Police and Fire Safety

1. Policies:

- (a) *Evaluate fire protection services islandwide, with particular attention to the east side, from Wailua to Anahola.*

This project will be consistent with this policy since it will include paving the recently dedicated public shoreline access provided by the Kealia Kai subdivision developer through their property. This paved access would provide improved access to the shoreline area for police and fire departments. The improvement multi-use path created along the shoreline would also improve access for police and fire department staff to provide protection services in this Kapa'a to Kealia corridor.

Q. Improving Housing, Parks and Schools: Parks and Recreation

1. Policies:

- (a) *Develop and maintain Kaua'i's parks to meet the needs of the island's various communities and of both residents and visitors.*
- (b) *Provide convenient access to all of Kaua'i's beaches and inland recreation areas.*
- (c) *Provide for the safe and secure use of public parks and recreation facilities.*
- (d) *Give high priority to improving maintenance of grounds and comfort stations.*

2. Implementing Action:

(a) **New Sites and Facilities**

1. *Develop new sites, facilities, and recreational opportunities in areas that are deficient in outdoor recreational opportunities or overburdened by the number of park users.*
2. *To the extent possible, utilize land in existing County parks that had not been fully developed for recreation uses.*
3. *Construct park facilities in a manner which avoids adverse impacts on natural resources or processes in the coastal zone or any other environmentally sensitive area. In the design of recreation areas,*

incorporate natural features of the site and use landscape materials that are indigenous to the area where feasible in order to retain a sense of place.

4. *Link recreational attractions, that may be designed to have distinct identities and entries, with surrounding areas through the use of connecting roadways, bikeways, walkways, landscape features and/or architectural design.*
6. *Supplement recreational and ecotourism activities in State and County parks with bikeways, particularly along scenic coastlines, as planned for in the State's master plan, Bike Plan Hawai'i (1994). This includes a bikeway along the windward coast from Ninini to Anahola.*

The project would be consistent with these policies and implementing action since the improvements planned supports those listed. The project will conserve the natural resources of this unique coastline and provide diverse recreational opportunities to local residents and visitors. In addition, the project will increase accessibility to the shoreline, provide needed facility improvements such as comfort stations, picnic shelters, and increased parking areas, and will improve the overall safety of the area by improving existing bridge crossings and pathways. Improvements will utilize existing bicycle and pedestrian paths and existing bridges to link several distinct parks and open coastal areas within a single corridor. The path and related amenities will be developed in such a way as to preserve scenic views of the coastline, both along the shore and from areas mauka of the planned improvements. Furthermore, the project will implement a portion of the long-planned bicycle path improvements described in *Bike Plan Hawai'i* for this area.

8.5 COUNTY ZONING DISTRICT

The Kawaihau District zoning map indicates that the entire project corridor is zoned "Open" while the existing public shoreline access trail within the Kealia Kai Subdivision is zoned "Agriculture." According to the County of Kauai's Comprehensive Zoning Ordinance, permitted uses and structures within both the "Open" and Agriculture Districts include outdoor recreation uses as well as accessory uses and structures. As such, the proposed multi-use path and related amenities would be meet the outdoor recreational use definition and are permitted uses within these districts.

Development standards for construction and use within an "Open" District specify that the amount of land coverage created for buildings shall not exceed 10 percent of the lot or parcel area. Furthermore, no existing structure, use or improvement shall be increased in size, or any new structure, use or improvement undertaken so as to exceed the 10 per cent land coverage limitation. The path amenities such as comfort stations will be developed in conformance with these requirements.

CHAPTER 9 CONSULTATION EFFORTS

Consultation with various government agencies has been conducted for this project as part of the pre-assessment consultation process in preparing this document. Such efforts consisted of distributing solicitation letters to several agencies to obtain their input and comments on the project identifying issues which should be addressed. Three public informational meetings have also been conducted by the County DPW as part of the planning effort for this project. A Draft EA was also published on November 23, 2002 for review and comments on this project. In addition, consultation with native Hawaiian organizations and the public was conducted as part of the Section 106 consultation process previously discussed in Chapter 4. These consultation efforts are discussed in this Chapter, and copies of comments received are included in Appendix B of this document.

9.1 DRAFT EA PRE-ASSESSMENT CONSULTATION

Consultation with various Federal, State, and County government agencies was conducted to obtain their comments and concerns associated with the project as part of the environmental assessment process. Letters providing project information along with a preliminary site plan was sent to these parties in August 2002 for their review.

A listing of agencies and organizations for which consultation letters were sent is provided below. Those providing written response are identified with a "»" symbol. Copies of their written comments received along with responses are included in Appendix B.

Federal Agencies

- » Pacific Islands Ecoregion, Fish and Wildlife Service, Department of the Interior
- Water Resources Division, Geological Survey, Department of the Interior
- » U.S. Army Engineer Division, Department of the Army
- Federal Highway Administration, Department of Transportation
- Natural Resources Conservation Service, Department of Agriculture

State of Hawaii Agencies

- Department of Accounting and General Services
- Department of Agriculture
- Department of Business and Economic Development
- » Department of Education
- Department of Hawaiian Home Lands
- » Department of Health
- » Department of Land and Natural Resources
- » Department of Land and Natural Resources, Division of Boating and Ocean Recreation (Kauai)

- » Department of Land and Natural Resources, Historic Preservation Division
- » Department of Land and Natural Resources, Kauai District Land Division
- » Department of Land and Natural Resources, Kauai Forestry Division (Na Ale Hele)
- » Department of Land and Natural Resources, Kauai/Niihau Islands Burial Council
- » Land Use Commission, Dept. of Business, Economic Development & Tourism
- » Office of Hawaii Affairs
- Office of Planning, Dept. of Business, Economic Development & Tourism
- » Department of Transportation
- » Department of Transportation, Kauai District Office

County of Kauai Agencies

- Civil Defense Agency
- Department of Environmental Management, Solid Waste Division
- Department of Environmental Management, Wastewater Division
- Department of Public Works, Division of Parks and Recreation
- » Department of Water Supply
- » Kauai Fire Department
- » Kauai Historic Preservation Review Commission, County of Kauai
- Kauai Police Department
- » Office of Economic Development
- Planning Department

Community Organizations and Elected Officials

- The Honorable Maryanne Kusaka, Mayor
- The Honorable Ronald Kouchi, Council Chair
- Kauai Electric Company

9.2 PUBLIC INFORMATIONAL MEETINGS

First Public Informational Meeting

An initial public informational meeting was held by the County DPW to notify the public of the project, and solicit input on community values, needs, constraints, and other information that could be used in developing project concepts and alternatives. The first informational meeting was held on July 25, 2002 at 7:00 p.m. at the Kapa'a Neighborhood Center. Public notifications of these meetings were published in the July 14th issue of The Garden Island and the Honolulu Star Bulletin newspapers. Flyers providing notice of this meeting was also distributed to properties within 300 feet of the affected path.

A copy of the attendance sheet for this informational meeting is provided in Appendix B along with a summary of comments received at that meeting. General comments received at this informational meeting could be grouped into a few categories which are summarized below along with discussions as to how they are being addressed.

1. General comments about the path features included the following:

- Questions on the length of paving, type of surface material, path color, and safety along the path due to the current deteriorating condition of the cane haul road.
- Asked if plans were to provide a path spanning the presently washed out Kumukumu Stream bridge.
- Suggested that speed limits be posted along the path and enforced.
- Suggestion to provide striped path lanes to accommodate the number of different users. Suggested that the path be divided into 3 lanes and left unpaved in a natural manner.

Information on the path features are discussed in this document which includes providing a new bridge spanning Kumukumu Stream. Other path specifics such as color, striping, and speed limits would be developed by the selected contractor design team. However, these path details should be similar to the Lydgate Park path being constructed, and should also conform with the County's design and maintenance guidelines developed for that path.

- The need for guardrails addressed safety and liability issues, but may change the natural character of the area.
- Some desired landscaping along the path using native or possibly endangered plants while others didn't want landscaping to retain the existing natural character.

Guardrails will be needed for some sections of the path for the safety of path users. These sections affect the area north of Kapaa Town since the existing cane haul road is located along steep cliffs several feet above the rocky shoreline below. Specific sections and guardrail design would be developed by the selected contractor design team. Similarly, landscaping added along the path would be established by the contractor design team.

- Path area needed 24-hour access to allow for environmental cleanup, beautification efforts, and cleaning beach areas.
- Suggested that maintenance of the path could be done through an "Adopt a Path Way" program, similar to the "Adopt a Highway."

Access to the path would available 24-hours to the public since there would be no structures preventing access within this County shoreline property. Regularly scheduled maintenance of the path would be completed by the Division of Parks and Recreation. The County is also open to community-based programs assisting with the maintenance of this path.

2. Comments about the path's use and accessibility included the following:

- Suggestion that the path needs to be ADA accessible, and allow people with electric powered wheel chairs/scooters or motorized wheelchairs.
- Access to Kuhio Highway should be provided from the path.
- Some indicated they did not want any motorized vehicles allowed on the path.

The path would be designed to comply with ADA requirements, and several access points to Kuhio Highway are provided as discussed in this document. Use of electric or motorized wheelchairs for persons with disabilities would be allowed on the path. However, vehicular access along the path would not be permitted as it is currently except for emergency vehicles (ex. police and fire departments).

- Provide easier vehicular access to viewing sights with short walking distance.
- Wanted better access to points such as the old "pineapple dump" and for general fishing spots along the coast.
- Provide vehicular parking to access areas south of Kuna Bay and along the Kealia Kai subdivision area.

Additional access points are being provided where practicable along the path to accommodate fishing activities. This includes providing a new parking area near the Kealia Lookout and improvements to Moikeha Canal Bridge to allow continued fishing from the bridge. Unfortunately, access to the shoreline area fronting the Kealia Kai Subdivision is limited since the County only has one public access through the development. Thus, access to areas north of Kealia Beach would continue to be from this beach park. Vehicular access along the path would not be permitted due to potential conflicts and safety issues with path users.

- Wanted ordinances changed to allow horseback riding (along the side of the path), dog walking, and motorcycles on the path.
- Did not want to see commercial uses along the path such as horse or bike tours. However, another indicated tours along path was okay.

Changes to County ordinances are beyond the scope of this project, however, consideration has been given in evaluating the feasibility of accommodating equestrian use along the path from the northern end of Kapaa town to Ahihi Point. Unfortunately, limited right-of-way along the current cane haul road path is restricting the feasibility of accommodating equestrian use. Commercial uses along the path are not being accommodated under this project.

3. Comments about the accessory facilities associated with the path project included the following:

- Did not want pavilions, cabanas, or any building built along the path which would invite people to congregate.
- Would like to see benches along the path to serve as rest stops at intervals.
- Commented that the path should have some lighting for safety at night, and the utilization of solar powered lamps were suggested.
- Suggested consideration for additional comfort stations at Lihi Park and at Kuna Bay near the area of the public access trail.
- Suggested that at least one covered picnic table be located at the scenic lookout point overlooking south portion of Kealia Beach.

Path accessory facilities are planned at Kealia Beach and Lihi Park to address the public need for such facilities. Concerns with the types of people congregating and activities occurring at these facilities would be a maintenance issue addressed by parks staff and the County Police Department. Pavilions will not be provided at beach parks to address such concerns. Benches and picnic tables are planned as part of rest areas provided along the path, and will be determined by the contractor design team. A comfort station is planned at the County's public parking area at the Kealia Kai subdivision. Lighting along the path is not planned for this project at this time.

Second Public Informational Meeting

The second informational meeting was held on August 27, 2002 at 7:00 p.m. at the Kapa`a Neighborhood Center. Public notifications of this meeting were published in the August 14th issue of the Honolulu Star Bulletin and on August 15th in The Garden Island newspaper. Flyers providing notice of this meeting was also distributed to properties within 300 feet of the affected path.

The purpose for this meeting was to present alternative concepts developed which are being considered for this project, and to provide the community with an opportunity to provide further input and comments on these plans. A copy of the attendance sheet for this informational meeting is provided in Appendix B along with a summary of comments received at that meeting. General comments received at this informational meeting could be grouped into a few categories which are summarized below along with discussions as to how they are being addressed.

1. General comments about the path features included the following:
 - Suggested the path not cut through the grass field behind Kapaa Community Center since many people utilize the area for and activities.
 - Suggested the use of grass blocks for the path instead of concrete pavement.
 - Commented that the path foundation be appropriately designed at crossings being provided for vehicular mauka-makai access.

The path would need to be paved with concrete or other appropriate surface to meet Federal design standards and be ADA compliant. It would also be designed to allow vehicular access across it to maintain existing mauka-makai access. Current plans for the path route would not affect the grass field behind the community center.

2. General comments about path amenities included the following:
 - Vehicular parking should be provided near Otsuka's and a rest area provided at Kealia Lookout.
 - Suggested that another comfort station be provided at Kealia Beach possibly at the southern end.
 - A rest stop on the north side of Kumukumu Stream should be considered because of its scenic view of the shoreline.
 - Requested that the path not have a lot of signs provided.

- Suggested that the existing sand parking lot at Kealia Beach not be paved since it might be washed out if large waves encroach onto the beach.

A path rest area with vehicular parking is planned just north of the Kealia Lookout. However, no vehicular parking is planned at the northern end of Otsuka's because several of the parcels located there are not owned by the County, and the State DOT has future plans to utilize that area as part of the permanent bypass highway. A comfort station is not planned at the southern end of Kealia Beach at this time, however, the County may consider providing one in the future. A path rest area north of Kumukumu Stream will be considered by the contractor design team. Consideration will be given to minimizing the amount of signage along the path. There are no plans to pave the existing sand parking area at the northern end of Kealia Beach.

3. General comments about the bridges affected included the following:

- Mauka/makai access should be maintained near Moikeha Canal and other segments of the proposed path.
- The Moikeha Canal bridge should include shoulders or flare-outs to allow the public to continue fishing from this bridge.
- Suggested Kapaa Stream Bridge be designed so improvements are only made to the deck and not the entire bridge structure and foundation.

Existing mauka-makai crossings over the existing path and cane haul road will be retained as part of this project's design. Plans for Moikeha Canal Bridge are intended to provide shoulders along the bridge for the public to continue fishing from while minimizing conflict with path users. The improvements designed for Kapaa Stream Bridge by the contractor design team will need to consider the entire structure to address its stability and the safety of path users.

4. General comments about the community involvement with the project included the following:

- Homeowners in the area of the County Swimming Pool should be involved in the project's design along with those who utilize roadways to access Kapaa Beach Park behind Otsuka's.
- Suggested that the Kapaa community should be involved for improvements occurring in the town area.
- Requested that special interest groups (such as the members of the Kauai Heritage and Health Coastal Trail Committee) should be notified of future meetings on the project.

Sufficient public notices of this project have been and will continue to be provided to surrounding homeowners and community organizations which include mailing flyers and publishing notices of meetings in the newspaper. A presentation of the project has also been given to the Kapaa Business Association and Kauai Heritage and Health Coastal Trail Committee.

5. General comments about the access along the project corridor included the following:
- Mauka-makai access should be maintained in the area south of Kealia Beach for people fishing in that area.
 - Concern was expressed about the enforcement of preventing motorized vehicles off the path since there may be instances where this occurs.

Existing mauka-makai crossings used by the public over the existing cane haul road, such as that at the southern end of Kealia Beach, will be retained as part of this project's design. The County Parks and Recreation Department maintenance staff will work with the Police Department to address enforcement of preventing unauthorized motorized vehicles on the path.

6. General comments about the equestrian use along the path included the following:
- Allowing horseback riding utilizing a separate parallel path was requested in the area from Otsuka's north to Ahihi Point.
 - Suggested equestrian use of the path would not be an issue, since it could be accessible for this use, if the path was constructed of gravel instead of concrete.
 - Requested that the horsing community not be excluded from discussions on whether or not horses will be allowed on the proposed path.
 - Comment was expressed that there were already enough equestrian trails on the island.
 - Commented that there are no ordinances regulating horse uses on Kauai, thus, one is able to ride anywhere unless prohibited by ordinance.
 - Commented that a horse/bridle path can be accommodated on the cane haul road, since the width of the entire cane haul road was measured when the Kauai Heritage and Health Coastal Trail Committee when preparing its report to the County Council.

Consideration was given by the County in evaluating the feasibility of accommodating equestrian use along the path from the northern end of Kapaa town to Ahihi Point. Unfortunately, limited right-of-way along sections of the current cane haul road path is restricting the feasibility of accommodating equestrian use. Consideration is also being given to meeting Federal requirements for this multi-use path width and design along with safety issues among bike, pedestrian and equestrian users, and maintenance of the path. However, the County plans to accommodate equestrian use to the less utilized section from Kealia Beach Landing up to Ahihi Point which will be periodically re-evaluated to assess safety and user conflicts. Appropriate consultation efforts have been and will continue to be conducted with path user groups which include equestrian, pedestrian, bicyclists, etc. to determine protocol and design requirements to accommodate this mixed use. Ordinances regulating horse uses on Kauai would need to be addressed by the County Council.

7. General comments providing other information within the study corridor included the following:
- An approximately 30 to 40-foot remnant of the old train track and ties are under the vegetation in the area of the intersection of Kuna Bay with the public shoreline access path.
 - An old slaughterhouse building is under the vegetation in the area of the shoreline access path and cane haul road intersection within the Kealia Kai subdivision study section.
 - A heiau was located at Ahihi Point.
 - The "Rails and Trails" program (Federal grant program under Department of Agriculture) should be sought for additional funding, especially if horse/bridle trails are added.

The path improvements planned in the Kuna Bay area should not affect the old train track and ties or slaughterhouse building remnants which appear to be situated makai of the existing cane haul road. In the event the path's design does require encroaching considerably makai of the cane haul road, the contractor design team will conduct appropriate coordination with SHPD to minimize affects on these structures. Similarly, there are no plans to extend the path to Ahihi Point at this time. Archaeological surveys and information collected thus far have not determined more details of this heiau's location at Ahihi Point, but appropriate coordination with SHPD will be conducted if future improvements are planned at this point. The County will consider pursuing project funding from other Federal grant programs.

9.3 SECTION 106 CONSULTATION

Efforts were conducted to initiate consultation with several native Hawaiian organizations and pertinent government agencies as part of this Section 106 consultation process. A listing of native Hawaiian organizations was compiled based upon information obtained from the SHPD and previous projects. Using this list, solicitation letters with project information were sent on August 7, 2002 to these parties giving them 30 days to provide any comments.

On September 4, 2002, follow-up letters were again sent to those who didn't respond to the initial solicitation letter. These follow-up letters informed parties of the project, the forthcoming publication of the Draft EA document for public review, and whether they would like to receive a copy of the Draft EA. A few comment letters were received and copies of these responses along with memos of consultation with individuals are included in Appendix B of this document.

A public notice of the project and initiation of Section 106 consultation efforts was also published in The Garden Island newspaper on August 4, 2002. This notice was published in this local newspaper of general circulation on the Island of Kauai to notify the general public and other potential Hawaiian organizations of these consultation efforts being initiated.

Other consultation efforts included a presentation made to the Kauai/Niihau Islands Burial Council on August 21, 2002 to provide them information on the project and solicit their input as part of this Section 106 consultation process. A presentation before the Kauai Historic Preservation Review Commission was also held on September 5, 2002 on the subject project as part of Section 106 consultation efforts.

A meeting with the County DPW, SHPD representative, Planning Department, and member of the burial council was held in October 2002 to discuss the status of the County's efforts to implement preservation plan (burial treatment plan) measures for a cultural preserve established at Kuna Bay. Based upon this meeting, it was recommended that implementation of the preservation plan be included along with developing a long-term preservation plan for other identified historic sites within the Kealia Kai Subdivision area in the vicinity of the project. The County has decided to incorporate these items with this project as recommended.

Consultation Letters

A listing of native Hawaiian organizations for which consultation letters were sent is provided below. Those providing written response are identified with a "»" symbol. Copies of written comments received are included in Appendix B.

- » Department of Hawaiian Home Lands
- » Department of Hawaiian Home Lands, HHL Housing (Kauai)
- » Office of Hawaiian Affairs, Administrator
- Department of Land and Natural Resources, Historic Preservation Division
- » Kauai/Niihau Island Burial Council, State Historic Preservation Division
- Office of Hawaiian Affairs, Kauai
- » Planning Department, County of Kauai
- Anahola Homestead Association
- Kekaha Hawaiian Homesteaders Association
- Kamualii Hawaiian Civic Club
- Kaumualii Chapter No. 3
- Kauai Hawaiian Civic Club
- Royal Order of Kamehameha I
- Hui Malama I Na Kupuna 'O Hawaii'I Nei
- Hanalei Hawaiian Civic Club
- Queen Liliuokalani Trust
- » Kauai Historic Preservation Review Commission, County of Kauai
- Na Kahu Hikina a Kala

Kauai/Niihau Island Burial Council Meeting

A presentation before the Kauai/Niihau Island Burial Council was held on August 21, 2002 on the subject project. A briefing on the project was provided and comments from Council members were obtained. A summary of their comments along with how they are being addressed is provided below.

1. It was inquired whether the County has made any allocations to address implementing preservation plan recommendations for the cultural preserve area established in the Kealia area (Kuna Bay site).
It was discussed that follow-up on this was the responsibility of the Planning Department. However, the County will incorporate implementation of these preservation plan measures as part of this project.
2. Clarification was asked to confirm whether the project is 100% federal-funded.
It was noted that 80% is coming from the Federal government. The other 20% is being partly funded by the land dedicated to the County in the Kealia area.
3. The path should be as pleasing as possible, yet not disturb burials or archeological resources below ground.
Appropriate mitigative measures will be incorporated in the project's design and implementation to minimize effects on burial or archaeological resources. Coordination with the SHPD and burial council will occur during the project's design to address such matters.
4. Concerns were expressed that a comfort station may have more impacts beyond the structure itself since a leach field may be needed. It was suggested that the County look at composting toilets, and other items that will reduce the impact to the environment.
The feasibility of utilizing composting toilets will be looked into as part of the project's design for implementation.
5. It was asked if development of the path would stop illegal parking currently occurring near the existing cane haul road at Kealia Beach Park.
This matter is a separate management issue of that park site that the administration will consider.

Kauai Historic Preservation Review Commission Meeting

A presentation before the Kauai Historic Preservation Review Commission was held on September 5, 2002 on the subject project. A briefing on the project was provided and comments from Commission members were obtained. The Commission accepted the project in concept, and a summary of their comments along with how they are being addressed is provided below.

1. New guard rails and related improvements should fit in with the existing area and architecture.
Bridge designs will meet the Federal guidelines established for bike paths which are different from highways. The design of guard rails and improvements will be developed by the selected contractor team, and will try to be compatible with the existing

- architecture. Appropriate coordination with the Commission would be conducted by the design team in developing bridge designs.*
2. Interpretive and historical signage should be considered.
Interpretive and historical signage will be considered as part of other path amenities included with the design of the project in accordance with the MOA stipulations.
 3. The design of bridge improvements should take mauka/makai viewplane impacts into consideration.
The design of bridge improvements will be developed by the selected contractor team, and will consider such viewplane impacts. Appropriate coordination with the Commission would be conducted by the design team in developing bridge designs.
 4. Impacts to sites identified in the inventory survey for the Kealia Kai subdivision along with implementation of the preservation plan developed should be addressed.
The County will incorporate implementation of these preservation plan measures as part of this project. Impacts to other historic sites from the Kealia Kai inventory survey will be addressed in this document.
 5. It was expressed that an understanding that sensitive unsurveyed areas will be inventoried with subsurface testing and that archaeological monitoring will occur during ground disturbance activities.
An inventory survey that included subsurface testing was already completed as part of planning work conducted for this project. Appropriate mitigative measures will be implemented during the project's design and implementation which includes archaeological monitoring for applicable sections of the path.

Memorandum of Agreement

Based upon consultation with the SHPD, a Memorandum of Agreement, or MOA, was required to make sure necessary mitigative measures would be implemented to avoid adverse effects on historic properties. Consequently, a Memorandum of Agreement has been developed and executed which includes stipulations identifying mitigative measures to be implemented as shown in Appendix B.

This MOA was developed in consultation with and review by pertinent parties which included the Advisory Council on Historic Preservation, SHPD, island burial council, Kauai Historic Preservation Review Commission, and State Office of Hawaiian Affairs. Copies of comment letters associated with consultation efforts in developing this MOA are also included in Appendix B.

9.4 DRAFT EA COMMENTS

The Draft EA for this project was published in the November 23, 2002 issue of the State Office of Environmental Quality Control's *The Environmental Notice* initiating a 30-day public comment period which ended on December 23, 2002. Copies of this Draft EA were distributed to the following parties for review and comments. Those parties which submitted comments are indicated by a ">>" next to them. Comment letters received from these parties along with corresponding

response letters are included in Appendix B. In addition, a public informational meeting was held to solicit comments on the project and this Draft EA document.

Federal Agencies

- Federal Highway Administration, Department of Transportation
- Natural Resources Conservation Service, Department of Agriculture
- National Oceanic and Atmospheric Administration, Department of Commerce
- Pacific Islands Area Office, National Marine Fisheries Service
- Pacific Islands Ecoregion, Fish and Wildlife Service, Department of the Interior
- » Water Resources Division, Geological Survey, Department of the Interior
- » U.S. Army Engineer Division, Department of the Army

State of Hawaii Agencies

- » Department of Accounting and General Services
- Department of Agriculture
- Department of Business, Economic Development, and Tourism
- » Department of Education
- Department of Hawaiian Home Lands
- Department of Hawaiian Home Lands, HHL Housing (Kauai)
- » Department of Health
- » Department of Land and Natural Resources
- Department of Land and Natural Resources, Division of Boating and Ocean Recreation (Kauai)
- » Department of Land and Natural Resources, Historic Preservation Division
- Department of Land and Natural Resources, Kauai District Land Division
- Department of Land and Natural Resources, Kauai Forestry Division (Na Ale Hele)
- Department of Land and Natural Resources, Kauai/Niihau Islands Burial Council
- Land Use Commission, Dept. of Business, Economic Development & Tourism
- » Office of Environmental Quality Control, Department of Health
- Office of Hawaii Affairs
- Office of Hawaii Affairs (Kauai)
- Office of Planning, Dept. of Business, Economic Development & Tourism
- Department of Transportation
- » Department of Transportation, Kauai District Office

County of Kauai Agencies

- Civil Defense Agency
- Department of Public Works, Division of Parks and Recreation
- Department of Transportation
- » Department of Water Supply
- Kauai Fire Department

- Kauai Historic Preservation Review Commission, County of Kauai
- Kauai Police Department
- Office of Economic Development
- Planning Department

Community Organizations and Elected Officials

- The Honorable Maryanne Kusaka, Mayor
- The Honorable Ronald Kouchi, Council Chair
- Kauai Electric Company
- Kapaa Public Library
- » Kauai Health and Heritage Coastal Trails Committee¹
- Anahola Homestead Association
- Kekaha Hawaiian Homesteaders Association
- Kamualii Hawaiian Civic Club
- Kauai Hawaiian Civic Club
- Royal Order of Kamehameha I, Kaumualii Chapter No. 3
- Hui Malama I Na Kupuna 'O Hawaii 'I Nei
- Hanalei Hawaiian Civic Club
- Queen Liliuokalani Trust
- Kauai Historic Preservation Review Commission, County of Kauai
- Na Kahu Hikina a Kala

Other Letters Received

- » Sierra Club, Kauai Group of the Hawaii Chapter
- » Glenn Mickens
- » Lorraine Scarpace
- » Richard O. Stauber
- » W. Norman Sims
- » Tom McCloskey

Kaua'i's Health and Heritage Coastal Trail Committee Meeting

A meeting was held on December 12, 2002 with the Heritage Trails Committee to present the planned improvements and obtain comments on the project and Draft EA published. A copy of the attendance sheet from this meeting is provided in Appendix B. General comments received are grouped into a few categories which are summarized below along with discussions as to how they are being addressed.

1. General comments about design issues associated with the path and amenities:
 - It was asked if grades along the pathway could be kept to less than 5 percent.

¹ A presentation was made to this Committee for which comments are summarized.

- Concerns were expressed about the detrimental aesthetic effect of having handrails on both sides of the path.
- Comments expressed regarding the pathway width and reducing it.
- Question why the equestrian path was 4 feet wide and the separation buffer 5 feet wide.
- Commented to consider use of crushed rock pathways to accommodate multiple uses including equestrian, and that pathways incorporate stone walls and bridges.
- Commented if using rock walls in lieu of guardrails or safety rails for aesthetic reasons could be considered.

The path grades will try not to exceed 5 percent and would be addressed as part of the project's design. Safety rails would only required if the grade is between 5 and 8 percent, and the path's grade will try not to exceed this. If the path width is reduced to less than 10 feet in width, then cyclists may be required to disembark due to user conflicts. This may only occur north of Kealia Beach park where equestrian use would be accommodated. However, the project's design would work with various groups to establish protocol along that shared section.

The trail width and buffer was identified based upon recommendations by the Heritage Trails Committee, and is consistent with design guidelines for trails in other states. A significant amount of discussion has been generated regarding the types of material that could be used to preserve or enhance the aesthetics of the pathway, preserve scenic views and meet the safety requirements. Such items as crushed rock pathways, rock walls, etc. would be determined as part of the design phase. Consultation with the Heritage Trails Committee along with other user groups would be conducted at that time to determine suitable materials given available funding.

2. General comments about user issues associated with the path and amenities:
 - Concern was expressed about the potential conflict of homeowner vehicles and path users in the area of the County pool.
 - Concern expressed about potential conflicts between horses and guide dogs for the disabled along a shared use path with equestrian.
 - Another person dismissed this concern stating he believed that horses in the area were used to being around dogs.

Potential conflict issues at the path's route near the County pool could be handled with appropriate signage as was done at Lydgate Park. The project's design will thus address necessary signage at this area. Shared use of the path with equestrian users is only planned along the section from Kealia Beach north which is less utilized by the public. Thus, potential conflicts between horses and dogs should be minimal. However, the County will monitor activity levels and conflicts along that shared section and re-evaluate its activity in the future as warranted.

3. General comments about path and amenity improvements:
- Positive comments received on proposed improvements for Kealia Lookout, and the new proposed access was believed to be safer than the existing one.
 - Request if the Kapa'a Cane Haul Bridge at Kealia Beach could be improved with wider flares to accommodate fishing as is proposed with the Moikeha Canal Bridge.
 - Question whether the path ends before the Homaikawaa Bridge washout.
 - Requested clarification of Kealia Beach improvements associated with to the two new proposed access points and County improvements.
 - A question was raised about providing specific interpretative signage.
 - Comments were provided on historic sites affected in the area. These comments were: 1) a reburial was done in Kapaa Park with the Division of Parks and Recreation, 2) a reburial is around the Kawaihae Road sign as part of a prior State DOT project, 3) sites in the Kealia Kai area were not listed such as the Pineapple Dump, 4) more information on possible sites at Ahihi Point was needed, and 5) desired implementation of the previously approved burial treatment plan at the Kealia Kai Subdivision area. Recommendations included: 1) develop an archaeological monitoring plan, 2) develop a burial treatment plan which addresses how to handle inadvertent finds, 3) conduct data recovery where cultural deposits are and impacts will occur, and 4) implement the Kealia Kai preservation plan which includes interpretative signage.

The improvements at Kealia Lookout were developed in consultation with the State DOT and were intended to improve safety along that bend. The Kapaa Cane Haul Bridge will include wider flares to allow fishing from the bridge. The multi-use path would stop before the existing cane haul road crosses the washed out Homaikawaa Bridge. At Kealia Beach Park, the State DOT does not have enough funding to make all the improvements (left turn storage lanes and right-turn deceleration lanes) at both beach park access points. As a result, the County will have to pay for some improvements to the northern access point, across from Kealia Road. Interpretative signage will be incorporated in this project and developed as part of the project's design.

The information on the reburials are noted and would be incorporated in the Final EA, however, the path improvements are not expected to negatively impact these sites. Information on sites in the Kealia Kai subdivision area, such as the pier (known as Pineapple Dump), were identified in the Draft EA and included in Appendix G (Inventory Survey). Information discussed on sites focused more on those affected by the project. Information on possible sites at Ahihi Point were already covered in the inventory survey for the Kealia Kai Subdivision and incorporated in the new inventory survey (Appendix G) prepared for this project. However, those sites at Ahihi Point should not be affected since no path improvements are planned in that area. Access to that Point is currently

available to the public by foot and would continue with this project. This project would include implementing the Kealia Kai's burial treatment plan measures such as landscaping for with the cultural preserve. The recommendations identified would be implemented and area discussed in Section 4.8 of this Final EA.

Third Public Informational Meeting

A third public informational meeting was held on December 12, 2002 at 7:00 p.m. at the Kapa'a Neighborhood Center. Public notifications of this meeting were published in the December 1st issue of the Honolulu Star Bulletin and on December 1st in The Garden Island newspaper. Flyers providing notice of this meeting was also distributed to properties within 300 feet of the affected path.

The purpose for this meeting was to present project plans proposed in the Draft EA, and to provide the community with an opportunity to provide further input and comments on these plans and the Draft EA. A copy of the attendance sheet for this informational meeting is provided in Appendix B along with a summary of comments received at that meeting. General comments received at this informational meeting could be grouped into a few categories which are summarized below along with discussions as to how they are being addressed.

1. General comments about the design related aspects associated with the path and amenities included the following:
 - Commented that he hasn't seen 12-foot wide multi-use trails before, and was concerned that such an expensive path may kill the project.
 - Suggested the County make the best use of funding available for project.
 - Indicated that concrete was the best long-term surface to use for the pathway.
 - Indicated that a concrete path was ugly but can be dyed or stained, and it can quickly become the same color due to soil runoff from the surrounding area.
 - Concerned that accidents were inevitable if no center line was maintained along the path.
 - Pier improvements planned for Waika'ea Canal bridge may not physically allow only a portion of the pier to be removed.

Paths in other states have widths of 12 feet, and design guidelines from other states call for a minimum 10 to 12-foot-wide path for multi-users and when located within urbanized areas. The AASHTO design guideline also indicates such path widths for designing multi-use paths. The County plans to provide 12 feet for the section in Kapaa Town, and 10 feet for northern areas where right-of-way constraints may necessitate such modifications. The County would make the most efficient and effective use of funding for this project which may include other design modifications to meet costs.

Concrete is the preferred material for the path, however, other material types will be evaluated as part of the design phase. Such design considerations would also include dyeing the path to a natural toned color. Striping along the path along with signage will

be developed as part of the design phase to minimize user conflicts. The project's design will evaluate the feasibility of removing only the planned pier at Waika`ea Canal in more detail, however, preliminary plans indicates that is possible.

2. General comments about the path, uses, and amenities included the following:
 - Indicated they would like comfort station at Kealia Beach be located closer to the beach.
 - Questioned what was wrong with the existing path, and wasn't clear what is meant by a multi-use path.
 - Questioned why the County can't improve the shoreline.
 - Other trails/pathways have successfully included equestrian uses.
 - Equestrian have historically used the path between Otsuka's and the northern end of the project and indicated a petition containing signatures of over 300 horse advocates supporting the continued use of this area for equestrian uses.
 - Indicated more bike-to-bike accidents than horse-to-pedestrian or horse-to-bike accidents.

The project's design will evaluate locating the comfort station closer to the beach, however, environmental factors (drainage, wastewater disposal, etc.) would also need to be considered. The existing deficiencies associated with the cane haul road are discussed in Chapter 2 along with clarification of the term multi-use. The path and amenities being proposed do serve as improvements to the County's shoreline property, and will help maintain open space, increase accessibility to people, and enhance the use of this coastline.

The section from Otsuka's to Kealia Beach would not be accommodated for equestrian use due to insufficient right-of-way along the corridor and the heavier use of that area which would create user conflicts. However, it was decided that equestrian use would be accommodated along a section of the path from the northern end of Kealia Beach to its terminus at the Ahihi Point area which is presently less utilized. The County will monitor and evaluate this shared equestrian use of the path in the future to determine if it needs to be re-evaluated due to significant changes in activity, conflicts, or accidents occurring.

3. General comments about the impacts on the environment from the project included the following:
 - Waika`ea Canal Bridge improvements will permanently disrupt historic use by local traffic.
 - Concerned about horse manure from equestrian use running off into the ocean and its impact on nearby surfing areas.
 - Senior citizens and disabled users will be precluded from using path if no motorized vehicles are allowed and will also prevent them from fishing at Kealia Kai Subdivision area.

The design plans developed for the Waikaea Canal Bridge will try to minimize disruptions to its use during construction which is inevitable. Such measures could include providing an alternate temporary crossing. However, such effects would not be permanent and the contractor would inform and coordinate such activities with the community. Horse manure runoff from equestrian use is a concern, and appropriate protocol and measures will be developed in consultation with those groups to address that as part of the design. Motorized vehicles, except for emergency vehicles, are already prohibited from using the cane haul road path along the Kealia Kai section. Thus, restricting such use would not change existing conditions. The County will consider allowing smaller motorized equipment to support accessibility for disabled and elderly. Such accommodations will be developed as part of the project's design.

4. General comments about the activities and uses associated with the path included the following:

- Loitering at the northern section of the pathway becoming a problem.
- Police protection needed to keep pathway safe.

Based upon concerns with loitering or other nuisance activities that may occur at a pavilion, the County is planning to provide smaller picnic shelters along Kealia Beach park. Such picnic shelters are now used at other park sites on the island. The County will work with the Police Department to address such nuisance activities along with keeping the path safe. Thus, there would be several side streets or access locations where police can respond to situations occurring along the path.

5. General miscellaneous comments about the project included the following:

- Enjoys Lydgate Park improvements and looking forward to the planned path improvements making area more accessible to all and provide economic benefit to the island.
- Commented that the project represents a great opportunity to be pro-active.
- Proposed pathway will be good for families and benefit the entire community
- Likes the idea of having a recreational trail for "muscle power".
- Bicycling has increased in popularity substantially over time.

The County will continue working with the community and various user groups as part of the project's design and construction. There are numerous benefits associated with this project for the community, and it is intended to support and enhance recreational use of this coastline.

CHAPTER 10 FINDINGS AND ANTICIPATED DETERMINATION

To determine whether a proposed action may have a significant effect on the environment, the State Approving Agency and Federal Lead Agency need to consider every phase of the action, the expected primary and secondary consequences, cumulative effect, and the short- and long-term effects. The Approving Agency's review and evaluation of the proposed action's effect on the environment would result in a determination whether: 1) the action would have a significant effect on the environment, and an Environmental Impact Statement Preparation Notice should be issued, or 2) the action would not have a significant effect warranting a Finding of No Significant Impact (FONSI).

10.1 PRELIMINARY FINDINGS UNDER STATE CHAPTER 343, HRS

This section discusses the results of the assessment conducted for the proposed project in relation to the 13 Significance Criteria prescribed under the State Department of Health's *Administrative Rules Title 11, Chapter 200*. The purpose of this assessment was to consider the "significance" of potential environmental effects which includes the sum of effects on the quality of the environment along with the overall and cumulative effects. The resulting findings are discussed below for each criteria.

10.1.1 Preliminary Findings

1. *Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.*

The project would not result in the irrevocable commitment to loss or destruction of any natural or cultural resource. As discussed in Chapter 4 of this document, the improvements would not negatively impact any natural or cultural resources of significance. There would be no destruction or loss of any significant, endangered, or threatened botanical, faunal, geological, or other natural resources.

In terms of archaeological resources and historic properties, the project should have no adverse effect. At Kealia Beach Park, the siting of path amenities has been relocated away from the area where cultural deposits were discovered to minimize impacts on this area. An archaeological monitoring program would also be developed and implemented for construction activities associated with improvements. Additional mitigative measures would also be implemented for bridges affected and other properties as discussed in Chapter 4 to address impacts associated with this project. The cultural assessment determined that the project would not adversely impact resources in the area.

2. *Curtails the range of beneficial uses of the environment.*

The path and amenities would not curtail the range of beneficial uses of the surrounding environment. The existing path and cane haul road are already being used for bicycling and pedestrians. Therefore, this improvement would support these activities by improving the facilities already being used. Amenity improvements would similarly support path users and the general public since they would be appropriately located at heavily used beach park areas. Therefore, range of beneficial uses of the environment would not be negatively impacted by the project.

3. *Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.*

The project would not conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS. This Draft EA addressed the probable environmental impacts associated with the project which have shown that the project is not expected to have a significant negative impact. The new facilities constructed are not expected to have a significant impact on natural resources or the surrounding environment. There would also be minimal effects on public facilities and infrastructure due to the type of improvements planned.

4. *Substantially affects the economic, or social welfare, cultural practices of the community or State.²*

As discussed under Chapter 5, the project would not have any significant negative impacts on economic factors. This project would create some short-term construction related jobs and increased tax revenue which would have a beneficial affect on the overall economy of the County and State. The character of the Kapa'a and Kealia areas would similarly not be substantially affected by this recreation project since it would support existing recreational activities already occurring in the area.

The cultural assessment study conducted determined that the project is not expected to have negative cultural impacts. No major concerns with the project were similarly identified based upon input received thus far with Hawaiian organizations, agencies, and community members. Therefore, the proposed project is not expected to have any short- or long-term impacts on traditional or cultural practices associated with the property.

5. *Substantially affects public health.*

The project is not expected to substantially affect public health since the project should not have an adverse impact on the surrounding environment. The improvements would not affect vehicular traffic and associated emissions of air pollutants. Noise associated with

² This significance criteria was modified to reflect the recent change to Chapter 343, HRS approved by the Governor as Act 50 on April 26, 2000. This Act added "cultural practices" as part of the factors considered in determining the significance of an effect.

recreational activities within this corridor area already occurring is not expected to significantly change with the improvements. Compliance with the State DOH's permissible sound limits would be complied with. Necessary on-site infrastructure improvements would be provided for the project which includes a wastewater treatment system to serve comfort stations.

Short-term construction activities are similarly not expected to cause significant air pollution in the form of fugitive dust due nor generate any other type of pollutants which may have an adverse affect on public health. Construction activities would occur only during a short time period, and best management practices would be incorporated into the project's design to further minimize nuisances and other typical impacts associated with construction activity.

6. *Involves substantial secondary impacts, such as population changes or effects on public facilities.*

This project is not expected to involve substantial secondary impacts since it would not result in significant changes to the resident population. Improvements would only be made to existing path and cane haul road within the study corridor along with adding amenities such as pavilions and comfort stations which are needed in the area. Therefore, the project would enhance recreational facilities in this area.

7. *Involves a substantial degradation of environmental quality.*

The development of the project would not involve a substantial degradation to the quality of the surrounding environment. Chapters 4 through 7 of this document discussed the probable impact of several environmental factors associated with this project. The results of this assessment and technical studies performed determined that the project would not substantially impact or degrade the environmental quality of the project corridor and surrounding environment.

8. *Is individually limited, but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.*

This document addressed the probable impacts resulting from the entire project that would be constructed over phases. Impacts associated with the project were thus addressed cumulatively taking into account both the phased construction of facilities. Therefore, the cumulative impacts associated with this project was considered and addressed which determined that the project would not have a significant impact on the environment.

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

As discussed in Chapter 4, the project would not substantially impact known endangered, threatened, or rare species or critical habitat identified within the study corridor. None of the botanical resources identified were a threatened or endangered species, or a species of concern. Furthermore, all of the plants can be found in similar vegetation types throughout the island and within the State of Hawai'i. To reduce the potential for interactions between nocturnally

flying Dark-rumped Petrels and Newell's Shearwaters with external lights and man-made structures, any external lighting planned would be shielded.

10. Detrimentially affects air or water quality or ambient noise levels.

As discussed in Chapter 4 of this document, the project would not detrimentally affect air quality, ambient noise levels, or water quality in the vicinity of the project site. Short-term construction activities would be mitigated by complying with applicable State and County regulations and implementing best management practices to minimize potential nuisances from dust, noise, etc.

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

Portions of the project are located within some environmentally sensitive areas such as tsunami inundation and flood zones, and a few sections subject to coastal erosion. However, as discussed in this document, the improvements planned are not expected to significantly impact these areas. The entire coastline is within the tsunami inundation area along with major floodways at certain drainageways. However, the improvements planned would mainly consist of improving an existing path for use by the public. Path amenities would be relatively small having minimal changes to existing conditions. As a result, this improvement would not result in significant changes to drainage patterns affecting other sensitive properties. The path is already located along the shoreline seaward of existing residences and businesses. Appropriate design measures will be developed to address the need and practicability of implementing measures for protection of the path from coastal erosion.

12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.

The project would not adversely affect scenic vistas, viewplanes, or other visual resources identified in the County's General Plan. As discussed in Chapter 4, there are no significant views or landforms in the immediate vicinity which would be adversely affected by the project.

13. Requires substantial energy consumption.

The project would have minimal impact on energy consumption on the island. The improvements are mainly recreational facilities such as the path which do not require electrical consumption.

10.1.2 Anticipated Determination

A Finding of No Significant Impact (FONSI) determination is warranted for the project based upon the information provided in this Final EA document. The results of the assessments conducted along with technical studies performed for various disciplines have determined that the facilities planned to be developed within the project corridor should not have a significant impact on the surrounding environment. These assessment results are also based upon the agency and public comments received on the Draft EA published and distributed for public review. The findings supporting this anticipated determination are based upon the previous discussion of the project's affect on the environment in relation to the 13 Significance Criteria.

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APPENDICES

APPENDIX A

Photographs Of Project Site And Surrounding Areas



Photo 1
View Of DLNR Boat Launch And
Parking Area



Photo 2
View Of Lihī Park

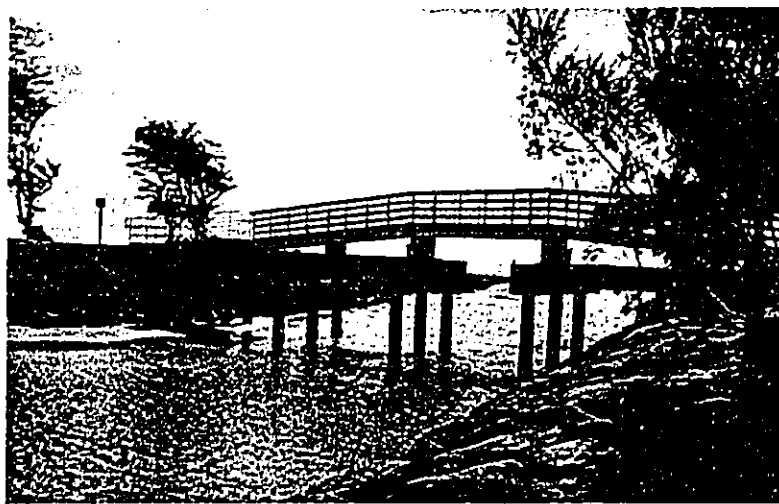


Photo 3
View Of Waikaea Bridge

**PHOTOGRAPHS OF PROJECT SITE
AND SURROUNDING AREA**

*Kapaa-Kalia Bike & Pedestrian Basis Of Design Project
County of Kauai, Department of Public Works*

Figure A-1

*Source:
SSFM International, Inc.*





Photo 4
View Of Existing Path Along
Pono Kai Resort



Photo 5
View Of Path Kapaa
Beach Park Playfield



Photo 6
View Of Kapaa Beach Park
Parking Lot

**PHOTOGRAPHS OF PROJECT SITE
AND SURROUNDING AREA**

Figure A-2

*Kapaa-Kehia Bike & Pedestrian Basis Of Design Project
County of Kauai, Department of Public Works*

Source:
SSFM International, Inc.



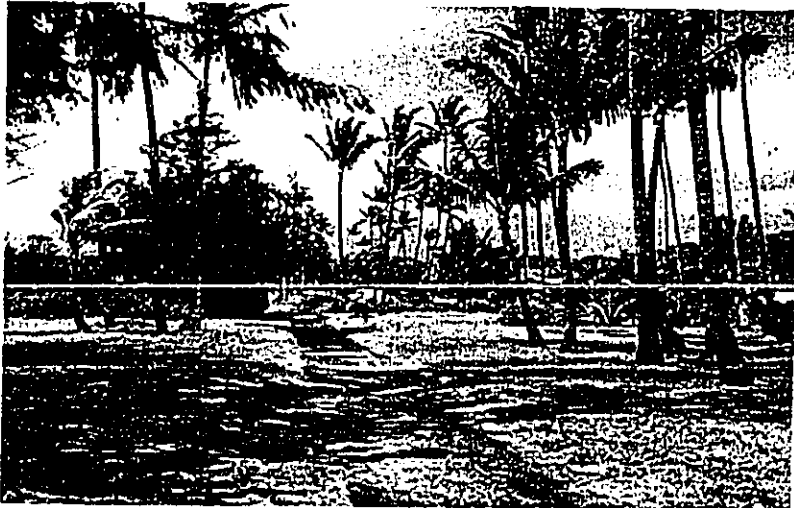


Photo 7
View Of Existing Path Along
Kapaa Town



Photo 8
View Of Moikeha Bridge



Photo 9
View Of Existing Path Along
Kapaa Beach

**PHOTOGRAPHS OF PROJECT SITE
AND SURROUNDING AREA**

Figure A-3

*Kapaa-Kelia Bike & Pedestrian Basis Of Design Project
County of Kauai, Department of Public Works*

*Source:
SSFMI International, Inc.*





Photo 10
View Of Existing Path Along
Kapaa Town

Photo 11
View Of Kapaa
Neighborhood Center



Photo 12
View Of Path Corridor Along
Swimming Pool

**PHOTOGRAPHS OF PROJECT SITE
AND SURROUNDING AREA**

*Kapaa-Kelia Bike & Pedestrian Basis Of Design Project
County of Kauai, Department of Public Works*

Figure A-4

Source:
SSFM International, Inc.



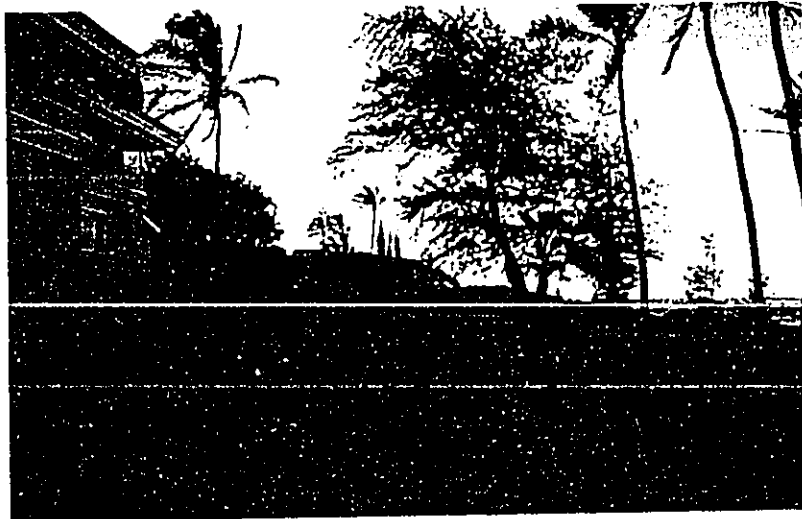


Photo 13
View Of Path Along
Otsuka And Kapaa Beach Park

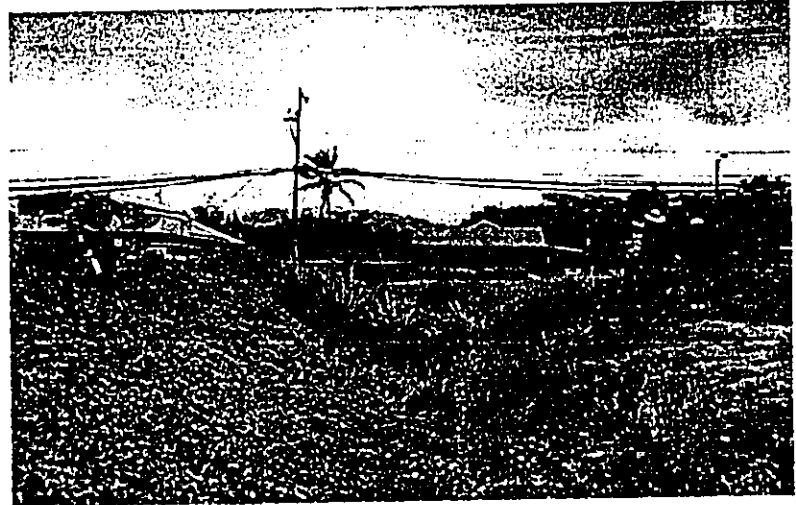


Photo 14
View Of Drainage Ditch
North of Otsuka's



Photo 15
View Of Cane Haul Road

**PHOTOGRAPHS OF PROJECT SITE
AND SURROUNDING AREA**

Figure A-5

*Kapaa-Kelia Bike & Pedestrian Basis Of Design Project
County of Kauai, Department of Public Works*

Source:
SSFM International, Inc.





Photo 16
View Of Cane Haul Road
North of Kapaa Town



Photo 17
View Of Cane Haul Road
Towards Kealia Beach



Photo 18
View Of Kapaa Stream
Cane Haul Bridge

**PHOTOGRAPHS OF PROJECT SITE
AND SURROUNDING AREA**

*Kapaa-Kealia Bike & Pedestrian Basis Of Design Project
County of Kauai, Department of Public Works*

Figure A-6

Source:
SSFM International, Inc.





Photo 19
View Of Cane Haul Road Path
Along Kealia Beach



Photo 17
View Of Cane Haul Road Path
Towards North of Kealia Beach

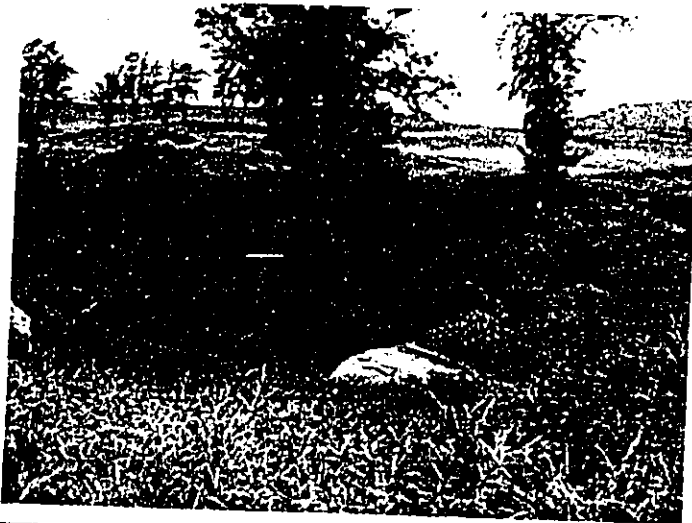


Photo 18
View Of Kumukumu Stream
Bridge Crossing (Washed Out)

**PHOTOGRAPHS OF PROJECT SITE
AND SURROUNDING AREA**

*Kapaa-Kelia Bike & Pedestrian Basis Of Design Project
County of Kauai, Department of Public Works*

Figure A-7

Source:
SSFM International, Inc.





Photo 22
View Of Kuna Bay
(Donkey Beach)

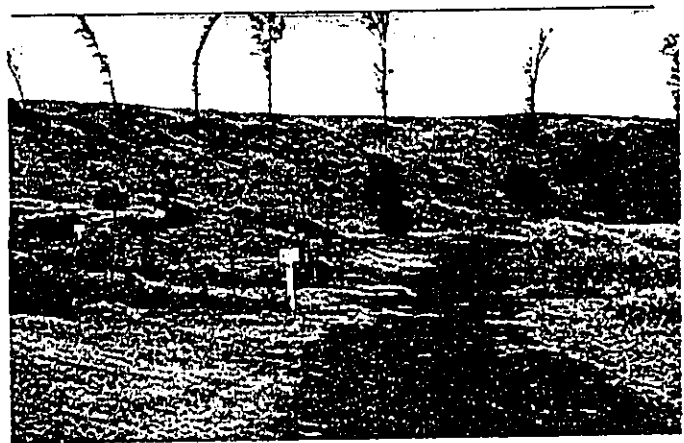


Photo 23
View Of Cane Haul Road
Path Intersection with
Public Shoreline Access



Photo 24
View Of Ahihi Point

**PHOTOGRAPHS OF PROJECT SITE
AND SURROUNDING AREA**

Figure A-8

*Kapaa-Kella Bike & Pedestrian Basis Of Design Project
County of Kauai, Department of Public Works*

*Source:
SSFM International, Inc.*



APPENDIX B

CONSULTATION EFFORTS

APPENDIX B-1

DRAFT EA PRE-ASSESSMENT CONSULTATION



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96839-9440

REPLY TO
ATTENTION OF

August 8, 2002

Regulatory Branch

Mr. Ronald A. Sato, AICP
Senior Project Planner
SSFM International, Inc.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Sato:

This letter responds to your request for comments concerning the proposed Kapa'a-Kealia Bike and Pedestrian Path, dated August 7, 2002. Portions of the project will require a Department of the Army (DA) permit since the path will cross several streams which are considered Navigable Waters of the United States at the crossing location. Please contact our office when the design is further along, and include us on your mailing list for the draft Environmental Assessment.

If you have any questions concerning this authorization, please contact Mr. William Lennan of my staff at 438-6986 or FAX 438-4060, and reference File No. 200200443.

Sincerely,

William Lennan
for
George P. Young, P.E.
Chief, Regulatory Branch



SSFM INTERNATIONAL, INC.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348
Toll-free Fax: (866) 887-8885

Professional Engineers, Planners, & Engineers
American Council of Engineering Companies, Member

November 12, 2002

SSFM2001_156

Mr. George P. Young, P.E.
Chief, Regulatory Branch
U.S. Army Engineer District, Honolulu
Department of the Army
Fort Shafter, Hawaii 96858-5440

Dear Mr. Young:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
Pre-Assessment Comments, Draft Environmental Assessment

Thank you for your letter dated August 8, 2002 providing comments on the Pre-Assessment Consultation for Draft Environmental Assessment for the subject project.

We note that the project will require a Department of Army Permit since the path improvements will cross some streams triggering this requirement. A copy of the published Draft Environmental Assessment will be provided to your agency for review and comments as part of the public review process. The selected design/build contractor team would be required to consult with your agency when they develop design plans for this project.

If you have any questions on this matter, please contact me at 531-1308. Thank you.

Sincerely,

Ronald A. Sato

Ronald A. Sato, AICP
Senior Project Planner

FILE COPY

SSFM INTERNATIONAL, INC.

501 SUMMER STREET, SUITE 502

HONOLULU, HAWAII 96817

PHONE: (808) 531-1308

FAX: (808) 521-7348

TOLL-FREE FAX: (866) 887-8885

PROFESSIONAL ENGINEERS, PLANNERS, & ENGINEERS

AMERICAN COUNCIL OF ENGINEERING COMPANIES, MEMBER

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United States Department of the Interior

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

SEP 27 2002
FILE

In Reply Refer To:
1-2-2002-TA-125

SEP 26 2002

Mr. Ronald A. Sato
SSFM International, Inc.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817

Re: Informal Consultation for the Kapa'a-Kealia Bike & Pedestrian Path Basis of Design Project

Dear Mr. Sato:

This responds to your August 27, 2002, letter in which you request the U. S. Fish and Wildlife Service (Service) provide additional information on listed endangered or threatened species present on the proposed site of the above-mentioned project. The site is located in the district of Kapa'a on the island of Kauai. Your letter was received in this office on August 29, 2002. The Kapa'a-Kealia bike and pedestrian path project consists of a 4.3-mile-long path to be routed along the shoreline beginning at the Waipouli Park and boat launch area at Waikaea Canal and extending north past Kealia Beach and Donkey Beach (Kuna Bay) up to Ahiki Point. This path is planned to be 12 feet wide, and is intended to utilize an existing paved path in the Kapa'a town area along with the existing cane haul road from the northern end of Kapa'a town up to Ahiki Point. Amenities being considered in addition to this path include: 1) a parking area at the County's Lih'i Park near (south of) the Waikaea Canal, 2) a comfort station at Kuna Bay (Donkey Beach) or at the existing parking area along the highway, and 3) a parking lot, comfort station, and possible pavilion at Kealia Beach Park.

We reviewed the information provided by you and pertinent information in our files, including maps prepared by the Hawaii Natural Heritage Program. The Service has no additional information on dark-rumped petrels, Newell's shearwaters, or any other listed species in the proposed project area at this time. The Service looks forward in reviewing the Draft EA in October of this year.

Mr. Ronald A. Sato

We appreciate your interest and concern for natural resources. If you have any questions, please contact Eric VanderWerf, Hawaiian Bird Recovery Coordinator (phone: 808/541-3441; fax: 808/541-3473).

Sincerely,

Paul Henson, Ph.D.
Field Supervisor



SSFM INTERNATIONAL, INC.
 501 Summer Street, Suite 502
 Honolulu, Hawaii 96817
 Phone: (808) 531-1308
 Fax: (808) 531-7348
 Toll-free Fax: (866) 537-8085

Project Managers, Planners, & Engineers
 American Council of Engineering Companies, Member

November 12, 2002

SSFM 2001_154

Paul Henson, Ph.D., Field Supervisor
 Fish and Wildlife Service
 U.S. Department of the Interior
 Pacific Islands Fish and Wildlife Office
 300 Ala Moana Boulevard, Room 3-122
 Honolulu, Hawaii 96850

Dear Dr. Henson:

Subject: Kapa'e-Kealia Bike and Pedestrian Path Basis of Design Project
 Informal Consultation (Section 7)

Thank you for your letter dated September 26, 2002 providing comments as part of informal consultation efforts initiated under Section 7 of the Endangered Species Act. Your comments will be used to assist in the preparation of the Draft Environmental Assessment for the subject project.

We note that your agency does not have any additional information on Dark-Rumped Petrels, Newell's Shearwaters, or any other listed species in the project area at this time. A copy of the Draft Environmental Assessment published will be provided to your agency for review as part of the public review process.

If you have any questions on this matter, please contact me at 531-1308. Thank you.

Sincerely,

Ronald A. Sato

Ronald A. Sato, AICP
 Senior Project Planner

REPUBLIC OF HAWAII
 DEPARTMENT OF EDUCATION



STATE OF HAWAII
 DEPARTMENT OF EDUCATION
 P.O. BOX 1580
 HONOLULU, HAWAII 96814

OFFICE OF THE SUPERINTENDENT

August 21, 2002

Mr. Ronald A. Sato, AICP
 Senior Project Planner
 SSFM International, Inc.
 501 Summer Street, Suite 502
 Honolulu, Hawai'i 96817

Dear Mr. Sato:

Subject: Kapa'e-Kealia Bike & Pedestrian Path
Pre-Assessment Consultation for Draft Environmental Assessment

The Department of Education (DOE) has reviewed your August 7, 2002 letter describing a proposed 4.3-mile shoreline bike and pedestrian path. The path begins at Waipouli Park and extends north to Ahiki Point.

The DOE has no specific comment or concern that should be addressed in the Draft Environmental Assessment.

Should you have any questions, please call Ms. Heidi Mecker of the Facilities and Support Services Branch at 733-4862.

Very truly yours,

Patricia Hamamoto

Patricia Hamamoto
 Superintendent

PH:hy

cc: A. Suga, OBS

REPUBLIC OF HAWAII
 DEPARTMENT OF EDUCATION

STATE OF HAWAII
 DEPARTMENT OF EDUCATION

ALUG 22-2002
 #225

FILE COPY



SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 531-1348
Toll-free Fax: (808) 867-8885

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

November 12, 2002

SSFM 2001_114

Ms. Patricia Hamamoto, Superintendent
Department of Education
State of Hawaii
P.O. Box 2360
Honolulu, Hawaii 96804

Dear Ms. Hamamoto:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
Pre-Assessment Comments, Draft Environmental Assessment

Thank you for your letter dated August 21, 2002 providing comments on the Pre-Assessment Consultation for Draft Environmental Assessment for the subject project.

We note that your department has no specific comments or concern with the project that should be addressed in the Draft Environmental Assessment at this time.

If you have any questions on this matter, please give me a call at 531-1308. Thank you.

Sincerely,

Ronald A. Sato

Ronald A. Sato, AICP
Senior Project Planner



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

September 13, 2002

DELLAMURA A. CATERINO
GOVERNOR OF HAWAII

BRUCE S. ANDERSON, Ph.D.
DIRECTOR OF HEALTH

SSFM INTERNATIONAL, INC.
RECORDED

SEP 16 2002

FILE

In reply, please refer to:
File # 02-210690

FILE 00

Mr. Ronald A. Sato, AICP, Senior Planner
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Sato:

Subject: Pre Environmental Assessment (PEA) Consultation
Kapa'a-Kealia Bike & Pedestrian Path Basis of Design Project

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

Clean Water Branch (CWB)

1. The Army Corps of Engineers should be contacted to identify whether a Federal permit (including a Department of Army permit) is required for this project. If it is determined that a Federal permit is required for the subject project, then a Section 401 Water Quality Certification would also be required from our office.

2. If the construction project involves any of the following discharges into State waters, a National Pollutant Discharge Elimination System (NPDES) permit coverage is required for each discharge:

- a. Storm water runoff associated with construction activities, including clearing, grading, and excavation that result in the disturbance of equal to or greater than five (5) acres of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale;

(Note: After March 10, 2003, an NPDES permit will be required for discharges of storm water associated with construction activities, including clearing, grading, and excavation that result in the disturbance of one (1) acre or more. In addition, the proposed amendments to Hawaii Administrative Rules (HAR), Chapter 11-55,

Mr. Ronald A. Sato, AICP, Senior Planner
September 13, 2002
Page 2

require NPDES permit coverage for all construction activities that meet the disturbance area requirements, regardless if discharge is unanticipated.)

- b. Hydro-testing water;
- c. Construction dewatering effluent.

The CWB requires that Notices of Intent (NOI) for DPDES general permits be submitted 30 days before the commencement of the respective activities. The proposed amendments to HAR, Chapter 11-55, also require a copy of the NOI or NPDES permit application to be submitted to the State Department of Land and Natural Resources, Title Historic Preservation Division. NOI forms can be picked up at our office or downloaded from our website at <http://hawaii.nri.us/foia/eh/cwb/forms/index.html>.

If you have any questions please contact the Clean Water Branch at (808) 586-4309.

Wastewater Branch (WWB)

Wastewater treatment and disposal have not been adequately addressed in this pre-assessment consultation. As two (2) comfort stations are proposed, the WWB will wait for wastewater plans to be addressed in the Environmental Assessment before offering further comment or concurrence with the bike and pedestrian path project.

The comfort stations should connect to the County sewer system if possible. If connection is not available at this time, the use of treatment individual wastewater systems such as septic tank systems would be required. New cesspools will not be allowed for the comfort stations.

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

If you have any questions, please contact the Wastewater Branch at (808) 586-4294.

Clean Air Branch (CAB)

Control of Fugitive Dust

There is a significant potential for fugitive dust emissions during the removal, transport and installation activities for this project. The project site will be at times within close proximity to neighboring residential dwellings, public parks and major thoroughfares. It is recommended that a dust control management plan be developed which identifies and addresses all activities that have a potential to generate fugitive dust. Implementation of adequate dust control measures during all phases of development and construction activities is warranted.

Mr. Ronald A. Sato, AICP, Senior Planner
September 13, 2002
Page 3

Construction activities must comply with provisions of Hawaii Administrative Rules, Chapter 11-60.1, "Air Pollution Control," Section 11-60.1-33, Fugitive Dust.

The contractor should provide adequate measures to control dust from the road areas and during the various phases of construction. These measures include, but are not limited to:

- a. Planning the different phases of construction, focusing on minimizing the amount of dust generating materials and activities, centralizing on-site vehicular traffic routes, and locating potentially dusty equipment in areas of the least impact;
- b. Providing an adequate water source at the site prior to start up of construction activities;
- c. Landscaping and rapid covering of bare areas, including slopes, starting from the initial grading phase;
- d. Controlling of dust from shoulders and access roads;
- e. Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
- f. Controlling of dust from debris being hauled away from project site.

If you have any questions regarding these issues on fugitive dust, please contact the Clean Air Branch at (808) 586-4200.

Noise, Radiation and Indoor Air Quality (NRIAQ) Branch

All project activities shall comply with the Administrative Rules of the Department of Health, Chapter 11-46, on "Community Noise Control".

If you have any questions, please contact the NRIAQ at (808) 586-4701.

Environmental Planning Office (EPO)

This project is located along the eastern Kaula's shoreline and the proposed pathway appears to cross Uhelekwakawa and Kapaa streams. These two streams are currently listed under section 301(d) of the Clean Water Act as impaired waters where the pollutant of concern is turbidity (generally associated with excess sediment loads).

The impaired status of these waters requires that the Department of Health establish Total Maximum Daily Loads (TMDLs) suggesting how much the existing pollutant loads should be reduced in order to attain water quality standards in each stream. Although these TMDLs are yet to be established and implemented for Uhelekwakawa and Kapaa streams, a first step in achieving TMDL objectives would be to prevent any project-related increases in pollutant loads.

Mr. Ronald A. Sato, AICP, Senior Planner
September 13, 2002
Page 4

The consultation letter notes that new parking lots and parking areas are being considered as additions to the existing pathway. We suggest that the Draft Environmental Assessment analyze the extent to which these additions may result in both short-term (construction phase) and long-term (operational phase) increases in the pollutant loads delivered to the streams. We also encourage the County of Kauai Department of Public Works to participate in the TMDL process and suggest consultation with the Department of Health Clean Water Branch (Engineering Section) to discuss how water pollution control permitting for project construction activities may be linked with TMDL implementation.

If you have any questions about these comments or the Total Maximum Daily Load program, please contact David Penn at (808) 586-4337.

Sincerely,



GARY GILL
Deputy Director
Environmental Health Administration

c: CWB
WWB
CAB
NRI/AQ
EPO
Kauai DHO



SSFM INTERNATIONAL, INC.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1309
Fax: (808) 521-7248
Toll-Free Fax: (866) 687-4335

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

November 12, 2002

SSFM 2001_156

Mr. Gary Gill, Deputy Director
Environmental Health Administration
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Gill:

Subject: Kapa'e-Kealia Bike and Pedestrian Path Basis of Design Project
Pre-Assessment Comments, Draft Environmental Assessment

Thank you for your letter dated September 13, 2002 providing comments on the Pre-Assessment Consultation for Draft Environmental Assessment (Draft EA) for the subject project. We have the following responses which correspond to comments offered by the individual branches.

Clean Water Branch

We received a comment letter from the Department of Army indicating that a Department of Army permit will be required for this project. Therefore, a Section 401 Water Quality Certification will be required from your office and obtained during the project's design phase.

Construction activities associated with this project would require NPDES permit coverage since it would affect an area greater than one acre, and start after March 10, 2003. A NPDES permit application would be submitted at least 30 days prior to any discharge occurring. If an individual permit is required, an application would be submitted 180 days before the discharge is to occur.

Wastewater Branch

The Draft EA will include information on path amenities planned such as comfort stations for your review and comments. Appropriate wastewater treatment systems is planned to be provided which would either involve connecting the County's existing system, if feasible, or providing septic tank systems. Wastewater improvements will conform to applicable provisions of HAR Chapter 11-62, Wastewater Systems. Wastewater plans developed for this project will be coordinated with your branch for review during the project's design phase.



Clean Air Branch

Construction activities associated with this project will be conducted in compliance with the provisions of Chapter 11.60-1, Hawaii Administrative Rules (Air Pollution Control), and specifically, the rules set forth in HAR 11.60-1-33 addressing fugitive dust. A dust control management plan would be developed as part of the project's design and implemented by the contractor. This would include providing adequate measures to control dust from road areas and during various construction phases.

Noise, Radiation and Indoor Air Quality Branch

All activities associated with this project will comply with the Department of Health's Administrative Rules Chapter 11-46, Community Noise Control.

Environmental Planning Office

The project corridor does include the Kapaa Stream (also referred to as Kealia River), but will not include Uhelekwakawa Stream which is located further south of the project area. The Draft EA will address parking areas established as path amenities and their effects, both short-term and long-term, on increasing pollutant loads to the Kapaa Stream. The County of Kauai, Department of Public Works will consult with your department's Engineering Section to discuss how water pollution control for construction activities may be linked with TMDL implementation.

If you have any further comments or questions on this matter, please give me a call at 531-1308. Thank you.

Sincerely,

Ronald A. Sato, AICP
Senior Project Planner



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 61
HONOLULU, HAWAII 96810

August 23, 2002

L-100//1176/1143
KAUAI/BIKEPATH59RM.RCH

SSFM International, Inc.
Ronald A. Sato, AICP
Senior Project Planner
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Sato:

SUBJECT: Pre-Assessment Consultation for Preparation of Draft Environmental Assessment for County of Kauai, Department of Public Works' Proposed Bike and Pedestrian Basis of Design Project at Kapaa-Kealia, Island of Kauai, Hawaii

Thank you for your letter (summary of project) dated August 7, 2002 and the opportunity to comment on the subject matter.

The Department of Land and Natural Resources' (DLNR) Land Division submitted a copy of your letter and attachments covering the subject matter to the following DLNR Divisions for their review and comment:

- Division of Aquatic Resource - Division of Forestry and Wildlife, Na Ala Hele Trails - Division of State Parks - Division of Boating and Ocean Recreation - Commission on Water Resource Management - Land Division Planning and Technical Services - Land Division Engineering Branch - Kauai District Land Office

Attached herewith is a copy of the Land Division Planning and Technical Services comment.

Based on the attached responses, the Department of Land and Natural Resources has not other comment to offer. Should the Land Division receive additional comments, they will be forwarded to your office at that time.

Should you have any other questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 1-808-587-0438.

Very truly yours,

DIERDRE S. HAMIYA
Administrator

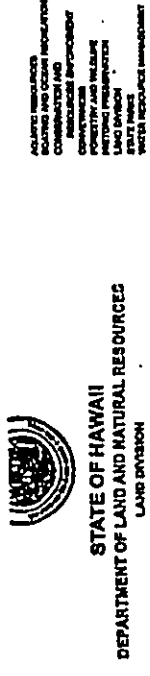
C: Kauai District Land Office

AGUIC RESOURCES
MARINE AND COASTAL PROTECT
CONSERVATION AND
RESTORATION
RECREATION
CONSERVATION
POLICY AND PLANNING
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 61
HONOLULU, HAWAII 96810

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FILE CI



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

LAND DIVISION
P.O. BOX 811
HONOLULU, HAWAII 96809

August 12, 2002

Suspense Date: 8/22/02
1-1004

ADJUTANT GENERAL
ARMY AND AIR FORCE
NAVY
MARINE CORPS
COAST GUARD
COMMERCIAL
CONSTRUCTION
PROPERTY AND RECORDS
LAND DIVISION
PLANNING
WATER RESOURCE MANAGEMENT

LD/NAV
Ref.: KAUAIAKEPATHSSFM.CMT

MEMORANDUM

- TO:
- XX Division of Aquatic Resources
 - XX Division of Forestry & Wildlife
 - XX Na Ala Hele Trails
 - XX Division of State Parks
 - XX Division of Boating and Ocean Recreation
 - XX Commission on Water Resource Management
 - XX Planning and Technical Services
 - XX Engineering Branch
 - XX Kauai District Land Office

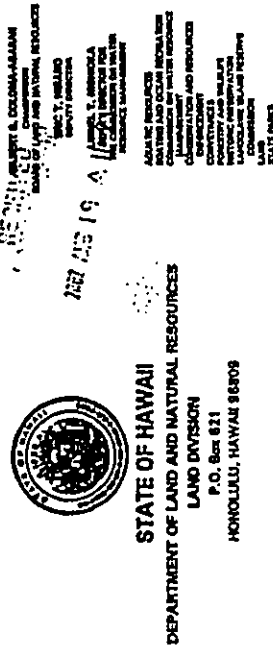
FROM: Dierdre S. Mamiya, Administrator *[Signature]*
Land Division

SUBJECT: Pre-Assessment Consultation for Preparation of Draft Environmental Assessment for County of Kauai, Department of Public Works' proposed Bike and Pedestrian Path Basis of Design Project at Kapaa-Kealia, Kauai, Hawaii

Please review the attached letter (summary) and project map prepared by SSM International for the County of Kauai's proposed project and submit your written comments (if any) to us on Division letterhead signed and dated) on or before the suspense date. Should you need more time to review the subject matter, please contact Mick Vaccaro at ext.: 7-0438.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

() We have no comments. (X) Comments-attached.
Signed: *[Signature]*
Date: 8-14-02



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

LAND DIVISION
P.O. Box 811
HONOLULU, HAWAII 96809

Correspondence: KA-03-25

Ref: PB: TC

MEMORANDUM

TO: Dierdre S. Mamiya
Land Division

FROM: Traver Carroll *[Signature]*
Planning Branch

SUBJECT: Pre-Assessment Consultation for Preparation of a Draft Environmental Assessment (DEA) for County of Kauai, Department of Public Works' proposed Bike and Pedestrian, Path Basis of Design Project, at Kapaa-Kealia, Kauai

We have reviewed the information regarding the proposed bike and pedestrian path from Waipoli Park near the Waikaa Canal to Abihi Point. Of particular note is the segment of the path running from Kapaa Stream to near Paliku Point. It is located in the Limited subzone of the Conservation District. As such, a Conservation District Use Application (CDUA) will be required for the project. We look forward to the review of the DEA and to processing the CDUA.

Aloha,



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 671
HONOLULU, HAWAII 96808

August 12, 2002

LD/NAV
Ref.: KAURIBIKEPATHSSFM.CMT

MEMORANDUM:

- TO:
- XX Division of Aquatic Resources
 - XX Division of Forestry & Wildlife
 - XX Na Ala Hele Trails
 - XX Division of State Parks
 - XX Division of Boating and Ocean Recreation
 - XX Commission on Water Resource Management
- Land Division Branches of:
- XX Planning and Technical Services
 - XX Engineering Branch
 - XX Kauai District Land Office

FROM: *B. Mamiya*
B. Mamiya, Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for Preparation of Draft Environmental Assessment for County of Kauai, Department of Public Works' proposed Bike and Pedestrian Path Basis of Design Project at Kapaa-Kealia, Kauai, Hawaii

Please review the attached letter (summary) and project map prepared by SSPM International for the County of Kauai's proposed project and submit your written comments (if any) to us on Division letterhead signed and dated) on or before the suspense date. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

He have no comments. () Comments attached.
FAW will return Review Signed: *[Signature]*
il draft EA for subject Date: DIFAW Administrator
ect is published. 8/13/02

AGRICULTURE
FORESTRY AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION
DIVISION OF BOATING AND OCEAN RECREATION
DIVISION OF FORESTRY AND WILDLIFE
DIVISION OF STATE PARKS
ENGINEERING
LAND DIVISION
PLANNING AND TECHNICAL SERVICES
STATE OF HAWAII
WATER RESOURCE MANAGEMENT

1-1004
Suspense Date: 8/22/02



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 671
HONOLULU, HAWAII 96808

August 26, 2002

LD-NAV
KAUAI BIKEPATHSSFM.RCM

L-1269/12571252/1004
SSPM 2001-156

FILE COPY

SSPM International, Inc.
Project Manager
501 Sumner Street, suite 502
Honolulu, Hawaii 96817

Dear Project Manager:

SUBJECT: Kapaa-Kealia Bike & Pedestrian Path Basis of Design Project
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for the opportunity to review and comment on the subject matter.

The Department of Land and Natural Resources' (DLNR) Land Division submitted a copy of your letter (summary) dated August 8, 2002 and project map to the following DLNR divisions for their review and comment:

- Division of Aquatic Resources
- Division of Forestry and Wildlife
- Na Ala Hele Trails
- Division of State Parks
- Division of Boating and Ocean Recreation
- Commission on Water Resource Management
- Land Division Engineering Branch
- Kauai District Land Office

Attached herewith is a copy of the Division of Boating & Ocean Recreation and Commission on Water Resource Management comments.

Based on the attached responses, the Department has no other comment to offer at this time. If the Land Division receives additional comments, they will be forwarded to SSPM International, Inc.

Should you have any other questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 1-808-587-0438.

Very truly yours,

[Signature]
B. Mamiya
Administrator

SSPM International District Land Office



STATE OF HAWAII
 DEPARTMENT OF LAND AND NATURAL RESOURCES
 LAND DIVISION
 P.O. BOX 611
 HONOLULU, HAWAII 96860

AGRICULTURE
 FORESTRY AND OCEANIC RESOURCES
 CONSERVATION AND
 COMMERCE SERVICES
 FORESTRY AND WILDLIFE
 HISTORIC PRESERVATION
 LAND USE
 WATER RESOURCE SERVICES

August 12, 2002

LD/NAV
 Ref.: KAUAI/BIKEPATH/SSFM.CMT
 1-1004
 Suspense Date: 8/22/02

MEMORANDUM:

TO: XX Division of Aquatic Resources
 XX Division of Forestry & Wildlife
 XX Na Ala Hele Trails
 XX Division of State Parks
 XX Division of Boating and Ocean Recreation
 XX Commission on Water Resource Management
 Land Division Branches of:
 XX Planning and Technical Services
 XX Engineering Branch
 XX Kauai District Land Office

FROM: *D. Mamiya*
 Dierdre S. Mamiya, Administrator
 Land Division

SUBJECT: Pre-Assessment Consultation for Preparation of Draft Environmental Assessment for County of Kauai, Department of Public Works' proposed Bike and Pedestrian Path Basis of Design Project at Kepaa-Kealia, Kauai, Hawaii

Please review the attached letter (summary) and project map prepared by SSFM International for the County of Kauai's proposed project and submit your written comments (if any) to us on Division letterhead signed and dated) on or before the suspense date. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

() We have no comments.
 Comments attached.
 Signed: *D. Mamiya*
 Date: 8/19/02

SPYRMAN J. CAVETANO
 Assistant Secretary



2002 AUG 21 P
 STATE OF HAWAII
 DEPARTMENT OF LAND AND NATURAL RESOURCES
 COMMISSION ON WATER RESOURCE MANAGEMENT
 P.O. BOX 611
 HONOLULU, HAWAII 96860

OLIVIERI & COLOAN-HAUA
 BRUCE S. ANDERSON
 MICHAEL J. CHAND
 CLAYTON W. DELA CRUZ
 HERBERT A. HOWARD, JR.
 LYNNE E. MARIKWA
 JOHN J. WATSON

AUG 21 2002 REF: KAUAI/BIKEPATH/SSFM.CMT

TO: Ms. Dierdre S. Mamiya, Administrator
 Land Division
 FROM: *D. Mamiya*
 Dierdre S. Mamiya, Deputy Director
 Commission on Water Resource Management (CWRM)

SUBJECT: Pre-Assessment Consultation for the Preparation of Draft Environmental Assessment for County of Kauai, Department of Public Works' proposed Bike and Pedestrian Path Basis of Design Project at Kepaa-Kealia, Kauai, Hawaii
 FILE NO.: 1-1004

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

- We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.
- We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
- We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.
- The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.
- Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- We are concerned about the potential for degradation of instream uses from development on highly erodible slope adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.
- If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).
- If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.
- OTHER:

If there are any questions, please contact David Higa at 597-0249.



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

LAND DIVISION
P.O. BOX 211
HONOLULU, HAWAII 96820

August 12, 2002

LD/NAV

Ref.: KAUAIBIKEPATHSSFM.CMT

Suspense Date: 8/22/02

MEMORANDUM:

- TO:
- XX Division of Aquatic Resources
 - XX Division of Forestry & Wildlife
 - XX Na Ala Hele Trails
 - XX Division of State Parks
 - XX Division of Boating and Ocean Recreation
 - XX Commission on Water Resource Management
 - Land Division Branches of:
 - XX Planning and Technical Services
 - XX Engineering Branch
 - XX Kauai District Land Office

FROM:

Jopledre S. Mamiya, Administrator
Land Division

SUBJECT:

Pre-Assessment Consultation for Preparation of Draft Environmental Assessment for County of Kauai, Department of Public Works' proposed Bike and Pedestrian Path Basis of Design Project at Kapaa-Kealia, Kauai, Hawaii

Please review the attached letter (summary) and project map prepared by SSFM International for the County of Kauai's proposed project and submit your written comments (if any) to us on Division letterhead signed and dated) on or before the suspense date. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

We have no comments.

Comments attached.

Signed: *W. Vaccaro*

Date: 8/14/02



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

LAND DIVISION
P.O. BOX 211
HONOLULU, HAWAII 96820

August 12, 2002

LD/NAV

Ref.: KAUAIBIKEPATHSSFM.CMT

Suspense Date: 8/22/02

MEMORANDUM:

- TO:
- XX Division of Aquatic Resources
 - XX Division of Forestry & Wildlife
 - XX Na Ala Hele Trails
 - XX Division of State Parks
 - XX Division of Boating and Ocean Recreation
 - XX Commission on Water Resource Management
 - Land Division Branches of:
 - XX Planning and Technical Services
 - XX Engineering Branch
 - XX Kauai District Land Office

FROM:

Jopledre S. Mamiya, Administrator
Land Division

SUBJECT:

Pre-Assessment Consultation for Preparation of Draft Environmental Assessment for County of Kauai, Department of Public Works' proposed Bike and Pedestrian Path Basis of Design Project at Kapaa-Kealia, Kauai, Hawaii

Please review the attached letter (summary) and project map prepared by SSFM International for the County of Kauai's proposed project and submit your written comments (if any) to us on Division letterhead signed and dated) on or before the suspense date. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

We have no comments.

Comments attached.

Signed: *W. Vaccaro*

Date: 8/14/02





STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF BOATING AND OCEAN RECREATION
333 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813

DEBORAH S. COLEMAN
CHAIR
BOARD OF LAND AND NATURAL RESOURCES
JANET L. HARRIS
DEPUTY CHAIR
LAWRENCE J. HARRIS
DEPUTY CHAIR
THE HONORABLE
GOVERNOR

August 20, 2002

BOR-SP 0097.03

MEMORANDUM

To: Dierdra Mamiya, Administrator
Land Division

From: W. Mason Young *W. Mason Young*
Acting Administrator

Subject: Kapaa - Kealia Bike & Pedestrian Path Basis of Design Project
Pre-Assessment Consultation for Draft Environmental Assessment

It appears that the new bike and pedestrian path is proposed to cross Waikaka Canal at the existing location, using the old railway bridge footings.

Since we understand that the purpose of this project is to provide for both a recreational use and a transportation function, we believe this new project provides an excellent opportunity to improve both the recreational use and the water transportation function provided by our Waikaka boat-launching ramp. Conflicts presently exist between pedestrian path users and boaters maneuvering their trailers at launch ramp, and the existing bridge abutment located in the center of the channel restricts navigational use of the canal and causes a safety hazard. Locating a new bridge to cross the canal about 400 feet upstream from the present bridge location and our boat launching ramp facilities can eliminate these conflicts and navigational hazards. The pedestrian abutment would be separated from the boat launching activity, and removal of the existing bridge abutment would enable use of the launching facility by larger vessels that are presently restricted by the narrow channel and low clearance between the water surface and the bottom of the existing bridge.

Additionally, we believe that the challenge of designing an ADA-compatible approach to the bridge would be significantly reduced, since the new bridge crossing coming from Waipouli Beach Park could be constructed at grade at the proposed location.

We strongly recommend that a new bridge crossing upstream from the boat launching facility be incorporated in the overall plans for this project. We realize that a 12-foot easement would be

Dierdra Mamiya
Page 2
August 20, 2002

BOR-SP 0097.03

required to provide access from the end of the bridge to Kaloloku Road across the State's launching ramp parcel.

Should the relocation to the pedestrian bridge across the canal prove to be infeasible, we request a new bridge be designed to replace the existing bridge that would allow removal of the existing bridge abutment from the center of the channel, and provide a minimum clearance of fifteen feet between the bottom of the bridge and the water level at mean low tide.

c: BOR-K
BOR-E

7032 AUG 21 AM 10:35



STATE OF HAWAII
 DEPARTMENT OF LAND AND NATURAL RESOURCES
 LAND DIVISION
 P.O. BOX 611
 HONOLULU, HAWAII 96809

SPRINTER/NUOVA, INC.
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 -TRAVEL SERVICES

FILE COPY

September 13, 2002

LD-NAV
 KAUAIKIRIPEATHSSFM.RCN2
 SSFM 2001 156

SSFM International, Inc.
 Project Manager
 501 Sumner Street, Suite 502
 Honolulu, Hawaii 96117

Dear Project Manager:

SUBJECT: Kapaa-Kaalia Bike & Pedestrian Path Basis of Design Project
 Pre-Assessment Consultation for Draft Environmental Assessment

This is a follow-up to our letter (Ref.: KAUAIKIRIPEATHSSFM.RCN1) to you dated August 28, 2002, pertaining to the subject matter.

Attached herewith is a copy of the Land Division Engineering Branch Comment.

The Department of Land and Natural Resources has no other comment to offer at this time.

Should you have any other questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 1-808-587-0438.

Very truly yours,

Chalene Elmore
 for DIERDRE S. MOHIYA
 Administrator

C: Kauai District Land Office

DLNR-LAND DIVISION
 ENGINEERING BRANCH

LD/NAV
 Ref: KAUAIKIRIPEATHSSFM.CMT

COMMENTS

We have reviewed the letter dated August 7, 2002 from SSFM International regarding the subject project. According to the Flood Insurance Rate Map (FIRM) panels 135C and 070C (effective: March 4, 1987), most of the 4.3 mile stretch of bike path appears to be in a special flood hazard area, Zones VE and X (Not Shaded). Zone VE is an area of coastal flood with velocity hazard (wave action) where no base elevations are determined while Zone X is an area determined to be outside the 500-year flood plain. Title 44 of the Code of Federal Regulations states the minimum requirements for development within SFHAs.

The proposed improvements must comply with the rules and regulations of the National Flood Insurance Program (NFIP) and all applicable County Ordinances. If there are questions regarding the NFIP, please contact the State Coordinator, Mr. Sterling Yong, of the Department of Land and Natural Resources at 587-0748.

Depending upon the type of grading work required for the proposed bike path and/or the final siting of the comfort stations, a variance may be required from the County of Kauai, Department of Public Works for development within a SFHA.

If you have any questions, please call Mr. Eric Yuasa of the Project Planning Section at 587-0729.

Signed: *Lin T. Yuasa*
 for ANDREW M. MONDEN, CHIEF ENGINEER

DATE: 11/3/02



SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348
Toll-Free Fax: (866) 867-8885

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member



November 12, 2002

SSFM 2001_156

Ms. Dierdre S. Mamiya, Administrator
Land Division
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Mamiya:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
Pre-Assessment Comments, Draft Environmental Assessment

Thank you for the letters dated August 23 and 28, 2002 and September 13, 2002 providing comments on the Pre-Assessment Consultation for Draft Environmental Assessment (Draft EA) for the subject project. We have the following responses which correspond to comments offered by the individual branches.

Land Division, Planning and Technical Services Branch

The planned path route between Kapa'a Stream (also referred to as Kealia River) and the Paliku Point area would be within the Conservation District. A boundary interpretation has been requested from the State Land Use Commission to clarify the Conservation District boundary as it relates to the existing cane haul road in this section. A Conservation District Use Permit would be obtained for this project and an application submitted for your review and processing.

Division of Forestry and Wildlife

We note this division will defer comments until their review of the Draft EA. A copy will be provided as part of the public review process.

Land Division, Kauai District Land Office

We note this district office had no comments on the subject project at this time.

Commission on Water Resource Management

A stream alteration permit will be obtained for this project during the project's design phase since it would likely involve bridge improvements that may alter the affected stream's existing bed or banks.

Division of Boating and Ocean Recreation

We note the information providing on existing conflicts your division has at Waikaea Canal with boaters using the launch ramp and getting through this canal. However, it is not feasible nor is it practicable for the County to relocate the proposed path 400 feet upstream from the present launch ramp. Doing so would involve having to re-route the path through privately-owned property (Pono Kai Resort) along with State property. This re-routed path would have a significant impact on the resort property and buildings, and create an undesired use and activities through their property instead along the shoreline as present. This effort would also involve property acquisition and mitigation for impacts on buildings.

Current plans are to utilize the existing bridge alignment crossing the canal and widen it to 12 feet to accommodate the multiple users. However, an alternative bridge improvement will be considered by the County and addressed in the Draft EA that would involve providing a height clearance of 15 feet from the water level and removal of an existing bridge abutment in the center of the channel.

Land Division, Engineering Branch

The existing path in Kapa'a Town and cane haul road to the north that are planned to improved as part of this project are situated within the special flood hazard area since they are routed along the shoreline. Project improvements will comply with the rules and regulations of the National Flood Insurance Program and County regulations for flood areas. Necessary permits and approvals for improvements would be obtained during the project's design phase, and appropriate coordination conducted with agencies.

If you have any questions on this matter, please give me a call at 531-1308. Thank you.

Sincerely,

Ronald A. Sato, AICP
Senior Project Planner

SEALING & CERTIFICATION DIVISION

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AUG 15 2002
KAS



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KALAU DISTRICT
2000 EDNA STREET, ROOM 203
LAIE, HAWAII 96768

FILE COPY

MAIL ROOM
JULY 2002

HWY-K 4.020837

August 12, 2002

Mr. Ronald Sato
SSFM International, Inc.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Sato:

Subject: Kapaa-Kealia Bike & Pedestrian Path
Basis of Design
Project Pre-Assessment Consultation for Draft
Environmental Assessment

This responds to your letter dated August 7, 2002 regarding the proposed Kapaa-Kealia Bike & Pedestrian Path.

The proposed bike & pedestrian path shall be placed entirely outside of the existing State Highway right of way.

Between Hauaala Road and the Kapaa Stream Bridge, the permanent Kapaa Bypass Relief Route and Highway Widening project may impact the bike & pedestrian path. More detailed information will become available when the preliminary routing plans for the bypass and highway widening project have been completed. The preliminary routing plans may not be available until later this year or early next year. As part of the Kapaa Relief Route Project, Kuliho Highway, between Kawahau Road and the Kapaa Stream Bridge, is proposed to be widened to a four (4) lane highway. At this time, widening of Kuliho Highway is expected to occur on the west, or mauka, side of the highway.

Mr. Ronald Sato
Page 2
August 12, 2002

HWY-K 4.020837

Thank you for giving us the opportunity to review and comment on the proposed bikeway project. If you have any questions, please call Steve Morikawa at 274-3118.

Very truly yours,

STEVE MORIKAWA, P.E.
District Engineer
SM:es

SCANNED



SSFM INTERNATIONAL, INC.
 501 Sumner Street, Suite 502
 Honolulu, Hawaii 96817
 Phone: (808) 531-1308
 Fax: (808) 531-7348
 Toll-Free Fax: (866) 887-8885

Project Managers, Planners, & Engineers
 American Council of Engineering Companies, Member

November 12, 2002

SSFM 2001_156

Mr. Brian K. Minaai, Director
 Department of Transportation
 State of Hawaii
 869 Punchbowl Street
 Honolulu, Hawaii 96813-5097

Dear Mr. Minaai:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
 Pre-Assessment Comments, Draft Environmental Assessment

Thank you for the letter dated August 21, 2002 providing comments on the Pre-Assessment Consultation for Draft Environmental Assessment (Draft EA) for the subject project.

Planning and development of this project will be coordinated with your Highways Division to ensure it does not adversely impact your facilities. Discussions with your Highways Division, Kauai District have already been occurring on this project. The project would be integrated with and consistent with the Statewide Bicycle Plan.

If you have any questions on this matter, please contact me at 531-1308. Thank you.

Sincerely,

Ronald A. Sato, AICP
 Senior Project Planner



STATE OF HAWAII
 DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
 LAND USE COMMISSION

P.O. Box 2359
 Honolulu, HI 96844-2359
 Telephone: 808-587-3822
 Fax: 808-587-3827

August 22, 2002

Ronald A. Sato, AICP
 Senior Project Planner
 SSFM International, Inc.
 501 Sumner Street, Suite 502
 Honolulu, Hawaii 96817

FILE COPY

Dear Mr. Sato:

Subject: Pre-Assessment Consultation for
 Draft Environmental Assessment (PCDEA)
 Kapa'a-Kealia Bike and Pedestrian Path Project
 Kapa'a-Kealia, Kauai, Hawaii

We have reviewed the subject PCDEA as transmitted by your letter dated August 7, 2002. It appears that segments of the proposed path lie within the State Land Use Urban, Agricultural, and Conservation Districts. As a boundary interpretation for the proposed path has already been requested by your firm, we have no further comments to offer at this time.

Thank you for the opportunity to comment on the subject PCDEA. Should you require clarification or further assistance in this matter, please contact Russell Kumabe of my staff at 587-3822.

Sincerely,

ANTHONY J. FITCHING
 Executive Officer

APPROVED FOR
 EXECUTIVE USE

OFFICE OF THE SECRETARY
 AUG 27 2002
 [Checkmarks in a grid]



SSFM INTERNATIONAL, INC.
 501 Sumner Street, Suite 502
 Honolulu, Hawaii 96817
 Phone: (808) 531-1308
 Fax: (808) 531-7348
 Toll-free Fax: (866) 987-9825

Professional Engineers, Planners, & Engineers
 American Council of Engineering Companies, Member

November 12, 2002

SSFM 2001_156

Mr. Anthony J. H. Ching, Executive Officer
 Land Use Commission
 Department of Business, Economic Development & Tourism
 State of Hawaii
 P.O. Box 2359
 Honolulu, Hawaii 96804-2359

Dear Mr. Ching:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
 Pre-Assessment Comments, Draft Environmental Assessment

Thank you for your letter dated August 22, 2002 providing comments on the Pre-Assessment Consultation for Draft Environmental Assessment (Draft EA) for the subject project.

We confirm that the path route and amenities planned would be located within the State Land Use Urban, Agricultural, and Conservation Districts. We appreciate your assistance in completing the boundary interpretation already requested.

If you have any questions on this matter, please contact me at 531-1308. Thank you.

Sincerely,

Ronald A. Sato, AICP
 Senior Project Planner

PHONE (808) 594-1869



STATE OF HAWAII
 OFFICE OF HAWAIIAN AFFAIRS
 711 KAPOLANI BOULEVARD, SUITE 500
 HONOLULU, HAWAII 96813

FILE COPY

(HRD #02-679)

August 22, 2002

Mr. Ronald A. Sato, AICP
 SSFM International, Inc.
 501 Sumner Street, Suite 502
 Honolulu, Hawaii 96817

Subject: Kapa'a-Kealia Bike & Pedestrian Path Basis of Design Project Pre-Assessment Consultation for Draft Environmental Assessment

Dear Mr. Sato:

Thank you for the opportunity to comment on the above referenced project. The Office of Hawaiian Affairs (OHA) offers the following comments.

Historical and Cultural Sites

Because the proposed project encompasses the coastline, there is the possibility of encountering traditional Hawaiian burials and cultural deposits. Burials in sand deposits that extended inland from the coast were a traditional Hawaiian burial practice.

OHA urges that a mitigation program be developed in consultation with the SHPD and the Kapa'a and Ni'ihau Islands Burial Council. The mitigation program should include monitoring while ground-disturbing activities are performed in the proposed project area.

In addition, we suggest contacting OHA's Kapa'a Community Affairs Coordinator, Ms. LaFrance Kapaka-Arboleda to obtain information from a Hawaiian individual or organization knowledgeable of the proposed project area.

Cultural Impact Statement

The DEA should also include a substantive cultural impact statement based upon consultation with the Hawaiian community, as required by Act 50, Session Laws of Hawaii, 2000.

FAX (808) 594-
 SSFM INTERNATIONAL, INC.
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Mr. Ronald Asato, AICP
SSFM International, Inc.
August 22, 2002
Page Two

The cultural impact statement must identify and describe the cultural practices located within the potentially affected area; assess the impact on these practices; examine alternatives to the proposed action; and propose mitigation measures. You should consult with Native Hawaiian individuals and organizations to determine the impact of the proposed structures and activities on cultural practices.

The DEA should also include a discussion of the methods used to identify and select persons with knowledge of cultural practices and the results of consultation with them. At a minimum, the DEA should identify individuals and organizations with expertise on cultural practices with whom consultation has occurred.

NHPA Section 106 Consultation

A NHPA Section 106 Consultation is required for this project. A formal consultation does not begin until a written Request for Consultation is made by the respective Federal agency to OHA. The request should be sent by mail to the following address:

Attn: Request for Section 106 Consultation
Administrator
Office of Hawaiian Affairs
711 Kaploani Blvd. - Suite 500
Honolulu, HI 96813-5249

Stakeholder Identification

OHA's position with regards to the propriety and adequacy of any and all Section 106 consultations is that without proper identification of all potentially interested stakeholders at the outset, the consultation process will be flawed and inadequate. NHPA requires any Federal agency contemplating an undertaking to attempt to identify all potentially interested stakeholders.

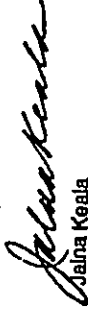
OHA cannot speak for all Hawaiian organizations and individuals that may be affected by an undertaking. Some potential organizations that you should contact include:

Mr. Ronald Asato, AICP
SSFM International, Inc.
August 22, 2002
Page Three

- Local Hawaiian civic clubs
- Local chapters of the royal societies
- Individuals familiar with cultural practices of the areas affected by your undertakings

If you have any questions, please contact Mark A. Mararagan, policy analyst at 594-1756, or e-mail him at markm@oha.org.

Sincerely,



Jaina Keala

Acting Hawaiian Rights Division Director

cc: OHA Board of Trustees
OHA Administrator Clyde W. Namu'o
Kauai CAC



SSFIM INTERNATIONAL, INC.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 531-7348
Toll-free Fax: (808) 887-5885

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member



SSFIM 2001_156

November 12, 2002

Ms. Jaina S. Keala, Acting Director
Hawaiian Rights Division
Office of Hawaiian Affairs
State of Hawaii
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

Dear Ms. Keala:

Subject: Kapā'a-Kealia Bike and Pedestrian Path Basis of Design Project
Pre-Assessment Comments, Draft Environmental Assessment

Thank you for the letter dated August 22, 2002 providing comments on the Pre-Assessment Consultation for Draft Environmental Assessment (Draft EA) for the subject project.

Historic and Cultural Sites

A mitigation plan will be developed in consultation with the State Historic Preservation Division and Kauai/Niihau Islands Burial Council to address potential burials located along the coastline. Archaeological monitoring would be included as part of this plan. Consultation with the Burial Council has already been conducted and will continue on this project to address such concerns. Information from Ms. Kapaka-Artoleda has been obtained, and a cultural assessment study conducted has obtained information from knowledgeable sources of the project coastline.

Cultural Impact Statement

A cultural assessment study is being conducted as part of this project and will be included in the Draft EA published. This study includes identifying and consulting with individuals knowledgeable of the project coastline.

NHPA Section 106 Consultation

Section 106 consultation has been initiated for this project. As requested, the Federal Highways Administration will provide a written Request for Consultation to your department.

Stakeholder Identification

The Section 106 process initiated included public notification in the newspaper and identification of interested stakeholders. Individuals and organizations solicited did include local Hawaiian civic clubs, local chapters of royal societies and other individuals. The Draft EA will document this consultation effort.

If you have any questions on this matter, please give me a call at 531-1308. Thank you.

Sincerely,

Ronald A. Sato, AICP
Senior Project Planner



Please use no substitutes.....Conserv

SSFM INTERNATIONAL

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FILE CO

September 26, 2002

Ronald A. Sato, AICP
SSFM International
501 Sumner Street, # 502
Honolulu, HI 96817

Dear Mr. Sato:

Subject: Kapa-Kealia bike & pedestrian path basis of design project, pre-assessment consultation for draft environmental assessment, Kauai.

This is in regards to your letter dated August 7, 2002. The Department of Water (DOW) has no objections to the proposed bike & pedestrian path as shown on your submitted map. It will be the developers responsibility to verify that existing DOW's water facilities are not affected by the proposed project.

If you have any questions, please contact Mr. Edward Doi of my staff at 245-5417.

Sincerely,

Edward Doi
Ernest Y.W. Lau
Manager and Chief Engineer

cc: Edward Doi, DOW



SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348
Toll-free Fax: (866) 887-8888

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

SSFM 2001_156

November 12, 2002

Mr. Ernest Y.W. Lau, Manager & Chief Engineer
Department of Water
County of Kauai
4398 Pua Loke Street
Lihue, Hawaii 96766

Dear Mr. Lau:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
Pre-Assessment Comments, Draft Environmental Assessment

Thank you for the letter dated September 26, 2002 providing comments on the Pre-Assessment Consultation for Draft Environmental Assessment (Draft EA) for the subject project.

We note your department has no objections to the proposed project. The project is not expected to adversely affect existing water facilities, and the contractor design team selected by the County Department of Public Works will appropriately coordinate their design plans with your department.

If you have any questions on this matter, please contact me at 531-1308. Thank you.
Sincerely,

Ronald A. Sato

Ronald A. Sato, AICP
Senior Project Planner

Maryanne W. Kusaka
Mayor



COUNTY OF KAUAI
Fire Department
Mokuaha Building
4444 Rice Street, Suite 295
Lihue, Kauai, Hawaii 96766

David K. Sproat
Fire Chief

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FIRE

August 14, 2002

Ronald A. Sato, ACIP
SSFM International, INC.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817

Re: Kapaa-Kealia Bike & Pedestrian Path

Dear Mr. Sato,

We appreciate given the opportunity to have input on the Pre-Assessment Consultation to the above proposed project.

Part of the Department Mission and Goal is to protect life and to administer basic life support in all types of life threatening emergencies.

With that premise in mind our primary concern are as follows:

1. The ability of the Department to be able to access this 4.3 mile path
2. Will this path be capable of handling the Department's vehicles while traversing this path?

Again thank you for allowing us to comment on this project.

Sincerely,

Dennis P. Aquino
Dennis P. Aquino,
Captain
Prevention Bureau

David K. Sproat
David K. Sproat
Fire Chief

An Equal Opportunity Employer



SSFM INTERNATIONAL, INC.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348
Toll-free Fax: (866) 807-8885

Project Manager, Planner, & Engineer
American Council of Engineering Companies, Member

November 12, 2002

SSFM 2001_156

Mr. David K. Sproat, Fire Chief
Fire Department
County of Kauai
Mokuaha Building, Suite 295
4444 Rice Street
Lihue, Hawaii 96766

Dear Mr. Sproat:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
Pre-Assessment Comments, Draft Environmental Assessment

Thank you for the letter dated August 14, 2002 providing comments on the Pre-Assessment Consultation for Draft Environmental Assessment (Draft EA) for the subject project.

The proposed path is planned to provide shoreline access so that your department can continue providing public support services. The path is planned to be 12 feet wide and have a concrete surface. Within Kapaa Town, there are existing public roads providing direct access to the path and shoreline area from the highway. North of Kealia Beach, an existing public shoreline access from the highway to the cane haul road through this subdivision development is planned to be paved which should allow your vehicles to reach the path area.

If you have any questions on this matter, please contact me at 531-1308. Thank you.

Sincerely,

Ronald A. Sato

Ronald A. Sato, AICP
Senior Project Planner



SSFM INTERNATIONAL, INC.
 501 Summer Street, Suite 502
 Honolulu, Hawaii 96817
 Phone: (808) 531-1308
 Fax: (808) 531-7348
 Toll-free Fax: (866) 867-8885

Project Managers, Planners, & Engineers
 American Council of Engineering Companies, Member

November 12, 2002

SSFM 2001_154

Ms. Virginia M. Kapali, Director
 Office of Economic Development
 County of Kauai
 4444 Rice Street, Suite 200
 Lihue, Hawaii 96766

Dear Ms. Kapali:

Subject: Kapa'e-Kealia Bike and Pedestrian Path Basis of Design Project
 Pre-Assessment Comments, Draft Environmental Assessment

Thank you for the letter dated August 14, 2002 providing comments on the Pre-Assessment Consultation for Draft Environmental Assessment (Draft EA) for the subject project.

We greatly appreciate your comments regarding this project as it would support the economic development and economy of the County. We will keep your department apprised of the project as it progresses including providing a copy of the Draft EA for your review and comments.

If you have any questions on this matter, please contact me at 531-1308. Thank you.

Sincerely,

Ronald A. Sato, AICP
 Senior Project Planner



MARYANNE W. KUSAKA
 MAYOR

VIRGINIA M. KAPALI
 DIRECTOR

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COUNTY OF KAUAI
 OFFICE OF ECONOMIC DEVELOPMENT
 4444 Rice Street, Suite 200, Lihue, HI 96766
 Tel: 808-311-4398 Fax: 808-311-6379

FILE COPY

August 14, 2002

Mr. Ronald A. Sato, AICP
 SSFM International, Inc
 501 Summer Street, Suite 502
 Honolulu, Hawaii 96817

Dear Mr. Sato:

RE: Kapa'e-Kealia Bike & Pedestrian Path- Pre-Assessment Consultation

Thank you for the opportunity to provide input in the pre-assessment phase of the Draft Environmental Assessment for the Kapa'e-Kealia Bike & Pedestrian Path.

Enriching and enhancing our tourism product has been a priority with the County Office of Economic Development for the sustainability of our island's major industry. The proposed bike and pedestrian path, as proposed, will offer a new and refreshing venue for our visitors and contributes to Kauai's healthy lifestyle.

The short term infusion of construction activity will provide a source of jobs and revenue to the island. If the design takes into consideration a long term benefit of encouraging start up of small businesses along the path, more diverse jobs may be created for our island residents.

The County of Kauai Office of Economic Development welcomes any economic stimulus that meets the needs of the community and sustains a balanced island lifestyle. The proposed project appears to be directed to this goal and we would appreciate being kept apprised as your work progresses.

Should you have any further questions, please call our office for assistance.

Sincerely,

Virginia M. Kapali, Director
 Office of Economic Development

APPENDIX B-2

PUBLIC INFORMATIONAL MEETINGS



SSFM INTERNATIONAL, INC.
 6011 Kamehameha Blvd, Suite 202
 Honolulu, HI 96821
 Phone: (808) 831-1304
 Fax: (808) 831-7348

Project Managers, Planners, & Engineers
 American Consulting Engineers Council, Member

SIGN-IN SHEET

PROJECT: Kapa'a-Kealia Bike & Pedestrian Path Basis of Design Project
DATE: Thursday, July 25, 2002 **TIME:** 7:00 p.m.
PURPOSE: Public Informational Meeting
MEETING SITE: Kapa'a Neighborhood Center, Kapa'a, Kauai

1. Name	Tina Bushnell	Phone:	262-9972
Organization	Cultural Services HI	Fax	
2. Name	LARRY SAITO	Phone:	822-9193
Organization	Park's Rec.	Fax	
3. Name	PHIL YAMAGATA	Phone:	822-9450
Organization	CITIZEN + FISHERMAN	Fax	
4. Name	Stake Kymond	Phone:	274-3111
Organization	DOT-Hwy	Fax	274-3116
5. Name	Michelle Lewis	Phone:	822-2307
Organization	4875 Sevenside Kapa.	Fax	
6. Name	Aime Garland	Phone:	822-1167
Organization	4620 Anolei St. Kapa.	Fax	
7. Name	Rosemary Egan	Phone:	822-9831
Organization	57250 Pali Hwy Pali Kapa. Ec-Sort	Fax	
8. Name	LUMINE BATES	Phone:	822-9054
Organization	4510 KAWAHA ST KAPA.	Fax	822-9714

SIGN-IN SHEET (Page 2)

PROJECT: Kapa'a-Kealia Bike & Pedestrian Path Basis of Design Project

9. Name	MARCO PEREZ	Phone:	822-7950
Organization	PO BOX 30 KAWAHA HI	Fax	SAME
10. Name	Dele Rosenfeld	Phone:	822-4698
Organization	PO Box 269 Kapa'a HI 96761	Fax	822-2309
11. Name	Clark Lipscomb	Phone:	823-1000
Organization	132 W. Mokuauia Kapaa, CO 96761	Fax	823-1008
12. Name	JEFF RIVERA	Phone:	635-6163
Organization	KAWAII RANCH PO BOX 519163 KAWAII HI 96759	Fax	821-2993
13. Name	Zelan-Nickel	Phone:	245 7747
Organization	Kaui Nanyo	Fax	245 9289
14. Name		Phone:	
Organization		Fax	
15. Name		Phone:	
Organization		Fax	
16. Name		Phone:	
Organization		Fax	
17. Name		Phone:	
Organization		Fax	
18. Name		Phone:	
Organization		Fax	



SSFM INTERNATIONAL, INC.
501 Summer Street, Suite 602
Honolulu, Hawaii 96817
Phone: (808) 531-1306
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

July 29, 2002

SSFM 2001_156.000

KAPA'A-KEALIA BIKE AND PEDESTRIAN PATH
Notes From Public Informational Meeting

July 25, 2002
7:00 p.m.
Kapa'a Neighborhood Center

PARTICIPANTS:

Name	Agency / Organization
Doug Haigh	DPW, County of Kauai
Rodney Misawa	SSFM International, Inc.
Ronald Sato	SSFM International, Inc.
Leo Asuncion	SSFM International, Inc.
Pat Owan	SSFM International, Inc.
Berna Cabacungan	Earthplan
Tina Bushnell	Cultural Surveys Hawaii
Jimmy Nakasone	Hawaii Design Associates, Inc
Larry Saito	Dept. of Parks and Recreation
Phil Yamagata	Citizen and Fisherman
Steve Kyoito	State Dept. of Transportation
Michelle Lewis	
Dru Gariand	Pono Kai Resort
Robert Egan	
Lurline Bettencourt	
Mario Perez	
Dale Rosenfeld	
Clark Lipscomb	Kealia Makai Holdings
Jeff Rivera	Kauai Ranch
LeJan Niskels	Kauai Nursery and Landscaping

SUMMARY OF MEETING:

1. Meeting began with opening statements by Mr. Doug Haigh, DPW, County of Kauai.
2. Mr. Rodney Misawa introduced himself and other SSFM International, Inc. team members. He explained the project's background and presented a slide presentation of the study corridor.
3. After the presentation, the public was assembled into two separate groups led by facilitators for discussion on the opportunities and concerns associated with the project.



SSFM 2001_156.000
Kapa'a-Kealia Bike and Pedestrian Path

Notes From Public Informational Meeting
Held On July 25, 2002

Page 2

July 28, 2002

SUMMARY OF COMMENTS:

1. Questioned whether the path will be paved the entire length and if rocks were going to be used to address erosion. Asked what type of surface material will be used. It was suggested the path be concrete colored, and to have plants along the areas. Would like landscaping provided possibly using endangered plants and native plants.
2. Installing guardrails brings liability issues or other measure that may change the character to the area which was a concern since they wanted more of a natural looking path.
3. Thought the path would provide more recreation for the public, and encourages more people to exercise by using the path/area with ease access for ADA accessible and for surfers and swimmers. Path encourages interaction/networking by residents along with serving as a gathering place.
4. Commented that older people who cannot walk long distances may be limited. Path needs to be ADA accessible, allow people with electric powered wheel chairs/scooters or motorized wheelchairs.
5. Wanted better access to points such as the old "pineapple dump" and for general fishing people along the coast. Rough shorelines conditions or accessibility limits the number of people able to fish there now.
6. Beautification of the area needed 24-hour access, access for environmental cleanup, and cleaning beach areas. Suggested that maintenance of the path could be done through an "Adopt a Path Way" program, similar to the "Adopt a Highway."
7. Improve for easier vehicle access to viewing sights and easy walking distance like 50 feet. Provide parking to prime areas, access south of Donkey Beach and Kealia Kai area.
8. Suggestion to divided path lanes as there are a number of different users in the area (i.e., joggers, walkers, skateboarders, bikers, fishermen, surfers, etc.). They suggested that the 12 foot path be divided into 3 lanes and left unpaved in a natural manner.
9. Concerned about safety along the path. Families go biking and some areas were rocky and need to be a lot smoother. There are also steep drop-offs due to erosion on cliffs in the Kealia Beach area.
10. Suggested that speed limits be posted along the path and enforced, but they don't want bumps on the path.
11. Access to Kuhio Highway should be provided from the path.
12. Wanted ordinances changed to allow horseback riders, dog walking, and motorcycles on the path. Horseback riding takes 3 to 5 feet of the path area, or could be provided on the side of the paved path. Others indicated they did not want any motorized vehicles on the path.
13. It was mentioned that the Kumukumu Stream area had a bridge washed out and if plans were to provide some continuous access by spanning that stream.



SIGN-IN SHEET
PROJECT: Kapa'a-Kealia Bike & Pedestrian Path Basis of Design Project
DATE: Tuesday, August 27, 2002
PURPOSE: Public Informational Meeting
MEETING SITE: Kapa'a Neighborhood Center, Kapa'a, Kauai
TIME: 7:00 p.m.

14. Did not want pavilions, cabanas, or any building be built along the path which would invite people to congregate and drink which was already a concern at Kapa'a Park pavilion.
15. Would like to see benches along the path to serve as rest stops at intervals. It was also mentioned of using benches made from recycled plastics or benches that are donated.
16. Did not want to see commercial uses along the path, and particularly horse tours. Another indicated tours along path was okay, didn't want landscaping, preferred natural character of the shoreline, and didn't mind horses being allowed.
17. Questioned whether a person renting a bike and using the path would be considered a "commercial" use. Person didn't want businesses conducted on the path.
18. Inquired what other areas could be considered for additional comfort stations. Someone mentioned Lih'i Park at Waikae'a Canal. This comfort station could serve the boat launch ramp, and also "Baby Beach" (located south of Lih'i Park).
19. In addition to Kealia Beach, there was mention that a comfort station should be located at Donkey Beach (Kuna Bay) in the area of the public access trail.
20. Suggested that at least one covered picnic table be located at the scenic lookout point overlooking south portion of Kealia Beach Park.
21. Mentioned that the path should have some lighting for safety at night. The new path will "invite" users and should be accessible at all hours. Utilization of solar powered lamps were suggested.

1. Name Organization	Marge Ipperson	Phone: Fax	822-4688
2. Name Organization	John Hoff CANDHL	Phone: Fax	332-9745
3. Name Organization	Maynard Raymond County	Phone: Fax	244-6300
4. Name Organization	Wynne Anderson SSFM	Phone: Fax	822-6711
5. Name Organization	Pua Pani Rogers Hookepa Network	Phone: Fax	821-2267
6. Name Organization	Doug Haigh County	Phone: Fax	244-6650
7. Name Organization	Patricia Sit Pano Koi Resort	Phone: Fax	822-9823
8. Name Organization	Tina Brown KAPAA	Phone: Fax	822-1682

SIGN-IN SHEET (Page 2)

PROJECT: Kapa'e-Kealia Bike & Pedestrian Path Basis of Design Project

9. Name	RICHARD O. SPINER	Phone:	246-6445
Organization	SELF	Fax	246-6445
10. Name	Nalani Brun	Phone:	822-0811
Organization	Pty.	Fax	246-6390 (w)
11. Name	Rick Scott	Phone:	822-3488
Organization	4-1191 Kuni Hwy # 311 Kapaa, HI 96746	Fax	822-6380
12. Name	Dale Rosenthal	Phone:	822-4688
Organization	Coastal Trail Committee	Fax	822-2309
13. Name	Randal Valencia	Phone:	
Organization		Fax	
14. Name	Joe Prigg	Phone:	822-3445
Organization		Fax	5/A
15. Name	Jimmy Tomiyama	Phone:	629-2068
Organization		Fax	
16. Name	John Barrett	Phone:	822-3879
Organization		Fax	
17. Name	Blake Rafael	Phone:	822-8998
Organization	P.O. Box 557 Anahulu HI 96703	Fax	
18. Name	DR. CAROLAND	Phone:	
Organization		Fax	

SIGN-IN SHEET (Page 3)

PROJECT: Kapa'e-Kealia Bike & Pedestrian Path Basis of Design Project

19. Name	Hanna Microm	Phone:	812-0998
Organization		Fax	
20. Name	John McIntyre - Kirk	Phone:	639-9502
Organization	KAMA NUISCAJ SEEF	Fax	245-9219
21. Name	Robert McLaughlin	Phone:	822-2068
Organization	Kaunoi Homage Health Coastal Trail	Fax	Same
22. Name	MARIO PEREZ	Phone:	822-7958
Organization	Biker	Fax	
23. Name	GARY KONGOL	Phone:	
Organization	COUNCIL MAN	Fax	
24. Name	WILLIAM PERONS	Phone:	
Organization	MANAGING DIRECTOR	Fax	
25. Name		Phone:	
Organization		Fax	
26. Name		Phone:	
Organization		Fax	
27. Name		Phone:	
Organization		Fax	
28. Name		Phone:	
Organization		Fax	



SSFM INTERNATIONAL, INC.
501 Sunrise Street, Suite 602
Honolulu, Hawaii 96817
Phone: (808) 531-1306
Fax: (808) 521-7346

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member



SSFM 2001_156.000
Kapa'a-Kealia Bike and Pedestrian Path

Notes From Public Informational Meeting
Held On August 27, 2002

Page 2

August 28, 2002

SSFM 2001_156.000

KAAPA'A-KEALIA BIKE AND PEDESTRIAN PATH
Notes From Public Informational Meeting

August 27, 2002
7:00 p.m.
Kapa'a Neighborhood Center

PARTICIPANTS:

Name	Agency	Phone
Doug Haigh	DPW, County of Kauai	
Rodney Misawa	SSFM International, Inc.	
Leo Asuncion	SSFM International, Inc.	
Berna Cabacungan	Earthplan	
Joel Kurokawa	Hawaii Design Associates, Inc	
Marge Freeman		
John Hoff		
Maryanne Kusaka	Mayor, County of Kauai	
Muriel Heddermann		
Pua Nani Rogers	Hookipa Network	
Peter Sit	Pono Kai Resort	
Tim Bynum	Kamalani	
Mario Perez	Coastal Trail Committee	
Dale Rosenfeld		
Richard O. Stauber		
Nalani Brun		
John McIntyre-King	Kauai Nursery and Landscaping/Self	
Rick Scott	Councilperson	
Randal Valenciano		
Joe Frigge		
Jimmy Tokioka		
John Barretto		
Blake Rafael		
Dru Garland		
Gilean Micken (sp?)		
Robert Measel, Jr.	Kauai Heritage & Health Coastal Trail	
Gary Hooser	Councilperson	
Wallace Rezendes	Managing Director	

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Notes - 11-6-02.doc

August 28, 2002

SUMMARY OF MEETING:

- Meeting began with opening statements by Mr. Doug Haigh, DPW, County of Kauai.
- Ms. Berna Cabacungan recapped what was presented/discussed at the July 25, 2002 Public Informational Meeting. Ms. Cabacungan also presented key points or comments made at the July 25, 2002 meeting.
- Mr. Rodney Misawa introduced the other SSFM International, Inc. team members and presented a slide presentation of the various areas, together with conceptual drawings of specific areas.
- During and after the presentation, questions and comments from the public were addressed.
- Ms. Cabacungan led the question and answer period after the presentation.

SUMMARY OF COMMENTS:

- The proposed path should not cut through grass field behind Kapaa Community Center, as a number of people and activities would be displaced or impacted. Suggested using the asphalt-paved road instead.
- Mauka/makai access should be maintained near Moikeha Canal and other segments of the proposed path. The path should not eliminate or restrict mauka/makai access points.
- Because of fishers, the bridge at Moikeha Canal should include shoulders or flare-outs for fishers to use. Bridges should also take into account ADA accessibility.
- Questioned whether the path is being called a "bicycle/pedestrian path" or a "multi-purpose path," since figures in the PowerPoint presentation used both representations of the proposed path. Mr. Misawa noted that correction will be made to the presentation and plans to ensure consistency of terminology.
- Improvements are made to the access road in the area of the Kapaa Swimming Pool, not only should homeowners in the area be involved in the design, but also those who utilize the roadway to access Kapaa Beach Park located behind Otsuka's. It was also mentioned that if improvements are made in the Kapaa town area, the Kapaa community should be involved, since it is a different area compared to the cane haul road area north of Kapaa town.
- Parking should be provided near Otsuka's, as well as allowing horseback riding in this area (From Otsuka's north to Ahiihi Point). Noted that there should be a rest area at Kealia Lookout.
- Suggested that the consultants look at the bridge that crosses Opaekaa Stream. Bridge is very well built, and a good amount of funding went into design and construction. The bridge is accessible via Kuamoo Road, and approximately 2 miles inland (towards Opaekaa Falls) on the Nounou Trail.

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Notes - 11-6-02.doc



August 28, 2002

8. It was mentioned in the area south of Kealia Beach, fishing access (mauka/makaa) should be maintained.
9. Suggested that more than one comfort station be provided at Kealia Beach. However, do not want the comfort station located in the middle of the beach area (i.e., along long straightway of Kubio Highway). This may impact viewplanes in the area and it was suggested that a comfort station be constructed at the south end of Kealia Beach, and at the north end of Kealia Beach.
10. Commented that people who live in the area would oppose to lots of concrete pavement and suggested the use of grass blocks (matrix-like concrete block with grass growing in between cells of matrix).
11. Commented that the bridge at Kapaa Stream be engineered in such a way that only improvements are made to the deck of the bridge, rather than the entire bridge (i.e., foundation, etc.). It seems that the bridge is sturdy enough since the trains used it for hauling cane, and subsequently trucks utilized the bridge.
12. In the area of the intersection of the access path (northern end of Kealia Kai Subdivision) and Kuna Bay (Donkey Beach), an approximately 30-40 foot remnant of the old train track and ties are under the vegetation in the area.
13. Added that an old slaughterhouse was located in the area of the access path and cane haul road intersection and claimed that the cornerstone of the building is under the vegetation as well.
14. A heiau is or was located at Ahini Point. Suggested looking at "Legends of Kauai" for the story on the heiau.
15. A rest stop on the north side of Kumukumu Stream should be considered because of its scenic view of the shoreline.
16. In response to a question on funding, Mr. Haigh noted that funding for Phase I of the project will be in the FY 2003 budget, and that Phase II is anticipated to be funded in the FY 2004 budget.
17. There should be a parallel path in the "Kapaa Homestead" area. One part of the path would be paved concrete, and horses would stay off the concrete, to utilize the unpaved portion of the path.
18. If a gravel path is installed for horses, it may not be the issue that it is today. The question of whether or not the pathway is concrete-paved also comes into play if a gravel path is constructed. Mr. Haigh noted that there are a number of factors for selecting the width and type of paving selected. Factors include AASHTO standards (width of path), maintenance of path (type of paving), and safety/liability issues.
19. Noted that providing more access is not necessarily good for the environment as people tend to "go off the beaten path."



August 28, 2002

20. It appears that the horning community has been excluded from discussions on whether or not horses will be allowed on the proposed path. Mr. Haigh acknowledged that it is the administration's position to determine if horses will not be allowed on the path. This is based on safety of multi- or conflicting uses on the path.
It was noted that dogs are not allowed in County parks, and if the trail is a part of the park, dogs will not be allowed on the path. Mr. Haigh responded that uses in County parks are determined by ordinance or by the County's Chief Engineer. Mr. Haigh added that dogs are allowed in County parks if they are leashed.
21. The County has an opportunity to obtain Federal Funds, and should not let this project die, would like to see access to the coastline preserved and the public keep this project alive.
22. "Rails and Trails" program (Federal grant program under Department of Agriculture) should be tapped for funding, especially if horse/bridle trails are to be added. It was strongly urged that horse trails be included in the planning of the proposed path.
23. It was mentioned that concrete can be dyed to an appropriate color, but will eventually be covered with red dirt, blending with the surrounding areas.
24. Asked whether possible erosion under the concrete path is addressed. Mr. Misawa responded that engineering aspects (i.e., erosion, drainage, etc.) will be examined.
25. An individual felt that although no motorized vehicles will be allowed on the path, there will be instances where an individual will sneak onto the path. He noted that there is an enforcement issue here. Additionally, this individual felt that there are enough equestrian trails on the island. An unidentified person denied the individual's assertion.
26. It was noted that the concrete be below the current surface of the path. This should allow mauka/makaa access as areas where access to the shoreline and path meets, will be an intersection, and those on the respective paths will have to respect one another (i.e., allowing joggers to pass if driving a vehicle across the path).
27. It was clarified that denial of the Unidentified Male's statement on equestrian trails is based on access to equestrian trails is being limited.
28. If horses are prohibited from the path, the path will be viewed as an "elitist" path.
29. It was also noted that special interest groups (such as the members of the Kauai Heritage & Health Coastal Trail Committee) should be notified of future meetings on the proposed path.
30. Questioned why the entire length should be concrete-paved, instead of just making improvements where needed. Mr. Haigh responded that it is a perception of need. For example, Mr. Haigh noted that for a person in a wheelchair, paving the path in concrete will allow that person to utilize the path, when in the past he/she could not.



August 28, 2002

31. Mr. Joel Kurokawa noted that not all conceptual drawings were shown during the PowerPoint presentation. Mr. Kurokawa also noted that horseback riding on the trail was considered, and that the County will have to weigh the issue of allowing or not allowing horses on the path versus liability and management issues.
32. Reiterated that the path should only be improved in specific areas.
33. Did not want a lot of signs along the path. Suggested that one or two signs be included.
34. Noted that for the equestrian community, their biggest concern is that not considering accommodation for horse riding in the plan will preclude it down the line.
35. It was added that there are no horse ordinances on Kauai. Thus, you are able to ride anywhere, unless prohibited by ordinance. Also added that the "Rails to Trail" program be utilized for funding as DOA has more funds to allocated compared to FHWA. Lastly, the horse/bridle path can be accommodated on the cane haul road, since the width of the entire cane haul road was measured when the Kauai Heritage & Health Coastal Trail Committee was preparing its report to the County Council.
36. It was mentioned that the existing sand parking lot at Kealia Beach should not be paved as it might be washed out if large waves hit the beach or coastal area.



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Project Managers, Planners & Engineers
American Council of Engineering Companies, Member

Project: Kapua-Kealia Bike and Pedestrian Path-Beels-of-Besight
Public Informational Meeting
August 27, 2002

FILE COPY

Name of Person: MARGE FREEMAN
6448 Kaahale St.
Kapaa, HI 96746

Subject / Location:

Comments:

not page

SCANNED

Just to reiterate some of the concerns that were voiced at the meeting Aug. 27. These are particularly important to remember in the design process:

1. PLAN FOR STONES FOR SAFETY - not guardrails
2. TRY REALLY HARD TO HAVE NO CAR AND BIKE MIX. Neither drivers of cars or bikes remember the existence of the other. We already have some very dangerous car/bike mixes on our roads.
3. TRY TO WORK IN SOME CURVES (AROUND EXISTING TREES AND HILLS, ETC) THIS ADDS INTEREST AND MAKES THE PATH LOOK LESS LIKE A ROAD.
4. COLOR THE CONCRETE SO IT BLENDS BETTER WITH THE DIRT. (RED OR BROWNISH) NOW NOT AT SOME LATER DATE. YOU CANNOT EXPECT NATURE TO COLOR IT LATER. Some resistance is surfacing about the size and color now that there is some path built at Lydgate that is not colored.
5. I HOPE BETWEEN THE BIKE FUNDS AND THE COUNTY YOU CAN ADD A SHOWER (OR SEVERAL) AT KEALIA BEACH. (this beach is heavily used and needs showers)
6. DESIGN IN LANDSCAPING - ESPECIALLY BIG TREES (in time) The path needs shade and interest. Don't expect the community to do it all later.
7. KEEP SIGNS TO A MINIMUM AND LOW TO THE GROUND (so they don't detract from the views)



KEALIA KAI

July 10, 2003

Doug Halph
 Chief Building Division for County of Kauai
 Department of Public Works
 4444 Rice Street
 Suite 175
 Lihue, Hawaii 96766

Dear Doug,

First, a belated thanks for meeting with Greg Kinglacy and me at Kealia Kai to discuss our participation in the Kapé e Kealia Bike and Pedestrian Path.

Subsequent to our meeting I had an opportunity to read the plan and was most impressed with the amount of time, effort and thoughtfulness that went into its development. I did however, want to bring to your attention one item of concern to all of us at Kealia Kai and that is the proposed location of the path at the northern most quadrant of the Kealia Kai property. The existing plan (the yellow line) shows the trail swinging mauka along the alignment of the old bridge and run which use to exist when the haul case railroad was in place. I'm sure you realize the cut no longer exists. All of the discussions that we had in the past with various members of public works led us to believe the new path location (the pink line) would be along the current trail. Both alignments begin and end at the same spot, however, the alignment we prefer takes the public closer to the shoreline and away from residential housing. We think this is in the interest of both the public and the landowners at Kealia Kai.

I hope the County isn't wedded to the mauka alignment and this was just an oversight in the plan. In any case, I would like the opportunity to discuss this alignment either with you in person after August 10th when I'll be on island or at any time of your choosing via telephone. Please feel free to call me at 303 410-2800.

Looking forward to working with you on this exciting project.

I remain

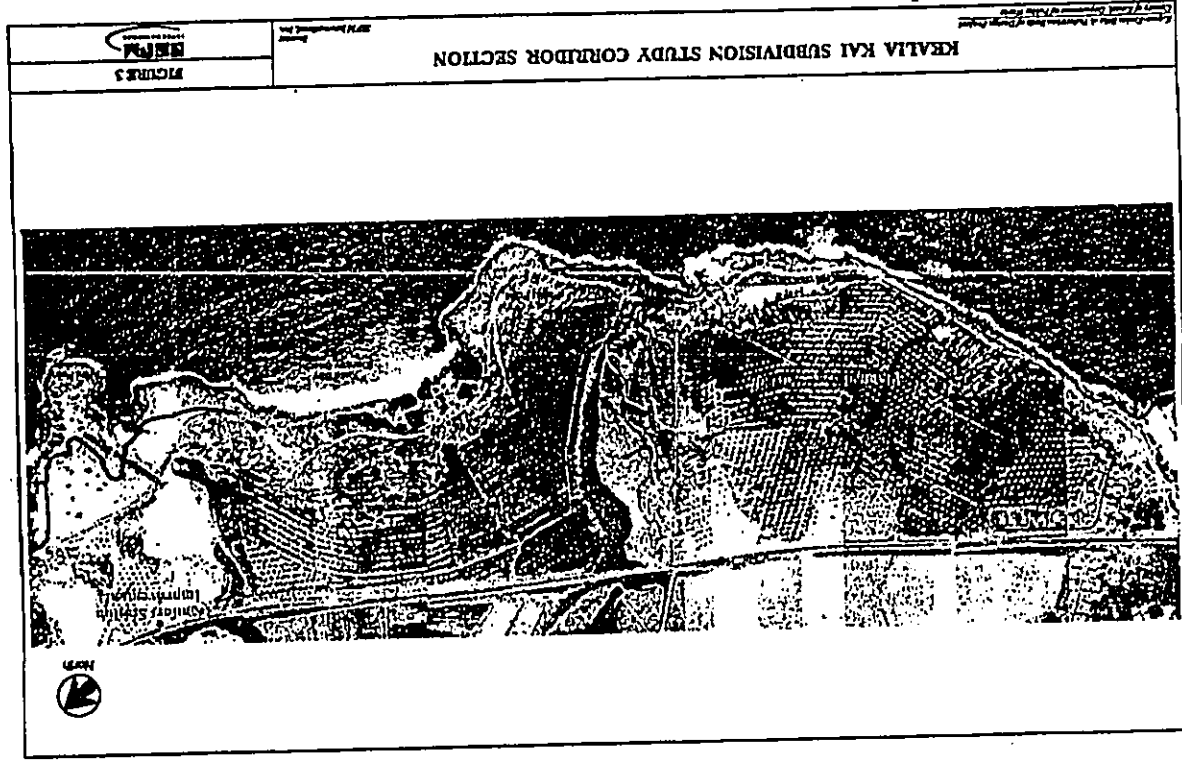
Cordially,



Enclosures

cc Greg Kinglacy

Kealia Kai Owners Association
 P.O. Box 579
 Anahulu, HI 96763
 Tel: (808) 833-1600
 Fax: (808) 833-1608



KEALIA KAI SUBDIVISION STUDY CORRIDOR SECTION

FIGURE 3

City of Kauai, Department of Public Works

DRAFT

July 28, 2003

Mr. Tom McCloskey
Kealia Kai Owners Association
P.O. Box 539
Anahola, Hawaii 96703

Dear Mr. McCloskey:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
Comments on Project Master Plan

Thank you for your letter dated July 10, 2003 providing comments on the subject project. We appreciate your comments on the effort expended in developing the proposed improvements.

We would like to clarify that the project area referred to in your letter is planned to be a future extension of this multi-use path. However, the specific alignment for this future extension has not been established at this time.

When the County decides to extend this path, there would be opportunities for public comments and input on this to determine the specific path route. Your desire to route the path closer to the shoreline will be incorporated into the planning of this extension.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,

Wynne M. Ushigome
Deputy County Engineer

APPENDIX B-3

SECTION 106 CONSULTATION

DOCUMENT CENTER
STATE OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
KAUAI DISTRICT OFFICE
200 BRYAN STREET, ROOM 200
LAIHA, HAWAII 96761-1826

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
KAUAI DISTRICT OFFICE
200 BRYAN STREET, ROOM 200
LAIHA, HAWAII 96761-1826
FILE COPY

September 24, 2002

SSEM INTERNATIONAL, INC.
Leo R. Asuncion, Jr., AICP, Project Planner
501 Summer Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Asuncion:

Subject: Kapaa - Kealia Bicycle/Pedestrian Path Basis of
Design Project Section 106 Consultation

Your letters requesting written comment regarding the project mentioned have been forwarded to unencumbered land use offices in Honolulu.

The land descriptions in your recent letter depicts the northern boundary of the project potentially reaching the boundary of Department of Hawaiian Home Lands (DHHL) property, TRK 4-7-04: Portion of 3. The project appears to stop at the DHHL southern boundary. My comments are reserved to use of DHHL property.

Questions and concerns arise if the project abuts the DHHL southern boundary. Access to DHHL property in this area is limited and recent unauthorized use/abuse of DHHL property has occurred in the area. What will happen when the general public is allowed to ride or walk to the boundary of DHHL property? What measures will be implemented to use/not use DHHL property?

Entities and/or the general public need to request and secure right of entry to use DHHL property. The DHHL Land Management Division (LMD) can assist the public in short term use of DHHL property by addressing requests to P.O. Box 1879, Honolulu, Hawaii 96805, 808 586-3823. More permanent use requests can be addressed to the Land Management Branch of LMD and the Planning Office, same address, 808 586-3836.

SSEM INTERNATIONAL, INC.
September 24, 2002
Page 2

Please call me if you have any questions or if I may assist your office with additional information, 808 274-3132. Mahalo.

Aloha,

Roland Licona, Kauai District Supervisor
Homestead Services Division



SSFM INTERNATIONAL, INC.
 501 Summer Street, Suite 502
 Honolulu, Hawaii 96817
 Phone: (808) 531-1308
 Fax: (808) 531-7248
 Toll-Free Fax: (808) 867-4883

Project Managers, Planners, & Engineers
 American Council of Engineering Companies, Member

November 12, 2002

SSFM 2001_156

Mr. Roland Licona, Kauai District Supervisor
 Homestead Services Division, Kauai District Office
 Department of Hawaiian Home Lands
 State of Hawaii
 3060 Eiiwa Street, Room 203
 Lihue, Hawaii 96766-1886

Dear Mr. Licona:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design
 Section 106 Comments

Thank you for your September 24, 2002 letter providing comments on the subject project as part of Section 106 consultation efforts.

Current plans for the project would provide a path terminus in an area just north of the existing public shoreline access through the Kealia Kai Subdivision. As a result, the cane haul road path would not be improved across the Homakawaa Stream, associated gulch, and Ahiki Point area which are adjacent to your Anahola property. Thus, path users would be restricted in their ability to proceed north of this terminus and access onto Hawaiian Home Land (HHL) property. Appropriate signage would be incorporated in the project's design to notify the public of restricted access to your Anahola property.

In the future, plans to extend this multi-use path beyond the County's property into Anahola would only proceed if a Right-of-Entry is given to the County. We received a copy of a letter from Mr. Soon to the County regarding Council Resolution No. 2002-13 which identified your department's concerns and conditions. At this time, we understand there is no decision regarding the County Council's agreement to the conditions and concerns. Consequently, an acceptable plan to address those concerns would be more appropriately developed at a later date by the County as part of their review and consultation with your department on this Resolution matter.

We appreciate your district office's willingness to assist the public with short-term right-of-entry requests. If you have any questions on this matter, please contact me at 531-1308. Thank you.

Sincerely,

Ronald A. Sato

Ronald A. Sato, AICP
 Senior Project Planner

REVISIONS & COMMENTS
 DATE BY



STATE OF HAWAII
 DEPARTMENT OF HAWAIIAN HOME LANDS
 P.O. BOX 1879
 HONOLULU, HAWAII 96828

September 27, 2002

FILE COPY

SSFM INTERNATIONAL, INC.
 RECEIVED
 9/27/02 1:38:22
 PROJECT: KAPA'A-KEALIA BIKE AND PEDESTRIAN PATH
 DRAWING: SECTION 106 COMMENTS
 DESIGNED BY: R. A. SATO
 CHECKED BY: R. A. SATO
 APPROVED BY: R. A. SATO

Mr. Leo R. Asuncion, Jr., Project Planner
 SSFM International, Inc.
 501 Summer Street, Suite 502
 Honolulu, Hawaii 96817

Dear Mr. Asuncion:

Subject: Kapa'a - Kealia Bicycle/Pedestrian Path Basis of Design
 Project Section 106 Consultation

Our Kauai District Supervisor has forwarded copies of your letters dated August 7, 2002, and September 3, 2002, regarding the subject project. While we do not have specific concerns regarding Section 106 Consultation under the National Historic Preservation Act, we do have concerns about the impacts the project will have on Hawaiian home lands (HHL) when completed.

The project, as presented in your letter calls for improving the former cane haul road from Kapa'a to Ahiki Point, just adjacent to HHL. As you know, the cane haul road continues through HHL to Anahola Beach Park and many users of the improved path will be tempted to continue along the unimproved cane haul road toward Anahola Beach Park. The increase in public access to HHL raises our concerns about increases in litter, unauthorized camping, unsanitary conditions, illegal uses, wildfires and liability for injury. We would like to see these issues addressed in your environmental assessment and ask that the County of Kauai (County) come up with an acceptable plan to mitigate our concerns, such as barricading vehicular access to HHL, posting appropriate signage and scheduling routine enforcement patrols.

We have also responded to the County regarding Resolution No. 2002-13 which requests that the Department of Hawaiian Home Lands (DHHL) consider granting the County a "Right-of-Entry" to continue public access from Kealia to Anahola Beach Park. Our

Mr. Leo R. Asuncion, Jr.
September 27, 2002
Page 2

concerns in that matter are similar to those stated above, however, if access is granted to extend the path onto HHL, the County will be asked to provide certain management functions and services to address our concerns. For your information, we have enclosed a copy of our letter to the County.

Your questions or future correspondence should be sent to our Land Management Division (LMD) at the address shown on this letterhead, or you may call Noel Akamu, LMD Land Agent for Kauai, at 587-6429 in Honolulu.

Aloha,

Raynaid C. Soon, Chairman
Hawaiian Homes Commission

c: County of Kauai (Mr. Peter A. Nakamura, County Clerk)



NOI'ANA I KA HOU
KŪ'ANA I KA
MAHELE O KA
MAHELE O KA

ANTHONY C. BOYD
County Clerk

JOHN W. S. H. HANAUSS
Secretary to the Clerk

STATE OF HAWAII
P.O. BOX 1177
HONOLULU, HAWAII 96810
DEPARTMENT OF HAWAIIAN HOMELANDS

September 27, 2002

Mr. Peter A. Nakamura, County Clerk
County Services Division
County of Kauai
4396 Rice Street, Room 206
Lihue, Hawaii 96766-1399

Dear Mr. Nakamura:

Subject: County Council Resolution No. 2002-13 - Requesting that the State Department of Hawaiian Home Lands Consider Granting a "Right-of-Entry" to the County of Kauai to Continue Public Access from Kealia to Anahola Beach Park.

Our recent receipt of correspondence from SSPH International (SSPH) indicates that the County of Kauai (County) is quickly moving forward on its project to build a public access, coastal pathway from Kapaa through Kealia. We apologize for the delay, however we now realize that our response to Resolution No. 2002-13 may be helpful to the County's plans, not only for the Kapaa to Kealia phase (a copy of our response to your consultant SSPH is enclosed for your information), but also for the proposed continuation of the pathway to Anahola Beach Park.

Our concerns and our proposed conditions to address these concerns are as follows:

1. In some areas, the former cane haul road is several hundred yards from the shoreline. To keep the public use of Hawaiian home lands to a minimum, we propose that the County realign the pathway so that it is not more than fifty (50) feet from the shoreline. In areas where the terrain requires a larger setback, we will consider a specific proposal on your part.



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 501 Surfer Street, Suite 502
 Honolulu, Hawaii 96817
 Phone: (808) 531-1308
 Fax: (808) 531-7546
 Toll-free Fax: (808) 531-0883

Project Managers, Planners, & Engineers
 American Council of Engineering Companies, Member

SSFM 2001_156

November 12, 2002

Mr. Raymond C. Soon, Chairman
 Hawaiian Homes Commission
 Department of Hawaiian Home Lands
 State of Hawaii
 P.O. Box 1879
 Honolulu, Hawaii 96805

Dear Mr. Soon:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
 Section 106 Comments

Thank you for your September 27, 2002 letter providing comments on the subject project as part of Section 106 consultation effort.

Current plans to be implemented for the project would provide a path terminus in an area just north of the existing public shoreline access through the Kealia Kai Subdivision. As a result, the canoe haul road path would not be improved across the Honouliuli Stream, associated gulch, and Ahiki Point area which are adjacent to your Anahola property. Thus, path users would be restricted in their ability to proceed north of this terminus and access onto Hawaiian Home Land (HHL) property.

Appropriate signage would be incorporated in the project's design to notify the public of these concerns and restricted access to your Anahola property. Consequently, the planned improvements are not expected to contribute to those concerns identified such as illegal uses, unauthorized camping, and unsanitary conditions on HHL property. The County will provide trash cans at periodic points along the path for users to dispose of their rubbish. A comfort station for the public is also planned at the parking lot connecting to the Kealia Kai Subdivision's public shoreline access to prevent unsanitary conditions along the path. Vehicular access on the multi-use path will not be permitted.

In the future, plans to extend this multi-use path beyond the County's property into Anahola would only proceed if a Right-of-Entry is given to the County. We received the copy of your department's letter to the County regarding Council Resolution No. 2002-13. At this time, we understand there is no decision regarding the County Council's agreement to the stated conditions and concerns. Consequently, an acceptable plan to address these concerns would be more appropriately developed at a later date by the County as part of their review and consultation with your department on this Resolution matter.

If you have any questions on this matter, please contact me at 531-1308. Thank you.

Sincerely,

Raymond C. Soon

Ronald A. Sato, AICP
 Senior Project Planner

Mr. Peter A. Nakamura
 September 27, 2002
 Page 2

2. Granting and improving public access will cause an increase in littering, dumping of solid wastes, illegal activity, unsanitary conditions, unauthorized camping and exposure to liability. We propose that the County manage and maintain the area of the proposed Right-of-Entry (ROE) which shall be defined as extending from the shoreline to 20-feet on the inland side of the pathway. Management and maintenance shall include posting appropriate signage, scheduling regular removal of litter and other solid wastes (including human wastes and dead animals), scheduling routine police patrols to curb unauthorized camping and other illegal activity, barricading other vehicular accesses into the area, and indemnifying DHH from all liability resulting from activity within the ROE area.

3. The beach area can be very dry and increased public access will increase the risk of wildfires which when fanned by on-shore winds, could pose a serious threat to inland residences. We propose that the County clear brush and trees within 15-feet of the inland side of pathway and post appropriate signage to restrict access beyond the inland boundary of the ROE area.

If the County Council agrees to conditions proposed herein, or provides other satisfactory methods to address our concerns, our Land Management Division (LMD) will proceed toward seeking approval from the Hawaiian Homes Commission to issue a 10-year, rent-free ROE to the County. We will await your response before proceeding further.

Should you have questions, you may contact Noel Akamu, LMD Land Agent for Kauai, at 587-6429 in Honolulu.

Aloha,

Raymond C. Soon
 Raymond C. Soon, Chairman
 Hawaiian Homes Commission

c: SSFM International (Mr. Leo R. Asuncion, Jr.)

James G. Trujillo
PO BOX 33 Kapa, HI
96746
jmanu16@hotmail.com

SSFM INTERNATIONAL, INC.
LEAD
AUG 26 2002
12
HI

FILE COPY

8/22/2002
SSFM International, Inc.
501 Summer St. # 502
Honolulu, HI 96817
Attn: Leo Asuncion, Jr.

Aloha Mr. Asuncion,

My name is Jimmy Trujillo and I am interested in participating in the Section 106 process regarding the proposed Kealia-Kapa'a Bikerepath. I am a resident of Kauai and live in the Kawaihau District.
Please accept this letter as a request to receive information about the project and the Section 106 process. I look forward to hearing from you or your representatives at your convenience. Mahalo for your time and consideration.

Sincerely,


J. Trujillo



SSFM INTERNATIONAL, INC.
501 Summer St., # 502
Honolulu, HI 96817
Phone: (808) 831-5334
Fax: (808) 831-7348
Toll-free Fax: (866) 887-8685
Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

August 29, 2002

SSFM 2001_156.000

Mr. James G. Trujillo
P.O. Box 33
Kapa, Hawaii 96746

Dear Mr. Trujillo:

Subject: Kapa-Kealia Bicycle/Pedestrian Path Project

Thank you for your letter dated August 22, 2002 requesting information on the subject project and the Section 106 process.

We have enclosed a flyer that gives a short description of the project, and an area map depicting the project corridor. The bicycle/pedestrian path project involves the use of Federal and County funds. Therefore, an Environmental Assessment meeting both State and National Environmental Protection Act (NEPA) requirements is required.

Section 106 of the National Historic Preservation Act of 1966, as amended, requires Federal agencies to take into account the effect of an undertaking upon any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register, prior to approval of the expenditure of any Federal funds. Thus, the County of Kauai, on behalf of the Federal Highways Administration, is required to implement the Section 106 consultation process.

Comments received under the Section 106 consultation process will be incorporated into the Environmental Assessment document. The document will also include appropriate scoping, identification of historic properties, assessment of effects upon historic properties, and consultation leading to resolution of any adverse effects.

Therefore, we are currently in the process of soliciting comment from various agencies, Hawaiian organizations, and the public regarding identification of historic or cultural sites that may be within the project corridor as depicted in the attached location map.

Please inform our office if you would like a copy of the Draft Environmental Assessment document when it is published.



Kapaa-Kealia Bikes and Pedestrian Path Project

Letter to Mr. James G. Trujillo
Page 2
August 29, 2002



SSFM INTERNATIONAL, INC.
801 Summer Street, Suite 602
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 531-1348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

In regards to the project, we are in the process of holding public information meetings on Kauai. Meetings have been held on July 25, 2002 and August 27, 2002. Efforts to e-mail you information on the August 27, 2002 meeting were made, however, the e-mails were returned stating that the e-mail account listed on your letter was not inactive and not accepting e-mails. The third and final informational meeting will be held in approximately 3 to 4 weeks, and you will be included on the mailing list for that meeting.

We hope that the enclosed information on the subject project and Section 106 process is helpful to you. If you should have any comments to offer on the project corridor in regards to historic or cultural resources, please feel free to submit those comments to our office.

If you should have any further questions in regards to the project or the Section 106 process, please contact me at (808) 531-1308 or via e-mail at the address listed below.

Thank you.

SSFM INTERNATIONAL, INC.

Leo R. Asuncion, Jr., AICP
Project Planner
Email: Lasuncion@sisfm.com

August 2002

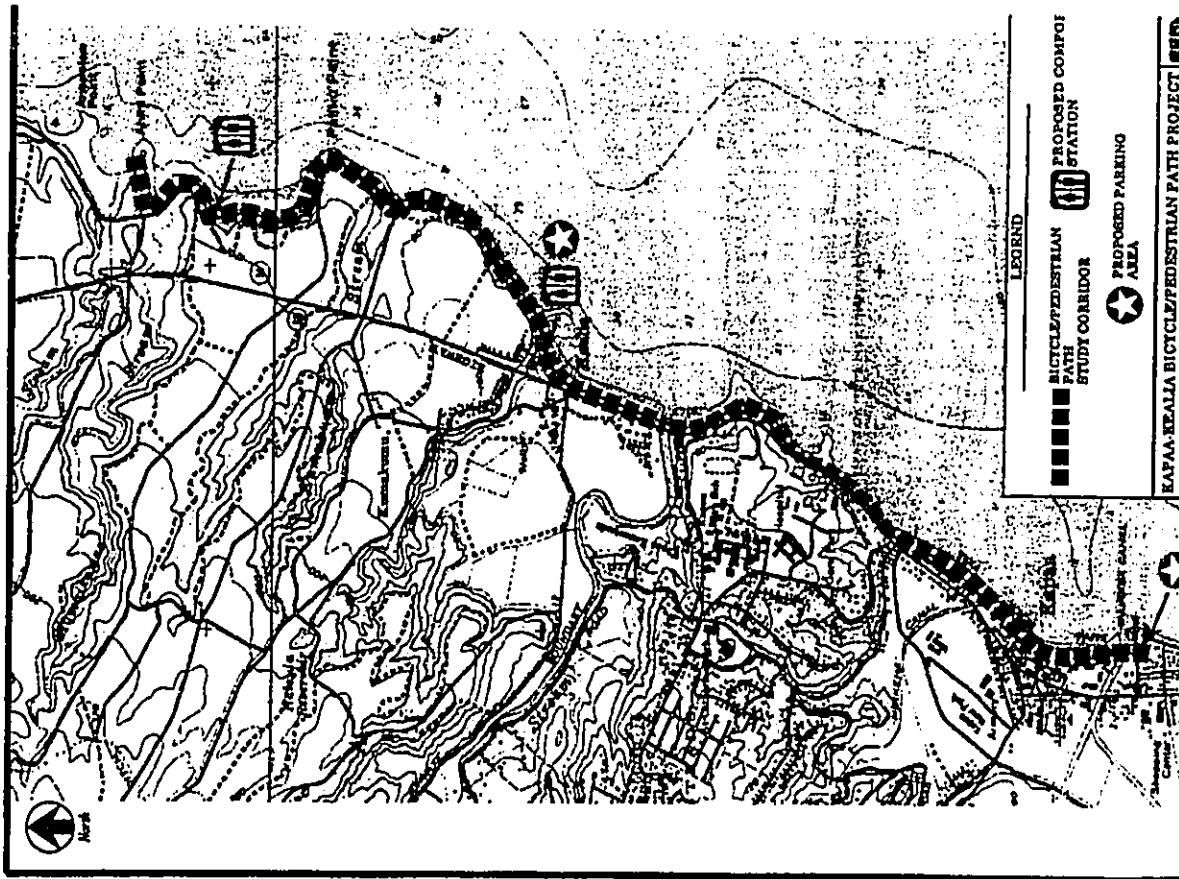
COUNTY OF KAUAI, DEPARTMENT OF PUBLIC WORKS
KAPAA-KEALIA BICYCLE/PEDESTRIAN PATH PROJECT

The County of Kauai (County), Department of Public Works (DPW), is proposing to develop the Kapaa-Kealia Bicycle/Pedestrian Path Project spanning from the town of Kapaa to Kealia on the Island of Kauai. This project would incorporate an existing bicycle/pedestrian path in the town of Kapaa, renovation of an existing cane haul road that spans from Kapaa to Ahiki Point in the Kealia area, and provision of related amenities such as a comfort station and parking areas. The Tax Map Keys associated with this project include: 4-5-06; portion of 1; 4-5-07; portion of 1; 4-5-08; portion of 1; 4-5-11; portion of 1, 3, portion of 45, and 53; 4-5-12; portion of 1, and 2; 4-5-13; portion of 1, 2, and 28; 4-6-14; portion of 34, and 90; 4-7-03; portion of 1; and 4-7-04; portion of 6. The exhibit enclosed provides a corridor location map within which the proposed bicycle/pedestrian path will be located.

The County of Kauai is currently performing a concept study to develop a basis for design that would be used in developing the proposed bicycle/pedestrian path, related improvements, and amenities. An environmental assessment is also being completed for the project. Implementation of this project will be through a design-build process, and is scheduled to begin in the Summer 2003.

The project will provide the community and general public with a renovated and safe bicycle/pedestrian path along the eastern shoreline of Kauai, beginning at Waipouli Park in Kapaa, and continuing northward for approximately 4.3 miles to Ahiki Point in the Kealia area. The path may be used for both recreational uses along with a transportation function. The path is proposed to be 12-feet in width, and utilize an existing asphalt paved path in the Kapaa Beach Park area, and an existing cane haul road from Kapaa to Kealia. Amenities associated with this project is planned to include a parking lot with comfort station at Kealia Beach, a comfort station at Kuaa Bay, and a parking area at Waipouli Park (near Waikaea Canal).

DOCUMENTARY




 US Department of Transportation
 Federal Highway Administration

HAWAII DIVISION
 SEP 11 2002
 300 Ala Moana Boulevard, Room 3300
 Honolulu, HI 96850

In Reply Refer To:
 HEC-111

September 10, 2002

Mr. Clyde W. Namm'o, Administrator
 Office of Hawaiian Affairs
 711 Kapiolani Boulevard, Suite 500
 Honolulu, HI 96813-5249

Dear Mr. Namm'o:

Subject: Kapa'a-Kealia Bicycle/Pedestrian Path Basis of Design Project
 Section 106 Consultation

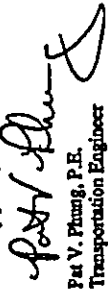
The County of Kauai (County), Department of Public Works (DPW) is proposing to develop a basis of design for the Kapa'a-Kealia Bicycle/Pedestrian Path Project in the towns of Kapa'a and Kealia on the island of Kauai. This bicycle/pedestrian path would utilize existing rights-of-way owned by the County, spanning approximately 4.3 miles along the coastline of eastern Kauai. The Tax Map Keys associated with this project include: 4-5-06: portion of 1; 4-5-07: portion of 1; 4-5-08: portion of 1; 4-5-11: portion of 3, portion of 45, and 53; 4-5-12: portion of 1, and 2; 4-5-13: portion of 1, 2, and 28; 4-6-14: portion of 34, and 50; 4-7-03: portion of 1; and 4-7-04: portion of 6.

This project will result in a basis of design for the Kapa'a-Kealia Bicycle/Pedestrian Path, which the County is proposing to implement. Enclosed is a project summary with an exhibit showing the project's location.

The County of Kauai intends to develop the project utilizing Federal and County funds. Therefore, a Draft Environmental Assessment (Draft EA) is now being prepared for this project to comply with both Federal (National Environmental Policy Act) and State (Chapter 343, Hawaii Revised Statutes) environmental regulations. As part of the environmental document being prepared, Section 106 consultation under the National Historic Preservation Act is being conducted. Therefore, we would like to solicit any comments your organization may have on this project as part of this Section 106 consultation.

We would greatly appreciate your cooperation in providing us with any written comments within 30 days of the date of this letter. Please do not hesitate to contact me at (808) 541-2700, extension 305, if there are any questions.

Sincerely yours,


Pat V. Pinnag, P.E.
Transportation Engineer

Enclosures

By certified mail

cc: Doug Haigh, County of Kauai (fax w/o enclosures at 808-241-6805)
✓ Leo Amundson, SSFM International (mail w/o enclosures)

COUNTY OF KAUAI
PLANNING DEPARTMENT
4444 RICE STREET, SUITE 473
LILUOUE, KAUAI, HAWAII 96766

MEMORANDUM

DATE: September 11, 2002
TO: SSFM International
FROM: Kauai Historic Preservation Review Commission
SUBJECT: Kapua-Kaalia Bike and Pedestrian Path

SEP 13 2002
FILE COPY

Thank you for consulting with the Kauai Historic Preservation Review Commission (KHPRC) as part of the Section 106 and the draft environmental assessment review process for the above project.

This is to inform you that the KHPRC met on September 5, 2002 and based on your submittal and presentation, the KHPRC accepted the project in concept and reserved the right to make supplemental recommendations as more details are presented. The following preliminary comments were offered during the discussion phase of the meeting:

- New guard rails and related improvements should fit in with the existing area and architecture;
- Interpretive and historical signage should be considered;
- The design of bridge improvements should take maula/makal viewplane impacts into consideration as well as how the bridge will look.
- The design of bridge improvements should also preserve as much of the bridge's historical integrity as possible (old photos may be available at the Kauai Historical Society);
- Impacts to sites identified in the survey and preservation plan for Kaalia Kai should be appropriately addressed;
- An understanding that sensitive unsurveyed areas will be inventoried with subsurface testing and that archaeological monitoring will occur during ground disturbing activities.

Thank you for attending the meeting and providing an informative project explanation as well as answering questions by the Commission. The KHPRC appreciates your efforts recognize and develop a project that is sensitive to the cultural and historical resources within the project area.

Please feel free to contact us should there be any questions regarding this matter.

Mahaalo.

cc: Department of Land & Nat. Resources-Historic Preservation Division
County Building Division

COUNTY OF KAUAI
PLANNING DEPARTMENT
4444 RICE STREET, SUITE 473
LUHUR, KAUAI, HAWAII 96766

USA INTERNATIONAL, INC.
KIDNEY

SEP 13 2002

2/22

MEMORANDUM

DATE: September 11, 2002
TO: SSFM International
FROM: Kauai Historic Preservation Review Commission
SUBJECT: Kapaia-Kealia Bike and Pedestrian Path

FILE COPY

Thank you for consulting with the Kauai Historic Preservation Review Commission (KHPRC) as part of the Section 106 and the draft environmental assessment review process for the above project.

This is to inform you that the KHPRC met on September 5, 2002 and based on your submittal and presentation, the KHPRC accepted the project in concept and reserved the right to make supplemental recommendations as more details are presented. The following preliminary comments were offered during the discussion phase of the meeting:

New guard rails and related improvements should fit in with the existing area and architecture;

Interpretive and historical signage should be considered;

The design of bridge improvements should take mauka/makai viewplane impacts into consideration as well as how the bridge will look;

The design of bridge improvements should also preserve as much of the bridge's historical integrity as possible (old photos may be available at the Kauai Historical Society);

Impacts to sites identified in the survey and preservation plan for Kealia Kai should be appropriately addressed;

An understanding that sensitive unsurveyed areas will be inventoried with subsurface testing and that archaeological monitoring will occur during ground disturbing activities.

Thank you for attending the meeting and providing an informative project explanation as well as answering questions by the Commission. The KHPRC appreciates your efforts recognize and develop a project that is sensitive to the cultural and historical resources within the project area.

Please feel free to contact us should there be any questions regarding this matter.

Mahalo.

SCANNED

cc: Department of Land & Nat. Resources-Historic Preservation Division
County Building Division

LOCAL OFFICE
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
1601 ALA MOANA BOULEVARD, ROOM 306
HONOLULU, HAWAII 96850

MAR 11 2003

Mr. Pat V. Phung, P.E.
Transportation Engineer
US Department of Transportation
Federal Highway Administration
Hawaii Division Box 60206
300 Ala Moana Boulevard, Room 3-306
Honolulu, Hawaii 96850

PETER L. YOUNG, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCES MANAGEMENT

DEPUTY
ERNEST T. W. LAU

SOLICITING AGENCIES
SOUTH PACIFIC
COMMISSION ON WATER RESOURCES
MANAGEMENT
COMMISSION ON LAND RESOURCES
ENVIRONMENT
CONTRACTORS
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
STATE PLANS

LOG NO: 31775
DOC NO: D302NMZD

Dear Mr. Phung:

SUBJECT: National Historic Preservation Act Review - Section 106 Compliance - the
Kapa'a-Keala Bike & Pedestrian Path Basils of Design Project
Kapa'a, Kauai; (THK: 4-5-08: por. 01; 4-5-07: por. 01; 4-5-11:
por. 01, 03, 45 & 53; 4-5-12: por. 01 & 02; 4-5-13: por. 01, 02, & 28; 4-6-14:
por. 34, 38, 80, 81 & 92; 4-7-03: por. 01; 4-7-07: 29 and 47-94; por. 08)

Thank you for starting the Section 108 consultation process for the proposed project. We have already reviewed an archaeological inventory survey report for this project (Bustnell, Mann, Borwick, Bush, Tulchin, Shideler and Hammett, September 2002, Archaeological Inventory Survey for the Proposed Kapa'a/Keala Bike Pedestrian Path, Kapa'a and Keala, Kewaikua District, Kauai Island, Hawaii) (THK: 4-5, 4-8-14, 4-7-03 and 04) Cultural Surveys Hawaii ms.), which was last published in the Draft EA. The report needs some revisions before we can accept it. A letter has been sent to the consulting archaeologist asking for the revisions. We agree that the project area was acceptably surveyed per our scope of work.

Five new sites were identified in the survey. The following table lists all the historic sites within the area of potential effect.

SS #	SITE TYPE
50-30-08-	
769	Historic Road
789 A/sub fe 1	Bridge
2074	Cultural Layer
2074A	Human Burial
2075	Hwy Bridge Foundation
2076	Petroglyph
2077	Concrete Steps
2078	Railway Alignment
2078 fa A	Railroad Bridge
2078 B	Railroad foundation
2078 C	Historic railroad bridge
2078 D	Historic railroad bridge

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MAR 14 2003
HAWAII HISTORIC

2078 E	Historic railroad bridge
769 B	Keala Landing
769 C	Dynamite Storage Blunker
769 G	Kumukumu Stream Bridge
769 H	Pier
789 L	Wall
789 M	Retaining Wall
789 N	Ditch
790	Military Infrastructure
780 A	Military Platform
780 B	Foxhole
1839	Human Burial
884	Human Burial

We can not concur with your determination that this project will have "no adverse effect" on significant historic properties. We believe the project will have an "adverse effect" on significant historic properties and that mitigation will be required through a number of plans and reports. These commitments should be executed through a memorandum of agreement.

The following are the plans and reports needing to be developed: a documentation report of the historic bridges; a burial treatment plan (for the treatment of burials to be preserved in place and inadvertent burial findings during construction); a preservation plan; and an archaeological monitoring plan. An archaeological data recovery plan might also be required if cultural deposits are identified during monitoring in the area of the bathrooms, lights, waterlines, and other infrastructural improvements.

The community has a working group under the County Council for this bikeway plan that wants to see interpretive signage along the path. So a preservation plan will need to be expanded to include interpretive signage. By working with the Community group, Kauai Historic Preservation Review Commission and our office, a preservation and interpretive plan can be designed, approved and implemented.

If you have any questions, please call Nancy McMahon 742-7033.

Sincerely,

Peter T. Young, Chairperson and
State Historic Preservation Officer

NH:ak

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

FAX TRANSMITTAL

To: Kauai SHPO From: Nancy McMahon

Dist./Agency: _____ Project #: _____

Page #: 521-7348 File #: _____

DATE: _____

RECEIVED BY: _____

LAND USE
DIVISION

COPY



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND USE DIVISION
1555 ALI'OLE DRIVE, SUITE 500
HONOLULU, HAWAII 96819

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MARCH 21 2003
LAND USE DIVISION
1555 ALI'OLE DRIVE, SUITE 500
HONOLULU, HAWAII 96819

March 21, 2003

Dr. David Stoddler
Cultural Surveys Hawaii
733 N. Kalia Avenue
Kaliua, Hawaii 96734

Dear Dr. Stoddler:

SUBJECT:

Chapter 62-8 Historic Preservation Review - 4th revision for the Archaeological Inventory for the Kape'e-Koala Bikini Pedestrian Path Basis of Design Project, Kape'e District, Kauai Island
(TMK: 4-5-01: 01; 4-5-07: 01; 4-5-11: 01, 03, 45 & 53; 4-5-12: 01 & 02; 4-5-13: 01, 02, & 20; 4-5-14: 3A, 3B, 3C, 3D, 3E, 3F, 3G, 3H, 3I, 3J, 3K, 3L, 3M, 3N, 3O, 3P, 3Q, 3R, 3S, 3T, 3U, 3V, 3W, 3X, 3Y, 3Z)

FILE COPY

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Thank you for submitting the revisions we requested. We have reviewed the revised archaeological inventory survey report for this project (Stoddler et al. 2003, *Archaeological Inventory Survey for the Proposed Kape'e-Koala Bikini Pedestrian Path, Kape'e and Koala, Kape'e District, Kauai Island, Hawaii*) (TMK: 4-5-01: 01, 4-5-07: 01, 4-5-11: 01, 03, 45 & 53; 4-5-12: 01 & 02; 4-5-13: 01, 02, & 20; 4-5-14: 3A, 3B, 3C, 3D, 3E, 3F, 3G, 3H, 3I, 3J, 3K, 3L, 3M, 3N, 3O, 3P, 3Q, 3R, 3S, 3T, 3U, 3V, 3W, 3X, 3Y, 3Z). We can accept the report as final, and conclude that the inventory survey has been successfully executed.

The next step will be the preparation and implementation of acceptable mitigation plans and documentation reports. These items include: a documentation report of the historic bridge, a burial treatment plan (for the treatment of burials to be preserved in place and inadvertent burial findings during construction), a preservation plan, and an archaeological monitoring plan. In addition, an archaeological data recovery plan might be required if cultural deposits are identified during monitoring in the area of the bathroom, light, waterline, and other infrastructural improvements.

If you have any questions, please call Nancy McMahon (808) 742-7033.

Aloha,

Holly McElwainy
P. Holly McElwainy, Acting Administrator
State Historic Preservation Division

c. Chairperson, Kauai Ikiiki Burial Council
Doc Crowell, Planning Department
Doug Hight, PW
Ken Sato, SSFM International Inc., 501 Summer Street, Suite 502, Honolulu, Hawaii 96817

NMAK

MAR 27 2003



US Department of Transportation
Federal Highway Administration

Hawaii Division
Box 50206
300 Ala Moana Boulevard, Room 3-306
Honolulu, HI 96850

May 15, 2003

In Reply Refer To:
HEC-III

Ms. Jane Crisler
Historic Preservation Specialist
Advisory Council on Historic Preservation
Western Office of Federal Agency Programs
12136 West Bayaud Avenue, Suite 330
Lakewood, CO 80228

FAX TRANSMITTAL		# of pages > 2
To	Ronald Sato	Pat Phung
From	Pat Phung	
Date	5/15/03	541-2700 x 305
Time	10:00 AM	
Fax #	541-2704	

Dear Ms. Crisler:

Subject: Notification of Adverse Effect
Kapaa-Kealia Bike & Pedestrian Path, Kapaa, Kauai

In accordance with Section 106 of the National Historic Preservation Act, we are notifying the Advisory Council on Historic Preservation (Council) that the Federal Highway Administration (FHWA), in cooperation with the Hawaii Department of Transportation and the County of Kauai, has determined that the subject project will have an adverse effect on the Waikaea Canal Bridge, the Moikeha Bridge, the Kapaa Stream Cane Haul Road Bridge, and two (2) archaeological sites during the construction of the subject project. The sites are identified as State Site Nos. 50-30-08-789B and 50-30-08-2078.

The undertaking is a project to develop a multi-use path for bicyclists, pedestrians, limited equestrian, and other users along the coastline from Kapaa to Kealia on the island of Kauai. A 10 to 12-foot-wide multi-use path is planned, which would involve incorporating an existing asphalt-paved path and unimproved paths in the Kapaa Town area, and pavement improvements to an existing cane haul road that extends from Kapaa to Ahihii Point. Improvements to existing cane haul road bridges along the coastline would also be conducted in establishing this path.

The FHWA and the County of Kauai have been coordinating with the State Historic Preservation Officer (SHPO) since late summer 2001. On March 11, 2003, the SHPO concurred with the FHWA that the subject project will have an adverse effect determination on the Waikaea Canal Bridge, the Moikeha Bridge, the Kapaa Stream Cane Haul Road Bridge, and two (2) archaeological sites. For additional background, coordination letters with the SHPO and other organizations are located in Appendix B-3 of the enclosed environmental assessment.

Additionally, we consulted with the following agencies to assist the FHWA and the County of Kauai in identifying other potential historic and archaeological properties in the Area of Potential Effect (APE):

- Office of Hawaiian Affairs
- State of Hawaii Department of Hawaiian Homelands
- Kauai Historic Preservation Review Commission
- Historic Hawaii Foundation
- Kauai Niihau Islands Burial Council
- Queen Liliuokalani Children's Center (Kauai)
- County of Kauai Planning Department
- Hui Malama I Na Kupuna O Hawaii Nei
- Kauai Museum
- Kauai Historical Society
- Kauai Health Heritage Corridor Committee
- Waikaea Ohana
- Kapaa First Hawaiian Church

Three public meetings were held to discuss the project and its impacts.

Furthermore, presentations were made to the Kauai Historic Preservation Review Commission, the Kauai Niihau Islands Burial Council, and the Kauai Health and Heritage Coastal Trail Committee to solicit comments on the project. A cultural impact assessment contacted 41 individuals from the area that led to interviews with 5 knowledgeable persons. For additional information on this consultation, the cultural impact assessment can be located in Appendix H of the enclosed environmental assessment.

The draft Memorandum of Agreement (MOA) and the environmental assessment are enclosed for the Council's review and comment. The draft MOA outlines the steps to be taken to mitigate the adverse effect. We welcome any comments that the Council may have on the format or content of the MOA.

If you have any questions or require additional information, please do not hesitate to call me at (808) 541-2700, extension 305.

Sincerely yours,

Pat Phung
Pat V. Phung, P.E.
Transportation Engineer

Encs: Environmental assessment
Draft MOA

By certified mail

cc w/o encls: Douglas Haigh, County of Kauai
Sara Collins, SHPO
Ronald Sato, SSFM International, Inc.



RECEIVED
JUN 16 2003
HAWAII DIVISION

June 12, 2003

Pat Phung
Federal Highway Administration
Box 30206
300 Ala Moana Blvd., Room 3-306
Honolulu, HI 96850

RE: *Kapaa-Kealia Bike & Pedestrian Path, Kapaa, Kauai, HI - HEC-HI.*

Dear Mr. Phung:

We received your notification and supporting documentation regarding the adverse effects of the referenced project, a property eligible for inclusion in the National Register of Historic Places. Based upon the information you provided, we do not believe that our participation in consultation to resolve adverse effects is needed. However, should circumstances change, please notify us so we can re-evaluate if our participation is required. Pursuant to 36 CFR 800.6(b)(iv), you will need to file the Memorandum of Agreement, and related documentation at the conclusion of the consultation process. The filing of this Agreement with the ACHP is necessary to complete the requirements of Section 106 of the National Historic Preservation Act.

Thank you for providing us with your notification of adverse effect. If you have any questions, please contact Jane Cristler at 303/969-5110 or via eMail at jcristler@achp.gov.

Sincerely,

Nancy Kochan

Nancy Kochan
Office Administrator/Technician
Western Office of Federal
Agency Programs

ADVISORY COUNCIL ON HISTORIC PRESERVATION

17136 West Bayaud Avenue, Suite 330 • Lakewood, Colorado 80228
Phone: 303-969-5110 • Fax: 303-969-5115 • achp@achp.gov • www.achp.gov

COUNTY OF KAUAI
PLANNING DEPARTMENT
4444 RICE STREET, SUITE A473
LIHUE, KAUAI, HAWAII 96766-1326

SSM INTERNATIONAL, INC.
RECEIVED

JUN 17 2003

✓ 7/23

MEMORANDUM

DATE: June 13, 2003

TO: SSFM International Attn. Ronald Sato

FROM: Kauai Historic Preservation Review Commission

SUBJECT: MOA For Kapaa-Kealia Bike & Pedestrian Path

FILE
FILE COPY

This is to inform you that the Kauai Historic Preservation Review Commission (KHPRC) met on June 5, 2003 to review the Memorandum of Agreement between the Federal, State and County jurisdictions which addresses historic preservation issues associated with the Kapaa-Kealia Bike and Pedestrian Path Project.

The KHPRC received the MOA for the record and acknowledged the commitment and sensitivity of the County and it's consultant team in addressing cultural and historic preservation issues associated with the project.

Thank you for keeping the KHPRC apprised of the status of the project.

Please feel free to contact us should you have any questions regarding this matter.

Mahalo.

cc: State Historic Preservation Division

SCANNED

PHONE (808) 594-1888

FAX (808) 594-1885



STATE OF HAWAII
OFFICE OF HAWAIIAN AFFAIRS
711 KAPOLAHU BOULEVARD, SUITE 500
HONOLULU, HAWAII 96813

HRD03/679E2

June 17, 2003

Pat V. Phung
Transportation Engineer
Federal Highways Administration
Hawaii Division
Box 50206
300 Ala Moana Blvd, Room 3-306
Honolulu, HI 96850

Dear Mr. Phung:

RE: Kapaa-Kealia Bike and Pedestrian Path Draft Memorandum of Agreement

Thank you for your letter of May 14, 2003 explaining the circumstances surrounding the draft memorandum of agreement for the above referenced project.

Although the timing of the SHPO's "adverse effect" determination was unfortunate, we ultimately agree with their change of heart. Thus, it is important to OHA to participate in the MOA. Thank you for ensuring that we will be included as a concurring party.

Response to the Draft MOA

We have reviewed the draft MOA that was enclosed with the above referenced letter. The MOA addresses our concerns and we have only the following minor comments:

Under Stipulations, Section A, paragraph 2, subsection b is confusing. We understand it to mean that monitoring will take place if extensive paving is called for, or, if the project requires excavation into underlying sand deposits. We suggest that "extensive paving" be clarified. For example, does "extensive paving" mean paving beyond the existing cane haul road bed?

We also suggest that "excavation into underlying sand deposits" be clarified. Who will decide when excavation into underlying sand deposits is happening? How deep do you expect to go before you hit sand deposits?

For consistency, Waika'ea and Mo'ikcha should have a glottal stop throughout the document.

Other minor typographical errors are noted as follows:

- Page 3, para. 4. c, Line 3: "Human burial remain" should read "Human burial remains."
- Page 5, top two paragraph numbers are transposed.

Thank you for your letter addressing our concerns over the Section 106 process on this project. We appreciate that we will be invited to concur on the MOA and we look forward to working with you.

If you have further questions, please contact Pua Aiu at 594-1931 or e-mail her at paiu@oha.org.

Sincerely,

Peter L. Yee
Director
Nationhood and Native Rights

C: Sara Collins, SHPO
Douglas Haigh, County of Kauai
Ronald Sato, SSFM International
LaFrance Kapaka-Arboleda, KIBC, (by e-mail).

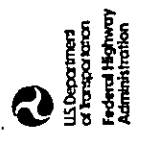
The name for Waika'ea and Mo'ikeha have been revised on the MOA for consistency. The other minor typographical errors have also been revised.

If you have any questions or require additional information, please do not hesitate to call me at 541-2700, extension 305).

Sincerely yours,
Pat V. Phung
Pat V. Phung, P.E.
Transportation Engineer

By certified mail

cc w/o encls: Douglas Haigh, County of Kauai
/Ronald Sato, SSSFM International



Hawaii Division
Box 50206
300 Ala Moana Boulevard, Room 3-308
Honolulu, HI 96850

July 31, 2003

SSSFM INTERNATIONAL, INC.
RECEIVED In Reply Refer To:
HEC-HI
AUG 0 1 2003

FILE COPY
FILE

Mr. Peter L. Yee
Director, Nationhood and Native Rights
Office of Hawaiian Affairs
State of Hawaii
711 Kapiolani Boulevard, Suite 500
Honolulu, HI 96813

Dear Mr. Yee:

Subject: Kapa a-Kealia Bike and Pedestrian Path Basis of Design Project
Memorandum of Agreement

Thank you for your letter dated June 17, 2003, providing comments on the draft Memorandum of Agreement (MOA) for the subject project.

Enclosed for your signature as a Concurring Party is the MOA. This document has already been signed by the State Historic Preservation Officer, the Federal Highway Division Administrator, and the County of Kauai. We would greatly appreciate your prompt attention to this matter, and action on it no later than 30 days from the date of this letter. Please return the signed original to the Federal Highway Administration, Hawaii Division; the second copy is for your file.

Regarding the comment on clarifying extensive paving, this refers to work that may result in excavation typically more than 18 inches below the existing surface due to grade or other design requirements needed for the path. It also includes work outside of the existing cane haul road pavement if needed. The archaeological monitoring plan will be developed as part of the project's design which will better determine specific path improvements required at that time. Consequently, this monitoring plan will be able to specify monitoring requirements based upon design plans that will be reviewed and approved by the State Historic Preservation Division (SHPD).

The monitoring plan developed would also assess which path sections may occur within underlying sand deposits based upon the actual design plans, soil maps, and construction methods proposed. Work less than 18 inches below the existing cane haul road surface should not affect underlying soils since this should be within the road's existing pavement material. Again, such details will be addressed under the monitoring plan developed and reviewed by the SHPD.

SCANNED

MEMORANDUM OF AGREEMENT
Submitted to the
ADVISORY COUNCIL ON HISTORIC PRESERVATION
Pursuant to 36 CFR §800.6(a)
Among the
**U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY
ADMINISTRATION**
And the
HAWAII STATE HISTORIC PRESERVATION OFFICER
And the
COUNTY OF KAUAI, DEPARTMENT OF PUBLIC WORKS
Regarding the
KAPAA-KEALIA BIKE AND PEDESTRIAN PATH PROJECT

Kauai, Hawaii

WHEREAS, the Federal Highway Administration (FHWA) has determined that the Kapa'a-Kealia Bike and Pedestrian Path Project (Project) will have an effect upon historic properties eligible for inclusion in the National Register of Historic Places, and has consulted with the Hawaii State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470(f)); and

WHEREAS, this Project, being proposed by the County of Kauai (County), Department of Public Works (DPW), is a Federal "Undertaking"; and

WHEREAS, this Project involves developing a 10 to 12-foot-wide multi-use recreational path for bicyclist, pedestrians, limited equestrian, and other users along an approximately 4.3 mile stretch of coastline from Kapa'a to Kealia on the Island of Kauai along with providing amenities such as comfort stations, parking areas, picnic shelters, and rest areas along this path to support path users and other recreational users; and

WHEREAS, this Project has an "area of potential effects" consisting of lands that are either owned or under the jurisdiction of the County within a project corridor generally located between Lihi Park in Kapaa Town north up to Ahihi Point in Kealia, and situated from the shoreline inland up to other privately-owned properties or Kuhio Highway as shown on Exhibit A; and

WHEREAS, FHWA and County DPW have consulted with the Hawaii State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the NHPA, and determined that this Project may have an adverse effect on historic properties; and

WHEREAS, FHWA and County DPW have consulted with the SHPO and native Hawaiian organizations, which included the Kauai/Niihau Islands Burial Council, Office of Hawaiian Affairs, Kauai Historic Preservation Review Commission, and Hui Malama I Na Kupuna 'O Hawaii Nei under this Section 106 process which was incorporated under the environmental review process conducted under the Federal National Environmental Policy Act and State of Hawaii Chapter 343, Hawaii Revised Statutes; and

WHEREAS, a cultural impact assessment study was also conducted that included consultation on the Project with representatives of other native Hawaiian organizations and individuals, which included the Kauai Museum, Kapaa First Hawaiian Church, Waikaea Ohana, Kauai Historical Society, and area residents; and

WHEREAS, FHWA will require the County DPW to carry out the agreed to stipulations identified under this Memorandum of Agreement (MOA) which are based upon the SHPD accepted *Archaeological Inventory Survey for the Proposed Kapaa/Kealia Bike Pedestrian Path* final report, dated February 2003; and

NOW, THEREFORE, FHWA and the Hawaii SHPO agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the Undertaking on historic properties shown on Exhibit A included with this document.

STIPULATIONS

The FHWA shall ensure that the following measures are carried out:

A. Archaeological Monitoring Plan

1. Develop an archaeological monitoring plan for path improvements and amenities with provisions for addressing burial treatment that are to be implemented during construction activities.
2. The archaeological monitoring plan is to cover the following sections of the Undertaking.
 - a. Path improvements from Lihi Park south of the Waika'ea Canal to the beginning of the cane haul road near Kawaihau Road.
 - b. Path improvements between the southern end of Kealia Beach, just north of the unnamed point, up to the Kealia Beach Landing (State Site #50-30-08-789B) if

- paving improvements to the existing cane haul road is extensive or has the potential of excavating into underlying sand deposits.
- c. Improvements proposed for Lihi Park which includes a comfort station, parking, and utility lines.
 - d. Improvements proposed for Kealia Beach Park which includes a comfort station, parking, picnic shelters, and utility lines.
3. The monitoring plan will be developed and implemented by a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology (Federal Register, Vol. 48, No. 190, page 44738-9).
 4. The archaeological monitoring plan will include the following major elements:
 - a. Archaeological monitoring provisions and procedures to be implemented during the course of the Undertaking's implementation; and
 - b. Specific levels of archaeological monitoring determined to be appropriate for each path section, and
 - c. A follow-up monitoring report for the Undertaking shall be submitted to State Historic Preservation Division (SHPD). The monitoring report, containing the location and description of any human burial remains discovered during the course of the Undertaking shall remain confidential and the precise location data may be provided in a separate confidential index.
 5. The archaeological monitoring plan shall be submitted by the County DPW, through FHWA, to the SHPD for a 30-day review. Unless the SHPD objects within 30 days after receipt of such Plan, the County DPW shall implement the provisions of the archaeological monitoring plan.

B. Mitigation Documentation for Historic Bridges

1. Consultation will be conducted by the County DPW or their consultant/contractor with the SHPD, with prior consultation with the Kauai Historic Preservation Review Commission, regarding design plans developed for improvements to the following historic bridges.
 - a. Waika'ea Canal Bridge (State Site #50-30-08-2078, Feature A); and
 - b. Mo'ikeha Bridge (State Site #50-30-08-2078, Feature C), and
 - c. Kapaa Stream (also known as Kealia River) Cane Haul Road Bridge (State Site #50-30-08-789A, Subfeature 1).
2. Historic American Engineering Record (HAER) documentation shall be conducted by the County DPW or their consultant/contractor for the following bridges prior to the start of construction to document its features.
 - a. Waika'ea Canal Bridge (State Site #50-30-08-2078, Feature A); and
 - b. Mo'ikeha Bridge (State Site #50-30-08-2078, Feature C), and
 - c. Kapaa Stream Cane Haul Road Bridge (State Site #50-30-08-789A, Subfeature 1).

3. The County DPW will consult with the architectural branch staff of SHPD prior to starting any construction activities if design plans would alter the following railroad bridge remnants.
 - a. Old railroad bridge foundation at Waika'ea Canal (State Site #50-30-08-2078 Feature B) inland of existing bridge presently used for pedestrian crossing.
 - b. Mauka Mo'ikeha Railroad Bridge (State Site #50-30-08-2078 Feature D) inland of existing bridge presently used for pedestrian crossing.
 - c. Railroad bridge foundation remnant (State Site #50-30-08-2078 Feature E) just north of Otsuka's Furniture Store.
 - d. Old Kauai Belt Highway Bridge foundation (State Site #50-30-08-2075) near Kapaa Stream Cane Haul Road Bridge.

C. Burial Treatment Plan

1. A burial treatment plan will be prepared to address the preservation of State Site # 50-30-08-2074 (Feature A – Human Burial) located at Kealia Beach Park.
2. This burial treatment plan shall also include a contingency treatment plan to address how potential inadvertent burials encountered during construction activities associated with this Undertaking are treated and mitigated.
3. This burial treatment plan shall be prepared and presented to the Kaua'i/Ni'ihau Islands Burial Council (KNIBC) for review, consultation, and approval in accordance with Title 13, Subtitle 13, Chapter 300 of the Hawaii Administrative Rules.
4. This burial treatment plan shall include provisions for establishing a reinternment site located near the existing State Department of Transportation's Kealia Lookout where path amenities, parking, and access improvements are proposed under this Undertaking. Consultation with the KNIBC shall be conducted in developing the design plan for this reinternment site.
5. The pertinent provisions of the KNIBC approved burial treatment plan shall be executed prior to the start of construction activities in the immediate vicinity of State Site # 50-30-08-2074 (Feature A).

D. Data Recovery Plan

1. A data recovery plan will be prepared that specifies data recovery work to be conducted if the Project's design plans include any subsurface work which may impact State Site #50-30-08-2074 (Buried Cultural Layer) located at Kealia Beach Park.
2. If archaeological monitoring of amenity improvements (facilities, utilities, etc.) constructed at Lihi Park and Kealia Beach Park encounters cultural deposits, consultation with SHPD will occur to determine the need for a data recovery plan for these areas.
3. Completion of data recovery work must be verified by the SHPD prior to initiation of construction within the area of these sites.

4. Data recovery plan(s) shall be submitted by the County DPW, through FHWA, to the SHPD for a 30-day review. Unless the SHPD objects within 30 days after receipt of such Plan(s), the County DPW shall ensure that its provisions are implemented.

E. Field Inspection of Kealia Lookout Parking Area

1. Conduct a field inspection of the area designed for parking and roadway improvements associated with the Kealia Lookout to confirm the presence of no historic properties.
2. The field inspection shall be conducted by a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualifications Standards for Archeology (Federal Register, Vol. 48, No. 190, page 44738-9).
3. Documentation of field work results will be provided to SHPD for review and acceptance prior to the start of construction activities in the immediate vicinity of the Kealia Lookout parking area.

F. Implementation of Burial Treatment Plan for Site #50-30-08-1899

1. Implement the provisions of the SHPD approved *Burial Treatment Plan for State Site 50-30-08-1899 at Paliku Beach (Donkey Beach) Ahupuaa of Kealia*, dated February 2000.
2. The pertinent provisions of this approved burial treatment plan shall be executed prior to the start of construction activities in the immediate vicinity of State Site # 50-30-08-1899.

G. Preservation Plan

1. Prepare a Preservation Plan addressing interpretive signage to be provided along the multi-use path that is reviewed and approved by the SHPD.
2. Consult with the SHPD, Kauai Historic Preservation Review Commission, and Kauai Health and Heritage Coastal Trails Committee in developing the interpretive signage associated with this Undertaking. Interpretive signage will be developed under the following conditions.
 - a. The timeframe for development of interpretive signage under the Preservation Plan will be limited to one (1) year from execution of this MOA.
 - b. The SHPD will have 60 days from receipt of the submitted Preservation Plan to review, revise, and approve this Preservation Plan.
 - c. Development and implementation of interpretive signage improvements can proceed concurrently or after construction of improvements under this Undertaking.

H. Amendments to this Memorandum of Agreement

1. Any party to this MOA may request that any term or stipulation of the MOA be amended; whereupon the parties to the MOA shall consult with each other in accordance with 36 CFR Part 800 to consider such amendment.
2. Should any party to this MOA object to the mitigative plans prepared pursuant to these stipulations within 30 days from receipt, the FHWA shall consult with the objecting party to resolve the objection. If the FHWA determines that the objection cannot be resolved, the FHWA shall forward all documentation relevant to the dispute to the Advisory Council on Historic Preservation (Council). Within 30 days after receipt of all pertinent documentation, the Council will either:
 - a. Provide the FHWA with recommendations, which the FHWA will take into account in reaching a final decision regarding the dispute; or
 - b. Notify the FHWA that it will comment pursuant to 36 CFR 800.6(b), and proceed to comment. Any Council comment provided in response to such a request will be taken into account by the FHWA in accordance with 36 CFR 800.6(c)(2) with reference to the subject of the dispute.
3. Any recommendation or comment provided by the Council to address such objections will be understood to pertain to the subject of the dispute. The FHWA's responsibility to carry out all actions under this MOA that are not the subject of the dispute will remain unchanged.

I. Termination of the MOA

1. If necessary and appropriate, SHPO may request, at any time, a review of the stipulations. This MOA shall be effective upon being signed and considered in full force and effect until replaced by future agreement, or until the Undertaking is fully implemented.
2. Interim archaeological monitoring reports for phases implemented shall be submitted by County DPW to SHPD no later than 90 days from the completion of each phase of the Project. Once the Undertaking has been completed, and the monitoring plan submitted and approved, this MOA shall terminate by its own course without the necessity of further action by any of the other signatories to this MOA.

J. Timeframe for Undertaking Initiation

Should the undertaking not take place within 5 years of the executed MOA, the parties shall consult in accordance with 36 CFR Section 800 to determine whether amendment should be considered.

K. Counterpart Signatures

This MOA may be executed in counterparts. Each signature page shall be incorporated into the MOA and considered a part of this MOA.

Execution of this Memorandum of Agreement by FHWA and the Hawaii SHPO, its subsequent acceptance by the Council, and the implementation of its terms, evidence that the FHWA has afforded the Council an opportunity to comment on the Kapa'a-Kealia Bike and Pedestrian Path Project and its effects on historic properties, and that FHWA has taken into account the effects of the Undertaking on historic properties.

FEDERAL HIGHWAY ADMINISTRATION

By: Abraham Wong
Abraham Wong, Division Administrator

DATE: 7/22/03

HAWAII STATE HISTORIC PRESERVATION OFFICER

By: [Signature]
Name and title (print) _____

DATE: JUL 22 2003

Concurred By:
COUNTY OF KAUAI, DEPARTMENT OF FINANCE

By: Michael H. Tresler

DATE: JUL 22 2003

Name and title (print) MICHAEL H. TRESLER, DIRECTOR OF FINANCE

Concurred By:
STATE OF HAWAII, OFFICE OF HAWAIIAN AFFAIRS

By: [Signature]

DATE: 9/4/03

Name and title (print) Chairperson, OHA Board of Trustees

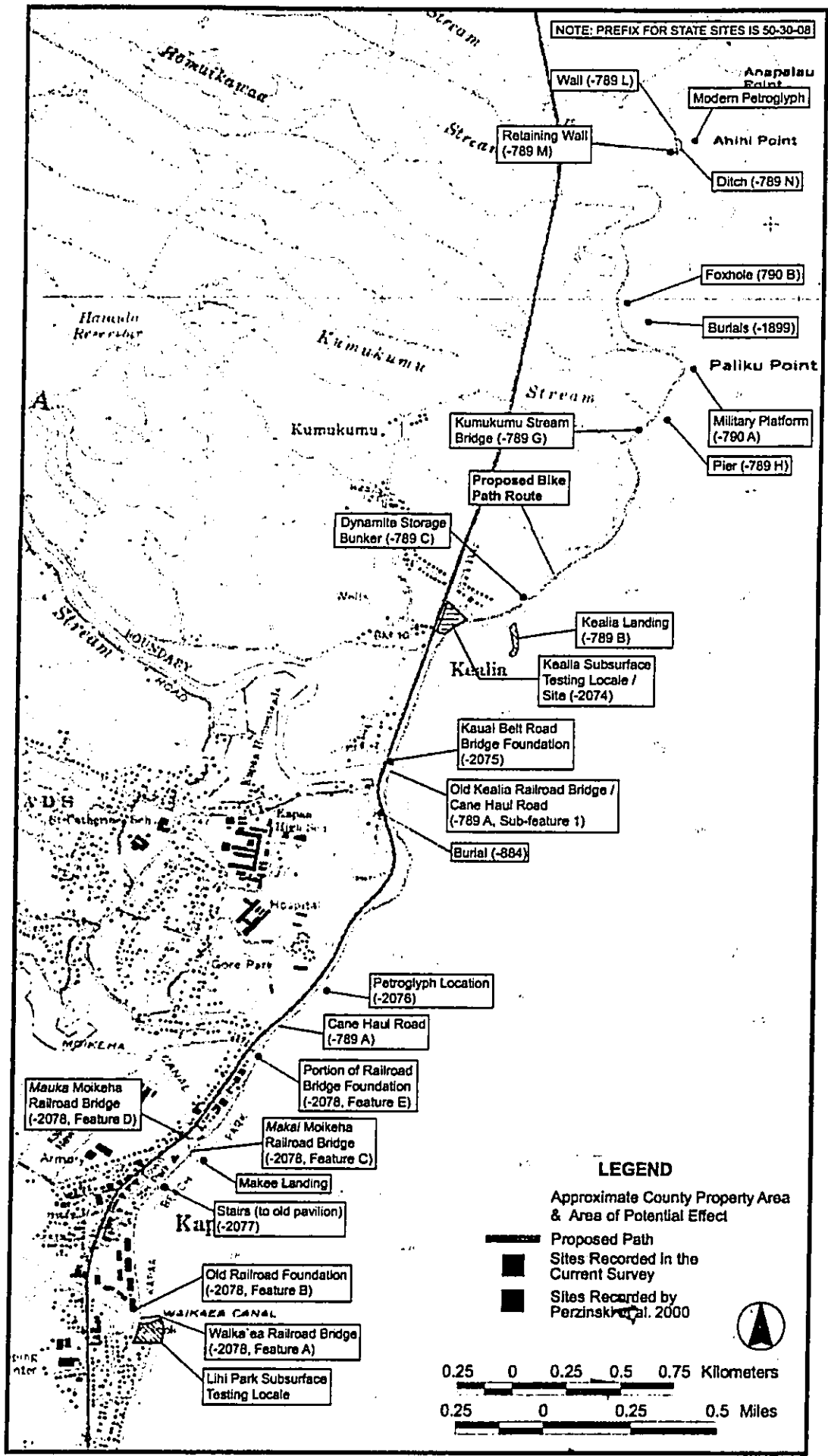


EXHIBIT A
MAP IDENTIFYING HISTORIC PROPERTIES WITHIN AREA OF POTENTIAL EFFECT

APPENDIX B-4

DRAFT EA COMMENT LETTERS AND RESPONSES



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
FORT SHAFTER, HAWAII 96858-5440

MAIL TO
ATTENTION:

November 27, 2002

SW/REGISTRATION
RECORD

DEC-11 2-2002

VAS

Regulatory Branch

Mr. Ronald A. Sato, AICP
Senior Project Planner
SFM International, Inc.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Sato:

This letter responds to your request for comments concerning the proposed Kapa'a-Kealia Bike and Pedestrian Path, dated November 22, 2002. Portions of the project will require a Department of the Army (DA) permit since the path will cross several streams which are considered Navigable Waters of the United States at the crossing location. Please contact our office when the designs for each crossing are further along, and include us on your mailing list for the final Environmental Assessment.

If you have any questions concerning this authorization, please contact Mr. William Lennan of my staff at 438-6986 or FAX 438-4060, and reference File No. 200200443.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

Copies furnished:

Mr. Doug Haigh, Department of Public Works, County of Kauai, 4444 Rice Street, Lihue, Hawaii 96766
Office of Environmental Quality and Control (OEQC), Department of Health, State of Hawaii, 235 South Beretania Street, Room 702, Honolulu, Hawaii 96813

SCANNED

BRYAN J. BAPTISTE
MAYOR

GARY K. HEU
ADMINISTRATIVE ASSISTANT



AN EQUAL OPPORTUNITY EMPLOYER

COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
444 RICE STREET
MOTIEMA BUILDING, SUITE 275
LILUOUE, KAUAI, HAWAII 96766-1543

January 20, 2003

Mr. George P. Young, P.E.
Chief, Regulatory Branch
U.S. Army Engineer District, Honolulu
Department of the Army
Fort Shafter, Hawaii 96858-5440

Dear Mr. Young:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your letter dated November 27, 2002 providing comments on the Draft Environmental Assessment for the subject project.

We note that portions of the project will require a Department of Army Permit since the path improvements will cross some streams triggering this requirement. The selected design/build contractor team would be required to consult with your agency and obtain necessary permits when they develop design plans for this project.

A copy of the published Final Environmental Assessment will be provided to your agency as requested.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,

IAN K. COSTA
Deputy County Engineer

COUNTY ENGINEER
TELEPHONE 241-6650

IAN K. COSTA
DEPUTY COUNTY ENGINEER
TELEPHONE 241-6644

STANDARD, INC.
SERVED
DEC-02 2002
RBS

FILE COPY



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
WATER RESOURCES DISCIPLINE
677 Ala Moana Blvd., Suite 415
Honolulu, HI 96813
Phone: (808) 587-2400 Fax: (808) 587-2401

November 29, 2002

Mr. Ronald A. Sato, AICP
SSFIM International, Inc.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Sato:

Subject: Draft Environmental Assessment, Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project, Kapa'a, Kauai
Tax Map Keys: (4) 4-05-02: 01; 4-05-07: 01; 4-05-08: 01; 4-05-11: 01; 03, 45, & 53; 4-05-12: 01 & 02; 4-05-13: 01, 02 & 28; 4-08-14: 34, 38, 90, 91 & 92; 4-07-03: 01; 4-07-07: 29

Thank you for forwarding the subject Draft Environmental Assessment for review and comment by the staff of the U.S. Geological Survey, Water Resources Discipline, Hawaii District office. We regret however, that due to prior commitments and lack of available staff, we are unable to review this document and are returning it for your future use.

We appreciate the opportunity to participate in the review process.

Sincerely,

Gordon Tribble
District Chief

Enclosure

Cc: Mr. Doug Haigh
Department of Public Works
County of Kauai
4444 Rice Street
Lihue, Hawaii 96766

Office of Environmental Quality and Control (OEQC)
Department of Health
State of Hawaii
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

SCANNED



BRYAN J. BAPTISTE
MAYOR

GARY K. HEU
ADMINISTRATIVE ASSISTANT

COUNTY ENGINEER
TELEPHONE 341-6400

IAN K. COSTA
DEPUTY COUNTY ENGINEER
TELEPHONE 341-6440

AN EQUAL OPPORTUNITY EMPLOYER

COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
4444 RICE STREET
MOTUEHA BUILDING, SUITE 275
LIHUE, KAUAI, HAWAII 96766-1340

January 20, 2003

Mr. Gordon Tribble, District Chief
Water Resources Discipline
U.S. Geological Survey
U.S. Department of the Interior
677 Ala Moana Boulevard, Suite 415
Honolulu, Hawaii 96813

Dear Mr. Tribble:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your letter dated November 29, 2002 providing comments on the Draft Environmental Assessment for the subject project.

We note that your department was unable to review the document due to prior commitments and lack of available staff.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,

IAN K. COSTA
Deputy County Engineer

LOCAL LAND USE
COMMISSION



STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 111, HONOLULU, HAWAII 96810

MATTHEW SALMONSON
ACTING COMPTROLLER

LETTER NO. PFD02L7993

ISSUED BY
DATE

FILED

FILED

DEC 10 2002

Mr. Ronald A. Sato, AICP
SSFM International, Inc.
501 Summer Street., Suite 502
Honolulu, Hawaii 96817

Dear Mr. Sato:

Subject: Kapua-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment

TMK (4) 4-05-02: 01; 4-05-07: 01; 4-05-08: 01; 4-05-11: 01, 03, 45 & 53;
4-5-12: 01 & 02; 4-05-13: 01, 02 & 28; 4-06-14: 34, 36, 90, 91 & 92;
4-07-03: 01; 4-07-07: 29

Thank you for the opportunity to comment on the subject project's environmental issues pursuant to the Draft Environmental Assessment. The project does not directly impact any of the Department of Accounting and General Services' projects or existing facilities. Therefore, we have no comments to offer.

If there are any questions regarding the above, please have your staff call Mr. Bruce Bennett of the Planning Branch at 585-0491.

Sincerely,

HAROLD SONOMURA
Acting Public Works Administrator

BB:mo
c: Mr. Douglas Haigh, County of Kauai, Department of Public Works
Ms. Genevieve Salmonson, OEQC



BRYAN J. BAPTISTE
MAYOR

GARY K. HEU
ADMINISTRATIVE ASSISTANT

COUNTY ENGINEER
TELEPHONE 841-8800

IAN K. COSTA
DEPUTY COUNTY ENGINEER
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COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
444 HICE STREET
MOTIYENI BUILDING, SUITE 275
LAIWE, KAUAI, HAWAII 96796-1340

January 20, 2003

Mr. Harold Sonomura, Acting Public Works Administrator
Department of Accounting and General Services
State of Hawaii
P.O. Box 119
Honolulu, Hawaii 96810

Dear Mr. Sonomura:

Subject: Kapua-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your letter dated December 10, 2002 providing comments on the Draft Environmental Assessment for the subject project.

We confirm that the project does not directly impact any of the Department of Accounting and General Services' projects or existing facilities.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,

IAN K. COSTA
Deputy County Engineer

SCANNED

LEWIS LUCAS & COMPANY



STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 1590
HONOLULU, HAWAII 96818

PATRICIA MALAMUTO
ADMINISTRATIVE

Mr. Ronald A. Sato
Page 2
December 23, 2002

The DOE appreciates the opportunity to comment on the pathway system. Should you have any questions, please call Ms. Heidi Meeker of the Facilities and Support Services Branch at 733-4862.

OFFICE OF BUSINESS SERVICES

December 23, 2002

STATE OF HAWAII
RECORD

DEC-3 11-2002
FILE COPY

Mr. Ronald A. Sato, AICP
Senior Project Planner
SSFM International, Inc.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Sato:

Subject: Kapaa-Kealia Bike & Pedestrian Path
Draft Environmental Assessment, Kapaa, Kauai

Sincerely yours,

Rayner M. Minami

Rayner M. Minami, Director
Facilities and Support Services Branch
RMM:by

cc: P. Hamamoto, Supt.
A. Suga, OBS
Principal, Kapaa High
Principal, Kapaa Elementary
D. Haigh, PW/Kauai
OEQC

The Department of Education (DOE) has reviewed the Draft Environmental Assessment (DEA) for a proposed 4.3-mile, shoreline bike and pedestrian path. The path begins at Waiopuli Park and extends north to Ahiki Point.

The DOE's primary concern is the proposed changes in the Kealia Lookout area might impact traffic at the intersection of Maaliuhua Road and Kubio Highway. The text of the DEA makes no reference to the cutting away of the hillside mauka of the highway at the Kealia Lookout as a method for improving traffic safety but Figure 2.12 indicates where the cut would be made. The DOE is a possible owner of a portion of the property to be cut. The DOE would like to be consulted if part of the Kapaa High School campus or immediately adjacent property is to be cut away.

The DEA contained several references to changes in Kubio Highway particularly makai of the highway directly across from the intersection with Maaliuhua Road. An existing dirt road there would become a permanent access point to the beach, in essence becoming an extension of Maaliuhua Road. The DEA also indicates that the intersection might be signalized. The DOE requests that the principals at Kapaa High School and Kapaa Elementary be notified and consulted concerning the plans for the intersection since it is a major access point to the schools.

SCANNED

AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

BRYAN J. BAPTISTE
MAYOR

GARY K. HEU
ADMINISTRATIVE ASSISTANT



AN EQUAL OPPORTUNITY EMPLOYER

COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
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LHAPE, KAUAI, HAWAII 96766-1940

COUNTY ENGINEER
TELEPHONE 841-6860

IAN K. COSTA
DEPUTY COUNTY ENGINEER
TELEPHONE 841-6444

January 20, 2003

Mr. Raynor M. Minami, Director
Facilities and Support Services Branch
Department of Education
State of Hawaii
P.O. Box 23160
Honolulu, Hawaii 96804

Dear Mr. Minami:

Subject: Kapa'e-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your letter dated December 23, 2002 providing comments on the Draft Environmental Assessment (EA) for the subject project. We have the following responses to your comments.

The intersection of Maaliuhua Road with Kubio Highway should not be negatively impacted by the improvements planned at the Kealia Lookout area. That intersection is about 1,500 feet away from the Kealia Lookout parking lot, and the highway improvements desired by the State Department of Transportation (DOT) are intended to minimize traffic congestion along the highway. As an example, the left-turn storage lane planned would minimize delays along the highway from cars turning into the new driveway being created. In addition, the number of cars turning into this area would be relatively light due to the limited number of parking stalls, and such activities are not expected to occur during the weekday morning peak hour or afternoon peak hour. Use of the area would likely be highest on weekends when school is not in session.

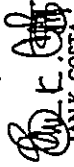
We would like to clarify that only some clearing of vegetation was proposed along the mauka side of the highway to improve sight distance around this bend. This clearing of vegetation is stated at the bottom of page 42 of the Draft EA, and the wording for Figure 2.12 will be revised to clarify this. No cutting into the mauka property is planned, and this vegetation clearing was another improvement request from the State DOT to improve traffic safety along this bend. The State Department of Education does own a portion of that area affected along with the State

Department of Land and Natural Resources. The selected design contractor team will be required to consult with your department as they develop design plans for that area.

The only improvements planned across from Maaliuhua Road would be improving the cane haul road to serve as a multi-use path. The existing dirt road there is currently used by the public for shoreline access and would continue to be accommodated with the project due to public requests for continued shoreline access. The crossing of this path at that access point would thus be designed to allow continued crossing by vehicles. There are no plans to signalize the intersection of Maaliuhua Road with Kubio Highway based upon the improvements described in Chapter 2. However, the principals of both Kapa'a High School and Kapa'a Elementary School will be notified and consulted with as part of this project's design so that any concerns can be addressed.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,


IAN K. COSTA
Deputy County Engineer

Mr. Ronald A. Sato, AICP
December 24, 2002
Page 2

- c. Discharge of treated effluent from leaking underground storage tank remedial activities;
- d. Discharge of once through cooling water less than one million gallons per day;
- e. Discharge of hydro-testing water;
- f. Discharge of construction dewatering effluent;
- g. Discharge of treated effluent from petroleum bulk stations and terminals; and
- h. Discharge of treated effluent from well drilling activities.

Any person requesting to be covered by a NPDES general permit for any of the above activities should file a Notice of Intent with the Department of Health, Clean Water Branch (CWB) at least thirty (30) days prior to commencement of any discharges to State waters;

3. If construction activities involve the disturbance of one acre or greater, including clearing, grading, and excavation, and will take place or extend after March 10, 2003, an NPDES general permit coverage is required for discharges of storm water runoff into State waters; and
4. The applicant may be required to apply for an individual NPDES permit if there is any type of activity in which wastewater is discharged from the project into State waters.

If you have any questions, please contact the Clean Water Branch at (809) 586-4309.

Clean Air Branch (CAB)

Control of Fugitive Dust

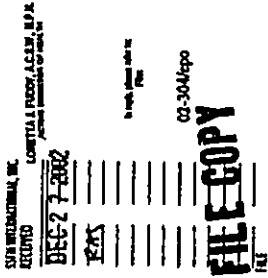
There is a significant potential for fugitive dust emissions during all phases of construction. Proposed construction activities will occur in proximity to an existing school and hospital, public parks, business and residential establishments and major thoroughfares, thereby exacerbating potential dust problems.

Implementation of adequate dust control measures during all phases of development and construction activities is warranted. Construction activities must comply with provisions of Hawaii Administrative Rules, Chapter 11-60.1, "Air Pollution Control," Section 11-60.1-33, Fugitive Dust.

If you have any questions, please contact the Clean Air Branch at (808) 586-4200.

Wastewater Branch (WWB)

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



STATE OF HAWAII
DEPARTMENT OF HEALTH
100, Hahaione
HONOLULU, HAWAII 96813-2079

December 24, 2002

Mr. Ronald A. Sato, AICP
SSFM International, Inc.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Sato:

Subject: Draft Environmental Assessment (DEA)
Kapaa-Kealia Bike and Pedestrian Path Basis of Design Project
Kapaa District, Kauai
Tax Map Key: 4-5-002:001; 4-5-007:001; 4-5-011:001; 4-5-011:001, 003, 045 &
053; 4-5-012:001 & 002; 4-5-013:001, 002 & 028; 4-6-014:034, 036,
090 - 092; 4-7-003:001; 4-7-007:029.

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

Clean Water Branch (CWB)

1. The applicant should contact the Army Corps of Engineers to identify whether a Federal permit (including a Department of Army permit) is required for this project. A Section 401 Water Quality Certification is required for "Any applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters..." pursuant to Section 401(QX1) of the Federal Water Pollution Act (commonly known as the "Clean Water Act";
2. A National Pollutant Discharge Elimination System (NPDES) general permit coverage is required for the following discharges to waters of the State:
 - a. Discharge of storm water runoff associated with industrial activities, as define in Title 40, Code of Federal Regulations, Sections 122.260(X)(14)(i) through 122.260(X)(14)(ix) and 122.260(X)(14)(x).
 - b. Discharge of storm water runoff associated with construction activities that involve the disturbance of five (5) acres or greater, including clearing, grading, and excavation.

SCANNED

Mr. Ronald A. Sato, AICP
December 24, 2002
Page 3

If you have any questions, please contact the Wastewater Branch at (808) 586-4294.

Noise, Radiation and Indoor Air Quality (NRIAQ) Branch

All project activities shall comply with the Administrative Rules of the Department of Health, Chapter 11-46, on "Community Noise Control."

If you have any questions, please contact the NRIAQ at (808) 586-4701.

Environmental Planning Office (EPO)

We concur with your determination that the project corridor does not include Uhelekaekawa Stream and are encouraged by the assertions that there should be minimal changes to the pre-development runoff quantities and patterns associated with the path and its amenities (pages 125-126). However, we suggest that the Final Environmental Assessment include an estimate of the total area of pre-development and post-development impervious surface and a discussion of how suitable best management practices (BMPs) for polluted runoff control will be properly applied in all phases of the project.

When TMDLs are established for Kapa'a stream, the State will establish pollutant load allocations for the lands surrounding the stream and an implementation plan to improve stream water quality. One of the components of this implementation plan will be to reduce the polluted runoff entering the stream from surrounding lands. Thus we suggest that project design consider additional practices that may go beyond the minimum requirements of the County Storm Drainage Standards for reducing any pollutant loads carried by runoff from the path corridor. One such practice to investigate is the use of permeable pavements to meet federal design standards and be ADA compliant.

If you have any questions, please contact David Penn at (808) 586-4337.

Sincerely,

Jane F. Harrigan-Lum
JANE F. HARRIGAN-LUM, MANAGER
Environmental Planning Office

c: CWB
CAB
WWB
NRIAQ
EPO

BRYAN J. BAPTISTE
MAYOR

GARY K. HEU
ADMINISTRATIVE ASSISTANT



AN EQUAL OPPORTUNITY EMPLOYER

COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
4441 NIHE STREET
MOTOKHA BUILDING, SUITE 275
LILUOPE, KAUAI, HAWAII 96785-1540

COUNTY ENGINEER
TELEPHONE 241-9690

IAN K. COSTA
DEPUTY COUNTY ENGINEER
TELEPHONE 241-9643

January 20, 2003

Ms. Jupe F. Harrigan-Lum, Manager
Environmental Planning Office
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu, Hawaii 96801-3378

Dear Ms. Harrigan-Lum:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your letter dated December 24, 2002 providing comments on the Draft Environmental Assessment (EA) for the subject project. We have the following responses to your comments.

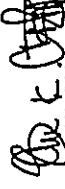
Clean Water Branch

As indicated in our previous response letter dated November 12, 2002, we received a letter from the Department of Army indicating that a Department of Army permit will be required for this project. Therefore, a Section 401 Water Quality Certification from your office will be obtained during the project's design phase.

Construction activities associated with this project would require NPDES permit coverage since it would affect an area greater than one acre, and start after March 10, 2003. A NPDES permit application would be submitted at least 30 days prior to any discharge occurring requiring such coverage. If an individual permit is required for wastewater discharge, an application would be submitted 180 days before the discharge is to occur.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,



IAN K. COSTA
Deputy County Engineer

Clean Air Branch

Construction activities associated with this project will be conducted in compliance with the provisions of Chapter 11.60-1, Hawaii Administrative Rules (Air Pollution Control), and specifically, the rules set forth in HAR 11.60-1-33 addressing fugitive dust. A dust control management plan would be developed as part of the project's design and implemented by the contractor. This would include providing adequate measures to control dust from road areas and during various construction phases.

Wastewater Branch

Appropriate wastewater treatment systems are planned to be provided which would either involve connecting the County's existing system, if feasible, or providing septic tank systems. Wastewater improvements will conform to applicable provisions of HAR Chapter 11-62, Wastewater Systems. Wastewater plans developed for this project will be coordinated with your branch for review during the project's design phase.

Noise, Radiation and Indoor Air Quality Branch

All activities associated with this project will comply with the Department of Health's Administrative Rules Chapter 11-46, Community Noise Control.

Environmental Planning Office

Thank you for your concurrence regarding the project corridor not including Uheleakawakawa Stream. The Final EA will include information on pre-development and post-development runoff quantities. Since the project would essentially involve improving the existing path in Kapa'a Town and cane haul road, the only increases would generally come from amenity improvements such as pavilions, parking, etc.

Section 4.1.3 of the Draft EA did address some of the measures considered to address runoff. However, the development of suitable best management practices for all phases of the project's construction would need to be developed as part of the project's design. Specific measures would be discussed in permits applied for from your department such as NPDES.

The selected project design team will consider the feasibility and applicability of additional practices that may go beyond the minimum requirements of the County's storm drainage standards. Appropriate coordination will be conducted with your department during the design phase of this project.



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HAWAIIAN PLANNING DIVISION
1505 KALANOAU AVENUE, 5TH FLOOR
HONOLULU, HAWAII 96813

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCES MANAGEMENT

STATE RESOURCES
PLANNING AND DESIGN
COMMISSION ON WATER RESOURCES
MANAGEMENT
CONSERVATION AND RESTORATION
DIVISION
1505 KALANOAU AVENUE, 5TH FLOOR
HONOLULU, HAWAII 96813

January 27, 2003

Mr. Ronald Sato, AICP
SSFM International Inc.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817

LOG NO: 31316
DOC NO: 0212NM11

FILE COPY

Dear Mr. Sato:

SUBJECT: Historic Preservation Review - Draft EA for the Kapa'a-Kealia Bike & Pedestrian Path Basis of Design Project

Kapa'a District, Kauai Island
(TMK: 4-5-02: 01; 4-5-07: 01; 4-5-11: 01, 03, 45 & 53; 4-5-12: 01 & 02;
4-5-13: 01, 02, & 28; 4-5-14: 34, 36, 90, 91 & 92; 4-7-03: 01; 4-7-07: 28)

Thank you for submitting this draft EA. We have reviewed the archaeological inventory survey report for this project (Bushman et al. 2002). Archaeological Inventory Survey for the Proposed Kapa'a/Kealia Bike Pedestrian Path, Kapa'a and Kealia, Kapehau District, Kauai Island, Hawaii (TMK: 4-5, 4-8-14, 4-7-03 and 04) CSH ms.). While the survey was carried out acceptably, we believe that the report needs some minor revisions before we can finalize our review.

We are primarily concerned over clarifying the number of sites in the project corridor; it appears that there might be more than the six, newly discovered sites documented in the report; a number of previously identified sites are also present in the project corridor. See the table below.

SS #	SITE TYPE
50-30-06-	
789	Historic Road
789 A/sub 1e 1	Bridge
2074	Cultural Layer
2074A	Human Burial
2075	Hwy Bridge Foundation
2076	Petroglyph
2077	Concrete Sleep
2078	Railway Alignment
2078 (e A)	Railroad Bridge
2078 B	Railroad foundation
2078 C	Historic railroad bridge
2078 D	Historic railroad bridge

Mr. Ronald Sato
Page 2

2078 E	Historic railroad bridge
789 B	Kealia Landing
789 C	Dynamic Storage Bunker
789 G	Kunukuani Stream Bridge
789 H	Pier
789 L	Wall
789 M	Retaining Wall
789 N	Ditch
790	Military Infrastructure
790 A	Military Platform
790 B	Fochoke
1899	Human Burial
1899	Human Burial
884	Human Burial

For the six sites (2074, 2075, 2076, 2077, 2078) identified during the subject survey, we agree that no further work is needed for the five sites (2077, 2075, 2078B, 2078D, 2078E) which seem to be outside the project impact area. Architectural data recovery work (documentation) will be needed for the bridges documented as features of sites (789G, 789A sub 1, 2078A, 2078C). Also, with regard to the cultural deposit (2074) with the one burial (2074A), we agree with the proposed preservation of the burial (which will require Burial Council approval and a burial treatment plan) and, if the site (2074) will be impacted, archaeological data recovery work (preceded by an archaeological data recovery plan's approval). Last, we also agree that archaeological monitoring is needed of sand deposits areas, in case burials or subsurface archaeological deposits are encountered. A monitoring plan would be needed for this task.

The community has a working group under the County Council for this bikeway plan, and they want to see interpreted signage along the path. So a preservation/interpretive plan will appear to be needed, to include interpretative signage and buffers around historic sites that are being preserved. By working with the Community group, Kauai Historic Preservation Review Commission and our office, a preservation and interpretive plan can be designed, approved and implemented.

A burial treatment plan needs to be submitted to the Kauai/Niihau Island Burial Council for the treatment of burials to be preserved in place and further inadvertent findings during monitoring work. Please call Kana'i Kapehau at 682-8037 for further instructions. If you have any questions, please call Nancy McMahon 742-7033.

Aloha,

R. Kelly McElowney

P. Holly McElowney, Acting Administrator
State Historic Preservation Division

NM:jen

c. Dee Crowell, Planning Department
David Schneider, CSH
Dough Haigh, PW
OECC

BRYAN J. BAFTISTE
MAYOR

GARY K. HIEU
ADMINISTRATIVE ASSISTANT



AN EQUAL OPPORTUNITY EMPLOYER

COUNTY OF KAULA
DEPARTMENT OF PUBLIC WORKS
4444 POPE STREET
MOLOKAI BUILDING, SUITE 276
LAHOLE, HAWAII, HAWAII 96786-1540

COUNTY ENGINEER
TELEPHONE 241-1800

WYNNE M. USHIGOME
DEPUTY COUNTY ENGINEER
TELEPHONE 241-1806

Ms. McEldowney
February 24, 2003
Page (2)

A burial treatment plan will be prepared as part of the project's design and submitted to your department and the Kama'i/Ni'ihau Island Burial Council for their review and approval.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,

Wynne M. Ushigome
WYNNE M. USHIGOME
Deputy County Engineer

Ms. P. Holly McEldowney, Acting Administrator
Historic Preservation Division
Department of Land and Natural Resources
State of Hawaii
Kakohiwa Building, Room 555
601 Kamaoila Boulevard
Kapolei, Hawaii 96707

Dear Ms. McEldowney:

Subject: Kapa'e-Kaula Bikini and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your letter dated January 27, 2003 providing comments on the Draft Environmental Assessment for the subject project.

The inventory survey report will be revised to clarify the number of sites within the project corridor based on our consultant's discussion with Ms. Nancy McMahon of your staff.

We confirm your agreement to the mitigative measures identified in your letter for various sites. These measures would be implemented as part of the project's design and construction. Necessary coordination would be conducted with your department by the selected design team to ensure implementation of these measures.

Interpretive signage would be developed as part of the project's design, and the design team will work with the community's working group on this matter. This would include development and implementation of the preservation / interpretive plan to be developed with your department, the community group, and Kana'i Historic Preservation Review Commission.

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
HONOLULU, HAWAII 96809



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 821
HONOLULU, HAWAII 96809

FILE COPY

January 17, 2003

L-1576
KAWAIBIKEPATHSSFIDEA.RCH2
SSFM International, Inc.
Donald A. Sato, AICP
Senior Project Planner
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Sato:

SUBJECT: Review of Draft Environmental Assessment (DEA) Covering the County of Kauai, Department of Public Works' Proposed Bike and Pedestrian Path at Kapaa-Kealia, Island of Kauai, Hawaii
This is a follow-up to our letter to you dated December 23, 2002 (Ref: KAWAIBIKEPATHSSFIDEA.RCH), pertaining to the subject matter.

Attached herewith is a copy of the Engineering Division response. The Department of Land and Natural Resources has not other comment to offer.

Should you have any other questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 3-808-587-0384.

Very truly yours,

Charlene E. Unoki
Charlene E. Unoki
Administrator

C: Kauai District Land Office

ADMINISTRATIVE
ASSISTANT
SECRETARY
SUPERVISOR
MANAGER
DIRECTOR



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. Box 821
HONOLULU, HAWAII 96809

November 27, 2002

Ref.: KAWAIBIKEPATHSSFIDEA.CHT

MEMORANDUM:

TO:
XX Division of Aquatic Resources (Distributed Doc)
XX Division of Forestry & Wildlife
Na Ala Hele Trails
XX Engineering Division
XX Boating and Ocean Recreation (Distributed DOC)
XX Commission on Water Resource Management
Land Division Branches of:
XX Planning and Technical Services
XX Kauai District Land Office

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment (DEA) for County of Kauai, Department of Public Works' proposed Bike and Pedestrian Path at Kapaa-Kealia, Kauai, Hawaii

Please review the attached DEA (November 2002) prepared by SSFM International covering the subject project and submit your written comments (if any) to us on Division letterhead signed and dated) on or before the suspense date. Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

****NOTE:** One (1) copy of the DEA is available for review in the Land Division Office, Room 220. Sign out slips are available at the counter for those who wish to review the document for a 24-hour period.

If this office does not receive your comments by the suspense date, we will assume there are no comments.
We have no comments.

() Comments attached.

Signed: *Charlene E. Unoki*

Date: 12/15/02

SCANNED

RECEIVED
 02 NOV 27 P3: 5
 COMMISSION ON WATER RESOURCE MANAGEMENT
 STATE OF HAWAII
 DEPARTMENT OF LAND AND NATURAL RESOURCES
 LAND DIVISION
 P.O. BOX 611
 HONOLULU, HAWAII 96808

November 27, 2002
 LD/NAV
 Ref.: KAUAIBIKEPATHSSFNDEA.CHT
 Suspend Date: 12/15/02
 L-3527

MEMORANDUM:

To: From: XX Division of Aquatic Resources (Distributed Doc)
 Na Ala Hele Trails
 XX Engineering Division
 XX Division of State Parks
 XX Boating and Ocean Recreation (Distributed Doc)
 XX Commission on Water Resource Management
 Land Division Branches of:
 XX Planning and Technical Services
 XX Kauai District Land Office (Distributed Doc) >

FROM: %: Charlene E. Unoki, Acting Assistant Administrator
 Land Division *Charlene E. Unoki*

SUBJECT: Draft Environmental Assessment (DEA) for County of Kauai,
 Department of Public Works' Proposed Bike and
 Pedestrian Path at Kapaa-Kealia, Kauai, Hawaii

Please review the attached DEA (November 2002) prepared by
 SSFM International covering the subject project and submit your
 written comments (if any) to us on Division letterhead signed and
 dated) on or before the suspense date. Should you need more time to
 review the subject matter, please contact Nicholas A. Vaccaro at
 ext.: 7-0384.

**NOTE: One (1) copy of the DEA is available for review in the Land
 Division Office, Room 220. Sign out slips are available at
 the counter for those who wish to review the document for a
 24-hour period.

If this office does not receive your comments by the suspense
 date, we will assume there are no comments.

() We have no comments.
 (X) Comments attached
 Signed: *Charlene E. Unoki*
 Date: DEC 12 2002

STATE OF HAWAII
 DEPARTMENT OF LAND AND NATURAL RESOURCES
 LAND DIVISION
 P.O. BOX 611
 HONOLULU, HAWAII 96808

December 23, 2002
 L-3176/23/02/1616/0146/2803
 KAUAIBIKEPATHSSFNDEA.RCM
 SSFM International, Inc.
 Ronald A. Sato, AICP
 Senior Project Planner
 501 Sumner Street, Suite 502
 Honolulu, Hawaii 96817

FILE COPY

Dear Mr. Sato:

SUBJECT: Review of Draft Environmental Assessment (DEA) covering the
 County of Kauai, Department of Public Works' Proposed Bike and
 Pedestrian Path at Kapaa-Kealia, Island of Kauai, Hawaii

Thank you for the opportunity to review and comment on the subject
 matter.

The Department of Land and Natural Resources' (DLNR) Land Division
 distributed or made available a copy of the subject DEA to the following
 DLNR Divisions for their review and comment:

- Division of Aquatic Resource - Division of Forestry and
 Wildlife, Na Ala Hele Trails - Division of State Parks - Division
 of Boating and Ocean Recreation - Commission on Water Resource
 Management - Land Division Planning and Technical Services -
 Engineering Division - Kauai District Land Office

Attached herewith is a copy of the Division of Aquatic Resources,
 Division of Forestry and Wildlife, Commission on Water Resource
 Management and Land Division Planning and Technical Services comment.

Based on the attached responses, the Department of Land and Natural
 Resources has not other comment to offer.

Should you have any other questions, please feel free to contact
 Nicholas A. Vaccaro of the Land Division Support Services Branch at 1-
 808-587-0384.

Very truly yours,
Charlene E. Unoki
 Charlene E. Unoki
 Administrator

C: Kauai District Land Office
 SCANNED

LANDS DIVISION



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
NOVEMBER 27, 2002
DEC 12 2002

COMMITTEE MEMBERS:
MEMBERS: J. O'NEILL, CHAIRMAN
MEMBERS: J. O'NEILL, CHAIRMAN
CLAYTON W. DEAN, CLERK
MEMBERS: J. O'NEILL, CHAIRMAN
MEMBERS: J. O'NEILL, CHAIRMAN

TO: Dendre Maniwa, Administrator
Land Division
FROM: Lived T. Nishitaka, Deputy Director
Commission on Water Resource Management (CWRM)
SUBJECT: DEA Bike and Pedestrian Path at Kapaa-Kealia, Kauai, HI
FILE NO.: KAUAI/BIKEPATH/SS/DEA/CMT

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative water resources whenever available, feasible, and there are no harmful effects to the ecosystem. The CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

- We recommend coordination with the county government to incorporate the project into the county's Water Use and Development Plan.
- We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate the project into the State Water Projects Plan.
- We are concerned about the potential for ground or surface water degradation/contamination and recommend that approval for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.
- The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.
- Groundwater withdrawals from the project may affect streamflows, which may require an instream flow standard amendment.
- We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approval for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.
- If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).
- If the proposed project alters the bed and banks of stream channels, the project may require a stream channel alteration permit.
- OTHER

If there are any questions, please contact David Higs at 597-0249.

ADMINISTRATIVE	
REGULATORY	
PLANNING	
DESIGN	
CONSTRUCTION	
OPERATIONS	
MAINTENANCE	
REPAIRS	
REPLACEMENT	
RECONSTRUCTION	
DEMOLITION	
DISPOSAL	
RECYCLING	
WASTE MANAGEMENT	
ENVIRONMENTAL	
SAFETY	
QUALITY ASSURANCE	
TRAINING	
PERSONNEL	
FINANCE	
INVENTORY	
RECORDS MANAGEMENT	
COMMUNICATIONS	
LEGAL	
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CONTRACTS	
PROPERTY	
LAND ACQUISITION	
LAND RESTORATION	
LAND REVENUE	
LAND MARKING	
LAND SURVEYING	
LAND USE	
LAND ZONING	
LAND ACQUISITION	
LAND RESTORATION	
LAND REVENUE	
LAND MARKING	
LAND SURVEYING	
LAND USE	
LAND ZONING	

November 27, 2002
L.D./NAV
Ref.: KAUAI/BIKEPATH/SS/DEA/CMT

MEMORANDUM

TO: XX Division of Aquatic Resources (Distributed Doc)
 XX Division of Forestry & Wildlife
Na Ala Hele Trails
XX Engineering Division
 XX Division of State Parks
 XX Boating and Ocean Recreation (Distributed Doc) 29 2002
 XX Commission on Water Resource Management
 XX Planning and Technical Services
XX Kauai District Land Office (Distributed Doc)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment (DEA) for County of Kauai,
Department of Public Works' proposed Bike and
Pedestrian Path at Kapaa-Kealia, Kauai, Hawaii

Please review the attached DEA (November 2002) prepared by
SSEM International covering the subject project and submit your
written comments (if any) to us on Division letterhead signed and
dated) on or before the suspense date. Should you need more time to
review the subject matter, please contact Nicholas A. Vaccaro at
ext.: 7-0384.

*NOTE: One (1) copy of the DEA is available for review in the Land
Division Office, Room 220. Sign out slips are available at
the counter for those who wish to review the document for a
24-hour period.

If this office does not receive your comments by the suspense
date, we will assume there are no comments.

() We have no comments.
() Comments attached.
Signed: D. Higs
Date: 12/10/02

Suspense Date: 12/15/02
L-3527



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
NOVEMBER 27, 2002

November 27, 2002
L.D./NAV
Ref.: KAUAI/BIKEPATH/SS/DEA/CMT

MEMORANDUM

TO: XX Division of Aquatic Resources (Distributed Doc)
 XX Division of Forestry & Wildlife
Na Ala Hele Trails
XX Engineering Division
 XX Division of State Parks
 XX Boating and Ocean Recreation (Distributed Doc) 29 2002
 XX Commission on Water Resource Management
 XX Planning and Technical Services
XX Kauai District Land Office (Distributed Doc)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment (DEA) for County of Kauai,
Department of Public Works' proposed Bike and
Pedestrian Path at Kapaa-Kealia, Kauai, Hawaii

Please review the attached DEA (November 2002) prepared by
SSEM International covering the subject project and submit your
written comments (if any) to us on Division letterhead signed and
dated) on or before the suspense date. Should you need more time to
review the subject matter, please contact Nicholas A. Vaccaro at
ext.: 7-0384.

*NOTE: One (1) copy of the DEA is available for review in the Land
Division Office, Room 220. Sign out slips are available at
the counter for those who wish to review the document for a
24-hour period.

If this office does not receive your comments by the suspense
date, we will assume there are no comments.

() We have no comments.
() Comments attached.
Signed: D. Higs
Date: 12/10/02

SUSPENSE DATE: 12/15/02

STATE OF HAWAII
Department of Land and Natural Resources
DIVISION OF AQUATIC RESOURCES

MEMORANDUM

TO: William Davick, Administrator
FROM: Annette Tegawa, Aquatic Biologist
SUBJECT: Comments on Draft Environmental Assessment for the proposed Bike and Pedestrian Path at Kapa'a-Keala, Kauai, Hawaii, Project No. L-3527
Comments Requested By: Charlene E. Unoki, Acting Administrator
Land Division
Date of Request: 11/22/02 Date Received: 11/29/02

Summary of Project

Title: Draft Environmental Assessment for the Kapa'a-Keala Bike and Pedestrian Path Basis of Design Project
Project By: County of Kauai, Dept. of Public Works
Location: Kapa'a-Keala, Kauai, Hawaii

Brief Description:

The Department of Public Works (DPW) of the County of Kauai is proposing to develop a multi-use path for bicyclists, pedestrians, and other users along the coastline from Kapa'a to Keala on the island of Kauai.

A 12 foot-wide multi-use path is planned which would involve incorporating an existing asphalt-paved and unimproved paths in the Kapa'a Town area, and pavement improvements to an existing cane haul road that extends from Kapa'a to Ahhi Point in the northern Keala area. Improvements to existing cane haul road bridges along the coastline would also be conducted in establishing this path. In addition, other amenities such as comfort stations, parking areas, and pavilions are planned along this path to support path users along with other recreational users.

Comments:

The Division has no major objections to this request since the proposed project is not expected to have any long-term impacts on aquatic resource values in this area. However, the streams that the proposed pathway will be crossing harbor both native and exotic species and construction activities could have short-term impacts on aquatic resources such as temporary turbidity, biota displacement, and disturbance. Mitigation measures must be taken to ensure that bridge improvements to these stream crossings do not impede the flow of water or the

migration of native species from upstream areas to the ocean. Appropriate Best Management Practices should be developed to address these concerns and should include the prevention of any excessive potential adverse impact to aquatic resources during construction activities. In addition, the applicant should take precautions as much as possible to prevent contaminants such as sediment, pollutants, and petroleum products from entering the aquatic environment. In addition, site work should be scheduled for periods of minimal rainfall and lands denuded of vegetation should be replanted or covered as quickly as possible to control erosion.

OLBERT E. COLEMAN-ALUAKI
GOVERNOR OF HAWAII

DAVID I. WELLS
COMMISSIONER

ADJUTANT GENERAL
STATE OF HAWAII
P.O. BOX 211
HONOLULU, HAWAII 96809



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 211
HONOLULU, HAWAII 96809

DEC 12 2002

Cor: KA-01-56

MEMORANDUM

TO: Charlene E. Unoki, Acting Assistant Administrator
Land Division

FROM: Mathew Myers
Planning Branch

SUBJECT: Comments on the Draft Environmental Assessment (DEA) for the County of
Kauai, Department of Public Works' proposed Bike and Pedestrian Path at Kapaa-
Kealia, Kauai, Hawaii

We are in receipt of a memorandum from Charlene E. Unoki dated November 27, 2002
requesting comments on the Draft Environmental Assessment (DEA) for the County of Kauai,
Department of Public Works' proposed Bike and Pedestrian Path at Kapaa-Kealia, Kauai,
Hawaii.

The Department is concerned with portions of the bike and pedestrian path's proposed
location. Sections of the path are located in a coastal zone that has a history of beach action and
shoreline erosion as a consequence of wave action. Chapter 4.2.4, Coastal Erosion, of the
Kapaa-Kealia Bicycle/Pedestrian Path Basis of Design-DEA, indicates that there are three
coastal areas that are of concern for the proposed project, Kapaa Town Section, Kealia Beach
Section, and the Kealia Kai Subdivision Section. (Exhibit 1, DEA, pages 66-67). The Kapaa
Town Section "has a history of beach erosion, and seawalls and revetments have been built along
portions of the beach to protect the backshore." Kealia Beach Section "is an area of concern
from shoreline erosion since the existing cane haul road to be used for the multi-use path is
located close to the shoreline." Kealia Kai Subdivision Section contains a section of "shoreline
about 600 to 700 feet long that is an area subject to coastal erosion (see photo). The northern
portion of this section of coastline "shows evidence of wave erosion." Additionally, "there is no
vegetation on the bank along this reach, indicating that it is not as stable and may be directly
impacted by large waves."

For each area that has a potential erosion problem please provide the Department with

LEGAL COUNSEL

per approved

ADJUTANT GENERAL
STATE OF HAWAII
P.O. BOX 211
HONOLULU, HAWAII 96809



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 211
HONOLULU, HAWAII 96809

November 27, 2002
LD/HAV
Ref.: KAUAIBIKEPATHSSFMDA.CMT
L-3527
Suspense Date: 12/15/02

MEMORANDUM:

TO: XX Division of Aquatic Resources (Distributed Doc)
XX Division of Forestry & Wildlife
Ne Aie Hele Trails
XX Engineering Division
XX Division of State Parks
XX Boating and Ocean Recreation (Distributed DOC)
XX Commission on Water Resource Management
Land Division Branches of:
XX Planning and Technical Services
XX Kauai District Land Office (Distributed Doc)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division

SUBJECT: Draft Environmental Assessment (DEA) for County of Kauai,
Department of Public Works' proposed Bike and
Pedestrian Path at Kapaa-Kealia, Kauai, Hawaii

Please review the attached DEA (November 2002) prepared by
SSFM International covering the subject project and submit your
written comments (if any) to us on Division letterhead signed and
dated) on or before the suspense date. Should you need more time to
review the subject matter, please contact Nicholas A. Vaccaro at
ext.: 7-0384.

**NOTE: One (1) copy of the DEA is available for review in the Land
Division Office, Room 220. Sign out slips are available at
the counter for those who wish to review the document for a
24-hour period.

If this office does not receive your comments by the suspense
date, we will assume there are no comments.

[] We have no comments.

h Comments attached.

Signed: *Mathew Myers*
Date: 12/12/02

ADJUTANT GENERAL
OFFICE OF THE ADJUTANT GENERAL
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 20315-5000
OFFICE OF THE ADJUTANT GENERAL
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 20315-5000
OFFICE OF THE ADJUTANT GENERAL
DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 20315-5000



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 521
HONOLULU, HAWAII 96809

November 27, 2002 L-3527
LD/NRV Suspend Date: 12/15/02
Ref.: KAUAI BIKE PATHS/DEA. CHI

MEMORANDUM:

TO: XX Division of Aquatic Resources (Distributed Doc)
**XX Division of Forestry & Wildlife
Na Ala Hele Trails
XX Engineering Division
**XX Division of State Parks
XX Boating and Ocean Recreation (Distributed DOC)
**XX Commission on Water Resource Management
Land Division Branches of:
**XX Planning and Technical Services
XX Kauai District Land Office (Distributed Doc)

FROM: Charlene E. Unoki, Acting Assistant Administrator
Land Division *Charlene*

SUBJECT: Draft Environmental Assessment (DEA) for County of Kauai,
Department of Public Works' proposed Bike and
Pedestrian Path at Kapaa-Kealia, Kauai, Hawaii

Please review the attached DEA (November 2002) prepared by
SSFM International covering the subject project and submit your
written comments (if any) to us on Division letterhead signed and
dated) on or before the suspend date. Should you need more time to
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date, we will assume there are no comments.

() We have no comments.
Comments attached.
Signed: *[Signature]*

Date: MICHAEL G. BUCK, ADMINISTRATOR
DIVISION OF FORESTRY AND WILDLIFE
NOV 27 11

The attached brochure will explain
DOFAW's concerns for seabirds'
attraction to lights. Please mitigate the
light attraction problems seabirds will have
should trail/park lights are incorporated into
the planning of this project.

additional information on the approximate distance of the proposed path to the shoreline
(measure the distance of the path to the ocean from the makai side of the path). Include a map
that shows these distances at numerous points along the path (do not average the distances).
Also provide the Department with more in-depth information on the history of erosion along the
shoreline where the project is proposed to be located, particularly areas that have a potential
erosion problem. Include shoreline certification survey maps or aerial photographs to document
the rate of erosion over time in these potential problem areas. For example, Appendix C,
"Coastal Evaluation for the Kapaa-Kealia Bike Path Master Plan and Environmental
Assessment", prepared by Sea Engineering, Inc., and included with the DEA, documents the rate
of erosion along Kapaa Beach. Their analysis included aerial photography and indicated "about
60 feet of erosion between 1950 and 1988" occurred on a section of Kapaa Beach. (Exhibit 2,
Appendix C, page 11).

Please feel free to contact Matthew Myers, of the Land Division, Planning Branch at 587-
0382.

Thank you.

Matthew Myers
Matthew Myers

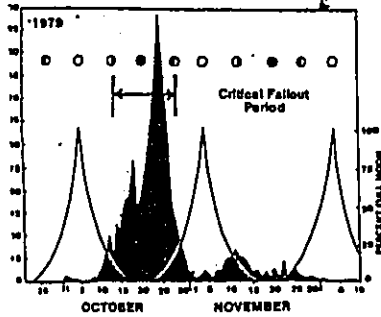


Figure 4. Relationship of shearwater "fallout" to the moon phases. The critical period of fallout occurs during the week before and after the new moon (darkest nights). Downing lights that are not absolutely necessary during that period could substantially reduce the annual shearwater fallout problem.

What To Do If Shearwaters Fall In Your Area

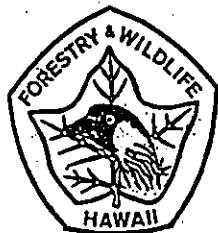
1. Collect birds as soon as possible to avoid losses to dogs and cats. They are generally docile birds and are easily handled. Take them to the nearest "shearwater aid station" located at county fire stations and at a few private business locations around the island. If birds must be held overnight, keep them in ventilated cardboard box with a secure lid.
2. Do not release birds by tossing them into the air. They may have unseen internal injuries and could become more badly injured.

TECHNICAL ASSISTANCE IS AVAILABLE
FOR ADDITIONAL INFORMATION, CONTACT:

State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
P.O. Box 1671
Honolulu, Hawaii 96788
245-4433

U.S. Dept. of the Interior
Fish and Wildlife Service
P.O. Box 67
Kilauea, Hawaii 96754
628-1413

The Nature Conservancy
of Hawaii
1026 Nuuanu Avenue, Suite 201
Honolulu, Hawaii 96813
637-4508



DEPARTMENT OF
LAND AND NATURAL RESOURCES



THE NEWELL'S SHEARWATER LIGHT ATTRACTION PROBLEM

A GUIDE FOR ARCHITECTS,
PLANNERS, AND RESORT MANAGERS

INTRODUCTION:

The future of a native Hawaiian seabird, the Newell's Shearwater, is threatened by the growth of new urban developments. Every year on Kauai, nearly 1,500 Newell's Shearwaters are attracted to bright urban lights, fly into unseen objects and fall stunned to the ground. Fortunately, 80% of them are recovered and successfully returned to the wild through the "SOS" (save our seabirds) program which involves the cooperation of the general public.

This brochure is designed to describe the bird, its problems with lights and specifically what architects, planners, resort managers and the general public can do to reduce or avoid the light attraction problem.

THE BIRD

The Newell's Shearwater once nested on all of the major Hawaiian Islands, but the mongoose, introduced to Hawaii, Maui, Hoolai and Oahu in the late 1800's is believed to have caused the extinction of shearwaters on those islands. Kauai is the last stronghold for this unique native Hawaiian seabird.

Newell's Shearwaters nest during the spring and summer months in the interior mountains of Kauai. They dig a long burrow in the ground beneath dense vegetation and lay a single egg each year. The eggs hatch during July and August, and the nestlings are reared within the burrow. The adult birds abandon the nestlings a week or two before they are old enough to fly. The nestlings become hungry, and leave the nesting grounds by themselves shortly after midnight. They head for the open ocean, and must depend upon their instincts to find food. They do not return to their nest, but fly south towards the equator where they will remain all winter on the open seas until the following spring.

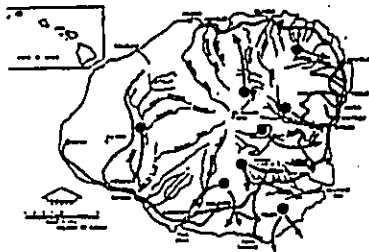


Figure 1. Map showing known nesting areas of the Newell's

THE THREATS:

PREDATORS: Dogs, cats, rats and feral pigs are known to kill some shearwaters and their young on the nesting grounds each year. The accidental establishment of a new predator to Kauai such as the mongoose, could cause the rapid extinction of this bird. Mongoose sightings on Kauai should be reported to wildlife officials promptly.

LIGHT ATTRACTION: Young shearwaters leaving their nests for the first time, do so only after dark. They are inexperienced and have a natural attraction to bright lights. Flying near urban areas, they become temporarily blinded by the lights and fly into unseen objects such as utility wires, trees, buildings and automobiles. Oftentimes they are just confused and exhausted. Most often they are only stunned and fall to the ground, but about 10 percent of them die each year. The problem is growing because of the increased number of urban lights associated with new resort and residential developments. The greatest "fallout" problem occurs near coastal towns, particularly near their mouths.

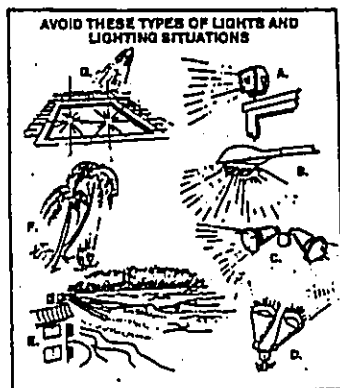


Figure 2. Avoid these types of lights: A. Unshielded high intensity floodlights on tall structures, B. Street lights without shields, C. Unshielded spotlights, D. Spotlights aimed upwards, Avoid using these types of lighting situations during peak fallout periods (new moon during October and November), E. Floodlights aimed up at vegetation, F. Spotlights

WHAT CAN WE DO TO HELP?

Architects and Planners

- Be aware of the light attraction problem during the planning stages of new development.
- Make every effort to avoid lighting situations where light glare projects upwards or laterally (see Figure 2). Avoid large high-intensity floodlights located on building tops or poles whenever possible.
- Use shielded lights, cut-off luminaires, or indirect lighting whenever possible. (see Figure 3).
- Avoid locating bright lights near utility wires or other objects that could be difficult for birds to see at night.

Hotel, Resort and Condominium Managers

- When converting to new exterior light fixtures, consider installing shielded lights, cut-off luminaires or indirect lighting.
- Consider installing shields on exterior lights that are known to attract shearwaters. Some light manufacturers offer ready made shields. In some cases inexpensive shields can be fabricated.
- Avoid using unnecessary lighting during the critical shearwater fallout period (October and November each year). Note: The heaviest fallout occurs on and around the new moon, generally for only 10 to 12 days. (See Figure 4). Downing unnecessary floodlights that light up the surf or shine upward upon buildings or trees for that short period, could significantly reduce shearwater fallout.



Figure 3. Use these types of lights whenever possible: 1. Shielded floodlights, 2. Shielded streetlights, 3. Cut-off luminaires, 4. Indirect lighting



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
HONOLULU, HAWAII 96815

DATE RECEIVED
BY: []
CHECKED BY: []
RECEIVED BY: []
DATE: []
TIME: []

November 27, 2002
LD/NAV
Ref.: KAUAIBIKEPATHSSRDEA.CMT

Suspense Date: 12/15/02
I-3527

MEMORANDUM:

TO: XX Division of Aquatic Resources (Distributed Doc)
XX Division of Forestry & Wildlife
Na Ala Hele Trails
XX Engineering Division
XX Division of State Parks
XX Boating and Ocean Recreation (Distributed DOC)
XX Commission on Water Resource Management
Land Division Branches of:
XX Planning and Technical Services
XX Kauai District Land Office (Distributed Doc)

FROM: Charlene E. Unoki, Acting Assistant Administrator *Charlene Unoki*
Land Division

SUBJECT: Draft Environmental Assessment (DEA) for County of Kauai, Department of Public Works' proposed Bike and Pedestrian Path at Kapaa-Kealia, Kauai, Hawaii

Please review the attached DEA (November 2002) prepared by SSPM International covering the subject project and submit your written comments (if any) to us on Division letterhead signed and dated) on or before the suspense date. Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

**NOTE: One (1) copy of the DEA is available for review in the Land Division Office, Room 220. Sign out slips are available at the counter for those who wish to review the document for a 24-hour period.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

We have no comments.

() Comments attached.
Signed: *Charlene Unoki*
Date: 12/10/02

NOV 29 2002 16:16

BRYAN J. BAPTISTE
LIVON

GARY K. HEU
ADMINISTRATIVE ASSISTANT



COUNTY ENGINEER
TELEPHONE 341-8600
IAN K. COSTA
DEPUTY COUNTY ENGINEER
TELEPHONE 341-8600

AN EQUAL OPPORTUNITY EMPLOYER
COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
4444 ROSE STREET
MORNING BUILDING, SUITE 275
LAHUE, KAUAI, HAWAII 96766-1340
January 20, 2003

Ms. Dierdre S. Mamiya, Administrator
Land Division
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Mamiya:
Subject: Kapaa-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your letters dated December 23, 2002 and January 17, 2003 providing comments on the Draft Environmental Assessment (DEA) for the subject project. We have the following responses to your comments.

Division of Aquatic Resources

Appropriate best management practices will be developed as part of the project's design to minimize short-term impacts on streams and aquatic resources. Similarly, the construction of bridge improvements would be designed to prevent impeding the flow of water or migration of native species from upstream areas to the ocean. Permitted permits, such as NPDES, will be applied for and include more details on practices to be implemented.

Measures will also be included to prevent contaminants, such as petroleum products, from entering the aquatic environment. If feasible and practicable, site work could be scheduled during periods of less rainfall. Lands denuded of vegetation would be replanted and covered quickly to minimize erosion.

DOUGLAS J. CRAIGHEAD
Commissioner



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KAUAI DISTRICT
300 DINA STREET, ROOM 108
LAILOA, HAWAII 96761

STEVE MORIKAWA, Director
NOV 29 2002
KAPAS
HWY-K 4-021180

FILE COPY

November 26, 2002

Mr. Ronald Sato
SSEM International, Inc.
501 Summer Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Sato:

Subject: Kapa'a-Kaalia Bike and Pedestrian Path
Draft Environmental Assessment
Department of Public Works
County of Kauai

Thank you for giving us the opportunity to review and comment on the Draft Environmental Assessment (DEA) for the project.

Enclosed is a copy of Page 127 of the DEA with our comments marked in red thereon. Our comments more accurately describes the location of the terminus of the Temporary Kapa'a Bypass Extension project.

If you have any questions, please call Steve Morikawa at 274-3118.

Very truly yours,

STEVE MORIKAWA, P.E.
District Engineer
SM:rcs
Encl.

cc: Department of Public Works (w/encl.)
Office of Environmental Quality and Control. (OEQC) (w/encl.)

SCANNED

Land Division, Planning Branch

The areas having erosion problems were discussed in the Draft EA, and included the three sections identified in your memo. The path improvements in Kapa'a Town are located inland and thus would not be subject to coastal erosion problems. Maps with distance information from the shoreline will be provided as requested at a later date.

Information on the history of erosion along the path corridor was provided in the coastal evaluation assessment included in Appendix C of the Draft EA. No additional information is available at this time of the coastal erosion history.
Commission on Water Resource Management

A stream alteration permit will be obtained for this project during the project's design phase since it would likely involve bridge improvements that may alter the affected stream's existing bed or banks.

Division of State Parks

We note this division has no comments on the Draft EA.

Engineering Division

We note this division has no comments on the Draft EA.

Division of Forestry and Wildlife

Thank you for the brochure on the guide for planners and architects to address the Newell's Shearwater light attraction problem. The project's effect would be minimal on these Shearwaters since no lighting along the path is planned. Lighting provided at path amenities would be appropriately designed incorporating the recommendations in the brochure to mitigate effects.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,

DOUGLAS HAIGH
Deputy County Engineer

In 1995, a temporary "bypass route" was opened to traffic during daylight hours to help alleviate traffic congestions through the Kapa'e Town corridor. This route utilizes the former cane haul road running mauka of Kapa'e Town.

The County of Kauai has several roadways within the study corridor under their jurisdiction. These roads primarily provide vehicular access to properties located above (mauka) and below (makai) Kulo Highway. Most of these roadways are located within the Kapa'e Town area since shoreline access north of the town to Kealia Beach and the Kealia Kai subdivision are directly from Kulo Highway.

Some roadways of note related to the project include Kaloloku Road which provides access to the boat launch area at Waiala'e Canal. Many residents also travel through Lili Park from Kaloloku Road to access the shoreline area on Moana Kai Road. Miu Street provides access from the highway to Kapa'e Beach Park and the parking lot along the shoreline where the existing path cuts through. Kou Street provides access to the Kapa'e Neighborhood Center and County's swimming pool.

Planned Improvements to Transportation Facilities

There are several improvements planned by the State DOT to existing transportation facilities which may have an effect on the path improvements and amenity alternatives. The State DOT plans to extend the temporary cane haul bypass road further north around Kapa'e New Park to Kulo Highway, in the vicinity of Haunalea Road and Kawaihanu Road, in the future. This bypass section extension would only be for southbound traffic, and is not planned for 2003.

The long planned permanent bypass road project for this region is still in the planning stages and may be many years before it is actually constructed due to anticipated construction costs. Kulo Highway is proposed to be widened to 4 lanes from the area of Gore Park/Mahelona Hospital to Kapa'e Stream Bridge as part of the bypass road project. Kapa'e Stream Bridge would also be widened to 4 lanes but shouldn't impact the nearby cane haul road bridge. The intersection of Kulo Highway with Malihuna Road may also be signalized. No bike lanes are planned for this widening project due to space constraints.

Preliminary plans are to connect this bypass road routed mauka of Kapa'e Town back to Kulo Highway at the intersection of Kawaihanu Road. This intersection is proposed to become a new "T" intersection with Kulo Highway lining up with Kawaihanu Road and the new bypass road forming the cross road. These improvements may involve the taking of some property on the makai (ocean) side of Kulo Highway in the vicinity of Kawaihanu Road and Haunalea Road to accommodate this intersection improvement. However, no plans are determined yet as to the exact alignment or how much land area will be needed.

Guardrails are also planned to be installed on the makai side of Kulo Highway along Kealia Beach. This would be done to restrict access into and out from Kealia Beach Park to two designated driveways along this beach park. The first access point would be about 600 feet north of Kapa'e Stream while the second access is located across from the Kealia Road Intersection with the



BRYAN J. BAPTISTE
MAYOR
GARY K. HEU
ADMINISTRATIVE ASSISTANT

AN EQUAL OPPORTUNITY EMPLOYER
COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
444 RICE STREET
MOOREA BUILDING, SUITE 275
LIHUE, KAUAI, HAWAII 96766-1540
January 20, 2003

COUNTY ENGINEER
TELEPHONE 241-4600
IAN K. COSTA
DEPUTY COUNTY ENGINEER
TELEPHONE 241-4600

Mr. Steven M. Kyono, District Engineer
Highways Division, Kauai District
Department of Transportation
State of Hawaii
3060 Eliwa Street, Room 205
Lihue, Hawaii 96766

Dear Mr. Kyono:

Subject: Kapa'e-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your letter dated November 26, 2002 providing comments on the Draft Environmental Assessment (EA) for the subject project.

We appreciate the comments clarifying the location of the future proposed terminus of the Temporary Kapa'e Bypass Extension project. The Final EA will be revised to incorporate these changes.

Planning and development of this project will be coordinated with your Highways Division to ensure it does not adversely impact your facilities. Discussions with your Highways Division, Kauai District have already been occurring on this project. The project would be integrated with and consistent with the Statewide Bicycle Plan.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,

IAN K. COSTA
Deputy County Engineer

Jan Costa
December 20, 2002
Page 2

Equestrian Use: Instead of a guardrail between the cycle-pedestrian portion of the path and the equestrian portion, has shrubbery, trees or some other kind of landscaping been considered? Greenery which is tall enough to block the horses' view of oncoming cyclists may prevent them from being spooked, would certainly be more pleasant and have more of a "natural" look.

Kapaa I Turn Statement Path Improvement: The draft EA notes that the path would be changed from an asphalt path to a concrete path, but does not explain why. In the final EA include a brief explanation.

Kapaa Beach seawall: A revetment is being considered to strengthen the existing seawall. We recommend that no additional eroding of the shoreline take place, as this disrupts coastal processes and, where beaches are undergoing long-term retreat, will eventually lead to beach narrowing, followed by beach loss.

If you have any questions call Nancy Heinrich at 586-4185.

Sincerely,

Jan Costa
JAN COSTA
Director

c: Ronald Sato, SSEFM



STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

* CORRECTED
PAGE ONE *

December 20, 2002

Jan Costa, Deputy County Engineer
Kauai Department of Public Works
4444 Rice Street
Lihue HI 96766

Attn: Douglas Hsieh

Subject: Draft Environmental Assessment (EA) for Kapaa - Kealia Bike Path

Dear Mr. Costa:

We have the following comments to offer:

Draft EA formatting: We would like to compliment you on the inclusion of the numerous photos which accompanied text. Seeing what the area in question looks like while reading the written description is a great benefit in understanding current conditions and potential impacts.

Joint Federal-State documents: When a project complies with both the Federal and state environmental review laws, HRS Chapter 343-5 (f) requires a joint document, whenever possible. This is to reduce duplication and streamline the review process for members of the public. If possible combine your federal and state final documents into one.

Lydgate Park: Section 2.5.1 of the draft EA mentions the ongoing bike path project in Lydgate Park. Does Lihai Park link with Lydgate? The maps do not show the relationship between these two parks.

Corrections and clarifications:

Physical and environmental context: The third sentence in section 2.5.1 begins, "The topography of the existing [sic] paved path section in town ...". The end of this sentence is missing. Please correct this in the final EA.

Existing bridge structures: The term *spalled* appears several times in this portion of section 2.4.1. In section 2.5.2 under *Molokai Canal bridge improvements* the term *spalled soffits* is used. In the final EA include brief definitions of these terms.

BRYAN J. BAPTISTE
MAYOR

GARY K. HEU
ADMINISTRATIVE ASSISTANT



AN EQUAL OPPORTUNITY EMPLOYER

COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
444 RICE STREET
MOTKEHA BUILDING, SUITE 275
LEHALE, KAUAI, HAWAII 96766-1540

COUNTY ENGINEER
TELEPHONE 241-6650

IAN K. COSTA
DEPUTY COUNTY ENGINEER
TELEPHONE 241-6650

January 20, 2003

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

Dear Ms. Salmonson:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your letter dated December 20, 2002 providing comments on the Draft Environmental Assessment (EA) for the subject project. We have the following responses to your comments.

We greatly appreciate your compliment on the formatting of photographs in the Draft EA document. We are glad it helped your understanding of the current environmental conditions.

We would like to clarify that this Draft EA document was prepared as a joint Federal and State environmental document to streamline the review process.

The bike path improvement at Lydgate Park was a separate project from this one, and has already been constructed. The improvements proposed under this project do not include extending from Lihii Park to the south linking with Lydgate Park. Thus, there are no maps showing the relationship between these two parks. However, a future link from Kapa'a Town to Lydgate Park may be pursued by the County in the future, and appropriate planning and environmental documentation would be conducted to establish and study a route.

The spelling error and end of the sentence in Section 2.5.1 will be corrected in the Final EA. Clarifications will also be provided for the terms "spalled" and "spalled soffits" in the Final EA.

Regarding equestrian use, landscaping or other "natural" barriers would be considered to separate equestrian users from bicycle and pedestrian users as part of the project's design phase. However, such barriers would require wider space and right-of-way which is limited along several sections of the path. Maintenance of such landscaping is also a concern with the County. The project's design would look into various design options to maintain the natural character of the area to the extent possible, and work with equestrian organizations to address appropriate design measures.

A concrete paved path is desired by the County since it would be easier to maintain over time, and is typically used for such paths. In addition, such a path would be consistent with the County's established design guidelines along with other path design guidelines implemented in other states. A brief explanation of this will be included in the Final EA.

A revetment along the Kapa'a Beach seawall was identified as one alternative for consideration by the County to address shoreline erosion along with making no improvements. Such shoreline hardening would be costly, and is not preferred at this time. Thus, no shoreline hardening is the preferred mitigative measure planned at this time as discussed in Section 4.2.4 of the Draft EA.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,

IAN K. COSTA
Deputy County Engineer



December 16, 2002.

Mr. Ronald A Sato
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, HI 96817

Dear Mr. Sato:

Subject: Draft Environmental Assessment (Draft EA) for the Kapaea-Kealia Bike and Pedestrian Path, Kapaea-Kealia, Kauai.

This is regarding your letter dated November 22, 2002. In reviewing the Draft EA for the proposed Kapaea-Kealia Bike and Pedestrian Path, it appears that construction of this project will not affect our existing water facilities (i.e. waterlines, pumps, etc.). It will be the developer's ultimate responsibility to verify if the Department of Water's (DOW) existing water facilities will be affected by this development. If existing DOW facilities will be affected by this project, the developer will be required to submit necessary construction drawings of the affected area, to the DOW for review and approval.

Availability of water service will for this project will be dependent on the adequacy of the source, storage and transmission facilities existing at the time water service is requested.

If you have any questions, please contact Mr. Edward Doi of my staff at 245-5417.

Sincerely,


Greg Fujikawa
Water Resources & Planning Division Head

cc: Doug Haigh, Public Works, COK
OEQC, State of Hawaii
Edward Doi, DOW

ANNED

4398 Pua Laka St., P.O. Box 1794, Lihue, HI 96766 Phone: 808-245-5400
Engineering and Fiscal Fax: 808-245-5813, Operations Fax: 808-245-5402, Administration Fax: 808-244-8428

Please Ask me politely..... Courtesy !!

SSFM INTERNATIONAL, INC.
RECEIVED
DEC 17 2002
7:25

FILE COPY
RU

BRYAN J. BAPTISTE
MAYOR

GARY K. HEU
ADMINISTRATIVE ASSISTANT



AN EQUAL OPPORTUNITY EMPLOYER

COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
1405 KULUE STREET
MOTOMEA MAUNALOHA, HI 96771
LIHUE, KAUAI, HAWAII 96766-1540

January 20, 2003

COUNTY ENGINEER
TELEPHONE 241-4600

IAN K. COSTA
DEPUTY COUNTY ENGINEER
TELEPHONE 241-4648

Mr. Greg Fujikawa, Division Head
Water Resources and Planning Division
Department of Water
County of Kauai
4398 Pua Loke Street
Lihue, Hawaii 96766

Dear Mr. Fujikawa:

Subject: Kapa'e-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments


Thank you for your letter dated December 16, 2002 providing comments on the Draft Environmental Assessment (EA) for the subject project.

The path improvements and amenities planned are not expected to negatively impact your existing water facilities. The County Department of Public Works will verify any needed connections or other improvements to existing water facilities as part of the project's design.

Necessary construction plans will be submitted to your department for review and approval as part of the project's design. We understand that availability of water service for improvements will be dependent upon your existing system facilities at that time of the water service request.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,


IAN K. COSTA
Deputy County Engineer



Kauai Group of the Hawaii Chapter
Post Office Box 8418
Lihue, Kauai, Hawaii 96760

December 19, 2001
County of Kauai
Department of Public Works
4444 Rice Street
Lihue, HI 96766

Re: Kapa'a - Kealia Bike & Pedestrian Path Basis of Design Project
Draft Environmental Assessment

The Kauai Group of the Sierra Club Hawaii Chapter supports the Kauai Bike Path Draft EA. After careful review of the Draft EA, we are pleased with the plan for many reasons:

- 1) To give good access to the shoreline and its many views
- 2) To encourage alternative traffic movement
- 3) To encourage the eventual extension of the path around the Island
- 4) To promote healthy outdoor activities for residents and visitors alike
- 5) To keep shoreline vistas as open and natural as possible
- 6) To preserve historic cane right-of-ways and other historic and cultural entities
- 7) To continue fulfilling the Bilos Plan Hawaii of the State Master Plan from April 1994, the Kauai General Plan and a long time dream of many people.

We would like to add that we hope the path will be tinted with earth colors to minimize the visual impact and we encourage the use of boulders or other natural materials rather than guardrails in unsafe areas.

We're looking forward to the upcoming Kapa'a to Kealia section of the bike/pedestrian path.

Thank you,

Marge Freeman

Marge Freeman, Conservation Committee
The Kauai Group of the Sierra Club Hawaii Chapter

Printed on recycled paper

BRYAN J. BAPTISTE
MAYOR

GARY K. HEU
ADMINISTRATIVE ASSISTANT



AN EQUAL OPPORTUNITY EMPLOYER

COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
444 RICE STREET
LIHUE, KAUAI, HAWAII 96766-1340
January 20, 2003

COUNTY ENGINEER
TELEPHONE 241-8800

IAN K. COSTA
DEPUTY COUNTY ENGINEER
TELEPHONE 241-6840

Ms. Marge Freeman
Conservation Committee
Kauai Group of the Hawaii Chapter
Sierra Club
P.O. Box 3412
Lihue, Hawaii 96766

Dear Ms. Freeman:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your letter dated December 19, 2002 providing comments on the Draft Environmental Assessment (EA) for the subject project.

We greatly appreciate your support for this project and comments after review of the Draft EA document. We note the seven reasons listed documenting your support this project.

The project's design will consider incorporating earth tone coloring for the path to maintain the natural character of the area to the extent possible. This will also include considering other natural materials or fence designs other than typical guardrails along sections of the path requiring such safety measures.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,

Ian K. Costa
IAN K. COSTA

Deputy County Engineer



BRYAN J. BAPTISTE
MAYOR

GARY K. HEU
ADMINISTRATIVE ASSISTANT

COUNTY ENGINEER
TELEPHONE 241-8600

IAN K. COSTA
SENIOR COUNTY ENGINEER
TELEPHONE 241-8600

AN EQUAL OPPORTUNITY EMPLOYER
COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
440 SOUTH STATE STREET
MOOREA BUILDING, SUITE 2718
LILUOKE, KAUAI, HAWAII 96786-1340

February 18, 2003

Mr. Richard O. Stauber
P.O. Box 662041
Lihue, Hawaii 96766

Dear Mr. Stauber:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your letter dated December 20, 2002 providing comments on the project based upon the public informational meeting held. We have the following response to your comments.

The existing path consists of only a 6-foot-wide asphalt paved path in the Kapa'a Town area. North of the town through Kealia Beach and past the Kealia Subdivision development, there is no established bicycle or pedestrian path. There is only an old and deteriorating cane haul road which has been used by the public. The condition of this cane haul road is poor, its former bridge crossing of Kumukumu Stream has been washed out, and accessibility is limited for other users.

Consequently, this project is being proposed to create a multi-use path that is safe and increases accessible to a wider range of users. Such a path would thus need to be wide enough and have adequate pavement to be used by various users such as bicyclists, skaters, pedestrians, joggers, children, and parents with strollers. This path also needs to be compliant with ADA standards to allow accessibility for persons with disabilities.

The American Association of State Highway and Transportation Officials (AASHTO) design guidelines recommend a path width of at least 10 to 12 feet to safely accommodate multiple users such as this proposed path would. A concrete paved path is desired by the County since it would be easier to maintain over time, and is typically used for such paths. In addition, such a path would be consistent with the County's established design guidelines along with other path design guidelines implemented in other states. However, other pavement materials would be considered as part of the project's design.

SSFM International Inc.
501 Sumner St. #502
Honolulu, HI 96817
Via FAX December 20, 2002

Project: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design
Public Informational Hearing Dec. 12, 2002

Comments:

- 1) What is wrong with the existing bike/bike path?
- 2a) Why 12 feet concrete in coastal areas?
- 2b) Has this concrete anything to do with the denial of the seawall along the Golf Course?
- 2c) Coastal improvement (shoreline erosion) to keep the land out of the ocean? In Haena homeowners have to ditch their homes into the ocean, and here the same government agencies approving somewhat/somewhat a seawall?
- 3) and ownership: Are you aware of the Grand Jury that is looking into the land deal between Kealia Kai, Mayor and County and how some parties and relatives to parties obtained properties. A federal judge may not rule out bribery. The County has to remove the new illegal structure (life guard stand) from Kealia Beach?
- 4) Why not improve Kapa'a town area first then try to expand to the north?
- 5) Why is it called multi purpose path? And sold to the community as bike and pedestrian path? If SSFM with public works together via to secure a reimbursement agency for money that can not be obtained (legally) if told the truth?

Richard O. Stauber

Mr. Stauber
February 18, 2003
Page (2)

The desired use of a paved concrete path is in compliance with design guidelines and requirements. Thus, it has nothing to do with a seawall along the Waialua Golf Course.

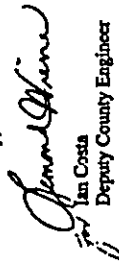
This multi-use path project does not involve trying to keep the land out of the ocean. The project would preserve the County's shoreline property as recreational open space while increasing accessibility and utilization of this area for a wider range of the public. Although there are some sections of the path which are subject to coastal erosion, no shoreline hardening improvements such as a seawall are planned at this time. Such mitigative measures would be costly, and does not appear to be necessary for this path project. The life guard tower at Kealia Beach is not part of this project, and the County will look into its status.

Phasing for the implementation of the project improvements will be determined by availability of Federal and County funding. Improvements from Kapea Town north would be the most costly, and an existing narrow path is already available to serve for the present time. Consequently, the northern section is planned to be implemented first.

The proposed path is identified as a "multi-use" and not "multi-purpose" path. This term reflects the multiple user groups that would be allowed to use it such as pedestrians, skaters, and bicyclists, etc. However, it is expected that the majority of users would be pedestrians and bicyclists. Funding for this project is being acquired through the normal process established.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,


Ian Costa
Deputy County Engineer

Ian Costa, Deputy Director
Dept. of Public Works
County of Kauai
4444 Rice St., Suite 275
Lihue, HI 96766-1340

Dear Mr. Costa,

After attending a December 12th meeting in Kapea regarding a proposed coastal "bike trail" I have given a lot of thought to the proposal. After nearly 40 years of volunteer participation in all facets of recreational trails, primarily in California and Utah, I have arrived at the following conclusions:

1. A 12 foot wide concrete wide trail is a bad design.
2. It is much too expensive and it will be extremely dangerous.

First, regarding the danger. Experience shows that the better the trail, the faster the bikers. This is not a criticism of bikers, it is human nature. Bikers and horses travel at speeds of 2.5 to 4 mph typically, a jogger at 6-7 mph. Bikers on a highway as proposed will travel about 35 mph. To put these speeds in perspective, bikers and horses will travel about 5.8 ft/second, while a bike will go 51 ft/sec. All trail users will have time to avoid each other at the lower speeds but the disabled, parents pushing baby carriages, or anyone where the line of sight is limited will have great difficulty in avoiding approaching bikers. Bikers approaching from opposite directions will meet at the rate of 100 ft/sec. The proposed trail, if built as now planned, will have many accidents and will become exclusive for bikers because of the fear of such speeds.

Secondly, the proposed trail is much too expensive. There are very limited funds for trail construction and the need for them is great. There is no need for a 12 ft. wide concrete highway. It was stated that these dimensions were suggestions of the National Highway Department and no investigation was made into actual programs. Bikers, joggers, and horses are far better off physically on compacted earth than on paved surfaces. Therefore the group benefiting from the proposal is the biking group, and possibly the handicapped or those with baby carriages, provided bike speed can be controlled.

I don't buy the statement that the higher maintenance justifies the higher cost. A trail is not built primarily because of maintenance but for the good of the trail users. Maintenance costs are important considerations but a well constructed compacted earth trail has a long life and many volunteers can help maintain it.

I am a strong advocate of equestrian trails including bikers, hikers, the handicapped, and horse riders and don't believe the proposed trail meets the criteria. An eight to ten foot wide compacted earth trail will meet the requirements of all users and the limited funds needed for such a trail will enable many more miles of trail to be constructed.

I respectfully request that the proposed trail be radically revised for the good of all.

Sincerely,

W. Norman Sims

W. Norman Sims
7481-A Koolau Rd.
Kilauea, HI 96754

The following experiences have contributed to the conclusions expressed in this letter:

- Former President of East Bay Area Trails Council
- Former Trails Chairman of California State Horsemen's Association
- Founder and first Chairman of Utah Trails Advisory Committee
- Member - Bay Area Ridge Trails Council
- Former member - Marin County Trails Committee
- Founder - Salt Lake Area Trails Council

Cc: Dale Rowenbald
P. O. Box 269
Kapaa, Kauai, HI 96746



BRYAN J. BAPTISTE
MAYOR

GARY K. HEU
ADMINISTRATIVE ASSISTANT

COUNTY ENGINEER
TELEPHONE 241-1800

IAN K. COSTA
DEPUTY COUNTY ENGINEER
TELEPHONE 241-0440

AN EQUAL OPPORTUNITY EMPLOYER
COUNTY OF KAUAI

DEPARTMENT OF PUBLIC WORKS
4441 RICE STREET
MO'OKIA BUILDING, SUITE 275
LEHOLE, KAUAI, HAWAII 96756-1340

February 18, 2003

Mr. W. Norman Sims
7481-A Koolau Road
Kilauea, Hawaii 96754

Dear Mr. Sims:

Subject: Kapaa, a-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your letter dated December 24, 2002 providing comments on the project based upon the public informational meeting held. We have the following response to your comments.

Thank you for the input on concerns with travel speed along the path associated with pedestrians, bicyclists, and others. However, we expect that most skilled cyclists who typically prefer traveling at higher speeds would continue to use roadways instead of the path. The old cane haul road path is presently used by many pedestrians either jogging or walking which is expected to grow with increased accessibility created by this project.

Thus, recreational (families) or less skilled bicyclists who prefer lower speeds and avoiding roadways are anticipated to make greater use of this path. Our consultation with bicycle club representatives on Kauai similarly confirmed this likely use. The project's design will follow Federal and County guidelines and requirements in establishing appropriate sight distances and signage along the path to reduce conflicts.

A 10-foot-wide path is generally recommended as the minimum width for multi-use paths which the proposed project would be. A wider 12-foot path width is recommended for urbanized areas or areas expected to have high use which is expected to occur especially between Kapaa and Kealia Beach. However, the County will consider providing a 10-foot-wide path as part of the project's design phase especially since some sections of the corridor have right-of-way limitations.

Mr. Sims
February 18, 2003
Page (2)

The path's desired width and pavement design requirements were established based upon the American Association of State Highway and Transportation Officials (AASHTO) guide for bicycle facilities and the County's adopted design guidelines from Lydgate Park. It also incorporated recommendations from the Kauai Health and Heritage Coastal Trails Committee which is comprised of State and County agencies, business associations, and community organizations which includes representatives from equestrian, bicyclists, cultural, fitness, and handicap accessibility groups. Minimum 10-foot-wide paths for multi-use paths are also common with other state design guidelines such as in Iowa, Georgia, Oregon, and Missouri.

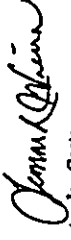
Asphalt paved surfaces are generally suitable for dry upland areas outside of the floodplain. However, concrete surfaces are used within floodplains since it is less likely to be impacted by flood events. Given the path's route along the shoreline, which is within several floodplain areas, concrete is a desired option.

The multi-use path is intended to serve a wide range users and not just bicyclists. Equestrian use along the proposed route is being considered, and may be accommodated along certain sections of the entire route. Thus, an unpaved bridled path would need to be established for such use.

The project's design would not be solely driven by maintenance concerns, however, it is an important factor needing to be evaluated by the County since it will involve long-term commitment costs. Path users are an important consideration, and much of the path improvements along with path amenities have been incorporated to accommodate them such as additional parking, accommodating boat users at Waikaeo Canal, and park facilities. Volunteers to help maintain the path is welcomed, however, such help may not be sufficient or consistent as time progresses. Thus, the County still needs to factor in the long-term responsibility for maintaining the path.

The concerns over costs associated with developing this project are important considerations we share with you. In terms of funding, the County is working to achieve necessary steps in securing funding for the first phase of this project. Thus, completing this planning phase of the project will allow the County to secure funding and initiate selection of the design/build contractor to build this project. We appreciate your comments and suggestions on this project's design.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,

Ian Costa
Deputy County Engineer

Lorraine Scarpone
P.O. Box 1253
1139 Moana Kai Road
Kapaa, Kauai, Hawaii 96746

January 9, 2003

Mr. Doug Haig
Public Works Dept.
Building Division
4444 Koa Street, Suite 275
Lihoe, Kauai, Hawaii
96766

Re: Proposed Fuji Beach/Baby Beach Park Comfort Station

Dear Mr. Haig,

I am a homeowner adjacent to Fuji Beach/Baby Beach park, hereinafter called "Baby Beach Park". I strongly oppose the proposed location of the comfort station in Baby Beach Park for the following reasons:

1. The comfort station should be located in the adjacent state-owned boat launching area, where it would be closer to the existing sewer line. It would reduce the cost to Kauai tax payers to locate the comfort station on state-owned property. It would avoid needless duplication of facilities to have only one comfort station located on the state-owned property, instead of having restrooms located on both adjacent properties. The state of Hawaii already has portable toilets located in the boat launch area.
2. Extending the sewer line into Baby Beach Park is a growth inducing factor because it will make it economical for the R-20 zoned properties near Moana Kai Road to develop to their full zoning potential. Because of the growth inducement and the inadequate police protection for the proposed comfort station, a full Environmental Impact Report/Statement is required for the project.
3. Locating the comfort station in Baby Beach Park, and especially within the area bordered by boulders beyond the parking lot, will create a haven for the homeless, and drug dealers and users. It is inaccessible by the police while they are in their vehicles. In order to patrol the area, the police would have to get out of their vehicles and walk over to the comfort station. This would be an impossible obstacle to proper police protection, especially at night when drug dealing in and around Baby Beach Park abounds. Facilitating drug dealing and homelessness in Baby Beach Park will lead to theft, vandalism, and burglaries in the homes that surround the park. Locating the

because it is easily accessible to police vehicles by the existing streets, and it is closer to the highway.

4. Locating the comfort station in Baby Beach Park will create a continuing nuisance and danger to the homeowners adjacent to the park. This will substantially depreciate the value of their homes, and will warrant compensation to them by the County of Kauai for inverse condemnation under the Fifth Amendment of the U.S. Constitution. As one of the homeowners adjacent to Baby Beach Park, I intend to bring an action for inverse condemnation if the comfort station is located in Baby Beach Park.

I request to be given notice of all meetings and proposed actions and decisions concerning the above-referenced comfort station. Thank you for your consideration of my comments.

Sincerely,

Lorraine Scarpace
Lorraine Scarpace

CC: Mr. Mel Nishibara
Director of Parks & Recreation

BRYAN J. BAPTISTE
MAYOR

GARY K. HEU
ADMINISTRATIVE ASSISTANT



AN EQUAL OPPORTUNITY EMPLOYER

COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
140 KAUAI PLACE STREET
MOLOKAI BUILDING, SUITE 275
LIHUE, KAUAI, HAWAII 96768-1340

January 20, 2003

Ms. Lorraine Scarpace
1139 Moana Kai Road
Kapaa, Kauai, Hawaii 96746

Dear Ms. Scarpace:

Subject: Kapa'a-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your letter dated January 9, 2003 providing comments on the project. We note your concerns with the comfort station improvement proposed and have the following response to your comments.

We would like to clarify that the comfort station proposed would be located within the County's park site situated along Waikaea Canal and bordered by the shoreline to the west and the State's property (boat launch facility) to the east. This park is known as Lihii Park, and is what you may be referencing in your letter as Fuji Beach. Baby Beach Park refers to the shoreline area along Moana Kai Road.

Providing comfort station improvements at the State's boat launch property would avoid duplication of facilities, and provide an improvement since there are only portable toilets currently provided there. Unfortunately, that property is owned by the State and such improvements would thus need to be constructed by the State. The comfort station is an important facility to service beach park users, thus, the County does plan to include that facility on their Lihii Park site. The siting of this facility will likely be closer to the Waikaea Canal Bridge to keep it away from residences on the other end.

Comfort station improvements planned at Lihii Park would not have involved extending a sewer line into Baby Beach Park since wastewater treatment was planned to involve a septic tank or low water organic system. If a lateral connection to the County's existing sewer line is economically feasible for this comfort station, it would be connected from the highway along Koloheku Road which is used to enter the boat launch area. This would not increase sewer service to homes located along Moana Kai Road.

TO: SSFM INTERNATIONAL
RE: KAPAAKEALIA BIKE AND PEDESTRIAN PATH BASIS OF DESIGN PUBLIC
INFORMATIONAL MEETING—DECEMBER 12, 2002

IN MY OPINION THE PEOPLE WHO HELD THIS MEETING WERE WELL INFORMED AND DID THEIR JOB. HOWEVER, THE FORMAT OF SPENDING OVER AN HOUR GIVING AN OVERVIEW OF THE PROJECT WITHOUT AUDIENCE PARTICIPATION AT EVERY STEP ALONG THE WAY—Q AND A— WAS WRONG.

MANY QUESTIONS WERE ASKED AS THE PRESENTATION WENT ALONG BUT THE PUBLIC WAS TOLD TO WAIT TILL Q AND A TIME LATER. THIS "FLAW" SHOULD BE CORRECTED SO THAT ANSWERS ARE GIVEN TO ANY QUESTION ASKED AT THE TIME THE QUESTION COMES UP.

THE MOST GLARING, NON-LOGICAL RESPONSE TO A QUESTION TO MR. HAIG CAME WHEN IT WAS ASKED IF THIS MEETING WAS TO GATHER INFORMATION ON THE PROJECT BEFORE DECISIONS WERE MADE OR IF THE "DEAL" WAS ALREADY DECIDED. THE ANSWER WAS THAT NO DECISION HAD BEEN MADE AND YET THE LYDGAATE PARK PART OF THE BIKE PATH WAS NEARLY COMPLETED. SO THE LOGICAL PART OF THE QUESTION WAS IF LYDGAATE PARK WAS JUST A LINK IN THE TOTAL "CHAIN" WHY WAS IT A "TONE DEAF" AND YET THE REST OF THE PATH HADN'T BEEN DECIDED ON? MR. HAIG SAID THAT THE LYDGAATE SEGMENT WAS A SEPARATE PART OF THE PROJECT BUT THIS MAKES NO SENSE IF THE PATH IS PLANNED FROM MAHALO TO ANAHOLA AND LYDGAATE IS AN INTEGRAL PART OF THE TOTAL.

ALSO, THE GLARING QUESTION WAS ASKED "WHO WILL MAINTAIN THIS RIGHT OF PROJECT AND WHERE WILL THE MAINTENANCE MONEY COME FROM?" MR. HAIG SAID THAT IT WOULD COME FROM PUBLIC WORKS WHICH IS OUR LOCAL TAX DOLLARS. WHY ASK THE PEOPLE ON KAUAI GIVEN THE TOTAL FACTS ABOUT THIS TRAIL BEFORE IT MOVES ONE STEP FURTHER? FEDERAL GUIDELINES STATE THAT PUBLIC INPUT AND PARTICIPATION ARE THE MOST IMPORTANT FACTORS IN GIVING FEDERAL GRANTS BUT IT SEEMS OBVIOUS THAT SOMEONE HAD PURSUED THIS GRANT WITH ONLY A FEW PROponents OF BIKING CONSULTED AND THIS, OBVIOUSLY, SKEWS THE TOTAL PICTURE.

THE EQUESTRIAN TRAIL WAS BROUGHT UP BY 2 PEOPLE AND YET YOUR PEOPLE HAVE SPENT A LOT OF TIME AND EFFORT TRYING TO INCORPORATE THIS NEW TRAIL INTO THE PLANS.

MY POINT IS THAT WE NEED TO GET THE TOTAL ISLAND INVOLVED IN THIS GIANTIC PROCESS BEFORE WE GO FURTHER AND I HOPE YOU AGREE.

MAHALO,
GLENN MCKENS

Existing property owners along Moana Kai Road are already permitted to develop their properties to its full potential under the current zoning code. Thus, a sewer line connection for such a comfort station alone would not increase the existing sewer system's capacity allowing significant growth of properties along that beach stretch. It would have actually reduced available capacity of the wastewater system by the use generated for the comfort station. Therefore, such effects would not warrant an Environmental Impact Statement.

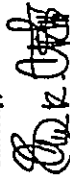
We note your concerns regarding possible activity by homeless living in the area or drug related activities. Vehicular access to the park and facilities will be available for the County's police department to adequately patrol since their vehicles could enter the parking lot via Moana Kai Road, and such facilities would be located along parking stalls near the canal. Your concerns with drug related activities occurring at night along Baby Beach will be forwarded to the police department to address.

The comfort station is planned to be located within the Lili Park site, however, we don't believe it would create a significant new nuisance and danger to surrounding property owners. Your comments indicated that such activities are already occurring there, and the police department will thus follow-up in addressing these activities.

With such activities already occurring, we don't believe there would have been a significant depreciation of property values to homes in the area directly resulting from the comfort station. The comfort station would not involve: 1) the physical invasion, occupation, and damaging of your property, nor 2) excessive regulation depriving the owner of all economic use of the property which are typically associated with inverse condemnation. Appropriate notifications will be provided on meetings and decisions made regarding these improvements.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,


IAN K. COSTA
Deputy County Engineer

RECEIVED
DEC 17 2002

SSFM INTERNATIONAL, INC.

BRYAN J. BAPTISTE
MAYOR

GARY K. HEU
ADMINISTRATIVE ASSISTANT



AN EQUAL OPPORTUNITY EMPLOYER

COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
444 HICE STREET
LAWRENCE, HAWAII 96746-1340

January 20, 2003

COUNTY ENGINEER
TELEPHONE 241-6650

IAN K. COSTA
DEPUTY COUNTY ENGINEER
TELEPHONE 241-6640

Mr. Glenn Mickens
5920 Kili Place
Kapaa, Hawaii 96746

Dear Mr. Mickens:

Subject: Kapaa-Kealia Bike and Pedestrian Path Basis of Design Project
Draft Environmental Assessment Comments

Thank you for your memo received at our office on December 17, 2002 providing comments on the project based upon the public informational meeting held. We have the following response to your comments.

The format implemented at the meeting is commonly used, and typically presentations are only 15 to 20 minutes long. However, the Kauai Health and Heritage Coastal Trails Committee (Heritage Trails Committee) requested an opportunity to give their own presentation which was accommodated and contributed to the length of time. Furthermore, the many questions raised by some individuals interrupted their presentation and contributed to the delay.

That is a major reason why questions and comments are typically held after the presentation. Thus, questions and comments can be properly recorded and discussed after everyone has an opportunity to see the entire presentation, and many times initial questions are answered during later portions of a presentation. This helps keep a meeting organized and progressing in the limited time available. Such interactive discussions during presentations may be more suitable for "workshops" which this meeting wasn't. Nevertheless, your comments on the meeting format are noted and appreciated.

The purpose for this meeting was to obtain input and comments on the project and Draft Environmental Assessment so that it can be evaluated before a decision is made to proceed with or modify the various improvements planned. We would like to clarify that the Lydgate Park improvements was a separate project from this Kapaa-Kealia project, and initiated a few years ago. That Lydgate project had its own planning process and community meetings before a decision was made on the type of improvements to construct and funding acquired for it. Thus, its construction is near completion.

Consequently, the County is now proceeding with this Kapaa-Kealia segment since funding is being acquired for it. The long-term vision is to provide a multi-use path along a general corridor from Nawiliwili to Anahola as desired by the Heritage Trails Committee. However, such an effort would need to be implemented in several phases because funding available for such improvements is limited. Thus, the planning process for this Kapaa-Kealia segment was initiated last year, and construction for a portion of this planned to start later this year.

The County is hoping that other segments of an overall path within the Nawiliwili to Kapaa corridor can be initiated sometime in the future. However, that would be dependent upon funding availability. Such projects would have its own planning process and community meetings to establish the desired route and path amenities.

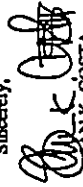
In terms of maintenance of the paths developed, it will be the responsibility of and performed by staff from the Parks and Recreation Division of the Department of Public Works. We appreciate your concerns over adequate maintenance of this path. Maintenance concerns have been a major factor in evaluating the design improvements associated with this path.

The planning process for this project has included considerable and adequate opportunities for public input along with making project information available. There were three public meetings held on this project to solicit input and comments. Public notices of these meetings were published in the newspaper, and notification flyers distributed to property owners along the study corridor along with government agencies, business and community organizations, and interested parties. Consultation has been conducted with representatives associated with historic properties, cultural practices, homestead associations, fishing groups, and government agencies. Input has also been obtained from the Heritage Trails Committee which is comprised of State and County agencies, business associations, and community organizations which includes representatives from equestrian, bicyclist, cultural, fitness, and handicap accessibility groups.

Regarding the consideration of equestrian use along the path, there has been much input received from these groups throughout the entire process which includes the Heritage Trails Committee. Thus, although only two individuals may have spoken that night, we have received much input at other meetings and from other consultation efforts. Therefore, this planning process has obtained considerable input from the general public which includes your comments as well which are appreciated.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Sincerely,


IAN K. COSTA
Deputy County Engineer

BRYAN BAPTISTE
MAYOR

GARY HEU
ADMINISTRATIVE ASSISTANT



COUNTY ENGINEER
TELEPHONE 341-4400

WYNNE M. USHIGOME
DEPUTY COUNTY ENGINEER
TELEPHONE 341-4448

AN EQUAL OPPORTUNITY EMPLOYER

COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
444 PACE STREET
LUCY M. BISHOP BUILDING, SUITE 275
LAIHE, KAUAI, HAWAII 96761-1540

August 6, 2003

Mr. Tom McCloskey
Kalia Kai Owners Association
P.O. Box 539
Anahola, Hawaii 96703

Dear Mr. McCloskey:

Subject: Kapa'e-Kalia Bike and Pedestrian Path Basis of Design Project
Comments on Path Alignment

Thank you for your letter dated July 10, 2003 providing comments on the subject project. We appreciate your comments on the effort expended in developing the proposed improvements.

We would like to clarify that the project area referred to in your letter is planned to be a future extension of this multi-use path. However, the specific alignment for this future extension has not been established at this time but in consideration of your comment we will modify the maps in the Environmental Assessment showing the potential alignment closer to the shoreline.

When the County decides to extend this path there will be opportunities for further public comments and input to determine the specific path route. Your desire to route the path closer to the shoreline will be considered during the planning of this extension.

Please contact Mr. Douglas Haigh of our department at (808) 241-6650 if you have any further questions on this matter. Thank you.

Very truly yours,

Handwritten signature of Wynne M. Ushigome in cursive.

WYNNE M. USHIGOME
Deputy County Engineer

DH
cc: SSFM



SSPM INTERNATIONAL, INC.
501 Sunset Blvd, Suite 1022
Hollywood, CA 90028
Phone: (800) 851-7344
Fax: (800) 851-7344

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

SIGN-IN SHEET

PROJECT: Kapu'e-Keala Bike & Pedestrian Path Basis of Design Project
DATE: December 12, 2002 Time: 3:00 p.m.
PURPOSE: Meeting with Kanae Heritage & Coastal Trail Committee
MEETING SITE: Kanae County Building, 2nd Floor

1. Name Organization	Sten Yata consarway	Phone: Fax	335-3558
2. Name Organization	NANCY McHATTIN DLNR - SHPD	Phone: Fax	742-7233 742-7229
3. Name Organization	LAURIE HO USDA - Resource Conserv. & Develop	Phone: Fax	246-0091 246-1719
4. Name Organization	DENNIS ALKIRE HAWAIIAN AGENCY	Phone: Fax	241 684 6815
5. Name Organization	DAVID J. BARTON DAVID DE KAMU	Phone: Fax	141 6300
6. Name Organization	Robert Messel, Jr.	Phone: Fax	822-2058 Sum
7. Name Organization	JOAN CARVALHO RECYCLE JC SambaLara Flores SAU	Phone: Fax	245-2600 246-9170
8. Name Organization	Nelani Bruen Econ. Dev. - Mayor's office	Phone: Fax	241-6390 241-6399

SIGN-IN SHEET (Page 2)

PROJECT: Kapu'e-Keala Bike & Pedestrian Path Basis of Design Project

9. Name Organization	Quint's Tom Lilikoi Business Assoc Bank of Hawaii	Phone: Fax	241-5200 245-5921
10. Name Organization	KODIUSAKU SSPM INTERNATIONAL	Phone: Fax	531-1308 531-7344
11. Name Organization		Phone: Fax	
12. Name Organization		Phone: Fax	
13. Name Organization		Phone: Fax	
14. Name Organization		Phone: Fax	
15. Name Organization		Phone: Fax	
16. Name Organization		Phone: Fax	
17. Name Organization		Phone: Fax	
18. Name Organization		Phone: Fax	



SSFM 2001_156,000
Kapa-Kealia Bike and Pedestrian Path

Notes From Kaula Health & Heritage
Coastal Trails Committee Meeting
Held On December 12, 2002

Page 2

January 3, 2003

SSFM INTERNATIONAL, INC.
501 Summer Street, Suite 302
Honolulu, Hawaii 96813-1308
Phone: (808) 521-1308
Fax: (808) 521-7348
Project Managers, Planners, & Engineers
American Consulting Engineers Council Member

SSFM 2001_156,000



January 3, 2003

KAAPA'A-KEALIA BIKE AND PEDESTRIAN PATH
Presentation to
Kaula's Health and Heritage Coastal Trail Committee

December 12, 2002, 3:00 p.m.
Kaula County Building
Conference Meeting Room #1

Purpose: To present the improvements planned by the County and to obtain comments on the project and Draft Environmental Assessment published. A sign-up sheet is included of those attending.

Presentations: Mr. Ronald Sato of SSFM International, Inc. gave a PowerPoint presentation which summarized the outcome of prior public meetings held on July 25th and August 27th, described the proposed improvements, physical constraints along the path corridor based upon the Draft Environmental Assessment, and the project status and implementation schedule. Following the presentation, questions and comments on the project were obtained.

SUMMARY OF COMMENTS ON PROJECT AND DRAFT EA:

1. Person asked if grades along the pathway could be kept to less than 5 percent. Mr. Haigh responded that the grades should try not to exceed 5 percent, and further elaborated that the Kuumukunu Stream Bridge replacement would be the most challenging improvement in the area to the north and that the Lydgate Park Project posed more serious grade issues than this.
2. Concerns were expressed about the detrimental aesthetic effect of having handrails on both sides of the path. Mr. Haigh clarified that safety rails are only required if the grade is between 5 and 8 percent, and that the grade will try not to exceed this.
3. Concerns were expressed about the potential conflict of homeowner vehicles and path users in the area of the County pool. Mr. Haigh responded that this situation could be handled with signage as was done at Lydgate Park.
4. In regards to possible equestrian use along the path, one attendee expressed concern that there might be potential conflicts between horses and guide dogs for the disabled. Another attendee dismissed this concern and stated his opinion that horses in the area are used to being around dogs.

5. Positive comments were received on the proposed improvements for Kealia Lookout, and the new proposed access point was believed to be safer than the existing one.
6. Mayor Baptiste asked if the Kapa'a Cane Haul Bridge in the Kealia Beach section of the path could be improved with wider flares to accommodate fishing as it is proposed with the Moitaha Canal Bridge. Mr. Sato responded that this can be accommodated.
7. The Kealia Beach improvements were discussed in regards to the two new proposed access points. Mr. Haigh explained that the State DOT does not have enough funding to make the full improvements (left turn holding lanes and right-turn deceleration lanes) to both access points. As a result the County will have to pay for some improvements to the northern access point, across from Kealia Road.
8. One attendee asked whether the path ends before the Homatikawaa Bridge washout. Mr. Haigh confirmed that it does.
9. In regards to discussions about the pathway width, Mr. Haigh commented that if the path is less than 10 feet in width then cyclists may be required to disembark due to user conflicts.
10. One attendee asked why the equestrian lane was 4 feet wide and the separation buffer 5 feet wide. Mr. Sato responded that this trail width and buffer was recommended by the trail committee. Mr. Sato further clarified that the equestrian lane could be separated from other pathway users either by a 5-foot-wide buffer or by safety rails, and that these measures would not be required to occur simultaneously.
11. One attendee asked if the project team had studied the layout of the pathway system at Arcadia National Park. That park uses crushed rock pathways to accommodate multiple uses, including horse-drawn carriages, and that pathways incorporate stone walls and bridges. In light of this discussion, it was asked if there had been any discussion of using rock walls in lieu of guardrails or safety rails for aesthetic reasons. Mr. Misawa and Mr. Haigh indicated that a significant amount of discussion has been generated regarding the types of material that could be used to preserve or enhance the aesthetics of the pathway, preserve scenic views and meet the safety requirements. Mr. Misawa emphasized that there is still a great deal of flexibility regarding potential materials, noting that the Health and Heritage Trails Committee recommended the use of recycled plastic lumber for fences along the pathway. Mr. Misawa stated that the Design RFP could indicate that a variety of potential materials may be acceptable for consideration by the County.
12. In regards to a question about specific interpretative signage, Mr. Haigh clarified that these items will likely be determined during the design of the project.
13. Nancy McMahon of DLNR-SHPD discussed historic preservation issues and submitted written comments and recommendations as an addendum to her previous review of the project.



SSFM INTERNATIONAL, INC.
801 Summer Street, Suite 202
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Toll-free Fax: (800) 887-4668

Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

Project: Kapaa-Kaalia Bike and Pedestrian Path Basis of Design
Public Informational Meeting - December 12, 2002
Comments Draft Environmental Assessment (EA)

Organization: DLNP - STPD / Kani: Heheue + Hahaione
Name: NAHEU MOHEHEUE
Address: Koloa, HI

Comments: In my official review I forgot to add the following: Kapaa Park where getting there is a natural (done w/ Park Dept) Kawahau Road sign is relocated (DOT project) Sites in Kaalia Kai not listed Pineapple Dump - is historic site! Hahaione Pt = Possible Sites more info needed.
Buccal Preserve - Proposed Implementation a previously approved plan!
Recommendations: 1. Arch Monitoring Plan
2. Buccal Treatment - Pres. in Place
How to handle water treatment
3. Data Recovery = where contaminated
see computer ad to take place
4. Presentation Plan -
- Interpretation - Signage
- Implement Kaalia Buccal Preserve Plan!



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Project Managers, Planners, & Engineers
American Council of Engineering Companies, Member

SIGN-IN SHEET

PROJECT: Kapaa-Kaalia Bike & Pedestrian Path Basis of Design Project
DATE: Thursday, December 12, 2002 TIME: 7:00 p.m.
PURPOSE: Public Informational Meeting - EA Comments
MEETING SITE: Kapaa Neighborhood Center, Kapaa, Kauai

1. Name	Address	Phone	Fax
WAYNE + BIRGIT SAMA	4179 LANI RD. KAPAA	821-1017	821-1017
NAHEU MOHEHEUE	2197-A Koloa Rd Koloa HI 96754	821-4880	821-4880
DALE ROSENFIELD	PO Box 3213 Lihue HI 96746	822-2909	822-2909
THOMAS NOYES	PO Box 3213 Lihue HI 96746	659-1018	822-5075
MICHAEL O'DONNELL	900 Koloa Hwy	631-9013	
KEVIN MOHEHEUE	Keolu		
MELODY KACKUNTER	Keolu		
PAUL 2107 KAPAA		822-9215	
PAT GRIFFIN			
LORENA KALINA R. KAPAA		808-639-1014	822-9275
JOHN McFARLANE - K112C			
36 LANA ST KAPAA		639-9502	

SIGN-IN SHEET (Page 2)

PROJECT Kapua'e-Kaala Bikes & Pedestrian Path Basis of Design Project

9. Name	Gordon Deo	Phone	822-3171
Address	1611 Pepee St Kapaa, HI	Fax	
10. Name	AL ARTESON	Phone	639-0930
Address	PO BOX 1491, HAWAII	Fax	826-6704
11. Name	Ken Rabot	Phone	822-4613
Address	593A Kapuni - Kapaa	Fax	
12. Name	Phewa N. Nunnally	Phone	822-5895
Address	Po Box 3538, Lihua, HI 96766	Fax	
13. Name	Kevin Gosselin	Phone	822-0426
Address	5034 Halelio Rd Kapaa	Fax	
14. Name	Ray Cargant	Phone	822-1150
Address	6221 Ololani	Fax	
15. Name	BRUCE E. STRECK	Phone	468-6423
Address	1541-7 WARD LANE	Fax	262-8925
16. Name	SCOTT W. FERGUSON	Phone	822-3067
Address	4457 KAHALOHA KAPAA	Fax	
17. Name	Joe Rosq	Phone	845-3016
Address	4611 Koko St Kapaa	Fax	
18. Name	ADAM O'NEILL	Phone	822-0998
Address	5920 Kuni Rd Pepee	Fax	

SIGN-IN SHEET (Continued)

PROJECT Kapua'e-Kaala Bikes & Pedestrian Path Basis of Design Project

Name	Linkey Phelps	Phone	821-0867
Address	1520 Nolele Pl. Kapaa	Fax	
Name	DORRANCE A. LONG	Phone	822-4804
Address	5339 Kala Moku	Fax	
Name	HARRY SWICEMUND	Phone	823-8315
Address	Po Box 226 KAPAA HI	Fax	
Name	ARTHUR DE FROES	Phone	822-5863
Address	P.O. Box 42, Aunahi, HI 96721	Fax	
Name	BEV BRODY	Phone	828-2027
Address	PO BOX 392, KIUEA, 96757	Fax	
Name	CHERYL SHARMS	Phone	846-4668
Address	PO BOX 1214, LIHUA 96766	Fax	845-7811
Name	Clyde Furumoto	Phone	823-0122
Address	POB 51032 Keolu 96751	Fax	
Name	1011 E. COBBL	Phone	241-6610
Address	4444 OLOE ST. LIHUA, HI 96766	Fax	241-6614
Name		Phone	
Address		Fax	
Name		Phone	
Address		Fax	

845-7811
along



SSFM INTERNATIONAL, INC.
501 Surfer Street, Suite 202
Honolulu, Hawaii 96817
Phone: (808) 531-1306
Fax: (808) 531-1348
Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

January 3, 2003

SSFM 2001_156.000

KAPA'A-KEALIA BIKE AND PEDESTRIAN PATH
Summary of Third Public Informational Meeting

December 12, 2002
7:00 p.m.

Kapa'a Neighborhood Center

Purpose:

To present the improvements planned by the County and to obtain public comments on the project and Draft Environmental Assessment published. A sign-up sheet is included of those attending. In addition, there were other individuals who arrived after the meeting started and did not sign the sheet.

Introduction:

Mr. Doug Haigh of the County Department of Public Works (DPW) opened the meeting. A representative of Kapa'a's Health and Heritage Coastal Trail Committee was allowed to give a PowerPoint presentation of their group's vision for a 90-mile coastal bicycle-pedestrian pathway running from Ke'e Beach at Hana in the north to Polihale in the southwest. This Committee was formed in May 1999, and members included representatives of Kauri business organizations, the visitor industry, non-profit organizations, and Federal, State and County agencies. The pathway was named Ke Ala Hele Makalae and the first phase was planned to span approximately 17 miles from Nawiliwili to Anahola. The proposed Kapa'a-Kealia path project represents a portion of this 17-mile segment of the entire pathway. The major goals for this pathway was to promote health and fitness, enhance access to culturally significant areas, preserve historic railroad corridors, provide alternative transportation routes, and protect shoreline access for residents and visitors, including those with mobility impairments.

Presentation:

Mr. Ronald Sato of SSFM International, Inc. gave a PowerPoint presentation which summarized the outcome of prior public meetings held on July 25th and August 27th, described the proposed improvements, physical constraints along the path corridor based upon the Draft Environmental Assessment, and the project status and implementation schedule. Following the presentation, Ms. Berna Cabacungan of SSFM's project team facilitated the discussion of questions of clarification and comments on the project by the public.



Page 2

January 3, 2003

SUMMARY OF QUESTIONS FOR CLARIFICATION:

An opportunity was provided for the public to first ask questions to help clarify the information presented to them or on the improvements being proposed. A summary of these questions is discussed below.

1. Questions were raised to clarify the improvements planned for the path such as the surface color, clarification of multiple users of the path, the width and path material, and path restrictions or permit requirements for users. The path design would be based upon AASHTO design requirements and the County's design guidelines for multi-use paths developed as part of their Lydgate path project. The path would support multiple users such as pedestrians, bicyclists, skaters, children, be ADA compliant, and consideration is being given to allow limited equestrian use. Appropriate signage would be provided to inform the public of allowable users, and no use permits would be required. The width of the path may be less than 12 feet-wide, and concrete materials and surface color would be considered as part of the project's design and construction funding availability. Inquires were made as to who from the County was initiating this project along with who the consultants were, their experience, and the funding for this effort. Mr. Haigh of the County's is managing this project and obtained \$375,000 in funding for this planning study and environmental documentation effort. SSFM International, Inc. is conducting this planning study, and has assembled a diverse project team with experience working on trail projects, and to assist with the planning and environmental documentation effort. Inquires about other associated path improvements and amenities addressed the location of comfort stations at Kealia Beach, the length of construction for Waikaka and Moikcha Canal Bridges, ownership of property where improvements will occur, planning of native plant species along path, and maintenance of the improved path. Construction activities at the bridges would be dependent upon the contractor and may occur for about three months each. Comfort station is planned at the northern end of Kealia Beach where most of the public congregate, however, another station at the southern end may be considered in the future. The County owns the shoreline property where improvements will occur, and their Division of Parks and Recreation would maintain the path. Planting of native plant species would be incorporated where feasible as part of the project's design. Some questions were raised as to the need to improve the cane haul road path since it has been there for many years and is already being used. Other questions were on the rationale for implementing the northern section first, why the alternate road through Kapa'a was not being built, and the warning light idea along Kubio Highway near Kealia Beach. The cane haul road is old and in deteriorating condition, and thus needs to be
- 2.
- 3.
- 4.

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Kapa'a-Kealia Bike and Pedestrian Path
Notes From 3rd Public Informational Meeting
Held On December 12, 2002



January 3, 2003

improved to provide a smooth and safe path for existing users along with making accessible to a wider range of people such as children, parents with strollers, and ADA compliant. County funding for the northern section of the route has already been established through land dedications making it a priority to implement first, and because the existing path in Kapa Town is already improved to some degree. The warning light for Kuluio Highway is a vehicular traffic operations issue that needs to be addressed by the State Department of Transportation (DOT), and the alternate road plex through Kapa is similarly a State DOT project.

5. Questions were also raised to clarify potential equestrian use of the path being considered which included whether equestrian use now occurs, how such use would affect other path users such as senior citizens, sanitation provisions for horses, and references used in determining equestrian design accommodations. Others included whether equestrian use would affect the project scheduling, and methods to separate equestrian from other users. Equestrian use does occur now along some portions of the route, and the County is considering how to accommodate this use and prevent conflicts with other users such as senior citizens and children. Accommodating such use should not affect the implementation schedule, but it will require some form of divider from the multi-use path such as vegetation, guardrails, or berms which are being evaluated along with potential additional project costs. The right-of-way and design requirements for this use would be based upon AASHTO guidelines and information provided by equestrian organizations, and sanitation issues would need to be resolved with such organizations.

SUMMARY OF PUBLIC COMMENTS ON PROJECT AND DRAFT EA:

An opportunity was also provided for the public to provide their comments on the proposed improvements and Draft Environmental Assessment which would be reviewed and evaluated by the County. A summary of these comments is discussed below.

1. Commented that individual hasn't seen 12-foot-wide multi-use trails before, and was concerned making it so expensive may kill the project since it can't be built. Also concerned that the wide path may allow for speeding by bicycles.
2. Pier improvements planned for Waikaeae Canal Bridge may not physically allow only a portion of the pier to be removed.
3. Concerned about horse manure from equestrian use running off into the ocean and its impact on nearby surfing areas.
4. Enjoys the recent Lydgate Park improvements, and was looking forward to planned path improvements which will make area more accessible to all and provide economic benefit to the island as a destination.



January 3, 2003

5. Questioned what was wrong with the existing path, and wasn't clear what is meant by a multi-use path.
6. Commented why the County can't improve the shoreline.
7. Would like the comfort station at Kealia Beach being located closer to the beach.
8. Stated this project represents a great opportunity to be pro-active.
9. Believed concrete was the best long-term surface to use for the pathway.
10. Believed the project will be good for families and will benefit the entire community.
11. Thought concrete was ugly and preferred AstroTurf.
12. Thought this project would be low on the priority list for the County if a poll were taken amongst residents.
13. Concerned that accidents were inevitable if no center line was maintained along the path. Questioned who will be responsible for these accidents, and believes the pathway presents a huge maintenance problem.
14. Believed Waikaeae Canal Bridge improvements will permanently disrupt historic use by local traffic.
15. Concerned that senior citizens and disabled users will be precluded from using path if no motorized vehicles are allowed, and this will also prevent them from fishing at Kealia Kai Subdivision area.
16. Concerned about people loitering at the northern section of the pathway and becoming a problem.
17. Believed police protection was needed to keep the pathway safe.
18. Likes the idea of having a recreational trail for "muscle power".
19. Would like the County to make the best use of funding available for project.
20. Commented that equestrians have historically used the path between Oisuka's and the northern end of the project. Indicated they have a petition containing the signatures of over 300 horse advocates supporting the continued use of this area for equestrian uses. Believed that horse manure dries quickly, blows away, and is eaten by chickens to respond to other concerns raised about sanitation from equestrian use. Indicated that there are more bike-to-bike accidents than horse-to-pedestrian or horse-to-bike accidents.
21. Believed that horse manure dries quickly, blows away, and is eaten by chickens to respond to other concerns raised about sanitation from equestrian use.
22. Felt that a concrete path was ugly but can be dyed or stained to address this, and it can quickly become the same color anyway due to soil runoff from the surrounding area.
23. Commented that other trails/pathways have successfully included equestrian uses.
24. Commented that bicycling has increased in popularity substantially over time.

APPENDIX B-5

PROGRAMMATIC SECTION 4(F) DETERMINATION

HAWAII DIVISION
 FEDERAL HIGHWAY ADMINISTRATION
PROGRAMMATIC SECTION 4(f) DETERMINATION AND APPROVAL
 UNDER THE
 NATIONWIDE PROGRAMMATIC SECTION 4(f) EVALUATION
 AND APPROVAL FOR FHWA PROJECTS THAT NECESSITATE
 THE USE OF **HISTORIC BRIDGES**
 (JULY 5, 1983)

PROJECT NUMBER: STP 0700(48) Kapaa-Kealia Bike & Pedestrian Path
 BRIDGE NAME: Kapaa Stream Bridge (Makai) BRIDGE ID: #50-30-08-789A, Subfeature 1
 ROUTE: Hwy 56 MILEPOST: N/A COUNTY: Kauai

Instructions: Consult the Nationwide Section 4(f) Evaluation as it relates to the following items. Complete all items. Any response in a shaded box requires additional information prior to approval. This Section 4(f) determination will be attached to the applicable EA, FONSI, or Categorical Exclusion.

Eligibility Criteria	Yes	No
1. Will the bridge be replaced or rehabilitated with Federal Funds?	X	
2. Will the project require the "use" ¹ of a historic structure which is on, or eligible for listing on, the National Register of Historic Places?	X	
3. Has the bridge been determined to be a National Historic Landmark?		X
4. Is the environmental documentation an Environmental Impact Statement?		X

Alternatives Considered	Yes	No
5. Have all of the following alternatives, to avoid any use of the historic bridge been evaluated? ²	X	
A. Has the "Do Nothing" alternative been studied and been determined, for reasons of maintenance and safety, not to be feasible and prudent?	X	
B. Has the "Build on New Location Without Using the Old Bridge Alternate" been studied and been determined, for reasons of terrain, and/or adverse social, economic or environmental effects, and/or engineering and economy, and/or preservation of the old bridge, not to be feasible and prudent?	X	
C. Has rehabilitation of the existing bridge without affecting the historic integrity of the bridge been studied and has it been determined, for reasons of structural deficiency and/or geometrics, that rehabilitation	X	

is not feasible and prudent?		
------------------------------	--	--

Measures to Minimize Harm When an item does not apply indicate with N/A	Yes	No
6. Has the project included all possible planning to minimize harm, including the following:	X	
A. For bridges that are adversely affected; have the FHWA, SHPO, and ACHP reached agreement [Memorandum of Agreement (MOA)] through the Section 106 process, and this MOA includes Stipulations which amount to Measures to Minimize Harm, and those measures will be incorporated in the project?	X	
B. For bridges that are to be rehabilitated to the point that the historic integrity is affected or that are to be moved or demolished have fully adequate records been made of the bridge in accordance with the Historic American Engineering Record (HAER) or other suitable means developed through the Section 106 consultation?	X	
C. For bridges that are to be replaced; has the existing bridge been made available for an alternate use, provided a responsible party agrees to maintain and preserve the bridge? ³ <i>(If the project is a rehabilitation project, write N/A for this question.)</i>	N/A	
D. For bridges that are to be rehabilitated and there is an "Adverse Effect" ⁴ on the historic integrity of the bridge, is the historic integrity preserved to the greatest extent possible, and consistent with unavoidable transportation needs, safety, and load requirements? <i>(If the project is a replacement project, write N/A for this question.)</i>	X	

Notes
¹ Definition of Use: The action will impair the historic integrity of the bridge either by rehabilitation or demolition. Where the definition of impair is to diminish the qualities that made it eligible for the National Register of Historic Places. (Federal Register, Vol 48, No. 163, dated Monday, August 22, 1983)
² Consult the Nationwide Programmatic Section 4(f) Evaluation for the generic (not prudent and feasible) reasons that might be addressed. (Federal Register, Vol 48, No. 163, dated Monday, August 22, 1983) The evaluation of alternatives for the subject project, however, must quantify those reasons as applicable and be supported by the circumstances of the project.
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⁴ When it has been determined by FHWA in consultation with the SHPO and ACHP that the rehabilitation work will result in "No Effect" or "No Adverse Effect" on the historic integrity of the structure, the provisions

DETERMINATION AND APPROVAL:

Based on the environmental documentation and analysis, the results of public and agency consultation and coordination, the FHWA has determined that :

The project meets the applicability criteria set forth in the Nationwide Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges dated July 5, 1983;

All of the alternatives set forth in the Findings section of the above Nationwide Section 4(f) Evaluation have been fully evaluated. Based on the Findings, it is determined there is no feasible and prudent alternatives to the use of the Historic Bridge; and

The project complies with the Measures to Minimize Harm Section of the Nationwide Section 4(f) Evaluation; and agreement between FHWA, SHPO and ACHP has been reached.

Accordingly, the FHWA approves the proposed use of the historic bridge for construction under the above Nationwide Section 4(f) Evaluation issued on July 5, 1983.

7-29-03
Date Approved


Federal Highway Administration

HAWAII DIVISION
 FEDERAL HIGHWAY ADMINISTRATION
PROGRAMMATIC SECTION 4(f) DETERMINATION AND APPROVAL
 UNDER THE
 NATIONWIDE PROGRAMMATIC SECTION 4(f) EVALUATION
 AND APPROVAL FOR FHWA PROJECTS THAT NECESSITATE
 THE USE OF HISTORIC BRIDGES
 (JULY 5, 1983)

PROJECT NUMBER: STP 0700(48) Kapaa-Kealia Bike & Pedestrian Path
 BRIDGE NAME: Moikeha Canal Bridge (Makai) BRIDGE ID: #50-30-08-2078, Feature
C
 ROUTE: Hwy 56 MILEPOST: N/A COUNTY: Kauai

Instructions: Consult the Nationwide Section 4(f) Evaluation as it relates to the following items. Complete all items. Any response in a shaded box requires additional information prior to approval. This Section 4(f) determination will be attached to the applicable EA, FONSI, or Categorical Exclusion.

Eligibility Criteria	Yes	No
1. Will the bridge be replaced or rehabilitated with Federal Funds?	X	
2. Will the project require the "use" ¹ of a historic structure which is on, or eligible for listing on, the National Register of Historic Places?	X	
3. Has the bridge been determined to be a National Historic Landmark?		X
4. Is the environmental documentation an Environmental Impact Statement?		X

Alternatives Considered	Yes	No
5. Have all of the following alternatives, to avoid any use of the historic bridge been evaluated? ²	X	
A. Has the "Do Nothing" alternative been studied and been determined, for reasons of maintenance and safety, not to be feasible and prudent?	X	
B. Has the "Build on New Location Without Using the Old Bridge Alternate" been studied and been determined, for reasons of terrain, and/or adverse social, economic or environmental effects, and/or engineering and economy, and/or preservation of the old bridge, not to be feasible and prudent?	X	
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reasons of structural deficiency and/or geometrics, that rehabilitation is not feasible and prudent?		
--	--	--

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B. For bridges that are to be rehabilitated to the point that the historic integrity is affected or that are to be moved or demolished have fully adequate records been made of the bridge in accordance with the Historic American Engineering Record (HAER) or other suitable means developed through the Section 106 consultation?	X	
C. For bridges that are to be replaced; has the existing bridge been made available for an alternate use, provided a responsible party agrees to maintain and preserve the bridge? ³ <i>(If the project is a rehabilitation project, write N/A for this question.)</i>	N/A	
D. For bridges that are to be rehabilitated and there is an "Adverse Effect" ⁴ on the historic integrity of the bridge, is the historic integrity preserved to the greatest extent possible, and consistent with unavoidable transportation needs, safety, and load requirements? <i>(If the project is a replacement project, write N/A for this question.)</i>	X	

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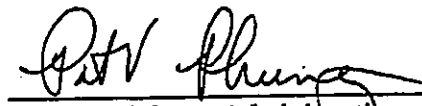
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The project complies with the Measures to Minimize Harm Section of the Nationwide Section 4(f) Evaluation; and agreement between FHWA, SHPO and ACHP has been reached.

Accordingly, the FHWA approves the proposed use of the historic bridge for construction under the above Nationwide Section 4(f) Evaluation issued on July 5, 1983.

7-29-03
Date Approved



Federal Highway Administration

HAWAII DIVISION
 FEDERAL HIGHWAY ADMINISTRATION
PROGRAMMATIC SECTION 4(f) DETERMINATION AND APPROVAL
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 (JULY 5, 1983)

PROJECT NUMBER: STP 0700(48) Kapaa-Kealia Bike & Pedestrian Path
 BRIDGE NAME: Waikaea Canal Bridge (Makai) BRIDGE ID: #50-30-08-2078, Feature
A
 ROUTE: Hwy 56 MILEPOST: N/A COUNTY: Kauai

Instructions: Consult the Nationwide Section 4(f) Evaluation as it relates to the following items. Complete all items. Any response in a shaded box requires additional information prior to approval. This Section 4(f) determination will be attached to the applicable EA, FONSI, or Categorical Exclusion.

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7-29-03
Date Approved

Pat V. Shure
Federal Highway Administration

APPENDIX C

COASTAL EVALUATION MASTER PLAN AND ENVIRONMENTAL ASSESSMENT

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**COASTAL EVALUATION FOR THE
KAPAA-KEALIA BIKE PATH
MASTER PLAN AND ENVIRONMENTAL ASSESSMENT**

September, 2002

Prepared for:

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1. INTRODUCTION

1.1 Project Location and General Description

The County of Kauai is planning to build a bike and pedestrian path from Waikaea Canal to Kuna Bay (Donkey Beach) along the eastern coast of Kauai. The path is intended to connect the existing Kapaa bike/pedestrian path to the abandoned cane haul road, and convert the cane haul road to a bike and pedestrian path. Because the proposed path closely parallels the shoreline, Sea Engineering completed a coastal evaluation of the entire route. The work included compilation and review of existing coastal information on the area, a field investigation of the existing shoreline condition and characteristics, an evaluation of wave hazards and shore protection needs, and a description of the oceanographic environmental setting.

The proposed bike route extends from Waikaea Canal in south Kapaa to Kuna Bay (Donkey Beach) north of Paliku Point, a distance of approximately 3 miles. The shoreline along the route changes from narrow sand beaches protected by broad fringing reef, to wide exposed sandy beaches to rocky shorelines and sea cliffs. The bike path alignment, in turn, varies from being well set back from the shore, to following the edge of a sea cliff. Figures 1 and 2 are a map and aerial photograph showing the project location and physical geographic features of the site.

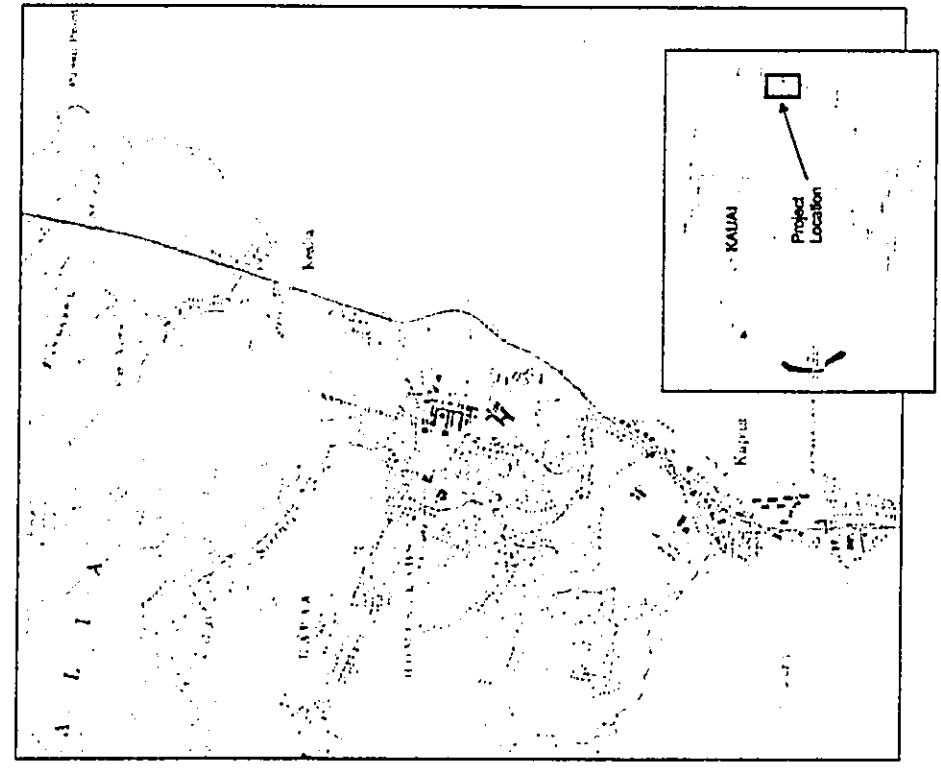


Figure 1 – Project Location on Kauai



Figure 2 – Aerial Photograph of Project Site

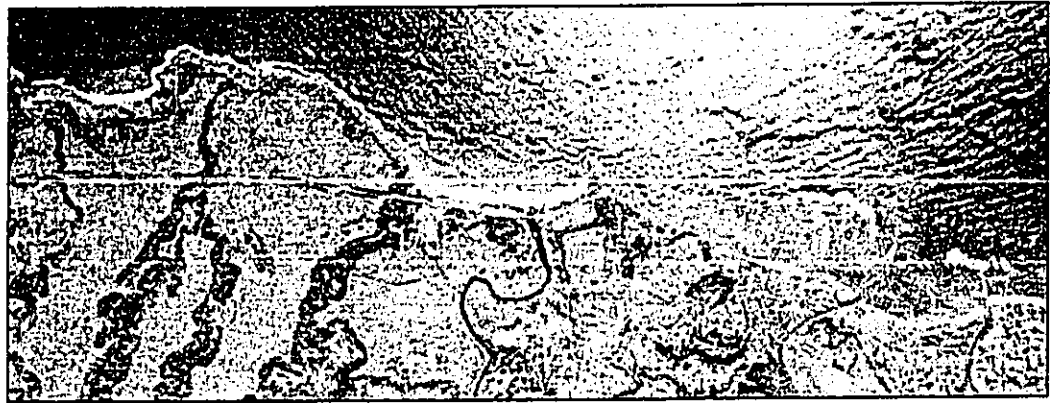


Figure 2 – Aerial Photograph of Project Site

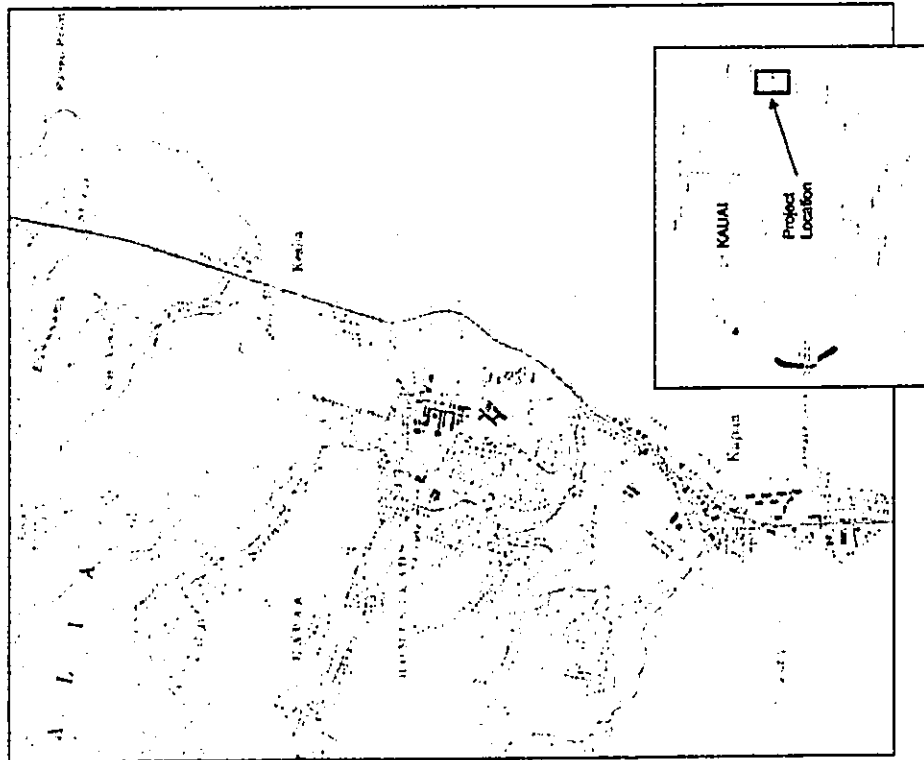


Figure 1 – Project Location on Kauai

Table 1. Annual Percent Frequency Distribution for Winds at Lihue Airport (1950 - 1995)

16 PL Dir.	SPEED													Total Percent	Mean Wind Speed					
	1-3	4-6	7-10	11-16	17-21	22-27	28-33	34-40	41-47	48-55	>=56									
N	0.2	1	1.5	0.8	0.1	.	.	.	.	.	.	.	.	.	0	0	0	3.4	8.1	
NNE	0.1	0.5	2.3	2.9	0.5	0.1	.	.	.	.	.	.	.	.	.	.	.	0	6.4	11.1
NE	0.1	0.8	8.5	18.1	2.1	0.2	.	.	.	.	.	.	.	.	.	.	.	0	28.3	12
ENE	0.1	0.8	8.2	18.1	2.7	0.2	.	.	.	.	.	.	.	.	.	.	.	0	28.9	12.2
E	0.1	0.6	2.9	4.2	0.8	.	.	.	.	.	.	.	.	.	.	.	.	0	8	11.1
ESE	0.1	0.4	0.8	0.3	.	.	.	.	.	.	.	.	.	.	.	.	.	0	1.8	9.4
SE	0.1	0.2	0.4	0.1	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.8	8.6
SSE	.	0.2	0.4	0.2	.	.	.	.	.	.	.	.	.	.	.	.	.	0	1	9.8
S	0.1	0.3	0.7	0.7	0.1	.	.	.	.	.	.	.	.	.	.	.	.	0	1.8	9.3
SSW	0.1	0.3	0.4	0.4	0.1	.	.	.	.	.	.	.	.	.	.	.	.	0	1.2	10.1
SW	0.1	0.5	0.7	0.5	0.1	.	.	.	.	.	.	.	.	.	.	.	.	0	2	9.8
WSW	0.2	1.3	0.7	0.3	0.1	.	.	.	.	.	.	.	.	.	.	.	.	0	2.7	7.1
W	0.5	3.9	1.8	0.1	.	.	.	.	.	.	.	.	.	.	.	.	.	0	6.2	5.7
WNW	0.3	2.4	0.9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	3.7	5.6
NW	0.2	0.7	0.2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	1.2	5.9
NNW	0.1	0.9	0.8	0.2	.	.	.	.	.	.	.	.	.	.	.	.	.	0	1.8	7
VAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	0	0
ALL	2.2	15.1	30.9	44.4	6.4	0.7	.	.	.	.	.	.	.	.	.	.	.	100	10.7	

* = PERCENT < .05

= EXCESSIVE MISSING DATA - VALUE NOT COMPUTED

Federal Climatic Complex Ashville

2. COASTAL ENVIRONMENTAL SETTING.

2.1 Bathymetry and Coastline

The project site is located on the windward shore of the island, directly exposed to tradewinds and tradewind-generated waves. The shoreline varies considerably along the bike path route, with sand beaches separated by rocky shorelines and sea cliffs. Along Kapaa, a narrow sand beach is protected by a wide, shallow fringing reef. The reef varies in width from 1,500 feet in the south to 500 feet to the north. A 2,500-foot long stretch of rocky shoreline separates Kapaa Beach from Kealia Beach. North of Kapaa, the fringing reef is not present. Tradewind waves break directly off the beach at Kealia, and the beach is relatively wide and flat. North of Kealia the shoreline typically consists of basalt outcrops with boulder and cobble beaches, backed by steep dirt and rock embankments.

2.2 Winds

The wind climate in Hawai'i is characterized by two distinct seasons, primarily defined by the annual variation in persistence of the northeast tradewinds. During the summer months around May through September, the tradewinds predominate, blowing out of the northeast 80 to 90 percent of the time with speeds generally from 10 to 25 mph. The winter season, from about November through March, is characterized by a weakening of the tradewind persistence and the occurrence of southerly or westerly winds as a result of localized low pressure and frontal systems. The months of October and April are generally considered to be transitional periods between seasons.

Table 1 is a histogram of the annual distribution of wind speeds and direction collected at the Lihue Airport between 1950 and 1995. The measurement location is approximately 7 miles south of the project site and has similar exposure. The data are provided by the International Station Meteorological Climate Summary (ISMCS, 1996). The data are based on two minute averages taken hourly for a 24-hour day.

About 70 percent of the annual winds were tradewinds from the northeast through east-southeast sectors with an average speed of 11 to 12 knots. The easterly tradewinds were most frequent in summer months. During Hurricane 'Iniki, in September 1992, the peak gust was 100 knots from the southwest.

2.3 Waves

The prevailing Hawaiian wave climate can be described by four primary wave types: northeast tradewind waves, North Pacific swell, south swell and Kona storm waves. The project area is partially sheltered from south swell and Kona storm waves by the island, and is exposed to North Pacific swell and northeast tradewind waves.

North Pacific swell is produced by severe winter storms in the Aleutian area of the North Pacific and by mid-latitude low-pressure systems. North swell may arrive in Hawaiian waters throughout the year, but it is largest and most frequent during the winter months of October through March. The North Pacific swell approach direction is from the west through north, with periods of 13 to 20 seconds and typical deepwater wave heights of 4 to 10 feet. Some of the largest waves reaching the Hawaiian Islands are of this type. The windward shoreline is partially sheltered from the approach of North Pacific swell, and only the more northerly of these swells arrive at the site.

In addition to the two primary wave types, infrequent tropical cyclones may generate large waves, which can impact any coastal area of Hawai'i.

The Scripps Institution of Oceanography has a wave buoy deployed 4.5 miles southeast of Mōkapu Point, O'ahu that has been measuring waves since August 9, 2000. This buoy provides wave data directly applicable to the project site, since the exposure at the two sites is the same. Data used were collected for the 20-month period between August 2000 and March 2002.

Northeast tradewind waves may be present in Hawaiian waters throughout the year, but are most frequent in summer months, when they dominate the wave climate on windward shores. They result from the strong and steady tradewinds blowing from the northeast quadrant over long fetches of open ocean. Typical deepwater tradewind waves have periods of 5 to 10 seconds and heights of 3 to 10 feet.

Table 2 shows the annual percent frequency distributions for waves measured at the buoy location. The wave height is a spectrally based significant wave height, which is derived from the reported energy spectrum. The wave period is associated with the highest energy in the reported spectrum.

During the 20-month duration, wave periods ranged from 4.0 to 22.2 seconds. Approximately 90 percent of waves had a wave period less than 12 seconds, indicating almost 90 percent of the reported waves were locally generated seas, and only 10 percent were swell (long period waves produced by distant storms).

2.3.1 Hurricane Waves

In any given year, one or more hurricanes can be expected to occur in the central North Pacific Ocean. Although hurricanes occur only infrequently in the immediate vicinity of Hawai'i, they do occasionally pass near the islands. Notable recent examples are Hurricane Iwa, which passed within 30 miles of Kaula'i in 1982, and Hurricane 'Iniki, which passed directly over Kaula'i in 1992. Because hurricanes directly impact the Hawaiian Islands at such infrequent intervals, it is difficult to calculate a statistically meaningful return period.

The report *Kauai Island Hurricane Vulnerability Study* (Sea Engineering, Inc., 2000) prepared for State of Hawai'i Department of Defense and U.S. Army Corps of Engineers, Pacific Ocean Division, considered the impact of four hurricane scenarios on the windward coast of Kauai.

The conditions considered included two hurricane intensities, typical and worst-case, and two approach directions, east-southeast and south-southwest, for a total of four scenarios. Calculated deepwater wave conditions for the coast under these scenarios varied about 17.8 feet with a period of 9.2 seconds to a worst case of 40.5 feet, with a period of 13.9 seconds.

Storms with hurricane intensity rarely pass directly north of the Hawaiian Islands. The most recent historical hurricane passing north of the islands was Hurricane Hiki in 1950.

2.3.2 Nearshore Wave Heights

As deepwater waves propagate toward shore, they begin to encounter and be transformed by the ocean bottom. The process of wave shoaling generally steepens the waves and increases the wave height. The refraction phenomenon will cause wave crests to bend and may locally increase or decrease the wave heights. Wave breaking occurs when the wave shape becomes too steep to be maintained. This typically occurs when the ratio of wave height to water depth is about 0.8, and is a mechanism for dissipating the wave energy.

As noted previously, nearshore wave heights are limited by the water depth. Water level rise due to wave setup or storm surge, added to high tide levels, will therefore increase the size of nearshore waves. For example, during a condition of spring high tide coupled with high north swell or tradewind waves, one can expect beach erosion because of both the increased wave height and increased accessibility of the shore to wave attack due to higher water levels.

2.5 Tsunamis

The Hawaiian Islands have a history of destructive tsunamis. Since 1819, 22 severe tsunamis have occurred, with wave heights at varying locations in Hawai'i ranging from 4 to 60 feet. Four tsunamis have occurred in recent history, occurring in 1946, 1957, 1960 and 1964. The tsunami wave height at any given Hawai'i coastline location during a given occurrence varies greatly. The height is affected by a number of factors including offshore bathymetry, coastal configuration, and exposure to the generating area. The 1946 and 1960 tsunami wave heights were 18 and 6 feet at Kealia, and ranged from 25 to 12 and 4.5 to 7 around Kapaa (Loomis, 1976).

Tables and methods in the *Manual for Determining Tsunami Runup Profiles on Coastal Areas of Hawai'i* (M&E Pacific, Inc., 1978) show the predicted 10-year tsunami wave height for the project area is 1.5 feet above mean sea level at a point 200 feet inland of the coastline. The methodology in the manual has been used to develop the shoreline classifications for the Flood Insurance Rate Maps (FIRM) for the state. Along the shoreline, the classifications are based on the 100-year tsunami. The FIRM map for the region shows that the shoreline along most of the bike path is classified Zone VE with a base flood elevation ranging from 9 to 22 ft. The Zone VE is a "Coastal High Hazard Area where wave action and/or high velocity water can cause structural damage in the 100-year flood," and is primarily identified as an area where a 3-foot or greater wave height could occur (FEMA, 1995).

3. EXISTING SHORELINE CONDITIONS

3.1 Kapaa Beach

The shoreline between Waikaea Canal and Kawaihau Road to the north consists of 6,000-foot long calcareous sand beach. The beach is typically 30 to 40 feet wide. Photos 1, 2 and 4 are representative of the beach configuration. Figure 3 is an aerial photograph showing the photo locations. A wide fringing reef is present that is up to 1500 feet wide north of Moikeha Canal. Large channels are cut through the reef offshore of Waikaea and Moikeha Canals. Both canal discharges are stabilized by rubble mound jetties extending across the beach.

The shoreline has a history of beach erosion, and seawalls and revetments have been built along portions of the beach to protect the backshore. Figure 4 presents the results of an aerial photographic analysis of shoreline erosion in the area (Makai Ocean Engineering and Sea Engineering, 1991). This analysis indicated about 60 feet of erosion between 1950 and 1988 (Transect 35 in Figure 4) immediately north of Waikaea Canal. A rock wall about 500 feet long has since been built in this area to protect the shoreline. The severity of the erosion decreases with distance to the north. The photographic measurements (Transects 36 and 37 in Figure 4) indicate that the shoreline has been more stable. However, during the site visit for the project, there was some evidence of erosion such as exposed tree roots, and scarps cut into the vegetation. A riprap revetment about 150 feet long has been built along the shoreline about 300 feet south of Moikeha Canal. There is no beach in front of this revetment at high tide.

The beach north of Moikeha Canal has a recent history of severe erosion (Transect 38 in Figure 4). In 1959, a borrow pit was dredged in the reef along 1200 feet of the shoreline about 100 feet offshore. Sand transported across the reef flat was trapped in this pit, resulting in severe erosion - up to 75 feet. A 900-foot long revetment was constructed in 1964 to prevent further erosion. The beach north of the revetment has accreted since 1953.

The proposed bike path route along this sector is located well back from the shoreline (Photo 3), and should have no impacts on the shoreline.

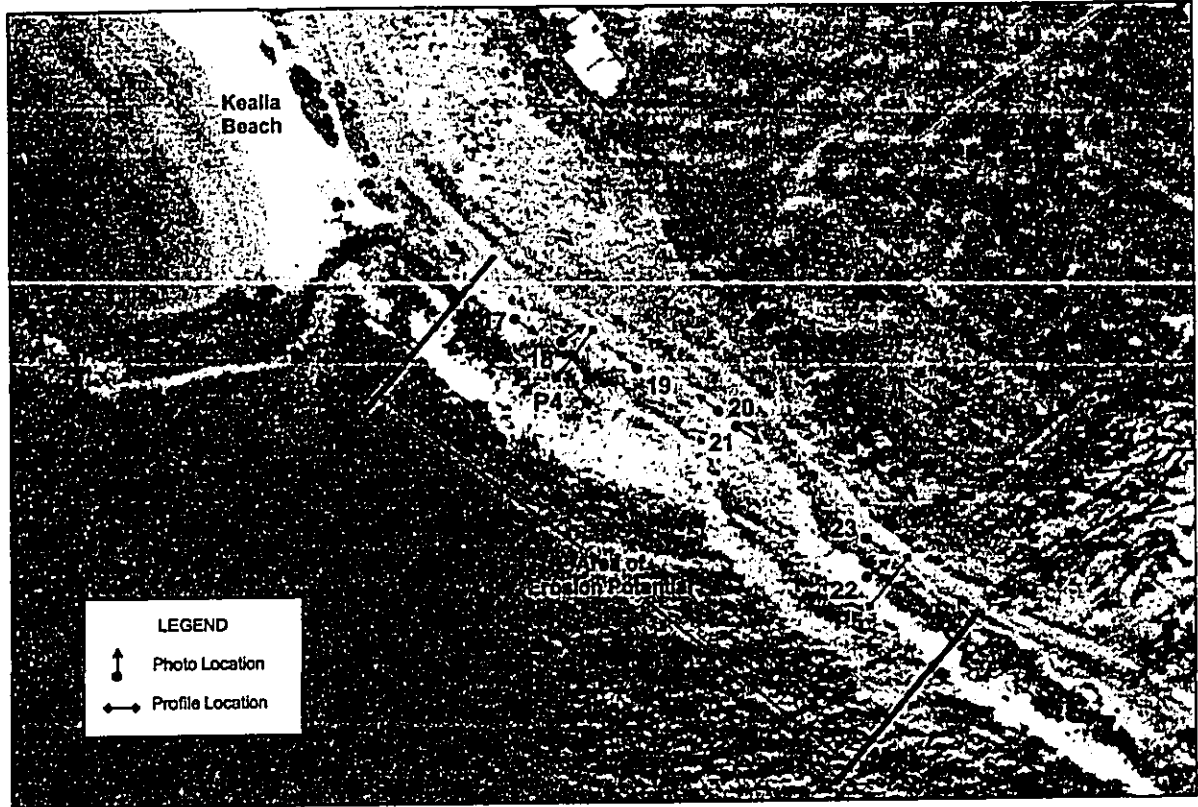


Figure 11 – Kealla Subdivision Area of Erosion Potential

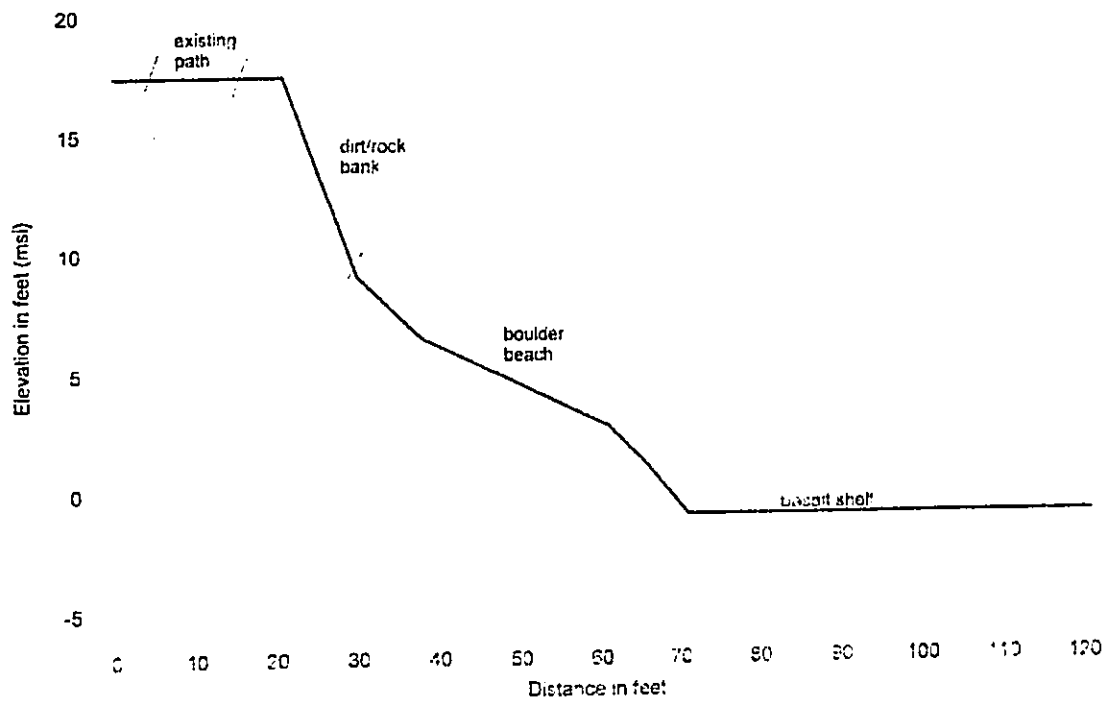


Figure 12 – Profile P4, Kealla Subdivision

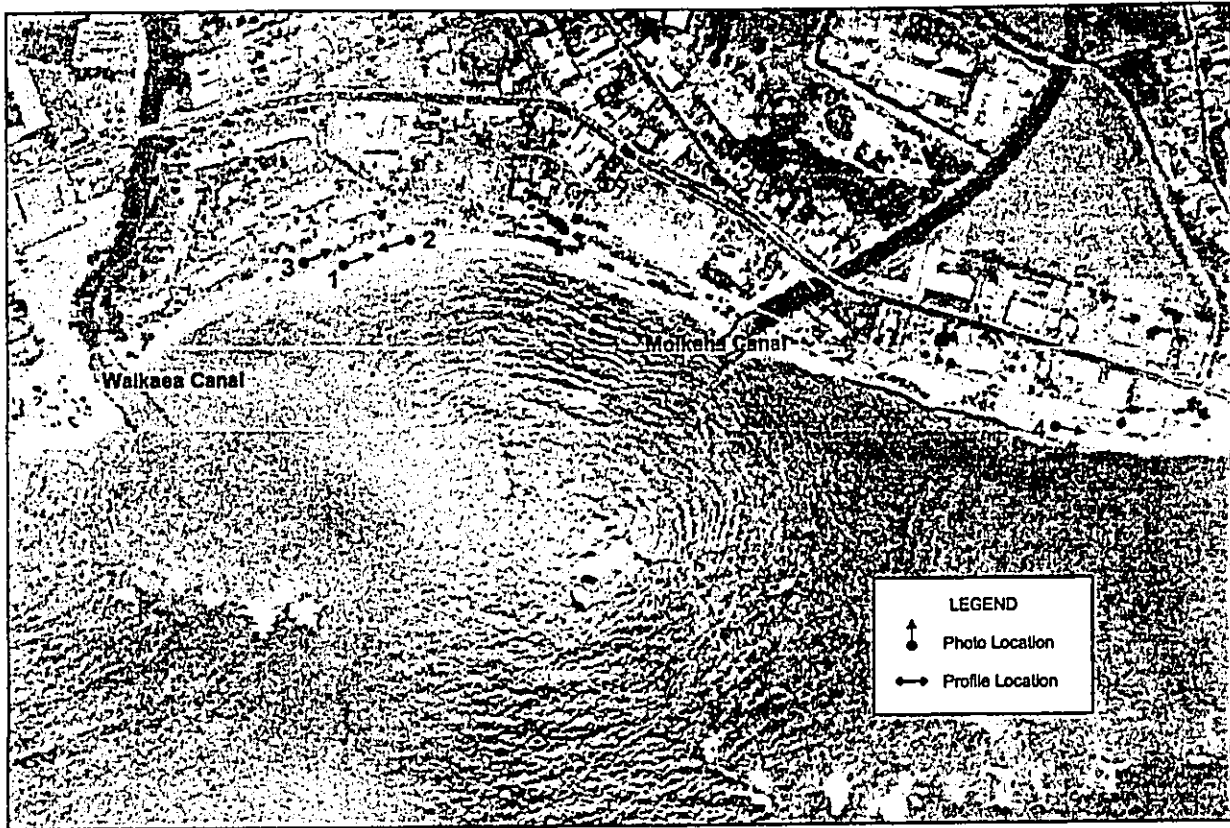


Figure 3 - Kapaa Beach

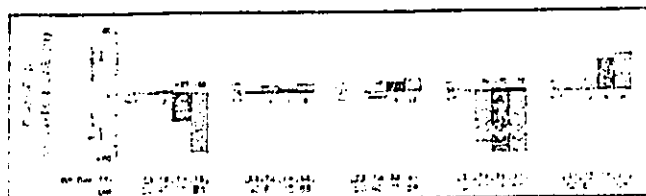
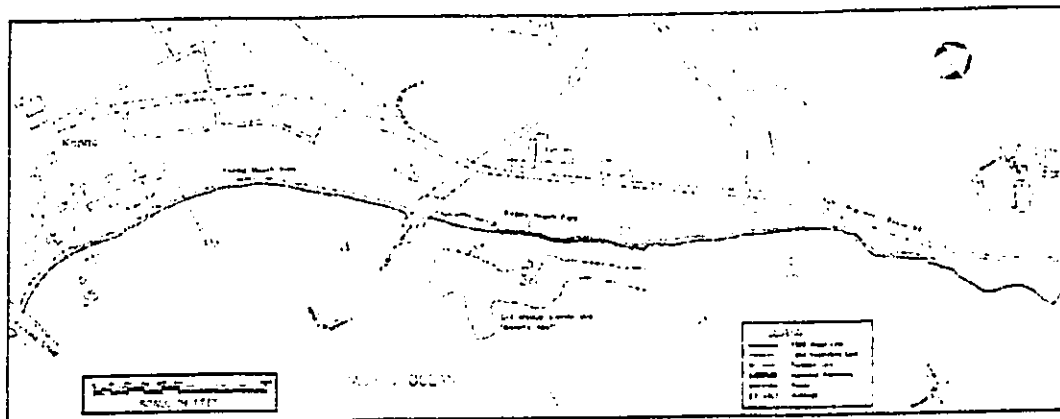


Figure 4 - Aerial Photograph Erosion Analysis of Kapaa Beach



Photo 1 - Kapaa Beach



Photo 2 - Kapaa Beach

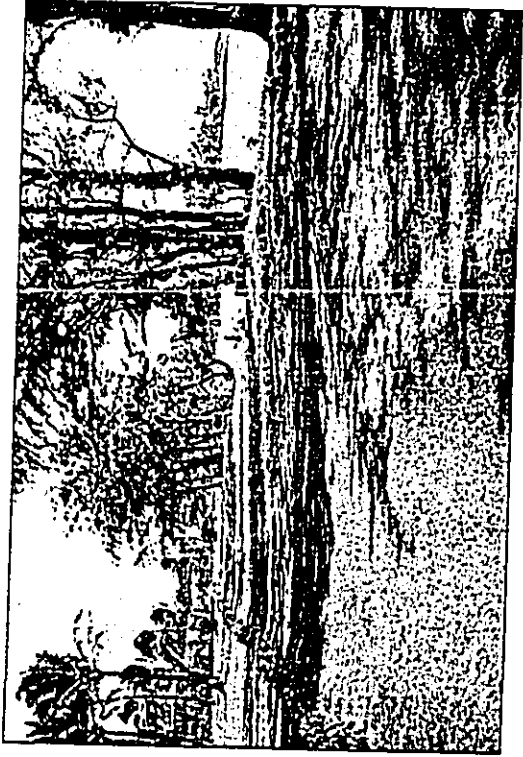


Photo 3 - Existing Path Along Kapaa Beach

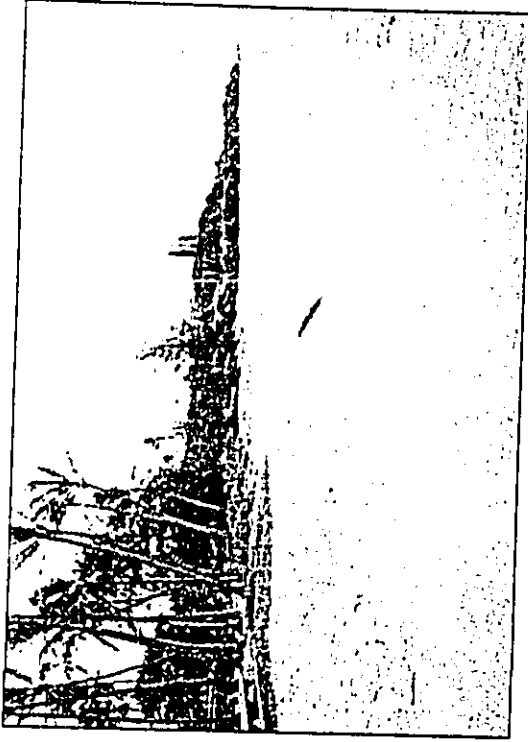
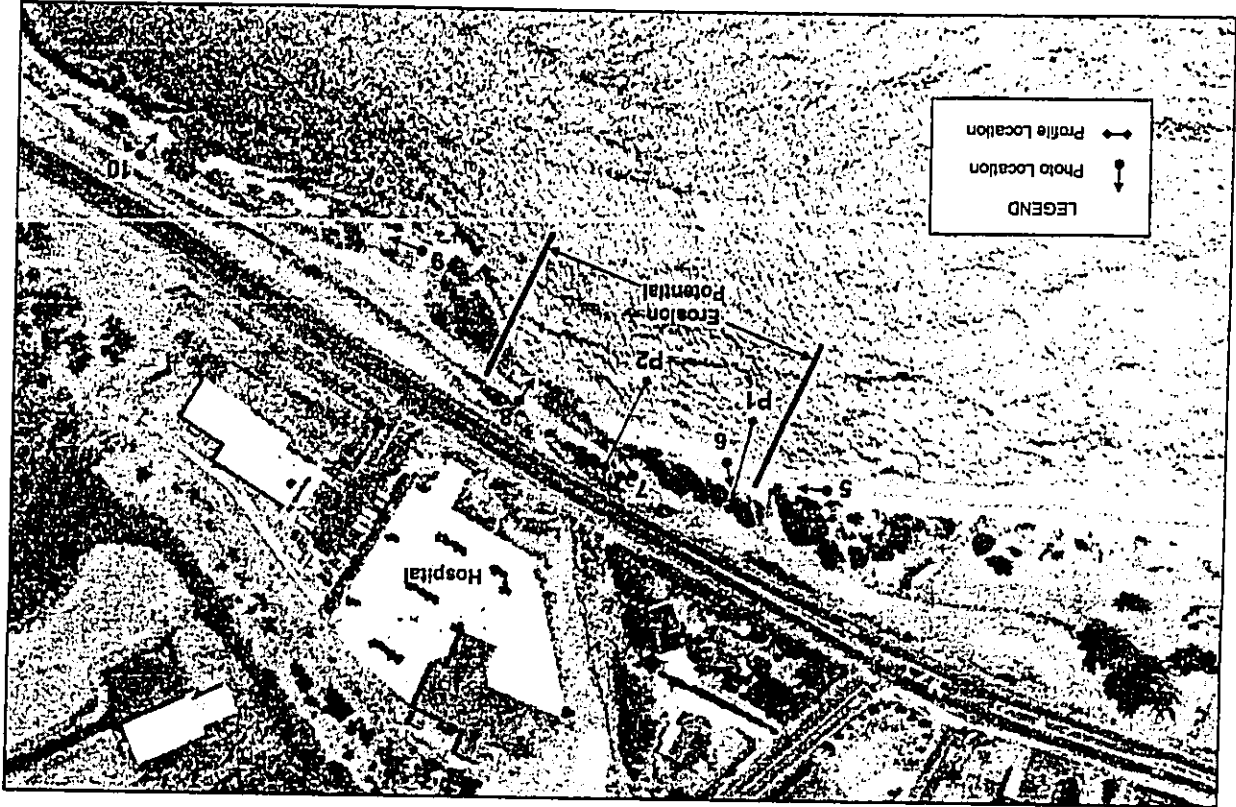


Photo 4 - Kapaa Beach

Figure 5 - North Kapaa Beach Area



3.2 North Kapaa Beach/Hospital

At the north end of Kapaa Beach, opposite Kawaihau Road and the Hospital, there is a short stretch of shoreline where the sand beach transitions to a rocky shoreline, and the bike path route is located immediately next to the shore. This is an area of concern for the bike path because of the potential for shoreline erosion. Figure 5 is an aerial photograph showing the area of potential erosion and the location of shoreline photographs. Two shoreline profiles were also measured in this area - P1 and P2. The profiles are shown on Figures 5 and 6, and their locations are illustrated in Figure 5. Photo 5 shows the narrow sand beach transitioning to a rocky shoreline consisting of some sand, and cobbles and boulders. There are also solid rock outcroppings at the waterline. The fringing reef is approximately 1000 feet wide at this location.

As shown in Photos 5 to 8, the shoreline is well vegetated with small trees, shrubs and grasses, indicating that the shoreline is well protected by the reef, is relatively stable, and may be subject to erosion only during severe storms. The reason for concern is that the bike path is located so close to the shoreline. Profile P1 shows that the edge of the asphalt of the present path is located on 5 feet from the edge of a dirt bank about 3 feet high. Although there is vegetation seaward of the bank, there is also evidence of erosion at the base of the bank. Along much of this shoreline segment, there is a falling vertical rock wall, with evidence of erosion along the landward side of the wall and at the base on the seaward side. Profile P2 shows that the seaward edge of the asphalt is located about 13 feet from the top of the wall (Photo 7). The wall is about 7 feet high, extending from an elevation of about 3 feet to 10 feet; the base of the wall is only 3 feet from the active beach berm, and is subject to wave impacts. The reason for concern in this area is because the wall is in poor condition; complete failure of the wall would leave an unstable bank exposed to possible wave erosion. Photo 8 shows the proximity of the bank to the water and beach berm. Land runoff is also contributing extensively to the shoreline erosion in this area.

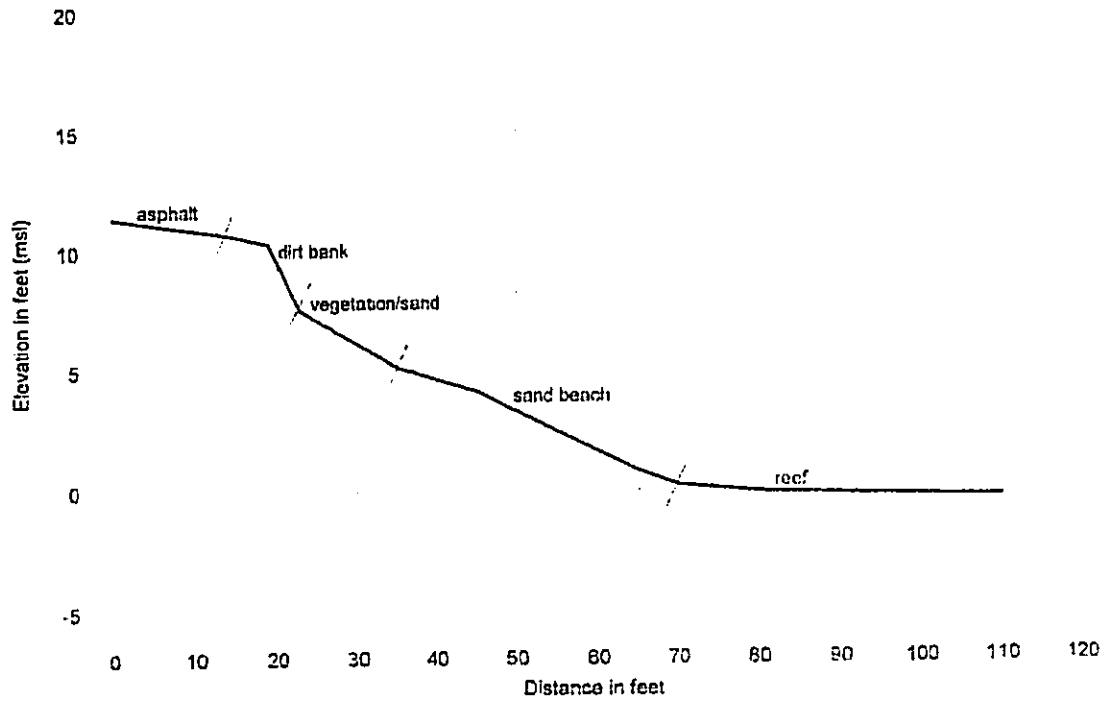


Figure 6 - Profile P1, North Kapaa Beach

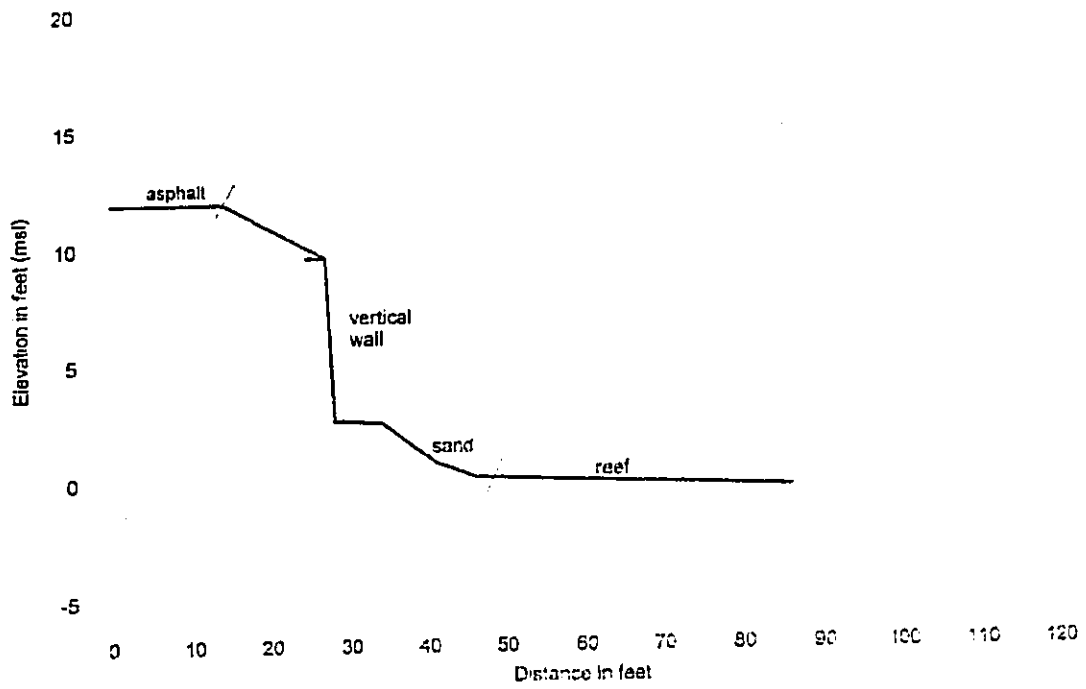


Figure 7 - Profile P2, North Kapaa Beach



Photo 5 - Narrow Sand Beach



Photo 6 - Dirt Bank at Profile P1 Location



Photo 7 - Edge of Asphalt Road at Profile P2 Location



Photo 8 - Bank Erosion Along Edge of Path

DO NOT WRITE IN THESE SPACES

3.3 Between Kapaa Beach and Kealia Beach

From the Hospital to Kealia Beach, the shoreline is characterized by rocky/dirt banks sloping steeply down to basalt boulder, and mixed basalt/coral cobble beaches, with interspersed outcroppings of basalt along the waterline (Figure 8, Photos 9 to 13). The bike path is situated landward of the rocky bank, at a typical elevation of 15 to 25 feet above mean sea level. There is no offshore fringing reef; waves therefore break close to shore. Along several sections, between rocky headlands, the bike path route is located immediately next to the shoreline, above the steeply sloping bluffs (Photos 11 and 13). The bluffs, however, are well-vegetated and showed no evidence of active wave erosion; the boulder and cobble beaches form a natural riprap that protects the base of the bluffs (Photos 11 to 13). In some areas there is evidence of land runoff erosion of the bluffs. As shown in Photo 10, land runoff begins at the top, and proceeds down the slope, and is generally confined to a narrow band or gully. Photo 10 shows a narrow gully of erosion with stable vegetation on either side. Wave erosion, on the other hand, generally extends over a broad area, and is most evident at the base. Typically, the base of the bluff would be eroded, leading to undermining and collapse of the bank above. Significant evidence of wave erosion along this reach is not evident; bank erosion appears to be more of a land runoff problem.

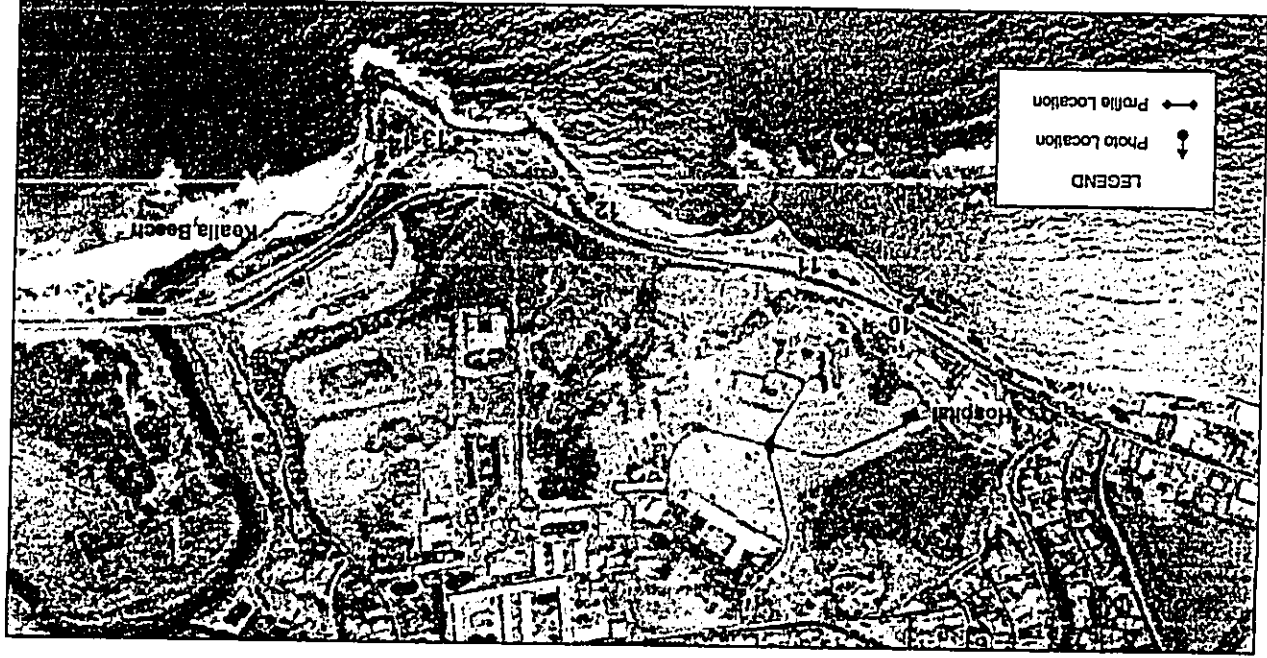


Figure 8 - Kapaa Beach to Kealia Beach



Photo 9 - Shoreline Between Kapaa Beach and Kealia Beach



Photo 10 - Runoff Erosion of Bank



Photo 11 - Vegetated Bank and Boulder Beach

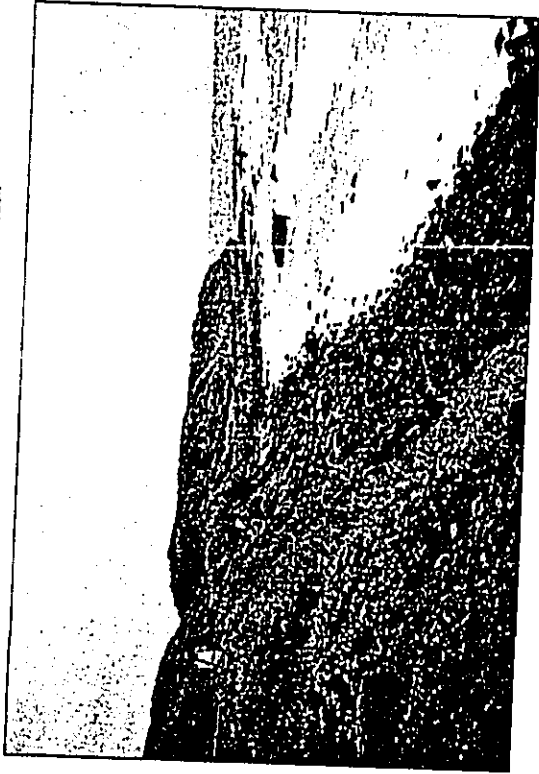


Photo 12 - Vegetated Bank and Boulder Beach

Figure 9 - Kealia Beach



Photo 13 - Vegetated Bank and Boulder Beach

3.4 Kealia Beach

Kealia Beach is a 4,000-foot long pocket beach, bounded on the south by a rocky point and on the north by a small jetty (Figure 9). This jetty is all that remains of an old inter-island steamer landing. Kapaa Stream crosses the center of the beach. There is no fringing reef offshore, and the tradewind waves break directly off the beach. The aerial photographic analysis of erosion along the beach (MOE and SEI, 1991) indicated erosion of between 21 and 45 feet along the beach between 1950 and 1988 (Figure 10). There were no indications of chronic or ongoing erosion observed along the beach during this site visit. The beach was wide and relatively flat, with a vegetation line well established with grass, naupaka, small trees and bushes. Photo 14 shows the beach.

The proposed bike path is located a safe distance behind the vegetation line (Photos 15 and 16) and should not be subject to erosion or have any impacts on the shoreline.

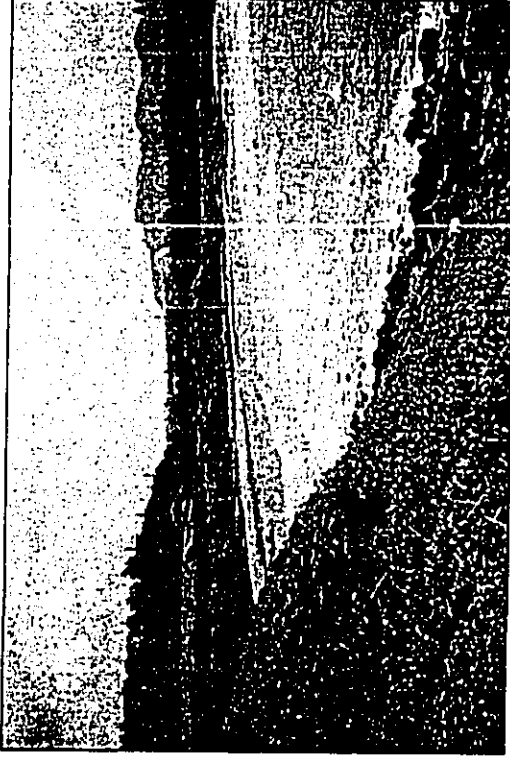


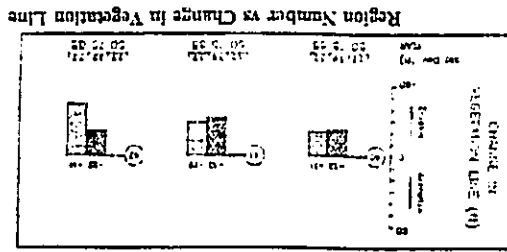
Photo 14 - Kealia Beach



Photo 15 - Existing Path at Kealia Beach

Figure 10 - Aerial Photographic Analysis of Kealia Beach

45



1000
 500
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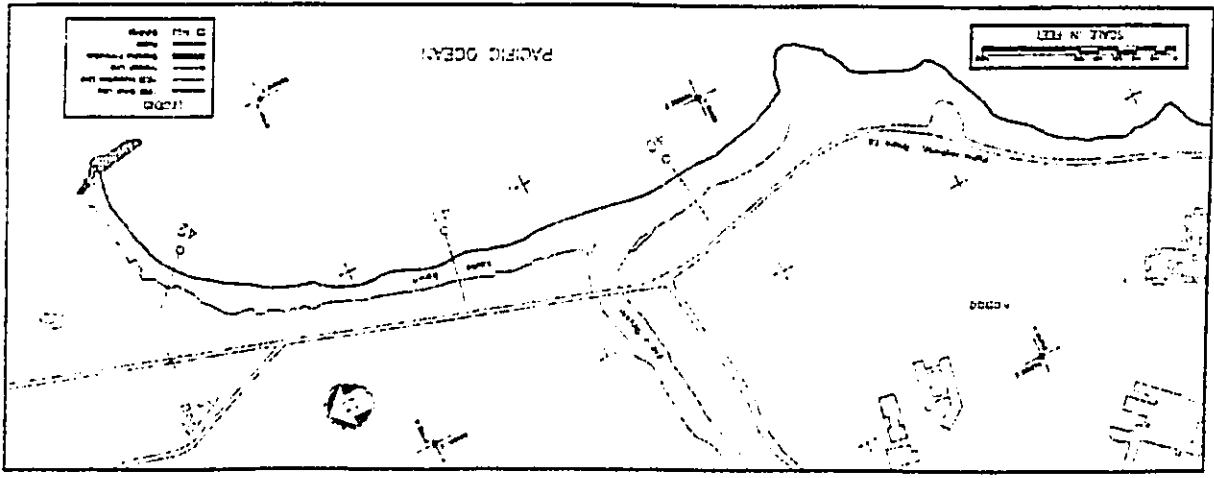




Photo 16 - Existing Path at the North End of Kealia Beach

3.5 Kealia Subdivision

The Kealia Subdivision shoreline extends from the jetty at the north end of Kealia Beach to Kuna Bay (Donkey Beach). The shoreline is characterized by basalt boulder and cobble beaches, and backed by steeply sloping dirt and rocky banks. There is no fringing reef offshore. The proposed bike path is located on top of the bank typically at an elevation of 15 to 25 feet msl. Immediately north of the jetty bounding Kealia Beach, the edge of the proposed bike path route is located at the edge, or near to the edge, of the steep bluff along the shoreline. This area of concern for erosion, about 700 feet long, is shown on Figure 11, along with the locations of photos and two shoreline profiles we measured. Along the southern half of this section, there is a basalt shelf at an elevation of about -1 to -2 msl, that extends 100 to 150 feet seaward of the shoreline. This shelf causes large waves to break along its seaward edge, and thus shelters the shoreline from wave impacts. Photos 17 to 20 and Profile P4 (Figure 12) show the nature of the shoreline. The proposed bike path is at an elevation of about 17.5 feet msl, along a 9-foot high dirt and rock bank with a slope of about 1H:1V. At the base of the bank, at an elevation of about 8 to 9 feet msl, a basalt boulder and cobble beach extends to the basalt shelf at the waterline. As the photos indicate, most of this reach is well vegetated - evidence that it is relatively stable and well protected by the basalt shelf and boulder beach. The edge of the asphalt has been eroded in a few locations (Photos 18 and 19). This erosion appears to be mostly due to land runoff because of the limited lateral extent, the presence of vegetation on either side, and the presence of gullies.

By contrast, the northern half of this section shows evidence of wave erosion. There is no basalt shelf, and the waves break closer to shore. Photos 21 to 23 and Profile P5 (Figure 13) show the nature of the shoreline. The bike path is located at an elevation of about 23 feet msl, above a dirt and rock bank about 12 feet high. The bank slope is near vertical at the top, with an average slope of about 1H:1V. A basalt boulder and cobble beach extends from the base of the bank at an elevation of about 11 feet to a basalt rock outcrop at an elevation of about 4 feet msl. The rock outcrop extends into the water. As the photos indicate, there is no vegetation on the bank along this reach, indicating that it is not stable and may be directly impacted by large waves. Furthermore, there is no evidence of surface runoff. The existing cane haul road slopes inland, and offers no outlet over the edge of the road down the bank.

Along the remainder of the route to Donkey Beach, the shoreline similarly consists of basalt outcroppings along the waterline, basalt boulder and cobble beaches, and steeply sloping dirt/rock banks. Photos 24 and 25 (see Figure 14 for photo location) are representative of this shoreline. Where the bike route runs close to the shoreline, the bank appears stable with vegetation, and well protected by the natural boulder beach (Photo 24). Beyond the location of Photo 25, the bike path route is located well inland of the shoreline, and should not be affected by shoreline processes.

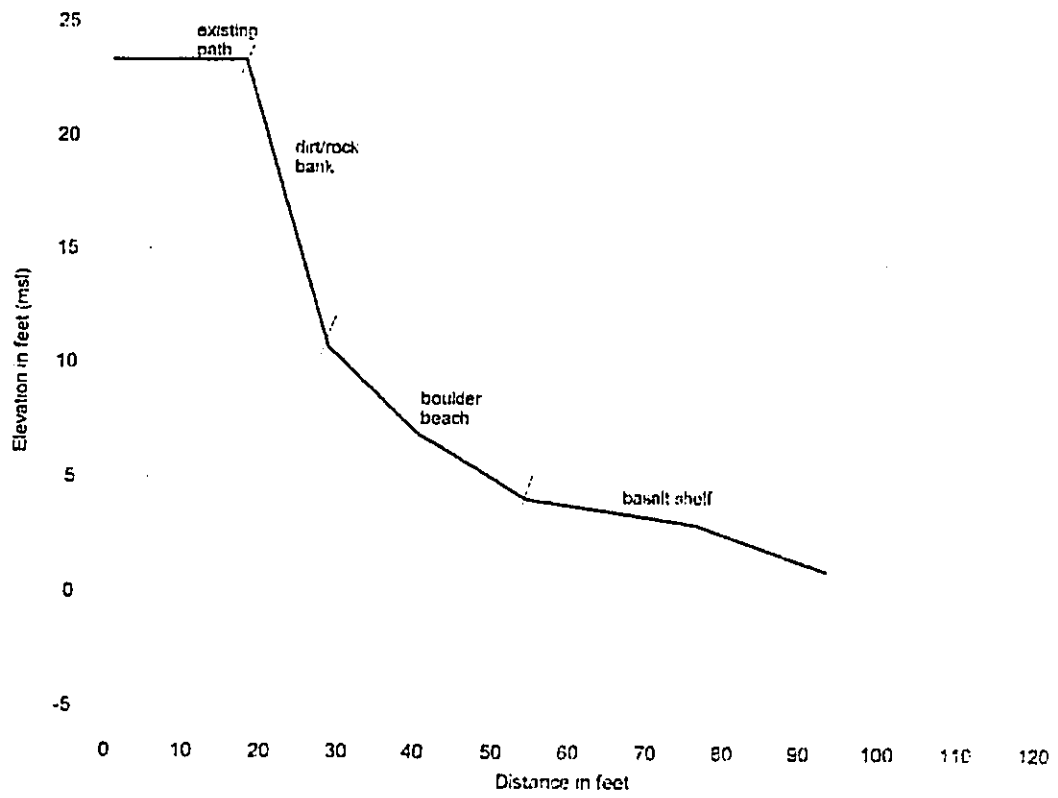


Figure 13 – Profile P5, Kealia Subdivision

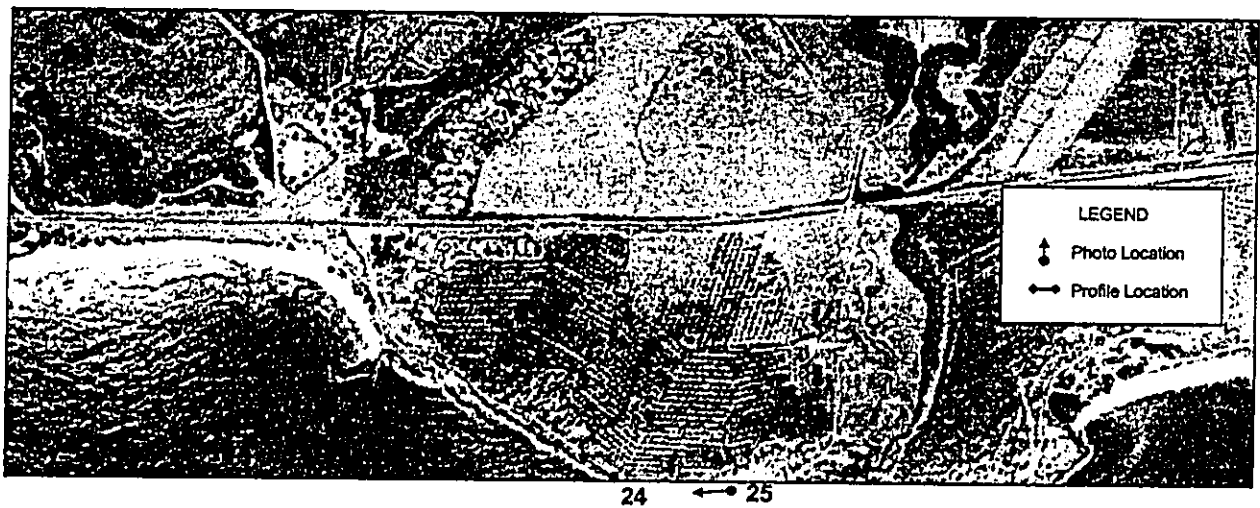


Figure 14 – Kealia Subdivision



Photo 17 - Bank and Boulder Beach



Photo 18 - Bank Erosion at Profile P4 Location

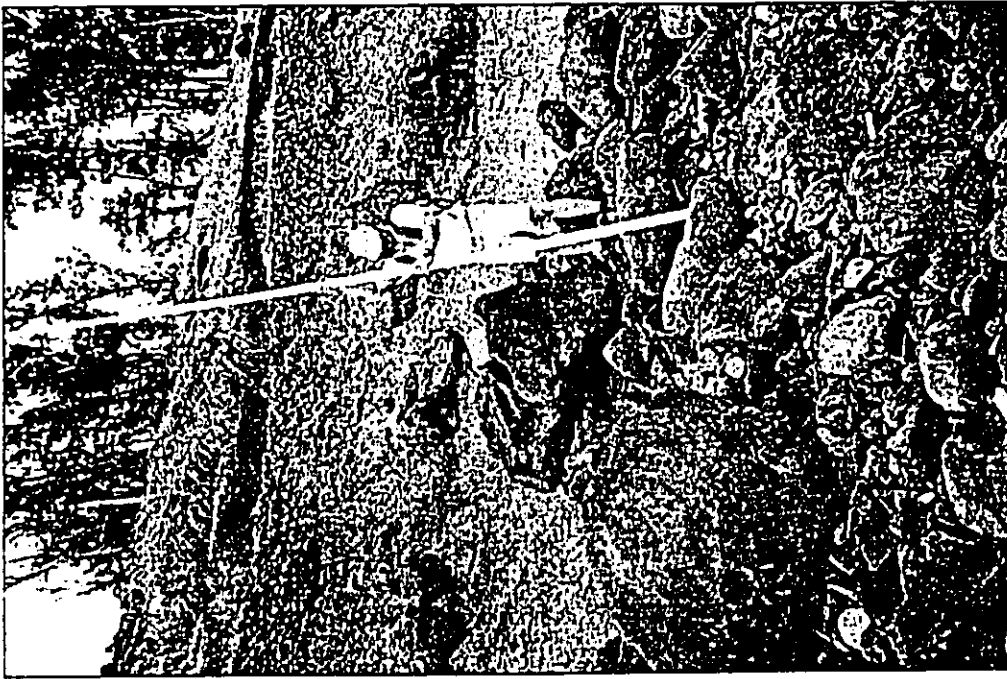


Photo 22 – Steep Dirt and Rock Bank at Profile P5 Location



Photo 23 – Steep Unvegetated Bank at Profile P5 Location



Photo 24 – Wide Boulder Beach and Partially Vegetated Bank



Photo 25 - Stable, Vegetated Bank

4. SHORE PROTECTION ALTERNATIVES

4.1 Seawalls

Seawalls are vertical or sloping reinforced concrete or grouted masonry walls used to protect the land from wave damage, with use as a retaining wall a secondary consideration. Seawalls have a stepped, vertical, or recurved seaward face. A seawall, if properly designed and constructed, is a proven, long lasting, relatively low maintenance shore protection method. They have the advantage of requiring limited horizontal space along the shoreline. However the near vertical seaward faces of seawalls result in very little wave energy dissipation. The walls are often stepped or recurved to reduce resulting problems of wave overtopping and spray. Wave energy is deflected both upward and downward, and also a large amount of wave energy is reflected seaward. The downward component can cause scour at the base of the wall, particularly in shallow waters, and the reflected waves can inhibit beach formation in front of the wall. Seawalls are not flexible structures, and their structural stability is dependant on the stability of their foundation.

4.2 Revetment

A revetment is a sloped structure built of wave resistant material. The most common method of revetment construction is to place an armor layer of stone, sized according to the design wave height, over an underlayer and bedding layer designed to distribute the weight of the armor layer and to prevent loss of the shoreline material through voids in the revetment. In Hawaii, almost all revetments are constructed of basalt boulders. Limestone boulders can be used, but the lesser density of limestone requires a larger boulder size for a given site. Toe protection can be provided by excavating to place the toe on solid substrate where possible, constructing the foundation as much as practicable below the maximum depth of anticipated scour, or extending the toe to provide excess stone and extra wave protection. Properly designed rock revetments are durable, flexible, and highly resistant to wave damage. Should toe scour occur, the structure can settle and readjust without major failure. Damage from large waves is typically not catastrophic, and the revetment can still function effectively even if damage occurs. The rough and porous surface and flatter slope absorb more wave energy than smooth vertical walls, thus reducing wave reflection, runup, and overtopping. The steepest practical revetment slope is 1V on 1.5H, therefore revetments have a larger footprint than vertical seawalls.

4.3 No Action / Retreat Inland

No action or retreat inland is a viable alternative for this project for several reasons. First, the areas of concern for erosion are relatively small. The area at North Kapaa Beach, opposite the hospital is approximately 300 feet long, while the area along the Kealia subdivision is 300 to 700 feet long. Second, the erosion hazard does not appear to be severe. At North Kapaa beach, there is a fringing reef approximately 1000 feet wide that offers substantial protection from storm wave erosion. The shoreline seaward of the bike path is also well vegetated, indicating that it is relatively stable. The main problem is that the proposed route is very close to shore and there is a 7-foot high vertical sea wall that is in poor condition and exposed to wave action. Failure of the wall could risk damage to the bike path. At the same time, the wall appears old, and because of the protection provided by the fringing reef, may remain in its present condition until future impact by a hurricane or unseasonably large storm event.

At the Kealia subdivision area of concern, natural protection is provided by a nearshore basalt shelf along the southern 350 feet, and by a boulder beach along the northern 350 feet. Vegetation along the bank in the southern 350 feet indicates that the bank is relatively stable. Surface runoff appears to be the primary erosive threat. In the northern 350 feet, there is no basalt shelf, no vegetation, no evidence of surface runoff, and the bank appears more susceptible to wave erosion. However, a natural boulder beach provides some protection from wave attack. The old cane haul road has existed in this site and has not failed or been extensively damaged. With better control of surface runoff, the natural protection at the site may result in the shoreline being stable into the foreseeable future. Relocating the new bike path as far inland as possible would help ensure its protection. Third, the bike path is not a major structure of critical importance. Given the complexity of the regulatory process for constructing structures along the shoreline it may be more practical or feasible to wait until the future bike path is actually damaged or clearly threatened.

5.0 SHORE PROTECTION DESIGN

To aid in the planning and design of the bike path, a conceptual design was developed for two revetment alternatives for the two areas of concern outlined above. The designs were developed for two wave conditions: The prevailing or annually occurring large wave event, and a typical hurricane that might strike that coastline. The prevailing deepwater wave conditions are 10 feet in height with a wave period of 10 seconds. Based on the wave data measured at Mokuapu Buoy located offshore Kailua on the east coast of Oahu, waves exceeding 10 feet occurred 7 percent of the time during the 20-month period, and the most common wave period for the 10-foot wave height was 10 seconds. The model hurricane wave is 30 feet high with a 12-second wave period, which is based on information in the report *Kaunai Island Hurricane Vulnerability Study* (Sea Engineering, Inc., 2000) for the vicinity of the project area. The model hurricane, which is described in the report *Hurricanes in Hawaii* (Haraguchi, 1984), is defined as the probable hurricane that will strike the Hawaiian Islands in the future. They are based on the characteristics of the hurricanes of Dot and Iwa, which previously struck the islands. The deepwater wave conditions are shown in Table 4.

The deepwater waves are assumed to directly approach the shoreline sites, where shore protection is potentially required. Stillwater levels were assessed by combining astronomical tide, wave setup and storm surge. A mean higher high water tide was used for the design tide, and wave setup was calculated for each design wave. Storm surge for the model hurricane was taken from the report mentioned above, but storm surge for the prevailing wave was assumed to be negligible. A wave height at the shore for each design wave conditions was determined as a depth-limited wave height or 80 percent of the water depth, which was based on the stillwater level and the hard bottom elevation at the site. The hard bottom at the shoreline at both sites was assessed at mean sea level from the nearshore profiles made during the site visit. Wave runup on a revetment was calculated for each design wave at the shore by using a computer program ACES (Automated Coastal Engineering System by U.S. Army Corps of Engineers, 1992). The wave heights, stillwater levels, and wave runups at the shore are summarized in Table 5. The still water level at the shoreline estimated during prevailing conditions is 2.5 feet msl, and during a hurricane is 5.7 feet msl. These depths limit wave heights at the shoreline to 2 feet and 4.5 feet during prevailing and hurricane conditions, respectively. Runup elevations generated by these waves are calculated to be +6 feet during prevailing conditions, and +13 feet during a hurricane.

Based on the wave conditions at the shore, two types of revetment were designed for the shore protection. A graded riprap is for the prevailing wave conditions and a one-stone armor revetment is for the hurricane wave conditions. The graded riprap extends to an elevation of +6 feet, because that is the estimated runup during prevailing large wave conditions. The armor stone revetment, on the other hand, must extend to the +13 elevation to prevent overtopping by hurricane wave runup. Both designs are applicable at the North Kapaau/Hospital site, but only the one-stone armor revetment is applicable at the Kealia subdivision site. This is because along this shoreline a natural riprap revetment or boulder beach exists, and extends beyond the +6-foot elevation for which the riprap design is applicable. Table 6 summarizes the revetment design parameters and Figure 15 depicts typical cross-sections of the revetment for Profiles P2 and P5. The figure shows that the riprap revetment is 2 ft. thick, consisting of stones ranging in weight from 35 to 350 lbs. The armor

stone revetment, on the other hand, consists of one layer of 1,000 to 2,000-lb. armor stones, underlain by a 2-ft. thick layer of 100 to 200-lb. stones.

Armor stone revetment costs are estimated at about \$1,000 per linear foot. Thus, to build this type of revetment along the area of concern at the North Kapapa/Hospital site is estimated to cost \$300,000. Similarly, an armor stone revetment along 350 feet of the Kealia subdivision site is estimated to cost \$350,000. Vertical seawall costs can be similar or much more expensive than armor stone revetment costs. The estimated cost for a riprap revetment is \$250 to \$500 per linear foot. The cost to build this type of revetment at the North Kapapa/Hospital site is \$75,000 - \$150,000.

Table 4. Deepwater Wave Conditions for Two Cases:
(1) A Prevailing High Wave And (2) A Model Hurricane

Design Conditions	Wave Height (ft)	Wave Period (sec)
Prevailing	10	10
Model Hurricane	30	12

Table 5. Nearshore Design Conditions Of Wave, Stillwater Level And Wave Runup

Design Conditions	Wave Height (ft)	Stillwater Elevation (ft, MSL)	Wave Runup Elevation (ft, MSL)
Prevailing	2.0	2.5	6
Model Hurricane	4.5	5.7	13

Table 6. Revetments for Design Wave Conditions

Design Conditions	Prevailing	Model Hurricane
Type of Revetment Layer Thickness (ft)	Graded Riprap 2	One-Stone Armor 2 (Armor Layer) 2 (Under Layer)
Stone Size (lb)	80-3/4" \leq 50 $W_{100\%} = 350$ $W_{50\%} = 35$	1000-lb Armor Stone \leq 2000 100-lb Under Layer \leq 200
Crest Elevation (ft)	6	13
Slope	1V:2H	1V:2H

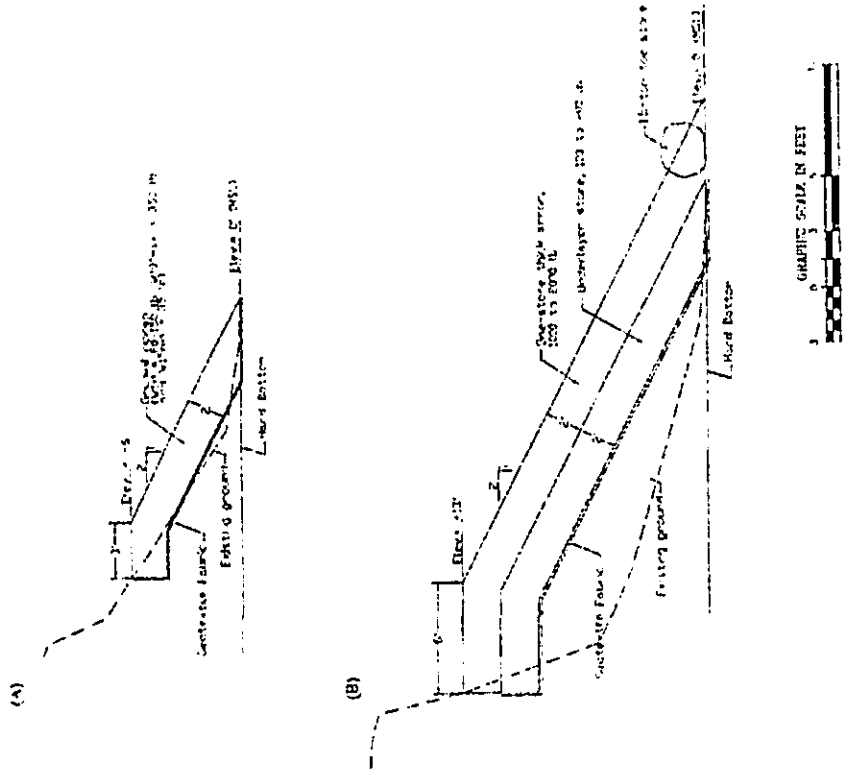


Figure 15 - Typical Cross Sections:
(A) Graded Riprap and (B) One-Stone Armor Revetment

CONCLUSIONS

Two areas of concern for potential erosion were identified along the proposed bike route - 300 feet at North Kapaa opposite the Hospital, and 300 to 700 feet in the Kealia subdivision area. Conceptual revetment designs were developed for these sites to protect against either the annual large wave event or a hurricane. The annual large wave event would require a riprap revetment of stone weighing 35 to 350 pounds, extending to the +6 elevation. To protect against hurricane waves would require an armor stone revetment consisting of a single layer of stones weighing 1,000 to 2,000 pounds, with an underlayer of stones weighing 100 to 200 pounds. Either structure is applicable to the North Kapaa site. At the Kealia subdivision site, however, a riprap revetment would not be useful because the existing boulder beach constitutes a natural riprap revetment that extends above +6 feet. An armor stone revetment extending up to +13 feet would be required to protect against hurricane waves. The cost for the armor stone revetment is estimated to be \$1,000 per linear foot - or approximately \$300,000 to protect 300 feet of shore at North Kapaa, and \$350,000 to protect 350 feet of shoreline along the Kealia subdivision shoreline. A riprap revetment to protect the shoreline at North Kapaa is estimated to cost \$75,000 - \$150,000.

No action or retreat inland is a viable alternative for this project for several reasons. The erosion hazard does not appear to be severe. At North Kapaa Beach, there is a fringing reef approximately 1,000 feet wide that offers substantial protection from storm wave erosion. The shoreline seaward of the bike path is also well vegetated, indicating that it is relatively stable. The main problem is that the proposed route is very close to shore and there is a 7-foot high vertical sea wall that is in poor condition and exposed to wave action. Failure of the wall could risk damage to the bike path. At the Kealia subdivision area of concern, natural protection is provided by a nearshore basalt shelf along the southern 350 feet, and by a boulder beach along the northern 350 feet. Vegetation along the bank in the southern 350 feet indicates that the bank is relatively stable. Surface runoff appears to be the primary erosive threat. In the northern 350 feet, there is no basalt shelf, no vegetation, no evidence of surface runoff, and the bank appears more susceptible to wave erosion. However, a natural boulder beach provides some protection from wave attack. The old cane haul road at these sites has not failed or been extensively damaged. With better control of surface runoff, the natural protection at the site may result in the shoreline being stable into the foreseeable future. Relocating the new bike path as far inland as possible would ensure its protection. Further, the bike path is not a major structure of critical importance. Given the complexity of the regulatory process for constructing structures along the shoreline it may be more practical or feasible to wait until the future bike path is actually damaged or clearly threatened.

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APPENDIX D

AQUATIC RESOURCES SURVEY

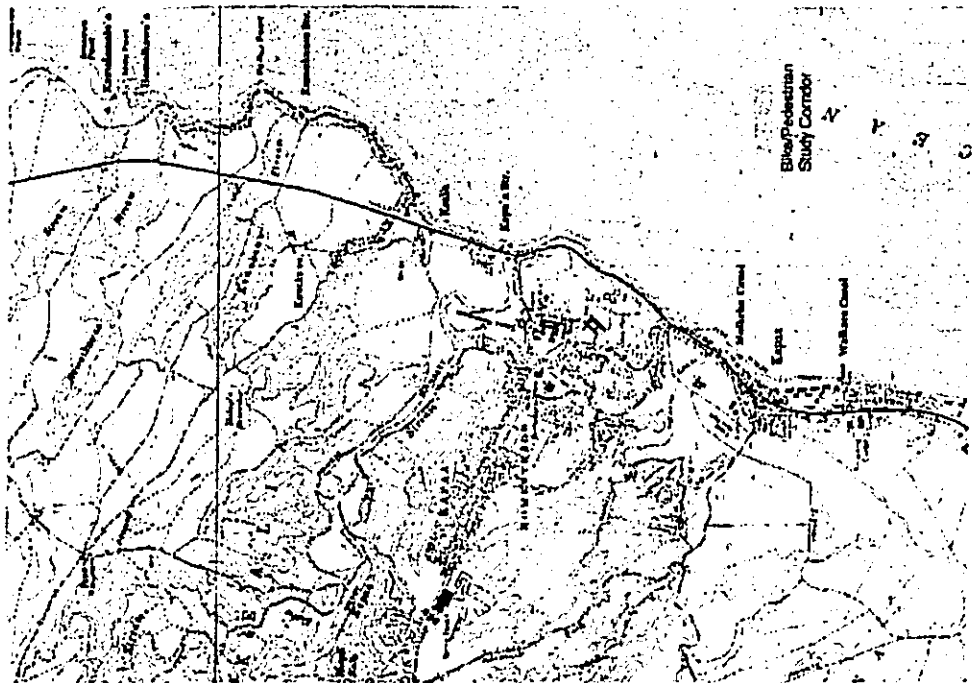


Figure 1. Map showing project survey corridor, waterways crossed, and water quality sampling points (red dots).

Aquatic resources survey for the Kapa`a-Kealia Bikepath, Kapa`a

August 31, 2002

AECOS No. 1018

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Introduction

The proposed project is to convert an existing cane haul road into a bike path from Kapa`a to Kealia, on the east side of Kaula. (Figure 1). The path will become part of Na Ala Hele's Lihue-Anahola Coastal Trail and is proposed to accommodate pedestrians, bicycles, and horseback riders. The existing cane haul road crosses the lower reaches of five streams: some perennial and some intermittent. Nearly all are estuarine in the project area. Existing crossings will be repaired and modified as needed for the bike path. This report discusses a stream faunal surveys and water quality analysis undertaken for an environmental assessment and applicable permit applications.

The field reconnaissance survey for this report was conducted on July 26, 2002 by two AECOS, Inc. biologists. The streams surveyed were: Kamalomalo`o Stream (intermittent); north of the end of the proposed path), Homaikawa`a Stream (intermittent), Kumukumu Stream (State Perennial Stream ID No. 2-2-02), Kapa`a Stream (2-2-04), Moikeha Canal (2-2-05), and Waikare Canal (2-2-06). Observations along the Kealia coast and a nearby hau bike path in the Kealia Kai subdivision (from Anapalau Point to Kumukumu Stream), stopping at each stream crossing to identify aquatic fauna and collect water samples. The other stream crossing points were accessed from the Kaula Belt Road near existing highway bridge crossings.

¹ Report prepared for SSFM for an environmental assessment. This report will become part of the public record.

Stream Descriptions

The mean annual rainfall for the area around these streams ranges from around 127 cm (50 in) in the lower reaches to over 254 cm (100 in) in the upper reaches (Tallaféro, 1959).

Kumukumu Stream, Kapaa Stream, Moikeha Canal, and Waikaea Canal are shown on the USGS topographic maps 17.5-minute Series, Kapaa and Anahola quadrangles, 1996) as perennial streams. Kamalomalo 'o Stream and Homakawa 'a Stream are shown to be intermittent streams. The maps also show that Kamalomalo 'o Stream, Kumukumu Stream, Kapa 'a Stream, and Waikaea Canal have numerous diversions and reservoirs along their middle and upper reaches.

Kamolomalo 'o Stream — The proposed bike path will end at Ahuhi Point, north of Homakawa 'a Stream but south of Kamalomalo 'o Stream. The mouth of Kamalomalo 'o Gulch is approximately 200 m (256 ft) north of Homakawa 'a Stream and ends at a wide sandy beach just before Anapalau Point. Because the existing path continues to Kamalomalo Stream and this beach, bike path users are likely to continue to use this path. For this reason, Kamalomalo 'o Stream was included in our survey.

Kamolomalo 'o Stream does not flow continuously to the ocean — a sand berm separated a brackish pool from the active beach and the ocean at the time of our survey (Figure 2A). A pool like this is called a muliwal, a Hawaiian word that can also mean estuary. The pool or muliwal was about 7 m (23 ft) wide and 25 cm (10 in) deep becoming narrower up into a stand of hau. The bottom of the pool consisted of a thick layer of silt. This stream probably opens to the ocean only on rare occasions when fresher flows push sand away from the mouth. Flotsam was found approximately 25 m (82 ft) upstream from the beach berm, evidence that the muliwal has been open to the sea relatively recently.

Homakawa 'a Stream — Homakawa 'a Stream is located just south of Ahuhi Point. At the time of the survey, the stream consisted of a dry gulch leading to an estuarine pool. The existing path fords the narrow gulch above a step that leads to the pool, more or less open to the ocean, depending upon the tide (Figure 2B). Runoff flows through this gulch into the ocean only during storm events. The pool below the path is approximately 5 m (16 ft) wide and 10 cm (4 in) deep. The mouth widens to approximately 30 m (98 ft) where it enters the ocean.

Kumukumu Stream — Kumukumu Stream is the southernmost stream or gulch crossed by the cane haul road in the Kealia-Kat Subdivision. This stream is perennial flowing and winds through an open grassy field (Figure 3A). The stream



Figure 2A (upper). View looking upstream across the beach berm blocking the muliwal of Intermittent Kamalomalo 'o Stream. Figure 2B (lower). Homakawa 'a Stream opens on a shore of loose basalt boulders, seen in this view looking out to sea from the mouth of the gulch.



Figure 3A (upper). View looking upstream along Kumukumu Stream. Concrete support abutments of former bridge crossing appear at left in photo. Note bare and eroded soil where the trail descends into gulch. Figure 3B (lower). View looking upstream from the highway bridge of the lower reach (and estuary) of Kapa'a Stream.

above the former road crossing is 1-2 m (3-6 ft) wide and approximately 15 cm (6 in) deep. The grassy banks are gently sloping and the stream incised some 2-3 m (6-10 ft). The banks and field are kept mowed - men were weed-whacking upstream when our observations were made and water quality samples collected.

A bridge used to span the stream here, but was washed out in a storm and only the bridge abutments remain (see Figure 3A). The road now fords the stream above a 3 m (10 ft) escarpment that drops into a pool and then an estuary that is open to the ocean, similar to, although larger than, the mullival of Homaikava'a Stream (see above). The estuary is quite wide where it enters the ocean; however, there is no obvious stream channel because the stream first flows through a dense stand of umbrella sedge (*Cyperus alternifolius*). A deep (80 cm or 30 in) pool is located above the stand of umbrella sedge.

Kealia Coast — The Kealia Coast consists of grassy bluffs, sand beaches, boulder beaches, and reef-rock benches. A green sea turtle (*Chelonia mydas*) was observed foraging near Kumukumu Stream and it is likely that others feed in the area and possibly nest on sand beaches in the area.

Kapaa Stream — Kapaa Stream flows underneath the Kauai Belt Road and the cane haul road south of Kumukumu Stream and north Kapaa Town. The banks of the stream have been hardened underneath the bridges and there is a small boat launching ramp below the cane haul road bridge along the right bank. Fishermen launch here and then motor upstream to fish for exotics such as small-mouth bass (*Micropterus dolomieu*) and bluegill (*Lepomis macrochirus*).

Underneath the bridges, the estuary is about 25 m (82 ft) wide and over 1 m (3 ft) deep in the center. The channel substratum is sand and the bridge abutment walls are concrete. Downstream, the estuary widens where it crosses the beach and enters the ocean. Upstream, the stream remains about the same width as it meanders through the valley (Figure 3B).

The Hawaii Stream Assessment ranks Kapaa Stream as "outstanding" and notes special areas associated with Kapaa Stream, Moikeha Canal, and Waikaea Canal (Hawaii Cooperative Park Service Unit, 1990).

Moikeha Canal — Moikeha Canal is a straightened and hardened (rock rip-rap banks; see Figure 4A) canal that flows through Kapaa town and discharges into the ocean between boulder jetties much like those built for the Waikaea Canal (see below). Large boulders line the banks, but the canal has a sand bottom. Downstream of Kauai Belt Road Bridge, two more bridges cross the canal — a small pedestrian bridge and the existing cane haul road/bike path. The canal is approximately 25 m (82 ft) wide at the highway bridge.

Waikaea Canal — Waikaea Canal is also a straightened and hardened canal that flows through Kapaa town (Figure 4B). Like Moikeha Canal, Waikaea Canal has boulder riprap banks and a sand bottom. There is a boat launching ramp and dock above the cane haul road/bike path bridge but downstream of the Kaula Belt Road Bridge. Waipoli Park is an open, undeveloped park area on the south side of Waikaea Canal.

Water Quality

Water samples were collected from five of the streams in the project area at stations above and below each existing bridge or ford. The Kamalomalo 'o Lower sample was collected from the shoreline and, due to an oversight, no samples were collected from Homaikawa 'a Stream. Some parameters were measured by field meter and others in water samples collected in appropriate containers and taken to the AECOS Laboratory on O'ahu (laboratory Log No. 16188). Table 1 lists field instruments and analytical methods used with these samples. Figure 1 shows the sampling locations.

The primary purpose of these water quality data is to characterize the existing aquatic environments, not to set baseline values or determine compliance with Hawaii's Water Quality Standards. In fact, the State Criteria for particulates and nutrients are based upon geometric mean values and a minimum of three separate samples would be required to compute a geometric mean (DOH, 2000). Thus, the single set of data for particulates and nutrients is not strictly comparable with State criteria. Nonetheless, the results can be evaluated against the water quality standards as long as the limitations are realized.

Four of the samples (Kumukumu Upper and Lower, and Kapa 'a Upper and Lower) were collected in freshwater reaches of the streams (salinity = 0 ppt). Five of the samples (Kamolomalo 'o Upper, Moikeha Upper and Lower, and Waikaea Upper and Lower) were collected in estuarine reaches of the streams (salinity ranges between 1 and 33 ppt). The Kamalomalo 'o Lower sample was actually collected from the coastal waters (salinity = 36 ppt).

The analyses of the water quality data collected from the five streams on July 26 show fairly high nutrient, turbidity, and temperature levels (Table 2).

The pH values (6.6 to 8.8) for all sampling sites except Kamalomalo 'o Upper fall within the appropriate ranges established by the State Department of Health (stream - 5.5 to 8.0, estuarine - 7.0 to 8.6, and coastal - 7.6 to 8.6) (DOH, 2000). The pH level at Kamalomalo 'o Upper (8.8) is higher than the State criterion and is probably caused by removal of CO₂ during photosynthesis; that is, the pH is

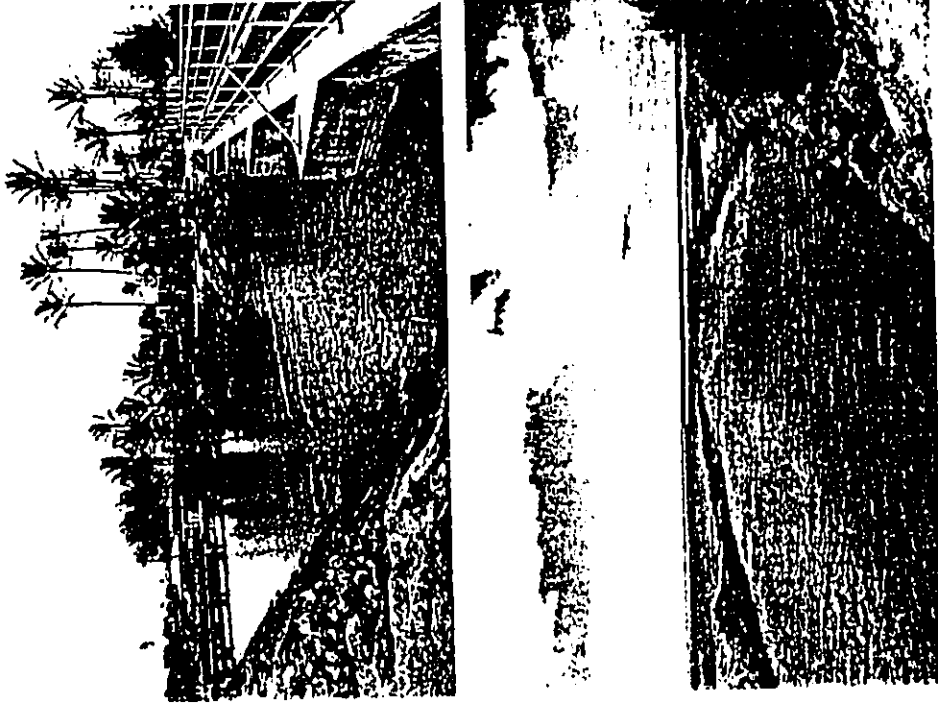


Figure 4A (upper). View looking across Moikeha Canal in the vicinity of the existing bridges. Figure 4B (lower). View looking out the mouth of the estuary at Waikaea Canal. Just upstream there is a public boat ramp.

Table 2. Water quality characteristics of five stream mouth areas on Kapa'a, from samples taken on July 26, 2002.

	Time sampled	Temp. °C	Salinity ppt	DO mg/l	DO % sat.	pH (pH units)
Kamalomalo'o						
Upper	0855	24.5	1	6.50	102	8.8
Lower	0845	26.2	36	5.45	83	8.0
Kumukumu						
Upper	1020	28.0	0	5.70	73	6.6
Lower	1025	27.9	0	5.61	72	6.6
Kapa'a						
Upper	1140	26.5	0	5.32	66	7.1
Lower	1154	29.4	0	6.21	81	7.2
Molkeha						
Upper	1345	28.3	32	6.01	92	8.0
Lower	1350	28.4	33	6.15	94	8.0
Waikaea						
Upper	1415	28.0	17	5.51	77	7.8
Lower	1425	28.2	22	6.22	90	8.0
Turbidity						
	(ntu)	TSS (mg/l)	Ammonia (µg N/l)	Nitrate + nitrite (µg N/l)	Total N (µg N/l)	Total P (µg P/l)
Kamalomalo'o						
Upper	2.60	4.1	6	78	210	251
Lower	2.05	7.2	<1	12	214	30
Kumukumu						
Upper	1.44	3.1	<1	<1	89	5
Lower	2.89	1.9	<1	<1	107	7
Kapa'a						
Upper	3.97	2.5	33	33	299	45
Lower	18.63	16	12	12	386	63
Molkeha						
Upper	5.48	7.8	18	18	223	34
Lower	5.75	8.7	17	17	222	28
Waikaea						
Upper	2.56	2.5	23	23	211	27
Lower	2.08	3.1	17	17	2333	14

Most of the temperature values recorded (24.5°C - 29.4°C) appear to be elevated. There were not adequate trees or other large plants on any of the stream banks to provide much shade to these streams. A recent statewide (Oahu, Hawaii, and Kauai)

elevated during the day by high algal productivity. Macroalgae were obvious in the midlial where the water sample was collected.

Table 1. Analytical methods and instruments used for the July 26, 2002 water quality sampling of five streams on Kapa'a.

Analytes List	Method	Reference	Instrument
Ammonia	alkaline phenol	Koroleff in Grasshoff et al. (1986)	Technicon AutoAnalyzer II
Dissolved Oxygen	EPA 360.1	EPA (1979)	YSI Model 550 DO meter
Salinity	refractive index	AO handheld refractometer	
Nitrate + Nitrite	EPA 353.2	EPA (1993)	Technicon AutoAnalyzer II
pH	EPA 150.1	EPA (1979)	Hanna Instruments pHep 3 w/ATC
Temperature	thermister calibrated to NRS cert. Thermometer (EPA 170.1)	EPA (1979)	YSI Model 550 DO meter
Total Nitrogen	persulfate digestion /EPA 353.2	D'Elia et al. (1977) / EPA (1993)	Technicon AutoAnalyzer II
Total Phosphorus	persulfate digestion /EPA 365.1	Koroleff in Grasshoff et al. (1986) / EPA (1993)	Technicon AutoAnalyzer II
Total Suspended Solids (TSS)	Method 2540D (EPA 160.2)	Standard Methods 18th Edition (1992); EPA (1979)	Mettler H31 balance
Turbidity	Method 2130B (EPA 180.1)	Standard Methods 18th Edition (1992); EPA (1993)	Hach 2100P Turbidimeter

D'Elia, C.F., P.A. Staudler, & N. Corwin. 1977. *Limnol. Oceanogr.* 22(4): 760-764.
 EPA. 1979. Methods for Chemical Analysis of Water and Wastes. U.S. Environmental Protection Agency. EPA 600/4-79-020.
 EPA. 1993. Methods for the Determination of Inorganic Substances in Environmental Samples. EPA 600/R-93/100.
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 Grasshoff, K., M. Ehrhardt, & K. Kremling (eds). 1986. *Methods of Seawater Analysis* (2nd ed). Verlag Chemie, GmbH, Weinheim.
 Standard Methods. 1992. Standard Methods for the Examination of Water and Wastewater. 18th Edition. 1992. Greenberg, Clesceri, and Eaton, eds. APHA, AWWA, & WEF. 1100 p.

The percent saturation of dissolved oxygen (DO) for Kamalomalo'o Upper and Lower, Kapa'a Lower, Molkeha Upper and Lower, and Waikaea Upper and Lower meet the value established by the State Department of Health (stream - > 80% estuarine and coastal - > 75%; DOH, 2000). The high DO level at Kamalomalo'o Upper (102%) is indicative of increased photosynthesis by the macroalgae in the midlial, suggesting some degree of eutrophication. The DO levels at Kapa'a Upper and Kumukumu Upper and Lower are below the State criterion (66%, 73%, and 72%, respectively) and may be indicative of sluggish exchange in these estuarine waters.

Streams Survey Report

survey of 15 streams found the average daytime temperature in the lower reaches (included some estuarine reaches) to be 25.7 °C (AECOS, 2002).

Values recorded for turbidity are generally higher than the expected values based upon the geometric mean criterion established by the State Department of Health (stream - 2.0 ntu, estuary - 1.5 ntu, coastal - 0.20 ntu), but the TSS values are below the geometric mean criterion (TSS: stream - 10.0 mg/l, estuary and coastal - no standard) (DOH, 2000). However, this is a typical outcome. TSS criteria values are not as stringent as turbidity criteria in the State standards. The very high turbidity (18.63 ntu) and TSS (16 mg/l) levels at Kapa 'a Lower may have been caused by bottom silt being stirred up by bass fishermen.

The nutrient values measured for these streams are not unusually high for streams draining urban and agricultural lands, although most are above the geometric mean criteria established by the State Department of Health (Table 3). Kumukumu Stream appears to have the best water quality of the five streams with respect to nutrient concentrations.

Table 3. State of Hawaii geometric mean criteria for nutrients (HAR §11-54).

	Ammonium (µg N/l)	Nitrate + nitrite		Total P (µg P/l)
		(µg N/l)	(µg N/l)	
Stream	ns	30.0	180.0	30.0
Estuary	6.00	8.00	200.00	25.00
Coastal	2.50	3.50	110.00	18.00

Biological Survey

Aquatic Plants — A thick mat of at least four species of algae was observed at Kamalaloa Stream and Holmakawaa Stream. The stringy green alga (*Cladophora* sp.) was prominent and *Spyrogyra* sp., *Nougetta* sp., and *Phormidium* sp. were also present.

Aquatic Animals — A listing of the aquatic fauna observed in the lower and/or estuarine reaches of the six streams is given in Table 4. In addition to the species listed above in Table 4, fishermen reported seeing blue gill, koi (*Cyprinus carpio*), perch, and snapper in the estuarine reach of Kapa 'a Stream.

Table 4. Checklist of aquatic fauna observed in the six streams and estuaries located along the Kapa 'a-Kealla Bike Path on Kapa 'a.

Species	Common name	Status	QC Code	Abundance	Stream
INVERTEBRATES					
MOLLUSCA, GASTROPODA	(mollusks)				
LITTORINIDAE	periwinkle	Ind	10	A	Moikeha, Waikaea
<i>Littorina</i> sp.					
NERITIDAE					
<i>Neritina vesperinus</i> Sowerby		end	10	A	Kapa 'a
<i>Nerita picea</i> (Recluz)		Ind.	10	A	Moikeha, Waikaea
SIPHONARIIDAE					
<i>Siphonaria normalis</i>	pulmonate limpet	Ind	10	C	Moikeha
THIAPIDAE					
<i>Melanoides tuberculata</i> (Müller)	melanid snail	nat	10	C	Kapa 'a
MOLLUSCA, BIVALVIA					
CORBICULIDAE					
<i>Corbicula fluminea</i> Müller	Asiatic flume clam	nat.	10	C	Kapa 'a
MYTILIDAE					
<i>Brachidontes crebristriatus</i> (Conrad)	mussel (brustaceans)	Ind	10	A	Moikeha
ARTHROPODA, CRUSTACEA					
GRAPSIDAE					
<i>Grapsus tenuicrustatus</i>	a 'aima	ind.	10	O	Moikeha, Waikaea
PAGURIDAE					
Indet.	hermit crab, <i>unauna</i>		10	O	Moikeha
PALAEMONIDAE					
<i>Macrobrachium lar</i> (Fabricus)	Pacific Island prawn	nat	10	U	Homakawa 'a, Kumukumu, Kapa 'a
ARTHROPODA, INSECTA					
ODONATA, COENAGRIONIDAE					
<i>Ischnura ramburi</i> (Selys-Longchamps)	damsel fly	nat	10	U	Kamakalo 'o, Kumukumu
ODONATA, LIBULLELLIDAE					
<i>Crocothemis servilla</i> Drury	Asian dragonfly	nat	10	U	Kamakalo 'o, Homakawa 'a, Kumukumu, Kapa 'a
<i>Orthemis ferruginea</i> (Fabr.)	dragonfly	nat	10	U	Homakawa 'a
<i>Pantala flavescens</i> (Fabricius)	globe skimmer	Ind	10	U	Homakawa 'a
ODONATA, AESCHNIDAE					
<i>Anax junius</i> (Drury)	green darner	Ind	10	U	Kamakalo 'o, Kumukumu
VERTEBRATES					
VERTEBRATA, PISCES	(fishes)				
ACANTHURIDAE					
<i>Acanthurus nigrofasciatus</i> (Forsskal)	dusky surgeonfish	Ind	10	O	Moikeha
<i>Acanthurus triostegus</i>	manini	Ind	10	C	Moikeha, Waikaea

Table 4. (continued)

Species	Common name	Status	QC Code	Abundance	Stream
BLENNIIDAE					
indet.					
CARANGIIDAE					
indet.	<i>papio</i>	Ind	10	O	Moikeha
CHAETODONTIDAE					
<i>Chaetodon lunula</i> (Lacepede)	raccoon butterflyfish	Ind	10	C	Kapa'a, Waikaea
<i>Chaetodon millardii</i> (Quoy & Gaimard)	lemon butterflyfish	end	10	C	Moikeha
CICHLIDAE					
<i>Sarotherodon melanocheilus</i>	black-chin tilapia	nat	10	U	Kamalomalo'o, Kapa'a
Gobiidae					
<i>Awaous guamensis</i> (Valenciennes)	'o'opu nakea	Ind	10	U	Homakawa'a, Kapa'a
<i>Stenogobius hawaiiensis</i> Watson	'o'opu naniha	end	10	U	Kapa'a
KUHLIIDAE					
<i>Kuhlia sandwicensis</i> (Steindachner)	'aholehole	end	10	A	Homakawa'a, Kumukumu, Kapa'a, Waikaea
LUTJANIDAE					
<i>Lutjanus fulvus</i> (Bloch & Schneider)	to'au (mullets)	nat	10	O	Moikeha
MUGILIDAE					
<i>Mugil cephalus</i>	'amia' 'amia	Ind	10	O	Kapa'a
MULLIDAE					
<i>Mulloidichthys</i> sp.	'oaima	Ind.	10	P	Moikeha, Waikaea
OSTRACIONTIDAE					
<i>Ostracion meleagris</i> Shaw & Nodder	(trunkfishes)	Ind	10	O	Moikeha
POECILIIDAE					
<i>Gambusia affinis</i> (Baird & Girard)	mosquitofish	nat	10	C	Kapa'a
<i>Poecilia mexicana</i> (Steindachner)	Mexican molly	nat	10	C	Kapa'a
<i>Poecilia reticulata</i> Peters	guppy, rainbowfish	nat	10	C	Homakawa'a, Kapa'a, Kamalomalo'o
POMOCENTRIDAE					
<i>Xiphophorus helleri</i> Heckel	green swordtail	nat	10	P	
<i>Abudefduf abdominalis</i> (Quoy & Gaimard)	(damselfishes)	Ind	10	C	Moikeha
<i>Abudefduf sordidus</i> (Forsk.)	<i>mama</i>	Ind.	10	P	Moikeha
SPHYRAENIDAE					
<i>Sphyraena</i> cf. <i>barracuda</i>	barracuda	Ind	10	O	Kapa'a, Moikeha, Waikaea
ZANCLIDAE					
<i>Zanclus cornutus</i> (L.)	Moorish idol (frogs & toads)	Ind	10	O	Moikeha
VERTEBRATA, AMPHIBIA					
BUFOINIDAE					
<i>Bufo marinus</i>	marine toad, tadpole	nat	10	C	Kamalomalo'o, Kumukumu, Kapa'a, Kamalomalo'o
<i>Bufo marinus</i>	marine toad, adult	nat	10	U	

Table 4 (continued)

Species	Common name	Status	QC Code	Abundance	Stream
RANIDAE					
<i>Rana catesbeiana</i> Shaw	bullfrog, tadpole	nat	10	A	Kapa'a
<i>Rana catesbeiana</i> Shaw	bullfrog, adult	nat	10	R	Kamalomalo'o, Homakawa'a
VERTEBRATA, AVES					
<i>Gallinula chloropus sandwicensis</i>	'alae' 'ula	end	10	R	Kamalomalo'o

KEY TO SYMBOLS USED IN TABLE 4:

Status:

nat - naturalized. An introduced or exotic species.
 Ind - Indigenous. A native species also found elsewhere in the Pacific.
 end - endemic - A native species found only in the Hawaiian Islands.

QC Code:

10 - Observed in the field by aquatic biologist on July 26, 2002.

Abundance categories:

R - Rare - only one or two individuals seen.

U - Uncommon - several to a dozen individuals observed.

O - Occasional - regularly encountered, but in small numbers.

C - Common - Seen everywhere, although generally not in large numbers.

A - Abundant - found in large numbers and widely distributed.

P - Present - noted as occurring, but quantitative information lacking.

All six of the streams contain some habitat for native fauna, although natives were observed in only two sites during the July 2002 survey: Homakawa'a Stream and Kapa'a Stream. Kumukumu Stream provides adequate habitat for native amphidromous fauna, although none was observed at the time of the survey. Although Moikeha and Waikaea canals have been altered by man, native amphidromous fauna might live in or migrate through their lower reaches because they are always connected to the ocean. Even though the mouth of Kamalomalo'o Stream was blocked from the ocean at the time of the survey, the stream-to-ocean passage way is sometimes open and might allow for the migration of amphidromous animals, although the upper end of this stream ends in a reservoir.

DISCUSSION

Native aquatic species recorded from the project area are two species of 'o'opu, an endemic snail, juvenile 'aholehole, and mullet, as well as various nearshore marine fishes and invertebrates noted in the estuarine areas. An 'alae' 'ula or Hawaiian gallinule (*Gallinula chloropus sandwicensis*) was observed in Kamalomalo'o Stream, technically, just outside of the project area. This bird is listed as endangered by the U.S. Fish and Wildlife Service under the Endangered Species Act of 1973 as amended (ESA) and by the State of Hawaii under its endangered species program (State DLNR,

1996; CFR, 1999; Federal Register, 1999, 2001). Also, State regulations (DLNR, 1989) extend protection to species of 'o'opu from net fishing activities.

The improved bike path will likely result in increased pedestrian, bicycle, and horse traffic near the streams and ocean shoreline. There are existing bridges for the path over Waikaea Canal, Moikeha Canal, and Kapa'a Stream. This project is not likely to result in any change of existing impacts in these areas. The bridge that used to cross Kumukumu Stream was washed out in a storm and the path presently crosses directly through the stream bed. The path also crosses directly through dry bed of Homakawa'a Stream.

Four of the six streams surveyed provide adequate habitat for native amphidromous fauna and care must be taken to ensure that the bike path's stream crossings do not impede the flow of water or the migration of these species from the stream to the ocean. With the exception of Kumukumu Stream, bridges already exist for these crossings. *The ford across Kumukumu Stream should be replaced with a bridge that spans the width of the stream channel. The ford across Homakawa'a Stream should be improved (constructed of concrete) or replaced with a bridge. The construction of bridges or hardened fords will reduce the erosion and sedimentation that is presently occurring, and thereby reduce impacts that pedestrians, bicyclists, and horses are having on the nearshore environment in these areas.*

Activities that decrease water quality during construction should be avoided by using BMPs designed to trap or reduce runoff and stabilize stream banks. All banks should be revegetated to prevent erosion once the path is completed. An opportunity will exist to revegetate many areas with native coastal plants, which would enhance the experience for path users.

Other potential problems that could have adverse impacts on the streams, or more particularly the estuarine and nearshore environments should be considered. An increase in the amount of litter entering the streams might occur as a result of additional pedestrian, bicycle, and horse traffic on the path. This could be mitigated by strategic placement and regularly maintenance of suitable trash receptacles along the path. The use of the bikeway by horses also raises some impact questions. Horse droppings can become a source of nutrients to the streams. However, if stream banks are vegetated near the bridges, the plants can serve as a filter to reduce the nutrient load entering the water. Finally, it bears mentioning that sharing of a narrow, paved pathway by both horse-riders and others on foot or on bicycles is unlikely. Sharing will be forced at bridge crossings, but everywhere else, it is more likely that horses will create their own, parallel trail. This eventuality should be carefully considered in planning landscaping vegetation and drainage from the trail.

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APPENDIX E

BOTANICAL REPORT

**BOTANICAL REPORT
PROPOSED KAPA'A TO AHIHI POINT BICYCLE PATH
ISLAND OF KAUAI**

by Ron Terry, Ph.D., and Patrick Hart, Ph.D.
August 2002

General Site Description

The project site is an approximately 4.3-mile long, winding path that borders the shoreline on the windward side of Kauai. The southern portion is basically urban, as the path is paved and divides a landscaped park from homes, commercial and resort property. The middle portion (from Kapa'a to Kealia Beach) passes first through undeveloped land with natural scenic values and then a beach park. The northern portion (from Kealia Beach to Ahiihi Point) is situated between wild, natural shoreline and the just-developing Kealia-Kai subdivision. The bike path is already in use by bicycles, pedestrians and motorcyclists.

Vegetation Dynamics

The elevation of the path remains within a few dozen feet of sea level, and mean annual rainfall is approximately 50 inches. The original natural vegetation of this coastal area can be classified as Coastal Dry Shrubland, per Gagne and Cuddihy (1990), consisting of scattered herbs, grasses, vines, shrubs and trees that are mostly indigenous but not endemic to Hawaii. The vegetation of this part of Kauai has been altered in places by disturbance such as grading, construction and dumping, and more fundamentally changed by alien species invasion.

Botanical Survey

A botanical survey of the project site was conducted on July 27, 2002. The purpose of the survey was to identify any state or federally listed threatened or endangered plant species growing on or near the project site, and to summarize the populations of native and introduced plant species.

A corridor about 20 meters wide flanking the existing path was surveyed. In certain locations, wider areas were surveyed:

- The public access from the highway to Donkey Beach;
- All of Waipoli Park, at the south end of the path;
- A wider corridor on the point overlooking Kealia Beach to the south;
- Large sections of the shoreline area makai of the path between Kealia Beach and Donkey Beach; and
- The entire Ahiihi Point area, from the mauka-makai footpath divergence south of the stream, through the stream area to the point, and along the path towards the bay to the north.

All species within the 20 m corridor were recorded. In the other areas, all native species as well as some alien species were recorded, as many landscaped plants and assorted weeds were present as well. A total of 78 plant species were recorded (Table 1).

**Table 1
Plant Species on Project Site**

Scientific Name	Family	Common Name	Life Form	Status
<i>Abutilon grandifolium</i>	Malvaceae	Hairy abouillon	Herb	A
<i>Acalypha</i> sp.	Euphorbiaceae	Khaki weed	Shrub	A
<i>Alepianthus pungens</i>	Amaranthaceae	Khaki weed	Herb	A
<i>Alysicarpus vaginalis</i>	Fabaceae	Alysicarpus	Herb	A
<i>Asplenium leptopus</i>	Polygonaceae	Mexican creeper	Vine	A
<i>Alysicarpus vaginalis</i>	Fabaceae	Alysicarpus	Vine	A
<i>Asplenium leptopus</i>	Polygonaceae	Mexican creeper	Vine	A
<i>Asplenium leptopus</i>	Polygonaceae	Mexican creeper	Vine	A
<i>Asplenium leptopus</i>	Polygonaceae	Mexican creeper	Vine	A
<i>Bacopa monnieri</i>	Scrophulariaceae	Water hyssop	Herb	I
<i>Boerhavia coccinea</i>	Nyctaginaceae	None	Herb	A
<i>Boerhavia repens</i>	Nyctaginaceae	None	Herb	I
<i>Bracharia nutica</i>	Poaceae	Alfalfa	Grass	A
<i>Calotropis gigantea</i>	Asclepiadaceae	Crown flower	Shrub	A
<i>Canavalia cubanica</i>	Fabaceae	Mama loa	Vine	A
<i>Canavalia setacea</i>	Fabaceae	Silky jack bean	Vine	A
<i>Casuarina equisetifolia</i>	Casuarinaceae	Iron wood	Tree	A
<i>Chamaesyce hirta</i>	Euphorbiaceae	Garden spurge	Herb	A
<i>Chamaesyce hypericifolia</i>	Euphorbiaceae	Graceful spurge	Herb	A
<i>Chloris barbata</i>	Poaceae	Swollen finger grass	Grass	A
<i>Coccoloba uvifera</i>	Polygonaceae	Sea grape	Tree	A
<i>Cocos nucifera</i>	Arecaceae	Cocconut	Tree	A
<i>Commelina diffusa</i>	Commelinaceae	Honobono	Herb	A
<i>Conyza bonariensis</i>	Asteraceae	Hairy horseweed	Herb	A
<i>Cordia subcordata</i>	Boraginaceae	Kou	Tree	A
<i>Crotalaria</i> sp.	Fabaceae	Rattlepod	Herb	A
<i>Cynodon dactylon</i>	Poaceae	Bermuda grass	Grass	A
<i>Cyperus latifolia</i>	Cyperaceae	Umbrella grass	Sedge	A
<i>Desmanthus virgatus</i>	Fabaceae	Slender mimosa	Shrub	A
<i>Eleusine indica</i>	Poaceae	Goose grass	Grass	A
<i>Ficus macrophylla</i>	Moraceae	Large-leaf fig	Tree	A
<i>Heliopsis scabra</i>	Asteraceae	Scabridaisy	Herb	I
<i>Hibiscus tiliaceus</i>	Malvaceae	Hau	Tree	I
<i>Ipomoea imperari</i>	Convolvulaceae	Humbai	Vine	I
<i>Ipomoea obscura</i>	Convolvulaceae	Koili ai	Vine	I
<i>Ipomoea pes-caprae</i>	Convolvulaceae	Pohuehue	Vine	I
<i>Ipomoea ovalifolia sandwicensis</i>	Convolvulaceae	Pa'u-o-hi'iaka	Vine	E
<i>Lantana camara</i>	Verbenaceae	Lantana	Shrub	A
<i>Leucaena leucocephala</i>	Fabaceae	Hiale koa	Tree	A
<i>Lycium sandwicensis</i>	Solanaceae	'Ohelo kai	Herb	I
<i>Macropodium lathyroides</i>	Fabaceae	Cow pea	Vine	A
<i>Melastomum coronanadiatum</i>	Malvaceae	False mallow	Shrub	A
<i>Melastomum polynesianum</i>	Fabaceae	Bur clover	Herb	A
<i>Mimosa pudica</i>	Fabaceae	Sensitive plant	Herb	A
<i>Morinda citrifolia</i>	Moraceae	Noni	Tree	A

A = alien, E = endemic, I = indigenous, End = Federal and State listed Endangered Species

Table 1, Continued

Species	Family	Origin	Life Form	Endangered Status
<i>Musa x paradisiaca</i>	Musaceae	Banana	Tree	A
<i>Pandanus tectarius</i>	Pandaneaceae	Hala	Tree	I
<i>Panicum maximum</i>	Poaceae	Guinea grass	Grass	A
<i>Phyllanthus debilis</i>	Emborbiaceae	Phyllanthus	Herb	A
<i>Pilea strabioides</i>	Araceae	Water lettuce	Herb	A
<i>Plantago major</i>	Plantaginaceae	Broad-leaved plantain	Herb	A
<i>Pluchea carolinensis</i>	Asteraceae	Sonchus	Shrub	A
<i>Pluchea indica</i>	Asteraceae	Indian pluchea	Shrub	A
<i>Portulaca oleracea</i>	Portulacaceae	Pig weed	Herb	A
<i>Portulaca pilosa</i>	Portulacaceae	None	Herb	A
<i>Prosopis pallida</i>	Fabaceae	Keawe	Tree	A
<i>Rhizophora mangle</i>	Rhizophoraceae	Red Mangrove	Tree	A
<i>Ricinus communis</i>	Euphorbiaceae	Castor bean	Tree	A
<i>Scaevola taccada</i>	Goodeniaceae	Naupaka kukihi	Shrub	I
<i>Schinus terebinthifolius</i>	Anacardiaceae	Christmasberry	Shrub	A
<i>Senna sp.</i>	Fabaceae	Senna	Shrub	A
<i>Securinum portulacastrum</i>	Aizoaceae	'Aki'aki	Herb	I
<i>Sida glabra</i>	Malvaceae	'Ilima	Shrub	I
<i>Solanum americanum</i>	Solanaceae	Popolo	Shrub	I
<i>Sonchus oleraceus</i>	Asteraceae	Sow thistle	Herb	A
<i>Sporobolus virginicus</i>	Poaceae	'Aki'aki	Grass	A
<i>Stachytarpheta jamaicensis</i>	Verbenaceae	Jamaica vervain	Shrub	A
<i>Strygium cumini</i>	Myrtaceae	Java plum	Tree	A
<i>Terminalia catappa</i>	Combretaceae	Tropical almond	Tree	A
<i>Tetragonia tetragonioides</i>	Aizoaceae	New Zealand spinach	Herb	A
<i>Thespesia populnea</i>	Malvaceae	Milo	Tree	I
<i>Tournefortia argentea</i>	Boraginaceae	Tree heliotrope	Tree	A
<i>Vigna marina</i>	Fabaceae	Nanea	Vine	I
<i>Vitex rotundifolia</i>	Verbenaceae	Pohinahina	Shrub	I
<i>Vitex trifolia</i>	Verbenaceae	Pohinahina	Shrub	I
<i>Waltheria indica</i>	Sterculiaceae	'Uhaloa	Herb	I
<i>Wedelia trilobata</i>	Asteraceae	Wedelia	Shrub	A
<i>Yucca sp.</i>	Agavaceae	Yucca	Tree	A

A = alien, E = endemic, I = indigenous, End = Federal and State listed Endangered Species

Vegetation of the Project Site

The vegetation flanking the bike path consists of remnant, and in some areas post-disturbance successional, strand and coastal communities. The presence of alien species ranges from negligible to dominant. In terms of cover percentage, the most prominent native components are herbs, grasses and vines, including *Ipomoea pes-caprae* (beach morning glory or pohuehue), *Jacquemontia ovalifolia sandwicensis* (pa'u-o-hi'iaka, an endemic subspecies), *Boerhavia repens* (alena), *Scaevola taccada* (naupaka), *Sesuvium portulacastrum* ('akulikuli), *Vitex rotundifolia* (pohinahina), *Sida fallax* (ilima), *Sporobolus virginicus* ('aki'aki grass). Somewhat less common but either widely scattered or prominent in certain locations are *Heliotropium curassavicum* (seaside heliotrope), *Ipomoea imperati* (humakai), *Waltheria indica* ('uhaloa), and *Vigna marina* (nanea).

Large shrubs and trees are not present directly adjacent to the bike path for much of its length, but are usually found close by. *Tournefortia argentea*, the alien tree heliotrope, very common on shores throughout Hawai'i, is the most common tree, followed by the indigenous milo (*Thespesia populnea*) and hau (*Hibiscus tiliaceus*).

Along its entire length, areas flanking the bike path are well endowed with a diverse range of native species. The point overlooking Kealia Beach from the south and the makai slopes of the path between Kealia Beach and Donkey Beach offer particularly good native assemblages in terms of either purity or diversity.

Threatened or Endangered Plant Species

No proposed or listed threatened or endangered species were observed during the botanical survey. Although it bears noting that even careful survey may miss cryptic species, seedlings, and stressed or obscured plants, based on its setting and the results of this survey, the project site is not likely to contain any significant population of threatened or endangered plant species.

Impacts and Mitigation Measures

The remnant strand and coastal plant communities, although not uncommon, have conservation value for preserving native species and communities, for preventing erosion and sedimentation of adjacent areas, and for conservation education. We have the following recommendations to minimize adverse impacts and maximize the potential conservation benefit of the path:

- The improved bike path should be located along the same alignment as the current path to the greatest degree practical.
- The path offers excellent interpretation opportunities for native plant education. In the interest of preserving the biota in the area and fostering interest in native plants in general, we recommend that educational signs be installed and maintained.
- During construction, care should be taken to restrict the footprint of construction to the minimum area necessary and repair any damage to native plant communities.
- A landscaping plan should be prepared by parties knowledgeable in native plants and conservation biology, and it should incorporate primary native species and avoid using any alien plants that have potential to naturalize in the area.

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APPENDIX F

SURVEY OF AVIAN AND TERRESTRIAL MAMMALIAN SPECIES

**A Survey of Avian and Terrestrial Mammalian
Species Conducted for the
Kapa'a to Kealia Bike and Pedestrian Path
Kawaihau District, Kaua'i.**

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August 2002

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Introduction:

This report summarizes the findings of a three day ornithological and mammalian survey of the proposed Kapa'a to Ke'Alia Bike and Pedestrian Path. The pathway starts on the south side of Waikaea Canal in the Waipouli Beach Park and runs ~ eight-kilometers north along the coastline to 'Ihiihi Point, in the Kawaihau District on the island of Kau'i (Figure 1). Fieldwork was conducted from July 24th through the 26th, 2002.

The primary purpose of the survey was to determine if there were any federally listed endangered, threatened, proposed, or candidate avian or mammalian species on, or in the immediate vicinity of the proposed bike and pedestrian path right-of-way. Federal and State of Hawai'i listed species status follows (DLNR, 1998; Federal Register, 1999a, 1999b, 2001)

Avian phylogenetic order and nomenclature follows *The American Ornithologist's Union Checklist of North American Birds 7th Edition* (American Ornithologist's Union, 1998), and the 42nd supplement to *Check-list of North American Birds* (American Ornithologist's Union, 2000). Mammal scientific names follow *Mammals in Hawaii* (Tomich, 1986). Plant names follow *Manual of the Flowering Plants of Hawaii* (Wagner et al., 1990). Place names follow *Place names of Hawaii* (Pukui et al., 1974).

General Site Description:

The route of the proposed Kapa'a to Ke'Alia Bike and Pedestrian Path follows portions of several existing pathways, portions of a former cane-haul road, and finally just south of 'Ihiihi Point crosses trackless abandoned sugar cane fields (Figure 1). At no point is the ~ eight-kilometer pathway far from the shoreline. Maximum elevations reached along the route are ~ 80 feet above mean sea-level, at 'Ihiihi Point (USGS, 1996a, 1996b).

The vegetation along the route includes manicured resort lawns with groves of ironwood (*Casuarina equisetifolia*) trees at the southern end of the route, urbanized areas in Kapa'a which are dominated by alicm (i.e. introduced to Hawai'i by humans) grasses and ornamental plants, and coastal strand vegetation dominated by native species along the *maka* side of the route north of Ke'Alia Beach.

Mammalian Survey Methods:

All observations of mammalian species were of an incidental nature. With the exception of the Hawaiian hoary bat (*Lasiurus cinereus semotus*), or 'Ōpe'ape'a as it is known in Hawaiian, all terrestrial mammals found on the island of Kauai are alien species. Most are ubiquitous; no trapping program was proposed or undertaken to quantify the use of the study site by alien mammalian species. The survey of mammals was limited to visual and auditory detection, coupled with observation of scat, tracks, and other animal sign.

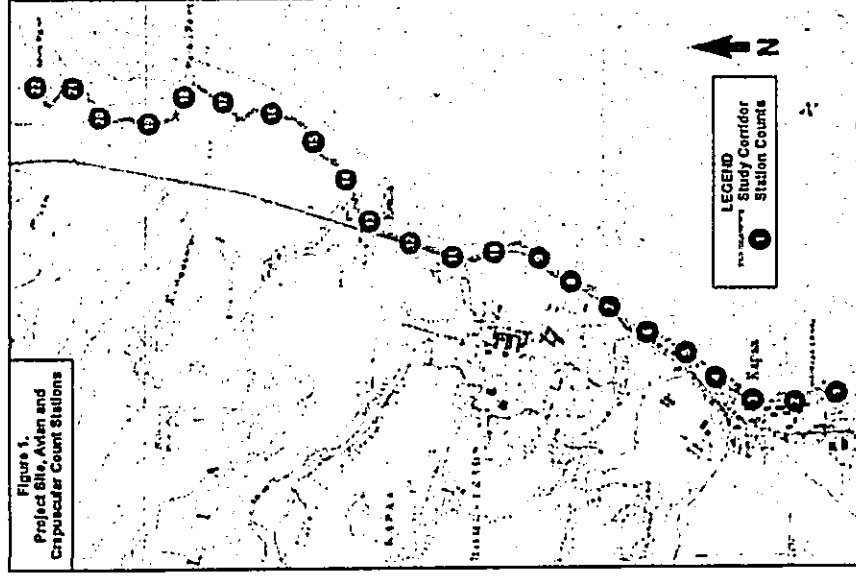


Figure 1.
Project Site, Avian and
Cynpucker Count Stations

A running tally was kept of all vertebrate species observed and heard within the project area. Visual scans were made for bats, during crepuscular periods on the evenings of the 24th and 25th of July, 2002.

Avian Survey Methods:

Twenty-two count stations were established along the proposed corridor (Figure 1). Six-minute variable circular plot counts were made at each station. Stations were counted once. Field observations were made with the aid of Leitz 10 X 42 binoculars and by listening for vocalizations. Counts were concentrated between 06:30 a.m. and 10:00 a.m., the peak of daily bird activity. An additional two hours were spent on site during the evenings of the 24th and 25th and the mornings of the 25th and 26th of July, 2002, in an attempt to detect nocturnally flying seabirds and owls over-flying the area. Additionally the existing public access trail running through the KeAlia Development Project was walked to determine if there is any significant difference in the faunal makeup along its length when compared to that found along the proposed bike and path route. Time not spent counting was used to search the corridor as well as the surrounding area for species and habitats not detected during count sessions.

Mammalian Survey Results

Endangered Hawaiian hoary bats were seen on both nights, a total of five animals were observed during the survey. One adult endangered Hawaiian monk seal (*Monachus schauinslandi*), was seen hauled out on the beach just north of Palikē Point, on July 25th, 2002. Within the project corridor we encountered numerous domestic dogs (*Canis f. familiaris*), all of which were accompanying joggers and walkers using the existing pathway. We also recorded sign and scat of two other mammalian species, namely, cat (*Felis catus*), and horse (*Equus caballus*), along the corridor.

Avian Survey Results

A total of 412 individual birds of 17 species, representing 14 separate families, were recorded during station counts (Table 1). Of the 17 species detected during station counts, one, the Common Moorhen (*Gallinula chloropus sandvicensis*), or 'alea'ula as it is known in Hawaiian, is an endemic (i.e. native and unique to Hawai'i), sub-species of this near cosmopolitan species. It is also listed as an endangered species under Endangered Species Act of 1973, as amended (ESA), and by the State of Hawai'i under its endangered species program (DLNR, 1998; Federal Register, 1999a).

Two species, Wedge-tailed Shearwater (*Puffinus pacificus*), or 'ua'u kani, and White-tailed Tropicbird (*Phaethon lepturus doroihea*), or 'koa'e kea, are indigenous (native to Hawai'i) but also found elsewhere naturally. During the course of crepuscular and nocturnal visits to the project site, two additional seabird species were recorded flying over

Avian Species Detected Along the Proposed Kapa'a to KeAlia Bike and Pedestrian Path

Common Name	Scientific Name	ST	RA
PETRELS & SHEARWATERS - Procellariidae			
Dark-rumped Petrel (Hawaiian)	<i>Pterodroma phaeopygia sandvicensis</i>	EE	IN
Wedge-tailed Shearwater	<i>Puffinus pacificus</i>	I	0.09
Newell's Shearwater	<i>Puffinus auricularis newelli</i>	TE	IN
TROPICBIRDS - Phaethonidae			
White-tailed Tropicbird	<i>Phaethon lepturus doroihea</i>	I	0.05
HERONS - Ardeidae			
Cattle Egret	<i>Bubulcus ibis</i>	A	1.50
Red-tailed Tropicbird	<i>Galus gallus</i>	A	0.55
RAILS & ALLIES - Rallidae			
Common Moorhen (Hawaiian)	<i>Gallinula chloropus sandvicensis</i>	EE	0.05
PIGEONS & DOVES - Columbidae			
Spotted Dove	<i>Streptopelia chinensis</i>	A	0.14
Zebra Dove	<i>Cropelia striata</i>	A	2.95
MIMIC THRUSHES & ALLIES - Mimidae			
Northern Mockingbird	<i>Mimus polyglottus</i>	A	0.05
SILVEREYES - Zosteropidae			
Japanese White-Eye	<i>Zosterops japonicus</i>	A	0.14
STARLINGS - Sturnidae			
Common Myna	<i>Acridotheres tristis</i>	A	3.36
BLACKBIRDS & ALLIES - Icteridae			
Western Meadowlark	<i>Sturnella neglecta</i>	A	0.41
SALTATORS & ALLIES - Cardinalidae			
Red-crested Cardinal	<i>Paroaria coronata</i>	A	0.86
Northern Cardinal	<i>Cardinalis cardinalis</i>	A	0.18
CARDULINE FINCHES & ALLIES - Fringillidae			
House Finch	<i>Carpodacus mexicanus frontalis</i>	A	2.68
OLD WORLD SPARROWS - Passeridae			
House Sparrow	<i>Passer d. domesticus</i>	A	4.27
WAXBILLS & ALLIES - Estrifidae			
Chestnut Munia	<i>Lonchura atricapilla</i>	A	1.27
Java Sparrow	<i>Padda oryzivora</i>	A	0.18

Key to Table 1.

ST Status
 I Indigenous, resident species
 A Alien species
 EE Endangered, endemic sub-species
 TE Threatened, endemic sub-species
 IM Indigenous, migratory species
 RA Relative Abundance: Number of birds detected divided by the number of count stations (22)
 IN Incidental observation / not counted during station counts, but seen along the corridor

nocturnal visits to the project site, two additional seabird species were recorded flying over the project area. These were the endangered endemic Hawaiian subspecies of the Dark-rumped Petrel (*Pterodroma phaeopygia sandwichensis*), or 'ua'u, and the threatened endemic sub-species of the Newell's Shearwater (*Puffinus auricularis newelli*), or 'a'o. Avian diversity and densities were relatively low. Four species, Zebra Dove (*Geopelia striata*), Common Myna (*Acridotheres tristis*), House Finch (*Carpodacus mexicanus frontalis*), and House Sparrow (*Passer d. domesticus*), accounted for 71% of the total of all birds recorded during station counts. The most common avian species detected was the House Sparrow, which accounted for 23% of the total number individual birds recorded. We recorded an average of 19 birds per station count.

Discussion:

A one-time survey cannot provide a total picture of the wildlife using any given area. Certain species will not be detected for one reason or another. Seasonal variations in populations, coupled with seasonal availability and use of resources, will cause different use patterns throughout a year and, in fact, over a number of years. Coupling the results of a one time survey with the results of previous surveys conducted in similar habitats and locations, greatly expands the value of the information gathered.

The findings of the mammalian survey are consistent with the results of other recent surveys conducted within the lowland areas of Kapa'i (David, 1995, 1998, 1999a, 1999b, 2000, 2001). The detection of the endangered Hawaiian hoary bat within the project area was not unexpected. This species is regularly seen in and around Kapa'a, as well as most of the lowland areas on the Island of Kapa'i (Tomich, 1986; David, 1995, 1999b, 2001; R. David, pers. obs. 1980-2002).

Although no live rodents were detected during the course of this survey, it is likely that roof rats (*Rattus r. rattus*), Norway rats (*Rattus norvegicus*), European house mice (*Mus domesticus*) and possibly Polynesian rats (*Rattus exulans hawaiiensis*) use various resources found within the project area. Without conducting a trapping program, it is difficult to assess the population densities of these often hard-to-see mammals. All of these introduced rodents are deleterious to native ecosystems and their dependant faunal components.

The findings of the avian survey are consistent with the findings of other recent surveys conducted within the lowland areas of Kapa'i (David, 1995, 1998, 1999a, 1999b, 2000, 2001; Day and Cooper, 1999, 2001; Day et al., 2000, 2001). The detection of listed seabird species over-flying the project area was not unexpected. Both the endangered Dark-rumped Petrel, and the threatened Newell's Shearwater cross the northern, eastern and southern coastline of Kapa'i across a broad front and in relatively large numbers during the breeding season (Cooper and Day, 1995, 1998; Day and Cooper, 1995; Day et al., 2000, 2001a).

Both species of seabirds, especially fledging birds, can become disoriented by exterior lighting on their way to sea in the Fall. When disoriented, seabirds often collide with manmade structures and, if not killed outright, the dazed or injured birds become easy targets of opportunity for feral mammals. Collision with utility structures is considered to be the second most significant cause of mortality of these two seabird species in Hawai'i (Telfer et al., 1987; Ainley et al., 1995, 1997, 1998, 2001; Cooper and Day, 1995, 1998; Day and Cooper, 1995). The primary cause of mortality in both species is thought to be predation by alien mammalian species at the nesting colonies (Ainley et al., 2001; Day and Cooper, 1998; Cooper and Day, 1995). There are no known nesting colonies, nor appropriate nesting habitat for either listed seabird species within or close to the project area.

One endangered Common Moorhen was seen foraging along the Kapa'a Stream *makai* of the old railway bridge. Currently there is no suitable nesting habitat below either bridge crossing the stream for this endangered species.

The further development of the proposed bike and pedestrian path will not have deleterious impacts on listed avian or mammalian species.

Recommendations

To reduce the possibility that the nocturnally flying Dark-rumped Petrels and Newell's Shearwaters may be disoriented by external lights and collide with man-made structures, it is recommended that any external lighting planned along the bike and pedestrian path be shielded (Reed et al., 1985; Telfer et al., 1987). This mitigation would minimize the threat of disorientation and downing of Dark-rumped Petrels, and Newell's Shearwaters.

To maintain the water quality necessary to support both listed waterbirds and near-shore waters that support listed aquatic reptiles it is imperative that any spoil created by construction activity not be allowed to enter any of the streams, canals or near-shore waters adjacent to the proposed pathway. It is recommended that Best Management Practices (BMP's) be developed and implemented during the construction phase of this project to ensure that spoil does not enter any of the aquatic habitat along the route.

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APPENDIX G

ARCHAEOLOGICAL INVENTORY

ARCHAEOLOGICAL INVENTORY SURVEY
 FOR THE PROPOSED KAPA'A/KEĀLIA
 BIKE AND PEDESTRIAN PATH,
 KAPA'A AND KEĀLIA, KAWAHAU DISTRICT,
 KAUAI ISLAND, HAWAII
 (TMK 4-5, 4-6-14, 4-7-03 & 04)

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Prepared for
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I. INTRODUCTION

A. Project Background

The Kapa'a to Keālia Bike and Pedestrian Path is a segment of a much longer proposed bike and pedestrian path to stretch along the eastern side of the island of Kaua'i. A portion of this bike path is in the process of being constructed in Wailua, south of the project area. For many island residents, the proposed path alignment has been used for walking, biking, motorcycling and horseback riding for years. In Kapa'a Town, the alignment has been paved since the 1980s. To assist in the development of a master plan, Cultural Surveys Hawai'i Inc. (CSH) has undertaken an archaeological inventory survey. The inventory survey included surface and subsurface investigations. CSH was contracted by SSFM International Inc. to conduct the inventory survey and an accompanying cultural impact assessment. The following document reports the results of the archaeological inventory survey.

B. Project Area Description

The project area consists of a narrow, approximately 4.3 mile corridor of land along the eastern coast of Kaua'i proposed for the Kapa'a/Keālia Bike and Pedestrian Path (Figures 1 & 2). The path is planned to begin on the south side of the Waikā'eā Canal at the Lihī and extend through the Kapa'a and Keālia *Ahupua'a* in the Kawaihau District. In addition to the narrow corridor of land proposed as the bike path, two parcels along the route were chosen for archaeological subsurface test excavations for proposed restroom facilities and parking areas associated with the bike path and pedestrian pathway. One area which was tested marks the beginning of the bike path at the south end of Waikā'eā Canal, also known as the Boat Ramp or the "Lihī" (Figure 2). The other area which was subjected to subsurface testing is located at the north end of Keālia Beach where there is an overflow parking area for beach activities.

The 4.3 mile path extends through a variety of physical terrains and settings. In the Kapa'a Town area, the bike path alignment follows an existing asphalt paved pathway for approximately 0.77 miles (Figures 3 & 4). In this section, the path is bounded on the east by the ocean and on the west, by a variety of resort, residential and light industrial structures including Pono Kai Resort, private residences, Kapa'a Beach Park, Kapa'a Public Library, Coral Reef Hotel, Kapa'a Neighborhood Center, Smokey Louie Public Swimming Pool and Otauka's Furniture and Appliances Store. The only structures situated on the *maka'i* side of the bike path in this section are two pavilions associated with Kapa'a Beach Park and the Smokey Louie Public Swimming Pool. The paved portion of the pathway ends at the Kapa'a Neighborhood Center or the Smokey Louie Public Swimming Pool where the bike path becomes a narrow, paved road which terminates at the north end of the swimming pool. Private residences line the *maka'i* side of this short, paved, narrow lane. From here, there is a dirt footpath which extends north approximately 200 m hooking into the plantation era Cane Haul Road (State Site 60-30-08-789A) which crosses Kūhiō Highway *maka'i* near the intersections of Hau'āla Road and Kūhiō Highway (Figure 5). From here to near the path's terminus, the pathway alignment follows the existing Cane Haul Road around the peninsula at the north side of Kapa'a, through Keālia Valley paralleling Kūhiō Highway and Keālia Beach and along the more isolated north

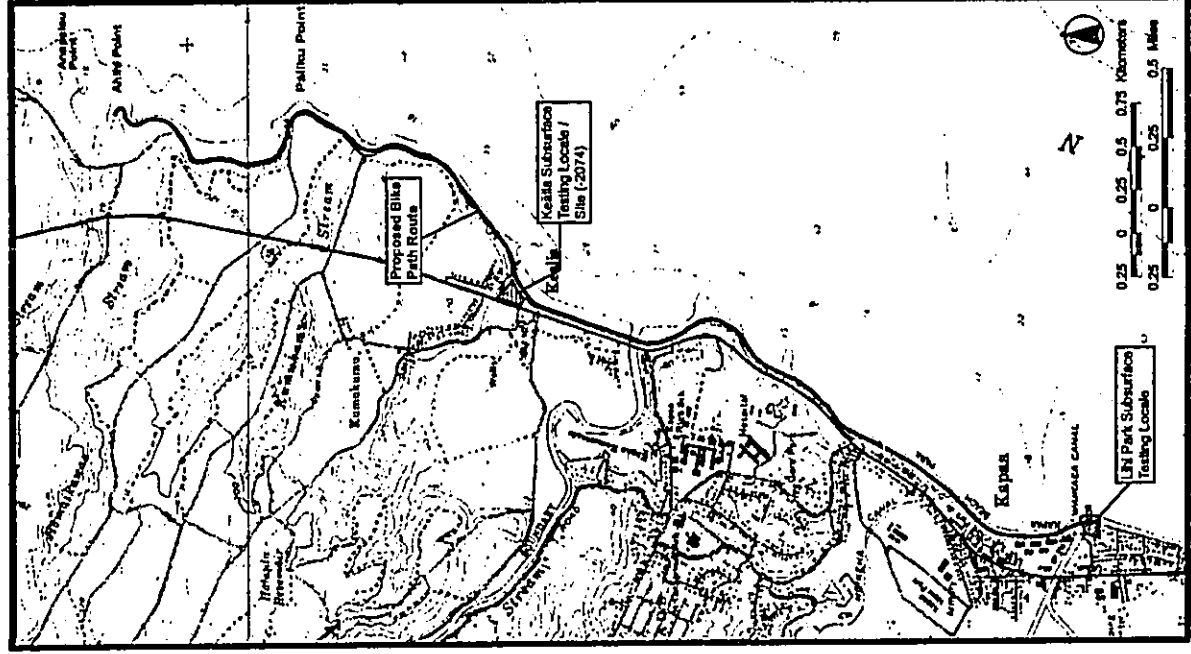


Figure 1 USGS Map Showing Proposed Bike/Pedestrian Path Route in Kapa'a and Keālia and Subsurface Testing Localities.

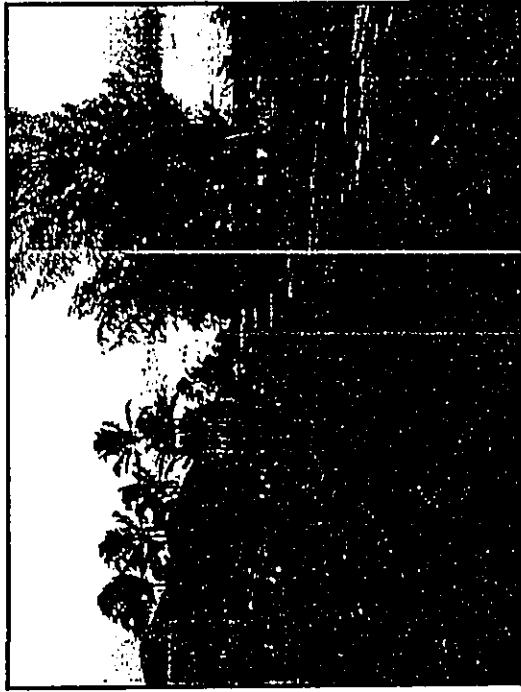


Figure 3 Present Bike and Pedestrian Path, Makai of Pono Kai Resort.
Photo Taken to North.

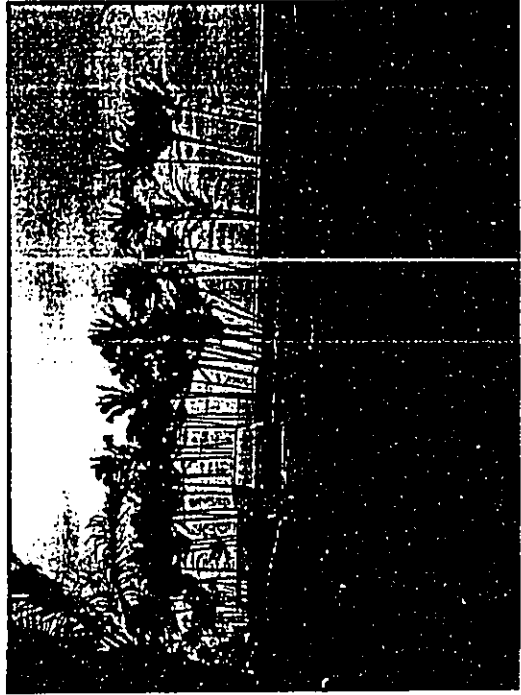


Figure 4 Present Bike and Pedestrian Path at Kapa'a Beach Park.
Photo Taken to North.

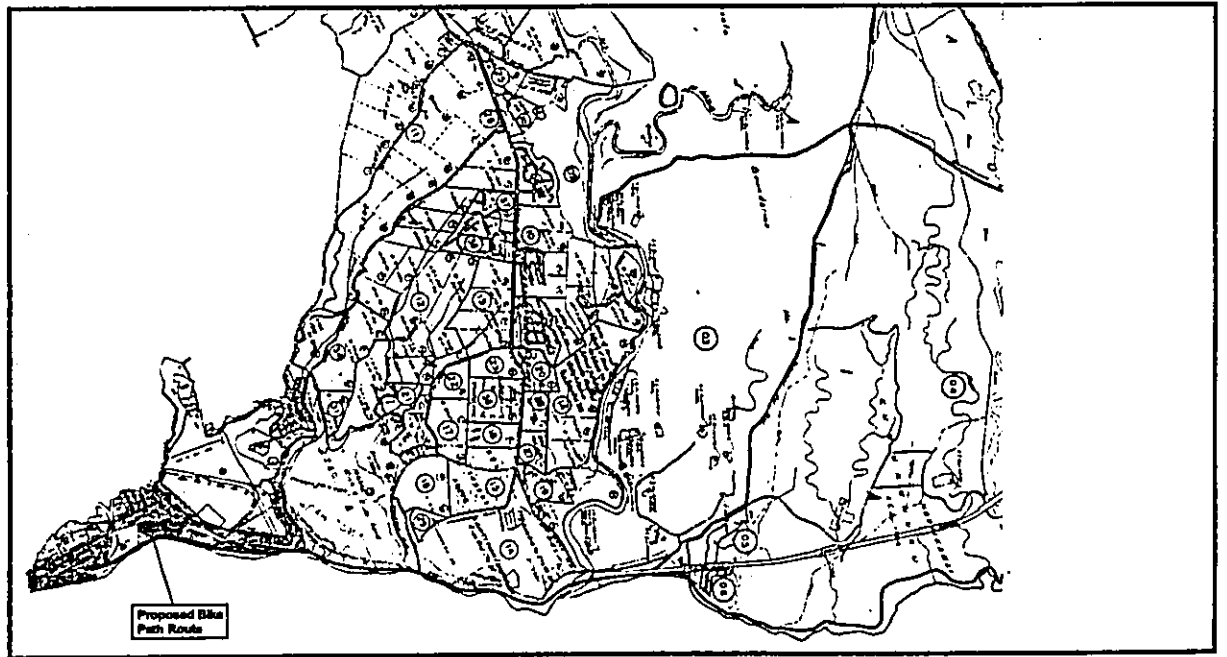


Figure 2 TMRs 4-5, 4-6-14, 4-7-03, and 4-7-04, Showing Proposed Pedestrian and Bike Path Through Kapa'a and Kalia.

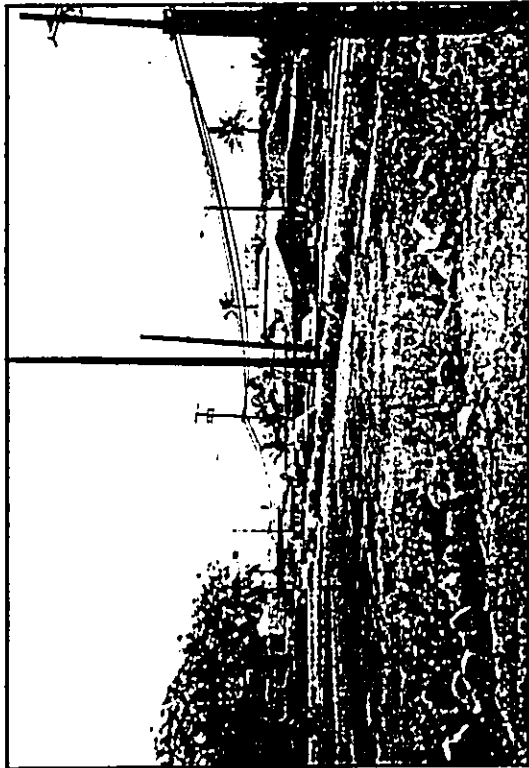


Figure 5 Beginning of Cane Haul Road (State Site 50-30-08-789, Feature A) in Kapa'a. Cane Haul Road Continues mauka of Kūhiō Highway at Yellow Gate. Photo Taken to South



Figure 6 Section of Cane Haul Road (State Site 50-30-08-789, Feature A) towards north end of Kapa'a. Photo Taken to North.

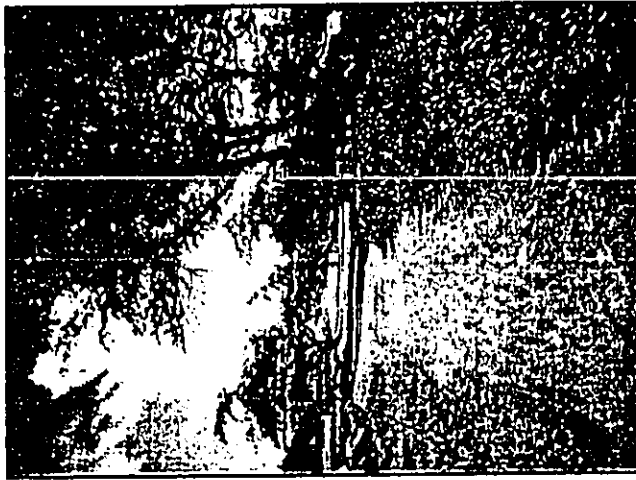


Figure 7 Section of Cane Haul Road (Site 50-30-08-789, Feature A), Paralleling Kūhiō Highway at Kealia Beach. Photo Taken to North.



Figure 8 Cane Haul Road (Site 50-30-08-789, Feature A) North of Keālia Landing. Photo Taken to North.

area prompted subsurface testing with a backhoe. The following archaeological inventory survey scope of work was formulated to satisfy the State and County requirements:

1. A complete ground survey of the entire project area for the purpose of site inventory. All sites were located, described, and mapped with evaluation of function, interrelationships, and significance. Documentation includes photographs and scale drawings of selected sites and complexes. All sites were assigned state site numbers.
2. Limited subsurface testing with a backhoe was conducted to determine if subsurface deposits are located within specific locations of the project area, and an evaluation of their significance. Samples from these excavations were analyzed for chronological information.
3. Research on historic and archaeological background, including search of historic maps, written records, and Land Commission Award documents. The research will focus on the specific area with general background on the *ahupua'a* and district and emphasizes settlement patterns.
4. Preparation of a survey report which includes the following:
 - a. A topographic map, if available, of the survey area showing all archaeological sites and site areas;
 - b. Description of all archaeological sites with selected photographs, scale drawings, and discussions of function;
 - c. Historical and archaeological background sections summarizing prehistoric and historic land use as they relate to the archaeological features;
 - d. A summary of site categories and their significance in an archaeological and historic context;
 - e. Recommendations based on all information generated which will specify what steps should be taken to mitigate impact of development on archaeological resources—such as data recovery (excavation) and preservation of specific areas. These recommendations were developed in consultation with the client and State agencies.

This scope of work also included full coordination with the State Historic Preservation Division (SHPD), and County relating to archaeological matters.

Keālia Coast to 'Āhihi Point just beyond Kūna Bay (more commonly known as Donkey Beach)(Figures 6 - 8). The existing paved bike path in Kapa'a Town is approximately 5 ft. in width. The proposed path will be expanded to approximately 12 ft. in width. The inventory survey covered the area from the coastline to just beyond the mauka boundary of the proposed path. There was some exception to this where existing historic railroad infrastructure was found, however for the most part, the survey attempted to remain within the bounds of the proposed pathway alignment and the coastline.

Kapa'a and Keālia are situated on the windward side of Kapa'i and are exposed to the prevailing tradewinds and their associated weather patterns. Rainfall on the coastal plains and plateaus of Kapa'a and Keālia averages approximately 40 in. per (Juvik and Juvik, 1998:56). Kapa'a can be characterized as fairly flat, with irregularly-shaped gulches and small valleys in the uplands, through which small tributary streams run including Kapahi, Makaleha and Moalepe. While some of these streams combine with other tributaries in neighboring Keālia to form Kapa'a Stream (often referred to as Keālia River) which empties into the ocean at the northern border of the *ahupua'a*, others flow directly into the lowlands of Kapa'a creating a large (approximately 170 ac.) swamp area which has been mostly filled in modern times (Handy and Handy 1972: 394, 423). Two canals have been constructed to drain the marshy areas behind Kapa'a Town, Walkā ea Canal (known to most local people as Waikeha Canal) and Moikeha Canal. Kapa'a Town is built upon a sand berm which forms the *maka'i* buffer to the inland swamp. A portion of the proposed pathway alignment is located on this sand berm. To the north of Kapa'a, Keālia *Ahupua'a* shows more characteristics of a typical stream valley with a good sized alluvial plain dissected by a major stream, the Kapa'a Stream (Keālia River) in addition to a plateau land dissected by a few small drainages including Kumukumu and Homakawa'a Streams.

The soils in the Kapa'a area of the proposed bike and pedestrian path include Beach Sand (BS) and Mokuleia fine sandy loam (Mf), a well-drained soil typically found along the coastal plains of eastern and northern Kapa'i (Foote *et. al.* 1972). Around the rocky peninsula of northern Kapa'a *Ahupua'a*, the soils are characterized by Rock Outcrop (rRO) or exposed basalt bedrock and Lihue silty clay (LhE2), weathered igneous rock. The Cane Haul Road paralleling Keālia Beach which is the proposed bike path alignment overlies Mokuleia fine sandy loam (Mf). Continuing north beyond the Keālia Landing, the Cane Haul Road and proposed bike path alignment overlies rocky material including Lihue silty clay (LhE2), Kōlea stony silty clay (KvD), a small area of Mokuleia fine sandy loam (Mf) just mauka of Kūna (Donkey Beach) and rock outcrop and rocky soils (rRR) at the end of the pathway alignment at 'Āhihi Point.

C. Scope of Work

The following scope of work was based on consultation with the State Historic Preservation Division Kapa'i Island Archaeologist, Nancy McMahon. The northern approximately 1/3 of the project area was included in a prior inventory survey by Cultural Surveys Hawaii (Perrinaki *et. al.* 2000) reviewed and accepted by SHPD (LOG. NO. 26358; DOC NO. 0004NM31). Given the length and coastal location of the project area, Nancy McMahon indicated that subsurface testing with a backhoe was needed during the inventory survey. Associated structures including a proposed bathroom facility and parking

D. Methods

The aims of the inventory survey and subsurface testing were twofold: 1) to locate and document all surface historic properties along the proposed bike and pedestrian path alignment and 2) to test for subsurface historic properties in the areas where subsurface work was intended for restroom facilities and parking areas associated with the bike path. The inventory survey included a pedestrian inspection of the project area to identify, map, photograph, and attempt to determine the age and function, based on observable characteristics, of all historic properties.

Field inspection and subsurface testing of the project area was accomplished in August 2002. Archaeologists, Melanie Mann, B.A., Brian Colin, B.A., Ian Masterson, A.A., Tina Bushnell, B.A., and David Shideler, ABD of CSH conducted the fieldwork.

Sub-surface testing consisted of the excavation of 13 backhoe trenches. The trenches were excavated below the water table or to a sterile stratum layer. A 70 cm wide bucket was used on the backhoe, and most trenches were one bucket width wide. Trench depth varied between 1.5 and 2.5 m.

Three archaeologists were on site to conduct sub-surface investigations. Documentation included scale section profiles, sediment descriptions, and photographs of exposed trench sections. Sediment descriptions included Munsell color designations, texture and sediment size, compactness, structure, inclusions and cultural material present, and lower boundary attributes. Sediment samples were collected, inventoried, and catalogued. Charcoal for radiocarbon analysis was collected from discreet charcoal pockets in the excavated trench walls and sent to Beta Analytic Inc. for C¹⁴ analysis.

Background research included a review of previous archaeological studies on file at the State Historic Preservation Division of the Department of Land and Natural Resources; a review of geology and cultural history documents at the Hawaii State Archives, the Hawaii Public Library, the Archives of the Bishop Museum and the Kaula'i Historical Society; study of historic photographs at the Archives of the Bishop Museum and the Kaula'i Historical Society; and a study of historic maps at the Survey Office of the Department of Land and Natural Resources; and research on the mid-1800's Land Commission Award documents (Waihona 'Aina).

The research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model of the expected type and location of sub-surface pre- and post-contact historic properties in the project area.

E. Note on Place Names

Place names are an integral part of Hawaiian culture. "They are a reflection of who, what, when, where, and why at the time they were given, and like the culture they are dynamic and subject to change no matter how established or traditional they are" (Clark,

2002:xiii). In carrying out this study, there were several instances when a place name, particularly those used in the USGS quadrangle maps, were questioned. For instance, the location recorded as the "Waipouli Beach Park" on the Kapaa Quadrangle of the USGS map is recognizable to very few as such. Most people from the Kapaa area who use the park know the place as the "Lihi" or the "Boat Ramp". One of the people who regularly hangs out at the Lihi claimed that was a new name, but that he did not know the origins of it (personal communication, E. Tokioka, August 2002). The name "Lihi" has been used in the report to represent the park area at the beginning of the bike path.

A second place name in question is the canal at the Lihi, depicted on the USGS map as Waikaea Canal. Local people refer to this drainage canal as Waiakea Canal, and in some cases as Waikae. Other historic documents vary in the usage of the name using everything from Waika'ea to Waikae to Waiakea. This report refers to this canal as Waika'ea Canal.

The final controversial place name is the river through Keālia Valley. The USGS, Kapaa Quad map refers to this as the Kapaa Stream, however everyone we talked to, including people who grew up in Keālia Town refer to this as the Keālia River. This report refers to this stream as the Keālia River.

II. CULTURAL BACKGROUND OF KAPA'A AND KEĀLIA

A. From Puna District to Kawaihau District

Kapa'a and Keālia *Ahupua'a* belong in the ancient district of Puna, one of five ancient districts on Kaua'i (King 1936: 228). Puna was the second largest district on Kaua'i, behind Kona, and extended from Kipā, south of Lihue to Kamalomalo'o, just north of Keālia. For taxation, educational and judicial reasons, new districts were created in the 1840's. The Puna District, with the same boundaries became the Lihue District, named for an important town in that district. In 1878, by act of King Kalākaua in securing a future and name for the new Hui Kawaihau, created the new district of Kawaihau. This new district encompassed the *ahupua'a* ranging from Olohena on the south to Kilauea on the north. Subsequent alterations to district boundaries in the 1920's left Kawaihau with Olohena as its southernmost boundary and Moloa'a as its northernmost boundary (*Ibid*:222).

B. Traditional and Legendary Accounts of Kapa'a and Keālia

Although Kapa'a and Keālia pale to their neighbor to the south, Wailua, in so far as legendary histories and *uahi pana* or celebrated places, there are still several accounts referring to these areas.

1. Kapa'a

a. Palila and Ka'ea

High in the *mauka* region of Kapa'a in the Makaleha mountains at a place called Ka'ea, is reported to be the supernatural banana grove of the Kaua'i *kupua* or demigod Palila, grandson of Hina (Handy and Handy 1972:424). Joseph Akina writing for Kuokoa in 1913 describes Palila's banana grove:

The stalk could hardly be surrounded by two men, and was about 35 feet high from the soil to the lowest petiole. The length of the cluster from stem to lowest end of the bunch of bananas was about 1 3/4 fathoms long (one arana and one muku). There were only two bananas on each about 4 1/2 inches around the middle. There were just two bananas, one on the east side and one on the west, each about a foot or more in length. The one on the east side was tartish, like a waiawi (Spanish guava) in taste and the one on the west was practically tasteless. The diameter of the end of the fruit stem of this banana seemed to be about 1 1/2 feet. This kind of banana plant and its fruit seemed almost supernatural... (Akina, 1913: 5).

b. Ka Lulu o Mō'ikeha

Kapa'a was the home of the legendary *aiti'i*, Mō'ikeha. Born at Waipi'o on the island of Hawai'i, Mō'ikeha sailed to Kahiki (Pahiti), the home of his grandfather Maweke, after a disastrous flood. On his return to Hawai'i, he settled at Kapa'a, Kaua'i. Kila, Mō'ikeha's favorite of three sons by the Kaua'i chiefess Ho'oiokamalani, was born at Kapa'a and was said to be the most handsome man on the island. It was Kila who was sent by his father back to Kahiki to slay his old enemies and retrieve a foster son, the high chief

La'amaikahiki (Handy and Handy 1972:424; Beckwith 1970:352-358; Kalakaua 1888:180-186; Fornander 1916, vol.4 pt.1:160). Mō'ikeha's love for Kapa'a is recalled in the *'ōlelo no'eau*: *Ka lulu o Moikeha i ka laulā o Kapa'a*. "The calm of Moikeha in the breadth of Kapa'a" (Pūkui, 1983: 157).

"Lulu-o-Moikeha" is described as being situated "near the landing and the school of Waimahana" (Akina, 1913: 5). The landing in Kapa'a was known as the Makee Landing and was probably constructed in the late 1870s, along with the Makee sugar mill. Today, in place of the old Makee Landing is part of a breakwater located on the north side of Moikeha Canal near the present day Coral Reef Hotel.

Akina (1913) tells the story of how Mō'ikeha's son, Kila stocks the islands with the fish *akule*, *kawakawa* and *'ōpelu*. When Kila travels to Kahiki, he seeks out his grandfather Maweke and explains that he is the child of Mō'ikeha. When Maweke asks Kila if Mō'ikeha is enjoying himself, Kila answers with the following chant:

My father enjoys the billowing clouds over Pohaku-pili,
The sticky and delicious poi,
With the fish brought from Puna,
The broad-backed shrimp of Kapulua,
The dark-backed shrimp of Pohakuhapai,
The potent awa root of Māiaki,
The breadfruit laid in the embers at Makialo,
The large heavy taros of Keahapana
The crooked surf of Makaiwa too
The bending hither and thither of the reed and rush blossoms,
The swaying of the kalukalu grasses of Puna
The large plump, private parts of my mothers,
Of Hoioikamalani and Hinanu-u,
The sun that rises and sets,
He enjoys himself on Kauai,
All of Kauai is Moikeha's. (Akina, 1913: 6)

Maweke was delighted and when the boy is questioned as to his purpose, Kila tells his grandfather he is seeking fish for his family. Maweke tells Kila to lead the fish back to his homeland. This is how Kila led the *akule*, *kawakawa* and *'ōpelu* to Hawai'i.

c. Paka'a and the wind gourd of La'amaomao (Keahiahi)

Kapa'a also figures prominently in the famous story of Paka'a, and the wind gourd of La'amaomao. Paka'a was the son of Kūānu'uānu, a high-ranking retainer of the Big Island ruling chief Keawenuia'umi (the son and heir to the legendary chief 'Umi), and La'amaomao, the most beautiful girl of Kapa'a and member of a family of high status *kahuna*. Kūānu'uānu left the island of Hawai'i, traveled throughout the other islands and finally settled on Kaua'i, at Kapa'a. It was there that he met and married La'amaomao, although he never revealed his background or high rank to her until the day a messenger arrived, calling Kūānu'uānu back to the court of Keawenuia'umi.

By that time, La'amao was with child but Kūanu'uano could not take her with him. He instructed her to name the child, if it turned out to be a boy, Pāka'a. Pāka'a was raised on the beach at Kapa'a by La'amao and her brother Ma'ilou, a bird snarer. He grew to be an intelligent young man and it is said he was the first to adapt the use of a sail to small fishing canoes. Although Pāka'a was told by his mother from a very young age that his father was Ma'ilou, he suspected otherwise and after constant questioning La'amao told her son the truth about Kūanu'uano.

Intent on seeking out his real father and making himself known to him, Pāka'a prepared for the journey to the Big Island. His mother presented to him a tightly covered gourd containing the bones of her grandmother, also named La'amao, the goddess of the winds. With the gourd and chants taught to him by his mother, Pāka'a could command the forces of all the winds in Hawai'i. While this story continues on at length about Pāka'a and his exploits on the Big Island and later on Moloka'i, it will not be dwelt upon further here. It is important to note that several versions of this story do include the chants which give the traditional names of all of the winds at all the districts on all the islands, preserving them for this and future generations (Nakuina 1990; Rice 1923:69-89; Beckwith 1970:86-87; Thrum 1923:53-67; Formander 1918-19 vol. 5 pt.1:78-128).

Frederick Wichman (1998:84) writes that Pāka'a grew up on a headland named Keahahi, which the bike path traverses. Here, Pāka'a learned to catch *māfōlo*, his favorite fish. After studying the ocean and devising his plan to fabricate a sail, Pāka'a wove a sail in the shape of a crab claw and tried it out on his uncle's canoe. One day, after going out to catch *māfōlo*, he challenged the other fishermen to race to shore. He convinced them to fill his canoe with fish suggesting it was the only way he could truly claim the prize if he won:

The fishermen began paddling toward shore. They watched as Pāka'a paddled farther out to sea and began to fumble with a pole that had a mat tied to it. It looked so funny that they began to laugh, and soon they lost the rhythm of their own paddling. Suddenly Pāka'a's mast was up and the sail filled with wind. Pāka'a turned toward shore and shot past the astonished fishermen, landing on the beach far ahead of them. That night, Pāka'a, his mother, and his uncle had all the *māfōlo* they could eat (Wichman 1998:85).

d. Kaweloleimākua

Kapa'a is also mentioned in traditions concerning Kawelo (Kaweloleimākua), Ka'ūilaoukekoa (Mo'ikeha's daughter, or granddaughter, dependent on differing versions of the tale), the *mo'ō* Kalaminiu'u and the origins of the *hāma i hāma'āea* or the fish trap used to catch the *hāma'āea* fish, and the story of Lonoikamakahiki (Formander 1917, vol.4 pt.2:318, vol.4 pt.3:704-705; Rice 1923:106-108; Thrum 1923:123-135; Kamakau 1976:80).

e. Kalukalu grass of Kapa'a

"*Kūmoena kalukalu Kapa'a*" or "Kapa'a is like the *kalukalu* mats" is a line from a chant recited by Lonoikamakahiki. *Kalukalu* is a sedge grass, apparently used for weaving mats (Formander 1917, Vol. IV, Pt. 2, pp. 318-19). Pukui (1983, 187) associates the *kalukalu* with lovers in "*ke kalukalu moe ipo o Kapa'a*;" the *kalukalu* of Kapa'a that sleeps

with the lover". According to Wichman (1998:84), "a *kalukalu* mat was laid on the ground under a tree, covered with a thick pile of grass, and a second mat was thrown over that for a comfortable bed", thus the association with lovers. Kapa'a was famous for this peculiar grass, and it probably grew around the marshlands of Kapa'a. It is thought to be extinct now, but an old-time resident of the area recalled that it had edible roots, "somewhat like peanuts." Perhaps it was a famine food source (Kapaa Elementary School 1933:VI).

2. Keālia

a. Hi'iaaka and Wahine'ōma'ō in Keālia

On their way to Hi'ena, Hi'iaaka and Wahine'ōma'ō stopped near Keālia to help a man cook his *luau* to eat with his *poi*. Noticing an ailing woman in the man's house, Hi'iaaka said a prayer which brought the woman back to health. All the *kahuna* in the region had been unable to help the woman previously (Rice, 1974:14).

b. Kaweloleimākua and Kauhōa in Waipahē'e

In the *mauka* areas of Keālia is a place called Waipahē'e, a slippery slide used up until recent times. This *wahi pana* is associated with Kaweloleimākua and Kauhōa, who one day traveled to this place with their companion 'Aikanaka (Wichman 1998:86). Here the two boys engaged in a contest of who could make the best *lei* for their chief. Kauhōa won this contest by making his *lei* of *līko lēhua* while Kaweloleimākua made his of fern. The boys then held a contest *na'ina'i mimi* to see who could urinate the longest, but because Kauhōa was much bigger than Kawelo, he also won this contest. Later, when the two were men engaged in war, Kawelo reminds Kauhōa of this boyhood excursion in an attempt to avoid bloodshed between them, however was unsuccessful.

c. 'A'aka at 'Āhihi Point

In Kamalomo'ō, what some consider to be the northernmost *ahupua'a* of Puna, is another *wahi pana*, 'Āhihi. 'Āhihi is a headland that juts out into the ocean in between what is now known as Keālia and Anahola. 'Āhihi Point is also the terminus of the pedestrian and bike path. Wichman (1998: 87) retells a story about 'A'aka, the name of the plain *mauka* of 'Āhihi and the name of a *menehune*, Hōmaikawa'a, the valley adjacent to 'A'aka, and 'Āhihi, a plant with long runners. One of 'A'aka's favorite pastimes was to throw a stone into the ocean from 'Āhihi Point and then jump in after it. Once, when a large white shark almost swallowed him whole, 'A'aka, devised a plan to fabricate a net made from *āhihi* to catch the shark. After ordering the canoe, "Hōmaikawa'a", he and his companions were able to catch the shark and tow it to the reef at 'Āliomannu, near Anahola.

C. Heiau of Kapa'a and Keālia

During their expeditions around Hawai'i in the 1880's, collecting stories from Ka *po'e kahiko*, Lahainalua students stopped in Kapa'a and Keālia and gathered information regarding *heiau* of the region. Fourteen *heiau* were named, suggesting the two *ahupua'a* were probably more politically significant in ancient times. Table 1 lists the names of the *heiau*, their location if known, their type, associated chief and priest, and any comments and the reference.

Table 1: Heiau of Kapa'a and Kealia

Name	Location	Type	Associated Chief/Priest	Comments/Reference
Mailehuna	Kapa'a (Mailehuna is the area of the present day Kapa'a School)	unknown	Kiha, Kaumuali'i/Lukahakona	Ref: Bishop Museum Archives (HEN I: 214) Lahainaluna Student Compositions
Pueo	Kapa'a	unknown	Kiha, Kaumuali'i/Lukahakona	Ref: "
Pehun	Kapa'a/Kealia	unknown	Kiha/Lukahakona	Ref: "
Kumalae	Kapa'a/Kealia	unknown	Kiha/Lukahakona	Ref: "
Waiehumalama	Kapa'a/Kealia	unknown	Kiha/Lukahakona	Ref: "
Napuupekai	Kapa'a/Kealia	unknown	Kiha/Lukahakona	Ref: "
Noemakali	Kapa'a/Kealia	"heiau for birth of Kauai Chiefs, like Holoholo ku"	Unknown	Ref: "
Puuka	Kapa'a/Kealia	"unu type heiau"	Unknown	Ref: "
Piuka	Kapa'a/Kealia	"unu type heiau"	Unknown	"heiau where standing chiefs quarreled over stream that flowed through them. When drought came, the water at Piuka dried up" / Ref: "
Una	Kapa'a/Kealia	Unknown	Kiha/Lukahakona	Ref: "
Mano	Kapa'a/Kealia	Unknown	Kiha/Lukahakona	Ref: "
Kuahahi	Kapa'a (govn't school stands on site now)	Unknown	Kaumuali'i/Lukahakona	Bishop Museum Archives (HEN I:216)

Mailehuna	Kapa'a (Mailehuna is the area of the present day Kapa'a School)	unknown	Kiha, Kaumuali'i/Lukahakona	Ref: Bishop Museum Archives (HEN I: 214) Lahainaluna Student Compositions
Makanalimu	Upland of Kawihau	Unknown	Kaumuali'i	Ref: "
Kawelomamaia	Kapa'a	Unknown	Kiwi/Kealia	Ref: "
Kawelomamaia	N. of Kealia/near Kawelomamaia Stream	Po'okana ka Class	Kawalo (sic.) Kawalo	"Dedicated to Shark God" / Bennett, 1931:129
Māhu-nā-pu-u-one	"Kamalomalo'o, the northernmost ahupua'a of Puna"	"heiau where humans were sacrificed"	Kawelomahamahai'a	"built in 1600s; heiau no longer exists" / Wichman, 1998:87

The exact locations of these heiau are unknown. The locations of two of the heiau correlate with the locations of *uahi pana* which are known to be in the vicinity of the project area, Kuahahi and Kaluomoiheha. Kuahahi (also spelled Kaahahi and Keahahi) is the rocky headland at the north end of Kapa'a where the first Kapa'a School was once located. Kaluomoiheha is thought to be the general area near the Moikeha Canal and the present day Coral Reef Hotel. The last two heiau mentioned in the table, Kawelomamaia and Māhu-nā-pu-u-one may refer to the same heiau. Both correspond to the same general location and both are associated with Kawelomahamahai'a. Several *komo āina* claimed there was a heiau in the area north of Kealia, but very little was known regarding the heiau (pers. communication, V. Aho, J. Lovell, K. Pa, P. Rogers). One individual thought it was probably located on Paliku, the flat ledge on the south side of Kūna (Donkey Beach) (Pers. communication, P. Rogers, August 2002).

D. The Māhele

The Organic Acts of 1845 and 1846 initiated the process of the *Māhele*, the division of Hawaiian lands, which introduced private property into Hawaiian society. In 1848 the crown and the *ali'i* received their lands. The common people received their *kuleana* in 1850. It is through records for Land Commission Awards (LCAs) generated during the *Māhele* that specific documentation of traditional life in Kapa'a and Kealia *Ahupua'a* comes to light.

1. Kapa'a Land Commission Awards

During the *Māhele*, Kapa'a was taken as Crown Lands (Office of the Commissioner of Public Lands of the Territory of Hawaii, 1929). The *'Ii* of Palakahawai and Unkiu in Kapa'a *Ahupua'a* were retained as Government Lands.

Table 2: *Māhete* Land Claims in Kapa'a Ahupua'a

LCA	CLAIMANT	ILI	LAND USE	AWARD
08843	Kiau and son, Apahu	Apopo, Kalolo Village	6 <i>lo'i</i> , small <i>kula</i> and house lot	2 apana; 2.75 acres
10564	Oleloa, Daniela	Kapaa, Puna; Hahanui 'Ili	farm plot, Hikinui with one fish pond; 10 <i>lo'i</i> and a fish pond	No award in Kapa'a, Puna; award in Waioli, Halelea
08247	Ehu	Moulepe	approx. 20 <i>lo'i</i> lying waste, some orange trees	1 apana, Kapaa
08837	Kamapaa	Awawaloa, Ulukiu Village	9 <i>lo'i</i> , and adjoining <i>kula</i> ; house/lot	Awawaloa: 1 apana; Wakiu 3 apana
03638	Huluhi, Kahoiu (Kadano)	Maelele, Kaloko Village	12-15 <i>lo'i</i> in Maelele and adjoining <i>kula</i> ; house lot in village of Kaloko (Kaloko)	Maelele: 2 apana, 5 acs.
03971 and 03243	Honoli, Ione	Kahana, Kupanihi	6 uncultivated <i>lo'i</i> , house lot in Kupanihi Village	Kupanihi: 2 apana, 1 ac
03554 and 03599	Keo	Hahanui,	Entire 'Ili of Hahanui, 15 <i>lo'i</i> , house lot in Puhii Village	No Award in Kapa'a, Puna; Award in Waila'au, Kona.

The land claims during this period show that only five individuals were awarded land parcels in the relatively large *ahupua'a* of Kapa'a (Table 2). The five awardees include Kiau (#08843), Kamapaa (#08837), Ione Honoli (#03971) Huluhi (#03638) and Ehu (#08247). In addition, two land claims (#10564 and #03554, 3659) were not awarded in Kapa'a. Four of the five awardees received multiple parcels which show similarities. All four had *lo'i* or irrigated *kafo* fields on the *mauka* side of the lowland swampy area, sometimes extending a short distance up into small, shallow gulches and valleys (Figure 9). Many of these *lo'i* parcels name *pahi* or hills/cliffs as boundaries. Each LCA also had a separate house lot located on the *makai* side of the swamp, near the beach. Three of the land claims name ponds on their lands, including Puhii Pond (LCA #03554). Fishponds in Kupanihi 'Ili (LCA #03971) and Hahanui 'Ili (LCA #10564). Loko Kihapai may be the same as the Fishpond in Hahanui as it was named in the same land claim. The other two *loko* are associated with house lots, situated on the *makai* edge of the Kapa'a swamplands

suggesting modification of the natural swamplands. Other natural and cultural resources mentioned in the LCAs include freshwater springs, pig pens, *hau* bushes, *hala* clumps, streams, *auwai*, and *kula* or pasturelands.

Interestingly, the residential "village" of Kapa'a did not exist as a single entity, but was a series of probably small settlements or compounds, perhaps even individual house lots which stretched along the shoreline of the *ahupua'a* and included (south to north) Kupanihi (Makahakupanihi), Kalolo (Kaulolo), Puhii, and Ulukiu (Figure 9).

The fifth individual, Ehu (LCA #08247), was the only person to be awarded a single parcel in the upland area of Kapa'a, Moulepe Valley, approximately five miles *mauka*. In 1848, when Ehu made his claim, he was the only one living there. A few years later, according to Honoli's testimony to support Ehu's claim, "There are no houses and no people now living on the land. Ehu found himself lonely there, all his neighbors having either died or left the land. Ehu now lives in Wailua." Evidently Ehu may have been the last person to live at and cultivate in the traditional way, the far *mauka* region of Kapa'a.

2. Kealia Land Commission Awards

Kealia was granted to the *afi* Miriam Ke ahikuni Kekau'onohi (Land Commission Award 11216; Royal Patent 6071). Kekau'onohi was a granddaughter of Kamehameha, one of Liholho's wives and served as Kapa'i governor from 1842 to 1844.

Seventeen land claims were made. One claimant, Lono (LCA #09973) relinquished his Kealia land to the *konohiki* and went to live in Wai'oli. Of the seventeen claims registered, fifteen were awarded (Table 3). The grand majority of the claims were made on lands adjacent to the Kealia River, a good sized stream which was capable of supporting large scale irrigation projects (Figure 10). Other *kuleana* lands were situated adjacent to smaller streams or *auwai* north of Kealia River. Sixty seven cultivated *lo'i* are claimed in the *kuleana*, with reference to numerous uncultivated *lo'i* and boundaries of other cultivated *lo'i* which were not claimed. In the *Māhete* documents, there are ten instances in which the individual *lo'i* are referred to with their personal names. Two ditches or *auwai* are recorded, Kaauiwaelo (LCA #01980) and Kahaui (LCA #10148). Kealia River and Keahapuna (Keahapana) River were also named as boundaries, although they may refer to the same river. This information suggests that taro farming continued to be central to Kealia. In addition, four *ko'eke* (land cultivated by tenant for local chief) are named in the Kealia *Māhete* documents. This suggests the *konohiki* of Kealia maintained a fair amount of power and played an active role in land and water distribution even as population was declining and foreign powers were beginning to trickle in.

Another noteworthy resource in Kealia were ponds or *loko*. Four ponds were mentioned, though no reference to location is given for two. Akiana Pond (LCA #8060) is thought to be located in the 'Ili of Akiana and Loko Waipunaia (LCA #8833) is thought to be in Waipunaia 'Ili. In addition to the fishponds providing fresh fish, the Kealia records indicate that freshwater fish were also caught in the rivers and streams. One individual claims a *kaha* 'o'opu or 'o'opu fish trap (LCA #2381). *Māhete* documents for Kealia indicate that people were raising turkeys, goats and pigs. One individual (LCA #8061) claimed a

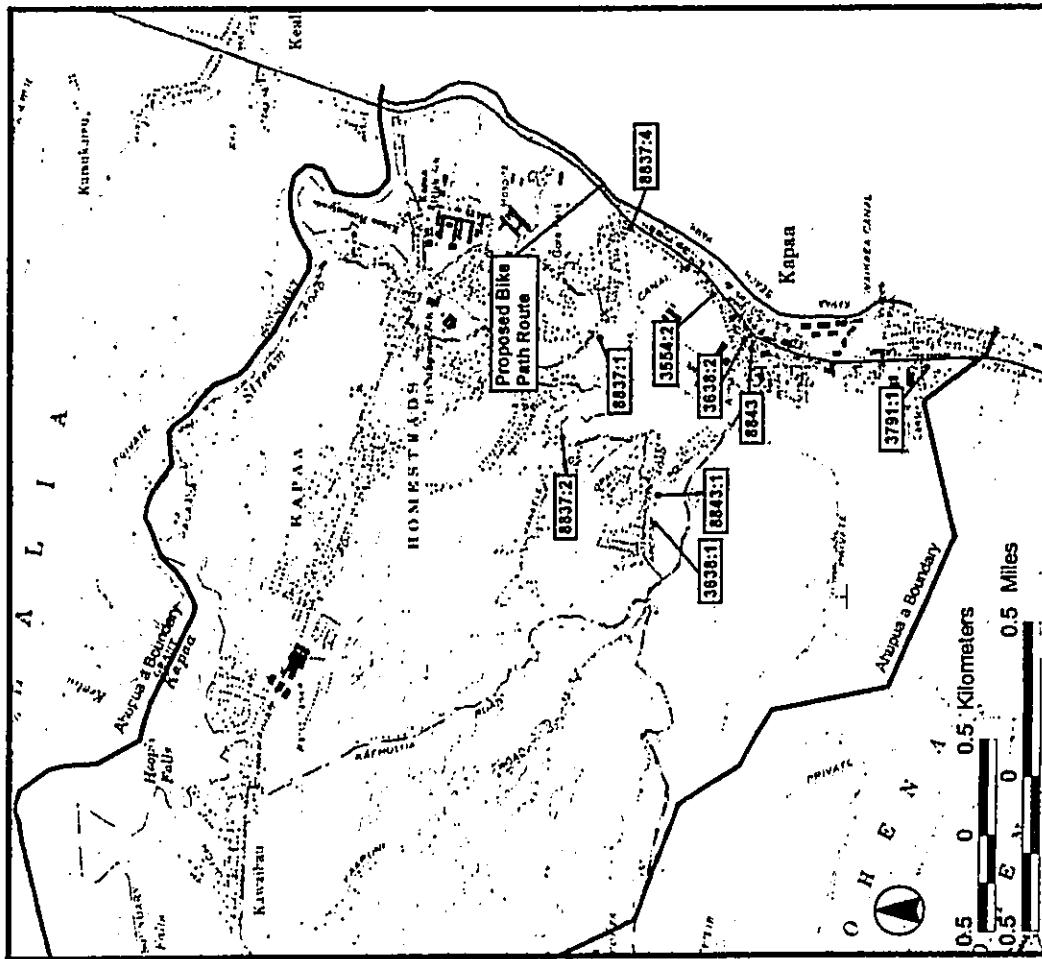


Figure 9 1983 USCS Map, Kapaa Quadrangle, Showing Locations of Land Commission Awards in Kapa'a Relative to the Proposed Bike Path.

Table 8: Māhele Land Claims in Keālia Ahupua'a

LCA	Claimant	ILI	CLAIMS	AWARD
10907	Umiumi	Akiana, Hawaipahae, Awikiwili	2 lo'i, 1 kula, house lot	2 parcels
10906	Umiumi	Kaukuolono	house lot, 2 lo'i, kula	2 parcels
08833	Kiipa	Waipunaula, Kiohale	5 lo'i, kula, house lot	2 parcels
11216 K	Kakaunohi	Keālia Ahupua'a		6500 acres
10451	Nuawa		10 ki'opai, goat enclosure	not awarded
10473	Nahi	Pauahi, Kunkahi, Kaelele	house lot, 15 lo'i, kula, orange trees	3 parcels
10628	Puhi	Kaunakakai, Kuniula	house lot, 1 lo'i	2 parcels
09973	Lono		lo'i and kula	relinquished land to konohiki
10149	Makua'ine	Kealohipaa	3 lo'i, kula	1 parcel
08834	Kalawaia	Lapanui, Kahue	house lot, 2 lo'i, kula	2 parcels
08842	Kaawapupuole	Kauaha, Makapono	house lot, 4 lo'i, kula	2 parcels
08061	Hainuu	Kapuna	house lot, 4 lo'i, kula	1 parcel
03413	Kaaki	Kapunakai	house lot, kula, 11 lo'i, 2 orange trees	1 parcel
02381	Kekoowai		5 lo'i, 2 ponds, 2 orange trees, 1 kaha 'o'opu, kula	not awarded
07966	Keonui and Paekai'a	Mahuaku, Haleki	5 lo'i, kula, house lot	1 parcel

LCA	Claimant	IILJ	CLAIMS	AWARD
08060	Huhialo	Hauei, Kalohipa	house lot, 2 <i>lo'i</i> , <i>kula</i>	1 parcel
01980	Puali	Hauei, Kaelele	house lot, 4 <i>lo'i</i> , <i>kula</i>	1 parcel
10148	Mamaki	Lapanui	house lot, 2 <i>lo'i</i> , <i>kula</i>	2 parcels

mouka parcel of land with *roni*, a useful medicinal plant and *wauke*, a plant used in making *kapu* and cordage. There were several disputes over orange trees (LCAs #3413B, 2381, 10473). In one case, the *konohiki* affirmed that he himself had taken away two orange trees belonging to a claimant.

Further north on the plateau land above Keālia Valley, Kumukumu Ahupua'a was surrendered to the government (by commutation) by W. C. Lunali'ilo. Only one claim (LCA #10660) was made for Kumukumu, apparently by Pakaa, a *konohiki* under Kanoa. According to Pakaa, he was given the lands of Kamalomalo, Kumukumu and Halaula by Kanoa. In those lands he restored 42 *lo'i*. In Kumukumu, there were several *lo'i*, *kula* and two house lots. The Kumukumu *lo'i* were situated along the Kumukumu Stream, a small stream which flows into the ocean near the project area. Hōmaikawa'a, which according to the documents contained within the Indices of Awards, was part of the district of Ko'olau, was claimed as Government Lands. Here, although there were five or six claims, only one was awarded (Table 4, Figure 10). Based on information in the *Māhele* records, Holoaumoku (LCA #08208) claimed she was made *konohiki* of Hōmaikawa'a and Kamalomalo by Emelia Keaweamahi. Holoaumoku, her son Alapai and their servants forsook their claims in Hōmaikawa'a when a new *konohiki* was appointed. The only claim awarded in Hōmaikawa'a was to Puukuakahi for 4 *lo'i*, cultivated along Hōmaikawa'a Stream, *kula* and a house lot.

Table 4: *Māhele* Land Claims in Kumukumu and Hōmaikawa'a Ahupua'a

LCA #	CLAIMANT	IILJ	CLAIM	AWARD
10660	Pakaa	Naapakukui, Kumukumu	4 <i>lo'i</i> , <i>kula</i> , 2 house lots	1 parcel
10689	Puukuakahi	Kapuhola, Hōmaikawa'a	4 <i>lo'i</i> , <i>kula</i> , house lot	1 parcel
11014	Wahaeku	Hōmaikawa'a		relinquishes lands at Hōmaikawa'a
8208	Holoaumoku	Hōmaikawa'a		relinquishes lands at Hōmaikawa'a
8043	Ainoa	Hōmaikawa'a		relinquishes lands at Hōmaikawa'a
80421	Alapai	Hōmaikawa'a		relinquishes lands at Hōmaikawa'a

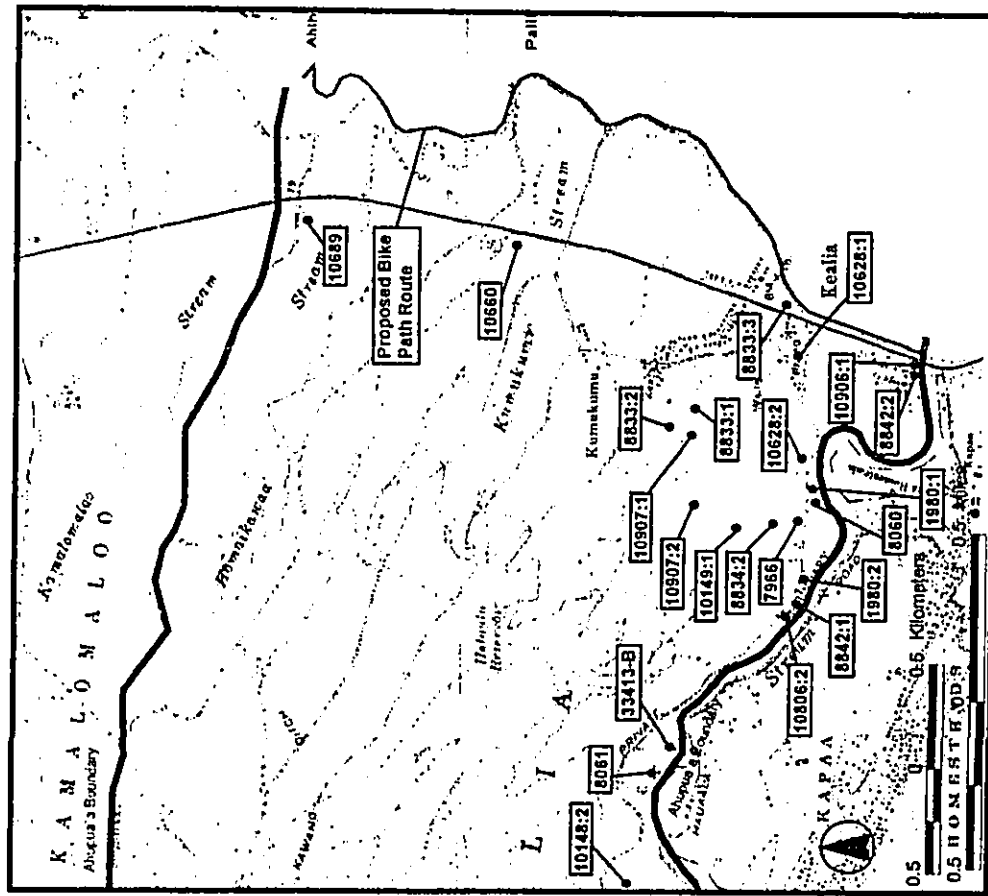


Figure 10 1988 USGS Map, Kapaa and Anahola Quadrangles, Showing Locations of Land Commission Awards in Keālia Relative to the Proposed Bike Path.

E. Early Historic Accounts of Kapa'a and Keālia (1830's-1900's)

The earliest documentation of life in the *ohupua* appears in the 1830's when missionary censuses recorded a total population of 283, comprising 265 adults and 18 children within Keālia (Schmitt 1973:25). Hōmaikawa seems to have been a small village at the time of the 1830 census with a population of 70. Other Protestant missionary records focused more specifically on areas where mission stations were established. An 1847 census of twenty three land divisions in the Hanalei and Kawaihau Districts gives population figures for Keālia, Kumukumu and Hōmaikawa (Schmitt, 1969). Most notable is the decline in population in Keālia, from 283 in the 1830s to 143, a reduction of almost half (*Ibid.*, 229). The population of Hōmaikawa was also recorded as reduced to half of its 1830's population, with 32 individuals. Accounting for the high death toll caused by the introduction of foreign disease, this still seems like an extremely high death rate. Kumukumu's population at this time was 21. Kapa'a's population during these time period is unknown.

Although most of the historic record documents for Kapa'a in this period revolve around missionary activities and the missions themselves, there was indication that the Kapa'a area was being considered for new sugar cane experiments, similar to those occurring in Kōloa. In a historic note, Ladd and Company received a 50 year lease on land in Kōloa from Kamehameha III and Kapa'a Governor Kaikio'ewa of Kapa'a. The terms of the lease allowed the new sugar company "the right of someone other than a chief to control land" and had profound effects on "traditional notions of land tenure dominated by the chiefly hierarchy" (Donoghue, 2001: 88). In 1837, a very similar lease with similar terms was granted to Wilama Ferani, a merchant and U.S. citizen based in Honolulu (Hawai'i State Archives, Interior Dept., Letters, Aug. 1837). The lease was granted by Kawaihau for the lands of Kapa'a, Keālia and Waipouli for twenty years for the following purpose:

...for the cultivation of sugar cane and anything else that may grow on said land, with all of the right for some place to graze animals, and the forest land above to the top of the mountains and the people who are living on said lands, it is to them whether they stay or not, and if they stay, it shall be as follows: They may cultivate the land according to the instructions of Wilama Ferani and his heirs and those he may designate under him... (Hawai'i State Archives, Interior Dept., Letters, Aug. 1837).

Unlike Ladd & Company which eventually became the Kōloa Sugar Company, there is no further reference to Wilama Ferani and his lease for lands in Kapa'a, Keālia and Waipouli. In a brief search for information on Honolulu merchant, Wilama Ferani, nothing was found. It is thought that perhaps Wilama Ferani may be another name for William French, a well known Honolulu merchant who is documented as having experimented with grinding sugar cane in Waimea, Kapa'a at about the same time the 1837 lease for lands in Kapa'a, Keālia and Waipouli was signed (Joesting, 1984: 152).

In 1849, son of Wai'oli missionary, William P. Alexander, recorded a trip he took around Kapa'a. Although, he focuses on the larger mission settlements like Kōloa and Hanalei, he does mention Kapa'a and Keālia.

A few miles from Waialua, near Kapa'a we passed the wreck of a schooner on the beach, which once belonged to Capt. Bernard. It was driven in a gale over the reef, and up on the beach, where it now lies. A few miles further we arrived at Keālia. We had some difficulty crossing the river at this place, owing to the restiveness of our horses. The country here near the shore was rather uninviting, except the valley which always contained streams of water (Alexander, 1991: 123).

In later years, the notorious Kapa'a reef was to become the location of many shipwrecks once a landing was built there in the 1880s.

One of the first people to succeed in business in the Keālia area was a German by the name of Ernest Krull. In 1864, a government survey was prepared for Kumukumu, Kapa'a (Hawai'i State Survey, RM 141). In handwritten notes of the map, it is indicated that Mr. Krull desired to buy government interest in the land for \$200.00. Apparently Mr. Krull was successful in obtaining Kumukumu because by the early 1860s, he was running a thriving business supplying whaling ships with beef and dairy products (Joesting, 1984: 171). Mr. Krull's ranch and dairy were located in the Waipaho'e area of Kumukumu in a place called Kahuhihiihi (Kapa'a School, 1983:4). His residence also served as a rest stop for travelers during the 1860s (Lydsate, 1991: 142). Mr. Krull continues to lease a portion of the tablelands above Keālia until 1876 when he sells his ranch to Colonel Z.S. Spalding and Captain James Makee (Hawai'i State Archives, Interior Dept., Letters, 1879; Kapa'a School, 1983:4).

Although the 1830 missionary census records a good size village in Hōmaikawa and a small settlement at Kumukumu, north of Keālia, there is very little historic information on these places. One story concerning Hōmaikawa has passed down and is recorded in the "Kapa'a Papers". Samuel W. Wilcox writes about an incident, "Who Stole Limaloa's Awa" that occurred in Hulē'ia Valley which was provoked by a group of men who gathered regularly at Hōmaikawa.

Then he told me that he suspected a crowd of men who used to gather down near the Beach at Hōmaikawa, beyond Kealia (where Mr. Spalding later had a Beach-house), at the house of a Kahuna, one Kinipaa. There they had great awa drinks, and they had already made a raid on an awa patch at Kapahi (Wilcox, 1991: 43).

Apparently, these men were directed by the *kahuna* Kinipaa to raid Limaloa's awa patch in Hulē'ia. However, the men beat Limaloa so severely, they became scared and fled. Many of the men were captured and charged, however, not all were found. The *kahuna* who led the raid ended up taking ill and dying before he could be questioned. As the story goes, he was thought to have been cursed by a rival *kahuna* commissioned by Limaloa, who survived the brutal attack (*Ibid.*: 46).

The first large scale agricultural enterprise in the Kapa'a/Keālia area began in 1877 in Kapa'a by the Makee Sugar Plantation and the Hui Kawaihau (Dole, 1916: 8). The Hui

Kawaihau was originally a choral society begun in Honolulu whose membership consisted of many prominent names, both Hawaiian and *haole*. It was Kalākaua's thought that the Hui members could join forces with Makee, who had previous sugar plantation experience on Maui, to establish a successful sugar corporation on the east side of Kaula'i. Captain Makee was given land in Kapa'a to build a mill and he agreed to grind cane grown by Hui members. Kalākaua declared the land between Wailua and Molokā'a, the Kawaihau District, a fifth district and for four years the Hui attempted to grow sugar cane at Kupahi, on the plateau lands above Kapa'a. After a fire destroyed almost one half of the Hui's second crop of cane and the untimely death of one of their principal advocates, Captain James Makee, the Hui began to disperse and property and leasehold rights passed on to Makee's son-in-law and new Makee Plantation owner, Colonel Z.S. Spalding (Dole, 1916: 14).

As part of the infrastructure of the new plantation, a sugar mill was erected and the Makee Landing was built in Kapa'a during the early years of the Makee Sugar Plantation. Following Captain Makee's death, Colonel Spalding took control of the Plantation and in 1886 moved the mill to Keālia (Cook, 1999: 61). The deteriorating stone smoketack and landing were still there well into the 1900s (Damon, 1931:359 and see 1934 photograph of "Kapaa Wharf Remains", Figure 11). Condé and Best (1973:180) suggest that railroad construction for the Makee Plantation started just prior to the mid 1890's. There is one reference to a railroad line leading from the Kapa'a landing to Keālia in 1891. During Queen Liliuokalani's visit to Kaula'i in the summer of 1891, the royal party was treated to music by a band, probably shipped in from O'ahu. "The band came by ship to Kapa'a and then by train to Keālia" (Joesting, 1984:252). This line is depicted on a 1910 USGS map which shows the line heading south from Keālia Mill and splitting near the present Coral Reef Hotel, one finger going to the old Kapa'a Landing (Makee Landing) and another line heading mauka, crossing the present Moikeha Canal, traveling southwest up Lehua Street and through what is now goat pasture, along a plateau and into the mauka area behind Kapa'a swamplands (Figure 12). This railroad line was part of a twenty mile network of plantation railroad with some portable track and included a portion of Keālia Valley and in the mauka regions of the plateau lands north of Keālia (Condé and Best, 1973:180).

By the late 1800's, Makee Plantation was a thriving business with more than one thousand workers employed (Cook, 1999:51). Hundreds of Portuguese and Japanese immigrants found work on Makee Plantation and the new influx of immigrants required more infrastructure. In 1883, a lease for a school lot was signed between Makee Sugar Company and the Board of Education (Kapa'a School, 1983: 9). Stipulations found in the Portuguese immigrant contracts with Makee Sugar Company stated that "children shall be properly instructed in the public schools" (Garden Island, April 1, 1883). The original Kapa'a School was constructed in 1883 on a rocky point adjacent to the Makee Sugar Company railroad in the project area (Figure 13). Traditionally, this point was known as Kaahiahi (Kapa'a School, 1983: 10). In 1908, Kapa'a School was moved to its present site directly mauka and up the hill at Mailehuna (Figure 14).

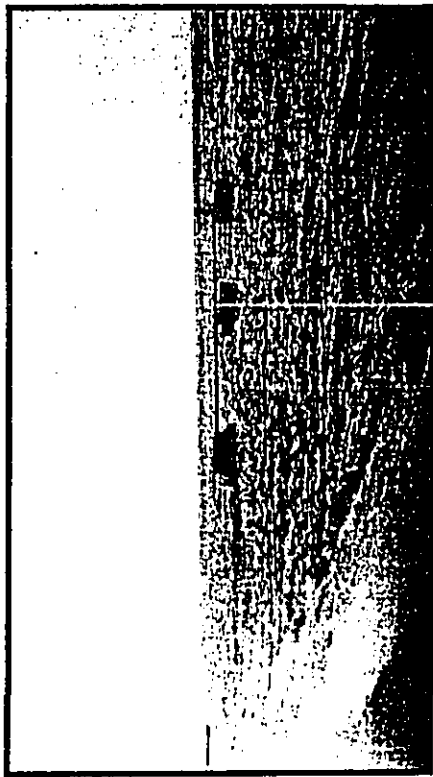


Figure 11 "Kapaa Wharf Remains, Kapa'a, Kauai, Hawaii" (ca. 1934) also known as the Old Makee Landing (top photo). Today, there is a breakwater associated with the Moikeha Canal in this general location (bottom photo). Top photo used with permission of Bishop Museum.

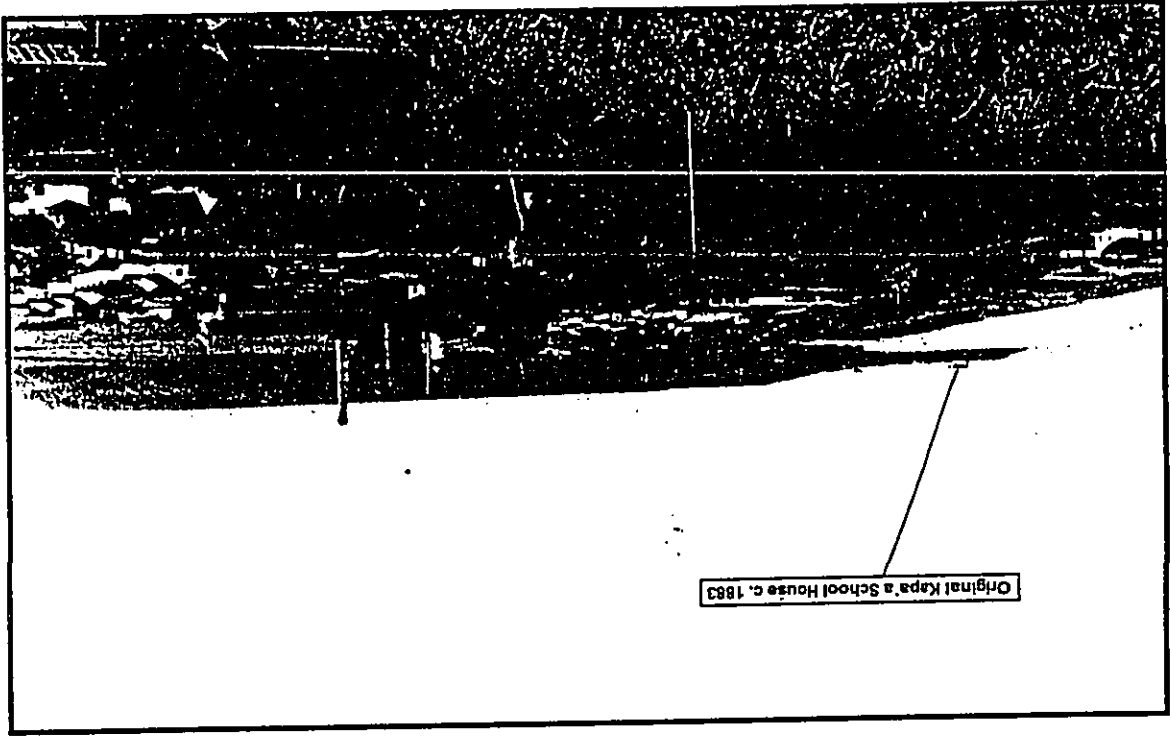


Figure 13 Historic Photograph of Kealia Mill and Town. Used with permission of Kaunā'i Historical Society.

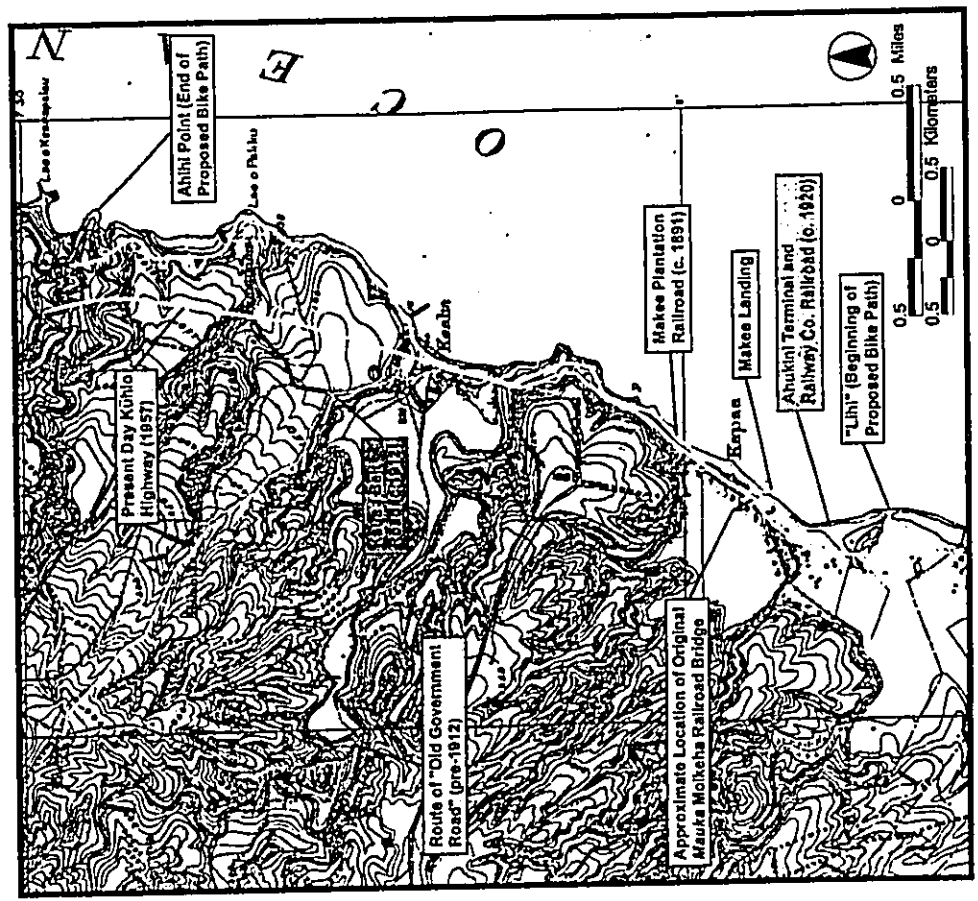


Figure 12 1910 USGS Map of Kapa'a Quad, Showing Locations of Historic Road and Railroad Alignments in Kapa'a and Keālia.

As in much of the rest of Hawai'i, the Chinese rice farmers began cultivating the lowlands of Kapa'a with increasing success in the latter half of the 1800s. Several Hawaiian *kuleana* owners leased or sold their parcels *mauka* of the swamp land to Chinese rice cultivators. Other Chinese rice cultivators appealed to the government for swamp lands first leasing and later buying. As a result of the growing rice and sugar industries, the economic activity displaced the houselot *kuleana* on the *makai* side of the marsh for increasing commercial and residential development (Lai, 1985:148-161).

Narrow wagon roads gave way to macadamized roads in the early part of the 20th century. This new road was called the Kauai Belt Road and parts of it are thought to have followed the "Old Government Road" (Cook, 1999). In Kapa'a, the present day Kūhiō Highway probably follows the same route as the original Government Road and subsequent Kaunā Belt Road. The location of the *kuleana* awards in Kapa'a indicates that the majority of the houselots were situated along the Government Road (Figure 9). LCA 3243 names a "road" as one of its boundaries.

In Keālia, however, there is evidence that there were numerous traditional trails leading to Anaholu with possibly two principal routes, a *makai* route and a *mauka* route. In 1881, Z.S. Spalding, proprietor of the Mahee Sugar Plantation, appealed to the Department of the Interior with a formal petition to have the *makai* road (in Keālia) officially closed stating that the natives were breaking through his fences to take short cuts between Keālia and Anaholu (Hawaii State Archives, Letter: Z.S. Spalding, May 16, 1881). The exact location of the *makai* road is unknown although it is thought to be on the plateau lands, somewhat removed from the coastline, in areas fit for sugar cane production. The route of the Old Government Road, also known as the "Mauka road" is described as such, "...crossing the Keālia River above the Rice Plantation and passing over the hill near Mr. Spalding's residence" (Hawaii State Archives, Letter: Z.S. Spalding, April 21, 1882) [Figure 12]. When the Kaunā Belt Road was constructed in first two decades of the 20th century, a portion of the old Government Road route was abandoned. The new route crossed the river at the *makai* end of Keālia Stream paralleled the ocean and the railroad track and then turned *mauka* passing through Keālia town and went up the hill to meet up with the "Old Government Road" (Figure 12). The Keālia Bridge built for the Kaunā Belt Road is thought to date to circa 1912. A traveler writing about their travels in 1913, mentions the bridge: "...In the twinkling of an eye we passed on the steel bridge of Keālia. This new bridge is beautiful" (Akina 1913) (Figure 15).

F. 20th Century History of Kapa'a and Keālia (1900-Present)

In the early 1900s, government lands were auctioned off as town lots in Kapa'a to help with the burgeoning plantation population. One *kama'āina* mentioned that in the 1930s and 1940s, the area north of Moikeha Canal in Kapa'a was mostly settled by Portuguese families (Personal communication, W. Kananua, 8/1/02). The Japanese were also very prominent in the 1920s and 1930s largely replacing the Chinese merchants of the turn of the century in the Kapa'a business sector (Pers. communication, R. Sugiyama, 7/19/02). Several territorial government structures were once situated adjacent to the bike and pedestrian path. The Board of Health, Territory of Hawaii ran a dispensary in Kapa'a at the *makai* edge of Niu Street near the Kapa'a Beach Park parking lot, adjacent to the

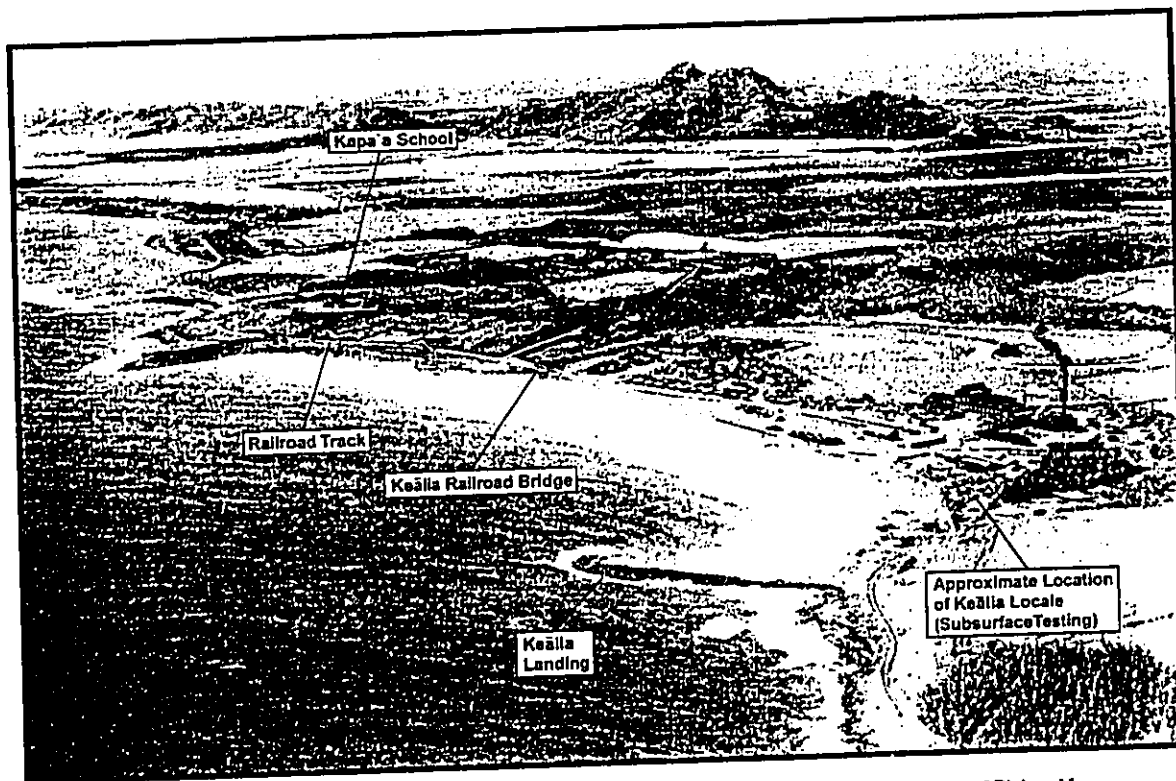


Figure 14 "Aerial View of Kealia, Kauai, Hawaii, Looking Landward" ca. 1933. Used with permission of Bishop Museum.

bike path starting 1926. The lot is presently vacant. A Fire Station was once located in the area now occupied by the Coral Reef Hotel and a Courthouse and jail cell once stood at the location of the present Kapa'a Neighborhood Center. It is not known when these structures were removed or abandoned.

In 1913, Hawaiian Canneries opened in Kapa'a at the site now occupied by Pono Kai Resort, adjacent to the project area (Cook, 1999: 56) [Figure 16]. Through the Hawaiian Organic Act, Hawaiian Canneries Company, Limited purchased the land they were leasing, approximately 8.75 acres, in 1923 (Bureau of Land Conveyances, Grant 8246). A 1923 sketch of the cannery shows only four structures, one very large structure assumed to be the actual cannery and three small structures *makai* of the cannery (Figure 17). A 1933 historic photograph of Kapa'a Town shows an ironwood windbreak on the *makai* side of the cannery adjacent to the railroad (Figure 18). By 1966, 1.5 million cases of pineapple were being packed. By 1960, 3400 acres were in pineapple and there were 250 full time employees and 1000 seasonal employees for the Kapa'a Cannery (Honolulu Advertiser, March 20, 1960). In 1962, Hawaiian Canneries went out of business due to competition from third world countries.

The Ahukini Terminal & Railway Company was formed in 1920 to establish a railroad to connect Anahola, Keālia, Kapa'a to Ahukini Landing and "provide relatively cheap freight rates for the carriage of plantation sugar to a terminal outlet" (Condé and Best, 1973: 186). This company was responsible for extending the railroad line from the Mākee Landing, which was no longer in use, to Ahukini Landing, which is now part of the project area, and constructing the original Waikā'eā Railroad Bridge and the Moikeha Makai Railroad Bridge which are also part of the project area. In an annual report written in December 1921, the line between Ahukini and Keālia was opened by May 7, 1921 stating, "can run trains from Ahukini to Keālia on twenty four hours notice" (Condé and Best, 1973: 185). The report also specifically mentions a bridge near the Hawaiian Canneries Co. which cost \$12,000.00 to build and was washed away in a "freshet" in January 1921 and needed to be rebuilt. The Keālia River Railroad Bridge was described as "an old wooden bridge" and was recommended to be replaced with concrete as soon as "finances permitted" (*Ibid.*: 186). No mention was made of the Moikeha Makai Railroad Bridge in the report.

In 1934, the Lihue Plantation Company absorbed the Ahukini Terminal & Railway Company and Makee Sugar Company (Condé and Best, 1973: 167). The railway and rolling stock formerly owned by Makee Sugar Company became the Makee Division of the Lihue Plantation. At this time, besides hauling sugar cane, the railroad was also used to haul plantation freight including fertilizer, etc...canned pineapple from Hawaiian Canneries to Ahukini and Nawiliwili, pineapple refuse from Hawaiian Canneries to a dump near Anahola and fuel oil from Ahukini to Hawaiian Canneries Co., Ltd. (Hawaiian Territorial Planning Board, 1940: 11). Former plantation workers and *kama'āina* growing up in Kapa'a remember when the cannery would send their waste to the pineapple dump, a concrete pier just north of Kumukumu Stream (State Site No. 50-30-08-789:H) by railroad. The structure is built over the water where the rail cars would dump the pineapple waste. The current would carry the waste to Kapa'a which would attract fish and sharks (Pers.communication J. & W. Kanekua and R. Sugiyama, August 2002).

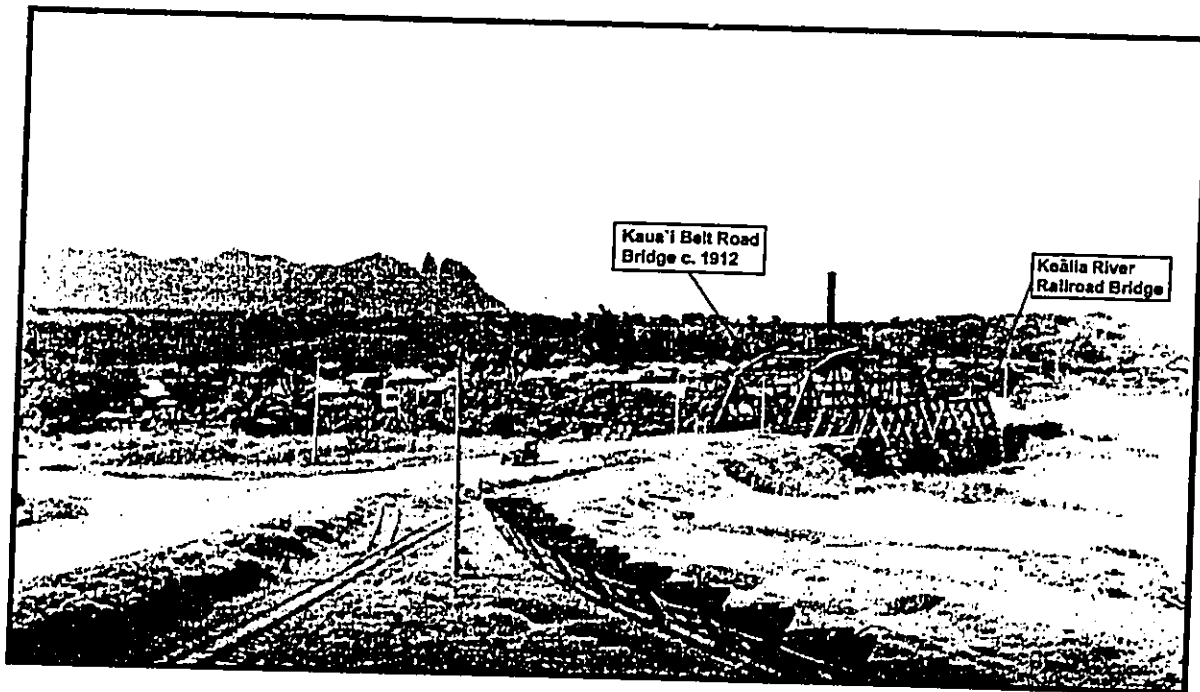


Figure 15 "Kealia in Background, Kealia, Kauai, Hawaii" ca. 1934. Photographer: Funk. Used with permission of Bishop Museum.



Figure 17 1923 Sketch of Land Purchased by Hawaiian Canneries Co. Note railroad alignment on right side of sketch. Bureau of Land Conveyances, Grant 8248.

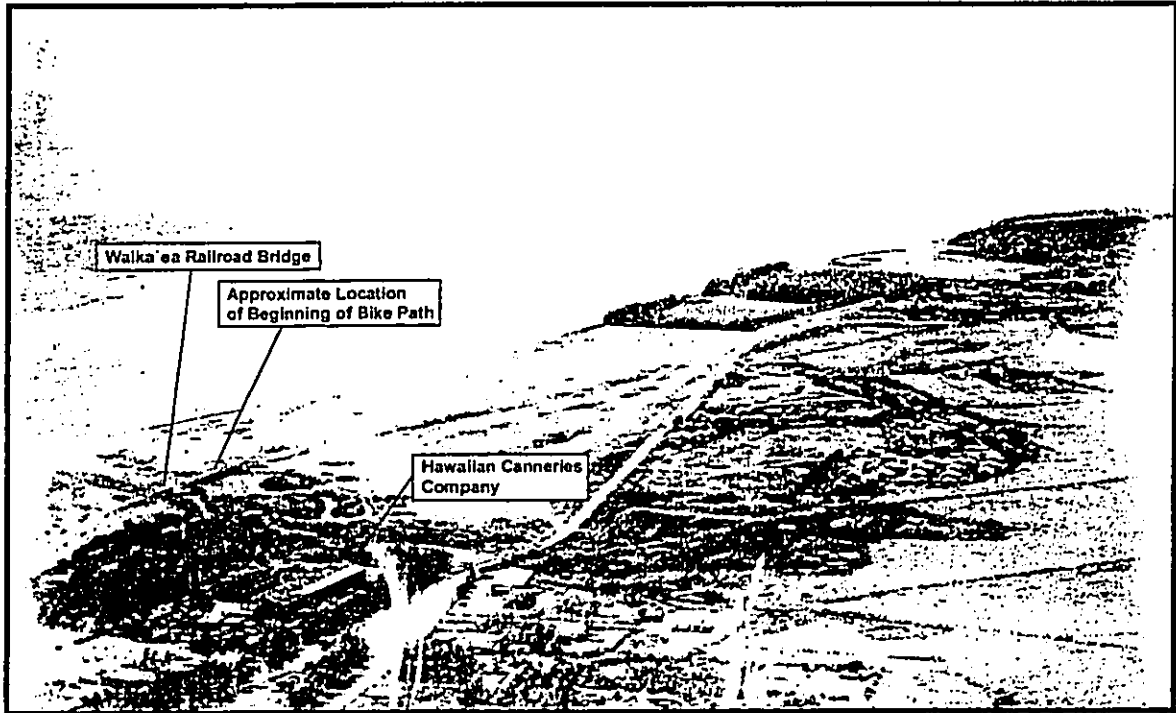


Figure 16 "Aerial View of Kapaa, Kauai, Hawaii, Looking Seaward" ca. 1924. Used with permission of Bishop Museum.

Lihue Plantation was the last plantation in Hawai'i to convert from railroad transport to trucking (Condé and Best, 1973: 167). "By 1957 the company was salvaging a part of their plantation railroad, which was being supplanted by roads laid out for the most part on or close to the old rail bed" (*Ibid*: 167). By 1959, the plantation had completely converted over to trucking. The Cane Haul Road which begins in the project area near the intersection of Hau'ala Road and Kūhiō Highway is thought to date to the late 1950s and follows the alignment of the old railroad until just before the end of the bike path near 'Ahihi Point.

Severe floods in Kapa'a in 1940 led to the dredging and construction of the Waikā'ea and Moikeha Canals sometime in the 1940s (Hawaii Territorial Planning Board, 1940: 7). Although the Waikā'ea Canal, bordering the Kapa'a Pineapple Cannery, had been proposed as early as 1923, nothing was constructed until after the floods (Bureau of Land Conveyances, Grant 82348). A Master Plan for Kapa'a, published in 1940, asks the Territorial Legislature for funds to be set aside for the completion of a drainage canal and for filling *makai* and *mauka* of the canal (Hawaii Territorial Planning Board, 1940: 7). In 1955, reports came out on the dredging for coral proposed for the reef fronting Kapa'a Beach Park (Garden Island Newspaper, September 21, 1955). The coral was to be used for building plantation roads. This dredging was later blamed for accelerated erosion along Kapa'a Beach (Garden Island Newspaper, October 30, 1963).

Today, there are several sea walls along the Kapa'a Beach Park to check erosion. Old time residents claim the sandy beach in Kapa'a was once much more extensive than it is now (Personal communication, N. Nagao, J. & W. Kaneakua, August 2002).

Keālia Town slowly dispersed after the incorporation of Makee Sugar Company into Lihue Plantation in the 1930s. Many of the plantation workers bought property of their own and moved out of plantation camps. The plantation camps which bordered Kūhiō Highway were disbanded in the 1980s. The Lihue Plantation began to phase out in the last part of the 20th century. In 1997, the entire *āhupua'a* of Keālia was sold off as an effort to downsize Amfac's landholdings and because Keālia is the most distant from the Lihue Plantation sugar mill, it was considered the least profitable (Honolulu Advertiser, July 7, 1997). The Lihue Plantation completely folded at the end of the 20th century. Kapa'a Town suffered after the closing of the Kapa'a Cannery, however the growing tourist industry helped to ease the economic affects of the Cannery's closing.

G. Summary of historic documentation associated with the proposed bike path
 The Kapa'a to Keālia Bike and Pedestrian Path traverses through the *āhupua'a* of Kapa'a and Keālia, part of the ancient Puna District. Legends, traditional accounts and *wahi pono* point to an area rich in pre-contact history, although it seems much of this history has been lost. Accounts name several *kupua* and known *akua* in reference to places in Kapa'a and Keālia such as Palila, Hī'iaka and Wahine'ōmao and 'A'aka, the *menehune*. 'A'aka, the *menehune* skirmishes with a shark at 'Ahihi Point, near the terminus of the bike path. In addition, several persons of high status appear in references to *wahi pono*, and legends associated with Kapa'a and Keālia. These include Mō'ikeha, Kawelo'leimākua,

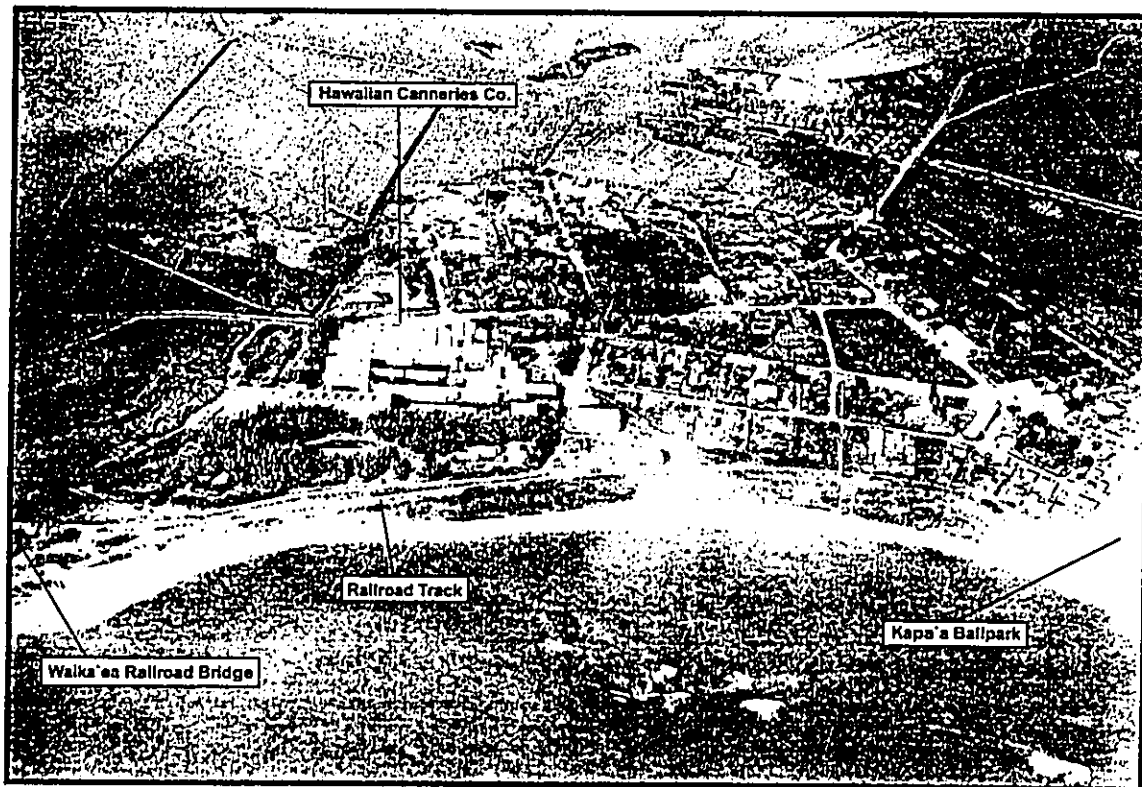


Figure 18 "Aerial View of Kapa'a, Kauai, Hawaii, Looking Landward" ca. 1933. Used with permission of Bishop Museum.

Karelomahahai'a and Paka'a. Although the extent of Ka lulu O Mō'ikeha is not known, there is record that it encompassed the area near the old Makee Landing, near the present day Coral Reef Hotel. The bike and pedestrian path traverse this area. Paka'a, son of notable parents and guardian of the wind gourd, is thought to have grown up at Keahiahi, the rocky headland between Kapa'a and Kealia through which the bike path runs.

Historic records list a number of *heiau* situated in Kapa'a and Kealia suggesting the region was at one time much more significant than is portrayed by the *kuleana* records of the late 1840s and early 1850s. The specific locations of most of these *heiau* are unknown, however there are a few which carry the same names as *wahi paʻa* known to be located in the vicinity of the project area. These *heiau* include Kuahiahi (Keahiahi, Keahiahi) at the rocky headland at the north end of Kapa'a and Kaluluomoikeha in Kapa'a. Oral accounts attest to a *heiau* in the vicinity of Kūna Bay, although no further information was obtained.

Historic accounts suggest a fairly sparse population in Kapa'a with Hawaiians living in a series of small settlements, probably along the *alanui aupuni* (the Kūhio Highway) which traversed a narrow sand berm. This sand berm created the *maka* boundary of an inland swamp. Most of the *lo'i* claimed were situated on the *mauka* side of the Kapa'a swamp in shallow gulches or valleys. The more ample river valley of Kealia hosted a larger population with *kuleana* claims mostly dispersed along the Kealia River. There is one Land Commission Award adjacent to the project area at the north end of Kealia Beach and subsurface testing in this locale has yielded evidence of human occupation ranging from pre-contact times to the plantation era. According to historic documents, the plateau areas north of Kealia Valley were sparsely inhabited with areas bordering Kumukumu and Hōmaikawa'a Streams hosting the largest settlements.

The earliest successful economic enterprises by a Westerner in these *chupua'a* was the Krull Ranch and Dairy, which operated in the Kumukumu area in the 1860s. The Krull Dairy was situated near Waipahē'e, well *mauka* of the coastal bike path. In 1877, the Makee Sugar Plantation was established in conjunction with the Hui Kawaihau, a group of prominent men from Honolulu, several of whom were retainers in Kalakaua's court. The Makee Plantation built a mill and landing at Kapa'a as part of the plantation infrastructure. *Kamo'āna* from Kapa'a pointed out the Makee Landing, also known as the Kapa'a Wharf, once extended out of what is now a breakwater for the Moikeha Canal, just *maka*i of the bike path near the present Coral Reef Motel. Following the move of the Kapa'a mill to Kealia in 1885, a railroad was built from Makee Landing to Kealia with another railroad arm leading across the Moikeha drainage up Lehua Street and into the *mauka* regions of Kapa'a. The *Mauka* Moikeha Railroad Bridge (State Site No. 50-30-08-2078, Feature D) and the Old Kealia Railroad Bridge/Cane Haul Road (State Site No. 50-30-08-789A, Sub-Feature 1) represent a part of the first railroad system constructed circa 1891 to transport sugar cane.

The Makee Sugar Plantation, operating out of Kealia, attracted hundreds of immigrant workers, first the Portuguese and Japanese and later, Filipinos. Kapa'a and Kealia towns sprung up around these immigrant groups. In addition, there were several plantation camps in Kealia, including in the plateau lands of Kumukumu and

Hōmaikawa'a as well as homesteads in the Kapa'a, Wailua and Kapahi areas. Many of the residential lots adjacent to the bike and pedestrian path in the Kapa'a area were auctioned off as Kapa'a Town Lots in the first part of the 20th century.

The pineapple industry made its debut in Kapa'a in 1913, with the opening of Hawaiian Cannery Companies, Ltd. A cannery was constructed on land north of Waikā'ea Canal and adjacent to the bike path. This cannery was in business for almost fifty years and made use of the railroad track which fronted it to transport pineapple to Ahukini Landing for shipment and also to send pineapple waste to the "pineapple dump" north of Kealia. Local residents remember the strong smell of the pineapple waste which floated down the coast with the current, producing good fishing and attracting sharks. In 1920, Ahukini Terminal & Railway Company extended the railroad from the Moikeha Canal area in Kapa'a to the Ahukini Landing in Hanama'ulu which became the new central terminal for shipping of agricultural goods. Lihue Plantation took over the Ahukini Terminal & Railway Company and the Makee Plantation in 1934.

By the late 1950s, the railroad gave way to truck roads. The local newspaper reports dredging coral from the Kapa'a reef to be used for building plantation roads. A good portion of the railroad alignment in Kapa'a was abandoned, however a cane haul road was constructed near the intersection of Hanua'ala Road and Kūhio Highway. The Lihue Plantation finally went out of business at the end of the 20th century and the cane haul road was abandoned. As an economic force, tourism has taken the place of agriculture in the last several decades. The old railroad alignment in the Kapa'a Town area was converted into a bike path in the 1980's extending from the Waikā'ea Canal to the Smokey Louie Swimming Pool. The path was paved with asphalt and minor modifications were made to two of the Railroad Bridges, the Waikā'ea Railroad Bridge and the *Maka*i Moikeha Railroad Bridge. Although this is the only paved portion, the entire proposed route including the paved bike path and the old cane haul road has been used by pedestrians, bicyclists, motor cyclists and horse back riders for years.

III. PREVIOUS ARCHAEOLOGICAL RESEARCH

A. Archaeological Studies and Sites in Kapa'a Ahupua'a

The following two tables outline the archaeological research (Table 6) and historic properties (Table 6) identified in Kapa'a Ahupua'a. These tables are followed by discussion of the research and historic properties. Table 6 provides a list of archaeological research conducted within Kapa'a Ahupua'a, including columns for source, location, nature of study, and findings. The locations of these archaeological studies are shown in Figure 19. Table 6 is a list of known historic properties within the ahupua'a and includes columns for site number, site type, location and reference. The locations of identified sites within Kapa'a Ahupua'a are shown in Figure 20.

Table 6: Previous Archaeological Studies in Coastal Kapa'a (Figure 19)

Source	Location	Nature of Study	Findings
Bennett 1931	Island-wide	Archaeological Reconnaissance	Identifies 2 sites: Site 110 'Taro terraces and bowl and Site 111. A large simple dirt Hawaiian ditch
Handy and Handy 1972	Archipelago-wide	Native Planter study	Discusses "highly developed irrigation system"
Ching 1976	Just south of the Waikaea Drainage Canal	Archaeological Reconnaissance	No significant findings
Hammatt 1981	Upland Kapa'a	Archaeological Reconnaissance	No significant findings
Hammatt 1986	Upper reaches of the Makaleha stream valley.	Archaeological Reconnaissance	No significant findings
Hammatt 1991	Along Kūhiō Highway	Subsurface Testing	Identifies two sub-surface cultural layer sites
Kikuchi and Remoaldo 1992	Around Kapa'a Town	Cemeteries of Kaus'i	Identifies six cemeteries
Spear 1992	South side Waikaea Canal, mauka of Kūhiō Highway. (TMK: 4-5-05:04, 09)	Monitoring Report	Designated subsurface site 60-30-08-547

Source	Location	Nature of Study	Findings
Chaffee, Burgett & Spear 1994a	A houselot near the corner of Kukui and Ulu Streets in mauka Kapa'a Town. (TMK: 4-5-09:10)	Archaeological Inventory Survey	No significant findings
Chaffee, Burgett & Spear 1994b	Māmane Street Kapa'a Town. (TMK: 4-5-09:51)	Archaeological Inventory Survey	No significant findings
Hammatt, Ida & Chigioji 1994	Proposed bypass routes mauka of Kapa'a Town	Archaeological Assessment	No new field work, reviews literature
Hammatt, Ida & Folk 1994	South side Waikaea Canal, mauka of Kūhiō Highway (TMK: 4-5-05:06)	Archaeological Inventory Survey	Weak cultural layer designated site 60-30-08-748
Kawachi 1994	Inia Street (Jaasper) TMK 4-5-08:33	Burial Report	Designates Site 60-30-08-871
McMahon 1994	"behind the armory in Kapa'a near the godstones" The location is uncertain & "Buzz's near the Coconut Marketplace"	Documents second hand report of burials in two locations	Bones in 3 places reported from behind the armory, 16 bodies reported from the Buzz's restaurant. No site numbers assigned
Creed, Hammatt, Ida, Masterson & Wintieski 1995	Kapa'a Sewerline project, Kūhiō Highway, south and central Kapa'a Town	Archaeological Monitoring Report	Documents cultural layer of site -1848 and (an enlarged) site -1849 & recovery of thirty burials at sites -867, -868, -871, & -1894
Jourdano 1995	1382-A Inia Street, mauka of Kūhiō Highway, central Kapa'a Town	Burial Report	Site 626

Source	Location	Nature of Study	Findings
McMahon 1996	South side Waikaea Canal, mauka of Kūhiō Highway (TRM: 4-5-05-08)	Archaeological Inventory Survey	No significant cultural material
Hammatt, Chiojeji, Ida & Creed 1997		Archaeological Inventory Survey	Four test trenches were excavated inland of Kapa'a Town
Borthwick and Hammatt 1999	Kapa'a Seventh-Day Adventist Church at 1132 Kūhiō Highway.	Archaeological Monitoring and Burial Treatment Plan	Monitoring was indicated as this parcel lay within the designated Site 60-30-08-1848.
Bushnell and Hammatt 2000	Seventh-Day Adventist Church, mauka of Kūhiō Highway, south of the Waikaea Canal	Archaeological Monitoring Report	Minimal findings (one piece of worked bone)
Callis 2000	Kapa'a Beach Park	Human Burial Removal and Archaeological Monitoring Report	
Ferzanski & Hammatt 2001	Kūhiō Highway on the margins of the Waikaea Canal	Archaeological Monitoring Report	No significant cultural material

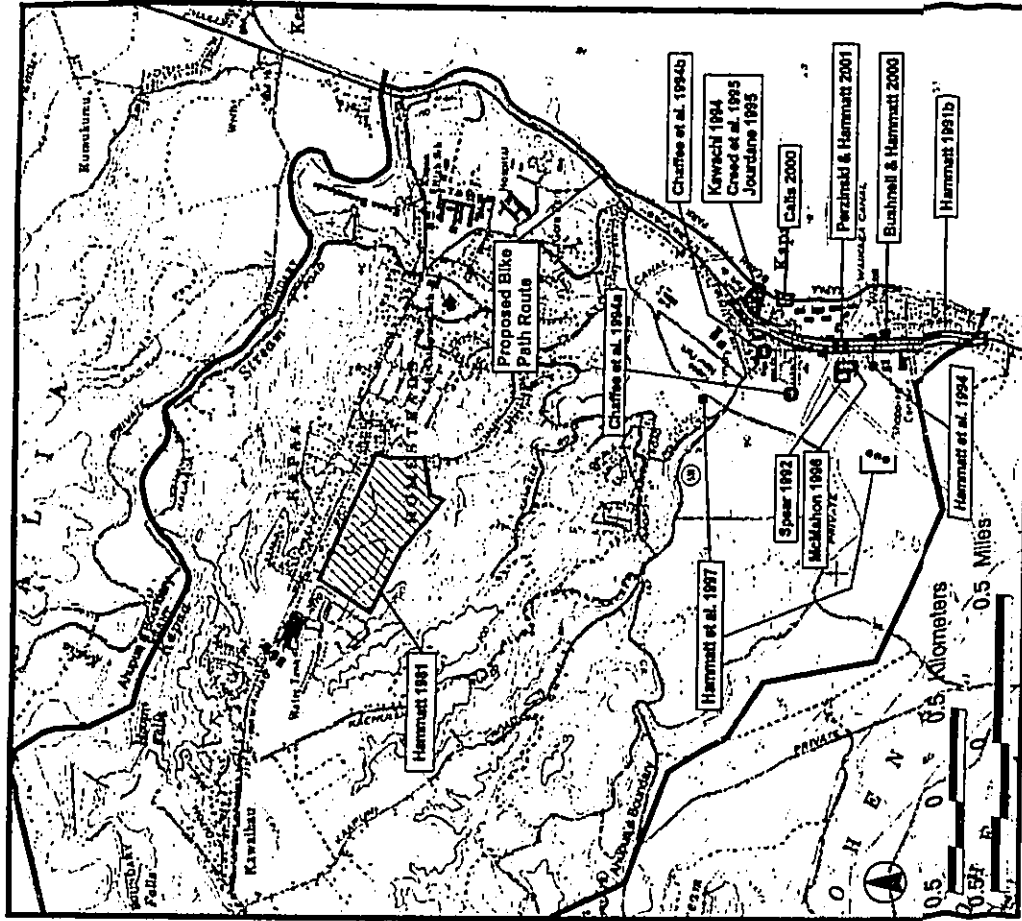


Figure 19 Previous Archaeological Studies in Kapa'a.

-748	Minimal findings, a weak cultural layer (buried A-horizon)	South of the bend of the Waikaea Canal, <i>mauka</i> of Kūhiō Highway	Considered no longer significant within project area	Hammatt, Ida & Folk 1994
-867	1 set of human remains	Kukui Street, just <i>mauka</i> of Kūhiō Highway, Kapa'a Town	Consultation and monitoring in vicinity indicated	Creed <i>et al.</i> 1995:50
-868	1 set of human remains	Lehua Street <i>mauka</i> of Kūhiō Highway, Kapa'a Town	Consultation and monitoring in vicinity indicated	Creed <i>et al.</i> 1995:50
-871	13 sets of human remains (Creed <i>et al.</i> 1995:50)	Inia Street, <i>makai</i> of Kūhiō Highway	Consultation and monitoring in vicinity indicated	Kawachi 1994, Creed <i>et al.</i> 1995:50
-884	1 set of human remains	Kawaihau Road and Kūhiō Highway	Consultation and monitoring in vicinity indicated	SHPD communication
-1848	Cultural layer & sub-surface features	Along Kūhiō Highway between Wana Road and the Waikaea Drainage Canal	Archaeological monitoring in the vicinity is recommended	Hammatt 1991; Creed <i>et al.</i> 1995
-1849	Cultural layer & sub-surface features; Creed <i>et al.</i> 1995:53 expands boundaries to incl. burial sites, -626, -867, -868 - 871, and -1894	Along Kūhiō Highway between Inia Street and Kauwila Street extending to the coast	Consultation and monitoring in vicinity indicated	Hammatt 1991; Creed <i>et al.</i> 1995
-1894	11 sets of human remains	Ulu Street, just N of Kūhiō Highway, Kapa'a Town	Consultation and monitoring in vicinity indicated	Creed <i>et al.</i> 1995:50

Table 6: Historic Properties in Coastal Kapa'a Ahupua'a (Figure 20)

Site # 50-30-08	Site Type/ Name (if any)	Location	Site Constraints	Reference
B001	Historic Cemetery	South of bend of Kapa'a Stream, a kilometer <i>mauka</i> from Kūhiō Highway	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B002	Historic Cemetery	Just <i>mauka</i> from Kūhiō Highway, south of Kapa'a Stream	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B003	Kapa'a Public Cemetery	South of Kanaole Road, approximately one kilometer inland of Kūhiō Highway	Appears to be a discrete historic cemetery	Kanaole Road; Kikuchi and Remoaldo 1992
B004	Historic Cemetery	North of Apopo Road, approximately one kilometer inland of Kūhiō Highway	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B013	Historic Cemetery	Just <i>mauka</i> from Kūhiō Highway, north of the Waikaea Canal	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B014	All Saints Episcopal Church Cemetery	Just <i>mauka</i> from Kūhiō Highway, south of the Waikaea Canal	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992:62-65
-547	sub-surface features including a firepit and a possible house foundation	South of bend of Waikaea Canal, <i>mauka</i> of Kūhiō Highway	Archaeological monitoring in the vicinity is recommended	Spear 1992:3
-626	Burial	Inia Street, <i>makai</i> of Kūhiō Highway, central Kapa'a	Consultation and monitoring in vicinity indicated	Jourdane 1995

Pattern of Archaeological Sites in Kapa'a

The pattern of archaeological studies in Kapa'a *Ahupua'a* is somewhat skewed with a dozen projects in urban Kapa'a Town and very little work along the coast. Major archaeological sites have been found in the Kapa'a Town area including extensive cultural layers with burials and other cultural features underlying Kohio Highway near All Saints Gym and near the older part of Kapa'a Town between Waikua Canal and Kapa'a Beach Park, *maka'i* of Kūhiō Highway (Hammatt 1991; Kawachi 1994; Creed *et al.* 1995; Jourdaine 1995; Callis 2000). The *mauka-makai* extent of these cultural layers has not been clearly defined. These extensive cultural deposits associated with pre-historic and early historic habitation are known to exist in a relatively narrow sand berm that makes up the physiogeography of Kapa'a. The areas *mouka* of Kapa'a Town are marshy although much of it has been filled in recent decades. The five *kuleana* awarded during the *Māhele* are located adjacent to the present highway. The more *mauka* studies (Spear 1992, Chaffee *et al.* 1994 & 1994b, Hammatt *et al.* 1994, 1997, McMahon 1996) are thought to be located towards the *mauka* fringe of the sand berm, approaching more marshy conditions and have generally reported no significant or minimal findings. Less than 1.5 km to the south of Waikua Canal is another extensive subsurface, cultural deposit which is associated with a pre-contact fishing encampment located at the southern boundary of Waipouli adjacent to Uhalakawa'a Stream (Waipouli Stream) and the ocean (Hammatt *et al.* 2000).

B. Archaeological Studies and Sites Keālia *Ahupua'a*

The following two tables outline the archaeological research (Table 7) and historic properties (Table 8) identified in Keālia *Ahupua'a*. These tables are followed by discussion of the research and historic properties. Table 7 provides a list of archaeological research conducted within Keālia *Ahupua'a*, including columns for source, location, nature of study, and findings. The locations of these archaeological studies are shown in Figure 21. Table 8 is a list of known historic properties within the *ahupua'a* and includes columns for state site numbers, site type, location and reference. The locations of identified sites within Keālia *Ahupua'a* are shown in Figure 22.

Pattern of Archaeological Sites in Keālia

Two inadvertent burial finds were documented in a large sand deposit at the bend of the Kapa'a River and were assigned State Site # 50-30-08-1851 (Figure 22). Sand dune burials and an associated cultural layer were documented at "Donkey Beach" (Perzinsky *et al.* 2000). Plantation era infrastructure and agricultural features have also been noted in coastal Keālia. Large area surveys of inland Keālia have documented extensive commercial agricultural landscape alterations. Sites such as traditional Hawaiian habitation and associated agricultural features have been noted in valley areas where plantation era cultivation did not occur.

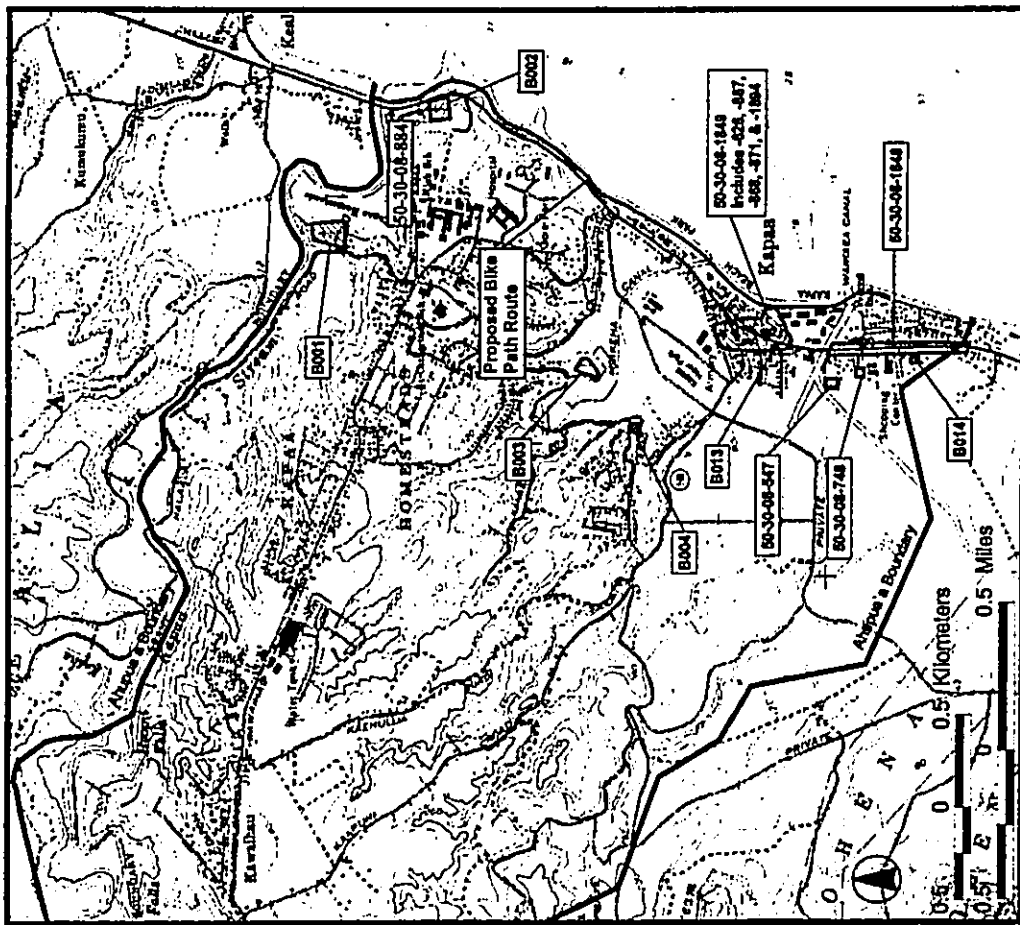


Figure 20 Historic Properties in Coastal Kapa'a *Ahupua'a*.

Table 7: Previous Archaeological Studies in Coastal Keālia Ahupua'a (Figure 21)

Source	Location	Nature of Study	Findings
Handy and Handy 1972	Archipelago-wide	Native Planters Study	Emphasizes that agricultural production was rather clumped along the Keālia side of Kapa'a Stream seaward of its confluence with Keālia Stream.
Folk & Hammatt 1991	Bend of the Kapa'a River, just inland of Kūhiō Hwy. Site 50-30-08-1851	Archaeological Assessment	Burial finds from Site 50-30-08-1851; noted the presence of historic artifacts and traditional Hawaiian midden in the vicinity. Also noted extensive disturbance from sand mining
Hibbard 1991	Bend of the Kapa'a River, just inland of Kūhiō Hwy. Site 50-30-08-1851	Reports field check of Nancy McMahon	Recommends further work (Site 50-30-08-1851)
Komori 1993	Palikū Beach (Donkey Beach)	Burial Report	Burial given site number 50-30-08-1899.
Jourdane and Collins 1996	Bend of the Kapa'a River, Site 50-30-08-1851	Burial Report	Burial finds from site 50-30-08-1851
Hammatt & Chiogetti 1998	Keālia Ahupua'a	Archaeological Assessment	Concludes lands formerly in cane or pineapple cultivation should be relatively free of cultural resources
Hammatt & Shideler 1998	Keālia Ahupua'a	Traditional Cultural Practices Study	Notes customary practice issues associated with the coast, streams and burials.
Perzinski, McDermott & Hammatt 2000a	Makai of Kūhiō Hwy., south Keālia Ahupua'a	Archaeological Inventory Survey	3 significant historic properties; Site 50-30-08-789 consists of 14 plantation era features; Site 50-30-08-790 consists of two World War II defensive features and burial site 50-30-08-1899 included three additional burials in the same general location as Komori's (1993).
Perzinski, McDermott & Hammatt 2000b	Palikū Beach (Donkey Beach)	Burial Treatment Plan	Discusses treatment for burial site 50-30-08-1899

Table 8: Historic Properties in Coastal Keālia Ahupua'a (Figure 22)

Site # 50-30-08	Site Type/Name (if any)	Location	Site Constraints	Reference
-789	14 plantation era features which included roads, stone walls, bridges, a bunker, terraces, a jetty and a pier.	Located makai of Kūhiō Hwy. below the agricultural tablelands on the low ridge just north of Ahiihi Point	No further work recommended, not recommended for preservation	Perzinski, McDermott & Hammatt 2000a:95
-790	Two World War II defensive features; Feature A, a concrete foundation & Feature B, a probable fox hole	Located makai of Kūhiō Hwy. in the vicinity of Palikū Beach.	No further work recommended, not recommended for preservation	Perzinski, McDermott & Hammatt 2000a:95
-1851	Burials, historic artifacts and traditional Hawaiian midden	Bend of the Kapa'a River, just inland of Kūhiō Hwy	Recommends abandonment of sand excavation due to presence of human bones, Consultation and monitoring in vicinity indicated	Folk & Hammatt 1991:2 Jourdane and Collins 1996
-1899	Burials	Located along edge of high water, 400 m makai of Kūhiō Hwy at Palikū Beach (Donkey Beach) just N. of Palikū Point	65 m by 50 m, long axis along coast, seaward of former railroad; to be preserved, Consultation and monitoring in vicinity indicated	Komori 1993; Perzinski, McDermott & Hammatt 2000a,b

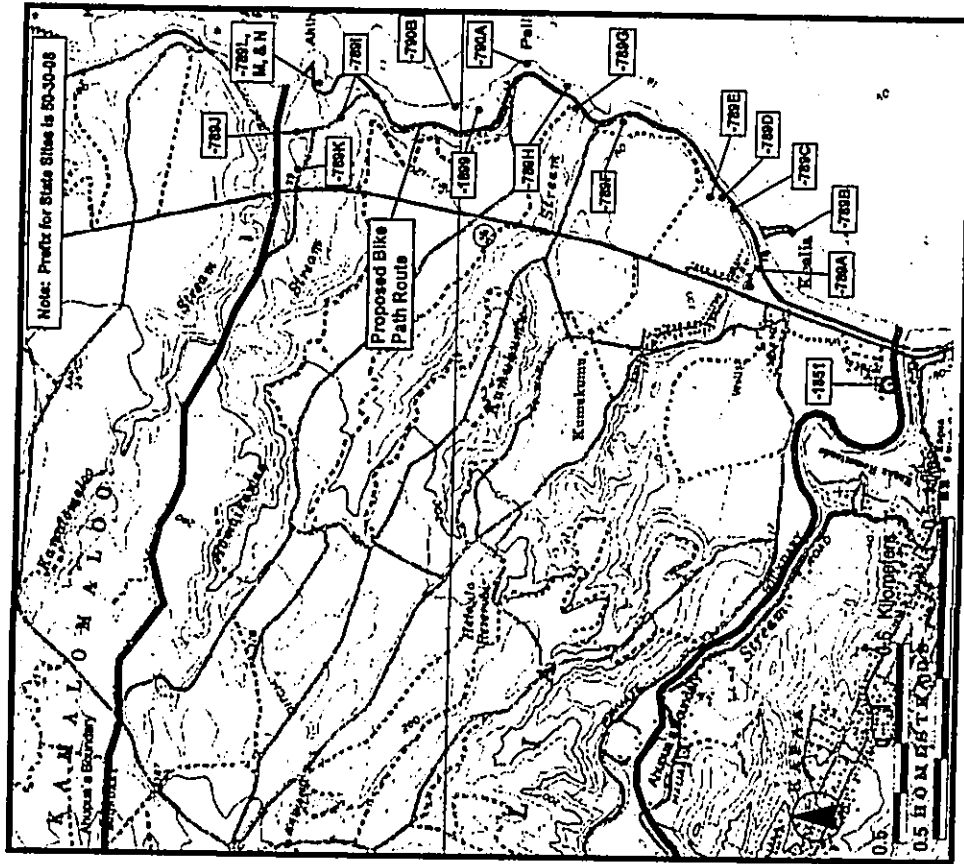


Figure 22 Historical Properties in Coastal Kealia Ahupua'a.

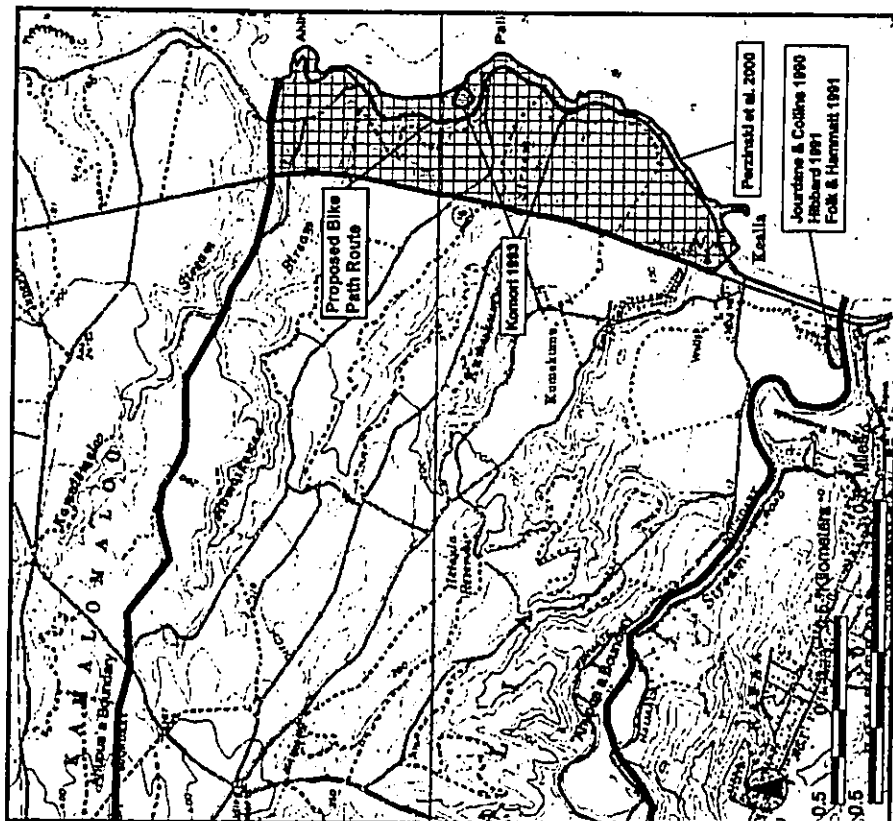


Figure 21 Previous Archaeological Studies in Coastal Kealia Ahupua'a.

IV. SUMMARY AND PREDICATIVE MODEL

The prehistoric settlement pattern shows coastal permanent habitation and inland agriculture as the general pattern. In Kapa'a, the inland agriculture and habitation loci was the perimeter of the large marshy area backshore of the coastal sand dune beach berm. In Kealia the inland agriculture and associated habitation was focused on a river valley and tributary system.

Buried pre-contact cultural layers with associated habitation and burial features have been documented for both coastal Kapa'a and Kealia. Burials have been primarily associated with Jaucus or beach sand deposits.

Commercial sugar cane cultivation and milling initiated in the mid to late 1800's was a primary factor in settlement pattern changes in the Kapa'a/Kealia area. Housing patterns were based on plantation camps of mainly immigrant laborers. Subsistence economy was replaced by the market-based economy. Transportation became mechanized, with rail lines from the fields to the mills, and to new landings. In the early 1900's, commercial pineapple becomes another major economic factor in the Kapa'a area with similar infrastructure as the plantation.

The demise of both pineapple and sugar was concurrent with an increase in tourism and service-oriented economy. Plantation era transportation routes went into disuse or were incorporated into present transportation infrastructure. Modern construction activities in coastal Kapa'a/Kealia however continue to unearth evidence of precontact, early historic, and plantation era activities.

Based on background data, the existing and proposed bike/pedestrian path utilizes and will utilize former plantation era transportation routes. Old rail line alignments, portions of which were converted to handle vehicular traffic (i.e. cane haul road) are envisioned as the primary corridor of the bike/pedestrian path.

Two locations are proposed for bike/pedestrian path parking and comfort stations. A parking only locale is proposed for the Lili Park, just south of Waikae'a Canal. A parking and comfort station locale is proposed for the north end of Kealia Beach. Both locations have the potential of containing buried cultural layers and associated human burials. In Kapa'a Town, on either side of Waikae'a Canal are State Sites 50-30-08-1848 and -1349, which consist of buried cultural layers and associated burials. In Kealia, State Sites # 50-30-08-1851 and -1899, mauka and makai of Kūhiō Highway respectively, contain buried cultural layers with associated burials. Thus, based on similar soil types, proximity and settlement patterns, it is anticipated that cultural layers with evidence of both precontact and historic occupation, and associated human burials, will be encountered during the subsurface testing phase of the inventory survey.

V. SURVEY RESULTS

The surface and subsurface inventory survey resulted in the documentation of five new sites (Sites -2074 to -2078) and a new feature (789 Feat. A Sub Feat. 1) placed within a previously identified site. Table 9 lists all identified sites within and seaward of the trail corridor, with columns for state site number, site type, site function, probable age, significance assessments, and recommendations. The newly identified sites (all in close proximity to the trail corridor) are indicated in Table 9 with an asterisk and are described in sections V A, B & C. Figure 23 shows the locations of the sites identified during this inventory survey as well as the sites located north of Kealia Beach, recorded during a previous inventory survey (Perzinski et al. 2000). The survey results section has two parts, A & B, with Part A being the subsurface testing documentation and Part B being the site descriptions for newly identified sites.

Table 9: Table of Sites Within and Seaward of the Trail Corridor (* denotes newly identified sites - all in close proximity to the trail corridor)

SS # to state	Site Type	Site Function	Probable Age	Signifi- cance	Recommendations
789	Historic road	Transportation	Historic, ca. 1950's to present	D	No Further Work/HAER
789 Feat. A Sub Feat. 1*	Bridge	Transportation	1890's to present	D	HAER
789 Feat. B	Kealia Landing	Transportation		D	No Further Work
789 Feat. C	Dynamite Storage Bunker	Plantation Infrastructure (storage)	c. 1900	D	No Further Work
789 Feat. G	Kumukumu Stream Bridge	Transportation	c. 1900	D	No Further Work
789 Feat. H	Pier	Plantation Infrastructure (refuse dumping)	Historic, Prior to 1950	D	No Further Work
789 Feat. L	Wall	Plantation Infrastructure (Agriculture)	Historic, Prior to 1950	D	No Further Work
789 Feat. M	Retaining Wall	Plantation Infrastructure (Agriculture)	Historic, Prior to 1950	D	No Further Work

789 Feat.N	Ditch	Plantation Infrastructure (Agriculture)	Historic, Prior to 1950	D	No Further Work
790	Military Infrastructure	Defense	WWII	D	No Further Work
790 Feat. A	Military Platform	Defense	WWII	D	No Further Work
790 Feat. B	Foxhole	Defense	WWII	D	No Further Work
884	Human Burial	Burial	Pre-Contact	D, E	Preservation
1899	Human Burials	Burial	Pre-Contact	D, E	Preservation
2074*	Cultural layer	Habitation, burial	Pre-Contact	D, E	Data Recovery/ Preservation
2074 Feat. A*	Human Burial	Burial	Pre-Contact	D, E	Preservation
2075*	Hwy Bridge foundation	Transportation	Historic, ca. A.D. 1912	D	No Further Work
2076*	Petroglyph	Symbolism, art	Historic	D, E	Preservation
2077*	Concrete steps	Related to old pavilion	Historic	D	No Further Work
2078*	Railway alignment	Transportation	Historic, ca. 1890's to 1950's	D	No Further Work/HAER documentation
2078 Feat. A	Railroad bridge	Transportation	Historic	A, D	HAER
2078 Feat. B	Railroad foundation	Transportation	Historic	A, D	No Further Work
2078 Feat. C	Historic railroad bridge	Transportation	Historic	A, D	HAER
2078 Feat. D	Historic railroad bridge	Transportation	Historic	A, D	No Further Work
2078 Feat. E	Historic railroad bridge	Transportation	Historic	A, D	No Further Work

HAER denotes Historic American Engineering Record

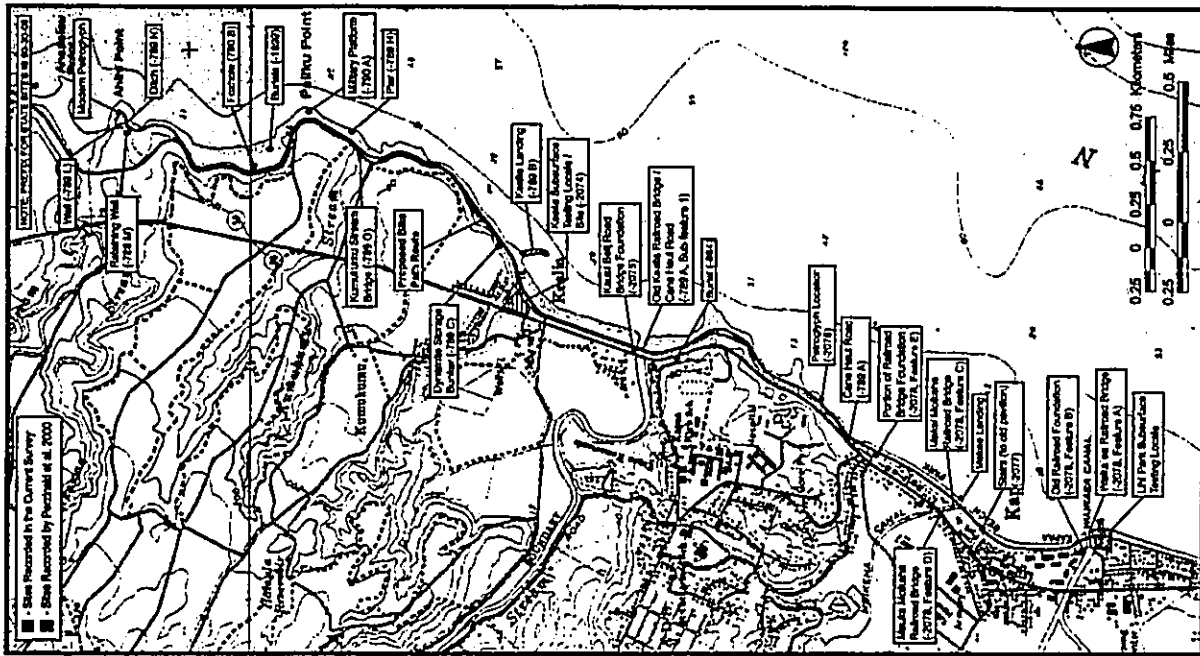


Figure 23 1950 USGS Kape's Quad Map Showing Archaeological Sites In or Near the Project Area.

A. Summary of Trenches

Subsurface testing was conducted at two locations based on the areas proposed for parking and comfort station facilities and consultations with SHPD/DLNR and Kaua'i County. The "parking only" locale is situated at Lihī, close to the existing bike path bridge (Figure 38). The proposed parking and comfort station locale is near the northern end of Keālia Beach and abuts Kūhiō Highway (Figure 24). Due to the differences in potential impacts, with a greater degree of construction and associated subsurface activities at the proposed Keālia comfort station and parking lot locale, more subsurface testing was conducted at Keālia Beach.

A total of 13 backhoe trenches were excavated during the inventory survey of the subject parcels, 8 at the Keālia locale (Figures 24-26) and 5 at the Lihī (Figures 39-41). A total length of approximately 75 m. were excavated, with the trenches generally 6 m. long and 70 cm. wide. The stratigraphy at Keālia was more complex than at the Lihī which was anticipated based on the predictive model.

The Keālia locale contains an existing gravel-covered parking area, a low drainage swale, and a grass-covered level area in the northwest corner, adjacent to Kūhiō Highway (Figures 24-26). Of the eight trenches, six (Trenches 1-5 & 8) were excavated within the parameters of the existing parking lot. The remaining two trenches include one (Trench 6) in the low drainage swale and one (Trench 7) in the level grass-covered northwest corner.

The trenches (1-5 & 8) in the existing parking area at Keālia all contained evidence of a buried cultural layer which has been allotted State Site # 50-30-08-2074. A number of features were observed, including a human burial (State Site # 50-30-08-2074, Feature A) in Trench 6.

B. Stratigraphic Overview

Keālia Overview

Trenches 1-8 were excavated in the vicinity of the existing Keālia parking area (Figures 29-38). The soil type is predominately Beach or Jaucus sand. The general stratigraphic soil sequence includes: surface layer of recent basalt gravel (Trenches 1-5 & 8); reddish brown clay loam alluvium (Trenches 1-3); culturally-enriched sand (Trenches 1-4, 5 & 8) with sterile sand as the base of excavations (Trenches 1-3, 5 & 8).

Stratum Ia refers to the modern imported parking lot basalt gravel. Stratum Ib refers to the reddish brown clay loam alluvium that corresponds to soil type Mokuleia Loam (Foote *et al* 1974). The Mokuleia soil series was utilized as the primary soil type for commercial sugar cane and pineapple cultivation in Keālia. The project area segment tested at Keālia is at the interface between the Mokuleia soil series and Jaucus or Beach sands and only a thin layer of the alluvial soil was present in the test trenches.

Stratum II for trenches in the parking lot (Trenches 1-5 and 8) was a mix of beach sand and the reddish loam of Stratum Ib. Stratum II also contained sparse historic to modern rubbish, including rusted metal and small glass fragments.

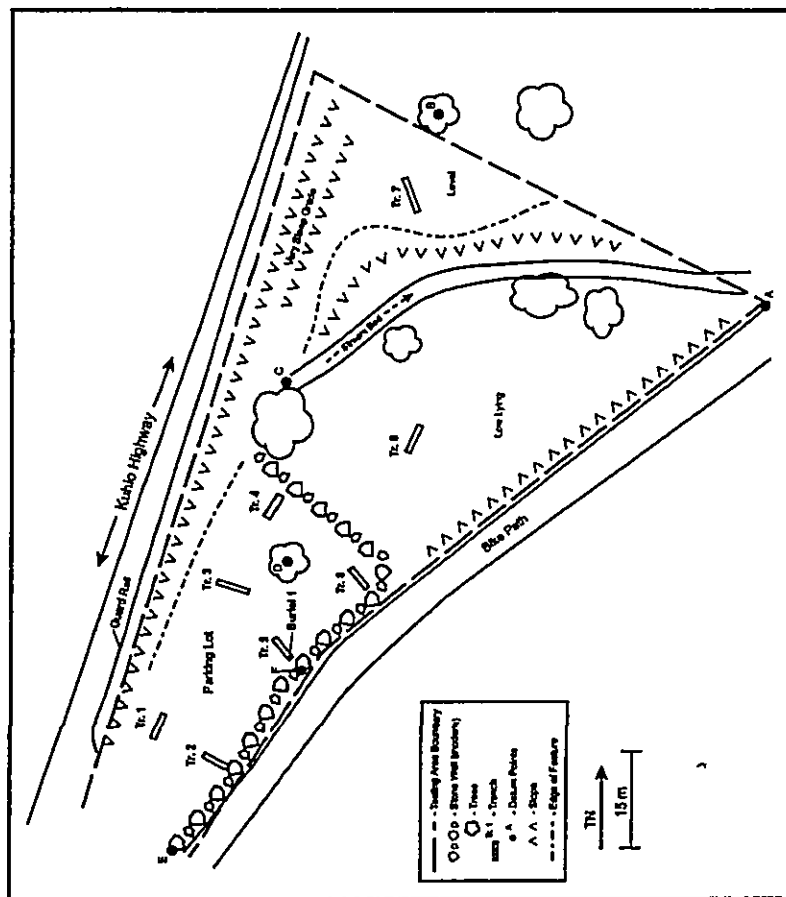


Figure 24 Plan View of Keālia Subsurface Testing Locale, Showing Locations of Test Trenches.



Figure 25 Kealia Subsurface Testing Locale, Note Graded Parking Lot Area in Foreground and Grassland Area in Background. Photo Taken to North.

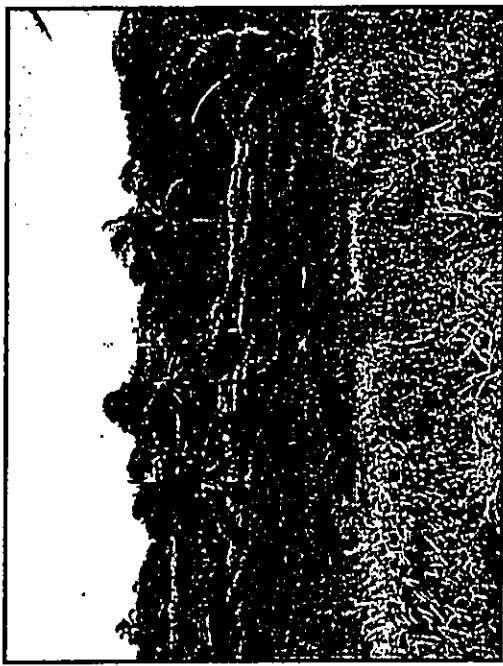


Figure 26 Kealia Subsurface Testing Locale, Grassland Area and Recommended Area for Development. Photo Taken to Northwest.

Stratum III consisted of clean beach sand. The thin layer which was not present in all trenches possibly represents a high surf or storm event that deposited culturally sterile sand over the cultural layer (i.e. Stratum IV) or more likely it represents a period of little or no cultural activity.

Stratum IV in Trenches 1-5 and 8 denotes the cultural layer (i.e. State Site # 50-30-08-2074). The layer is fine to medium coralline sand that has been culturally enriched. Pit features were common in the trench profiles and a charcoal sample from a discrete 'imu-type feature' in Trench 8 was sent for C¹⁴ analysis. The analysis resulted in a calibrated age range of ca. A.D. 1670 - 1950. The feature contained no historic-era artifacts or midden (i.e. cow, goat, etc.), but did contain traditional marine midden components. Based on feature type, lack of historic artifacts, and stratigraphic position, a late pre-historic to early historic time frame is posited. The single human burial (i.e. State Site # 50-30-08-2074 Feature A) encountered during testing was in Trench 5 in a distinct burial pit which was a mix of Stratum IV (i.e. cultural layer SS# 50-30-08-2074) and sterile beach sand, Stratum V.

Stratum V (in Trenches 1-5 and 8) denotes the sterile beach sands of Kealia Beach. The sterile sand extends below the level of backhoe excavations (ca. 2.2 m). The pit features associated with Stratum IV cultural layer are intrusive into this layer and are evidenced by dark color sands from the culturally enriched sediments versus the lighter colored Stratum V.

Trench 6 was located in a low grass-covered swale at the northeastern corner of the Kealia testing locale (Figure 24 & 26). Stratum I in Trench 6 was sand, similar to Stratum II in Trenches 1-5 and 8. The sand was a dark brown loamy sand with a mat of grass roots in it. Stratum II was also sand (i.e. silty sand) with Stratum I and II representing aeolian deposition of beach sand. Stratum III consisted of bluish gray gleyed clay which represents alluvial water-logged terrestrial sediments. The swale within which Trench 6 was located in a drainage feature that at one time was a low energy backshore estuary-type environment. The gleyed clays were developed in the low energy environment possibly a 'muliwai' which is defined as "river, river mouth, pool near mouth of a stream, as behind a sand bar, enlarged by ocean water left there by high tide; estuary" (Paku; Elbert 1986: 256). Additionally, LCA data for a nearby house lot references a "Loko Waipunaula", indicating a pond-type environment. Historic photographs depict an 'auwai or a ditch in this general area (Figure 27) of the current day swale.

Trench 7 was located closer to Kūhiō Highway and on the northern side of the existing drainage (Figure 24 & 26). The trench had similar stratigraphy as Trench 6 except for Stratum I. Stratum I in Trench 7 was a thick (70-80 cm.) layer of imported clay loam fill. The area around Trench 7 had been filled and leveled with Stratum I material. A 1960's licence plate was observed in this fill material. Below the fill were gleyed clay sediments similar to those in Trench 6. The gleyed clay was also observed in Trench 4 on the southern side of the existing drainage, though Trench 4 also had sand layering similar to the Waikā'ea locale.

Trenches 4, 6, and 7 contained evidence of estuary-type gleyed clay deposits below fill and sand layers. The mucky clay soils may represent a backshore pond (i.e. *mufiuaa*) which possibly functioned, at least in part, as a fishpond, referred to in LCA documents as "Loko Waipunauala".

Keālia Summary

The subsurface testing revealed two distinct soil sequences, one primarily sand, the other with more terrigenous soils and water-logged clay deposits. The sand regime is evidenced by Trenches 1-3, 6, and 8 and to a lesser extent, Trench 4. These trenches contained evidence of the cultural layer, State Site # 60-30-08-2074 with the associated human burial (i.e. Feature A) in Trench 6. The cultural layer (i.e. Site -2074) contains evidence of both pre- and post-contact occupation. A charcoal sample from a fire pit feature (Beta # 169917) yielded two sigma-calibrated age range of ca. A.D. 1650-1960. The broad age range is unfortunately not unusual and makes inferences from the date difficult. However, based on the absence of historic cultural material, and on the stratigraphic position of the fire pit feature, a late prehistoric to early historic time frame is possible.

The soil sequence evidenced in Trenches 6, 7, and to a lesser extent Trench 4, indicates a natural swale or drainage feature along the north side of the testing locale (Figures 24 & 26). Terrestrial clays lie below fill material in these trenches. Trench 4 appears to be at the southern edge or interface between the two soil sequences as it had both sand and clay layers. Data from the *Māhele* era documents concerning LCA 8833 (to Kiapa) reference "Loko Waipunauala" near the coastal house lot. The water-logged sediments located in Trench 6 & 7 may be evidence of the pond, which has since been filled in over time. However, no sediments clearly from a 'fishpond' were observed during testing. There is, at present, a culvert extending under Kōhio Highway which has added to the runoff and filling in of this area with terrestrial sediments.

Based on the archaeological results of the testing at the Keālia locale siting of the proposed comfort station would be best at the northern end of the test area (i.e. Trenches 4, 6, and 7), away from State Site # 60-30-08-2074.

Lihī Park Overview

Trenches 9 - 13 were excavated within the parameters of the proposed "parking only" Lihī Park locale (Figures 39-41). The area is, based on our observations, already heavily utilized for parking and 'hanging out at the beach'.

The stratigraphic soil sequence is primarily sand. Stratum I in all five trenches was sand or loamy sand and ranged in color, depending on content, from browns to dark grays. Trenches 10 and 12 contained charcoal, modern trash, and in the case of Trench 10 some marine shell midden. In both cases the layer did not appear to be an intact prehistoric (or early historic) cultural layer. Modern materials were mixed within these deposits and the charcoal and midden are possibly from recent beach use.

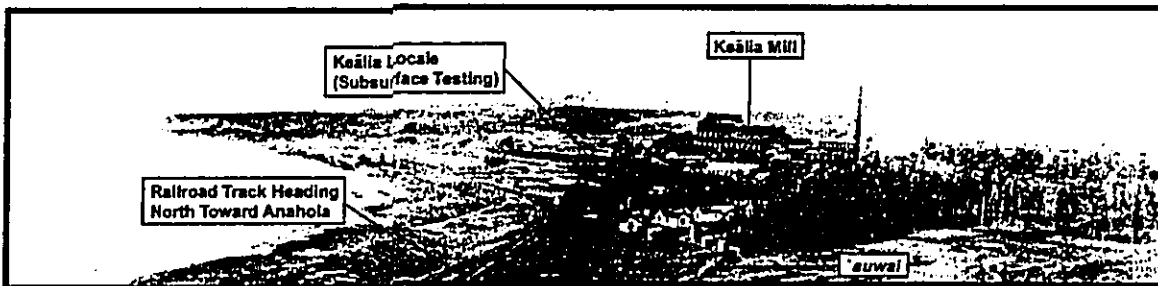
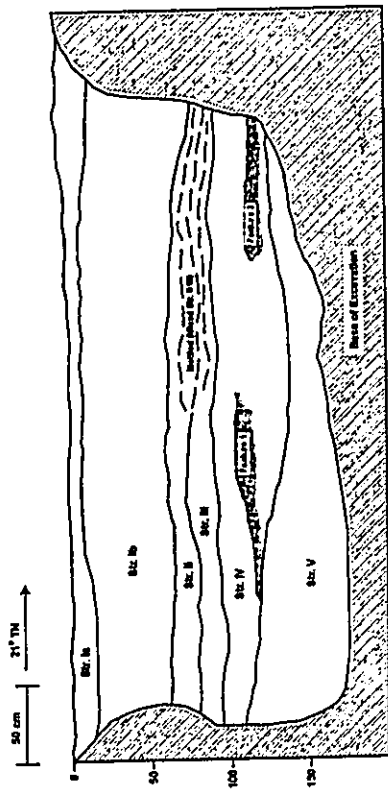


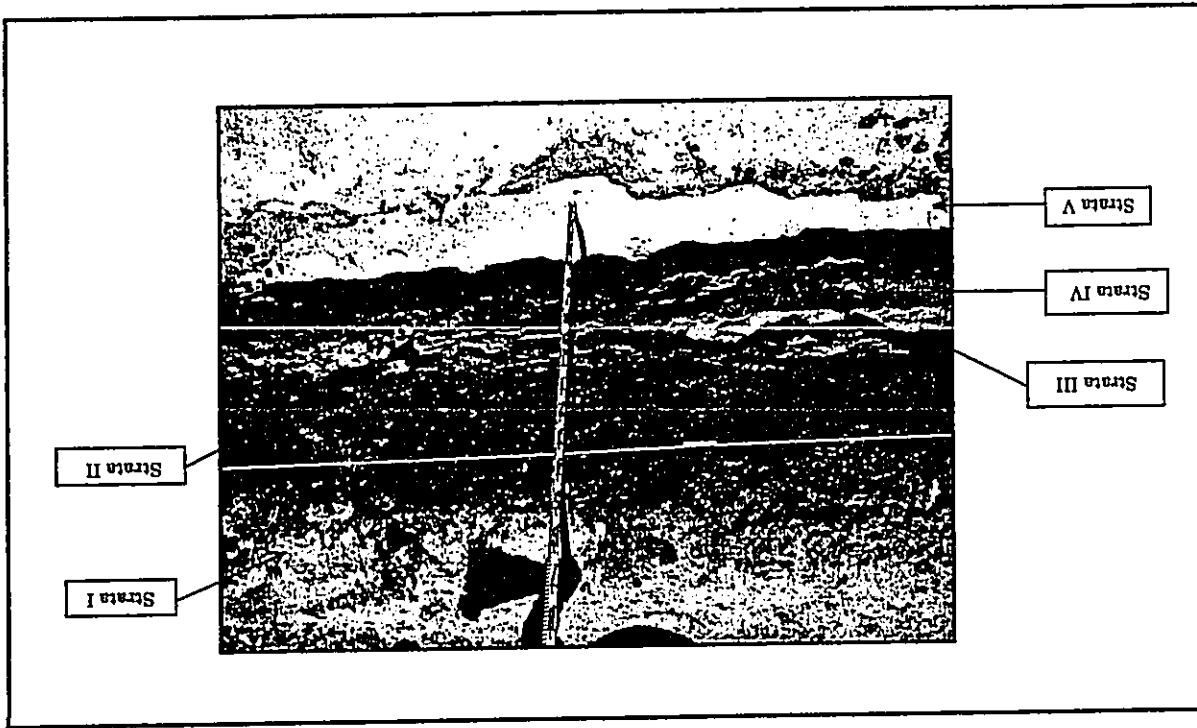
Figure 27 Makee Sugar Company Mill, Kealia, Kauai, Hawaii" October 1919. Photographer: L.E. Edgeworth. Used with permission of Bishop Museum.

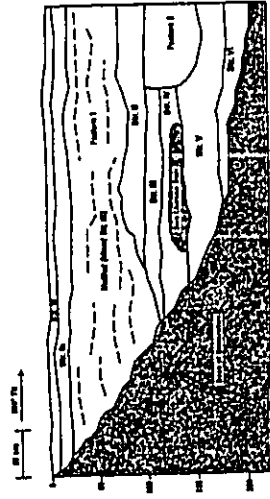


Strata	CMBS	Description
I a	0 - 6/15	2.5 Y 5/1 gray gravel fill layer; modern parking lot fill material.
I b	6/15 - 60/75	2.5 YR 4/6 reddish clay loam, strong, fine, crumbly, dry, weakly coherent, abrupt wavy lower boundary; thought to be associated with former sugar cane.
II	60/75 - 76/80	7.5 YR 3/4 dark brown loamy sand, weak, fine, single-grained, dry consistency, loose, non-plastic, non-sticky, abrupt smooth lower boundary; thin grass rootlet inclusions, historic trash (metal, glass)
III	76/80 - 85/96	10 YR 6/4 light yellowish brown beach sand, medium grained, structureless, dry, loose, granular, non-sticky, non-plastic, abrupt wavy lower boundary, no cultural material.
IV	85/96 - 110/140	10 YR 3/1 very dark gray loamy sand, fine to medium, structureless, dry, loose, non-plastic, non-sticky, abrupt wavy lower boundary; cultural layer with marine shell midden, basalt flakes, and charcoal.
Feat 1	105 - 120	Charcoal lense within Stratum IV cultural layer.
Feat 2	110 - 124	Charcoal lense within Stratum IV cultural layer.
V	110/140 - 165/175	10 YR 6/4 light yellowish brown beach sand, medium grained, structureless, dry, loose, granular, non-sticky, non-plastic, lower boundary is BOE, no cultural material.

Figure 28 Kealia Beach Trench 1: West Wall: (length 4 m, depth 175 cmbs, width 80 cm, oriented 21° TN)

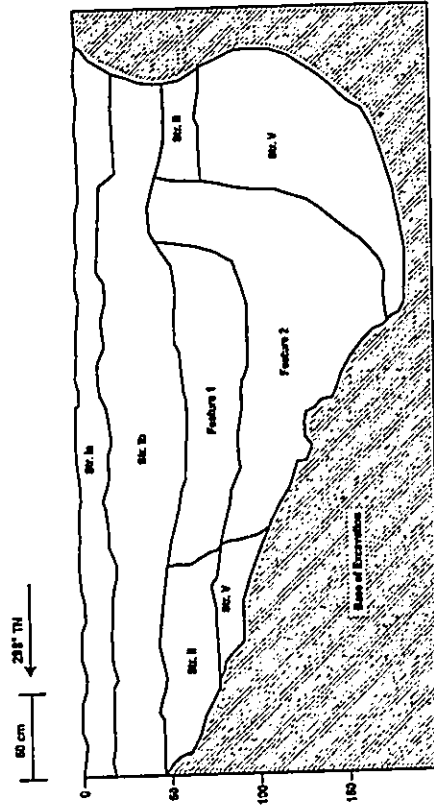
Figure 29 Photograph of Test Trench 1 (Kealia Beach Park) Showing General Stratigraphy Observed in the Area. See Stratigraphic Descriptions in Text.





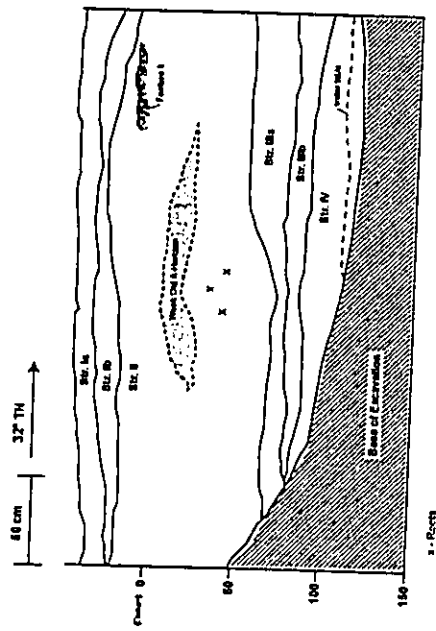
Strata	CMBS	Description
Ia	0 - 10/15	2.5 Y 3/1 gray gravel fill layer; modern parking lot fill material.
1b	6/15 - 20/25	2.5 YR 4/6 reddish clay loam, strong, fine, crumbly, dry, weakly coherent, abrupt wavy lower boundary; thought to be associated with former sugar cane.
Feat 1	20/25 - 70/110	Modern trash pit feature, containing portions of an old house foundation; Stratum I & II mottled
II	70 - 100	10 YR 4/6 yellowish brown loamy sand, weak, fine, single-grained, dry consistency, loose, non-plastic, non-sticky, abrupt smooth lower boundary, thin grass rootlet inclusions.
Feat 2	100 - 155	Historic trash pit
III	100 - 115	10 YR 6/4 light yellowish brown beach sand, medium grained, structureless, dry, loose, granular, non-sticky, non-plastic, abrupt wavy lower boundary; no cultural material.
IV	115 - 135/140	10 YR 3/1 very dark gray loamy sand, fine to medium, structureless, dry, loose, non-plastic, non-sticky, abrupt wavy lower boundary; cultural layer with marine shell midden, basalt flakes, and charcoal
V	135/140 - 170/185	10 YR 6/4 light yellowish brown beach sand, medium grained, structureless, dry, loose, granular, non-sticky, non-plastic, lower boundary is BOE, no cultural material.
VI	170/185 - 185/205	10 YR 8/3 very pale brown medium/course sand, medium grained, structureless, dry, loose, granular, non-sticky, non-plastic; associated with water table.

Figure 31 Kealia Beach Trench 3: Northwest Wall (length 5 m, depth 205 cmbs, width 70 cm, oriented 288° TN)



Strata	CMBS	Description
Ia	0 - 15/20	2.5 Y 5/1 gray gravel fill layer; modern parking lot fill material.
1b	15/20 - 45/55	2.5 YR 4/6 reddish clay loam, strong, fine, crumbly, dry, weakly coherent, abrupt wavy lower boundary; thought to be associated with former sugar cane.
II	45/55 - 70/75	7.5 YR 3/4 dark brown loamy sand, weak, fine, single-grained, dry consistency, loose, non-plastic, non-sticky, abrupt smooth lower boundary, thin grass rootlet inclusions, no cultural material.
Feat 1	105 - 120	Pit Feature 1 containing historic to modern trash (glass, metal, charcoal chunks); intrusive into Pit Feature 2.
Feat 2	110 - 124	Pit Feature 2 historic trash pit containing glass, metal, cut cow bones, charcoal.
V	110/140 - 165/175	10 YR 6/4 light yellowish brown beach sand, medium grained, structureless, dry, loose, granular, non-sticky, non-plastic, lower boundary is BOE, no cultural material.

Figure 30 Kealia Beach Trench 2: North Wall (length 4.25 m, depth 185 cmbs, width 80 cm, oriented 298° TN)



Strata	CM/BS	Description
Ia	0 - 15/20	2.5 Y 5/1 gray gravel fill layer; modern parking lot fill material.
Ib	15/20 - 30	2.5 YR 4/6 reddish clay loam, strong, fine, crumbly, dry, weakly coherent, abrupt wavy lower boundary; thought to be associated with former sugar cane.
II	30 - 100/122	7.5 YR 3/4 dark brown loamy sand, weak, fine, single-grained, dry consistency, loose, non-plastic, non-sticky, abrupt smooth lower boundary, thin grass rootlet inclusions, charcoal flecking.
Feat I	35 - 40	Feature I charcoal lens within Stratum II
IIIa	55 - 75	8/1 10 Y light greenish gray gleyed clay, structureless, slightly wet consistency, sticky, plastic, abrupt broken lower boundary; no cultural material observed.
IIIb	75 - 83	7/1 10 Y light greenish gray gleyed clay, structureless, slightly, wet consistency, semi-sticky, moderate plasticity, abrupt broken lower boundary; no cultural material observed.
IV	83 - 125	3/1 10 G dark bluish gray clay, structureless, moist consistency, plastic, very sticky; no cultural material observed.

Figure 32 Kealia Beach Trench 4: West Wall (length 4 m, depth 160 cmbs, width 110 cm, oriented 32° TN)

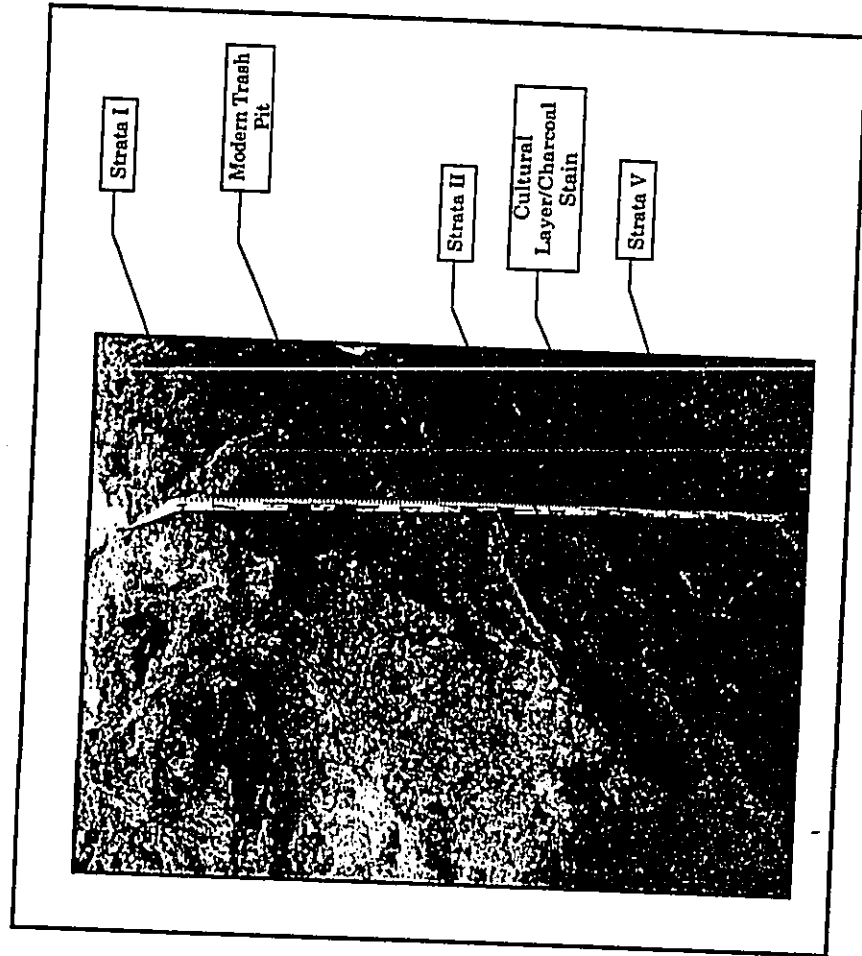
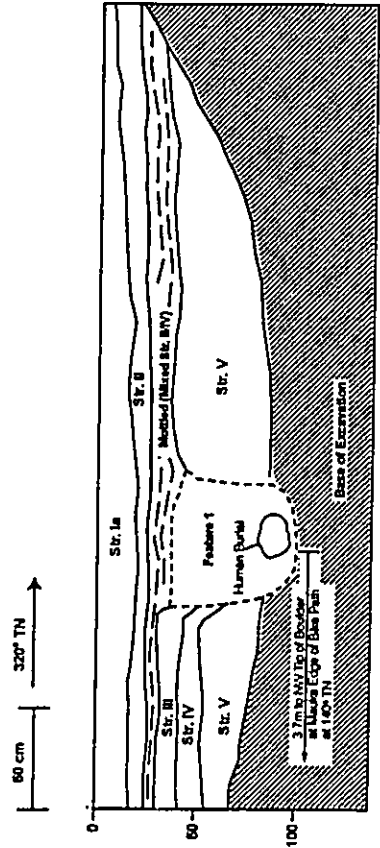
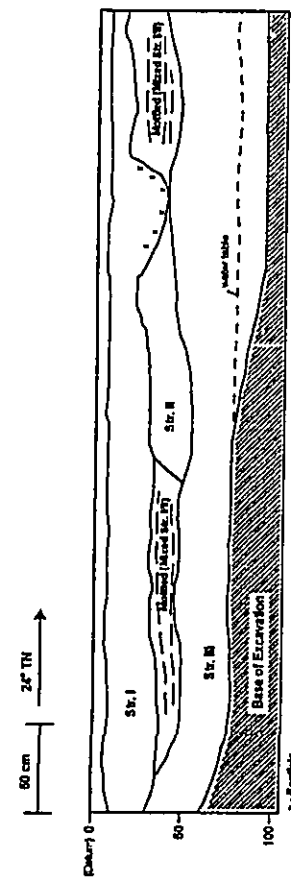


Figure 33 Photograph of Test Trench 4 (Kealia Beach Park), Showing Modern Trash Pit and Cultural Layer. See Stratigraphic Descriptions in Text.



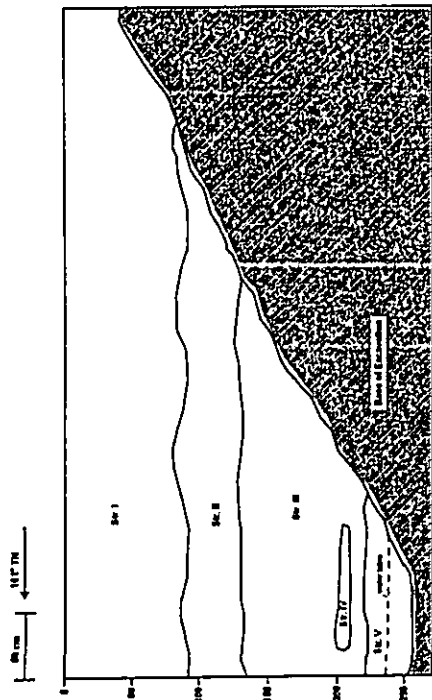
Strata	CMBS	Description
I a	0 - 15/20	2.5 Y 5/1 gray gravel fill layer, modern parking lot fill material.
II	15/20 - 30	7.5 YR 3/4 dark brown loamy sand, weak, fine, single-grained, dry consistency, loose, non-plastic, non-sticky, abrupt smooth lower boundary, thin grass rootlet inclusions, historic trash (rustic metal).
III	30 - 37	10 YR 6/4 light yellowish brown beach sand, medium grained, structureless, dry, loose, granular, non-sticky, non-plastic, abrupt wavy lower boundary, no cultural material.
III/IV	30 - 46	10 YR 4/1 dark gray loamy sand, fine to medium, structureless, loose, non-plastic, non-sticky, abrupt wavy lower boundary.
IV	35 - 46/50	10 YR 3/1 very dark gray loamy sand, fine to medium, structureless, dry, loose, non-plastic, non-sticky, abrupt wavy lower boundary; cultural layer with marine shell midden, basalt flakes, and charcoal
Feat 1	25/30 - 90	Burial Pit; 10 YR 6/1 gray sand, fine to medium; mix of Stratum IV and V.
V	46/50 - 90	10 YR 6/4 light yellowish brown beach sand, medium grained, structureless, dry, loose, granular, non-sticky, non-plastic, lower boundary is BOE, no cultural material.

Figure 34 Kealia Beach Trench 5: Northeast Wall (length 4 m, depth 96 cmbs, width 80 cm, oriented 320° TN)



Strata	CMBS	Description
I	0 - 25/35	7.5 YR 3/4 dark brown loamy sand, weak, fine, single-grained, dry consistency, loose, non-plastic, non-sticky, abrupt smooth lower boundary, thin grass rootlet inclusions, no cultural material.
II	25 - 52	10 YR 5/6 yellowish brown (mottled areas 10 YR 5/2 grayish brown) silty sand, fine to medium, single-grained, structureless, dry consistency, coherent, non-plastic, non-sticky, abrupt wavy lower boundary; contains no observed cultural deposits.
III	25/35 - 75/95	3/1 10 BG dark bluish gray gleyed clay, structureless, moist consistency, sticky, moderate plasticity, lower boundary is BOE; contains no observed cultural deposits.

Figure 35 Kealia Beach Trench 6: East Wall: (length 4.5 m, depth 92 cmbs, width 80 cm, oriented 24° TN)



Strata	CMBS	Description
I	0 - 80/90	2.5 YR 4/3 reddish brown clay loam, strong, medium size, crumbly, dry consistency, slightly hard, sticky, slightly plastic, clear wavy lower boundary; Modern imported top soil layer, unique in this trench, contains modern (1950's) trash.
II	80/90 - 130/133	2.5 YR 3/4 reddish clay loam, strong, fine, crumbly, dry, weakly coherent, abrupt wavy lower boundary; thought to be associated with former sugar cane.
III	130/133 - 210	2.5 YR 3/3 dark reddish brown clay, structureless, sticky, plastic, clear smooth lower boundary.
IV	200 - 205	10 YR 5/6 yellowish brown (mottled areas 10 YR 5/2 grayish brown) silty sand, fine to medium, single-grained, structureless, dry consistency, coherent, non-plastic, non-sticky, abrupt wavy lower boundary; contains no observed cultural deposits.
V	210 - 250	3/1 10 BG dark bluish gray gleyed clay, structureless, moist consistency, sticky, moderate plasticity, lower boundary is BOE; contains no observed cultural deposits.

Figure 37 Kealia Beach Trench 7: West Wall: (length 5.5 m, depth 250 cmbs, width 80 cm, oriented 161° TN)

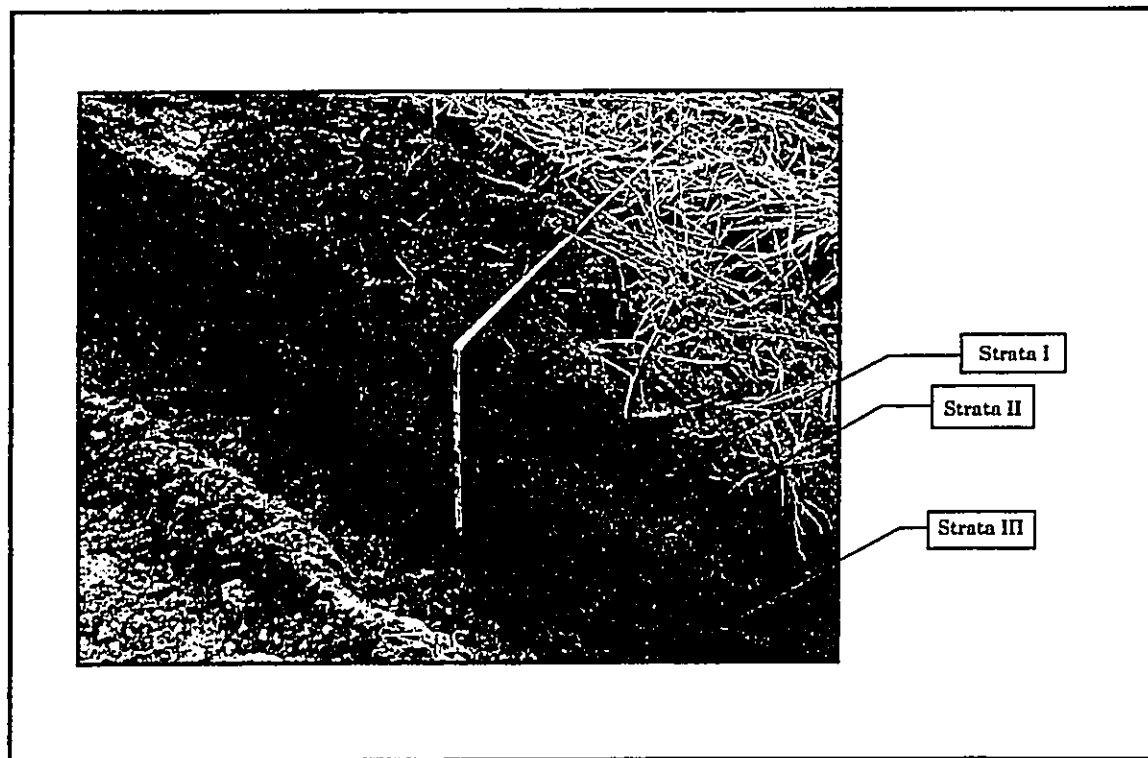
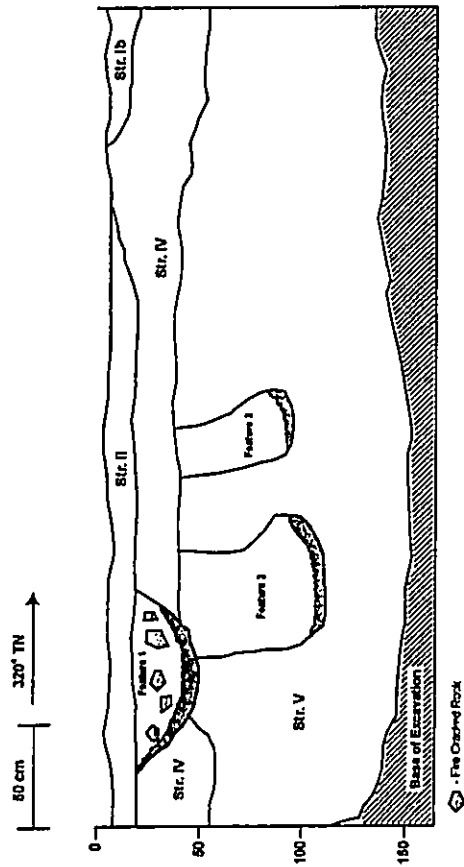


Figure 36 Photograph of Test Trench 6 (Kealia Beach Park), Showing General Stratigraphy Observed in Area. See Stratigraphic Descriptions in Text.



Strata	CMBS	Description
I	0 - 15	7.5 YR 3/4 dark brown loamy sand, weak, fine, single-grained, dry consistency, loose, non-plastic, non-sticky, abrupt smooth lower boundary, thin grass rootlet inclusions, contains rusted metal.
IV	0 - 40/55	10 YR 3/1 very dark gray loamy sand, fine to medium, structureless, dry, loose, non-plastic, non-sticky, abrupt wavy lower boundary; cultural layer with marine shell midden, basalt flakes, and charcoal.
Feat 1	15 - 50	Fire Pit 1
Feat 2	40 - 110	Fire Pit 2
Feat 3	40 - 95	Fire Pit 3
V	40/55 - 153	10 YR 6/4 light yellowish brown beach sand, medium grained, structureless, dry, loose, granular, non-sticky, non-plastic, lower boundary is BOE, no cultural material.

Figure 38 Kealia Beach Trench 8: Southwest Wall (length 4 m, depth 150 cm, width 80 cm, oriented 320° TN)

Stratum II in Trenches 9, 10, 12, and 13 denotes the sterile beach sand layer. The Stratum II sand was dry and loose with no observed cultural materials. There were intrusive pit features in Trenches 9, 12, and 13 which were a mixture of Stratum I and II but with no cultural contents. Mixed pit features in actively utilized beach sand areas are common and occur with typical beach activities.

The only divergence from the sand sequence was found in Trench 11, the trench closest to Waika'ea Canal. Stratum II in Trench 11 is dark bluish gray clay. The clay which extends below the present water table level represents terrestrial soils deposited in a low energy environment. Waika'ea Canal is a modern channelized drainage feature. However, Stratum II in Trench 11 indicates a broader estuary, or *mutitvāi*, for the Waika'ea drainage prior to channelization.

Lihī Park Summary

The soil sequence observed at the Lihī Park was, as anticipated, coralline beach sand, though Trench 11 did have waterlogged clay sediments below 2 m. of sand. Trench 10 in the southeast corner of the testing locale had a mixed Stratum I that contained big, chunky charcoal pieces with what appeared to be traditional marine midden components, basalt gravel, and sparse modern trash. The layer had an abrupt smooth lower boundary and appeared more like a re-worked or graded mixed layer more than an intact cultural layer. Based on these observed characteristics including it being the surface layer, presence of modern trash, the large, chunky charcoal dispersed throughout the layer and not in discrete features, no state site designating a traditional cultural layer appears warranted. Trench 12 had similar Stratum I deposits, with more abundant modern trash and far less charcoal. The deposit may be evidence of a local, modern demolition layer related to former structures at or near this location prior to park development and recent beach park usage (e.g. camping, fishing, cooking, etc.).

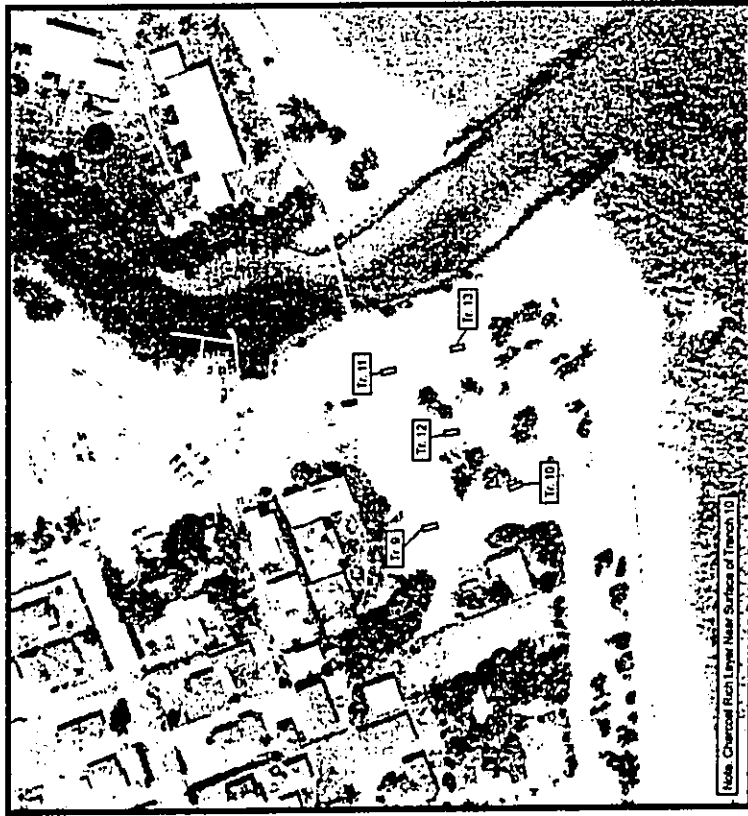


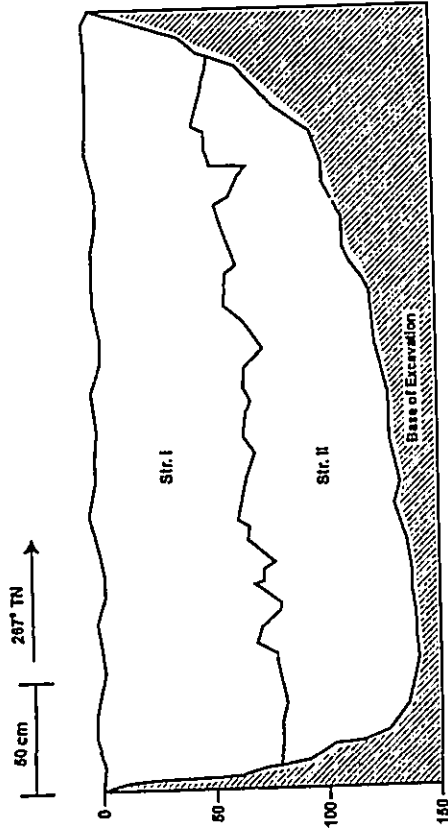
Figure 39 Aerial View of Waikāea Canal and Lihī Park Showing Locations of Test Trenches for Proposed Restroom and Parking Facility.



Figure 40 Lihī Park Subsurface Testing Locale. Photo Taken to Northwest.

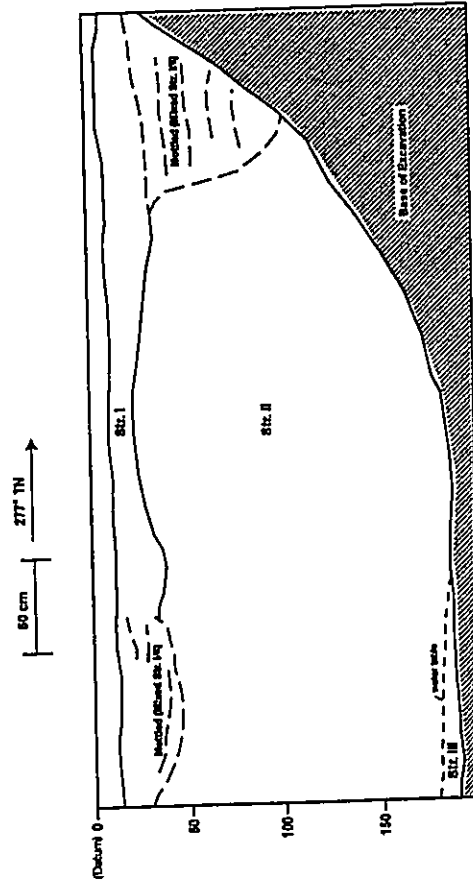


Figure 41 Lihī Park Subsurface Testing Locale. Photo Taken to South.



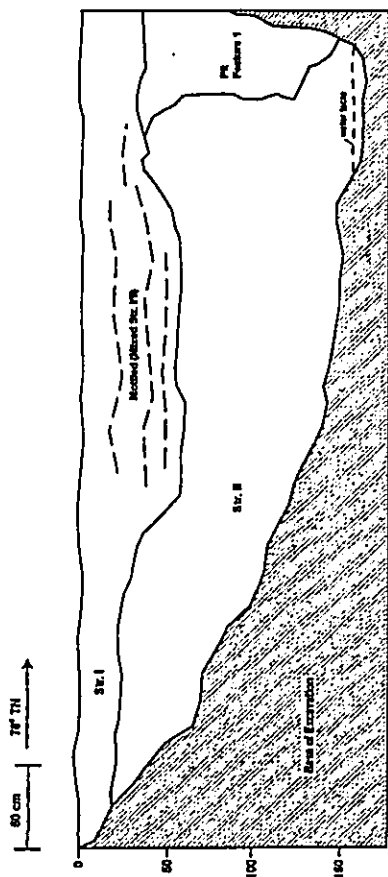
Strata	CMBS	Description
I	0 - 45/80	10 YR 2/2 dark brown loamy sand, inclusions of <i>kup'e</i> midden, basalt flakes, charcoal flecking; cultural layer, but not typical as there is no discernable pit.
II	45/80 - 145	10 YR 6/4 light yellowish brown beach sand, medium grained, structureless, dry, loose, granular, non-sticky, non-plastic, lower boundary is BOE; no cultural material.

Figure 43 Lihl Park Trench 10: South Wall (length 3.5 m, depth 145 cmbs, width 70 cm, oriented 267° TN)



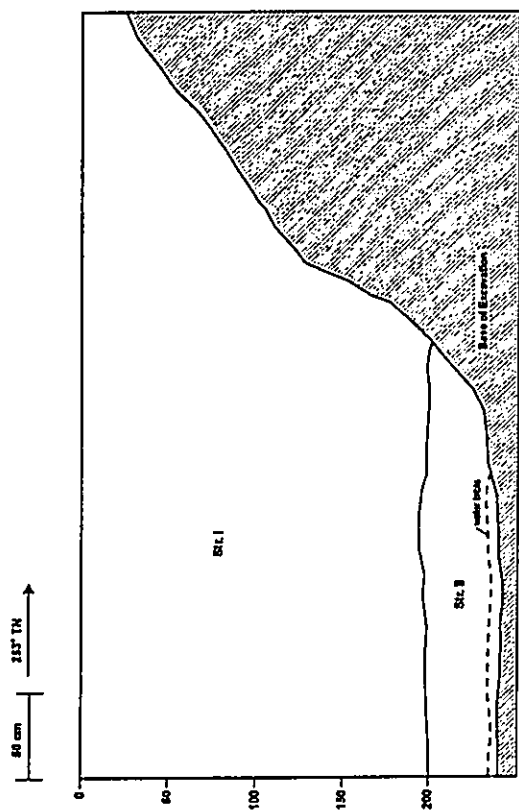
Strata	CMBS	Description
I	0 - 12/15	10 YR 5/2 grayish brown sand, very fine single grained, moderate compaction; very dry, non-plastic, structureless, includes moderate grass rootlets, abrupt wavy lower boundary, no cultural material.
II	12/15 - 195	10 YR 6/6 brownish yellow silty sand, very fine single grained, dry consistency, non-compact, non-plastic, structureless, no inclusions, BOE is lower boundary.
III	185 - 195	10 YR 5/2 grayish brown sand, structureless, dry consistency, very slight compaction, non-plastic, lower boundary is BOE; no cultural material encountered; associated with water table/ tidal zone.

Figure 42 Lihl Park Trench 9: South Wall (length 4.25 m, depth 195 cmbs, width 190 cm, oriented 277° TN)



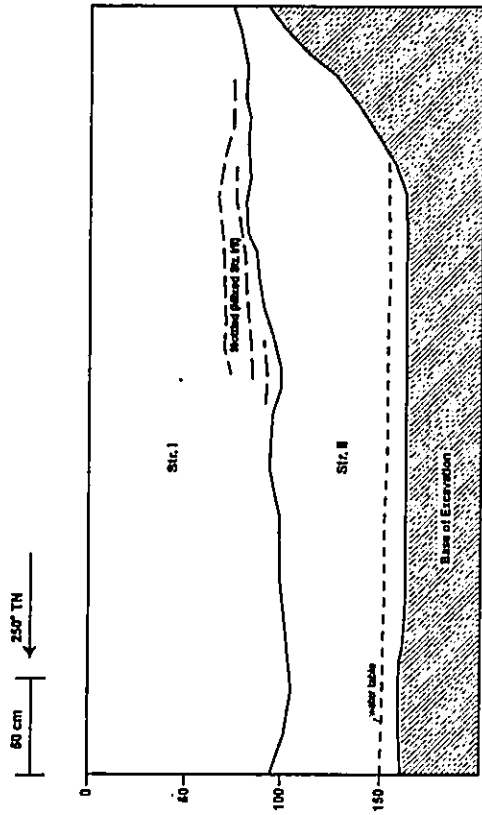
Strata	CMBS	Description
I	0 - 20/55	10 YR 3/1 very dark gray sand, weak, fine, medium-grained, dry, loose, non-sticky, non-plastic, abrupt wavy boundary, containing inclusions of charcoal flecks, modern trash, (glass, metal), wood shingles.
II	20/55 - 100/170	10 YR 6/6 brownish yellow sand, weak, fine, medium-grained, dry loose, non-sticky, non-plastic, no inclusions, no cultural material, lower boundary is BOE.
P1	35 - 145	Pit Feature; 10 YR 4/3 brown sand, weak, fine, medium-grained, dry loose, non-sticky, non-plastic, no inclusions; origin of pit unknown, possible organic.

Figure 45 Lihi Park Trench 12: West Wall: length 5 m, depth 170 cm, width 80 cm, oriented 76° TN



Strata	CMBS	Description
I	0 - 200	7.5 YR 4/6 strong brown loamy sand, fine grained, crumbly structure, dry consistency, moderate compaction, non-plastic, moderate medium to large coral inclusions, abrupt smooth lower boundary, no cultural material; associated with dredging from canal.
II	200 - 240	2 for Gley 3/1 dark bluish gray gleyed clay, moist consistency, non-compact, slight plasticity, no inclusions, structureless, lower boundary is BOE.

Figure 44 Lihi Park Trench 11: South Wall (length 4.5 m, depth 240 cm, width 100 cm, oriented 253° TN)



Strata CMBS	Description
I 0 - 75/102	10 YR 5/6 yellowish brown loamy sand, structureless, dry, slightly compact, non-plastic, abrupt wavy lower boundary, no cultural material.
II 75/102 - 160	10 YR 5/2 grayish brown sand, structureless, dry consistency, very slight compaction, non-plastic, lower boundary is BOE; no cultural material encountered.

Figure 46 Lihl Park Trench 13: North Wall: length 5.7 m, depth 160 cmbs, width 80 cm, oriented 250° TN

C. Site Descriptions

Cane Haul Road (Figures 5, 6, 47 & 48)
 State Site: 60-30-08-789, Feature A
 Site Type: Historic Road
 Function: Transportation
 Age: Historic (ca. 1940's to present)

The old Cane Haul Road extends from the intersection of Kūhiō Highway and Haus'ala Road in Kapa'a, to beyond the north end of the project area past Keālia Ahupua'a. The road, at least in part, follows the course of the former plantation era rail line, though additional modifications to stream crossings, culverts, and road surfaces were necessary to accommodate heavy truck traffic. In many places along the rocky point between Kapa'a and Keālia, the old railroad track is exposed from the makai side of the road which, in some places, drops steeply into the ocean. In some places, these rusted tracks are buried in up to six feet of soil, probably laid down during the widening of the original railroad alignment to accommodate large cane trucks. The Cane Haul road parallels the makai side of Kūhiō Highway running in a north/south direction. In many areas along the Cane Haul road erosive factors have reduced the road surface to gravel and dirt, while in other areas the original paved asphalt surface remains in relatively good condition. In general, the road is approximately 4 m wide.

A few features associated with the Cane Haul Road including several culverts and a sea wall were also documented (Figures 47 & 48). The culverts were generally well exposed on the makai cliff-side, and were constructed of 24 in. metal piping, dressed with basalt cobbles and concrete. Most of the culverts are in moderate to poor condition and a few culverts have been completely obliterated. Additionally, a few retaining walls were observed, most of which are in moderate to poor condition. The best preserved sea wall was documented approximately 100 ft northeast of the intersection of Kūhiō Highway and Haus'ala Road. The sea wall spans approximately 5 m and is 2.12 m high, and is constructed of stacked basalt cobbles.

Old Keālia Railroad Bridge (Figures 49 & 50)
 State Site: 60-30-08-789, Feature A, Sub-feature 1
 Site Type: Historic Bridge
 Function: Transportation
 Age: Historic
 Dimension: 42 m. (length) x 6 m. (width) x 2.5 m. (height)

Substantial portions of the original Keālia Stream Bridge Crossing was documented approximately 25-feet east of Kūhiō Highway. The Keālia Stream Bridge Crossing measures approximately 42 m. in overall length, 6 m. in width, and 2.5 m. in height. Sixteen overhead bridge beams are present every 3.5 meters on either side of the bridge. These overhead bridge beams are approximately 1.80 cm in height and are in fairly poor condition. Between several of the overhead bridge beams, original cable cords strung



Figure 47 Site 50-30-08-789, Feature A. Portion of Sea Wall Associated with Cane Haul Road. Photo Taken to West.



Figure 48 Site 50-30-08-789, Feature A. Culvert Associated with Cane Haul Road. Photo Taken to West.

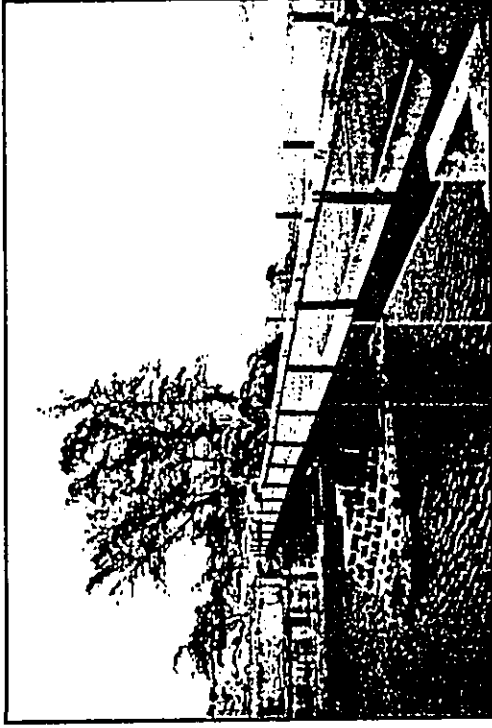


Figure 49 Old Kealia Railroad Bridge (Site 50-30-08-789, Feature A, Sub-Feature 1). Also Note Tilting Foundation at Center. Photo Taken to North.

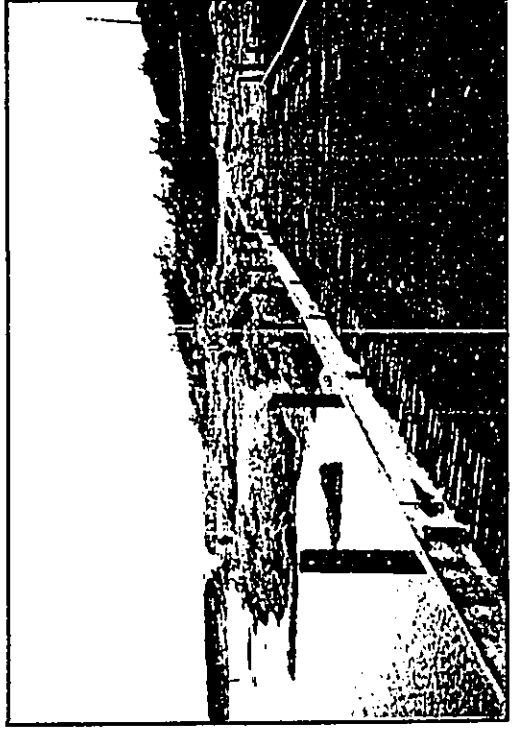


Figure 50 Close up of Old Kealia Railroad Bridge (Site 50-30-08-789, Feature A, Sub-Feature 1). Note Original Railroad Metallic Super-Structure Now Paved Over with Asphalt. Photo Taken to South.

horizontally, and are also in very poor condition. Supporting the bridges are two concrete foundations, which appear to have been constructed and re-constructed in several different phases. The original concrete foundation is partially collapsed, and a second brick foundation was constructed directly above the concrete foundation. Remnants of the original horizontal rails still exist, however in more recent years asphalt has been placed over the rails in order to accommodate the existing pedestrian right-of-way. The rails are rusty and in very poor condition. During low tide, the bridge remains at approximately 4.5 m. above stream level.

Keālia Cultural Layer (Figures 28, 30-34 & 38)
State Site #: 50-30-08-2074
Site Type: Cultural Layer
Function: Habitation, Burial
Age: Prehistoric/Historic
Dimension: 1350+ sq. miles

A buried cultural layer within the sand dune beach deposits on the *makai* (east) side of Kūhio Highway in Keālia *Ahuapua'a* was documented during subsurface testing for the proposed parking lot and comfort station at the north end of Keālia Beach. Testing included eight backhoe trenches in the roughly triangular-shaped parcel.

Test Trenches 1, 2, 3, 4, 5, and 8 contained evidence of the buried cultural layer (see stratigraphy section). The buried cultural layer consisted of culturally enriched beach sand with midden, charcoal, pit features (e.g. *imu*). One human burial was encountered during the subsurface testing (i.e. State Site # 50-40-08-2076 Feature A). Sample Beta # 169917 was collected from the base of an *imu* type feature approximately 60 cm (1.6 ft.) below the present gravel parking lot. The calibrated age range of ca. A.D. 1660 - 1960 suggests a late prehistoric to early historic time frame.

The prehistoric component of the cultural layer has been disturbed by historic and modern activities. In Trench 3, concrete and basalt boulder steps are evidence of plantation era occupation on the site. Background data indicates a mid-1800's house lot in the vicinity, although no direct subsurface evidence relating to mid-1800 occupation was observed.

Based on the present results, the buried cultural layer contains evidence of prehistoric (ca. 1660 - 1960 A.D.) and historic occupation. The layer contains discrete features such as fire pits, trash pits, and at least one human burial (still *in situ*). The backhoe testing was limited to a specific area (the proposed parking lot and comfort station), so the overall dimensions of the site could not be addressed during this study. However, within the roughly triangular-shaped Keālia locale the site covers approximately 50 m.

Feature A of State Site 50-30-08-2074 represents a human burial, contained within the boundaries of Trench 5, located in the gravel parking lot area of Keālia Beach Park. The burial was encountered during test trench excavations. The burial appears to be

primary in origin, with a distinct burial pit (Figure 34). The burial remains *in situ*. The trench was backfilled with the originally removed sediment.

Based on the observed skeletal remains, the burial appears to be that of a young adult, with both the sagittal and coronal sutures exhibiting little to no suture closure. The dentition recovered further supports a relatively young adult age. No dental wear or dental pathology was noted. A sex determination was not possible based on the skeletal remains observed. No historic, cultural material was associated with the burial, although a substantial amount of fish bones, shell midden, and bone fish hook blanks were recovered during sediment screening. Based on the lack of historic artifacts, traditional cultural midden, and other known Native Hawaiian burials encountered in similar sand deposits, the ethnicity of the remains is presumed to be Native Hawaiian.

Kaua'i Belt Road Bridge Foundation (Figures 51 & 52)
State Site: 50-30-08-2075
Site Type: Historic Bridge Foundation
Function: Transportation
Age: Historic
Dimensions: 10 m. (length) x 5.24 m. (width) x 8.95 m. (height)

Supportive concrete foundations of the old Kaua'i Belt Road, Keālia Bridge, was documented at the south and north end of Keālia Stream. The foundation was observed between the new Kūhio Highway Bridge and the old Keālia Stream railroad bridge (State Site 50-30-08-789 Feature A, Sub-feature 1).

At the north end, the concrete foundation is approximately 10 m. in length, 5.24 m. in width, and 8.95 m. in overall height. Two railroad support beams measuring 89 cm in length, by 78 cm in width, and 95 cm in height were further documented.

The support beams are approximately 7.5 m. apart from one another. The ledge by which the support beams are sitting is approximately 1.75 m. above surface, and approximately 8.5 m in width. The concrete foundation at the north end is in moderate to poor condition, and exhibits substantial graffiti markings. At the south end, the bridge foundation maintains the same dimensions as the north end. Substantial weather damage and deterioration was observed upon the south end.

Kaua'i Petroglyph (Figure 53)
State Site: 50-30-08-2076
Site Type: Petroglyph
Function: Symbolism/Art
Age: Historic
Dimension: 22cm x 24.5cm

A petroglyph was documented along the shoreline, approximately an eighth of a mile northeast of the intersection of Hau'ala Road and Kūhio Highway in Kapā'a. The

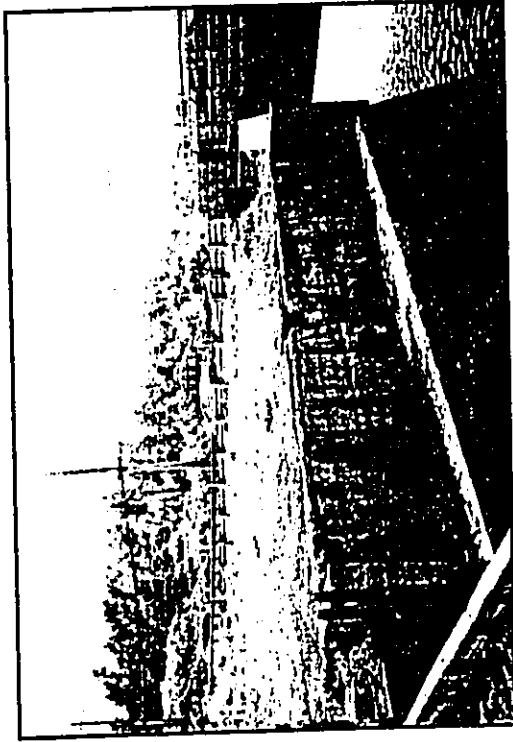


Figure 51 Kuaui Belt Road Bridge Foundation (Site 50-30-08-2075). Photo Taken to Southwest.

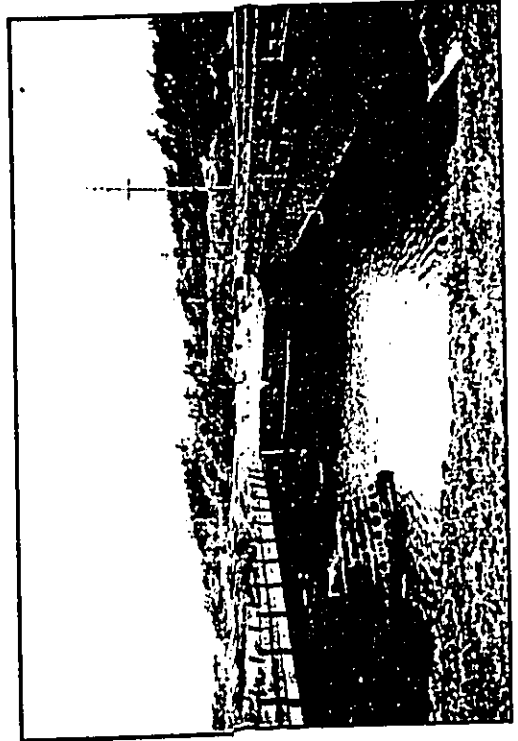


Figure 52 Kealia Stream Showing Railroad Bridge at left, Kuaui Belt Road Bridge Foundation, and Present Day Kuaui Highway at Right. Photo Taken to South.



Figure 53 Petroglyph (Site 50-30-08-2076). Photo Taken to East.

petroglyph can be seen from the bike path, however the boulder on which it is etched is situated at the edge of the water. The petroglyph consists of three dots arranged in a triangular motif with a spiral-shaped design adjacent to, and to the right of the dots. The petroglyph design is engraved upon the face of a medium sized dense basalt boulder 80 cm (width) by 85 cm (length) by 90 cm (height) in dimension.

The three circular dots are approximately 2.5 cm in diameter, and are arranged in a triangular position, with each dot distributed 2.5 cm apart from one another. To the right of the circular dot motif, a spiral design is present. The spiral itself is 22 cm high and 18 cm wide, with a total of three coils.

The petroglyph motif remains in excellent preservation condition, with no observable deterioration or abrasion to the face of the design. During high tide, the water brushes against the base of the basalt boulder. Although under normal conditions, the water never appears to rise to the level of the petroglyph, it is presumed that during intense storms the basalt boulder and petroglyph design would be completely, or at least partially, submerged under water. Based on the excellent preservation condition of the petroglyph, as well as its location near the shoreline it is suggested that the petroglyph is modern in origin.

Kapa'a Beach Park Pavilion Concrete Steps (Figure 54)

State Site #: 50-30-08-2077

Site Type: Concrete Steps

Function: Foundation for Old Pavilion

Age: Historic

Dimension: 317cm x 50cm x 126 cm

Three steps reportedly associated with an old pavilion were documented at Kapa'a Beach Park, leading from the sandy beach to the grassy area, just east of the paved parking lot.

The top step (closest to the parking lot area) is 120 cm long at the base, 16 cm high, and approximately 40 cm wide at its midpoint. The top step consists of approximately 20 sub-angular large dense basalt cobbles (with the average cobble size being 38 cm x 48 cm in dimension) informally dressed with a sandy-cement mixture. The top step has undergone the most damage, and remains in poor preservation condition. Many of the cobbles are broken, and very little of the original cement dressing remains. The middle step sits directly beneath the top step, and is 295 cm at the base, 19 cm high, and approximately 42 cm wide at its midpoint. The middle step consists of approximately 30 to 40 large dense basalt cobbles dressed with the same sandy-cement mixture. Unlike the top step, the middle step remains in relatively good preservation condition, with a substantial portion of the mid-section retaining much of its original cement dressing and smooth surface finish. The bottom step, which is situated beneath the middle step is approximately 317 cm wide at the base, 15 cm high, and 44 cm wide at its midpoint. The bottom step consists of 40 to 50 sub-angular to blocky large dense basalt cobbles embedded in a sandy-cement matrix.



Figure 54 Old Kapa'a Beach Park Pavilion Concrete Steps (Site 50-30-08-2077). Photo Taken to North.

During high tide, the sea water breaks along the bottom step almost entirely submerging it. The bottom step however, is the best preserved and retains most of its original construction with only the extreme ends of the step observed to be damaged.

The pavilion is associated with the establishment of the Kapa'a Beach Park in the early 1920s. According to many old timers of the area, the sand beach was once much more extensive than it is today (Personal communication with J. & W. Kanenkun, N. Nagao). The dredging of the two canals in Kapa'a and dredging for coral in the reef fronting the Kapa'a area are thought to have depleted the beach areas of sand and caused much erosion along the coastline. At one time, the area fronting the Kapa'a Beach Park was full of children swimming and people fishing. The area at the north end of Kapa'a Beach Park, *mokai* of the Kapa'a Public Library was where the Japanese would store their fishing sampans. The ocean area just south of the Kapa'a Beach Park was once used for *hukilau* as the sandy bottom was good for this type of fishing. The pavilion would have been located on the *mokai* side of the railroad tracks and is believed to have been torn down in the 1960s (Pers. Comm., N. Nagao, August 2002).

State Site 50-30-08-2078 represents features associated with the original railroad right-of-way, which extends both north and south beyond boundaries of the project area in Kealia and past the southern boundary of Kapa'a, at Waika'ea Bridge. The railroad was built specifically for plantation(s) transportation and functioned from ca. A.D. 1890 to 1950. Remnants of the old railroad tracks remain visible in some areas, and can be seen along the cliff side of the shore.

Railroad Alignment (Figure 55)
State Site: 50-30-08-2078, Feature A
Site Type: Historic Railroad Bridge
Function: Transportation
Age: Historic (ca. 1890's to 1930's)
Dimension: 24.53 m x 2.20m x 0.72m

The Waika'ea Railroad Bridge is located approximately 250 ft northeast of the intersection of Kūhiō Highway and Kaloloku Road in Kapa'a, and is an historic railroad bridge associated with the transportation of sugarcane beginning ca. 1920.

Waika'ea Bridge spans approximately 24.53 m. in length, 2.20 m. in width, approximately 0.72 m. in height, and is constructed of solid concrete. Six concrete supportive arms, perpendicular to the concrete foundation (running in an east-west direction) are also present, and are approximately 617 cm apart from one another. Additionally, 18 vertical concrete anchor beams measuring 30 cm in width, by 30 cm in length, and approximately 115 cm in height support the concrete foundation. The middle section, which measures approximately 10 m. in length by 0.71 in width, has been removed to accommodate boat access from the ocean to the boat ramp, located just *mauka*, or west of the bridge. The bridge is approximately 2 m. above water level.

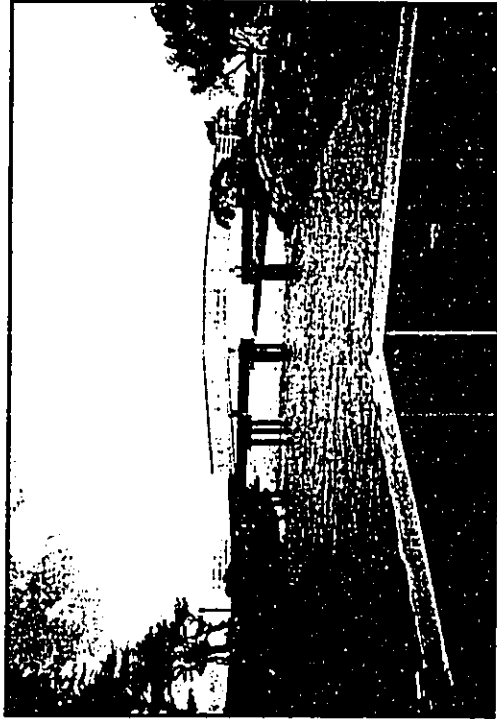


Figure 55 Waika'ea Railroad Bridge (Site 50-30-08-2078, Feature A). Photo Taken to East. Note Boat Ramp in the Foreground.

The bridge remains in good preservation condition, with some weather damage to the concrete foundation. The Waikā'ea Railroad Bridge was originally built in 1920 by the Ahukini Terminal & Railway Company with the intention of connecting the Anahola, Kealin and Kapaa rail lines to Ahukini Landing (Condé and Best, 1973: 186). The bridge was most likely modified or possibly entirely rebuilt in the early 1940's, at the time when the Waikā'ea Canal was constructed. In more recent years, the Waikā'ea Railroad Bridge has been converted into a pedestrian and bike path crossing. A wooden plywood bridge has been constructed atop the old concrete bridge foundation, and more modern additions including plywood sidings and metal railings have been added.

Old Railroad Bridge Foundation (Figure 56)

State Site: 50-30-08-2078, Feature B

Site Type: Historic Railroad Bridge Foundation

Function: Transportation

Age: Historic

Dimension: 2.8 m. x 3.75 m.

Remnants of an old railroad bridge foundation on the north side of Waikā'ea Canal and mauka of the current Waikā'ea railroad bridge and hike path was documented in Kapa'a. The stone and concrete foundation is situated at an approximate 50° angle upon the embankment of Waikā'ea Canal, and two discontinuous sections of the foundation remains. The first section of the foundation (located the most makai) is constructed of cut-dense basalt small boulders (average boulder size is approximately 40 cm x 55 cm) formally dressed with concrete cement. The second section (located the most mauka) is constructed of sub-angular dense basalt boulders of smaller average size (25cm x 40 cm) and is informally dressed with concrete cement. Both sections appear to have been constructed in two separate construction phases. Overall, the foundations spans approximately 280 cm in overall height, and encompasses an area of approximately 3 sq. m. This historic bridge foundation may represent the original 1920 railroad bridge foundation constructed by Ahukini Terminal & Railway Company.

Moikeha Makai Railroad Bridge (Figures 57 & 59)

State Site: 50-30-08-2078, Feature C

Site Type: Historic Railroad Bridge

Function: Transportation

Age: Historic

Dimension: 32.5 m. x 2.13 m x 0.7 m

The Makai Moikeha Bridge is located approximately 84 ft northeast of the intersection of Kūhiō Highway and Lehua Street. Currently, there are three bridges crossing Moikeha Canal: the most recent Moikeha Bridge (part of Kūhiō Highway), an historic railroad bridge located 15 ft. east of the Kūhiō Highway bridge named here, Moikeha Mauka Railroad Bridge, and a more makai (eastern) historic railroad bridge which has been converted into a pedestrian and bike path crossing (named here the



Figure 56 Old Railroad Bridge Foundation (Site 50-30-08-2078, Feature B). Photo Taken to North.



Figure 57 Makai Moikeha Bridge (Site 50-30-08-2078, Feature C). Photo Taken to East.

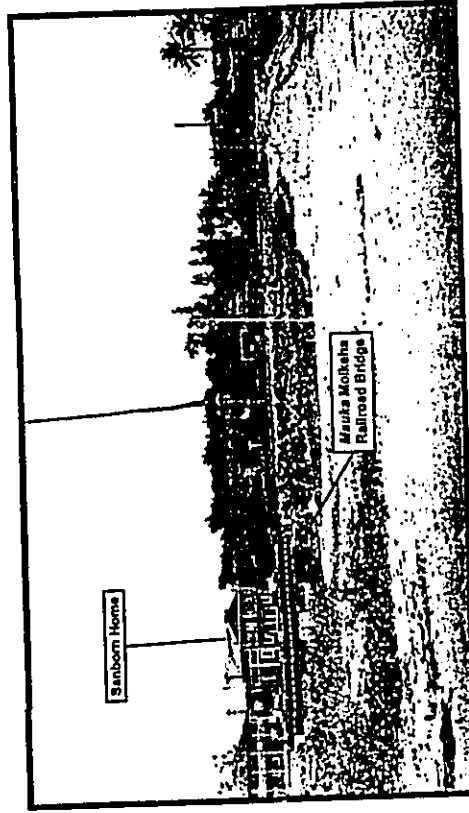


Figure 58 "Kapaa from the Beach, Sanborn Home in Center, Kapaa, Kauai, Hawaii" ca. 1934. Used with permission of Bishop Museum.

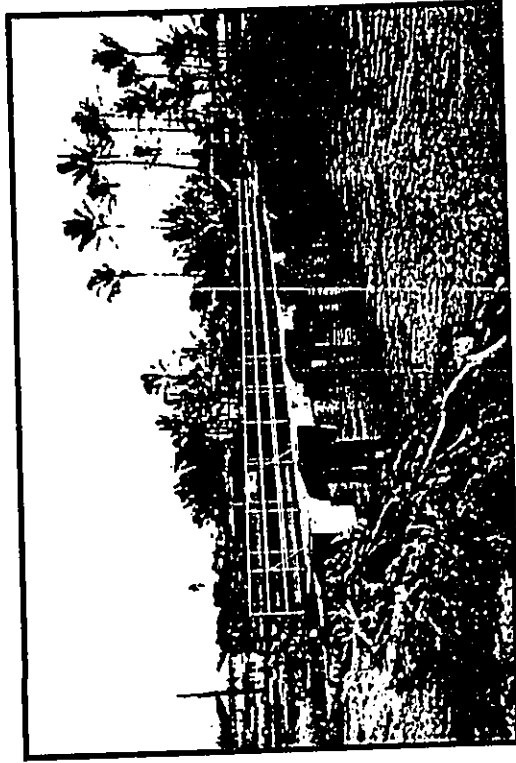


Figure 59 Makai Moikeha Railroad Bridge with Sanborn Home in Left Background. Photo taken to NW.

Moikeha *Makai* Bridge). Although two historic railroad bridges cross Moikeha Canal, it is believed that this, *Makai* Moikeha Bridge was constructed after the *Mauka* Moikeha Bridge, when the old railroad line was extended from Keālin to the Ahukimi Landing.

The *Makai* Moikeha Bridge spans approximately 32.5 m. in length by 213 cm in width, and approximately 70 cm in bridge foundation height, and is constructed of concrete. Six supportive concrete arms running in an east-west direction are further present, which are situated at a 130° angle to the concrete bridge foundation, arranged approximately 517 cm apart from one another. Additionally, 17-vertical concrete anchor beams measuring 30 cm in width by 30 cm in length, and approximately 115 cm in height, support the concrete foundation. These concrete anchor beams are constructed of a different concrete material, and may have been constructed at a different stage from the bridge foundation.

The bridge foundation remains in good condition, with the most observable deterioration noted on the concrete bridge foundation. No name or date associated with the bridge construction was observed on the bridge, however the original *Makai* Moikeha Railroad Bridge is thought to have been constructed ca. 1920, similar to the Waika'e and Kapa'e railroads to the Ahukimi Terminal & Railway's efforts to connect Anahola, Kealia and Kapa'e railroads to the Ahukimi Landing. In the early 1940's, the Moikeha Canal was dredged and the bridge needed modification. The present bridge may date to this period. In more recent years, the Moikeha *Makai* Railroad Bridge has been converted into a pedestrian and bike path crossing with several additions including hand and side rails, and asphalt paving which covers the old railroad tracks.

Mauka Moikeha Railroad Bridge (Figures 58 & 60)

State Site: 50-30-08-2078, Feature D

Site Type: Historic Railroad Bridge

Function: Transportation

Age: Historic (ca. 1890's to 1940's)

Dimension: 32.5m. x 2.13m. x 0.7m.

The Moikeha *Mauka* Railroad Bridge is located approximately 15 m west of the Moikeha *Makai* Railroad Bridge, and is adjacent to Kūhiō Highway. The Moikeha *Mauka* Railroad Bridge is an historic railroad bridge associated with the transportation of sugarcane by the Makee Sugar Plantation beginning ca. 1891. Although two historic railroad bridges are located here, it is believed that this, Moikeha *Mauka* Railroad Bridge, was the first railroad bridge to be constructed across Moikeha Canal.

The Moikeha *Mauka* Railroad Bridge spans approximately 32.5 m. in length by 213 cm in width, and approximately 70 cm in bridge foundation height, and is constructed of concrete. Remnants of the old railroad tracks were observed running throughout the length of the bridge. The tracks themselves are approximately 4.5 cm in width and are 65 cm from either edge of the concrete bridge foundation. Also present are six supportive concrete arms running in an east-west direction, which are situated at a 90° angle to the railroad foundation, and arranged 517 cm apart from one another. Additionally, 15



Figure 60 Mauka Moikeha Bridge (Site 50-30-08-2078, Feature D). Photo Taken to North. Note Kūhiō Highway Bridge in Left Corner.

vertical concrete anchor beams measuring 30 cm in width, by 30 cm in length, and approximately 115 cm support the concrete foundation. These concrete anchor beams are constructed of a different concrete material, and may have been constructed at a different construction stage from the bridge foundation. The bridge is approximately 182 cm above stream level.

The bridge foundation remains in good to moderate preservation condition, with only the railroad tracks experiencing the most deterioration and damage. No name or date associated with the bridge construction was observed, however the bridge is believed to have been modified and modernized at the time when the Moikeha Drainage was converted into a canal in the early 1940's.

Portion of Railroad Bridge Over Dry Drainage (Figure 61)

State Site #: 50-30-08-2078, Feature E

Site Type: Historic Railroad Bridge

Function: Transportation

Age: Historic

Dimension: 40cm x 75cm x 630cm

A portion of what appears to be the remnants of an old railroad bridge over a dry drainage ditch, located approximately 100 ft southeast of the intersection of Kūhiō Highway and Kawailou Road, and immediately north of Otsuka's Furniture Store in Kapa'a, was identified. Only the concrete foundation and a small section of the rail itself remain on the northern face of the dry drainage ditch area (which runs in a *mauka/mokai* direction).

The concrete foundation is shaped like a trapezoid with its center most section removed for the rails. The concrete foundation is 40 cm wide, 75 to 85 cm in height, and approximately 630 cm in overall length. The sides of the foundation wing outwards from the center at a 150° angle. A cut-out area for the rails measuring 73 cm wide, by 32 cm in length, by 50 cm in height, is situated at the center of the foundation. Two rails, measuring 17 cm wide and 22 cm in length also remain sitting atop the concrete foundation upon the cut-out area. The foundation is in moderate to poor preservation condition, and much of what remains has been covered by soil and vegetation.

No remnants of the continuation of the railroad bridge on the south face of the dry drainage ditch were identified. Adjacent to the ditch is a park area which appears to have been graded. During construction for the park area, material may have been pushed into the ditch covering what was left of the old railroad bridge on the south face. This dry drainage ditch foundation represents part of the original alignment of the 1891 railroad line which transported cans from the Kapa'a area to Keālia mill for processing.



Figure 61 Bridge Foundation at Dry Drainage (Site 50-30-08-2078, Feature E). Photo Taken to North.

VI. SUMMARY

Cultural Surveys Hawai'i, Inc. conducted an archaeological inventory survey for the existing and to be developed portions of the Kapa'a/Keālia Pedestrian and Bike Path. The inventory survey consisted of background research on Kapa'a and Keālia *ahupua'a*, a surface survey, and limited subsurface testing.

The background research included historic documentation and previous archaeological data. The historic documentation included references to legendary accounts associated with Kapa'a and Keālia. Though few in number, the accounts indicate that there are at least two places along the bike path associated with legends and *wahipana*. These include Ka lulu o Mo'ikeha, near the Moikeha Canal, and Kuahihā, near the rocky headland in north Kapa'a.

Mid-1800's land use and settlement patterns were gleaned from LCA data. The pattern suggested by these documents includes coastal habitation and inland agriculture. In Kapa'a, inland agriculture was focused around the perimeter of a large backshore marshy area with primary habitation on the sand berm dividing the marsh from the ocean. In Keālia, inland agriculture and associated habitation was focused on Kapa'a/Keālia stream and its' tributaries.

Commercial agriculture (i.e. sugar and pineapple) initiated in the last half of the 19th Century, dramatically changed the landscape and settlement patterns. The Maake Plantation organized housing into camps and developed major transportation infrastructure. The demise of commercial sugar cane and pineapple in the late 20th century left an economic void that was, in part, filled by tourism and service-oriented industries.

In terms of a predictive model, two primary site types were anticipated, including cultural layers and associated human burials, and plantation era infrastructure. Archaeological research in coastal Kapa'a and Keālia has documented buried cultural layers with associated human burials. The buried cultural layers and burials have been primarily within *Jaucus* and/or beach sand deposits. Based on all the background data similar buried cultural layers with associated human burials are a potential in *Jaucus* or beach sand deposits. Additionally the existing and proposed bike path utilizes and will utilize plantation-era transportation infrastructure including railroad alignment and bridges and the Cane Haul Road.

Previous research has identified a number of sites in proximity to the proposed bike path (see Table 9). There are two sites which contain human remains, one (Site -50-30-08-884) just mauka of the proposed path on the margin of Kūhiō Highway and one (Site -50-30-08-1899) approximately 200 m makai at Keālia Beach. Also in the Keālia Beach area seaward of the proposed bike path are a number of minor WWII era features (Site -50-30-08-790: A & B). Though these sites are touched upon in this present study they are not considered part of the inventory of sites specific to the proposed bike path.

The inventory survey included surface survey and subsurface testing. Combined, the research resulted in the identification and documentation of five new sites (Sites -2074 to -2078) and one newly designated feature for a previously identified site (Site 789 Feat A Subfeature 1).

The previously identified site, State Site # 50-30-08-789 Feature A refers to the plantation-era Cane Haul Road. The 'Haul Cane' road was a 1950's modification of an existing railroad alignment. Road width, bridges, and culverts were modified to handle the large cane haul trucks. A prime example of this modification is the bridge over Kapa'a/Keālia Stream, referred to as State Site # 50-30-08-789 Feature A subfeature 1. The original bridge was built (ca. 1890's) for the plantation railroad, then modified for truck traffic in the 1950's, and most recently the bridge has been utilized as a part of the existing pedestrian/bikepath.

Four other sites were documented as part of the surface survey portion of the project (the one new subsurface site 2074 is summarized subsequently below). The surface sites include: Old Kapa'a Belt Highway Bridge foundation (State Site # 50-30-08-2076), a petroglyph (State Site # 50-30-08-2076), concrete steps (State Site # 50-30-08-2077), and the remnants of the old railroad alignment (State Site # 50-30-08-2078).

The Old Kapa'a Belt Highway bridge remnants, State Site # 50-30-08-2075, are situated between the existing Kūhiō Highway Bridge and the existing cane haul road bridge at Keālia River. The remnants are not within the proposed bike path corridor but due to proximity were documented and allotted a state site number. The Belt Highway was an early 20th century (ca. 1912) undertaking by the Territory of Hawai'i. Similar era belt highways were built throughout the territory with the Hāna Highway and its' remaining early 20th century bridges probably the best existing example.

The petroglyph, State Site # 50-30-08-2076, is located within Kapa'a on a boulder at the water's edge. The petroglyph motif consists of three dots arranged in a triangle with a spiral design adjacent to, and to the right of the dots. The basalt boulder in which the motif(s) was pecked is approximately 85 cm. in diameter and is regularly wave-washed, due to its shoreline location. The dots and spiral are very clear with sharp edges, essentially showing no signs of wear, that would be expected especially on a boulder at the water's edge. Based on the lack of wear, no record of the petroglyph boulder in past studies, and fine, clear edges (due probably to the use of a metal tool) the petroglyph is positioned to be modern. However, due to the possibility of the petroglyph dating more than 50 years old, it is prudent to allot it a state site number. The petroglyph boulder is well makai of the existing bike path (i.e. cane haul road) and there should be no direct impacts related to continued use of the bike path.

The concrete steps, State Site # 50-30-08-2077, were part of a plantation era pavilion at Kapa'a Beach. Based on background research the pavilion was extant from ca. 1930 to 1960. The steps are on the makai side of the railroad alignment (State Site # 50-30-08-2078) presently being utilized as the bike path. The steps are just remnants, however they do represent links to transportation and recreation activities of the Kapa'a Town during the height of the cannery and plantation era.

The railroad alignment, State Site # 50-30-08-2078, includes the rail grade bed and bridge supports. The railroad was initiated in the late 1800's for plantation transportation needs. The railroad functioned until the 1950's when the plantations shifted to trucks as their primary means of transporting cane. The railroad alignment in the project area has subsequently been modified for truck traffic and pedestrian/bike path usage.

In the present project area there are five bridges or bridge remnants (i.e. State Site # 50-30-08-2078 Features A-E). Two of the five bridge features are foundation remnants only (i.e. Site -2078 Features B & E). The other three bridges still span canals with bridge supports and bridge surfaces. Two of the five bridges, Sites -2078 Feature A & C, at Waika'e'a Canal and Moikeha Canal respectively, have been modified for use on the existing bike path.

The railroad alignment, north of Otauka'e, near the intersection of Kūhiō Highway and Haua'ala Road, has been converted into the cane haul road (i.e. State Site # 50-30-08-789 Feature A). The modifications include widening of alignment, concrete culverts, and large boulder embankments. The present bike path utilizes both the railroad alignment and the converted cane haul road.

The single subsurface site identified and documented, State Site # 50-30-08-2074, is situated at the north end of Keālia Beach. Subsurface testing was conducted at the location in anticipation of a parking lot and comfort station. Eight backhoe test trenches were excavated within the roughly triangular shaped parcel (Figure 24). Trenches 1-5 & 8 were excavated within the area of the presently utilized gravel paved parking lot with trenches 6 & 7 excavated north of the parking lot.

The buried cultural layer (Site -2074) was encountered in the test trenches (Trenches 1-5 & 8) that were excavated in the existing gravel paved parking lot. The buried cultural layer consists of culturally-enriched sand which contains pit features, midden, charcoal, historic era trash and building foundations, and a human burial. The burial was encountered in Trench 6, in a discrete burial pit that extended from the cultural layer (i.e. Stratum IV) into the underlying sterile sand layer (i.e. Stratum V). The burial was only partially exposed, and thus there is no detailed burial style data (e.g. flexed, extended, etc.) or osteological analysis (see Site Description State Site # 50-30-08-2074 Feature A). Standard notification procedures were followed (i.e. SHPD/DLNR and Kāua'i/Ni'ihau Island Burial Council) upon encountering the burial, which was left *in situ*.

A charcoal sample from an *imu* or fire pit feature within the cultural layer was sent for radiocarbon analysis. Unfortunately, the resulting calibrated age was "A.D. 1650 - beyond 1960" (Beta Analytic sample -169917) which does not provide for good interpretative data. However, based on absence of historic artifacts within the feature or from within the portion of the cultural layer that the pit originated, a late prehistoric to early historic time frame is posited for the fire pit event.

Portions of the cultural layer have been impacted by historic era activities. Background data indicates a mid-1800's LCA house/lot in the vicinity of the testing locale and later plantation era structures. No direct evidence, such as trash pits with artifacts

datable to the mid-1800's, was observed. However, the dated charcoal sample could be associated with this time frame. Concrete and basalt boulder steps were encountered in Trench 3. The steps and foundation had cut through and obliterated the cultural layer indicating plantation era impacts to the subsurface site. Based on the above evidence, the buried cultural layer, State Site # 50-30-08-2074, contains both prehistoric and historic components and the presence of the human burial suggests that more may be present. Oral accounts attest to plantation related structures, including residences in the area up until the 1960's.

Testing at Lihī Park on the south side of Waika'e'a Canal consisted of 5 backhoe trenches (i.e. Trenches 9 - 13). Testing at Lihī Park was based on the assumption that the locale would be utilized for a parking lot only, with little subsurface impact. The testing indicated that the stratigraphic sequence is primarily beach or Jaucus sands. Charcoal-stained pit features and a lens containing charcoal chunks were encountered, though in each case, modern trash was present also. No clearly prehistoric or early historic cultural layer or human burials were encountered. However, the sandy soil type and proximity to other cultural layers with associated burials (e.g. State Site 50-30-08-1848 and -1849) suggests similar features may be within the Lihī Park locale.

The existing and proposed segments of the Kapa'a/Keālia pedestrian and bike path will, for the most part, utilize plantation era transportation routes and associated features. The railroad alignment (State Site # 50-30-08-2078) and cane haul road (State Site # 50-30-08-789 Feature A) are presently utilized for the path and will be the primary corridor for the upgraded and extended path. Railroad bridges exist at Waika'e'a and Moikeha Canals. The cane haul road portion will extend from near Otauka'e north to near 'Ahihi Point. Proposed parking and comfort stations at Lihī Park and Keālia Beach have the potential to encounter buried cultural layers and associated human burials. State Site # 50-30-08-2074 refers to the newly identified subsurface cultural layer with an associated burial (i.e. Feature A) at the proposed comfort station and parking lot area at the north end of Keālia Beach. Previous inventory research (Perzinaki *et al* 2000a) and the present research indicates an absence of sites at the northern terminus of the path where it is proposed to divert from the existing cane haul road.

Subsequent to the completion of the inventory surface path corridor alternatives were proposed based on community input. It is our understanding that the additions and alternatives include: moving the corridor more *makai* in the vicinity of the Kapa'a Community Center and Otauka'e; more *makai* in the vicinity of Kapa'a Park and associated parking lot; and development of a new parking lot shoreline access path and foot path near the existing State Scenic Lookout at the 'South Point' of Keālia Beach. The alternatives *makai* of the community center and Kapa'a Park have, based on sandy soil type and existing documentation, the potential to encounter subsurface cultural layers and burials. The proposed parking lot, shore line access, and foot paths at 'South Point' do not appear to have the same type of potential impacts because the area is not sand. Traditional accounts suggest this was a significant area where there was a *heiau*. Historic data does suggest however that there was an older portion of the railroad alignment close to the shore at Keālia Beach's 'South Point'. The first Kapa'a school opened adjacent to the train tracks in 1883. The alignment was subsequently bypassed by the later railroad alignment and cane haul road.

VII. SIGNIFICANCE

See Table 9 for a listing of all significance and recommendations by site for all sites within and seaward of the bike and pedestrian path corridor. The following discussion pertains to newly identified sites and features reported in this study. Significance of sites is determined after evaluation of each site in light of the following five broad criteria used by the State of Hawai'i and National Registers of Historic Places:

- A Site reflects major trends or events in the history of the state or nation.
- B Site is associated with the lives of persons significant in our past.
- C Site is an excellent example of a site type.
- D Site may be likely to yield information important in prehistory or history.
- E Site has cultural significance to an ethnic group, including, but not limited to, religious structures, burials, and traditional cultural sites.

State Site # 50-30-08-789 Feature A has been previously assessed under Criterion D, for the informational content regarding changing transportation infrastructure of the plantation era (Perzinski *et al* 2000a). However, the integrity relating to any single time period of the plantation era has been compromised by periodic revamping, modernization, and use as a cane haul road until the 1980's. The present study also indicates that Criterion D applies to the segment within the bike path project area.

State Site # 50-30-08-2074 (buried cultural layer) is assessed under Criteria D and E. Criterion D applies in that Site -2074 has yielded significant data related to coastal occupation within Keālia, and by inference, Eastern Kaua'i. The site (-2074) also has the potential to yield additional significant information. Discrete feature sampling could provide for better chronological and functional interpretations.

Criterion E applies to Site -2074 due to the presence of the human burial in Trench 5. Based on previous research in the Keālia area, burials are not uncommon and the present discovery (Site -2074 Feature A) further evidences the prospect of more unmarked burials in coastal Keālia.

State Site # 50-30-08-2075, the remnant bridge foundation of the Old Belt Highway, is assessed solely under Criterion D for its informational content. The present study has provided historic background information, locational references, photographs, and a written description of the ca. 1910 bridge remnants. The site also has the potential to yield additional architectural and engineering information.

Petroglyphs have generally been assessed under Criteria D and E, with Criterion D related to the information and Criterion E related to the cultural significance. In the case of State Site # 50-30-08-2076, there is, based on observed characteristics, the possibility the petroglyph is modern, which would actually negate the symbolic figures as a significant historic property. However, since the age is uncertain, it is felt more prudent to deal with the petroglyph as an historic property and assess it under Criteria D and E.

State Site # 50-30-08-2077, the basalt boulder and concrete steps of an old plantation era Kapā'a Beach Park pavilion, is assessed solely under Criterion D. Criterion D applied in that basic data such as construction style, location, and plantation era association has been documented for this site. Though just a remnant of an old plantation era beach park facility, it is a link to the past transportation (i.e. proximity to the railroad, State Site # 50-30-08-2078) and recreational activities, which the present project is containing.

State Site # 50-30-08-2078, the rail line and associated infrastructure, is assessed under Criteria A and D. Criterion A applies in that the plantation era railroad reflects major economic transportation and socio-political trends in Hawai'i's history. Kaua'i, specifically Kōloa, was the site of the first plantation organized commercial sugar cane operations. The plantation style organization eventually came to dominate Hawai'i's economics, including the Kapa'a/Keālia area of Kaua'i. The railroads, like Site -2078 were integral to the plantations. They represent trends to the greater economic scale of the plantation enterprises. The present railroad alignment (Site -2078) functioned as the primary transportation mechanism for mills and canneries in the Kapa'a/Keālia area. The subsequent decline of the railroad and replacement by vehicular traffic is evident where the railroad, Site -2078, becomes the cane haul road, Site -789A.

The present study has, through background studies including historic maps and photographs, existing condition photographs and descriptions, provided significant information (i.e. Criterion D) on the potential to yield additional significant information.

VIII. RECOMMENDATIONS

The inventory survey, including subsurface testing has resulted in the identification and documentation of five new sites and one new feature of a previously designated site. The sites range from a buried cultural layer with an associated human burial (State Site # 50-30-08-2074) to a possibly modern petroglyph (State Site # 50-30-08-2076). Some of these sites were associated with plantation era transportation infrastructure including Site -789 (cane haul road), and a railroad alignment Site -2078. Site -2077 relates to recreational facilities as evidenced by the basalt boulder and concrete steps of an old beach park pavilion. The last site, the remnant foundations of the ca. early 1900s Old Kausi Belt Highway, also is transportation related. Recommendations on a per site basis follows:

Further historic preservation work, specifically HAER documentation is recommended for the bridge over Kealia River, which is referred to as State Site # 50-30-08-789A subfeature 1 (see Site Description section). The remainder of the cane haul road, State Site # 50-30-08-789A, has undergone numerous changes through time and is presently actively being utilized for the bike path. No further historic preservation research appears warranted for the alignment of the road itself.

The buried cultural layer, State Site # 50-30-08-2074, is recommended for further research if the bike path plans include any subsurface work which may impact the site. The human burial documented within the site is recommended for preservation. The burial preserve recommendation will need to be presented to the Kaula / Ni'ihau Island Burial Council for review and approval in accordance with HAR Title 13, Subtitle 13, Chapter 300.

State Site # 50-30-08-2075, the Old Kausi Belt Highway bridge foundation, is presently not part of the planned bike path, thus no specific recommendations in relation to the bike path appear warranted. The bridge remnants are however a link to past (ca. early 1900s) transportation infrastructure and SHPD/DLNR architecture staff should be consulted if any modifications to the bridge are anticipated.

State Site # 50-30-08-2076, the shoreline boulder petroglyph, is recommended for preservation. Bike path utilization should have no direct impacts to the site itself as it is situated *makai* (east) of the path at the shoreline.

The concrete and boulder steps, State Site # 50-30-08-2077, are situated *makai* of the existing bike path utilized railroad alignment segment and no direct impacts of proposed improvements are anticipated. Sufficient data concerning the steps is presented in this report and no further research appears warranted.

The railroad alignment, State Site 50-30-08-2078 has been modified significantly over time, including relatively recently. Modifications of bridges, Features -2078A and -2078C, for the existing bike path are evidence of recent alterations. The cane haul road was a major modification to the alignment, an alteration significant enough to warrant giving the cane haul road its' own state site number (i.e. State Site # 50-30-08-789 Feature

A). The remaining intact, and to be modified, bridges of the railroad alignment and bike path warrant additional documentation. It is recommended that HAER documentation occur on bridge Site -2078 Feature A (Waika'ea Canal) and for bridge Site -2078 Feature C (*makai* Moikeha Bridge).

No further research appears warranted for railroad features, Site -2078B, -2078D, and -2078E, with the understanding that the present bike path project will neither use or impact directly these features. If any alterations to these features are planned the architectural staff of SHPD/DLNR should be contracted prior to any undertaking.

Based on the present study and previous research, human burials and subsurface cultural layers are commonly encountered in sand deposits of Kapa'a and Kealia. Testing at Lih'i Park did not encounter burials but the potential exists, especially if extensive subsurface work is planned for that locale. Thus, it is recommended that an archaeological monitoring program be in place prior to construction activities where there is sand. The areas include the Kapa'a Town area from the Lih'i Park locale, throughout the Kapa'a Beach Park to the beginning of Site -789A, the cane haul road, and the Kealia Beach area.

The use of the existing railroad alignment through the Kapa'a Beach Park area, from Waika'ea Canal south to the intersection with the cane haul road, should minimize the potential of encountering burials or cultural layers. However, improvements to the path or use of alternative corridors in the Kapa'a Beach Park area have the potential of inadvertently encountering significant subsurface features. Due to that potential, monitoring is recommended for these areas.

There are similar concerns of the potential to encounter significant subsurface features at Kealia Beach. The use of the existing cane haul road should minimize the potential. If, however, improvements and modifications are extensive and have the potential of excavating into underlying sand deposits, monitoring is recommended.

Two areas of proposed path construction do not appear to warrant further research or archaeological monitoring. The present path plans indicate that at the northern terminus near Ahiki Point the path will deviate from the existing cane haul road. The area planned for the path was subjected to inventory level survey as part of the '300 Acre Kealia Makai Parcel' (Perzinaki *et al* 2000a) and during the present study also. No sites were observed, except for on the point itself. The sites on the point include petroglyph #2, a modern petroglyph, and State Site # 50-30-08-789, Features L, M, and N, plantation era features. An existing foot path approximates the planned bike path and if there is no re-routing of proposed path to the point itself, which could encounter the aforementioned features, no further research is warranted.

The other area of newly proposed path improvements is at the State Scenic Lookout at Kealia Beach's 'South Point'. Plans for use of this area were formulated after the present inventory survey work, thus no field work specific to these improvements was undertaken. It is our understanding that improvements consist of an additional parking lot adjacent to the existing path, and scenic lookout path on the point itself. Background

research indicates there was a heiau somewhere on this point which was traditionally called Kuahiahi (Kaaiahi, Keahiahi). The first Kapa'a school was located adjacent to the railroad on this point, and historic photographs and maps suggest that a railroad related alignment traversed the perimeter of the point. Although no other documentation of this heiau is known to exist and the soils in the area are not conducive to the presence of burials or cultural layers, a field inspection of this area is recommended.

In the unlikely event that significant historic properties (e.g. burials, cultural layers, artifacts, etc.) all work should stop and SHPD/DLNR should be notified.

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Report Date: 8/23/02

Material Received: 8/21/02

Sample Data	Measured Radiocarbon Age	¹³ C/ ¹² C Ratio	Conventional Radiocarbon Age(±)
Bcs - 169917 SAMPLE: KAPA3 C-1 ANALYSIS: Radiometric-Imageguide delivery MATERIAL/PRE-TREATMENT: (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1650 to beyond 1960 (Cal BP 300 to 0)	160 ± 70 BP	-26.5 ‰	130 ± 70 BP

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12 = -26.5; lab. multi = 1)

Laboratory number: Beta-169917

Conventional radiocarbon age: 130 ± 70 BP

2 Sigma calibrated result: Cal AD 1650 to beyond 1960 (Cal BP 300 to 0)
(95% probability)

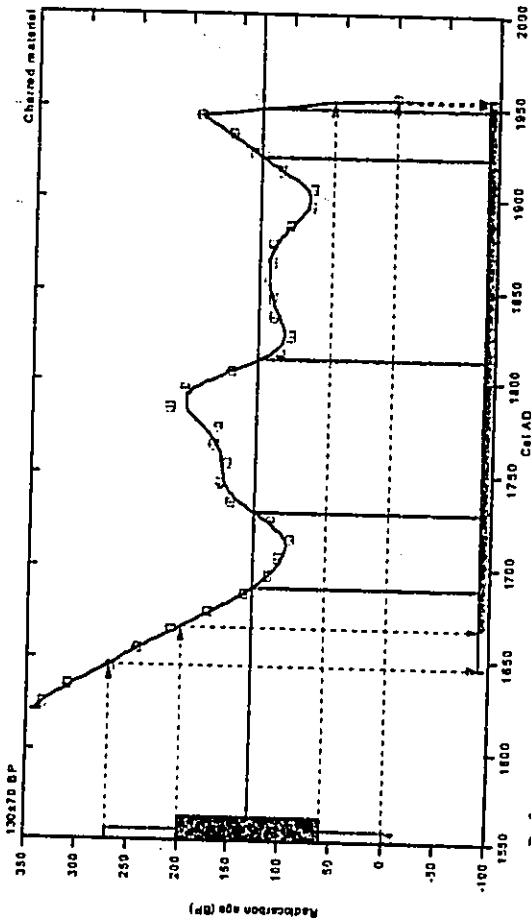
* 2 Sigma range being quoted is the maximum uncertainty based on the minus 2 Sigma range

Intercept data

Intercepts of radiocarbon age
with calibration curve:

Cal AD 1690 (Cal BP 260) and
Cal AD 1730 (Cal BP 220) and
Cal AD 1810 (Cal BP 140) and
Cal AD 1920 (Cal BP 30) and
Cal AD 1950 (Cal BP 0)

1 Sigma calibrated result: Cal AD 1670 to 1950 (Cal BP 280 to 0)
(68% probability)



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Calibration Database
Editorial Comment
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INTCAL98 Radiocarbon Age Calibration
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Beta Analytic Radiocarbon Dating Laboratory

4933 S.W. 74th Court, Miami, Florida 33155 • Tel: (305) 607-5107 • Fax: (305) 607-0164 • E-Mail: beta@radiocarbon.com

FROM: Barden Hood, Director (mailto:mailto:bardonhood@radiocarbon.com)
(This is a copy of the letter being mailed. Invoices/receipts follow only by mail.)

August 23, 2002

Dr. Hallett H. Hammatt
Cultural Surveys Hawaii
733 North Kalanooa Avenue
Kailua, HI 96734
USA

RE: Radiocarbon Dating Result For Sample KAPAZ3 C-1

Dear Hallett:

Enclosed is the radiocarbon dating result for one sample recently sent to us. It provided plenty of carbon for an accurate measurement and the analysis went normally. As usual, the method of analysis is listed on the report sheet and calibration data is provided where applicable.

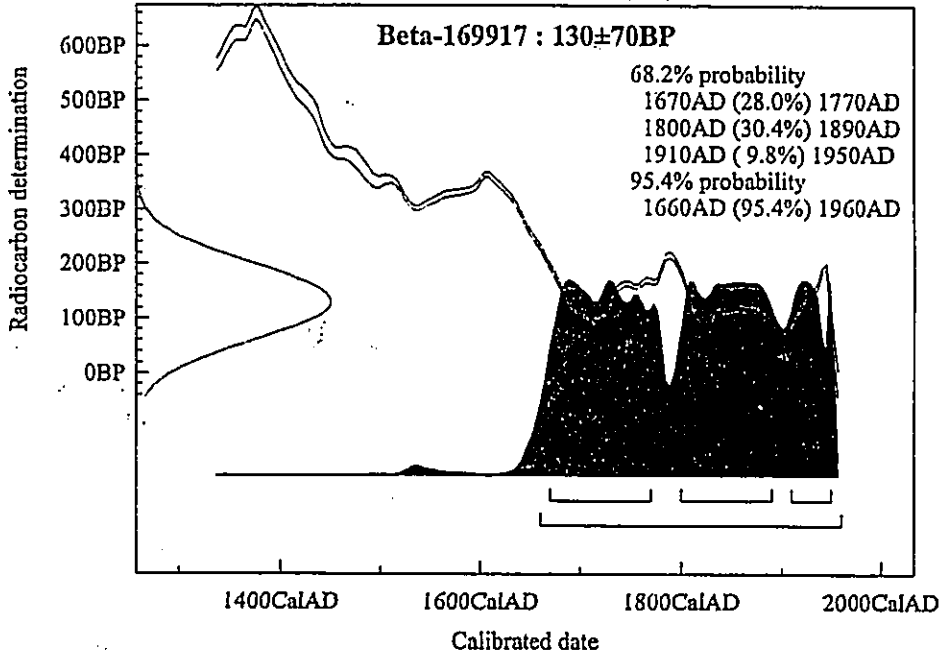
As always, no students or intern researchers who would necessarily be distracted with other obligations and priorities were used in the analysis. It was analyzed with the combined attention of our entire professional staff.

If you have specific questions about the analyses, please contact us. We are always available to answer your questions.

Our invoice is enclosed. Please, forward it to the appropriate officer or send VISA charge authorization. Thank you. As always, if you have any questions or would like to discuss the results, don't hesitate to contact me.

Sincerely,

Atmospheric data from Stuiver et al. (1998); Or/Ca +3.5 Drunk Ramsey (2000); sub r:4 al:12 perm up[chron]



APPENDIX H

CULTURAL IMPACT ASSESSMENT

ACKNOWLEDGMENTS

Cultural Surveys Hawai'i wishes to acknowledge, first and foremost, the *kāhuna* who willingly took the time to be interviewed and granted their interviews to be used for this Cultural Assessment study: James and William Kaneakua of Kapa'a, Hosea Lovell, a *kāhuna* from Anahola, Joseph Prigge of Kapa'a and John Ornellas, originally of Keālia. Special thanks also go to several individuals who added their *mana'o* and information towards the completion of this report including Val Ako of Kapa'a, Emaline White and PEARL SANTOS of Anahola, Puanani ROGERS of Kapa'a and Richard Sugiyama of Kapa'a. Acknowledgments also go to Mary Requilman of the Kaula'i Historical Society and the Bishop Museum Archives staff for helping to secure historic photos.

CULTURAL IMPACT ASSESSMENT
FOR THE PROPOSED
KAPA'A-KEĀLIA BIKE AND PEDESTRIAN PATH
KAPA'A AND KEĀLIA, KAWAHAU DISTRICT,
KAUAI ISLAND, HAWAII
(TMK: 4-5, 4-6-14, 4-7-03 & 04)

VOLUME I

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Prepared for
SSFM International, Inc.

Cultural Surveys Hawai'i, Inc.
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I. INTRODUCTION

A. Project Area Background

At the request of SSFM International, Inc., Cultural Surveys Hawai'i conducted a Cultural Impact Assessment for the proposed Kapa'a to Keālia Pedestrian and Bike Path in the Kawaihau District of Kaua'i. In part, the purpose of the Cultural Impact Assessment is to consider the effects the proposed pedestrian and bike path may have on native Hawaiians as it pertains to culture and their right to practice traditional customs. The Hawai'i State Constitution, Article XII, Section 7 protects "all rights" of native Hawaiians that are "customarily and traditionally exercised for subsistence, cultural and religious purposes". The Scope of Work (SOW) was designed to meet the cultural impact assessments of the Office of Hawaiian Affairs (OHA), the Office of Environmental and Quality Control (OEQC) and any other state and county agencies involved in the review process for the proposed project. The process for evaluating cultural impacts is evolving. There continue to be gray areas and unresolved issues pertaining to traditional access and gathering rights for native Hawaiians. Act 50 is an attempt to balance the scales between traditional lifestyles and development and economic growth.

B. Project Area Description

The project area consists of a narrow, approximately 4.3 mile corridor of land along the eastern coast of Kaua'i proposed for the Kapa'a/Keālia Bike and Pedestrian Path (Figures 1 & 2). The path is planned to begin on the south side of the Waikā'ea Canal at the Lihī and extend through the Kapa'a and Keālia *Ahupua'a* in the Kawaihau District. In addition to the narrow corridor of land proposed as the bike path, two parcels along the route were chosen for archaeological subsurface test excavations for proposed restroom facilities and parking areas associated with the bike path and pedestrian pathway. One area which was tested marks the beginning of the bike path at the south end of Waikā'ea Canal, also known as the Boat Ramp or the "Lihī" (Figure 2). The other area which was subjected to subsurface testing is located at the north end of Keālia Beach where there is presently an overflow parking area for beach activities.

The 4.3 mile path extends through a variety of physical terrains and settings. In the Kapa'a Town area, the bike path alignment follows an existing asphalt paved pathway for approximately 0.77 miles. In this section, the path is bounded on the east by the ocean and on the west, by a variety of resort, residential and light industrial structures including Pono Kai Resort, private residences, Kapa'a Beach Park, Kapa'a Public Library, Coral Reef Hotel, Kapa'a Neighborhood Center, Smokey Louie Public Swimming Pool and Otsuka's Furniture and Appliances Store. The only structures situated on the *makai* side of the bike path in this section are two pavilions associated with Kapa'a Beach Park and the Smokey Louie Public Swimming Pool. The paved portion of the pathway ends at the Kapa'a Neighborhood Center or the Smokey Louie Public Swimming Pool where the bike path becomes a narrow, paved road which

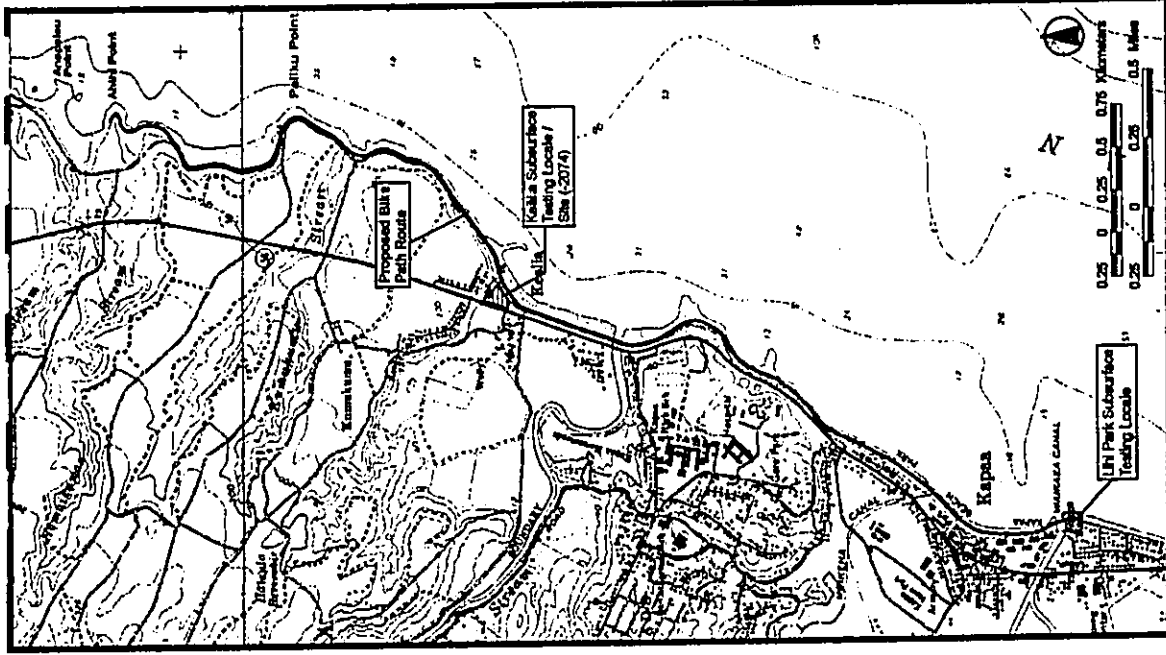


Figure 1 USGS Map Showing Proposed Bike/Pedestrian Path Route in Kapa'a and Keālia and Subsurface Testing Locales.

terminates at the north end of the swimming pool. Private residences line the *mauka* side of this short, paved, narrow lane. From here, there is a dirt footpath which extends north approximately 200 m hooking into the plantation era Cane Haul Road (State Site 50-30-08-789A) which crosses Kūhiō Highway *mauka-maka* near the intersections of Haua ala Road and Kūhiō Highway. From here to near the path's terminus, the pathway alignment follows the existing Cane Haul Road around the peninsula at the north side of Kapa'a, through Keālia Valley paralleling Kūhiō Highway and Keālia Beach and along the more isolated north Keālia Coast to 'Āhihi Point just beyond Kuna Bay (more commonly known as Donkey Beach).

C. Scope of Work

The following Scope of Work (SOW) was proposed for satisfying Cultural Impact Assessment requirements related to Hawaiian customary and traditional rights and their applicability to the project area.

- 1) Examination of historical documents, Land Commission Awards, historic maps, with the specific purpose of identifying traditional Hawaiian activities including gathering p'lant, animal and other resources or agricultural pursuits as may be indicated in the historic record.
- 2) A review of the existing archaeological information pertaining to the sites along the alignment as they may allow us to reconstruct traditional land use activities and identify and describe the cultural resources, practices and beliefs associated with the parcel and identify present uses, if appropriate.
- 3) Conduct oral interviews with persons knowledgeable about the historic and traditional practices in the project area and region. We anticipate 2-4 formal interviews and more informal interviews.
- 4) Preparation of a report on items 1-3 summarizing the information gathered related to traditional practices and land use. The report will assess the impact of the proposed action on the cultural practices and features identified.

D. Methodology

1. Historic Research

Historic documents, maps and photographs were researched at the Hawai'i State Archives, Hawai'i State Survey Office, Bernice Pauahi Bishop Museum archives and library, the State Historic Preservation Division (SHPD) Library, the Kaula'i Museum Archives, the Kapa'a Public Library and the library of Cultural Surveys Hawai'i.

2. Identification of Knowledgeable Informants

Hawaiian organizations, agencies, community members and cultural and lineal descendants with ties to the Kapa'a, Keālia, Kumukumu and Hōmaikawa areas were contacted to (1) identify potential knowledgeable individuals with cultural expertise and knowledge of the project area and the surrounding vicinity, and (2) identify cultural concerns and potential negative impacts relative to the project. An effort was made to locate informants who either grew up in the study area or who, in the past, used the area for traditional and cultural purposes. In addition, informal talk-story with community members familiar with the project area was ongoing throughout the consultation period. The organizations consulted were the State Historic Preservation Division, Kaula'i/NI'ihau Island Burial Council, Office of Hawaiian Affairs, Kaula'i Hawaiian Civic Clubs, the Kaula'i County Council, Kaula'i Health Heritage Coastal Corridor Committee, Queen Lili'uokalani Children's Center, Waikā'ea Ohana, Kaula'i Museum, Hui Ho'okipa O Kaula'i, and the Kaula'i Historic Preservation Review Commission.

Once the participants were identified, they were contacted and appointments were set up to conduct the interviews. The interviews were conducted between August 1 and August 12, 2002 in Kapa'a, Keālia and Anahola. All interviews were recorded and transcribed. All participants were allowed the opportunity to review the typed transcript for corrections, editing and to approve the final transcript. All informants signed an "Authorization for Release" form giving permission for the interview to be used as part of this study. Excerpts from the interview are used throughout this report, wherever applicable. The full transcripts of all interviews are appended to this report.

II. CULTURAL BACKGROUND OF KAPA'A AND KEALIA

A. From Puna District to Kawahau District

The project area traverses through the traditional *ahupua'a* of Kapa'a, Kealia, Kumukumu and Hōmaikawa'a in the ancient district of Puna, one of five ancient districts on Kapa'a (King 1935: 228). Today, the Kumukumu and Hōmaikawa'a *ahupua'a* are considered part of Kealia. Puna was the second largest district on Kapa'a, behind Kona, and extended from Kipu, south of Lihue to Kamalomalō, just north of Kealia. For taxation, educational and judicial reasons, new districts were created in the 1840's. The Puna District, with the same boundaries became the Lihue District, named for an important town in that district. In 1878, by act of King Kalākaua in securing a future and name for the new Hui Kawahau, the new district of Kawahau was created. This new district encompassed the *ahupua'a* ranging from Olohena on the south to Kilauea on the north. Subsequent alterations to district boundaries in the 1920's left Kawahau District with Olohena as its southernmost boundary and Mōloa'a as its northernmost boundary (*ibid*:222).

B. Traditional and Legendary Accounts of Kapa'a and Kealia

1. Kapa'a

a. Palila and Ka'ea

High in the *mauka* region of Kapa'a in the Makaleha mountains at a place called Ka'ea, is reported to be the supernatural banana grove of the Kapa'a *kupua* or demigod Palila, grandson of Hina (Handy and Handy 1972:424). Joseph Akina writing for *Kuokoa* Newspaper in 1913 describes Palila's banana grove:

The stalk could hardly be surrounded by two men, and was about 35 feet high from the soil to the lowest petiole. The length of the cluster from stem to lowest end of the bunch of bananas was about 1 3/4 fathoms long (one anana and one muku). There were only two bananas on each about 4 1/2 inches around the middle. There were just two bananas, one on the east side and one on the west, each about a foot or more in length. The one on the east side was tartish, like a waiawi (Spanish guava) in taste and the one on the west was practically tasteless. The diameter of the end of the fruit stem of this banana seemed to be about 1 1/2 feet. This kind of banana plant and its fruit seemed almost supernatural... (Akina, 1913: 5).

b. Ka Lulu o Mō'ikeha

Kapa'a was the home of the legendary *ali'i*, Mō'ikeha. Born at Waiipi'o on the island of Hawai'i, Mō'ikeha sailed to Kahiki (Tahiti), the home of his grandfather Maweke, after a disastrous flood. On his return to Hawai'i, he settled at Kapa'a, Kapa'a, Kila, Mō'ikeha's favorite

of three sons by the Kapa'a chiefess Ho'oihoikamalani, was born at Kapa'a and was said to be the most handsome man on the island. It was Kila who was sent by his father back to Kahiki to slay his old enemies and retrieve a foster son, the high chief La'amaikahiki (Handy and Handy 1972:424; Beckwith 1970:352-358; Kalakaua 1888:130-135; Fomander 1916, vol.4 pt.1:160). Mō'ikeha's love for Kapa'a is recalled in the *'ōlelo no'eau*: *Ka lulu o Mō'ikeha i ka fauilā o Kapa'a*. "The calm of Mō'ikeha in the breadth of Kapa'a" (Pukui, 1983: 157).

"Lulu-o-Mō'ikeha" is described as being situated "near the landing and the school of Wainabanua" (Akina, 1913: 5). The landing in Kapa'a was known as the Makee Landing and was probably constructed in the late 1870s, along with the Makee sugar mill. Today, in place of the old Makee Landing is part of a breakwater located on the north side of Mō'ikeha Canal near the present day Coral Reef Hotel.

Akina (1913) tells the story of how Mō'ikeha's son, Kila stocks the islands with *the akule*, *kanakawa* and *'ōpeli* fish. When Kila travels to Kahiki, he seeks out his grandfather Maweke and explains that he is the child of Mō'ikeha. When Maweke asks Kila if Mō'ikeha is enjoying himself, Kila answers with the following chant of Puna:

My father enjoys the billowing clouds over Pohaku-pili,
The sticky and delicious poi,
With the fish brought from Puna,
The broad-backed shrimp of Kapalua,
The dark-backed shrimp of Pohakuhapai,
The potent awa root of Maiaiki,
The breadfruit laid in the embers at Makiolo,
The large heavy turus of Keahapuna
The crooked surf of Makaiwa too
The swaying of the kalukalu grasses of Puna
The bending hither and thither of the reed and rush blossoms,
The large, plump, private parts of my mothers,
Of Hooipoikamalani and Hinuu-u,
The sun that rises and sets,
He enjoys himself on Kapa'a,
All of Kapa'a is Mō'ikeha's. (Akina, 1913: 6)

Maweke was delighted and when the boy is questioned as to his purpose, Kila tells his grandfather he is seeking fish for his family. Maweke tells Kila to lead the fish back to his homeland. This is how Kila led the *akule*, *kanakawa* and *'ōpeli* to Hawai'i.

c. Paka'a and the wind gourd of La'amaomao (Kealahi)

Kapa'a also figures prominently in the famous story of Paka'a, and the wind gourd of La'amaomao. Paka'a was the son of Kūānu'uānuu, a high-ranking retainer of the Big Island ruling chief Keawenuia'umi (the son and heir to the legendary chief 'Umi), and La'amaomao, the most beautiful girl of Kapa'a and member of a family of high status *kaunua*. Kūānu'uānuu left the island of Hawai'i, traveled throughout the other islands and finally settled on Kapa'a, at Kapa'a.

It was there that he met and married La'amaomao, although he never revealed his background or high rank to her until the day a messenger arrived, calling Kūānu'uano back to the court of Keawenū'uani. By that time, La'amaomao was with child but Kūānu'uano could not take her with him. He instructed her to name the child, if it turned out to be a boy, Pāka'a. Pāka'a was raised on the beach at Kapā'a by La'amaomao and her brother Ma'ilou, a bird snarer. He grew to be an intelligent young man and it is said he was the first to adapt the use of a sail to small fishing canoes. Although Pāka'a was told by his mother from a very young age that his father was Ma'ilou, he suspected otherwise and after constant questioning La'amaomao told her son the truth about Kūānu'uano.

Intent on seeking out his real father and making himself known to him, Pāka'a prepared for the journey to the Big Island. His mother presented to him a tightly covered gourd containing the bones of her grandmother, also named La'amaomao, the goddess of the winds. With the gourd and chants taught to him by his mother, Pāka'a could command the forces of all the winds in Hawai'i. While this story continues on at length about Pāka'a and his exploits on the Big Island and later on Moloka'i, it will not be dwelt upon further here. It is important to note that several versions of this story do include the chants which give the traditional names of all of the winds at all the districts on all the islands, preserving them for this and future generations (Nakaina 1990; Rice 1923:69-89; Beckwith 1970:86-87; Thurum 1923:53-67; Fomander 1918-19 vol. 5 pt.1:78-128).

Fredrick Wichman (1998:84) writes that Pāka'a grew up on a headland named Keahihi, which the bike path traverses. Here, Pāka'a learned to catch *māfōlo*, his favorite fish. After studying the ocean and devising his plan to fabricate a sail, Pāka'a wove a sail in the shape of a crab claw and tried it out on his uncle's canoe. One day, after going out to catch *māfōlo*, he challenged the other fishermen to race to shore. He convinced them to fill his canoe with fish suggesting it was the only way he could truly claim the prize if he won:

The fishermen began paddling toward shore. They watched as Pāka'a paddled farther out to sea and began to fumble with a pole that had a mat tied to it. It looked so funny that they began to laugh, and soon they lost the rhythm of their own paddling. Suddenly Pāka'a's mast was up and the sail filled with wind. Pāka'a turned toward shore and shot past the astonished fishermen, landing on the beach far ahead of them. That night, Pāka'a, his mother, and his uncle had all the *māfōlo* they could eat (Wichman 1998:85).

d. Kaweloleimākua

Kapā'a is also mentioned in traditions concerning Kawelo (Kaweloleimākua), Ka'iliauokekoa (Mō'ikeha's daughter, or granddaughter, dependent on differing versions of the tale), the *mō'ō* Kalamai'u and the origins of the *hāia'i hāiāea* or the fish trap used to catch the *hāiāea* fish, and the story of Lonoikamakahiki (Fomander 1917, vol.4 pt.2:318, vol.4 pt.3:704-705; Rice 1923:106-108; Thurum 1923:123-135; Kamakau 1976:80).

e. Kalukalu grass of Kapā'a

"*Kāmoena kalukalu Kapā'a*" or "Kapā'a is like the *kalukalu* mats" is a line from a chant recited by Lonoikamakahiki. *Kalukalu* is a sedge grass, apparently used for weaving mats (Fomander 1917, Vol. IV, Pt. 2, pp. 318-19). Pukui (1983: 187) associates the *kalukalu* with lovers in "*ke kalukalu moe ipo o Kapā'a*"; the *kalukalu* of Kapā'a that sleeps with the lover". According to Wichman (1998:84), "a *kalukalu* mat was laid on the ground under a tree, covered with a thick pile of grass, and a second mat was thrown over that for a comfortable bed", thus the association with lovers. Kua'i was famous for this peculiar grass, and it probably grew around the marshlands of Kapā'a. It is thought to be extinct now, but an old-time resident of the area recalled that it had edible roots, "somewhat like peanuts." Perhaps it was a famine food source (Kapā'a Elementary School 1933:V7).

2. Keālia

a. Hi'iaka and Wahine'ōma'ō in Keālia

On their way to Hi'ena, Hi'iaka and Wahine'ōma'ō stopped near Keālia to help a man cook his *luau* to eat with his *poi*. Noticing an ailing woman in the man's house, Hi'iaka said a prayer which brought the woman back to health. All the *kahuna* in the region had been unable to help the woman previously (Rice, 1974:14).

b. Kaweloleimākua and Kauhōa in Waipahē'e

In the *mauka* areas of Keālia is a place called Waipahē'e, a slippery slide used for recreation up until recent times. This *wahī pana* is associated with Kaweloleimākua and Kauhōa, who one day traveled to this place with their companion 'Alkanaka (Wichman 1998:86). Here the two boys engaged in a contest of who could make the best *lei* for their chief. Kauhōa won this contest by making his *lei* of *liko lehua* while Kaweloleimākua made his of fern. The boys then held a contest *na'ina'i mimi* to see who could urinate the longest, but because Kauhōa was much bigger than Kawelo, he also won this contest. Later, when the two were men engaged in war, Kawelo reminds Kauhōa of this boyhood excursion in an attempt to avoid bloodshed between them, however he was unsuccessful.

c. 'A'aka at 'Āhihi Point

In Kamalomalo'o, what some consider to be the northernmost *āhupua'a* of Puna, is another *wahī pana*, 'Āhihi. 'Āhihi is a headland that juts out into the ocean in between what is now known as Keālia and Anahōla. 'Āhihi Point is also the terminus of the pedestrian and bike path. Wichman (1998: 87) retells a story about 'A'aka, the name of the plain *mauka* of 'Āhihi and the name of a *meretuna*, Hōmaikawa'a, the valley adjacent to 'A'aka, and 'Āhihi, a plant with long runners. One of 'A'aka's favorite pastimes was to throw a stone into the ocean from 'Āhihi Point and then jump in after it. Once, when a large white shark almost swallowed him whole, 'A'aka devised a plan to fabricate a net made from *āhihi* to catch the shark. After ordering the canoe, "Hōmaikawa'a", he and his companions were able to catch the shark and tow it to the reef at 'Āliomānu, near Anahōla.

C. *Heiau* of Kapa'a and Keālia

During their expeditions around Hawai'i in the 1880s collecting stories from *ka po'e kahiko*, Lahainaluna students stopped in Kapa'a and Keālia and gathered information regarding *heiau* of the region. Fourteen *heiau* were named, suggesting the two *ahupua'a* were probably more politically significant in ancient times. Table 1 lists the names of the *heiau*, their location if known, their type, associated chief and priest, and any comments and the reference.

Table 1: *Heiau* of Kapa'a and Keālia

Name	Location	Type	Associated Chief/Priest	Comments/Reference
Mai'ehuna	Kapa'a (Mai'ehuna is the area of the present day Kapa'a School)	unknown	Kiha, Kaumuali'i/Lukahakona	Ref: Bishop Museum Archives (HEN I: 214) Lahainaluna Student Compositions
Pueo	Kapa'a	unknown	Kiha, Kaumuali'i/Lukahakona	Ref: ""
Pahua	Kapa'a/Keālia	unknown	Kiha/Lukahakona	Ref: ""
Kumalee	Kapa'a/Keālia	unknown	Kiha/Lukahakona	Ref: ""
Waichumalema	Kapa'a/Keālia	unknown	Kiha/Lukahakona	Ref: ""
Napupuakai	Kapa'a/Keālia	unknown	Kiha/Lukahakona	Ref: ""
Noemakalii	Kapa'a/Keālia	" <i>heiau</i> for birth of Kauai Chiefs, like Holoholo ku"	Unknown	Ref: ""
Puukoa	Kapa'a/Keālia	" <i>unu</i> type <i>heiau</i> "	Unknown	Ref: ""

Name	Location	Type	Associated Chief/Priest	Comments/Reference
Piounka	Kapa'a/Keālia	" <i>unu</i> type <i>heiau</i> "	Unknown	" <i>heiau</i> where standing chiefs quarreled over stream that flowed through them. When drought came, the water at Piounka dried up"/ Ref: ""
Una	Kapa'a/Keālia	Unknown	Kiha/Lukahakona	Ref: ""
Mano	Kapa'a/Keālia	Unknown	Kiha/Lukahakona	Ref: ""
Kuahihi	Kapa'a (govn't school stands on site now)	Unknown	Kaumuali'i/Lukahakona	Bishop Museum Archives (HEN I:216)
Makanalimu	Upland of Kawahau	Unknown	Kaumuali'i	Ref: ""
Kaluluomoikeha	Kapa'a	Unknown	Mō'ikeha	Ref: ""
Kawelomamaia	N. of Keālia/near Kawelomamaia Stream	Po'okana Ka Class	Kawalo (sic) Kawelo	"Dedicated to Shark God"/ Bennett, 1931:129
Māhu-nā-pu'u-one	"Kamalomalo'o, the northernmost <i>ahupua'a</i> of Puna"	" <i>heiau</i> where humans were sacrificed"	Kawelomahama hai'a	"built in 1600s; <i>heiau</i> no longer exists"/ Wichman, 1998:87

The exact locations of these *heiau* are unknown. The general locations of two of the *heiau* correlate with the locations of *wahi pana* which are known to be in the vicinity of the project area, Kuahihi and Kaluluomoikeha. Kuahihi (also spelled Kaahihi and Keahihi) is the rocky headland at the north end of Kapa'a where the first Kapa'a School was once located. Kaluluomoikeha is thought to be the general area near the Moikeha Canal and the present day Coral Reef Hotel. The last two *heiau* mentioned in the table, Kawelomamaia and Māhu-nā-pu'u-one may refer to the same *heiau*. Both correspond to the same general location and both are associated with Kawelomahamaia. Several *kama'āina* claimed there was a *heiau* in the area north of Keālia, but very little was known regarding the *heiau* (pers. communication, V. Ako, J.

Lovell, K. Pa, P. Rogers). One individual thought it was probably located on Palikū, the flat ledge on the south side of Kuna (Donkey Beach) (Pers. communication, P. Rogers, August 2002).

D. The *Māhele*

The Organic Acts of 1845 and 1846 initiated the process of the *Māhele*, which introduced private property into Hawaiian society. It is through records for Land Commission Awards (LCAs) generated during the *Māhele* that specific documentation of traditional life in Kapa'a and Kealia *Ahupua'a* comes to light.

1. Kapa'a Land Commission Awards

During the *Māhele*, Kapa'a was designated as Crown Lands (Office of the Commissioner of Public Lands of the Territory of Hawaii, 1929). The *ʻĪi* of Paikahawai and Ulakū in Kapa'a *Ahupua'a* were retained as Government Lands. Table 2 describes the *kūleana* claims in Kapa'a, Puna including the Land Commission Award numbers, the name of the claimant, the name of the land division or *ʻĪi* in which the claim was being made, the claim and land use of the claim and what was awarded to the claimant.

Table 2: *Māhele* Land Claims in Kapa'a *Ahupua'a*

LCA#	CLAIMANT	ʻĪI	CLAIM/LAND USE	AWARD
08843	Kiau and son, Apahu	Apopo, Kalolo Village	6 <i>lo'i</i> , small <i>kūle</i> house lot	2 apana; 2,75 acres
10564	Oleoa, Daniela	Kapa'a, Puna; Hahanui 'Īi	farm plot, Hikinui with one fish pond; 10 <i>lo'i</i> and a fish pond	No award in Kapa'a, Puna; award in Waiohi, Halelea
08247	Ehu	Moalepe	approx. 20 <i>lo'i</i> lying waste, some orange trees	1 apana, Kapan
08837	Kamapaa	Awawaloa, Ulukiu Village	9 <i>lo'i</i> , and adjoining <i>kūle</i> ; house lot	Awawaloa: 1 apana; Wākū 3 apana
03638	Huhūi, Kahoiu (Kadaio)	Maelele, Kaloko Village	12-15 <i>lo'i</i> in Maelele and adjoining <i>kūle</i> ; house lot in village of Kaloko (Kalolo)	Maelele: 2 apana, 5 acs.
03971 and 03243	Honohi, Ioane	Kahana, Kupanihi	6 uncultivated <i>lo'i</i> ; house lot in Kupanihi Village	Kupanihi: 2 apana, 1 ac

LCA#	CLAIMANT	ʻĪI	CLAIM/LAND USE	AWARD
03554 and 03599	Keo	Hahanui,	Entire <i>ʻĪi</i> of Kahanu, 15 <i>lo'i</i> ; house lot in Puhi Village	No Award in Kapa'a, Puna; Award in Waia'au, Kona.

The land claims during this period show that only five individuals were awarded land parcels in the relatively large *ahupua'a* of Kapa'a (Table 2). The five awardees include Kiau (#08843), Kamapaa (#08837), Ioane Honohi (#03971) Huhūi (#03638) and Ehu (#08247). In addition, two land claims (#10564 and #03554, 3559) were not awarded in Kapa'a. Four of the five awardees received multiple parcels which show similarities. All four had *lo'i* or irrigated *kūle* fields on the *mauka* side of the lowland swampy area, sometimes extending a short distance up into small, shallow gulches and valleys (Figure 3). Many of these *lo'i* parcels name *pali* or hills/cliffs as boundaries. Each LCA also had a separate house lot located on the *makai* side of the swamp, near the beach. Three of the land claims name ponds on their lands, including Puhi Pond (LCA #03554), fishponds in Kupanihi 'Īi (LCA #03971) and Hahanui 'Īi (LCA #10564). Loko Kihapai may be the same as the Fishpond in Hahanui as it was named in the same land claim. The other two *loko* are associated with house lots, situated on the *makai* edge of the Kapa'a swamp lands suggesting modification of the natural swamp lands. Other natural and cultural resources mentioned in the LCAs include freshwater springs, pig pens, *hau* bushes, *hala* clumps, streams, *ʻarava'i*, and *kūle* or pasture lands.

Interestingly, the residential "village" of Kapa'a did not exist as a single entity, but was a series of probably small settlements or compounds, perhaps even individual house lots which stretched along the shoreline of the *ahupua'a* and included (south to north) Kupanihi (Makahaikupanihi), Kalolo (Kaulolo), Puhi, and Ulakū (Figure 3).

The fifth individual, Ehu (LCA #08247), was the only person to be awarded a single parcel in the upland area of Kapa'a, Moalepe Valley, approximately five miles *mauka* of the coast. In 1848, when Ehu made his claim, he was the only one living there. A few years later, according to Honohi's testimony to support Ehu's claim, "There are no houses and no people now living on the land. Ehu found himself lonely there, all his neighbors having either died or left the land. Ehu now lives in Waialua." Evidently Ehu may have been the last person to live at and cultivate in the traditional way, the far *mauka* region of Kapa'a.

2. Kealia Land Commission Awards

Kealia was granted to the *alii* Miriam Ke'ahikuni Kekau'ono'hi (Land Commission Award 11216; Royal Patent 6071). Kekau'ono'hi was a granddaughter of Kamehameha, one of Liholiho's wives and served as Kamehameha's governor from 1842 to 1844. Table 3 describes the *Auleana* claims in Kealia, Puna including the Land Commission Award number, the name of the claimant, the name of the land division or *ili* in which the claim was being made, the claim and land use of the claim and what was awarded to the claimant.

Table 3: *Māhele* Land Claims in Kealia Ahupua'a

LCA#	CLAIMANT	ILI	CLAIM/LAND USE	AWARD
10907	Umiumi	Akiana, Hawaupaha, Awikiwili	2 <i>lo'i</i> , 1 <i>kula</i> , house lot	2 parcels
10906	Umiumi	Kaukuolono	house lot, 2 <i>lo'i</i> , <i>kula</i>	2 parcels
08833	Kiaipa	Waipunaola, Kiohale	5 <i>lo'i</i> , <i>kula</i> , house lot	2 parcels
11216 K	Kekauono'hi	Kealia Ahupua'a		6500 acres
10451	Neawa		10 <i>kihapai</i> , goat enclosure	not awarded
10473	Nahi	Paahi, Kuakahi, Kaclele	house lot, 15 <i>lo'i</i> , <i>kula</i> , orange trees	3 parcels
10628	Puhi	Kaunakakai, Kuaiula	house lot, 1 <i>lo'i</i>	2 parcels
09973	Lono		<i>lo'i</i> and <i>kula</i>	relinquished land to konohiki
10149	Makuaime	Kealohipea	3 <i>lo'i</i> , <i>kula</i>	1 parcel
08834	Kalawala	Lapanui, Kahue	house lot, 2 <i>lo'i</i> , <i>kula</i>	2 parcels
08842	Kaawapupuole	Kauaha, Makapono	house lot, 4 <i>lo'i</i> , <i>kula</i>	2 parcels
08061	Hainau	Kapuna	house lot, 4 <i>lo'i</i> , <i>kula</i>	1 parcel
03413	Kaaki	Kapunakai	house lot, <i>kula</i> , 11 <i>lo'i</i> , 2 orange trees	1 parcel

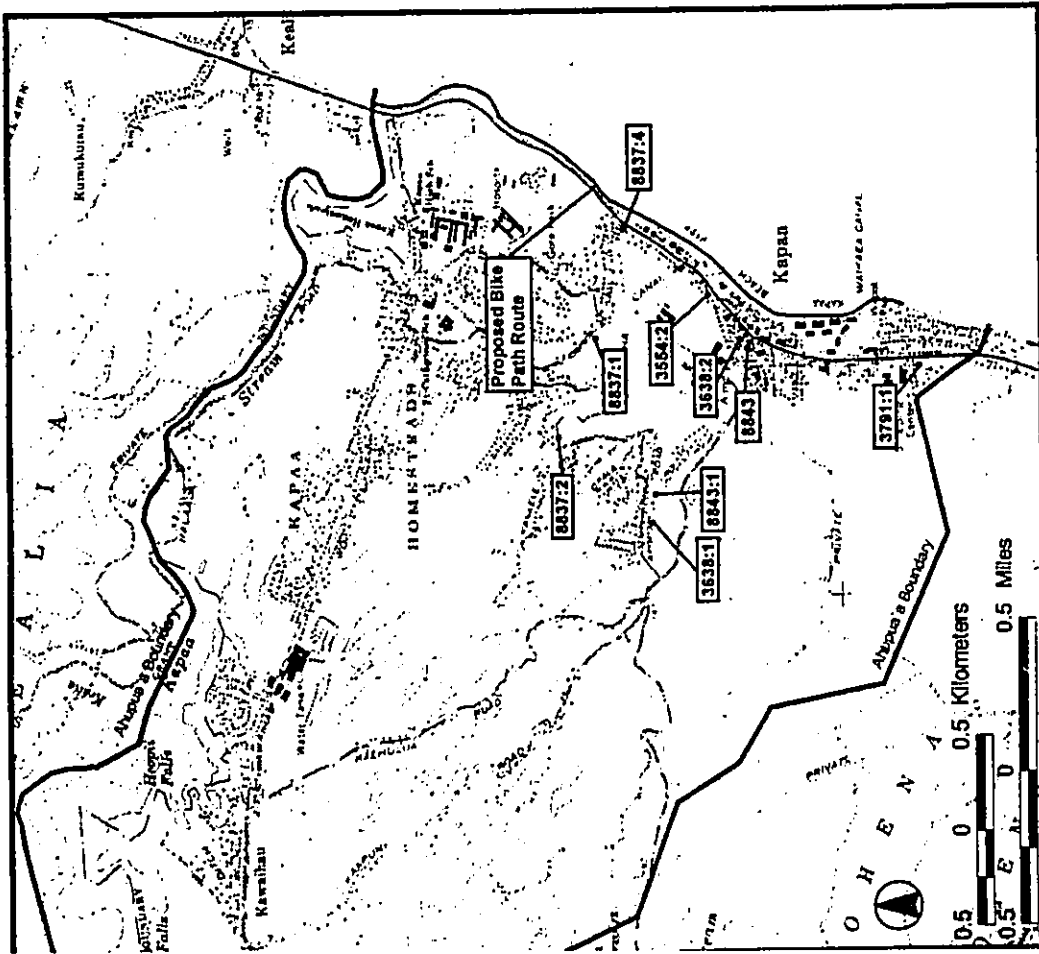


Figure 3 1983 USGS Map, Kapaa Quadrangle, Showing Locations of Land Commission Awards in Kapa a Relative to the Proposed Bike Path.

LCA#	CLAIMANT	ILI	CLAIM/LAND USE	AWARD
02381	Kekoowai		5 lo'i, 2 ponds, 2 orange trees, 1 kahe 'o' opu, kula	not awarded
07966	Keonui and Paekaiia	Mahuaku, Haleki	5 lo'i, kula, house lot	1 parcel
08060	Huliolo	Haulci, Kalohipa	house lot, 2 lo'i, kula	1 parcel
01980	Punli	Haulci, Kaelele	house lot, 4 lo'i, kula	1 parcel
10148	Mamaki	Lapanui	house lot, 2 lo'i, kula	2 parcels

Seventeen land claims were made. One claimant, Lono (LCA #09973) relinquished his Kealia land to the *konoiki* and went to live in Wai'oli. Of the seventeen claims registered, fifteen were awarded (Table 3). The grand majority of the claims were made on lands adjacent to the Kealia River, a good sized stream which was capable of supporting large scale irrigation projects (Figure 4). Other *kuleana* lands were situated adjacent to smaller streams or *'auwai* north of Kealia River. Sixty seven cultivated *lo'i* are claimed in the *kuleana*, with reference to numerous uncultivated *lo'i* and boundaries of other cultivated *lo'i* which were not claimed. In their *Māhele* documents, there are ten instances in which the individual *lo'i* are referred to with their personal names. Two ditches or *'auwai* are recorded, Kaauiwalelo (LCA #01980) and Kahaukua (LCA #10148). Kealia River and Keahapuna (Keahapana) River were also named as boundaries, although they may refer to the same river. This information suggests that taro farming continued to be central to Kealia. In addition, four *kō'e'ele* (land cultivated by tenant for local chief) are named in the Kealia *Māhele* documents. This suggests the *konoiki* of Kealia maintained a fair amount of power and played an active role in land and water distribution even as population was declining and foreign powers were beginning to trickle in.

Another noteworthy resource in Kealia were ponds or *loko*. Four ponds were mentioned, though no reference to location is given for two. Akiana Pond (LCA #8060) is thought to be located in the *ili* of Akiana and Loko Waipunaia (LCA #8833) is thought to be in Waipunaia *'ili*. In addition to the fishponds providing fresh fish, the Kealia records indicate that freshwater fish were also caught in the rivers and streams. One individual claims a *kahe 'o' opu* or *'o' opu* fish trap (LCA #02381). *Māhele* documents for Kealia indicate that people were raising turkeys,

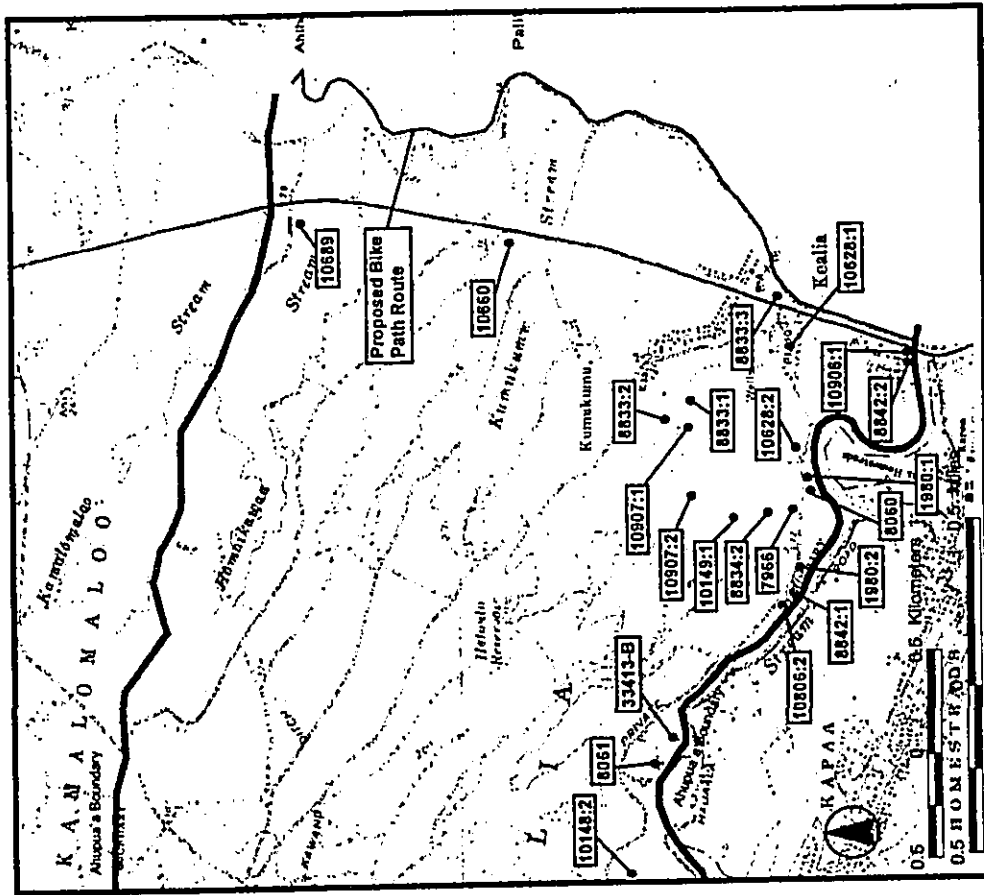


Figure 4 1983 USGS Map, Kapaa and Anahola Quadrangles, Showing Locations of Land Commission Awards in Kealia Relative to the Proposed Bike Path.

goats and pigs. One individual (LCA #08061) claimed a *manuka* parcel of land with *noni*, a useful medicinal plant and *wauke*, a plant used in making *kapa* and cordage. There were several disputes over orange trees (LCAs #3413B, 02381, 10473). In one case, the *konoiki* affirmed that he himself had taken away two orange trees belonging to a claimant.

Further north on the plateau land above Kealia Valley, Kumukumu Ahupua'a was surrendered to the government (by commutation) by W. C. Lunaliio. Only one claim (LCA #10660) was made for Kumukumu, apparently by Pakaa, a *konoiki* under Kanoo. According to Pakaa, he was given the lands of Kamalomalo, Kumukumu and Halaala by Kanoo. In those lands he restored 42 *lo'i*. In Kumukumu, there were several *lo'i*, *hala* and two house lots. The Kumukumu *lo'i* were situated along the Kumukumu Stream, a small stream which flows into the ocean near the project area. Homaikawa'a, which according to the documents contained within the Indices of Awards, was part of the district of Ko'olau, was claimed as Government Lands. Here, although there were five or six claims, only one was awarded (Table 4, Figure 4). Based on information in the *Māhele* records, Holoaumoku (LCA #08208) claimed she was made *konoiki* of Homaikawa'a and Kamalomalo by Emelia Keaweama. Holoaumoku, her son Alapai and their servants forsook their claims in Homaikawa'a when a new *konoiki* was appointed. The only claim awarded in Homaikawa'a was to Puukakahi for 4 *lo'i*, cultivated along Homaikawa'a Stream, *hala* and a house lot. Table 4 describes the *kuleana* claims in Kumukumu and Homaikawa'a, Puna including the Land Commission Award number, the name of the claimant, the name of the land division or *'i'i* in which the claim was being made, the claim and land use of the claim and what was awarded to the claimant.

Table 4: *Māhele* Land Claims in Kumukumu and Homaikawa'a Ahupua'a

LCA #	CLAIMANT	'I'I	CLAIM/LAND USE	AWARD
10660	Pakaa	Naapakui, Kumukumu	4 <i>lo'i</i> , <i>hala</i> , 2 house lots	1 parcel
10689	Puukakahi	Kapuhaha, Homaikawa'a	4 <i>lo'i</i> , <i>hala</i> , house lot	1 parcel
11014	Wahaeku	Homaikawa'a		relinquishes lands at Homaikawa'a
8208	Holoaumoku	Homaikawa'a		relinquishes lands at Homaikawa'a
8043	Ainoa	Homaikawa'a		relinquishes lands at Homaikawa'a
80421	Alapai	Homaikawa'a		relinquishes lands at Homaikawa'a

E. Early Historic Accounts of Kapa'a and Kealia (1830's-1900's)

The earliest documentation of life in the *ahupua'a* appears in the 1830's when missionary censuses recorded a total population of 283, comprising 265 adults and 18 children within Kealia (Schmitt 1973:25). Homaikawa'a seems to have been a small village at the time of the 1830 census with a population of 70. Other Protestant missionary records focused more specifically on areas where mission stations were established. An 1847 census of twenty three land divisions in the Hanalei and Kawaihau Districts gives population figures for Kealia, Kumukumu and Homaikawa'a (Schmitt, 1969). Most notable is the decline in population in Kealia, from 283 in the 1830s to 143, a reduction of almost half (ibid., 229). The population of Homaikawa'a was also recorded as reduced to half of its 1830's population, with 32 individuals. Accounting for the high death toll caused by the introduction of foreign disease, this still seems like an extremely high death rate. Kumukumu's population at this time was 21. Kapa'a's population during this time period is unknown.

Although most of the historic record documents for Kapa'a in this period revolve around missionary activities and the missions themselves, there was indication that the Kapa'a area was being considered for new sugar cane experiments, similar to those occurring in Kōloa. In a historic note, Ladd and Company received a 50 year lease on land in Kōloa from Kamehameha III and Kapa'a Governor Kaikio'ewa of Kapa'a. The terms of the lease allowed the new sugar company "the right of someone other than a chief to control land" and had profound effects on "traditional notions of land tenure dominated by the chiefly hierarchy" (Donohugh, 2001: 89). In 1837, a very similar lease with similar terms was granted to Wilama Ferani, a merchant and U.S. citizen based in Honolulu (Hawai'i State Archives, Interior Dept., Letters, Aug. 1837). The lease was granted by Kaulikeaouli for the lands of Kapa'a, Kealia and Waipouli for twenty years for the following purpose:

...for the cultivation of sugar cane and anything else that may grow on said land, with all of the right for some place to graze animals, and the forest land above to the top of the mountains and the people who are living on said lands, it is to them whether they stay or not, and if they stay, it shall be as follows: They may cultivate the land according to the instructions of Wilama Ferani and his heirs and those he may designate under him... (Hawai'i State Archives, Interior Dept., Letters, Aug. 1837).

Unlike Ladd & Company which eventually became the Kōloa Sugar Company, there is no further reference to Wilama Ferani and his lease for lands in Kapa'a, Kealia and Waipouli. In a brief search for information on Honolulu merchant, Wilama Ferani, nothing was found. It is thought that perhaps Wilama Ferani may be another name for William French, a well known Honolulu merchant who is documented as having experimented with grinding sugar cane in Waimea, Kapa'a at about the same time the 1837 lease for lands in Kapa'a, Kealia and Waipouli was signed (Joesting, 1984: 152).

In 1849, son of Wai'oli missionary, William P. Alexander, recorded a trip he took around Kapa'a. Although, he focuses on the larger mission settlements like Kōloa and Hanalei, he does mention Kapa'a and Keālia.

A few miles from Wailua, near Kapa'a we passed the wreck of a schooner on the beach, which once belonged to Capt. Bernard. It was driven in a gale over the reef, and up on the beach, where it now lies. A few miles further we arrived at Keālia. We had some difficulty crossing the river at this place, owing to the restiveness of our horses. The country here near the shore was rather uninviting, except the valley which always contained streams of water (Alexander, 1991: 123).

In later years, the notorious Kapa'a reef was to become the location of many shipwrecks once a landing was built there in the 1880s.

One of the first people to succeed in business in the Keālia area was a German by the name of Ernest Krull. In 1854, a government survey was prepared for Kumukumu, Kapa'a (Hawai'i State Survey, RM 141). In handwritten notes of the map, it is indicated that Mr. Krull desired to buy government interest in the land for \$200.00. Apparently Mr. Krull was successful in obtaining Kumukumu because by the early 1860s, he was running a thriving business supplying whaling ships with beef and dairy products (Joesting, 1984: 171). Mr. Krull's ranch and dairy were located in the Waipahi'e area of Kumukumu in a place called Kaluahihihi (Kapa'a School, 1983:4). His residence also served as a rest stop for travelers during the 1860s (Lydgate, 1991: 142). Mr. Krull continues to lease a portion of the tablelands above Keālia until 1876 when he sells his ranch to Colonel Z.S. Spalding and Captain James Makee (Hawai'i State Archives, Interior Dept., Letters, 1879; Kapa'a School, 1983:4).

Although the 1830 missionary census records a good size village in Hōmaikawa'a and a small settlement at Kumukumu, north of Keālia, there is very little historic information on these places. One story concerning Hōmaikawa'a has passed down and is recorded in the "Kapa'a Papers". Samuel W. Wilcox writes about an incident, "Who Stole Limaloa's Awa" that occurred in Hūlē'ia Valley which was provoked by a group of men who gathered regularly at Hōmaikawa'a.

Then he told me that he suspected a crowd of men who used to gather down near the Beach at Hōmaikawa'a, beyond Keālia (where Mr. Spalding later had a Beach-house), at the house of a Kahuna, one Kiaipaa. There they had great awa drinks, and they had already made a raid on an awa patch at Kapahi (Wilcox, 1991: 43).

Apparently, these men were directed by the *kahuna* Kiaipaa to raid Limaloa's awa patch in Hūlē'ia. However, the men beat Limaloa so severely, they became scared and fled. Many of the men were captured and charged, however, not all were found. The *kahuna* who led the raid ended up taking ill and dying before he could be questioned. As the story goes, he was thought to have been cursed by a rival *kahuna* commissioned by Limaloa, who survived the brutal attack (*ibid.*: 45).

The first large scale agricultural enterprise in the Kapa'a/Keālia area began in 1877 in Kapa'a by the Makee Sugar Plantation and the Hui Kawaihu (Doie, 1916: 8). The Hui Kawaihu was originally a choral society begun in Honolulu whose membership consisted of many prominent names, both Hawaiian and *haole*. It was Kalākaua's thought that the Hui members could join forces with Makee, who had previous sugar plantation experience on Maui, to establish a successful sugar corporation on the east side of Kapa'a. Captain Makee was given land in Kapa'a to build a mill and he agreed to grind cane grown by Hui members. Kalākaua declared the land between Wailua and Moloa'a, the Kawaihu District, a fifth district and for four years the Hui attempted to grow sugar cane at Kapahi, on the plateau lands above Kapa'a. After a fire destroyed almost one half of the Hui's second crop of cane and the untimely death of one of their principal advocates, Captain James Makee, the Hui began to disperse and property and leasehold rights passed on to Makee's son-in-law and new Makee Plantation owner, Colonel Z.S. Spalding (Doie, 1916: 14).

As part of the infrastructure of the new plantation, a sugar mill was erected and the Makee Landing was built in Kapa'a during the early years of the Makee Sugar Plantation (Figure 5). Following Captain Makee's death, Colonel Spalding took control of the Plantation and in 1885 moved the mill to Keālia (Cook, 1999: 51). The deteriorating stone smoketack and landing were still there well into the 1900s (Damon, 1931:359 and see 1934 photograph of "Kapa'a Wharf Remains", Figure 5). Condé and Best (1973:180) suggest that railroad construction for the Makee Plantation started just prior to the mid 1890's. There is one reference to a railroad line leading from the Kapa'a landing to Keālia in 1891. During Queen Lili'uokalani's visit to Kapa'a in the summer of 1891, the royal party was treated to music by a band, probably shipped in from O'ahu. "The band came by ship to Kapa'a and then by train to Keālia" (Joesting, 1984:252). This line is depicted on a 1910 USGS map which shows the line heading south from Keālia Mill and splitting near the present Coral Reef Hotel, one finger going to the old Kapa'a Landing (Makee Landing) and another line heading *mauka*, crossing the present Moikaha Canal, traveling southwest up Lehua Street and through what is now goat pasture, along a plateau and into the *mauka* area behind Kapa'a swamp lands (Figure 6). This railroad line was part of a twenty mile network of plantation railroad with some portable track and included a portion of Keālia Valley and in the *mauka* regions of the plateau lands north of Keālia (Condé and Best, 1973:180).

By the late 1800's, Makee Plantation was a thriving business with more than one thousand workers employed (Cook, 1999:51). Hundreds of Portuguese and Japanese immigrants found work on Makee Plantation and the new influx of immigrants required more infrastructure. In 1883, a lease for a school lot was signed between Makee Sugar Company and the Board of Education (Kapa'a School, 1983: 9). Stipulations found in the Portuguese immigrant contracts with Makee Sugar Company stated that "children shall be properly instructed in the public schools" (Garden Island, April 1, 1983). The original Kapa'a School was constructed in 1883 on a rocky point adjacent to the Makee Sugar Company railroad in the project area (Figure 7). Traditionally, this point was known as Kaahahi (Kapa'a School, 1983: 10). In 1908, Kapa'a School was moved to its present site directly *mauka* and up the hill at Mailchune (Figure 8).

As in much of the rest of Hawai'i, the Chinese rice farmers began cultivating the lowlands of Kapa'a with increasing success in the latter half of the 1800s. Several Hawaiian *kūleana* owners leased or sold their parcels *mauka* of the swamp land to Chinese rice cultivators. Other

Chinese rice cultivators appealed to the government for swamp lands first leasing and later buying. As a result of the growing rice and sugar industries, the economic activity displaced the house lot *kūleana* on the *makaʻai* side of the marsh for increasing commercial and residential development (Lai, 1985:148-161).

Narrow wagon roads gave way to macadamized roads in the early part of the 20th century. This new road was called the Kawai Belt Road and parts of it are thought to have followed the "Old Government Road" (Cook, 1999). In Kapa ʻa, the present day Kūhiō Highway probably follows the same route as the original Government Road and subsequent Kawai Belt Road. The location of the *kūleana* awards in Kapa ʻa indicates that the majority of the house lots were situated along the Government Road (Figure 3). LCA 3243 names a "road" as one of its boundaries.

In Keālia, however, there is evidence that there were numerous traditional trails leading to Anahola with possibly two principal routes, a *makaʻai* route and a *manuka* route. In 1881, Z.S. Spalding, proprietor of the Makee Sugar Plantation, appealed to the Department of the Interior with a formal petition to have the *makaʻai* road (in Keālia) officially closed stating that the natives were breaking through his fences to take short cuts between Keālia and Anahola (Hawaii State Archives, Letter: Z.S. Spalding, May 16, 1881). The exact location of the *makaʻai* road is unknown although it is thought to be on the plateau lands, somewhat removed from the coastline, in areas fit for sugar cane production. The route of the Old Government Road, also known as the "Mauka road" is described as such, "...crossing the Keālia River above the Rice Plantation and passing over the hill near Mr. Spalding's residence" (Hawaii State Archives, Letter: Z.S. Spalding, April 21, 1882) (Figure 6). When the Kawai Belt Road was constructed in the first two decades of the 20th century, a portion of the old Government Road route was abandoned. The new route crossed the river at the *makaʻai* end of Keālia Stream paralleled the ocean and the railroad track and then turned *manuka* passing through Keālia town and went up the hill to meet up with the "Old Government Road" (Figure 6). The Keālia Bridge built for the Kawai Belt Road is thought to date to circa 1912. A traveler writing about their travels in 1913, mentions the bridge: "...In the twinkling of an eye we passed on the steel bridge of Keālia. This new bridge is beautiful" (Akina 1913) (Figure 9).

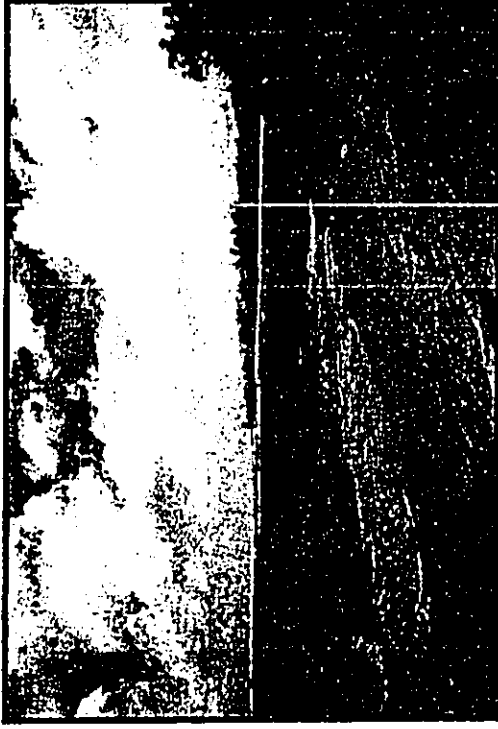


Figure 6 "Kapea Wharf Remains, Kapea, Kauai, Hawaii" (ca. 1934) also known as the Old Makee Landing (top photo). Today, there is a breakwater associated with the Moikaha Canal in this general location (bottom photo). Top photo used with permission of Bishop Museum.

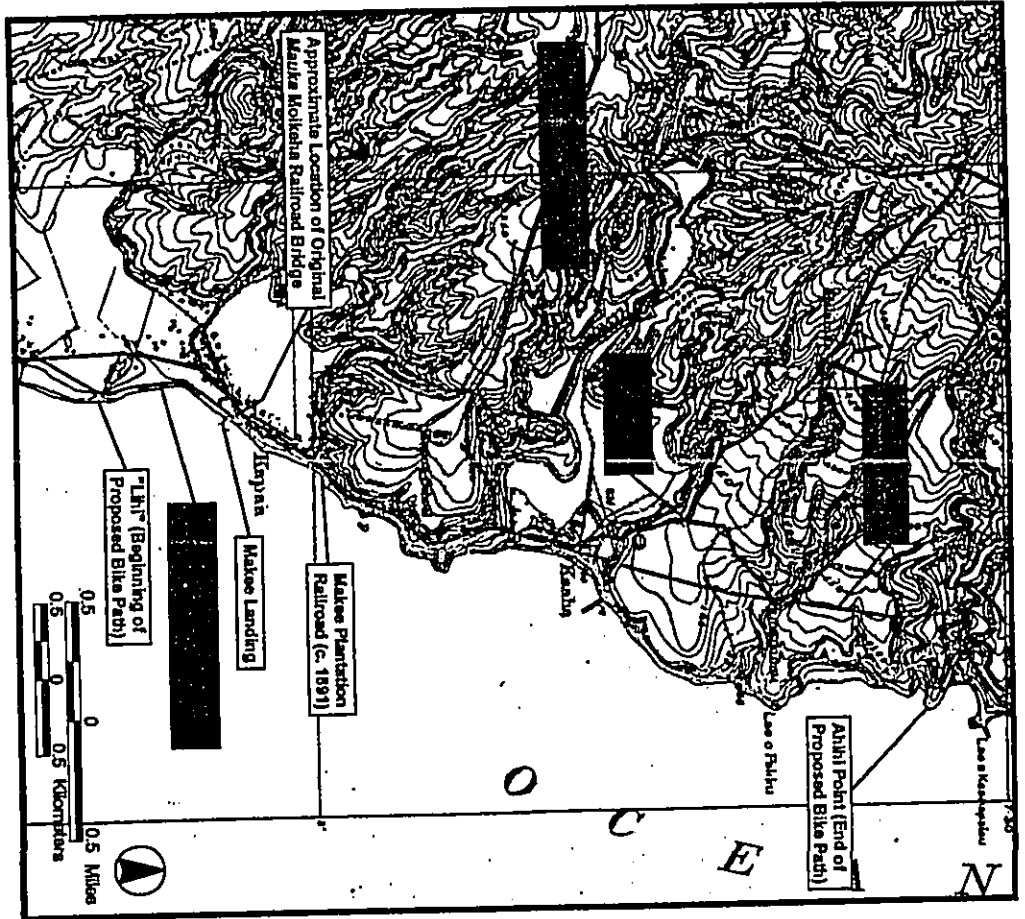


Figure 6 1910 USGS Map of Kapa'a Quad, Showing Locations of Historic Road and Railroad Alignments in Kapa'a and Kealia.

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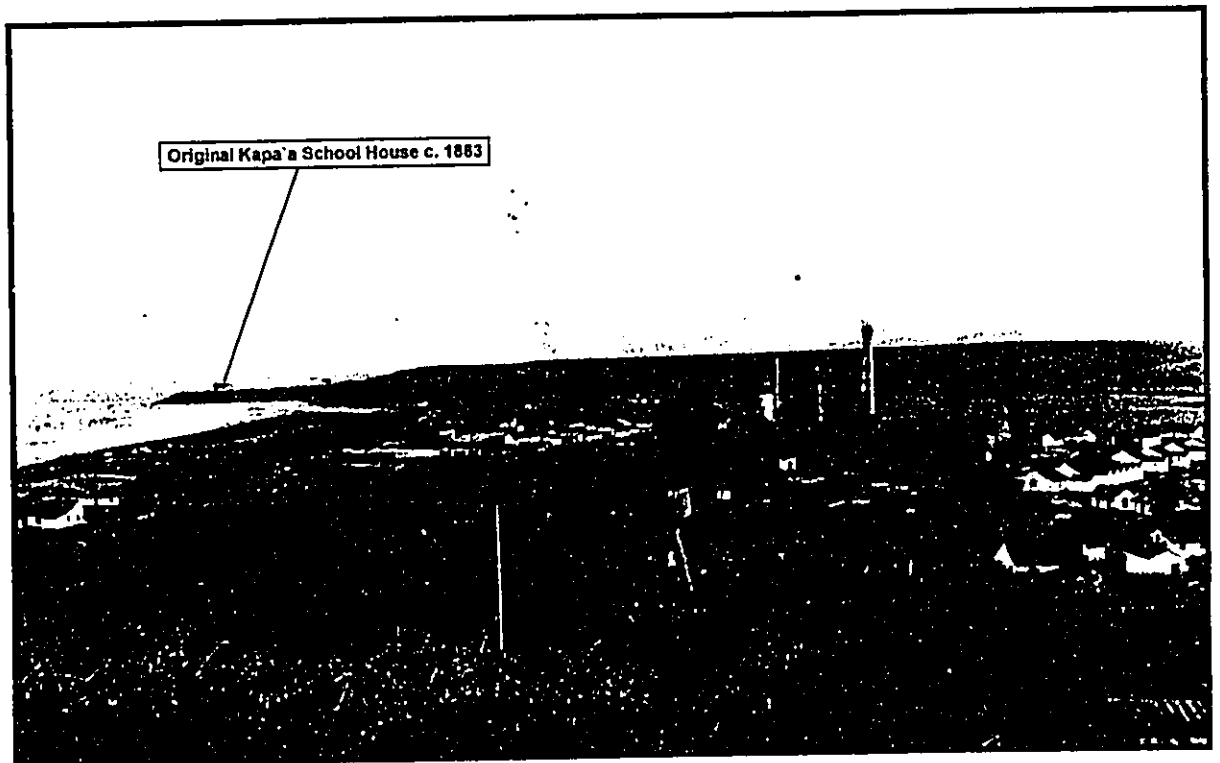


Figure 7 Historic Photograph of Kealia Mill and Town. Used with permission of Kaua'i Historical Society.

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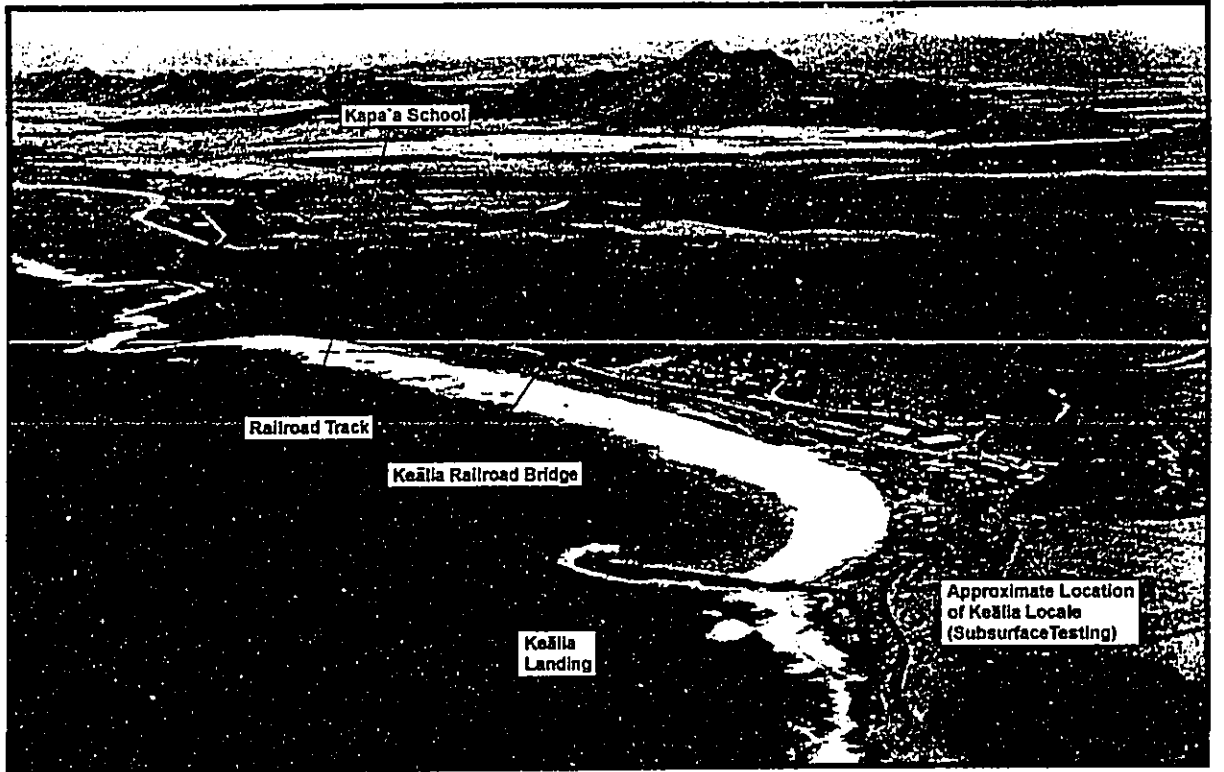


Figure 8 "Aerial View of Kealia, Kauai, Hawaii, Looking Landward" ca. 1933. Used with permission of Bishop Museum.

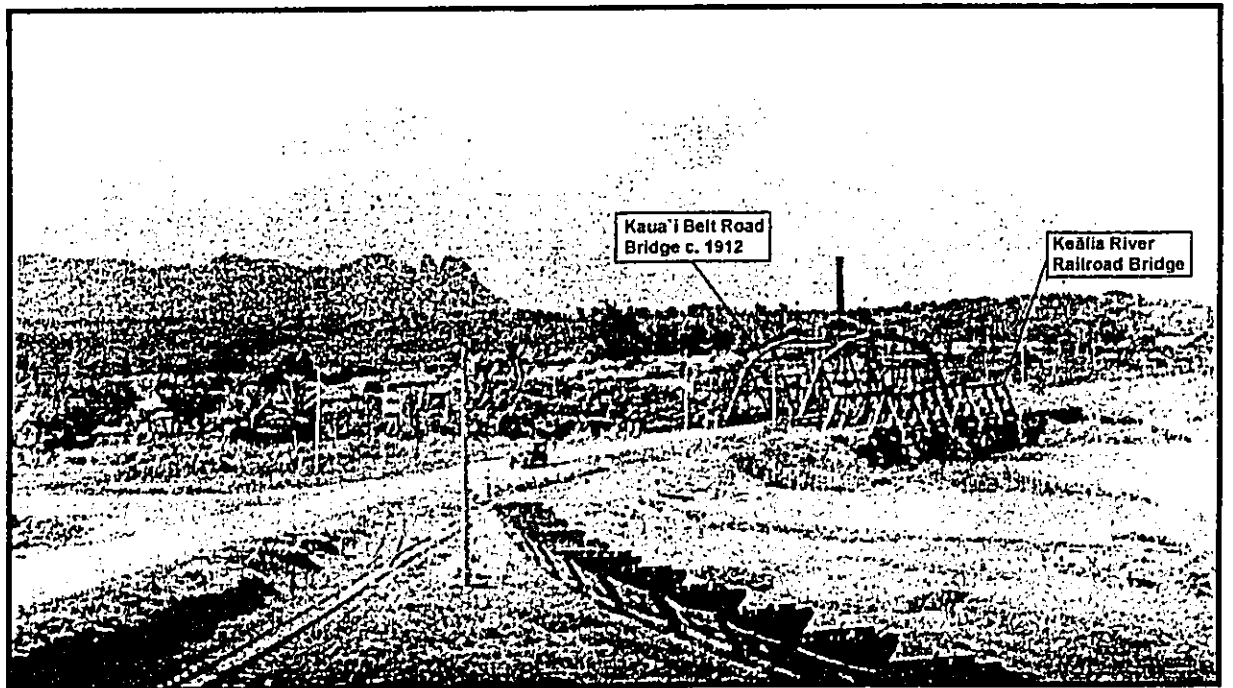


Figure 9 "Kealia in Background, Kealia, Kauai, Hawaii" ca. 1934. Photographer: Funk. Used with permission of Bishop Museum.

F. 20th Century History of Kapa'a and Keālia (1900-Present)

In the early 1900's, government lands were auctioned off as town lots in Kapa'a to help with the burgeoning plantation population. One *kama'āina* mentioned that in the 1930's and 1940's, the area north of Moikeha Canal in Kapa'a was mostly settled by Portuguese families (Personal communication, W. Kaneakua, 8/1/02). The Japanese were also very prominent in the 1920s and 1930s largely replacing the Chinese merchants of the turn of the century in the Kapa'a business sector (Pers. communication, R. Sugiyama, 7/19/02). Several territorial government structures were once situated adjacent to the bike and pedestrian path. The Board of Health, Territory of Hawaii ran a dispensary in Kapa'a starting 1926. This was located at the *makai* edge of Ni'u Street near the Kapa'a Beach Park parking lot, adjacent to the present bike path. The lot is presently vacant. A Fire Station was once located in the area now occupied by the Coral Reef Hotel and a Courthouse and jail cell once stood at the location of the present Kapa'a Neighborhood Center. It is not known when these structures were removed or abandoned.

In 1913, Hawaiian Canneries opened in Kapa'a at the site now occupied by Pono Kai Resort, adjacent to the project area (Cook, 1999: 56) [Figure 10]. Through the Hawaiian Organic Act, Hawaiian Canneries Company, Limited purchased the land they were leasing, approximately 8.75 acres, in 1923 (Bureau of Land Conveyances, Grant 8248). A 1923 sketch of the cannery shows only four structures, one very large structure assumed to be the actual cannery and three small structures *makai* of the cannery (Figure 11). A 1933 historic photograph of Kapa'a Town shows an ironwood windbreak on the *makai* side of the cannery adjacent to the railroad (Figure 12). By 1956, 1.5 million cases of pineapple were being packed. By 1960, 3400 acres were in pineapple and there were 250 full time employees and 1000 seasonal employees for the Kapa'a Cannery (Honolulu Advertiser, March 20, 1960). In 1962, Hawaiian Canneries went out of business due to competition from third world countries.

The Ahukini Terminal & Railway Company was formed in 1920 to establish a railroad to connect Anahola, Keālia, Kapa'a to Ahukini Landing at Hanamā'u and "provide relatively cheap freight rates for the carriage of plantation sugar to a terminal outlet" (Condé and Best, 1973: 185). This company was responsible for extending the railroad line from the Makea Landing, which was no longer in use, to Ahukini Landing, and constructing the original Waika'ea Railroad Bridge and the Moikeha. Portions of the alignment of the railroad are in the project area including from the Moikeha Makai Railroad Bridge to the Waika'ea Railroad Bridge. In an annual report written in December 1921, the line between Ahukini and Keālia was opened by May 7, 1921 stating, "can run trains from Ahukini to Keālia on twenty four hours notice" (Condé and Best, 1973: 185). The report also specifically mentions a bridge near the Hawaiian Canneries Co. which cost \$12,000.00 to build and was washed away in a "freshet" in January 1921 and needed to be rebuilt. The Keālia River Railroad Bridge was described as "an old wooden bridge" and was recommended to be replaced with concrete as soon as "finances permitted" (*Ibid*: 186). No mention was made of the Moikeha Makai Railroad Bridge in the report.

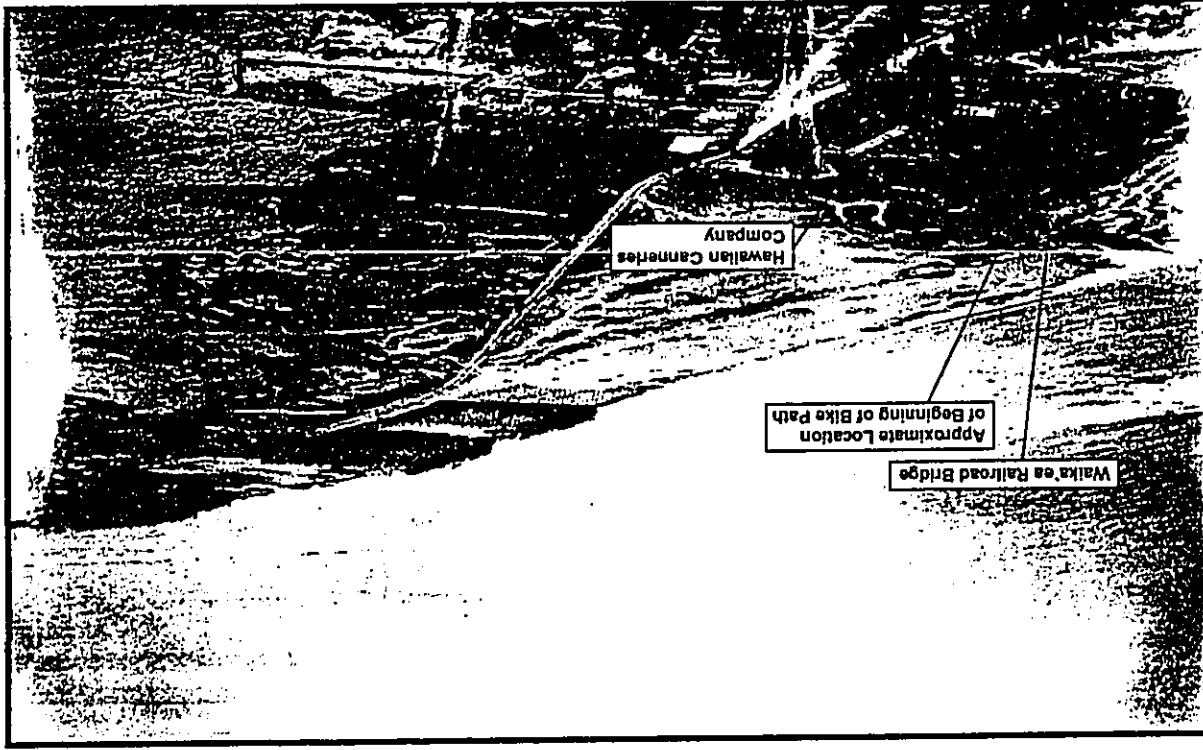


Figure 10 "Aerial View of Kapa'a, Hawaii, Looking Seaward" ca. 1924. Used with permission of Bishop Museum.

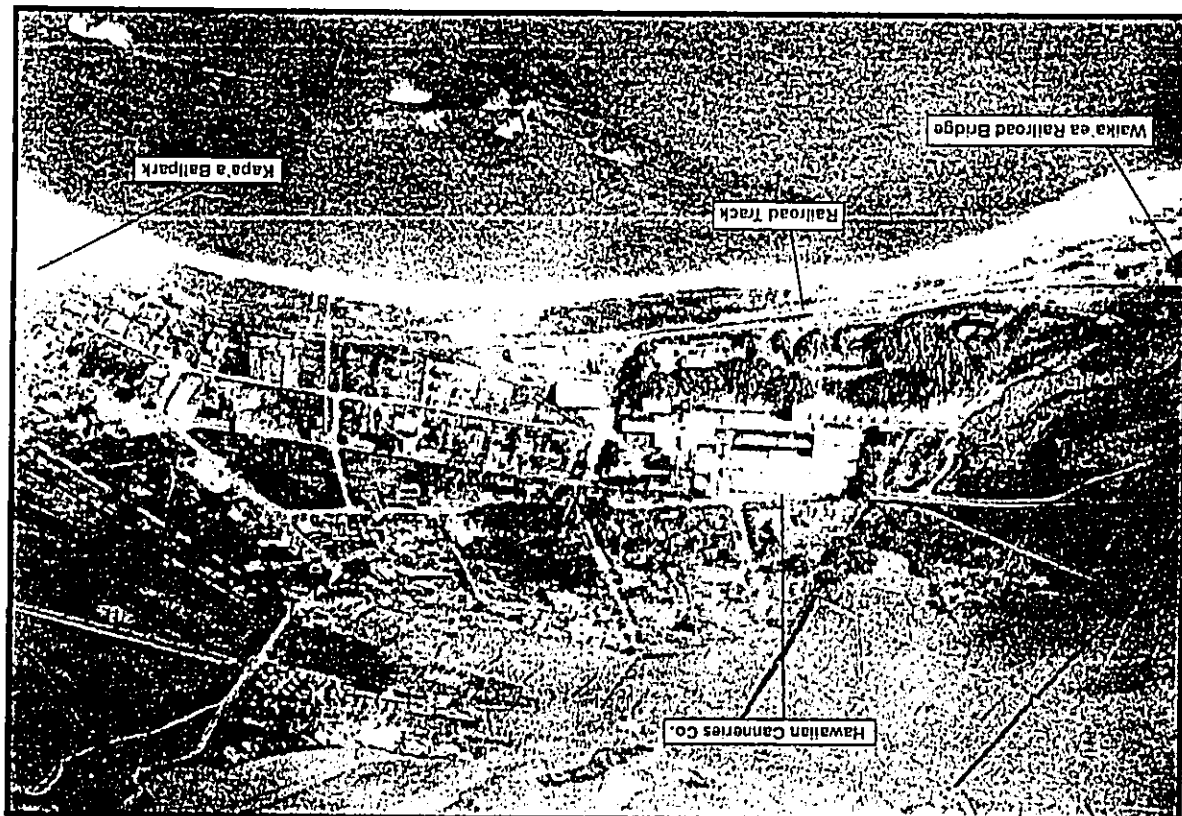


Figure 12 "Aerial View of Kapa'a, Hawaii, Looking Landward" ca. 1933. Used with permission of Bishop Museum.

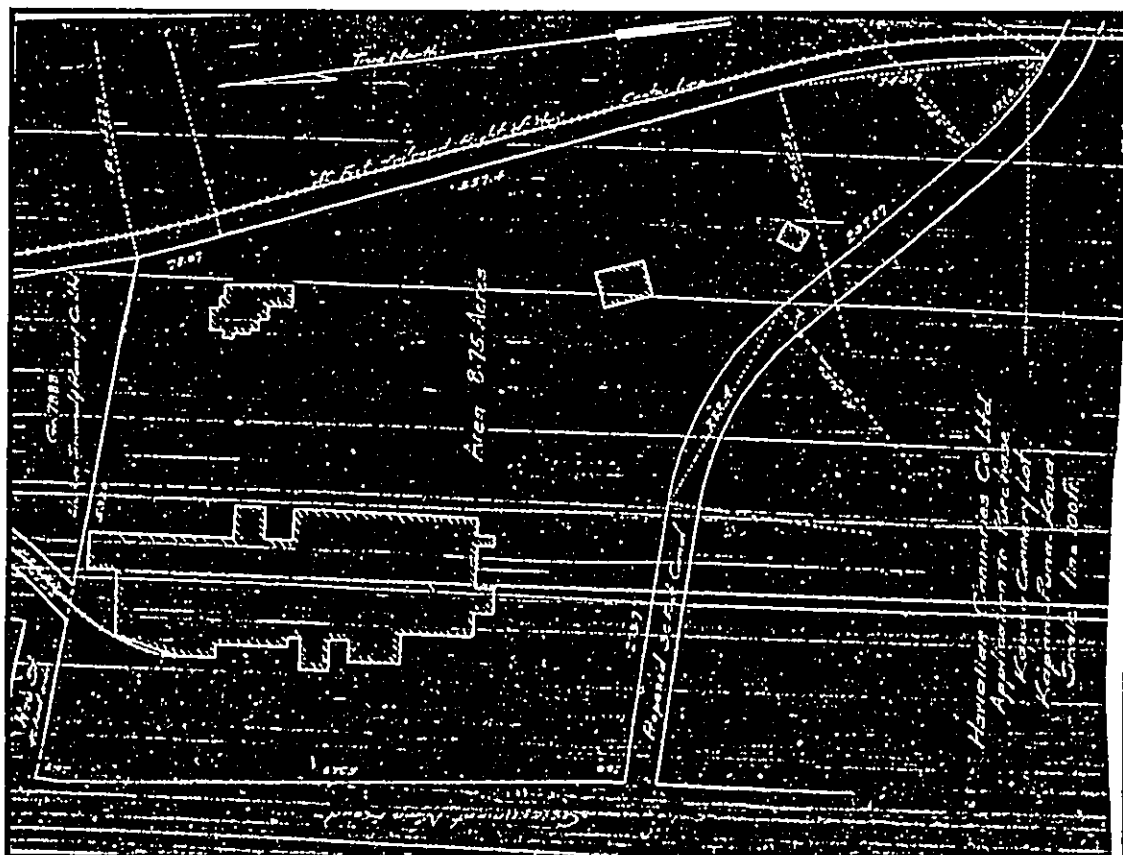


Figure 11 1923 Sketch of Land Purchased by Hawaiian Canneries Co. Note railroad alignment on right side of sketch. Bureau of Land Conveyances, Grant 8248.

G. Place Names of Kapa'a and Keālia

Place names and *wahi pana* ("legendary place" Pukui and Elbert, 1968: 376) are an integral part of Hawaiian culture. "In Hawaiian culture, if a particular spot is given a name, it is because an event occurred there which has meaning for the people of that time (Mc Guire, 2000: 17)." The *wahi pana* were then passed on through language and the oral tradition, thus preserving the unique significance of the place. Hawaiians named all sorts of objects and places, points of interest which may have gone unnoticed by persons of other cultural backgrounds.

Hawaiians named taro patches, rocks and trees that represented deities and ancestors, sites of houses and *heiau* (places of worship), canoe landings, fishing stations in the sea, resting places in the forests, and the tiniest spots where miraculous or interesting events are believed to have taken place. (Pukui, Elbert & Mookini 1974:x)

The following is a list of place names for Kapa'a, Keālia, Kumukumu and Hōmaikava'a mentioned in this report. This list is by no means considered to be complete. Place names were gathered from traditional literature (*mo'olelo*, chants) historical sources, maps and the *Māhele* records. Almost all of the 'ili names were taken from Land Commission Award records. Sadly, none of these 'ili names were documented on historic maps researched for this project and their meanings and cultural associations appear to be lost and forgotten.

Place Names of Hawai'i (Pukui et al., 1974) was used as the primary source for all place name translations. Where there were no known translations, a literal translation of the place name was made using the *Hawaiian Dictionary* (Pukui and Elbert, 1986). The intent of the author is to merely present the available information and let the reader come to his/her own conclusions.

An attempt was made to include the proper diacritical marks for all known and generally accepted translations of place names. Making incorrect assumptions about the pronunciation and where to place the diacritical marks in a name can entirely change the meaning of a name, (e.g. *pū ʻā ʻā* "scattered; to flee in disorder and fright"; *pua ʻā* "pig, pork"). Therefore, in cases where the pronunciation of a name was uncertain, diacritical marks were not used and no attempt was made to translate the name. In some cases, cultural relationships were made based on the literal translation of the root word.

One of the beauties of the Hawaiian language is the dualism in names and the double meanings – the literal meaning and the *kaona* or hidden meaning. It should be remembered that the true significance of a place name lies only with the people who use them and know their history.

The following abbreviations are used throughout the Place Names section for ease and efficiency. Please refer to the References section for complete citations.

LCA = Land Commission Award
PE = *Hawaiian Dictionary* by Pukui and Elbert, 1986
PEM = *Place Names of Hawai'i* by Pukui, Elbert and Mookini, 1974

In 1934, the Lihue Plantation Company absorbed the Ahukini Terminal & Railway Company and Makee Sugar Company (Condé and Best, 1973: 167). The railway and rolling stock formerly owned by Makee Sugar Company became the Makee Division of the Lihue Plantation. At this time, besides hauling sugar cane, the railroad was also used to haul plantation freight including "fertilizer, etc., canned pineapple from Hawaiian Canneries to Ahukini and Nawiliwili, pineapple refuse from Hawaiian Canneries to a dump near Anahola and fuel oil from Ahukini to Hawaiian Canneries Co., Ltd." (Hawaiian Territorial Planning Board, 1940:11). Former plantation workers and *kama ʻāina* growing up in Kapa'a remember when the cannery would send their waste to the pineapple dump, a concrete pier just north of Kumukumu Stream (State Site No. 50-30-08-789:H) by railroad. The structure is built over the water where the rail cars would dump the pineapple waste. The current would carry the waste to Kapa'a which would attract fish and sharks (Pers. communication J. & W. Kanteakua and R. Sugiyama, August 2002).

Lihue Plantation was the last plantation in Hawai'i to convert from railroad transport to trucking (Condé and Best, 1973: 167). "By 1957 the company was salvaging a part of their plantation railroad, which was being supplanted by roads laid out for the most part on or close to the old rail bed" (Ibid: 167). By 1959, the plantation had completely converted over to trucking. The Cane Haul Road which begins in the project area near the intersection of Haus'ala Road and Kūhiō Highway is thought to date to the late 1950s and follows the alignment of the old railroad until just before the end of the bike path near 'Ahihi Point.

Severe floods in Kapa'a in 1940 led to the dredging and construction of the Waikā'ea and Moikeha Canals sometime in the 1940s (Hawai'i Territorial Planning Board, 1940: 7). Although the Waikā'ea Canal, bordering the Kapa'a Pineapple Cannery, had been proposed as early as 1923, nothing was constructed until after the floods (Bureau of Land Conveyances, Grant 8248). A Master Plan for Kapa'a, published in 1940, asks the Territorial Legislature for funds to be set aside for the completion of a drainage canal and for filling *makai* and *mauka* of the canal (Hawai'i Territorial Planning Board, 1940:7). In 1955, reports came out on the dredging for coral proposed for the reef fronting Kapa'a Beach Park (Garden Island Newspaper, September 21, 1955). The coral was to be used for building plantation roads. This dredging was later blamed for accelerated erosion along Kapa'a Beach (Garden Island Newspaper, October 30, 1963). Today, there are several sea walls along the Kapa'a Beach Park to check erosion. Old time residents claim the sandy beach in Kapa'a was once much more extensive than it is now (Personal communication, N. Nagso, J. & W. Kanteakua, August 2002).

Keālia Town slowly dispersed after the incorporation of Makee Sugar Company into Lihue Plantation in the 1930s. Many of the plantation workers bought property of their own and moved out of plantation camps. The plantation camps which bordered Kūhiō Highway were disbanded in the 1980s. The Lihue Plantation began to phase out in the last part of the 20th century. In 1997, the entire *ahupua'a* of Keālia was sold off as an effort to downsize Amfac's landholdings and because Keālia is the most distant from the Lihue Plantation sugar mill, it was considered the least profitable (Honolulu Advertiser, July 7, 1997). The Lihue Plantation completely folded at the end of the 20th century. Kapa'a Town suffered after the closing of the Kapa'a Cannery, however the growing tourist industry helped to ease the economic effects of the Cannery's closing.

Place Names of Kapa'a, Keālia, Kūmukumu and Hōmaikawa'a

Achor's Reef	Name of the dredged area on reef between Kapa'a Swimming Pool and Moikeha Canal (Manoa Mapworks, 1983)	Kaea	<i>Wahi pana</i> associated with Palila and his banana grove located in the <i>manuka</i> region of Kawaihau district.
'Āhihi Point	Point at northern tip of proposed pedestrian and bike path; This place is associated with a supposed legend involving a <i>kupua</i> , half shark, half person; The place where a <i>menehune</i> , 'Ā'aka, skirmishes with a shark (Wichman, 1998:87)	Kaele'ele	Name of land division in Keālia (LCAs #10473, #1980).
Ākiana	Land division, possibly 'īhi in Keālia (LCA #10907)	Kahana	The name of a land, possibly an 'īhi in Kapa'a where uncultivated <i>lo'i</i> were claimed (LCA 03971). <i>Lit.</i> , cutting (PEM:63)
Āpopo	The name of a land division, possibly an 'īhi in Kapa'a in which <i>lo'i</i> and <i>kuia</i> lands were claimed (LCA #8843)	Kahue	Name of an 'īhi in Keālia (LCA #8834).
Āwawaloa	The name of a land division, possibly an 'īhi in Kapa'a in which <i>lo'i</i> were cultivated (LCA #8837)	Kaiakae/Kaikae	Name of area encompassing Kuahiahi Point. "kaikae: White sea foam, especially as washed up on a beach; ka'ike'a: Station of the cross (Catholic); procession of the cross" (P & E:116).
Āwikiwili	Land division, possibly 'īhi in Keālia (LCA #10907)	Kalalea	Anahola Mountain. "Hill inland of Anahola, Ka-wai-hau, Kaula'i, which has a conspicuous hole near the top said to have been pecked by Huhu, a supernatural bird, who wanted to see Anahola on the other side. Huhu could also change himself into man and <i>mo'o</i> . Another version, perhaps later, is that the Kaula'i hero, Ka-welo, threw his spear through this hole. According to another story, Ka-pūnohu cast the spear. <i>Lit.</i> , prominent." (PEM:74)
Donkey Beach	Small beach and bay adjacent to proposed pedestrian and bike path near northern end of pathway. Traditionally called Kūna, the beach was given this name during the plantation era when the plantation donkeys, used for planting cane, were placed in the fields <i>manuka</i> of this beach to feed.	Kalolo/Kaloko	The name of a village or houselot in Kapa'a Ahupua'a (LCA #3638, #8843)
Hahanuu/Kahanui	The name of an 'īhi in Kapa'a where <i>lo'i</i> were claimed (LCA #10564, #3554/3599)	Kaloloku	Name of swamp in back of Kapa'a and Waipouli.
Hala'ula	"Areas, Hanalei and Kawaihau districts, Kaula'i. <i>Lit.</i> , red pandanus" (PEM: 36); name of an historic plantation camp associated with Makee Sugar Company at Keālia.	Kalua'ihihihi	Name of area where Krull Dairy was located near Waipahe'e in Keālia in the mid 1800s (Kapa'a Elementary School, 1982); name of a fishing grounds in Puna district famed in chant (HEN: 215).
Hale'ēi	Name of a land division, possibly an 'īhi in Keālia (LCA #7966).	Kapalua	Place in Puna district famed in chant for its "broad-backed shrimp" (HEN: Kuokoa, May 1913).
Haulēi	Name of land division, possibly an 'īhi in Keālia (LCAs #8060, #1980).	Kapuka	Name of a place in Puna district famed in chant for its sea urchins (HEN: 215).
Hawaipahea	Land division, possibly 'īhi in Keālia (LCA #10907).	Kapuna	Name of 'īhi in Keālia (LCA #8061).
Hōmaikawa'a	"Stream and land division, Kawaihau district, Kaula'i. <i>Lit.</i> , give me the canoe" (PEM: 48); very few people living now have heard of this name.	Kapunakai	Name of 'īhi in Keālia (LCA #3413).
Huilua	Name of wind of Hōmaikawaa (<i>sic</i> . Hōmaikawa'a) [Fornander, 1916-1919: Vol. V, pp. 96, 97]	Kapuahola/Kapuaahole	Name of an 'īhi in Hōmaikawa'a (LCA #10689).
		Kauaha/Kanaha/Kaha	Name of land division, possibly 'īhi in Keālia (LCA #8842).
		Kaukuolono	Name of land division, possibly 'īhi in Keālia (LCA #10906).
		Kaunakakai	Name of land division, possibly 'īhi in Keālia (LCA #10628).

Maiaki'i
 Place in Puna district famed in chant for its "potent awa" (HEN: Kuokoa, May 1913)

Maiichuma/Maiichuma
 Name of hill where the present day Kapa'a School is located. Name of a former *heiau* at this location (HEN: 214).

Makaiwa
 Place in Puna district famed in chant for its surf break (HEN: Kū'oko'a, May 1913).

Makapono/Makahono
 Name of 'i'i in Keālia (LCA #8842).

Makiolo
 Place in Puna district famed in chant for its *imu* which yielded breadfruit (HEN: Kū'oko'a, May 1913) and yams (HEN: 211-216); 'iwa is also associated with this place (HEN: 211-216).

Malamalamaiki
 Name of wind of Keālia (Fornander, 1916-1919: Vol. V, pp. 96, 97)

Moalepi/Monalepe
 Hill in the *mauka* region of Keālia (HSA, Interior Dept., Land, June 23, 1862); land division, possibly an 'i'i in *mauka* region of Kapa'a claimed in LCA #8247

Moikeha Canal
 Canal which is traversed by two plantation era railroads near the present day Kapa'a Public Library and the Coral Reef Hotel

Naapakukui
 Land division, possibly an 'i'i in Kuumukumu (LCA #10660).

Niau
 Name of northern side of Keālia Bay and location of Keālia Landing; name of a place in Puna district famed in chant for its short, breaking surf (HEN: 215)

Opeka
 Tributary in the *mauka* region of Keālia (HSA, Interior Dept., Land, June 23, 1862)

Palikū
 Name of a seaside cliff on the southern end of Kuna Bay which is noted for fishing; some informants suggest there was once a *heiau* at this location (interview with H. Lovell & talk story with P. Rogers, August 2002).

Papaloa
 Name of small bay just north of project area popular for fishing, *imu* gathering and diving (Interview w/ H. Lovell, August 1, 2002); surfing and camping were also mentioned in association with this location (Talk Story w/ W. Kaneakua). The place is also popularly known as 14 Crack or Crack 14, named after the cane field number located just *mauka* of the bay.

Pauahi
 Name of an 'i'i in Keālia (LCA #10473).

Pohakuhapai
 Place in Puna district famed in chant for its "dark-backed shrimp" (HEN: Kuokoa, May 1913)

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Keahapuna
 Place in Puna district famed in chant for its "heavy taro" (HEN: Kuokoa, May 1913); area located up the Keālia River where Hawaiians continue to live and where taro was grown until recently (Interview w/ J. Ornellas, August 12, 2002).

Kealahipaa
 Name of an 'i'i in Keālia (LCAs #10149, #8060).

Keahu
 Name of wind of Kapa'a (Fornander, 1916-1919: Vol. V, pp. 96, 97)

Kuahihi/Kuahihi/
 Kuahihi
 Name of rocky headland at north end of Kapa'a *Ahiupua'a*; location of first Kapa'a School (1883-1908); location of former *heiau* called Kuahihi (HEN: 216); place where the legendary figure Paka'a, keeper of the wind gourd of La'amao, grew up and fished (Wichman, 1998: 85).

Kuatiula
 Name of a land division, possibly 'i'i in Keālia (LCA #10628)

Kuakahi/Kuakahi/
 Makuakahi
 Name of an 'i'i in Keālia (LCA #10473).

Kulehaole/Kulehaole/
 Kulihaele
 Name of an 'i'i in Keālia (LCA #8833).

Kumukumu
 "Land division, Kawaihau district, Kaula'i, Lili, stubs" (PEM: 124); possibly an old *ahupua'a* name in the ancient Puna District. Also the name of an historic plantation camp associated with Makee Sugar Company at Keālia.

Kuna
 Hawaiian name for "Donkey Beach" (Interview w/ H. Lovell and J. Priggs, 8/1/02).

Kupali'i
 Name of a pond in Puna district famed in chant for the rustling of the *maritene* grass (HEN: 211-216).

Kupanihi
 The name of a pond in the Puna district associated with Kaeo, Kaumuāli'i's older brother (HEN: 216); Name of fishpond and land in Kapa'a claimed in LCA #3971/3243.

Lapanui
 Name of a place in Puna district famed in chant for its stunted taro (HEN: 215); *Lapanui* is also listed as a variety of taro (P & E: 194); name of an 'i'i in Keālia (LCAs #8834, #10148).

Macle'e
 The name of a land division, possibly an 'i'i in Kapa'a in which *lo'i* were cultivated (LCA #3638)

Mahuaku/Mahuāli
 Name of 'i'i in Keālia (LCA #7966).

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appear in references to *wahi pana*, and legends associated with Kapa'a and Keālia. These include Mō Ikeha, Kaweloleimāua, Kawelomahai'a and Paka'a. Although the extent of Ka lulu O Mō Ikeha is not known, there is record that it encompassed the area near the old Makee Landing, near the present day Coral Reef Hotel. The bike and pedestrian path traverse this area. Paka'a, son of notable parents and guardian of the wind gourd, is thought to have grown up at Keahiahi, the rocky headland between Kapa'a and Keālia through which the bike path runs.

Historic records list a number of *heiau* situated in Kapa'a and Keālia suggesting the region was at one time much more significant than is portrayed by the *kuieana* records of the late 1840s and early 1850s. The specific locations of most of these *heiau* are unknown, however there are a few which carry the same names as *wahi pana* known to be located in the vicinity of the project area. These *heiau* include Kuahiahi (Keahiahi, Kaahiahi) at the rocky headland at the north end of Kapa'a and Kaluhoimōikeha in Kapa'a. Oral accounts attest to a *heiau* in the vicinity of Kuna Bay, although no further information was available.

Historic accounts suggest a fairly sparse population in Kapa'a with Hawaiians living in a series of small settlements, probably along the *aiānuī anupuni* (the Kūhiō Highway) which traversed a narrow sand berm. This sand berm created the *makaī* boundary of an inland swamp. Most of the *lo'i* claimed were situated on the *mauka* side of the Kapa'a swamp in shallow gulches or valleys. The more ample river valley of Keālia hosted a larger population with *kuieana* claims mostly dispersed along the Keālia River. There is one Land Commission Award adjacent to the project area at the north end of Keālia Beach and subsurface testing in this locale has yielded evidence of human occupation ranging from pre-contact times to the plantation era. According to historic documents, the plateau areas north of Keālia Valley were sparsely inhabited with areas bordering Kumukumu and Hōmaikawa'a Streams hosting the largest settlements.

The earliest successful economic enterprise by a Westerner in these *ahupua'a* was the Krull Ranch and Dairy, which operated in the Kumukumu area in the 1860s. The Krull Dairy was situated near Waipahē'e, well *mauka* of the coastal bike path. In 1877, the Makee Sugar Plantation was established in conjunction with the Hui Kawaihau, a group of prominent men from Honolulu, several of whom were retainers in Kalakaua's court. The Makee Plantation built a mill and landing at Kapa'a as part of the plantation infrastructure. *Kama'āina* from Kapa'a pointed out the Makee Landing, also known as the Kapa'a Wharf, once extended out of what is now a breakwater for the Moikeha Canal, just *makaī* of the bike path near the present Coral Reef Motel. Following the move of the Kapa'a mill to Keālia in 1885, a railroad was built from Makee Landing to Keālia with another railroad arm leading across the Moikeha drainage up Lehua Street and into the *mauka* regions of Kapa'a. The *Mauka* Moikeha Railroad Bridge (State Site No. 50-30-08-2078, Feature D) and the Old Keālia Railroad Bridge/Cane Haul Road (State Site No. 50-30-08-789A, Sub-Feature I) represent a part of the first railroad system constructed circa 1891 to transport sugar cane.

The Makee Sugar Plantation, operating out of Keālia, attracted hundreds of immigrant workers, first the Portuguese and Japanese and later, Filipinos. Kapa'a and Keālia towns sprung up around these immigrant groups. In addition, there were several plantation camps in Keālia, including in the plateau lands of Kumukumu and Hōmaikawa'a as well as homesteads in the Kapa'a, Waihua and Kapaahi areas. Many of the residential lots adjacent to the bike and pedestrian path in the Kapa'a area were auctioned off as Kapa'a Town Lots in the first part of the 20th century.

Name of low hillock in Keālia (HSA, Interior Dept., Land, June 23, 1862)

Name of a mountain in Puna district famed in chant for a place where clouds gather (HEN: 211-216); Mountain peak of Keālia (HSA, Interior Dept., Land, June 23, 1862)

Mountain peak of Keālia (HSA, Interior Dept., Land, June 23, 1862)

The name of a village or houselot in Kapa'a *Ahupua'a* claimed in LCA #3554/3599

Name of land division in Keālia (LCA #10473).

Hill in the *mauka* region of Keālia (HSA, Interior Dept., Land, June 23, 1862)

Name of a place in Puna district famed in chant for the mountain apple found there (HEN: 215)

Waikā'ea is a canal and boat ramp in Kapa'a at the south end of the proposed pedestrian and bike path (Clark, 2002:374). A place described as being located in the uplands near Nonou (HEN Placenames, Kuokoa, May 2, 1913).

Name of a stream and school located near the old Makee Landing near the present day Moikeha Canal (HEN Placenames, Kuokoa May 9, 1913). The name mahanalua suggests the stream was forked and fed by multiple streams which could well be the case since the backlands of Kapa'a were swamp lands fed by many streams.

"Trail and waterfall providing a natural slippery slide, Kawaihau District, Kapa'a i. *Li*, slippery water" (PEM: 227).

Name of an *ʻili* and fishpond in Keālia (LCA #08833).

The name of a houselot or village in Kapa'a (LCA #08837)

II. Summary of historic documentation associated with the proposed bike path

The Kapa'a to Keālia Bike and Pedestrian Path traverses through the *ahupua'a* of Kapa'a and Keālia, part of the ancient Puna District. Legends, traditional accounts and *wahi pana* point to an area rich in pre-contact history, although it seems much of this history has been lost. Accounts name several *ahupua'a* and known *akua* in reference to places in Kapa'a and Keālia such as Pailia, Hi'iaka and Wāhine'ōmao and 'A'aka, the *menehune*. 'A'aka, the *menehune* skirmishes with a shark at 'Ahihi Point, near the terminus of the bike path. In addition, several persons of high status

III. PREVIOUS ARCHAEOLOGICAL RESEARCH

A. Archaeological Studies and Sites in Kapa'a Ahupua'a

The following two tables outline the archaeological research (Table 5) and historic properties (Table 6) identified in Kapa'a Ahupua'a. These tables are followed by discussion of the research and historic properties. Table 5 provides a list of archaeological research conducted within Kapa'a Ahupua'a, including columns for source, location, nature of study, and findings. The locations of these archaeological studies are shown in Figure 13. Table 6 is a list of known historic properties within the ahupua'a and includes columns for state site numbers, site type, location and reference. The locations of identified sites within Kapa'a Ahupua'a are shown in Figure 14.

Table 5: Previous Archaeological Studies in Coastal Kapa'a (Figure 13)

Source	Location	Nature of Study	Findings
Bennett 1931	Island-wide	Archaeological Reconnaissance	Identifies 2 sites: Site 110 Taro terraces and bowl and Site 111 A large simple dirt Hawaiian ditch
Handy and Handy 1972	Archipelago-wide	Native Planter study	Discusses "highly developed irrigation system"
Chung 1976	Just south of the Waikaea Drainage Canal	Archaeological Reconnaissance	No significant findings
Hammatt 1981	Upland Kapa'a	Archaeological Reconnaissance	No significant findings
Hammatt 1986	Upper reaches of the Makalaha stream valley.	Archaeological Reconnaissance	No significant findings
Hammatt 1991	Along Kūhiō Highway	Subsurface Testing	Identifies two sub-surface cultural layer sites
Kikuchi and Renoaldo 1992	Around Kapa'a Town	Cemeteries of Kapa'a	Identifies six cemeteries
Spear 1992	South side Waikaea Canal, mauka of Kūhiō Highway. (TMK: 4-5-05-04, 09)	Monitoring Report	Designated subsurface site 50-30-08-547

The pineapple industry made its debut in Kapa'a in 1913, with the opening of Hawaiian Cannery Companies, Ltd. A cannery was constructed on land north of Waikaea Canal and adjacent to the bike path. This cannery was in business for almost fifty years and made use of the railroad track which fronted it to transport pineapple to Ahukini Landing for shipment and also to send pineapple waste to the "pineapple dump" north of Keālia. Local residents remember the strong smell of the pineapple waste which floated down the coast with the current, producing good fishing and attracting sharks. In 1920, Ahukini Terminal & Railway Company extended the railroad from the Moikeha Canal area in Kapa'a to the Ahukini Landing in Hanama'ulu which became the new central terminal for shipping of agricultural goods. Lihue Plantation took over the Ahukini Terminal & Railway Company and the Makes Plantation in 1934.

By the late 1950s, the railroad gave way to truck roads. The local newspaper reports dredging coral from the Kapa'a reef to be used for building plantation roads. A good portion of the railroad alignment in Kapa'a was abandoned, however a cane haul road was constructed near the intersection of Haus'ala Road and Kūhiō Highway. The Lihue Plantation finally went out of business at the end of the 20th century and the cane haul road was abandoned. As an economic force, tourism has taken the place of agriculture in the last several decades. The old railroad alignment in the Kapa'a Town area was converted into a bike path in the 1980's extending from the Waikaea Canal to the Smokey Louie Swimming Pool. The path was paved with asphalt and minor modifications were made to two of the Railroad Bridges, the Waikaea Railroad Bridge and the Makal Moikeha Railroad Bridge. Although this is the only paved portion, the entire proposed route including the paved bike path and the old cane haul road has been used by pedestrians, bicyclists, motor cyclists and horse back riders for years.

Source	Location	Nature of Study	Findings
Chaffee, Burgett & Spear 1994a	A houselot near the corner of Kukui and Ulu Streets in <i>manuka</i> Kapa'a Town. (TMK: 4-5-09:10)	Archaeological Inventory Survey	No significant findings
Chaffee, Burgett & Spear 1994b	Māmane Street Kapa'a Town. (TMK: 4-5-09:51)	Archaeological Inventory Survey	No significant findings
Hammatt, Ida & Chiogioji 1994	Proposed bypass routes <i>manuka</i> of Kapa'a Town	Archaeological Assessment	No new field work, reviews literature
Hammatt, Ida & Folk 1994	South side Waikaea Canal, <i>manuka</i> of Kūhiō Highway (TMK: 4-5-05:06)	Archaeological Inventory Survey	Weak cultural layer designated site 50-30-08-748
Kawachi 1994	Inia Street (Jasper) TMK 4-5-08:33	Burial Report	Designates Site 50-30-08-871
McMahon 1994	"behind the armory in Kapa'a near the godstones" The location is uncertain & "Buzz's near the Coconut Marketplace"	Documents second hand report of burials in two locations	Bones in 3 places reported from behind the armory, 16 bodies reported from the Buzz's restaurant. No site numbers assigned
Creed, Hammatt, Ida, Masterson & Winiateski 1995	Kapa'a Sewerline project, Kūhiō Highway, south and central Kapa'a Town	Archaeological Monitoring Report	Documents cultural layer of site -1848 and (an enlarged) site -1849 & recovery of thirty burials at sites -867, -868, -871, & -1894
Jourdane 1995	1382-A Inia Street, <i>makai</i> of Kūhiō Highway, central Kapa'a Town	Burial Report	Site 626
McMahon 1996	South side Waikaea Canal, <i>manuka</i> of Kūhiō Highway (TMK: 4-5-05:08)	Archaeological Inventory Survey	No significant cultural material

Source	Location	Nature of Study	Findings
Hammatt, Chiogioji, Ida & Creed 1997		Archaeological Inventory Survey	Four test trenches were excavated inland of Kapa'a Town
Borthwick and Hammatt 1999	Kapa'a Seventh-Day Adventist Church at 1132 Kūhiō Highway.	Archaeological Monitoring and Burial Treatment Plan	Monitoring was indicated as this parcel lay within the designated Site 50-30-08-1848.
Bushnell and Hammatt 2000	Seventh-Day Adventist Church, <i>makai</i> of Kūhiō Highway, south of the Waikaea Canal	Archaeological Monitoring Report	Minimal findings (one piece of worked bone)
Callis 2000	Kapa'a Beach Park	Human Burial Removal and Archaeological Monitoring Report	
Perzinski & Hammatt 2001	Kūhiō Highway on the margins of the Waikaea Canal	Archaeological Monitoring Report	No significant cultural material

Table 6: Historic Properties in Coastal Kapa'a Ahupua'a (Figure 14)

Site # 50-30-08-	Site Type/ Name (if any)	Location	Site Constraints	Reference
B001	Historic Cemetery	South of bend of Kapa'a Stream, a kilometer mauka from Kūhiō Highway	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B002	Historic Cemetery	Just mauka from Kūhiō Highway, south of Kapa'a Stream	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B003	Kapa'a Public Cemetery	South of Kanaele Road, approximately one kilometer inland of Kūhiō Highway	Appears to be a discrete historic cemetery	Kanaele Road; Kikuchi and Remoaldo 1992
B004	Historic Cemetery	North of Apopo Road, approximately one kilometer inland of Kūhiō Highway	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B013	Historic Cemetery	Just mauka from Kūhiō Highway, north of the Waikaea Canal	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992
B014	All Saints Episcopal Church Cemetery	Just mauka from Kūhiō Highway, south of the Waikaea Canal	Appears to be a discrete historic cemetery	Kikuchi and Remoaldo 1992:62-65
-547	sub-surface features including a firepit and a possible house foundation	South of bend of Waikaea Canal, mauka of Kūhiō Highway	Archaeological monitoring in the vicinity is recommended	Spear 1992:3
-626	Burial	Inia Street, makai of Kūhiō Highway, central Kapa'a	Consultation and monitoring in vicinity indicated	Jourdane 1995
-748	Minimal findings, a weak cultural layer (buried A-horizon)	South of the bend of the Waikaea Canal, mauka of Kūhiō Highway	Considered no longer significant within project area	Hammatt, Ida & Folk 1994
-867	1 set of human remains	Kukui Street, just mauka of Kūhiō Highway, Kapa'a Town	Consultation and monitoring in vicinity indicated	Creed et al. 1995:50

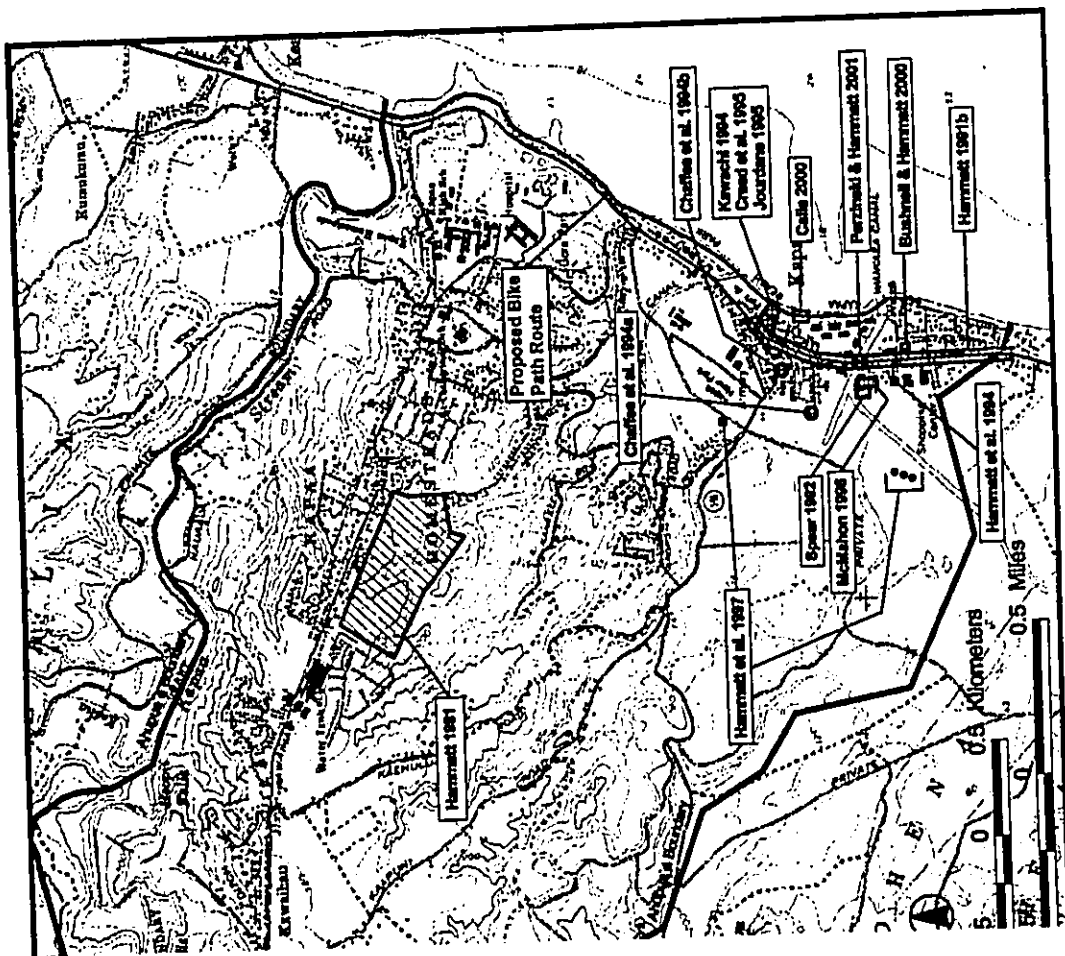


Figure 13 Previous Archaeological Studies in Kapa'a.

Site # 50-30-06	Site Type/Name (if any)	Location	Site Constraints	Reference
-868	1 set of human remains	Lehua Street <i>maka'i</i> of Kūhiō Highway, Kapā'a Town	Consultation and monitoring in vicinity indicated	Creed <i>et al.</i> 1995:50
-871	13 sets of human remains (Creed <i>et al.</i> 1995:50)	Inia Street, <i>maka'i</i> of Kūhiō Highway	Consultation and monitoring in vicinity indicated	Kawachi 1994, Creed <i>et al.</i> 1995:50
-1848	Cultural layer & sub-surface features	Along Kūhiō Highway between Wana Road and the Waikāea Drainage Canal	Archaeological monitoring in the vicinity is recommended	Hammett 1991; Creed <i>et al.</i> 1995
-1849	Cultural layer & sub-surface features; Creed <i>et al.</i> 1995:53 expands boundaries to incl. burial sites, -626, -867, -868 - 871, and -1894	Along Kūhiō Highway between Inia Street and Kauwila Street extending to the coast	Consultation and monitoring in vicinity indicated	Hammett 1991; Creed <i>et al.</i> 1995
-1894	11 sets of human remains	Ulu Street, just N of Kūhiō Highway, Kapā'a Town	Consultation and monitoring in vicinity indicated	Creed <i>et al.</i> 1995:50

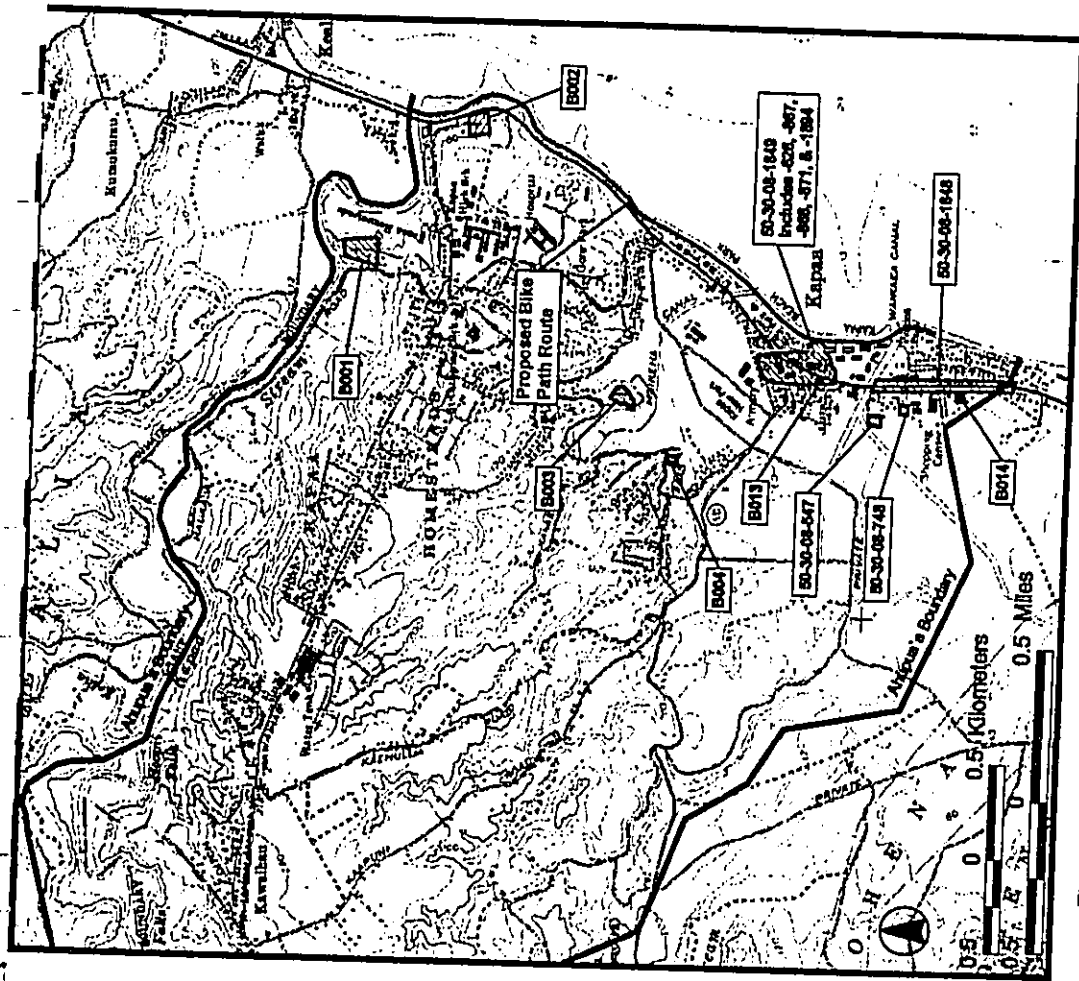


Figure 14 Historic Properties in Coastal Kapā'a *Aupuni* 'a.

Pattern of Archaeological Sites in Kapa'a

The pattern of archaeological studies in Kapa'a *Ahupua'a* is somewhat skewed with a dozen projects in urban Kapa'a Town and very little work along the coast. Major archaeological sites have been found in the Kapa'a Town area including extensive cultural layers with burials and other cultural features underlying Kūhiō Highway near All Saints Gym and near the older part of Kapa'a Town between Waikā'e Canal and Kapa'a Beach Park, *maka'a* of Kūhiō Highway (Hamnatt 1991; Kawachi 1994; Creed *et al.* 1995; Jourdan 1995; Callis 2000). The *maka'a* extent of these cultural layers has not been clearly defined. These extensive cultural deposits associated with pre-historic and early historic habitation are known to exist in a relatively narrow sand berm that makes up the physiogeography of Kapa'a. The areas *maka'a* of Kapa'a Town are marshy although much of it has been filled in recent decades. The five *āieana* awarded during the *Māhele* are located adjacent to the present highway. The more *maka'a* studies (Spears 1992; Chaffee *et al.* 1994a & 1994b; Hamnatt *et al.* 1994, 1997; McMahon 1996) are thought to be located towards the *maka'a* fringe of the sand berm, approaching more marshy conditions and have generally reported no significant or minimal findings. Less than 1.5 km to the south of Waikā'e Canal is another extensive subsurface, cultural deposit which is associated with a pre-contact fishing encampment located at the southern boundary of Waipouli adjacent to Uhalakawa'a Stream (Waipouli Stream) and the ocean (Hamnatt *et al.* 2000).

B. Archaeological Studies and Sites Keālia *Ahupua'a*

The following two tables outline the archaeological research (Table 7) and historic properties (Table 8) identified in Keālia *Ahupua'a*. These tables are followed by discussion of the research and historic properties. Table 7 provides a list of archaeological research conducted within Keālia *Ahupua'a*, including columns for source, location, nature of study, and findings. The locations of these archaeological studies are shown in Figure 15. Table 8 is a list of known historic properties within the *ahupua'a* and includes columns for site numbers, site type, location and reference. The locations of identified sites within Keālia *Ahupua'a* are shown in Figure 16.

Table 7: Previous Archaeological Studies in Coastal Keālia *Ahupua'a* (Figure 15)

Source	Location	Nature of Study	Findings
Handy and Handy 1972	Archipelago-wide	Native Planters Study	Emphasizes that agricultural production was rather clumped along the Keālia side of Kapa'a Stream seaward of its confluence with Keālia Stream.
Folk & Hamnatt 1991	Bend of the Kapa'a River, just inland of Kūhiō Hwy. Site 50-30-08-1851	Archaeological Assessment	Burial finds from Site 50-30-08-1851; noted the presence of historic artifacts and traditional Hawaiian midden in the vicinity. Also noted extensive disturbance from sand mining

Source	Location	Nature of Study	Findings
Handy and Handy 1972	Archipelago-wide	Native Planters Study	Emphasizes that agricultural production was rather clumped along the Keālia side of Kapa'a Stream seaward of its confluence with Keālia Stream.
Hibbard 1991	Bend of the Kapa'a River, just inland of Kūhiō Hwy. Site 50-30-08-1851	Reports field check of Nancy McMahon	Recommends further work (Site 50-30-08-1851)
Komori 1993	Palikū Beach (Donkey Beach)	Burial Report	Burial given site number 50-30-08-1899.
Jourdan and Collins 1996	Bend of the Kapa'a River, Site 50-30-08-1851	Burial Report	Burial finds from site 50-30-08-1851
Hamnatt & Chiogioji 1998	Keālia <i>Ahupua'a</i>	Archaeological Assessment	Concludes lands formerly in cane or pineapple cultivation should be relatively free of cultural resources
Hamnatt & Shideler 1998	Keālia <i>Ahupua'a</i>	Traditional Cultural Practices Study	Notes customary practice issues associated with the coast, streams and burials.
Perzinski, McDermott & Hamnatt 2000a	<i>Maka'a</i> of Kūhiō Hwy., south Keālia <i>Ahupua'a</i>	Archaeological Inventory Survey	3 significant historic properties: Site 50-30-08-789 consists of 14 plantation era features; Site 50-30-08-790 consists of two World War II defensive features and burial site 50-30-08-1899 included three additional burials in the same general location as Komori's (1993).
Perzinski, McDermott & Hamnatt 2000b	Palikū Beach (Donkey Beach)	Burial Treatment Plan	Discusses treatment for burial site 50-30-08-1899

Table 8: Historic Properties in Coastal Kealia Ahupua'a (Figure 16)

Site # 50-30-08	Site Type/Name (If any)	Location	Site Constraints	Reference
-789	14 plantation era features which included roads, stone walls, bridges, a bunker, terraces, a jetty and a pier.	Located <i>makai</i> of Kūhiō Hwy, below the agricultural tablelands on the low ridge just north of Ahiihi Point	No further work recommended, not recommended for preservation	Perzinski, McDermott & Hamratt 2000a:95
-790	Two World War II defensive features; Feature A, a concrete foundation & Feature B, a probable fox hole	Located <i>makai</i> of Kūhiō Hwy, in the vicinity of Palikā Beach.	No further work recommended, not recommended for preservation	Perzinski, McDermott & Hamratt 2000a:95
-1851	Burials, historic artifacts and traditional Hawaiian midden	Bend of the Kapa'a River, just inland of Kūhiō Hwy	Recommends abandonment of sand excavation due to presence of human bones, Consultation and monitoring in vicinity indicated	Folk & Hamratt 1991:2, Jourdaine and Collins 1996
-1899	Burials	Located along edge of high water, 400 m <i>makai</i> of Kūhiō Hwy at Palikā Beach (Donkey Beach) just N. of Palikā Point	65 m by 50 m, long axis along coast, seaward of former railroad; to be preserved, Consultation and monitoring in vicinity indicated	Komori 1993; Perzinski, McDermott & Hamratt 2000a,b

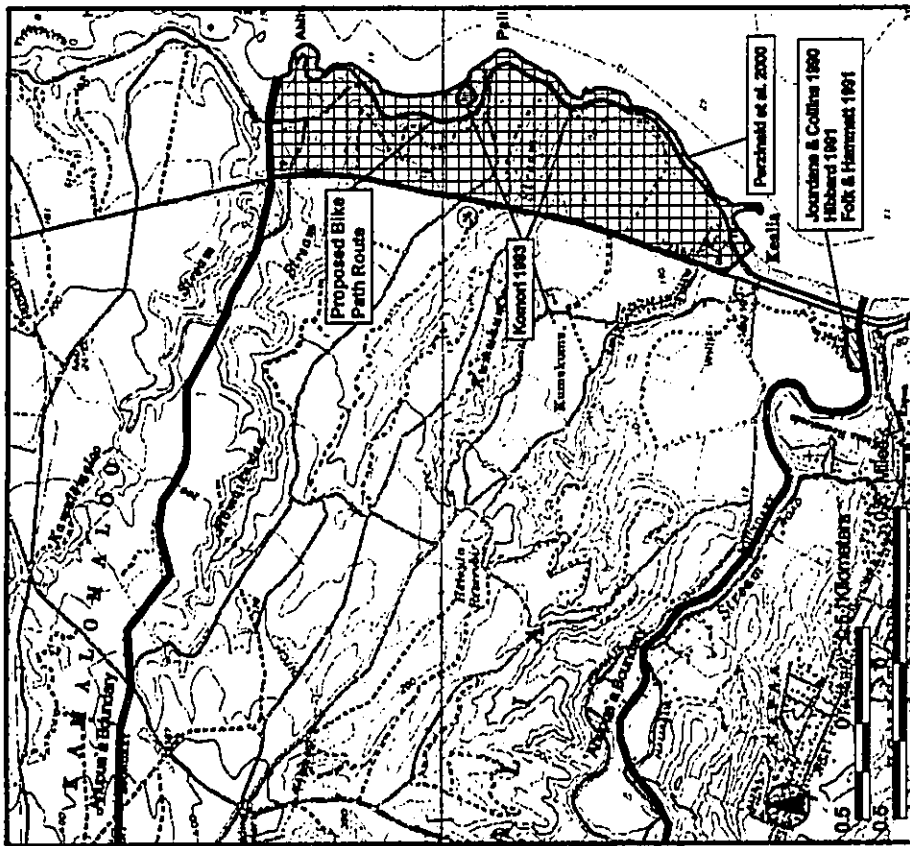


Figure 15 Previous Archaeological Studies in Coastal Kealia Ahupua'a.

Pattern of Archaeological Sites in Keālia

Two inadvertent burial finds were documented in a large sand deposit at the bend of the Kapā'a River and were assigned State Site # 50-30-08-1851 (Figure 17). Sand dune burials and an associated cultural layer were documented at "Donkey Beach" (Perzinsky *et al.* 2000). Plantation era infrastructure and agricultural features have also been noted in coastal Keālia. Large area surveys of inland Keālia have documented extensive commercial agricultural landscape alterations. Sites such as traditional Hawaiian habitation and associated agricultural features have been noted in valley areas where plantation era cultivation did not occur.

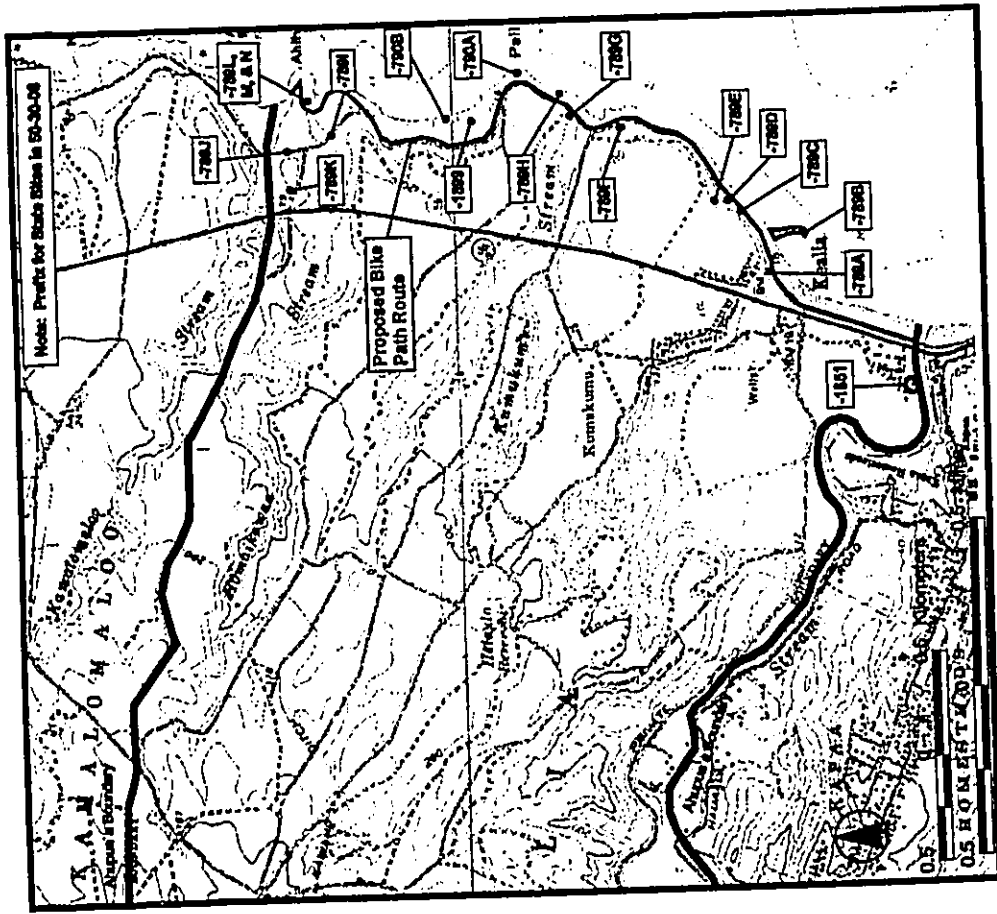


Figure 16 Historical Properties in Coastal Keālia Ahupua'a.

Table 9: Results of Community Consultations

Key:
 Y=Yes
 N=No
 A=Attempted (at least 3 attempts were made to contact individual, with no response)
 S=Some knowledge of project area
 D=Declined to comment
 U=Unable to contact, i.e., no phone or forwarding address, phone number unknown

Name	Affiliation	Contacted	Personal Knowledge (Y/N/S)	Comments
Ahahui Ka'ahunanu		U		No known phone number, contact person
Aiu, Dr. Pua	Office of Hawaiian Affairs	Y	N	Recommend doing ethnographic study along with archaeological inventory survey
Akana, Kaipo	Kaua'i Archaeologist	Y	N	Made referral
Ako, Val	Kapa'a resident	Y	S	Fisherman originally from Kona, Hawai'i, however aware of fishing practices along Kapa'a and Kealia and traditional knowledge regarding fishing
Baptiste, Bryan	Kaua'i County Council	Y	S	Made referrals
Bettencourt, Lurline	From Kapa'a Family	Y	S	Family has roots in Kapa'a
Bushnell, Andrew	Kaua'i Health Heritage Coastal Corridor Committee	Y	S	Made referrals
Castillo, Kauli	QLCC-Kaua'i Unit	Y	N	
Ching, Milton	Kapa'a Resident	A		Supposed lineal descendant to known burials in vicinity of project area

Name	Affiliation	Contacted	Personal Knowledge (Y/N/S)	Comments
Cummings, Ruby	Anahola Resident	Y	S	Made Referrals
Ferguson, Scott	Kapa'a Resident	Y	S	Lives near the Lihī
Haigh, Douglas	City and County of Kaua'i, Building Division	Y	N	
Ida, Gerald	Kaua'i Archaeologist	Y	N	Made Referrals
Kalama, Nathan	Kumu Hula	D		
Kaneakua, James	Kapa'a Resident	Y	Y	Interviewed August 1, 2002 with brother William
Kaneakua, William	Kapa'a Resident	Y	Y	Interviewed August 1, 2002 with brother James
Kaneholani, Jerry	Waika'ea Ohana	Y	Y	Have concerns regarding Waika'ea Canal and pedestrian bridge
Kapa'a Library	Kapa'a Library	A		
Kapaka-Arboleda, La France	OHA, Kaua'i Island Burial Council	Y	Y	Aware of burial issues in the area and made referrals
Kawada, Hazel	Kapa'a First Hawaiian Church	Y	S	Receptionist at Church. Grew up in Kealia. Did not have referrals.
Kekua, Kehau	Ilio'ulaokalani (Kaua'i)	A		
Kikuchi, Dr. William	Kaua'i Archaeologist	Y	S	Made referrals
Lovell, Carol	Kaua'i Museum	Y	N	
Lovell, Jane	Anahola Resident	Y	Y	Kupuna from Anahola; included in interview with husband, Josiah Lovell, August 1, 2002

Name	Affiliation	Contacted	Personal Knowledge (Y/N/S)	Comments
Lovell, Hosea	Anahola Resident	Y	Y	<i>Kupuna</i> from Anahola; familiar with traditional fishing practices and places particularly in Anahola; interviewed August 1, 2002; husband to Jane Lovell
Lovell-Obatake, Cheryl	Kaua'i Resident	A		
Lydgate, John	Kapa'a Resident	Y	N	Made referral
McEldowney, Holly	SHPD-Culture and History Branch	Y	N	Made comments regarding resource areas
McMahon, Nancy	SHPD-Kaua'i Archaeologist	Y	Y	Has knowledge of some archaeological and burial concerns; made referrals
Meatoga, Ko'olau	Kapa'a Resident	Y	Y	Avid fisherman who lives adjacent to bike path near Kapa'a Beach Park. Takes care of <i>niiu</i> he planted along the coast in Kapa'a area
Murakami, Tracy	Kapa'a Resident	Y	S	Made referrals
Okashige, Leilani	Kapa'a Resident	Y	S	<i>Kupuna</i> who fishes for <i>oama</i> at the Lihī
Ornellas, John	Anahola Resident	Y	Y	Grew up in Keālia; family from Keahapana and Halaula in Keālia; interviewed August 12, 2002
Pa, Kekane	Activist and former security guard for Keālia Kai Subdivision	U		No forwarding address or known telephone number
Pascua, Raymond	Kapa'a Resident	Y	Y	Grew up in Keālia Camp
Prigge, Joseph	Kapahi Resident	Y	Y	Involved in Keālia Kai; maintaining access for local folks; interviewed with J. Lovell on August 1, 2002

Name	Affiliation	Contacted	Personal Knowledge (Y/N/S)	Comments
Rausch, Wendy	Kapa'a Resident	Y	N	Lives adjacent to path at Kapa'a Beach Park
Requillman, Mary	Kaua'i Historical Society (KHS)	Y	S	Made referrals; helped access historic photographs
Rogers, Nani	Hui Ho'okipa o Kaua'i	Y	Y	Comes from old time Kapa'a/Keālia family
Santos, Pearl	Anahola Resident	Y	Y	<i>Kupuna</i> knowledgeable of gathering practices on coast north of Keālia Beach, particularly on the Anahola side; older sister of Emmaline White
Sugiyama, Richard	Kapa'a Resident	Y	S	Grandparents owned and operated historic Kawamura Store in Kapa'a Town
Tokioka, Edward	Kapahi Resident	Y	S	Familiar with the Lihī
Tsuchiya, Rick	Kaua'i Historic Preservation Review Commission (KHPRC)	Y	N	KHPRC met on August 1, 2002; no new information to offer regarding trad. cultural practices in Kapa'a and Keālia
Wann, Presley	Kaua'i Island Burial Council	Y	S	Made referral
White, Emmaline	Anahola Resident	Y	Y	<i>Kupuna</i> knowledgeable of gathering practices on coast north of Keālia Beach, particularly on the Anahola side; younger sister of Pearl Santos
Wichman, Randy	KHPRC	A		Involved in Kapa'a Tours/KHS
Yent, Martha	HI State Archaeologist	Y	N	Made referral
Yokotake, Sherri	Anahola Resident	Y	S	Made referrals

Name	Affiliation	Contacted	Personal Knowledge (Y/N/S)	Comments
Yoshida, Miles	Kapa'a Resident	Y	Y	Grew up in plantation camp in Kealia

B. Biographical Sketches of the Interview Informants

The following biographical sketches of the five interviewees serve to introduce the reader to the informants.

Joseph Prigge

Born in 1956, Joseph Prigge is the youngest of the interviewees. He grew up in the mauka area of Kapa'a near Makaleha Mountain and continues to live there today. Joe attended Kapa'a School through high school, graduating in 1974. In the late 1970s, he moved to Seattle to work in the shipyards and later spent several years in Los Angeles. Returning to Kapa'a after Hurricane Iniki in 1993, Joe became involved in several community/environmental/cultural issues including Makaleha Springs, Kealia Water Study, and Hanalei Boating Issue. In the late 1990s when the ahupua'a of Kealia came up for sale and beach access was blocked, Joe became involved in negotiations to maintain beach access open to the community. He was instrumental in leading us to other interviewees for this project. Joe continues to give back to the community in his work with youth at Hale O'opio and Hina Mauka.

James and William Kaneakua

James and William were both born in Kapa'a, James in 1929 and William in 1935. Their parents were James N.P. Kaneakua and Louise Kamanuwai. The two brothers along with four other brothers and sisters grew up on Mamane Street on a Hawaiian Homelands lot granted to their grandfather, John 'Umu' iwi, remembered fondly as Tūū Mi. Both brothers have vivid memories of the railroad which once ran through Kapa'a Town along the coast. Both brothers grew up playing and fishing along the coast and are also familiar with the mauka region of Kapa'a, after living there for a stint in the 1930s. Retired from Smith's Bus Transit, James now farms a few acres in the mauka areas of Kapa'a, Wailua Homesteads with his wife, Beverly. Although William has moved away from Kapa'a, he continues to visit almost daily. We found him one day fishing for 'oama from the bike path at Moikeha Canal along with his wife and grandchildren.

John Ornellas

John Ornellas Jr. was born in Lihue, Kaua'i in 1941, just days after the beginning of World War II. He grew up near the sugar mill in Kealia in a large family. His Portuguese father, John Ornellas was originally from Hala'ula, a plantation camp north of Kealia Valley and his Hawaiian mother, Harriet Kani, was originally from Keahapana in Kealia Valley. John has good memories of visiting his grandparents in Keahapana and working on the family land including in the taro lo'i. John attended Kapa'a School graduating from Kapa'a High in 1959. He got married soon after high school and began raising a family which today consists of four children and five grandchildren. After high school, he worked for times for the pineapple cannery in Kapahi and in construction. In 1962, John began working for Lihue Sugar Plantation as a sprayer and later moved into heavy equipment becoming an operator. In his spare time, he continued the family tradition as a cowboy and raised cattle in Keahapana, Kealia. Although Lihue Plantation is no longer in business, John continues working in heavy equipment. He can often be found in the afternoon talking story at Kealia Beach, his old stomping grounds.

Hosea Lovell

Hosea Lovell is one of the oldest kupuna of Anahola, born and raised there. He grew up fishing with his father and uncles and retains much of the knowledge passed down to him by his family. Uncle Hosea still lives on the land where he was born. Uncle Hosea started school first at Anahola School, later transferring to Kapa'a, and finally graduating from Kapa'a High School in the early 1940s. Following high school, Hosea joined the Navy and was discharged in 1946. He returned to Anahola and spent a year living on the beach and fishing. He spent some years doing odds and ends, including commercial fishing. He eventually obtained a job from the University of Hawai'i Experimental Station, retiring as Farm Manager in the early 1980s. He continues to be an active fisherman, kupuna, and supporter of the larger Hawaiian community.

V. CULTURAL RESOURCES/TRADITIONAL PRACTICES

A. Marine Resources

The entire length of the proposed pedestrian and bike path parallels the ocean and thus, it is no surprise that potential impacts to marine resources were a commonly expressed concern by informants. Traditionally, the ocean area is a fundamental resource for Hawaiian families for the gathering of food, recreation as well as spiritual expression. The ocean fronting Kapa'a and Keālia continues to be frequented by the local population for fishing and gathering (Figures 18 and 19). Fishing and gathering conditions from Kapa'a to Keālia range from the extensive shallow reef fronting Kapa'a to the sandy bays of Keālia and Kūna to the wave washed, rocky coastlines at Kuahāhi Point north of Kapa'a Town and north of Keālia Landing.

1. Kapa'a

In the Kapa'a area, *kama ʻāina* made reference to several types of fishing including shoreline casting, fish trapping, throw net, *hukilau*, *lamalama* or torching and "poking tako". Some of these are no longer practiced such as the *hukilau* method of fishing which took place occasionally in the area fronting the present day Pono Kai Resort. *ʻŌio*, *ʻūua*, *manini*, *pāpio*, *weke* were all identified in association with shoreline casting. One long time fisherman pointed out that the Kapa'a reef was home to several species of the *limu* eating fish such as *kala*, *ʻūua* and *nemue*. *Moi ʻi* was once plentiful along the shoreline during the summer season. Crabbing continues to be very popular in the ocean and at the river mouths. Three varieties of *limu* were commonly found along the Kapa'a coast, however there seems to be little doubt that most *limu* gathering in this particular area has severely declined and only isolated pockets remain.

2. Fishing

1. Hukilau

Sadly, *hukilau* fishing seems to be a dying tradition in Kapa'a and Keālia. *Hukilau* fishing involves a net with a long rope on each end strung with ti leaves and a bunch of people (Hosaka, 1973:39). After the net was set in a semi-circle in the bay, the people would draw the ends in while the ti leaves would scare the fish into the net. James and William Kaneakua recall fondly their experiences with *hukilau*. Popular places to *hukilau* on the east side of the island were the sandy bays of Hanamā'u, Wailua and Keālia (Interview w/ J. & W. Kaneakua, 8/1/02).



Figure 18 Fishing on the reef at low tide, behind the Kapa'a Swimming Pool adjacent to the proposed Bike Path. Photo Taken to

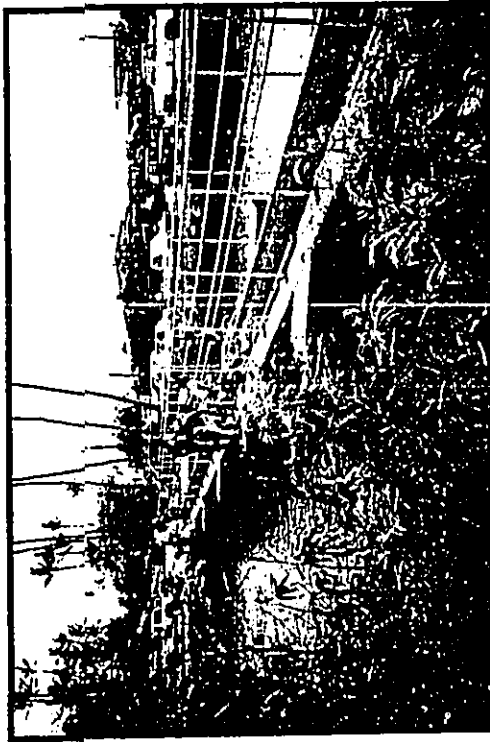


Figure 19 Fishing for 'oama at Moikeha Canal along the proposed Bike Path.

Hukilau was also practiced in the area fronting the present day Pono Kai Resort when *ahule* would come in. The Kaneakua brothers describe one of the greatest pleasures in this type of fishing was that everyone received fish:

WK: And you know the good part about before when they get *hukilau*. You know people pass by, they see the crowd, wonder what they doing. They come down and * and then they come and help and everybody—the tourists kick off their slippa—I mean their shoes and all that and they join in you know.

JK: Yeah, they enjoy that.

WK: Then when they *huki* the fish up, they always give everybody fish. Even the tourist, give them even if they don't know what to do with it (Interview w/ J. & W. Kaneakua, 8/1/02).

The decline in fish in the last several decades can be associated with the decline of this type of value and lifestyle. The *hukilau* was a method of providing the community with fish as well as building community relations. The modern fishing methods of today reflect the new values which have permeated Hawaiian society.

WK: Today, it's different the big boats come outside, they park way outside. And they purse, you know, they net the fish about two three times. Then they go in with their big purse, tie everything up pick 'em up and you know they sell the fish. So nobody get fish. And then, that's why when they catch 'em out there, not enough for people on shore (Interview w/ J. & W. Kaneakua, 8/1/02).

James Kaneakua felt that the decline of this type of fishing started around the time of the 1957 April Fool's Day Tsunami. According to James Kaneakua, after the Tsunami, nothing was ever quite the same.

ii. Lamalama

The extensive reefs of Kapa'a make for good *lamalama* fishing, or torch fishing. The favored time for *lamalama* fishing is on dark nights when the water is calm and the tide is low (Hosaka, 1973:45). The torches allow you to see the creatures that come alive on the reef at night. One individual whose family has lived at the corner of Kawaihau and Kūhio Highway for several generations remembers accompanying her uncle night fishing when she was little. They would go out with glass-bottomed boxes to see the reef. Once there, they would set fish traps and hope the eels did not beat them to the fish (pers. communication L. Bettencourt, 7/25/02). "poking" or spearing tako or squid is also popular during night fishing on the Kapa'a reef.

iii. Shoreline Casting

One individual whose grandparents operated the Kawamura Store in Kapa'a Town in the 1920s and 1930s remembers visiting Kapa'a during his summers from O'ahu. He remembers the ocean waters fronting Kapa'a were often murky and *pilau* (smelly) and he didn't like to swim

much (pers. communication w/ R. Sugiyama, 7/19/02). At that time, the pineapple cannery in Kapahi took its pineapple waste down to Pineapple Dump (in the project area) at Kumukumu. There, the cannery would dump their organic waste and the waste would be carried with the current down towards Kapa'a. Mr. Sugiyama says that although the water was often not inviting to swim in, it did make for good fishing conditions. Nowadays, Mr. Sugiyama feels that although the water appears much cleaner than it did in the 1950s and 1960s, the fishing has declined. He describes shoreline casting as a youngster and catching many distinct varieties of fish including 'ō'io, *ulua*, *pūpū*, *manini* and *wēke*. People still stand from the breakwaters extending from the canal into the ocean to whip for *pūpū* and other fish in the vicinity of the project area.

iv. Specific Fishes Mentioned

Nemue and *Uhu*

Traditionally, *nemue* (*Xiphosus faxcus*) and *uhu* (*Scarus spp.*) were both very popular fishes amongst Hawaiians. One Kapa'a fisherman, originally from Kona, Hawai'i and very knowledgeable on traditional methods of fishing described Kapa'a as historically good for *limu* eating fish such as the *nemue* and the *uhu* (personal communication w/ V. Aho, 7/31/02). Mr. Aho mentioned that Kapa'a once had an abundant supply of the *lipoa* variety of *limu* which attracted the *nemue* and the *uhu*. Another long time fisherman from Kapa'a claimed the good *nemue* fishing grounds extended from Kapa'a to Anahola (personal communication w/ K. Meatoga, 8/12/02). In Kapa'a, this fish was called 'i'a *papa* (*papa*: flat reef area near shore) because it remained inside the reef close to the shore." (Titcomb, 1972:114). One choice way of consuming the *nemue* is raw although some prefer to broil it in ti leaf because of its strong *limu* odor.

The *uhu* is found in legends starting with the fisherman Puniakaia who rears a baby *uhu* until the fish grows to supernatural proportions who Puniakaia names Uhumaka 'ika'i, the parent of all fishes (Formander, 1916-1920:156-163). The legend continues with Kawelo's adventure in capturing Uhumaka 'ika'i (Pukui, 1951:104-109). In fishing for *uhu*, a net or spear are often preferred as it is difficult to catch *uhu* with hook and line (Hosaka, 1973:153). There is indication that Hawaiians altered fishing grounds to attract *uhu*. "At Mōkapu, at one end of Kane'ōhe Bay, is a spot called Keawanui, where *uhu* used to come to feed, and Hawaiians used to keep it in order by eliminating seaweeds inedible to *uhu*" (Titcomb, 1972:149). *Uhu* can be eaten in many ways including dried, broiled and raw.

Molii'i

Molii'i refers to the young of the *moi* (*Polydactylus sexfilis*) when it is approximately 2 to 3 inches. *Moi* typically can be found in schools and *molii'i* can be seen from mid-August through October (Titcomb, 1972:111). James Kaneakua remembers the tremendous numbers of *molii'i* which once passed through Kapa'a during this season.

...And I can remember when, there's a certain time of the year, they used to have fish running, like the *mol*. They had the *molii'i*, we used to call them *molii'i*. And I can remember walking over here this shore line all the way up here, in fact all throughout the island sometimes, all over here when we walk on the shoreline, when the wave break, the water come up and goes down, just black, just black all the way, all *molii'i*. And *molii'i* and *moi*, that *moi* is a *ali'i* fish, you know. Only

the *ali'i*'s really have that. But because—the reason why there were lots and lots of *moli* is because the Hawaiian believe that you take so much and leave so much. Take care of the *aina*, the land, see. And then, those days, population wasn't that much you know. People go catch enough for the day and come home whereas today people go, it seems like that's the last time they gonna catch fish so they grab everything that they can which is wrong. The Hawaiians style is not like that. The Hawaiian style is you catch so much for today and that's it, control because when you need it again it's there for you, see (Interview w/ W. & J. Kaneakua, 8/1/02).

In talking about the former abundance of *moli'i*, Uncle James speaks to the values associated with fishing. The value of "take only what you need" seems to be a fading tradition as well. As fishing conditions deteriorate and resources become limited, it seems people have only become more aggressive. Even up into the 1960s, *moli'i* was commonly seen near the Kapa'a Library (Interview w/ H. Lovell and J. Prigge, 8/1/02). Nowadays, it is rare to see *moli'i*.

v. Crabbling

Besides the Waikā'ea and Moikeha Canals, the ocean of Kapa'a is also good crab habitat. Two species were specifically mentioned as being caught though there were probably more. These include the Hawaiian crab (*Podophthalmus vigif*) and the white crab (*Portunus sanguinolentus*) known to many Japanese as the *vaiari* crab (Personal communication w/ R. Sugiyama, 7/19/02). The white crab or *kūhōnu* frequents coral reefs, like the extensive reef of Kapa'a. The following is a description of how to prepare and eat *kūhōnu*.

It was liked several hours old when the flesh inside the legs began to shrink away from the shell, called *pōhōhōlo* [fitting loosely]. It was then prepared as any other crab. If eaten raw, the legs were broken off and the meat sucked out—with quite a bit of noise. The meat was not actually running out of the shell but was loosened enough to make sucking easier. It is a good eating crab, raw or cooked, but does not keep as well as others (Titcomb, 1978:366).

vi. *Limu* Gathering

Oral accounts attest to at least three kinds of *limu* in the waters off Kapa'a, *limu ipoo* (*Diclyptera plagiogramma*), *limu 'ele 'ele* (*Enteromorpha prolifera*) and *limu wāwae 'ole* (*Codium edule*). *Limu ipoo* was mentioned in association with the *limu* eating fish *uhu* and *nemue* and it is not known how common it was. Unlike some *limu*, *ipoo* keeps well and may be refrigerated indefinitely. Abbott and Williamson describes a popular way of preparing and eating *ipoo*:

The characteristic odor and unique spicy flavor are highly favored. The *limu* is usually eaten as an accompaniment to fish, especially *uhu*, or meat dishes, and is a favorite in stews; frequently eaten with raw octopus (he'e maka) and ake (raw liver) [Abbott and Williamson, 1974:13].

The Kaneakua brothers remember the *wāwae 'ole* and the *'ele 'ele* growing near the mouths of streams. One place in particular Uncle James associated with *limu* was the drainage which the

plantation formerly used to pump out what he called "fresh cane water", possibly the swamp water in the back of Kapa'a. This drainage is located just north of Otsuka's Store and the Kaneakua's father once worked at the pump house which kept the fresh water flowing into the ocean. Today, this drainage is dry. The Kaneakua's remembered in particular the *limu 'ele 'ele*.

JK: And another *limu* that we used to have here is the green *limu*, very fine, hairy *limu*, fine silky *limu*.

CSH: Is that the *'ele 'ele*?

JK: Yeah, you don't find that anymore. And that like fresh water and saltwater. Brackish water.

WK: Plentiful, plentiful. I know my mom guys used to always go pick up you know.

CSH: And how did they like to eat it? What was their favorite preparation?

JK: Some eat it with the black crabs. Some eat it just like that. Some eat it with tomatoes. Filipinos love that too with tomatoes and all that you know.

WK: You know the stew like that (Interview w/ J. & K. Kaneakua, 8/1/02).

Although, it is presumed that *limu* in Kapa'a still exists, the traditional sources have been greatly depleted and in some cases annihilated.

2. Kealia

Because the once active town of Kealia has dispersed, many of the fishing traditions associated with the area have dispersed as well. Today, there are more memories of fishing at Kealia than there is fishing activity. The north and south sides of Kealia bay are still popularly used for casting and a lone fisherman is sometimes seen at daybreak casting from Kealia Beach. *Moi* and *'ōio* were mentioned in association with shoreline casting. One individual identified the breakwater as a place where the *akule* periodically congregate and where his family sometimes goes to surround net. Other fishermen familiar with the area identified other not so well known fish they had found at Kealia before including *kole* and the kona crab.

a. Fishing

1. Surround Net

Even up until recently, large quantities of *akule* (*Selar crumenophthalmus*) were surrounded in Kealia Bay. Kapa'i's bays are famous for containing abundant *akule* (Titcomb, 1972:62). According to those familiar with the area, the still water inside of the breakwater, also known as the old Kealia Landing is one good place to find *akule* during certain times of the year (pers. communication w/ J. Prigge, 7/25/02). Traditionally, drying was a common way of preserving *akule* and drying *akule* is still done today. *Akule* can also be eaten raw, broiled or fried (Titcomb, 1972:62). A long time fisherman also mentioned finding *kole* in Kealia, although it is

not found there commonly (Pers. Communication with V. Ako, 8/1/02). *Koie* is often found in the nearshore environment surrounding a reef which provides good hiding places (Hosaka, 1973:140). Because of its swiftness and propensity to hide, a surround net is often used to catch this kind of fish.

II. Shoreline Casting

For those who grew up in the plantation camps in Kealia, *moi* and *o'io* were two highly prized fishes and many have fond memories of catching them from Kealia beach. One individual who grew up in the camps recalls that conditions were wonderful for shoreline casting for *moi* and *o'io* (personal communication w/ L. Kubo, 7/25/02). Nowadays, Mr. Kubo claims the surfers and bodyboarders scare the fish away. Traditionally, *moi* was associated with the chiefs and *kapu* to commoners (Titcomb, 1972:111). It's love for foamy, rough places make Kealia Bay and the area north of the bay ideal conditions for *moi*. *O'io* is also described as a flavorful fish and is used to make fish cake by Orientals.

This is an exceedingly popular food fish, flesh is delicious, white; liked raw when its many fine bones are supple and slip down the throat without any trouble; often eaten "fomited" with *limu koku* (a seaweed)" [Titcomb, 1972:119].

The breakwater was a popular place from which to fish for these prized fish and fishermen still frequent the area (personal communication w/ M. Yoshida, 7/25/02). Another popular fishing spot is from the lava tongue on the south side of Kealia Bay. An historic photograph taken in 1934 shows several fishermen pole fishing from this point, thought to be named Kuahiahi (Kuahiahi, Keahiahi) [Figure 20]. They may have been fishing for *moi* and *o'io* as well.

III. Other Marine Resources in Kealia

Other marine resources found in Kealia in the vicinity of the bay include the kona crab and *limu ipoo*. Mr. Ako described crabbing for kona crab (*Ranina ranina*) in Kealia, mentioning that not too many know about how to find the crab in Kealia waters. Considered one of the best crabs to eat, the kona crab is typically found in deep waters [Titcomb, 1978:365]. Another individual remembers her uncle gathering *limu ipoo* down at Kealia (personal communication, P. Rogers, 8/12/02).

3. Kumukumu and Homakawa

The areas north of Kealia are characterized by a rocky, wave washed shoreline. Conditions in this portion of the coastline were good for shoreline casting and throw net fishing. Prior to the sale of the *ahupua'a* of Kealia and the creation of Kealia Kai Subdivision, access to this shoreline was not difficult. According to people familiar with the area, even during the Lihue Plantation Co. days, fishermen were able to access this part of the coastline with their vehicles. One individual explained that the majority of the people who fished in those areas used to work for the plantation and therefore were aware of the access routes. Those fishermen would be aware of the cane haul truck traffic and wouldn't fish during harvest season. This way, they were able to still drive up to their favorite fishing spots with all their gear at hand (Personal communication M. Yoshida, 7/25/02). Since Kealia Kai has blocked access to the cane haul roads beginning a few years ago, these fishermen have not had access to those fishing spots using their vehicles. Several



Figure 20 Fishing from Kuahiahi with a view of Kealia in the background, ca. 1934. Used with permission of Bishop Museum.

fishermen have expressed concern that they will continue to be denied access to their fishing locales once the bike path becomes a reality. Many of these fishermen are older and have difficulty walking long distances, particularly if they have to carry their fishing gear.

Considering the issue from a different angle, some individuals have observed some positive improvements as a result of the blocked access of vehicular traffic north of Keālia Beach. Since the haul cane road was blocked a few years ago, several marine resources have begun to make a come back (Personal communication w/ J. Prigge, 7/25/02). Where there was no *opihī* before, now there are small to medium sized limpets covering the wave washed rocks. Other resources that have returned or become more abundant are *wana*, and different varieties of *limu* such as *limu wāwae ʻole*, *limu kōhu* (*Asparagopsis taxiformis*) and *ogo*, which is the Japanese term, and now local term, for the species *Gracilaria* or in some cases *manaua* (*Gracilaria coronopifolia*) [Personal communication w/ J. Prigge and M. Yoshida, 7/25/02]. Reportedly, fishing has also improved along this coast due to the lack of easy access. In essence, although the blocked access has deprived many local fishermen the opportunity to fish in the area north of Keālia, it has also provided a period in which the near shore fisheries and marine invertebrate populations have been able to recuperate and reproduce, creating more abundance of these resources.

Many older fishermen still fish according to the traditional boundaries passed down through their families. Speaking with a *kupuna* from Anahola, he maintained that the southern boundary for the fishing *ʻōhana* from Anahola was Kūna (Donkey Beach) [Interview w/ H. Lovell & J. Prigge, 8/1/02]. This is interesting considering that Kūna is near the northern boundary of the traditional Puna District which did not include Anahola. The northern boundary of the traditional Puna District was Kamalomalo ʻo, a narrow *ahupua ʻa*. This suggests that Uncle Hosea's fishing traditions date from generations ago when district boundaries were different than they are today.

The coastal landscape between Keālia Bay and Anahola Bay share many similarities including low sea cliffs, rough, wave washed, basalt boulder shorelines and interspersed coves which may contain sandy beaches. Although some old time Anahola fishermen continue to fish within the traditional boundaries passed down through their families, there are others who presently live in Anahola who have ties to Keālia or areas between Keālia and Anahola and who fish the entire coastline from Keālia to Anahola. Many of the following fishing traditions come from these families.

2. Fishing

1. *Moi*

Moi is often mentioned in association with shoreline casting from Keālia Bay, however it was commonly found along the rough shores to the north of the bay as well. Uncle John Omellas recalls that *mōi* was the choice fish of his family and he was taught the locations of the *mōi* holes along the Keālia coast by his grandfather and his father.

CSH: What kind fish used to get over there?

JO: *Moi*.

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CSH: Oh *Moi*.

JO: *Moi* I telling you. One day, I went through there, I walked through here after school with my little spinner, 'cause we know all the areas where the house for the *mōi* yeah. We learn that from my grand father and my dad and I used to go up there, with the spinner. If we only was at that area, I could show you that exact spot. I think would be how wide. Would be from here 'til outside of the road out there where the last car stay. And wide, more wide than this. This one particular day I went there fish. Man I was stunted. The whole bay was all full with *mōi*. And you know something, I throw my pole and the bait over there, not one bite. My mom tell me 'no, that kind time when they no bite, they not going bite. I no care what, you can look 'em, but you not going catch nothing'. That's how much plentiful that place had. *Moi* is like that and the best bait we used to use over there. It's not the kind you go to the store go buy. We used to go in the streams, in the cane field, those ditches. Just go with the scoop net. Just shake the grass little bit underneath, you get all the shrimp, the white ones. We catch one gallon full. Wrap one rag, one cloth and we cover it up, keep 'em fresh. And we hidden, but normally full moon nights, and we hidden over there, this kind time, we go. You get set everything, make everything ready. I tell you, we stay there until the bait all gone, and the fish still biting heavy. But no more bait already, then we come home. Fish, I telling you. You put two hooks, two *mōi* coming up. And *mōi*, that's the valuable fish yeah.

CSH: Yeah.

JO: Very, very good eating fish.

CSH: So that was the favorite of your family.

JO: Yeah. But like us, we was brought up—you know my mom, you don't turn your head away from the table, what ever is on the table for eat, you eat. Nobody is particular. She don't want to see that. Yeah. We all had survive, we all healthy, ten of us still going yet.

CSH: Right.

JO: Yeah.

CSH: You folks never went fishing for other kind fish? Only *mōi*.

Moi: And then, we go throw net, me and my dad, some time in the dark nights. My dad and I. We don't put on no lights. My dad, he's so familiar with all the area. So when we get to the area he just throw blind. He fix his net and he just throw blind. Soon as the net hit the water, you know how the washing machine sound like yeah, PAPA with the water inside? That's how, and that's how you know get all fish in the net and that's how used to

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he. And like I said, used to be plentiful. My dad and I, we go to the beach maybe three, four times, that's enough food already, coming home. And then if you do it, like certain time the water is perfect for the *moi* like that. They get the houses little bit further out, deep kind places. But when the water is nice, then we go for catch the *moi* out there with the net. Because you get, you throw line, you catch *moi*, then you get with the net. The net, you go to the houses yeah.

CSH: Oh the—

JO: The holes. The regular holes. *Moi* love to be in the soapy water. What I mean, real white water.

CSH: Foamy.

JO: Foamy water yeah. If you read the history of *moi*, they love to stay along the shoreline, the foamy water (Interview w/ J. Ornellas, 8/12/02).

Moi is now a rare treat claims Uncle John Ornellas. Overfishing and the degradation of the nearshore marine environment has had a lasting effect on the *moi* populations in this area.

II. *Upapalu* and *Hāhālea*

Two sisters from Anahola spoke of hooking *upapalu* (*Apogon frenata*) and *hāhālea* (*Thalassoma amblypygma*) along the coast with their bamboo poles when they were younger. *Upapalu* is a small fish often caught on moonlit nights (Titcomb, 1972:158). The flesh of the *upapalu* is described as "sweet, soft and tender" with few bones (*Ibid*: 158). Hosaka (1973:149) gives the following description of the *hāhālea*, "the flesh is rather soft and is tasteless. When caught the fish is usually thrown back into the sea. If saved for eating, the best way to prepare it is to cut it into large pieces and make fish chowder". The written historic record, however, suggests that *hāhālea* held more significance in traditional lifestyles. Malo lists the *hāhālea* as one of several excellent eating fish (Malo, 1951:46). Forlander describes *hāhālea* as a "choice fish" (Forlander, 1918-1919:112). In Forlander's account of the Legend of Kuapakaā, Pakaā teaches his son Kuapakaā how to temper the bitter taste of *awa* with the *hāhālea* when serving a king.

After you have strained the *awa* into the cup, hand the cup to your master, then run as fast as you can to the pool where we keep the *hāhālea* and catch two for your master, for he would want the fish to take away the bitter taste of the *awa* from his mouth (*Ibid*: 114).

In legend, the *hāhālea* fish is derived from the pieces of two supernatural beings who were torn to bits by an *e'epa* woman who discovered that the two supernatural beings had been aiding her disloyal husband (Kamakau in Titcomb, 1972:78). Titcomb also discusses the use of the *hāhālea* as an offering in invoking Kū and Hina when pregnancy was desired (*Ibid*: 77-78). Although Auntie Emaline and Auntie Pearl did not give details on the preparation of the *hāhālea* and its significance in their family, the fact they fished for *hāhālea* suggests it was at least an important food source.

III. *Akule* Fishing at Kuna

The beach now commonly known as Donkey Beach was traditionally known as Kuna. The name Kuna was given to us from Uncle Hosea Lovell who has been fishing in the area since he was a young boy. During an interview, Uncle Hosea expressed his dismay at how the Hawaiian placenames have changed.

JP: ...and even with the names, you know some of the older people they kind of piss off at you when you call it Donkey Beach [Kuna Bay].

HL: No, I get mad when they call it Donkey Beach, I get mad, yeah. I know before the plantations, you know, uh, right down on the beach, you know, plantations used to keep their donkeys over there.

JP: That's for pack all the fertilizer.

HL: Yeah, yeah. But how they created that name Donkey Beach. Every time I mention that name, I get mad (Interview w/ H. Lovell & J. Frigge, 8/1/02).

To the Lovell family in Anahola, Kuna was an *akule* fishing ground. Kuna was accessed mostly by boat, perhaps because of the distance, but also because a surround net used in catching *akule* was set from the boat. *Akule* fishing was a community event in the early days and as Uncle Hosea shares, when someone said "*akule*", the whole community went running towards the beach.

CSH: So, what kind of fishing was at Kuna?

HL: I tell you, from Anahola, my father had one rowboat and the rowboat was probably about twenty-feet.

JP: Hooo!

HL: But they had four big Hawaiians, you know, our the boat. Before, da Hawaiians, * they were big. And one guy in the back steer, steer the boat. And they had all the nets inside.

JP: For what, *akule*?

HL: Yeah. And go all the way to Kuna, surround the *akule* and pick up the fish, row all the way back.

JP: Wow!

HL: But that was no problem rowing.

JP: How deep the nets?

HL: Oh, the nets was about twenty, thirty-feet deep?

JP: Really?

HL: Oh, and the nets were all made with colton, 'cause it's called *aho yeah*, you know *aho* net. They was heavy. Hawaiians were big before.

JP: They had plenty food.

HL: My father was a big man. Only my mother was very small. My father was around, close to 6'6". I had my oldest sister, she was big Hawaiian. She was really big.

JP: Big lady?

HL: Yeah. Only me, I'm kinda small in the family.

CSH: So, you used to go with them to surround *akule* in Kuna?

HL: No, I was, I was small, yeah.

CSH: You was small.

HL: Everybody would go down there and wait 'til they come back, you know—because down here when they say, '*akule*', everybody go down.

JP: To the pier?

HL: By the old landing. At the time, the old landing was not in use already. They just about given it up already.

JP: What year was that?

HL: Oh, was early 19—, around 1930s. Before that, that thing wasn't, you know.—They had a warehouse down there, they kept few things, you know, but— (Interview w/ H. Lovell & J. Priggs, 8/1/02).

Uncle Hosea explained that in former times when fish was abundant, they would leave the net out for a week at a time so that everyone in the community was assured a portion. If there was leftover, they would sometimes sell it. The families would then dry the *akule*, often by hanging it on the clothesline.

b. Gathering

1. 'A'ama

'A'ama (*Grapsus tenuicrustatus*) crabs are now more often used as bait than as food, however they are traditionally known as good food. Prepared well and salted, the 'a'ama is known to store well for long periods (Titcomb, 1978: 362). 'A'ama were known as a sacred food as described here:

The 'a'ama is said to have been a special or favorite sacred food for certain priests; care was taken to see that the crab was whole—no missing legs, etc. It was also used in medicine, usually to finish off a course of treatment in certain diseases. The 'a'ama crab was offered in sacrifices so that the gods would loosen ('a'ama) and grant the request...

The coastline between Keālia and Anahola was good habitat for the 'a'ama as they prefer rocky shorelines. They were collected for food, though no details were given as to their preparation (Personal communication E. White and P. Santos, 8/1/02).

II. Pūpū

Two sisters who grew up in Anahola are well acquainted with the coastline in the project area from Keālia Bay to Anahola. Their *tūtū*s grew up in the Waipaho'e area in the upland of Kumukumu. The sisters, relatives of the Lovell family, learned as young girls what to gather from the reefs and rocky shoreline in the Kumukumu, Homāka'awa 'a and north into Anahola. Perhaps this is a reflection of what was traditionally considered woman's work. In talking story with them, they listed several types of marine invertebrates they would collect including 'opihī (families: Fissurellidae, Patelidae, Siphonariidae), Kūpe'e (*Nerita polita*), *leho* (family: Cypridae) and *pūpū o M'ihau*.

'Opihī

'Opihī was once much more abundant on this coastline than it is today. The common habitat for 'opihī is rocky shoreline where there is wave action (Ahuna, 1977:19). In the past, 'opihī was considered the most common shellfish consumed by Hawaiians (Titcomb, 1978:343). Mrs. Santos and Mrs. White recalled that Pineapple Dump was once an excellent place to gather 'opihī. Mrs. Santos had fond memories of "pounding" 'opihī north of Keālia Bay after working night shift at the pineapple cannery at Kapahi (Pers. Communication, E. White and P. Santos, August 2002). Although 'opihī was and continues to be a favorite food, it is often gathered at considerable risk. Perhaps, this is why 'opihī is also known as the fish of death, *he i'a make* (Titcomb, 1978:343).

Kūpe'e

Kūpe'e is a type of edible marine snail which are harvested at certain times, often according to the moon (Ahuna, 1977:10). Ahuna suggests that the best night to harvest kūpe'e is on the night of the first quarter moon. Mrs. White and Mrs. Santos identified the Kumukumu and Anahola coasts as good places to find kūpe'e (Pers. Communication, E. White and P. Santos, August 2002). Kūpe'e can be consumed both raw and cooked, depending on the locality and the palate.

Leho

According to Mrs. White and Mrs. Santos, the *leho* or cowry shell are also collected from this coastline. Their families still use the *leho* as an octopus lure as in traditional times, only nowadays, instead of burying the shell to get the meat out, they freeze it (Pers. Communication, E. White and P. Santos, August 2002). The sisters did not specify names of types of *leho* although many are known.

Pipū o Ni'ihau

Pipū o Ni'ihau or Ni'ihau shells are highly prized shells collected for making necklaces. The tiny shells from the *Columbella* and *Leptothyra* genus are strung together in *lei* for adornment. In Ni'ihau, these shells are called "momi" (Ticomb, 1978: 346). Mrs. White and Mrs. Santos have combed the sandy coves between Keālia and Anahola for the acclaimed shells (Personal communication w/ E. White and P. Santos, August 2002).

III. Limu

Mrs. White and Mrs. Santos think of the area north of Keālia Bay especially in association with *limu*. The sisters are familiar with three kinds of *limu* along this coastline, *limu kōhu*, *wāwae'ole* and *ogo* (*manaua*). The sisters emphasized that they were taught only to harvest particular *limu* at certain localities at certain times of the year. For example, the *limu kōhu* along the coastline between Anahola and Keālia, they would only harvest during the winter. During the summer, the *limu kōhu* turned white, perhaps because of lower tides or more sun exposure (Personal communication w/ E. White and P. Santos, August, 2002). Mrs. White and Mrs. Santos are saddened at the state of the *limu* today claiming that it is much more difficult to find and in poor condition.

B. Trails

1. Kapā'a

Based on the locations of the *tuleana* awarded in Kapā'a during the *Māhele*, the principal traditional route through Kapā'a was very similar to today's Kūhiō Highway. In north Kapā'a, just before the rocky bluff known as Mailehuna, Hau'ala Road leads up the ridge that separates Kapā'a from Keālia. Hau'ala Road leads into the described *mauka* road of Keālia, traversing the ridge and dropping down to Keālia River. The 1910 USGS Kapā'a Quad Map shows this road and a coastal route which cuts through the rocky bluff Kuahiahi and crosses the Keālia River near the river mouth (Figure 6). Both these routes probably do correlate to traditional routes, however there is no record of these routes prior to the 1880s.

Another type of trail described by the informants was the Pō Kāne. "On the 27th night of the lunar month was kapu in its meaning of 'sacred' to the god Kane. On this night, spirits of departed chiefs march over the pathways trod in life. Anyone in the pathway of the marchers might be killed. The spirit of a relative could rescue him or the victim could save himself by stripping and lying flat in the path. This may account for the fear that visions can kill" (Pukui et al., 1972:22). Often called "night marchers" in modern times, two informants, the Kaneakua

brothers recall their mother talking about a path which ran near their house in Kapā'a. The path originated from up *mauka* and passed near their home on Māmane Street and ran through where Pono Theater was formerly located and out to the ocean (Pers. Communication with J. and W. Kaneakua, 8/1/02).

2. Keālia, Kumukumu and Hōmaikawā'a

An interesting controversy in the Keālia and Anahola community transpired in the 1880s concerning trails between Keālia and Anahola. The controversy reflects the impact of the arrival of large scale agriculture on traditional practices, in this case traditional trails and routes of transportation. The controversy revolves around Colonel Z.S. Spalding's attempt to fence off the tablelands above Keālia to plant sugar cane and cutting off access of the Hawaiians to their trails. The following letter written by Spalding to the Interior Department acted as a formal petition to officially close the *makai* road between Keālia and Anahola.

At the last session of the Legislature some natives tried to make trouble by petitioning to have my fences taken down, and the old road from Kapā'a to Anahola through Keālia opened. The facts in the case are simply these—years ago Mr. Krull agreed with the Road Supervisor that the road might be changed to run through *mauka* lands, and (?) Kapā'a river where there would be no danger from quicksands. The old road was abandoned and has not been worked since that time—Out of course people could cross the lands on horseback in any direction. When I commenced to plant cane I put up fences, but have always left the Government Road open and free. I had some trouble through natives breaking through to take short cuts and finally appealed to the Legislature as I have said—The only ground was that the old road was not legally closed by Government notice, when the new road was opened (Hawaii State Archives, Interior Dept, Roads, Kauai, 1881).

Mr. Krull operated a dairy and ranch in the *mauka* area of Keālia in the 1860s, in the area known as Kumukumu. It was to his benefit that the *mauka* road be the official and maintained road because this allowed Mr. Krull to more easily transport his dairy and beef products to the landings at Anahola and Keālia. More than likely, Mr. Krull's cattle were permitted to roam freely and thus the traditional trails and roads through the area were still accessible. When Colonel Spalding started to cultivate the land, he needed fences to protect the cane from the cattle and thus, access became an issue.

Based on historic letters and correspondence available, it seems there were two major routes between Keālia and Anahola, a *mauka* route and a *makai* route with several secondary trails in between, probably both *mauka-makai* and cross *ahupua'a*. Prior to the 1880s, the *mauka* route was claimed the "Government Road" and although the *makai* route remained opened, it was no longer maintained by the "government". Hawaiians, however, continued to use the *makai* route and presumably, some of the other secondary trails as well. After the decision whether to close the *makai* road was placed in front of two juries of six legal voters in the district, the decision was made to keep the *makai* road open, as well as maintaining the *mauka* road as the "Government Road" (Hawaii State Archives, Interior Dept, Subj: Roads, Kauai, 1881, 1882-1884). This suggests the significance of the *makai* route to the people who lived in those areas. The *mauka* route through Keālia is described as, "crossing the Keālia River above the Rice Plantation and

passing over the hill near Mr. Spalding's residence" (Hawaii State Archives, Interior Dept., Letterbook 1882). This route is depicted on a 1910 USGS Kapa'a Quad Map (Figure 6). The alignment of the *maka'i* route is unknown although based on Spalding's necessity to fence off the route, it may have been located a little distance from the coast, where sugar cane cultivation was feasible. Another possibility is the alignment of the historic railroad and present day cane haul road. A long time fisherman from Anahola born in the 1920s interviewed for the project claimed he and his family never used the plantation roads for accessing fishing grounds along the coast. Rather, they would ride their horses to the lighthouse at Kahala and leave their horses there and walk along the coastline, on the rocks, to their fishing destination. The far southern part of what was considered the Anahola fishing grounds, Kuna (Donkey Beach) was mostly accessed by boat (Interview w/ H. Lovell & J. Priggs, 8/1/02).

As far as the railroad alignment and the proposed pedestrian and bike path alignment, there is no documentation of this having been a traditional trail prior to the railroad construction beginning in the 1890s. The location of the alignment suggests the route would have been in a good place in so far as accessing coastal resources, however, the landscape was much different in traditional times and coastal clusters of dunes which are known to have been within the project area, may have been avoided for their cultural significance.

C. River Resources

There are five streams or stream systems which traverse the proposed pedestrian and bike path in Kapa'a and Kealia. Listing the streams from southernmost to northernmost are Waika'ea Canal, Moikeha Canal, Kealia River, Kumukumu Stream and Homaiakawa'a Stream.

1. Kapa'a: Waika'ea and Moikeha Canals

a. 'Ōpae and 'Ō'opu

Waika'ea and Moikeha Canals were originally natural drainages for the swamp lands of Kapa'a and were dredged in the 1940s. Prior to dredging, the areas now used by the bike path had a very different appearance. The estuaries were more extensive and the drainages were often dry except in times of heavy rainfall (See figures 10 and 21). In addition, there were sand dunes in the area. Older *kama'āna* recollect that the areas behind Kapa'a, or the Kapa'a swamp lands, as good fishing grounds for 'ō'opu and 'ōpae. James Kaneakua recalls the streams were once loaded with fresh water shrimp, 'ōpae.

JK: ...Chinese, I can remember Chinese, they used to catch shrimp, fresh water shrimp in a big five gallon can. They, put it in there, both side and they have their stick across, walking through the little village that we were over there and used to come out and say "'Ōpae, 'Ōpae" and families who want buy the 'ōpae and they used to dig it out in a big a scoop, bowl, and was so much you know. Yeah, those were the days. Our stream used to be loaded with shrimp.

CSH: This one right here Mo'ikeha?

JK: All streams, used to be loaded with shrimp.

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Figure 21 "Kapa'a from the Beach, Sanborn Home in Center, Kapa'a, Kauai, Hawaii" ca. 1984. Used with permission of Bishop Museum.

WK: You seen me walking over there 'cause I go take a look and I don't see one tiny shrimp [When I arrived in the morning William was walking around the *mauka* railroad track along Mo'ikeha Canal looking for 'ōpae in the water] (Interview w/ J. & W. Kaneakua, 8/1/02).

The Kaneakua did not remember the names of the varieties of 'ōpou and 'ōpae they once caught in the Kapa'a swamps, however, they still remember their distinct flavors and continue to search for them in the canal waters which today drain the Kapa'a swamps.

b. 'Ōama

Since the dredging of the canals in the 1940s, conditions have been created which are conducive to certain types of fishing for instance 'ōama fishing. 'Ōama are young of the *wete* (*Griffithia* spp.) and they generally frequent shallow reefs (Hosaka, 1973:126). Water is now permanently flowing from the swamps into the ocean via the canals and the canals act as artificial river mouths or estuary systems where some species of fish come to spawn and feed. The 'ōama is one of these and during the summer spawning season, there is a constant stream of local people who come to hook the young 'ōama at both Waika'ea and Moikeha Canals. Many of these people use the pedestrian and bike path bridges at these locales to sit and hook 'ōama. It is often necessary for bikers to walk their bikes over bridges in order for them to pass without mishap. Nowadays, people use 'ōpae or shrimp on very small hooks to attract the small 'ōama, however fishing for 'ōama did not always involve this technique.

HL: ... You go down here looking guys coming down hook 'ōama Hooa, where they come from? [Laughs]. Uh, before days, growing up, nobody go hook 'ōama down here, nobody.

JP: No?

HL: Nobody hook?

JP: •

HL: Net.

JP: [Laughing].

HL: 'Cause more time they surround, take care the whole Anahola. And then up, and more than enough you can see 'em all hanging on the line drying.

JP: Everybody drying.

HL: Right. Nobody hook.

JP: That's all the new state regulations, gotta give the fish chance, 'eh.

HL: You know why? There was so much 'ōama before, so much! And- (Interview w/ H. Lovell and J. Priggs, 8/1/02).

The legal limit now is fifty 'ōama and the local people say that when the fish is biting, it doesn't take long to bring up fifty. Most people nowadays favor their 'ōama fried. Uncle Hosea remembers times past when drying 'ōama was the popular and practical thing to do. 'Ōama are also known to be 'ono when eaten raw (Titcomb, 1972:162).

2. Keālia: Keālia River

The name of the largest river that runs through Keālia is Kapa'a Stream, perhaps because it marks the northern boundary of Kapa'a *Ahupua'a*. However, none of the local people we talked to referred to this stream as Kapa'a Stream. Instead, they used the name Keālia River. In fact, if you mention Kapa'a Stream, most people look quite puzzled. For most people the rocky point with Mahelona Hospital and Kapa'a School on the bluff marks a sort of geographical boundary between Kapa'a and Keālia Valley.

Māhele records indicate the Keālia River was central to the taro production of Keālia 'ōhana in the mid 1800s. Many of the *kūleana* awarded in Keālia were awarded along the Keālia River. One area, famed in old times for its large, heavy taro, is still occupied by descendants of the original *kūleana* 'ōhana. This area is called Keahapana and is located some distance from the coast and the proposed path. Taro was grown in Keahapana until the early 1970s and one of our informants, Uncle John Ornellas, remembers going to *tūū*'s house in Keahapana and helping in the *lo'i* and later to pound fresh *poi*. Now, the Keahapana area is mostly full of pig farms.

Uncle John Ornellas commented on how the aspect of the Keālia River has changed throughout the years as well as attitudes towards caring for the river. He talked about how the plantation had a good relationship with the private land owners and would build ditches through private land and thus provide the land owners with easy access to clean water for home use and to irrigate their *lo'i* or other crops. He also spoke of how the plantation would clean the vegetation from the river to prevent flooding.

...But then, those years the plantation used to maintain the river. They had men constantly trimming all the bank, the river not how stay now, all close with the grass. Wide, all clean. So what the men used to do, they used to cut all the bank, the grass that grow with the boat, cut, cut. So then, when you get floods, everything rush down... (Interview w/ J. Ornellas, 8/12/02).

As the plantation slowly moved out and the plantation camps were disbanded, this relationship with the land and care of its waterways has faded.

a. Samoan Crab

Keālia River is a natural stream which flows into ocean near the proposed pedestrian and bike path. Those who grew up in Keālia, including those who have ties to the plantation camps, have very fond memories of fishing and swimming in Keālia River. For those growing up in the 1950s and 1960s, crabbing was particularly popular, especially for Samoan crabs. One informant recalls crabbing for Samoan crabs with her siblings from their corrugated iron canoes (pers).

communication w/ P. Rogers, 8/12/02). One individual whose parents grew up in the plantation camps in Kealia remembers frequently catching "big kine Samoan crab" in the river. Mr. Pascua feels that crabbing has diminished in the last few decades and now, Samoan crab can only be found in certain times, particularly after a heavy rain (pers. communication w/ R. Pascua, 7/24/02).

b. Mullet, 'Ama'ama (*Mugil cephalus*)

Mullet was available at the river mouth in the vicinity of the proposed path bridge. Although only one individual mentioned fishing for mullet, the fish was probably at one time, much more available than it is now.

c. 'O'opu

The 'o'opu is a favorite amongst those who grew up fishing in Kealia River. Several species of 'o'opu are known to be present in the Kealia River including 'o'opu *ma'kea* (*Awaous stamineus*) and 'o'opu *elamo* 'o (*Lentipes concolor*) however informants did not specify any by name (State of Hawaii, 1990:174). Mostly, they spoke of the abundance of 'o'opu in their day, the 1950s and 1960s. Uncle John Ornellas recalls catching 'o'opu in Kealia by the bucket.

JO: 'O'opu, yeah but you only get 'em in seasons. And let me tell you yeah we used to go out there in the night, with the flash light or the lanterns, with the rain coat and the five gallon buckets, and we used to fill 'em up by the five gallon buckets.

CSH: 'O'opu.

JO: 'O'opu, food for the family. And the next day everybody used to sit down and clean ... (Interview w/ J. Ornellas, 8/12/02).

One method used in catching 'o'opu from Kealia River was hooking. Another popular method was by using fish traps. In upper Kealia, fish traps were set in plantation ditches and flumes which carried water through private lands. Uncle John Ornellas describes how this worked.

...And right under this *hau* bush, that's where used to get the flume. And right—when they built the flume, that flume was long flume. It goes all the way to the end of the *hau* bush. And then it goes into the ditch. Because over there is all cliff side. Amazing how they build 'em, all the redwood. And you could walk on it. Yeah and then right in the end of that *hau* bush under that big monkey pod tree, where the water comes out and flows into the ditch, we used to put the trap right there. And we used to walk up from the old house and come up and pick up the 'o'opu's like that, with the flash light. You just go over there, you just rake 'em, pick 'em all up. They stay, all in the rubbish they stay, all in the leaves, because flood time all the leaves and rain, the *hau* bush leaves, all come down with the water yeah. You just move the leaves. And you fill up that bucket two shakes man, I telling you (Interview w/ J. Ornellas, 8/12/02).

Those familiar with the river have observed a notable decline in the 'o'opu population in the last three or four decades. Some attribute this to the dumping of pesticides, pig and cattle wastes and other non-point source pollutants (pers. communication, J. Priggs, 7/25/02 and P. Rogers, 8/12/02). Others blame the introduction of tilapia (*Cichlidae* spp.). Tilapia were intentionally introduced to Hawai'i in 1962 as a food fish and as a biocontrol, but have wreaked havoc in stream ecosystems since by consuming native aquatic plants and invertebrates and by silting out the habitat of other native freshwater animals (Staples and Cowie, 2001:36). Since its introduction in the 1960s, tilapia has become a very popular food item for the Filipinos who lived at Kealia Camp.

Another introduction which became widely popular as a food item, including in Kealia, is frogs. Uncle John Ornellas remembers the frog chorus in February and March which prompted the hunt for frogs along the Kealia River.

Frog season. We used to pick 'em up by the buckets too. And I mean big kind.

You know when frog season because that thing just harmonize in the night.

Ooyunnnoyunnnoyunn oh my goodness boy, yeah (Interview w/ J. Ornellas, 8/12/02).

3. Kumukumu and Hōmaikawa'a Streams

The two small streams located on the plateau lands north of Kealia traverse the proposed path and empty into the ocean nearby. Historic documents suggest that both streams were used to irrigate *lo'i* and there was *kuleana* land awarded near them. During a field inspection, a cluster of bananas and tobacco plants was observed near the path at the Kumukumu Stream crossing.

According to Uncle John Ornellas, these bananas marked the *makai* boundary of Kumukumu Camp, a Filipino Plantation Camp. Kumukumu is a name still held in the memory of former plantation workers who lived in the Kealia area, however because the plantation camp no longer exists, the name is being lost to younger generations. No cultural resources were named from the Kumukumu Stream. The stream was greatly modified during the plantation era and probably has very little left of its traditional character.

Hōmaikawa'a Stream is the northernmost stream which traverses the proposed path. One person interviewed referred to this stream as Kawa'a Stream. This stream empties into a small, protected cove near the terminus of the proposed path at 'Ahihi Point (Interview w/ H. Lovell and J. Priggs, 8/1/02). This little cove was once called "Beach House" after a home built there by Colonel Spalding in the 1800s (Wilcox, 1991:43). This name was carried on and is still used to refer to this area (Interview w/ H. Lovell and J. Priggs, 8/1/02). In fact, the name Hōmaikawa'a has been largely lost as even the oldest informants familiar with the area did not recall the name. The mouth of the small stream is a protected pool and small 'ama'ama can still be found there (Interview w/ H. Lovell and J. Priggs, 8/1/02).

D. Plant Resources

The botanical survey identified eighteen indigenous species of plant and one endemic species which grew adjacent to the path (Terry and Hart, 2002). Some of the most common native species included *pōhuehue* (*Sporobolus virginicus*), *pa'u-o-hi'iaka* (*Jacquemontia ovalifolia sandwicensis*), *alena* (*Boerhavia repens*), *naupaka* (*Scaevola taccada*), *ākulikuli* (*Sesuvium portulacastrum*), *pōhinahina* (*Vitex rotundifolia*), *ilima* (*Sida fallax*) and *āhi āhi* (*Sporobolus virginicus*) (Terry and Hart, 2002). Although few informants or community members mentioned plants directly, plants were alluded to in their comments.

1. Kapa'a

The Kapa'a town area has endured severe coastal erosion due to human intervention. The construction of canals and dredging of reef material fronting Kapa'a Beach Park has led to increased erosion along the shore. Many local residents of Kapa'a commented on the loss of the beach. The plant communities which once formed the erosional barrier above the high water mark have been destroyed by the encroaching sea. One long time fisherman who lives adjacent to the bike path in Kapa'a Town spoke to the tradition of caring for the land which means nurturing the plant life which grows in the area you live. Ko'olau Meitoga has been living in Kapa'a and fishing on the reef fronting the bike path for twenty eight years. Mr. Meitoga goes out early every morning to water the *niu*, coconut trees he planted years ago to help stabilize the coastline. Although the trees are in the Kapa'a Beach Park, Mr. Meitoga feels personally attached to the trees because he planted them and they help to promote stability to the coastline which provides him fish. *Niu* is a popular coastal tree and is well adapted to the harsh coastal environment including an occasional hurricane. Traditionally, the *niu* had multiple uses including as food and drink, the leaves for thatching and baskets, the midrib for stringing *kukui* shells for light, the shells for containers and musical instruments, the husks for snout and many other uses (Neal, 1965:120).

Mr. Meitoga is concerned that although attempts have been made to block vehicular traffic to the Kapa'a Beach Park area, people still break through barriers to drive their vehicles as close as possible to the shoreline and they destroy the vegetation including the young *niu* plants which are at the water's edge. He is not sure whether the new bike path will aggravate the situation or not.

Another important point related to plants which is often overlooked is the use of coastal trees for shade. From south of the Lili to north of the Smokey Louie Swimming Pool, almost every coastal tree including ironwoods, beach heliotrope, coconut and *milo* was being used as a "hang out" for local people. Families fishing, workers taking lunch breaks, retired men hanging out, the entire Kapa'a coast was a popular place to visit and coastal trees were the preferred place to relax.

In the rocky point area at the northern end of Kapa'a, the path continues as part of an old cane haul road. In this area, the plants which grow adjacent to the cane haul road are mostly alien plants with the exception of *alena* (*Boerhavia repens*) and isolated, wind ravaged *hala* trees (*Pandanus tectorius*). Although *hala* is traditionally known as one of the most popular plants in

which the leaves are utilized in weaving, the *hala* in this area were probably too windswept to be considered for collection. Formerly when the haul cane trucks were in use, the area was constantly covered in red dirt and the impact from vehicular traffic was high. Now, although the plants are cleaner than they once were, the alien populations of plants still dominate the landscape.

2. Keālia

Keālia Beach hosts several native plant species. *Naupaka* (*Scaevola taccada*) is the most prevalent and grows in clumps all along the length of the proposed bike path. Other common native plants growing in healthy populations on Keālia are *koali* (*Ipomea* spp.), *pōhinahina* (*Vitex rotundifolia* and *Vitex trifolia*), *pa'u o hi'iaka* (*Jacquemontia ovalifolia sandwicensis*) and *āhi āhi* (*Sporobolus virginicus*). Also, scattered along the beach was found *pōhuehue* (*Ipomea pes-caprae*). Traditionally, *koali* was a fairly popular medicinal plant used for a variety of treatments including as a purgative mixed with other herbs. To treat fractures and sprains, the flowers were mashed into a poultice and applied (Gutmanis, 1976:27). Gutmanis also describes the preparation of a *pa'ali'i* which consisted of prepared *koali* root to treat sore muscles, poor circulation and lagging appetite. The leaves and stems of the *Pa'u o hi'iaka* were also used medicinally, as a cathartic and to treat a generic condition in babies likened to thrush, *ea* (Wagner, Herbst and Soluner, 1990:562). For medicinal purposes, *pōhuehue* is indicated in treating piles and perineal injury (Gutmanis, 1976:26). The vine like properties of the *pōhuehue* makes it especially useful in the construction of certain bag nets like the *ūpena nae kuku* utilized in catching mullet fry for stocking fish ponds or bait fish (Krauss, 1993:39). Symbolically, *pōhuehue* is associated with sorcery as evident in this *ālelo no'eau*:

kā'ia i ka pōhuehue. *Smitten with the pōhuehue*. Said of a victim of sorcery. One who bore ill against another would smite the sea with a *pōhuehue* vine while the intended victim was at sea. It was believed that with the proper incantations this would cause the surf to rise. The sea would become rough and dangerous and the intended victim would be killed (Pukui, 1983:146).

According to those who grew up in the Keālia Camp, there used to be many, many more trees on Keālia Beach (pers. communication w/ M. Yoshida, July 2002). He explained they were mostly ironwood trees. Nowadays, trees along the beach are scarce and include scattered ironwood (*Casuarina equisetifolia*), beach heliotrope (*Tournefortia argentea*), *milo* (*Theopstia populnea*), *hala* (*Pandanus tectorius*) and *hau* (*Hibiscus tiliaceus*). A good patch of *hau* is situated near the breakwater also known as the old Keālia Landing on the north end of the beach adjacent to the proposed path. Traditionally *hau* was very useful. One of its most common utilities was its bark and bast for cordage, *'i'i hau* (Summers, 1990:14). Other uses include as a wood for canoe *'iako* (booms) and *ama* (floats), lightweight spears, kite frames in *ho'olele lupe* (flying kites) and as bast fibers in winding, tying and sewing (Krauss, 1993). Medicinally, the slimy sap from the inner bark and the flowers are properties indicated as anti-contraceptives, in childbirth and in promoting milk flow following childbirth (Gutmanis, 1976:32, 36-37).

3. Kumukumu and Hōmāikawa's

From the old Keālia Landing to 'Āhihi Point, the proposed path follows the alignment of the old cane haul road along low, rocky seacliffs. The plants adjacent to the path here are low and stunted from constant exposure to wind, sun and salt and minimum moisture. Like the Keālia area in north Kapa'a, alien plants are dominant in this area, however there are several native plants which seem to be thriving. One person attributes this to work done by the Keālia Kai Subdivision who has begun to clean up the area as well as cleared and cut back the vegetation (personal communication w/ J. Priggs, 7/25/02). By cutting back the introduced weeds along the path, several of the struggling native creepers such as the *ilima papa*, the *pa'u o Mīlaka* and the *'āhulikūi* have been able to take hold. The *ilima* blossom is still today a popular *lei* flower (Krauss, 1993: 77). Medicinally, the juice of the *ilima* was used as an enema and the blossoms were helpful prior to and following childbirth (Gutmanis, 1976: 36, 38, 41).

At Kuna (Donkey Beach) along the path are clumps of *hau* and *noni*. *Noni* continues to be a popular medicinal plant in Hawai'i and is commonly used as a mild purgative and in the treatment of diabetes, heart trouble and high blood pressure (McBride, 1975:55). The leaves are indicated in treating rheumatic joints and deep bruises as well as pimples and boils (Gutmanis, 1976: 30). In the sandy areas of Kuna leading down to the beach are *naupaka*, *pōhūhūe* and *pōhīhīhīe*.

Just beyond Kuna is a little cove where Hōmāikawa's Stream empties into the ocean. To some old timers, this area is known as Beach House after a home built there, originally used by the Spalding Family. A nice grove of *milo* and false *kanani* (*Terminalia catappa* L.) trees shade a small beach here *makai* of the proposed path. Traditionally, calabashes and wooden eating bowls were carved from the *milo* (Krauss, 1993:22). Today, *milo* is still a favored wood for wood carvers for its beautiful hues and contrasts. *Manuka* of the path on the hill leading to 'Āhihi Point are many *uhaloa* plants in what appears to be a disturbed hillside. *Uhaloa* has the appearance of a weed and can grow in disturbed soils in many different environments. Our informant referred to *uhaloa* as *hi'aloa*, another common name for the same plant. Uncle Hosea explains how the *hi'aloa* was used when treating a sore throat.

And then the, the roots you brush it off, yeah? And then you peel the skin off, you know, peel the skin off. And then you can—there's two ways of doing it, you can, after you wash it you can chew it, it's real bitter. Or you can boil it and make it into a tea, which is much easier you know, the taste. Most Hawaiian medicines are bitter, hard taking. Yeah you gotta— I know growing up, 'eh, 'ake this' [impersonating a parent]. 'Hold your nose like that, open your mouth, over there or you get a big stick over there'. [Laughter](interview w/ H. Lovell and J. Priggs, 8/1/02). Although the medicinal properties of a few plants were mentioned during the interviews, no specific area along the Keālia or Kapa'a was identified as a particular collection locale for *hi'aloa* or any other plant.

E. Burials

Several documented burials are known to exist near or adjacent to the proposed pedestrian and bike path including in Kapa'a, Keālia and Paliku Beach or Kuna Bay (Bushnell *et al.* 2002; Callis 2000; Perzinski *et al.* 2000a; McMahton 1999; Komori 1993). Sand is a common medium

for interment in traditional Hawaiian burials and there are extensive sand deposits along portions of the proposed path. In former times, sand dunes, in particular, were heavily used for burial and there were once many more dunes along the coast. An account of an 1898 trip around Kapa'a documents dunes in the Kapa'a Waipouli area:

...on we went; no time to stop. The Keālia Sugar Co.'s cane fields came into view. The sleeping giant on our left—the sand dunes on our right (Knaudsen, 1991:152).

According to one of our informants, sand dunes once lined the Keālia beach area also. Memories of going to the beach are expressed describing a geography which no longer exists, scaling the dunes in order to reach the beach.

CSH: Remember you was telling me used to be sand dunes.

JO: Yeah, big sand dunes right through here.

CSH: Where?

JO: Right through the beach.

CSH: You mean *makai* of the train tracks.

JO: Yeah *makai* of the train track. Right where the guys stay park the cars, the front portion of the back. Where they get the logs. Big high dunes. Right down the bay.

CSH: All the way to the river.

JO: And used to carry the things with you and we used to climb up on the sand and then go down... (Interview w/ J. Omellas, 8/12/02).

In Anahola, a village to the north of Keālia, memory still exists of the sand dune burials which once bordered the beach and the Hawaiian community member's attitudes, beliefs and values concerning them. Uncle Hosea's description of the leveling of the sand dunes by the U.S. Army and the destruction of burials in Anahola is probably a reflection of what was happening to all of the major beaches on the islands.

JP: Yeah they come. They come right in. We walk right out in the water up to here. When she was a little girl she said she climb up on top the hill [talking about JP's grandma]. I go, 'what hill?' She said, 'ahh, that was all dunes, high. You gotta climb over, you gotta climb over the, you gotta walk up. To go to the beach, you no walk like that, you gotta walk up'.

Jal: Oh yeah 'cause never...[inaudible]

JP: Oh no, they had knock 'em all down for build houses.

- HL: You see, all over there had dunes ah.
- JP: That used to be all burial grounds.
- HL: You know the beach, where the County Beach Park? You know they knock all the dunes down over there? The army.
- JP: World War II?
- HL: Right early part of 1942 after the World War went start, okay. They used to take us out of high school for go put, string barb wire.
- JP: Over there? All along the beach?
- HL: No, we started from Moloa'a, come Anahola.
- JP: All the way to Kealia?
- HL: And then, our place was all the way to Kealia. When we was down here, that's when the Army had come over there and [make's rumbling sound]. Oh man. All the people from Anahola got all upset, because over there was all burial grounds.
- CSH: Burials!
- HL: Burial grounds. You could see all bones coming out. You know the army, they never care. They go level the place out, put one big Army tent and everything over there. In fact, had Army all up the lighthouse, underneath the pine trees, they had gun emplacements.
- JP: John was telling me that, John Ornellas, he was telling me, all the way from Kealia, all the way this way, he showed me some places where get hole in the ground. He tell me, 'you see this?' I go, 'yeah'. He go, 'this was the spot where the guards. They stay with their binoculars'. I go, 'really?'. And then he show me few places.
- HL: Anahola Lighthouse, all over.
- JaL: ♦ come all the way to river mouth, go across the river mouth ♦
- HL: I worked for them until we finished Kealia, and then right after that—bingo! I went in the Navy.
- JP: My father went Army.
- HL: Just about after highschool, yeah. So, I seen that. A lot of guys they don't know, you know. Because those days used to have all the mounds over there and— we used to go down and, we never used to sleep by the mound,

we used to go way by the end because—that's why we used to call that place "Smith Beach". Because used to be one Dr. Smith live down by the end.

- JP: That's what my mom told me.
- HL: Yeah, because down by the end never had those mounds inside. Only one small area.
- JP: No more the *kepa'i'o* over there [laughing].
- HL: That's why when we go down the beach, we take all the kids, ten, twelve of us go sleep. Never sleep by yourself down there. No way! You know those days, when come dark, everybody know, ah (interview w/ H. Lovell and J. Friggs, 8/1/02).

Concerns regarding the inadvertent discovery of burials were expressed during consultation for this project. In particular, the areas near Waikā'ea Canal, Moikēha Canal and Onulua's building in Kapa'a were deemed more sensitive (Meeting of SSFM and Nancy McMahon, SHPD Kauai, 7/26/02). Other active community members are aware of the burials previously discovered adjacent to other parts of the proposed path north of Kealia and one expressed dismay at the State's attempt to "protect" the burials by putting up signage "Culturally Sensitive Area" (Personal communication w/ J. Friggs, 7/25/02). This individual feels that this is not the best approach to protecting burials. He feels that such signage calls attention to the area inviting exposure and the potential for vandalism.

F. Sacred Sites and *Wahi Pana*

In the historic record, several *heiau* are noted in the Puna district, however the location of the majority of them is unknown as they no longer exist. Two of the former *heiau* are thought to have existed in the vicinity of the proposed path, the Kaluluomoi'keha Heiau and the Kuahihii Heiau. The locations of these *heiau* correlate with locations of *wahi pana*, celebrated places.

1. Kapa'a

Ka lulu o Mō'ikeha is linked to Mō'ikeha. Mō'ikeha's love for Kapa'a is recalled in the *'ōlelo no'ana*; *Ka lulu o Mō'ikeha ka lau'ā o Kapa'a*. "The calm of Mō'ikeha in the breadth of Kapa'a (Pukui, 1983: 157). "Lulu-o-Mō'ikeha" is described as being situated "near the landing and the school of Waimahanalua" (Akina, 1913: 5). The former Kapa'a Landing was located near the mouth of the present day Moikeha Canal. The Kaluluomoi'keha Heiau is thought to have been located in the same general area. Today, this *heiau* is all but forgotten, however there are those who associate today's canal with the legendary figure Mō'ikeha and it was one of our informants who reminded me that the canal was named after Mō'ikeha (Personal communication w/ W. Kaneakua, 7/25/02).

VI. SUMMARY OF TRADITIONAL CULTURAL PRACTICES

A cultural impact assessment was conducted for the proposed Kapa'a to Keālia pedestrian and bike path. Historic research of the project area was carried out to identify any cultural resources or traditional practices associated with the area encompassing the proposed path alignment. In addition, community consultation was conducted. An attempt was made to contact forty nine parties regarding cultural knowledge, land use history, cultural sites and traditional Hawaiian or other cultural practices in the vicinity of the project area. Five individuals came forward as knowledgeable informants including James and William Kaneakua, Hosea Lovell, Joseph Priggs and John Ornellas. Three interviews were conducted and other community members shared valuable information regarding traditional land use, attitudes and practices associated with the project area.

Traditional cultural practices and attitudes regarding marine resources were by far the most documented of the cultural resources. The coastline has been in the past and continues to be a great attraction for the Hawaiian and local community for fishing, gathering and recreation. Almost everyone consulted who knew the study area at all talked about fishing, crabbing or gathering shellfish or *limu* along the shoreline adjacent to the proposed path. The alignment has been used for many years- both in Kapa'a as a trail then a bike path, and also in Keālia, as a cane haul road-to access fishing and gathering grounds. Different types of fishing mentioned include net fishing such as *hukilau*, throw net and surround net. Other types of fishing identified include trapping, *lamalama*, hooking, and shoreline casting. The fish typically caught in the nearshore areas adjacent to the proposed path include *akule*, *moi*, *ō'ō*, *ulua*, *pāpālo*, *manini*, *weke*, *nemue*, *ūhū*, *moili'i*, *upapalu*, *hāhātea*, and *atō* (squid). Informants also communicated a strong tradition of gathering adjacent to the study area. Crabs such as the Hawaiian crab and the *kūhonu* were once more common near the shoreline. On the rocky shorelines of Keālia and Kumukumu, a *ama* crab was collected. Gathering *limu* continues to this day, although several of the informants lamented at the decline of *limu* over the last few decades. Varieties of *limu* that were once common along the Kapa'a-Keālia coastline and can still be seen are *wāwae'ole*, *ko'ho* and *ōgo* (*manauoa*). *Limu* varieties which were once found, but which are now quite rare are *limu līpōa* and *limu 'ele'ele*. The wave washed shorelines of Kumukumu and Hōmaikawa'a were identified as good gathering places of a variety of *pūpū* such as *'opihi*, *kāpē'e*, and *leho* or cowry shells. *Pūpū o Ni'ihau*, or Ni'ihau shells are found on the sandy beaches and coves between Keālia and Anahola.

A few fishing grounds and geographical references used in fishing were shared by those familiar with them. The area between the Kapa'a Public Swimming Pool and the Bull Shed in Waipouli was considered the Kapa'a fishing grounds. Anahola fishing grounds included Kuna bay at the north end of the project area. Most informants expressed concern and sadness over the deteriorating conditions of the ocean resources due to environmental degradation, overfishing, changes in attitudes regarding fishing and gathering and choices made by the younger generations. Despite problems, families continue to frequent the shoreline and waters to fish and gather.

Historic research provided information regarding old trails in Kapa'a and Keālia. The main thoroughfare of Kapa'a seems to have been the alignment of the present day Kūhiō Highway. At the north of Kapa'a, the paths split, one *mauka*, one *makai* traversing the *makai* and *mauka* areas of Keālia Valley. Historic sources document the impact of commercial sugar

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Kuāhiahī (also spelled Keāhiahī and Keāhiahī) is the rocky headland at the north end of Kapa'a. The first Kapa'a School was built at Kuāhiahī (Kapa'a Elementary School, 1982). Another legendary hero of Kapa'a, Pāka'a is associated with this place. Pāka'a was the keeper of the wind gourd of La'amaomao and according to Wichman (1998:84), grew up on a headland named Keāhiahī, which the bike path traverses. Here, Pāka'a learned to catch *mā'ōlo*, his favorite fish. The lava tongue which extends out into the ocean at Kuāhiahī has been well used over the years by fishermen. A 1934 photo shows several men, probably plantation workers, fishing with bamboo poles (Refer to Figure 18). Fishermen continue to frequent this area today. Here also at Kuāhiahī was formerly a *heiau* (HEN I:216). A second *heiau* was built on top of the volcanic ridge, Mailehuna, where the present day Kapa'a School is located. The distinction of this natural landmark and the placement of the two *heiau* suggest this was once a very sacred site.

For many, this rocky headland marks the boundary of Kapa'a and Keālia and historic accounts name the entire rocky stretch Kaiaka or Kaikea. This name Kaikea is still remembered by the older generations because it was the name given to an "underweight school", a government sponsored school to help sickly children, children with tuberculosis or other illnesses or malnourished children (personal communication with H. Kawada, W. Kaneakua, P. Santos, July and August 2002). Kaikea refers to the white sea foam which is deposited on the beach and the rough seas in this location produce much white foam. Interestingly, *ka'ike'a* refers to a procession of the cross (Pukui and Elbert, 1986:116). The location of the original St. Catherine's Church was adjacent to the highway at Kaikea and the cemetery remains there until today (Interview w/ J. Ornellas, 8/12/02). The location of the petroglyph found and described in the archaeological inventory survey is in the Kaikea area and may hold some significance.

2. Kumukumu and Hōmaikawa'a

Several *kama'āina* claimed there was a *heiau* in the area north of Keālia, but very little was known regarding this *heiau* (personal communication, V. Ako, H. Lovell, K. Pa, P. Rogers). One individual thought it was located on Palikū, the flat ledge on the south side of Kuna (personal communication, P. Rogers, August 2002). Uncle Hosea mentioned it was somewhere on the Kumukumu side of Kuna Bay which may correspond to the Palikū area (Interview w/ H. Lovell and J. Priggs, 8/1/02). By virtue of its name, Palikū suggests a sacred area. Pukui and Elbert (1986:312) define Palikū as 1) initial point of a genealogy line and 2) Priests of Lono; ancient order of priests. Another individual formerly involved with caretaking Keālia specified that a *heiau* was once located on 'Āhīhi Point (K. Pa in Perzinski et al., 2000:94). 'Āhīhi Point is also a *wahi pa'ana* associated with 'Ā'aka, a *menehune* who has a skirmish with a resident shark and eventually outsmarts him with a net made of *'āhīhi* vine (Wichman, 1998:87). Although there was no real consensus as to the location of the *heiau*, everyone seemed to be in agreement that the *heiau* was no longer there.

A *ko'a* in Kumukumu, or a traditional fishing grounds, was identified by one old time fisherman (Personal communication, V. Ako, 7/31/02). Mr. Ako did not identify the exact location, however he did reveal that this was the place of the *weke'ula*, a popular food fish and also used in ceremony (Titcomb, 1972:162).

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agriculture on the traditional trails and access routes between Keālia and Anahola. The proposed pedestrian and bike path shares the alignment with a historic railroad which traversed Kapa'a, Keālia, Kumukumu and Hōmaikawa'a. There is no documentation that this alignment was used as a traditional trail. In addition to transportation routes, a traditional *Pōkane* trail or night marchers path, which traveled from *mauka* to *makai* traversed the proposed path near the present day Pono Kai Resort.

The streams and canals which traverse the proposed path alignment have played a significant role in resident's lives, particularly the Waikā'e and Mōikeha Canals and the Keālia River. The smaller streams to the north of Keālia were significant to those who lived in the area, however no former residents of that area were identified during this study. *Ōpae* and *ō'opu* were once commonly found in the streams and swamp areas of Kapa'a and in Keālia River. Today, it is difficult to find these native freshwater shrimp and gobies. *Oama*, mullet (*ama ama*) and Samoan crab are still caught in the larger streams and canals, in fact *oama* season fetches good numbers of families to the canals where they use the existing bike path bridges to fish from. Small mullet were reported for Hōmaikawa'a Stream north of Keālia. In addition to the types of fish and crabs caught in the streams, some informants discussed the changing attitudes toward the use and care of freshwater drainages.

Although plants were not stressed during interviews, a few informants pointed out plants which they felt held significance. One long time fisherman was caring for *niu* he had planted adjacent to the proposed path in the Kapa'a area. He still held the traditional value that those who live and fish in an area should take care of the land in that area, including the plants. Others mentioned medicinal uses for *hi'aloa* although they did not indicate any special gathering place for the plant associated with the proposed path. Several other traditionally useful Hawaiian plants were found growing along the path including *niu*, *hala*, *hau*, *hau*, *milu*, *kamani*, *koali*, *pōhuehue*, *pa'u* *o hi'taka* and *'i'ima* though no one consulted indicated any use traditional or modern for these plants. Several *kama'āina* remarked on the changed coastal landscape, noting the relationship between more erosion and less coastal plants and trees. The trees that remain along the bike path serve an important role producing shade for the many local folks that frequent the area.

Previous archaeological work has identified burials in the vicinity of the project area in Kapa'a, Keālia and near Kuma. Several *kāpuna* attested to the sand dunes which once ringed Keālia and Anahola and historic research records sand dunes for the Kapa'a area as well. These dunes have largely been altered due to nineteenth and twentieth century development, particularly projects such as the construction of the railroad, building of roads and WWII. Despite the massive modifications to the sand dunes, several individuals expressed concern over the possibility of uncovering burials during the construction of the path. Documentation was also made of traditional beliefs regarding burials.

Research for this area suggest Kapa'a, Keālia, Kumukumu and Hōmaikawa'a are rich in cultural traditions. Written sources document the area's connection to such legendary figures as Mō'ikeha, Paka'a, La'amao, and Kawelo. Two *wahī pana* seem to correlate with the location of historically recorded *heiau*, Kuahiahī and Ka-luh-o-Mō'ikeha which are in the vicinity of the proposed path. A number of informants also mention a former *heiau* in the vicinity of Kuma Bay possibly near Paliku.

VII. RECOMMENDATIONS

Many traditions of the Kapa'a, Keālia, Kumukumu and Hōmaikawa'a areas are still alive, though sometimes well hidden. The peoples who have come to live in the coastal communities of those areas, whether Hawaiian, or immigrant Japanese, Portuguese or Filipino have adopted and modified traditions to something which is today known as "local". Most *kama'āina* consulted felt the proposed path was mostly a positive asset to the community. The principal concerns revolved around access for fishing and potential burials. Other concerns included protecting the shoreline and the streams and canals from erosion.

Specific Recommendations

1. Fishing Access

The area north of Keālia Beach has been blocked to vehicular traffic. This has led to access issues for fishermen who had previously used their vehicles to access their fishing grounds. Many of these fishermen are older and are not able to walk the long distances to their fishing grounds while transporting their gear.

Recommendation: Open up at least one access area between Keālia Beach and the end of the proposed path at 'Ahihi Point from Kūhō Highway so that older or less mobile persons could access fishing grounds adjacent to the proposed path.

2. Burials

Several individuals have expressed concerns regarding uncovering burials during construction of the pedestrian and bike path. Many of the burial concerns will be addressed in a monitoring program designed for the construction phase of the project.

Recommendation: In addition to monitoring program and the burial treatment plan which will address the discovery of inadvertent burials, the alignment of the proposed path should take into consideration the locations of documented burials and avoid them.

General Recommendations

1. Rivers

The river continues to provide the community with opportunities for fishing, crabbing and recreation. The stream mouths are particularly sensitive areas, environmentally and culturally.

Recommendation: If bridges associated with the proposed path are to be modified, measures should be taken to protect riparian resources and water quality.

2. Plants

Erosion is a concern in the project area, particularly in the Kapa'a area and north of Keālia. Although not solely a cultural concern, erosion can become a cultural concern when it eats up culturally significant land or affects water quality in the form of sedimentation of the reef. One way to limit erosion in the near shore environment which is an important area of gathering shell fish, *limu* and crabbing is to keep the shoreline vegetated.

Recommendation: If landscaping or stabilization is needed, plant native trees and shrubs which are normally found in the vicinity of the bike path including such plants as niu, mīlo, hala, kamani, naupaka, kōali, 'ilima papa, pa'u o hi'iaka, pōhinahina, pōhuehue, alena, akulikuli and 'aki'aki.

3. Wahi Pana and Place Names

This study identified a few *wahi pana* or celebrated places and several place names which may correlate to locations along the path. The use of Hawaiian place names and *wahi pana* helps an area preserve its history, sometimes through legend and sometimes through reference to a cultural or natural resource.

Recommendation: With community input, we recommend that consideration be given to using the following place names in interpretive signage along the path: Ahihi Point, Hōmaikawa'a Stream, Kūna, Kaiākea, Kuahiahi Point, Kumukumu Stream, Niau, Palikū, Moikeha Canal and Mailehuma.

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