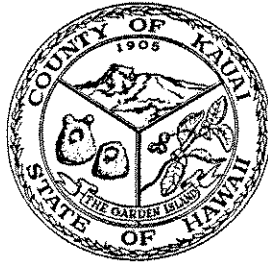


BRYAN J. BAPTISTE
MAYOR



DONALD M. FUJIMOTO
COUNTY ENGINEER
TELEPHONE 241-6600

GARY K. HEU
ADMINISTRATIVE ASSISTANT

DEPUTY COUNTY ENGINEER
TELEPHONE 241-6600

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

December 12, 2006

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawai'i
235 South Beretania Street, Suite 702
Honolulu, HI 96813

RECEIVED
DEC 21 11:59
OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

SUBJECT: FONDING OF NO SIGNIFICANT IMPACT (FONSI)
PO'IPŪ ROAD 24-INCH SANITARY SEWER LINE
TAX MAP KEYS: (4) 2-6-15: POR. 1; (4) 2-6-04: POR. 3;
AND (4) 2-8-14: POR. 27, AND PORTIONS OF PO'IPŪ
AND LAWA'I ROAD, KŌLOA. KAUA'I, HAWAII

Dear Ms. Salmonson:

The County of Kaua'i Department of Public Works has reviewed the comments received during the 30-day comment period which began on October 23, 2006. The County of Kaua'i, Department of Public Works has determined that this project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the next available Environmental Notice.

We have also enclosed a completed OEQC Publication Form and four (4) copies of the Final Environmental Assessment (EA). Should you have any questions, please contact me at (808) 241-6498.

Very Truly Yours,

CONCUR:

Wallace Kudo
Wallace Kudo, P.E.
Chief, Engineering Division

Donald M. Fujimoto
DONALD M. FUJIMOTO, P.E.
County Engineer

wk
Attachment

cc: Ms. Frances Yamada, Wilson Okamoto Corp.
Mr. Lindsay Crawford, Kukui'ula Development Company (Hawai'i) LLC

2007-01-08-KA-FEA-POIPU RD 24 INCH SANITARY SEWER LINE

JAN - 8 2007
FILE COPY

Final Environmental Assessment RECEIVED

'06 DEC 21 P1:58

REC. OF ENVIRONMENTAL
QUALITY CONTROL

**Poipu Road
24-Inch Sanitary Sewer Line**

Koloa, Kauai, Hawaii

Tax Map Keys: [4] 2-6-04: Por. 3, 2-6-15: Por. 1, and 2-8-14: Por. 27, and
Portions of Poipu Road and Lawai Road

Prepared For: _____

**Kukui'ula Development Company
(Hawaii), LLC**
P.O. Box 280
Koloa, Kauai, Hawaii 96756

Prepared By: _____

Wilson Okamoto Corporation
Engineers and Planners
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

December 2006

FINAL ENVIRONMENTAL ASSESSMENT

**POIPU ROAD
24-INCH SANITARY SEWER LINE**

Koloa, Kauai, Hawaii

**Tax Map Keys: (4) 2-6-04: por. 3,
2-6-15: por. 1, and 2-8-14: por. 27,
and Portions of Poipu Road and Lawai Road**

Prepared For:

**Kukui'ula Development Company (Hawaii), LLC
P.O. Box 280
Koloa, Kauai, Hawaii 96756**

Prepared By

**Wilson Okamoto Corporation
Engineers and Planners
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826**

December 2006

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- Appendix A: *A Survey of Botanical, Avian and Terrestrial Mammalian Species Conducted for a Proposed Sewer Line Along Poipu Road, Koloa, District, Island of Kauai, Prepared by Rana Productions, Ltd. and AECOS Consultants, August 16, 2006*
- Appendix B: *Archaeological Assessment for the Kukui'ula – Poipu 24-Inch Sewer Line, Koloa Ahupua'a, Koloa District, Island of Kauai, TMK: (4) 2-6-004: por. 3, 2-6-015: por. 1, and 2-8-014: por. 27, and Portions of Poipu Road and Lawai Road, Prepared by Cultural Surveys Hawaii, Inc., October 2006.*
- Appendix C: *Cultural Impact Assessment for the Kukui'ula – Poipu Road 24-Inch Sewer Line, Koloa Ahupua'a, Koloa District, Island of Kauai, TMK: (4) 2-6-004: por. 3, 2-6-015: por. 1, and 2-8-014: por. 27, and Portions of Poipu Road and Lawai Road, Prepared by Cultural Surveys Hawaii, Inc., October 9, 2006.*

PREFACE

This Final Environmental Assessment ("EA") and Finding of No Significant Impact ("FONSI") is prepared pursuant to Chapter 343, Hawaii Revised Statutes ("HRS"), and Title 11, Chapter 200, Administrative Rules, Department of Health, State of Hawaii. Proposed is an applicant action by Kukui'ula Development Company (Hawaii), LLC for the installation of a private 24-inch gravity sanitary sewer line of approximately 2,250 linear feet within a portion of Poipu Road and Lawai Road in Koloa, Island of Kauai to convey wastewater from the planned Kukui'ula development to the existing Poipu Water Reclamation Facility ("Reclamation Facility"), a private wastewater treatment plant located approximately 0.4 mile to the east of the Kukui'ula development. Approximately 200,000 gallons per day ("gpd") of wastewater generated by the Kukui'ula development will be conveyed to the Reclamation Facility via the proposed 24-inch sewer line. Treatment allocation for the 200,000 gpd has been secured from the owner of the Reclamation Facility. The proposed sewer line is sized to accommodate wastewater flows in excess of the flows to be generated by the Kukui'ula development. The proposed sewer line will be built by the Applicant on behalf of Kukui'ula South Shore Community Services, LLC, a private wastewater utility regulated by the Hawaii Public Utilities Commission ("PUC"). The preparation of this EA is required in accordance with Chapter 343, HRS, due to the use of State and County lands.

PROJECT SUMMARY

Applicant: Kukui'ula Development Company (Hawaii), LLC
P.O. Box 280
Koloa, Kauai, Hawaii 96756

Approving Agency: County of Kauai ("County") Department of Public Works
4444 Rice Street, Suite 275
Lihue, Kauai, Hawaii 96766

Location: Koloa, Kauai, Hawaii

Tax Map Keys ("TMKs"): (4) 2-6-04: por. 3, 2-6-15: por. 1, and 2-8-14: por. 27, and portions of Poipu Road and Lawai Road

Affected Area: Approximately 1.8 acres

Recorded Fee Owners: Kukui'ula Development Company (Hawaii), LLC
(TMK: (4) 2-6-15: por. 1)

State of Hawaii
Department of Land and Natural Resources, Land Division
(TMK: (4) 2-6-04: por. 3)
(Note: The State is in the process of conveying the subject property to the County.)

Eric A. Knudsen Trust, Etal
(TMK: (4) 2-8-14: por. 27)
(Poipu Water Reclamation Facility Parcel)

County Department of Public Works
(Portions of Poipu Road and Lawai Road)

Existing Use: Portions of Poipu Road and Lawai Road; roadside vegetation consisting of open mixed scrub and introduced landscape plantings; vacant, undeveloped land; and a portion of the existing Poipu Water Reclamation Facility site.

State Land Use Classification: Urban District

County General Plan: Residential Community and Open

Koloa-Poipu-Kalaheo Development Plan: Residential, Public, Park, and Industrial

County Zoning:	Open District (O), Neighborhood Commercial District (CN), and Residential District (R-20)
Special Management Area ("SMA"):	Within the SMA, however, underground utility lines are not defined as "development" subject to an SMA Permit.
Proposed Action:	The Applicant proposes to install a private 24-inch gravity sanitary sewer line within a portion of Poipu Road and Lawai Road in Koloa, Island of Kauai to convey wastewater from the planned Kukui'ula development to the existing Poipu Water Reclamation Facility ("Reclamation Facility"), a private wastewater treatment plant located approximately 0.4 mile to the east of the Kukui'ula development. Approximately 200,000 gallons per day ("gpd") of wastewater generated by the Kukui'ula development will be conveyed to the Reclamation Facility via the proposed 24-inch sewer line. Treatment allocation for the 200,000 gpd has been secured from the owner of the Reclamation Facility. The proposed sewer line is sized to accommodate wastewater flows in excess of the flows to be generated by the Kukui'ula development. The proposed sewer line will be built by the Applicant on behalf of Kukui'ula South Shore Community Services, LLC, a private wastewater utility regulated by the Hawaii Public Utilities Commission ("PUC"). The proposed sewer line will extend approximately 2,250 linear feet and will be installed using the open cut trench method.
Impacts:	No significant impacts are anticipated from the construction and operation of the proposed Project.
Required Permits & Approvals:	<p><u>State of Hawaii</u> Department of Health</p> <ul style="list-style-type: none">▪ National Pollutant Discharge Elimination System ("NPDES") Permit▪ Community Noise Permit <p>Department of Land and Natural Resources Historic Preservation Division</p> <ul style="list-style-type: none">▪ Chapter 6E, HRS Historic Preservation <p><u>County of Kauai</u> Department of Public Works</p> <ul style="list-style-type: none">▪ Road Permit

**Agencies Consulted
In Pre-Assessment
Process:**

Federal

U.S. Army Corps of Engineers
U.S. Geological Survey
U.S. Fish & Wildlife Service

State of Hawaii

Department of Health, Office of Environmental Quality Control
Department of Health, Environmental Planning Office
Department of Land and Natural Resources
Department of Land and Natural Resources, Historic Preservation
Division
Office of Hawaiian Affairs

County of Kauai

Planning Department
Department of Public Works
Department of Public Works, Division of Wastewater Management
Department of Water

Others

HOH Utilities, LLC, Etal
Eric A. Knudsen Trust, Etal
Kiahuna Makai, LLC
Terry P. Kamen Family Trust, Etal
Robert E. Keown Trust, Etal
Waikomo Stream Associates
Waikomo Stream Villas

**Agencies Consulted
In Draft EA Process:**

Federal

U.S. Army Corps of Engineers
U.S. Geological Survey
U.S. Fish & Wildlife Service
U.S. Natural Resources Conservation Service

State of Hawaii

Department of Business, Economic Development, and Tourism
Department of Business, Economic Development, and Tourism,
Office of Planning
Department of Health
Department of Health, Environmental Planning Office
Department of Health, Environmental Management Division
Department of Health, Office of Environmental Quality Control
Department of Land and Natural Resources
Department of Land and Natural Resources, Historic Preservation
Division

Office of Hawaiian Affairs

County of Kauai

Planning Department

Department of Public Works

Department of Public Works, Division of Wastewater Management

Department of Water

Police Department

Fire Department

Others

HOH Utilities, LLC

Eric A. Knudsen Trust, Etal

Kiahuna Makai, LLC

Terry P. Kamen Family Trust, Etal

Robert E. Keown Trust, Etal

Waikomo Stream Villas Resort

Waikomo Stream Associates

Koloa Public/School Library

Kauai Island Utility Cooperative

Poipu Beach Resort Association Board of Directors

1. INTRODUCTION AND PROJECT SETTING

1.1 Introduction

Kukui'ula Development Company (Hawaii), LLC ("Applicant") proposes to install a private 24-inch gravity sanitary sewer line within a portion of Poipu Road and Lawai Road in Koloa, Island of Kauai to convey wastewater from the planned Kukui'ula development to the existing Poipu Water Reclamation Facility, a private wastewater treatment plant ("WWTP") located approximately 0.4 mile to the east of the Kukui'ula development ("Project"). A Location Map depicting the Project Site is included as Figure 1-1.

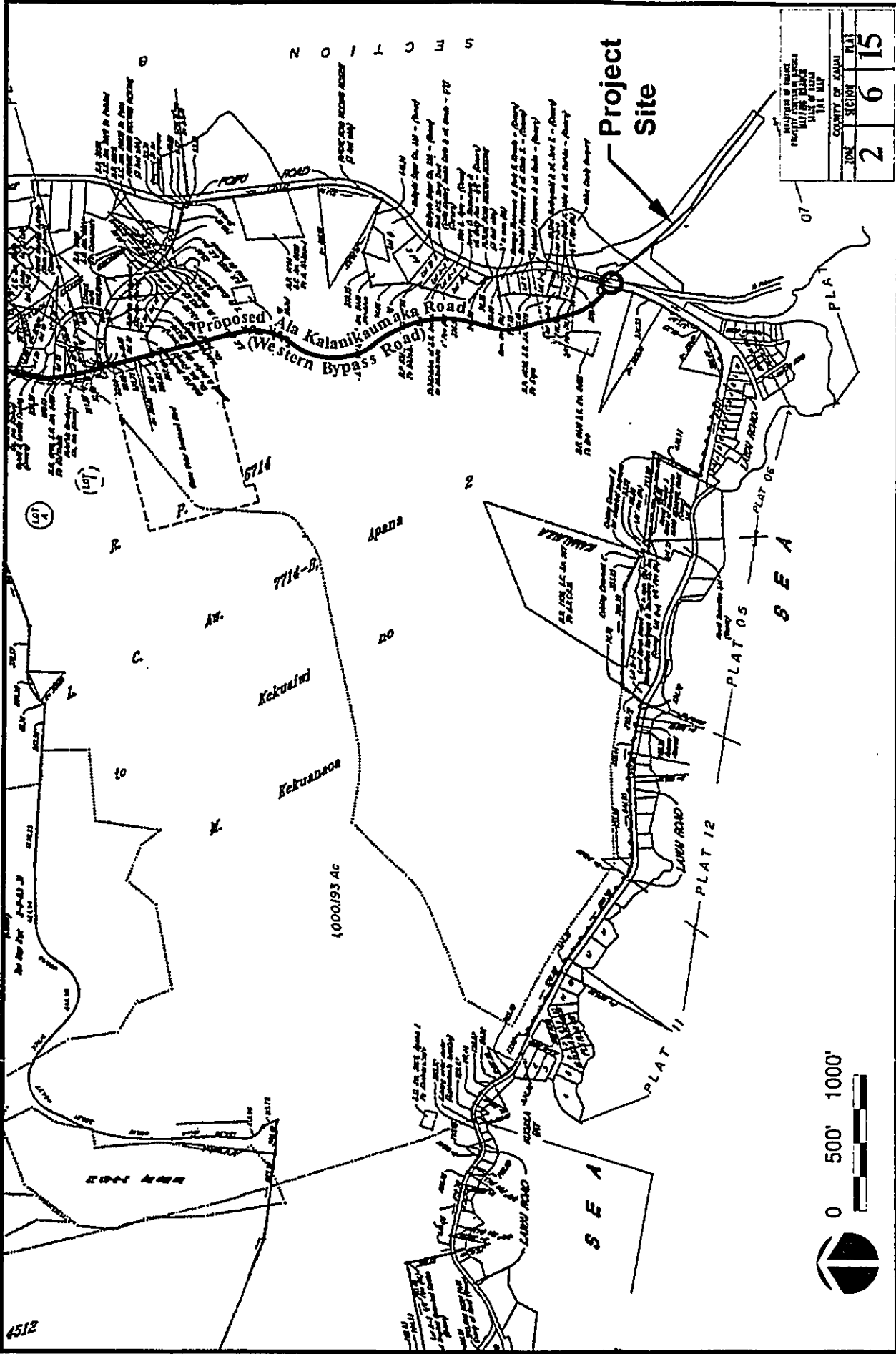
The Project will be developed in conjunction with the planned Kukui'ula development, a resort-residential project located on approximately 1,002 acres to be developed by the Applicant. The Kukui'ula development is located west of the Koloa-Poipu area along the south shore of Kauai on former McBryde Sugar Company plantation lands as shown on Figure 1-1. The Kukui'ula development proposes a maximum of 1,500 units, a resort, an 18-hole golf course, recreational facilities, commercial uses, parks and open space, along with a maximum of 75 gap housing units and 60 affordable housing units. An Environmental Impact Statement ("EIS") was prepared in April 1989 in conjunction with a County General Plan amendment for the Kukui'ula development. A Supplemental EIS was also subsequently prepared in August 1998 in conjunction with the County General Plan amendment process for the Kukui'ula development's resort core. On July 28, 2004, the County of Kauai ("County") approved a zoning amendment and amendment to the Visitor Destination Area ("VDA") designation for the Kukui'ula development.

Preparation of this Environmental Assessment ("EA") pursuant to Chapter 343, Hawaii Revised Statutes ("HRS"), is required since the proposed sewer line will be traversing through lands owned by the State of Hawaii ("State") and County of Kauai. The portion of the Project Site owned by the State, identified as Tax Map Key ("TMK"): (4) 2-6-04: por. 3, is currently in the process of being conveyed to the County. The County-owned lands within the Project Site include Poipu Road and Lawai Road.

1.2 Project Location and Setting

The Project Site is located within the central portion of the Koloa-Poipu area along the south shore of Kauai in the Koloa District as shown on Figure 1-1. The Project Site is identified as TMKs: (4) 2-6-15: por. 1, 2-6-04: por. 3, and 2-8-14: por. 27, and portions of Poipu Road and Lawai Road as shown on Figures 1-2, 1-3 and 1-4. The landowners of the Project Site are Kukui'ula Development Company (Hawaii), LLC (TMK: 2-6-15: por. 1), State (TMK: 2-6-04: por. 3), Eric A. Knudsen Trust, LLC, Etal (TMK: 2-8-14: por. 27), and County (Poipu Road and Lawai Road). The portion of the Project Site owned by the State is currently in the process of being conveyed to the County.

FILE PATH: D:\6607-33 Kuku'ula\Figure 1-2 IUX 2-6-15\Figure 1-7 Iux 2-6-15.dwg PLOT DATE: Sep 13, 2015



**POIPU ROAD
24-INCH SANITARY
SEWER LINE
KUKU'ULA**
Koloa, Kauai, Hawaii

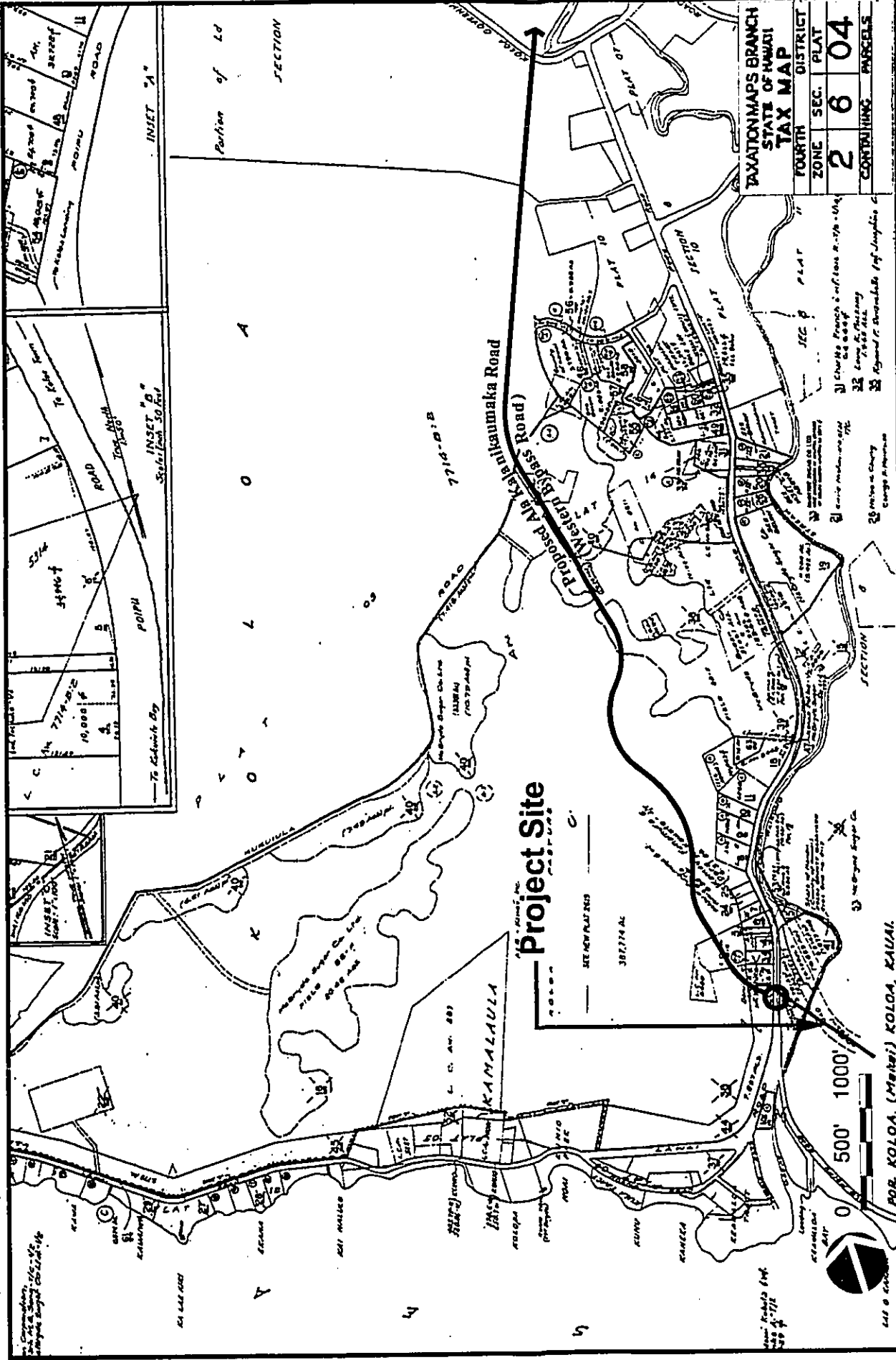
Tax Map Key: 2-6-15: Por. 1

Prepared for:
Kuku'ula Development Company (Hawaii), LLC

Prepared by:
Wilson Okamoto Corporation

Figure 1-2

FILE PATH: D:\6607-33 Kuku'ula\Figure 1-3 Tax 2-6-04\Figure 1-3 Tax 2-6-04.dwg PLOT DATE: Sep 13, 2006



TAXATION MAPS BRANCH STATE OF HAWAII TAX MAP			
FOURTH	ZONE	SEC.	DISTRICT
	2	6	04
CONTAINING PARCELS			

**POIPU ROAD
24-INCH SANITARY
SEWER LINE**

KUKU'ULA
Koloa, Kauai, Hawaii

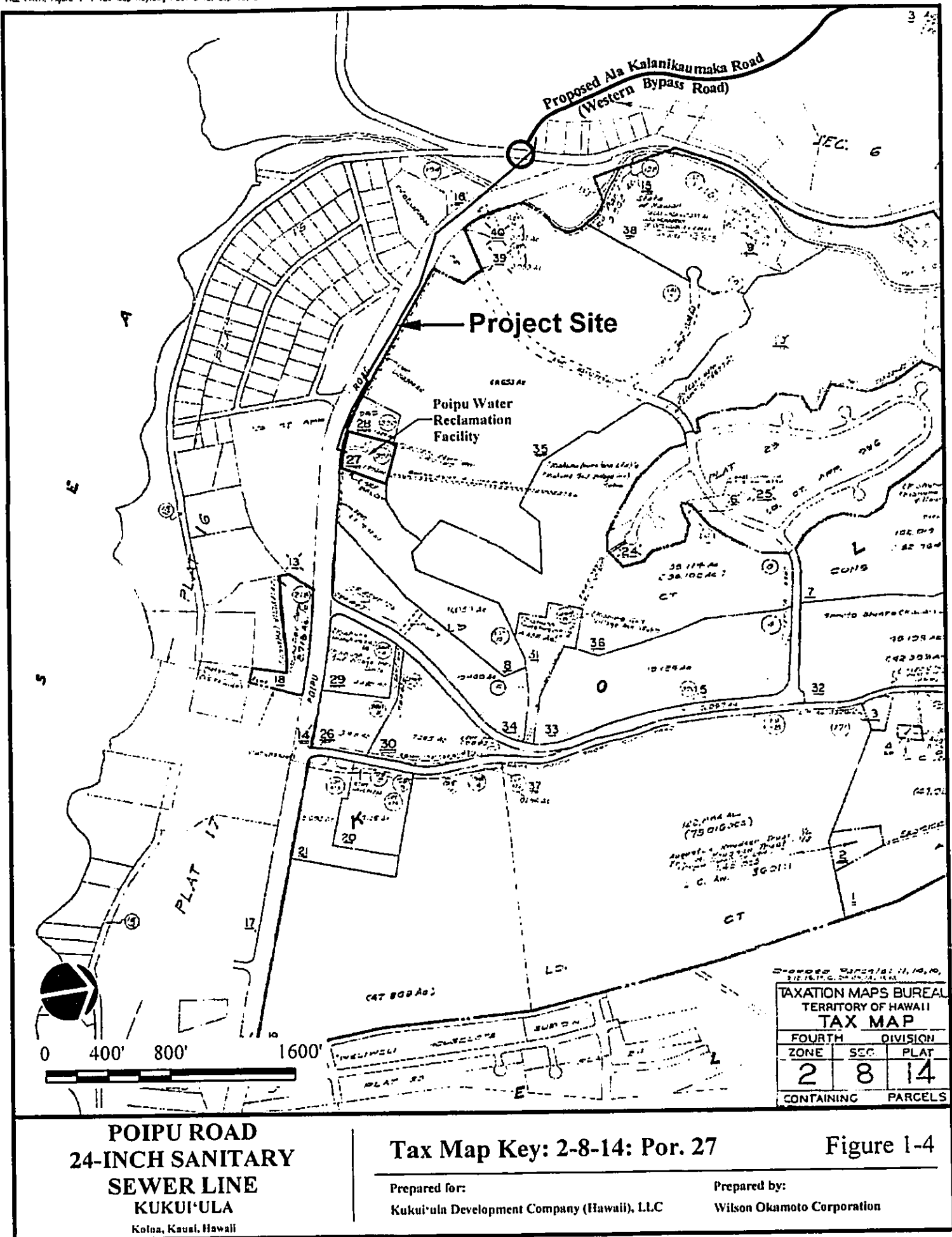
Tax Map Key: 2-6-04: Por. 3

Prepared for:
Kuku'ula Development Company (Hawaii), LLC

Prepared by:
Wilson Okamoto Corporation

Figure 1-3

DOCUMENT CAPTURED AS RECEIVED



**POIPU ROAD
24-INCH SANITARY
SEWER LINE
KUKUI'ULA**
Kona, Kaula, Hawaii

Tax Map Key: 2-8-14: Por. 27

Figure 1-4

Prepared for:
Kukui'ula Development Company (Hawaii), LLC

Prepared by:
Wilson Okamoto Corporation

A portion of the Project Site is located within the southeastern portion of the Kukui'ula development and continues through the proposed single-lane roundabout to be constructed by the Applicant at the intersection of Poipu Road, Lawai Road and the planned Ala Kalanikaumaka Road (Western Bypass Road). The Project Site continues southeast within the Poipu Road right-of-way and terminates within the southern portion of the Reclamation Facility parcel.

1.3 Existing and Surrounding Uses

Existing Uses: The Project Site consists primarily of a portion of Poipu Road and, to a lesser extent, a portion of Lawai Road. The roadside vegetation within the Project Site consists of open mixed scrub containing weeds, Guinea grass and koa haole, and introduced landscape plantings. The portion of the Project Site west of Poipu Road and mauka of Lawai Road consists of vacant, undeveloped land that is predominantly vegetated with a mixture of weedy species, open mixed scrub, and a variety of grasses. The eastern end of the Project Site consists of the Poipu Water Reclamation Facility site.

Surrounding Uses: Land uses bordering the Project Site primarily include vacant, undeveloped areas to the north, west and south. The Waikomo Stream traverses beneath Poipu Road near the western end of the Project Site. The Waikomo Stream Villas Resort is located adjacent to and south of the Project Site, just east of Waikomo Stream. The Koloa Fire Station is located northwest of the Project Site at the intersection of Poipu Road and Lawai Road. Other surrounding uses include private residences and commercial uses to the northwest, and vacant, undeveloped areas to the north, south, west, and east.

2. PROJECT DESCRIPTION

2.1 Project Need

The conveyance of wastewater from the Kukui'ula development to the Poipu Water Reclamation Facility is intended to be part of a systematic and consolidated approach to the conveyance, treatment and disposal of wastewater with other developments in the area. The proposed Project will provide a means of delivering wastewater to be generated by the Kukui'ula development to the Poipu Water Reclamation Facility which currently has available capacity, and can produce a higher quality of effluent than the existing Kukui'ula WWTP, unless it is substantially upgraded.

2.2 Project Description

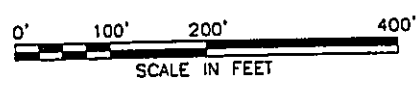
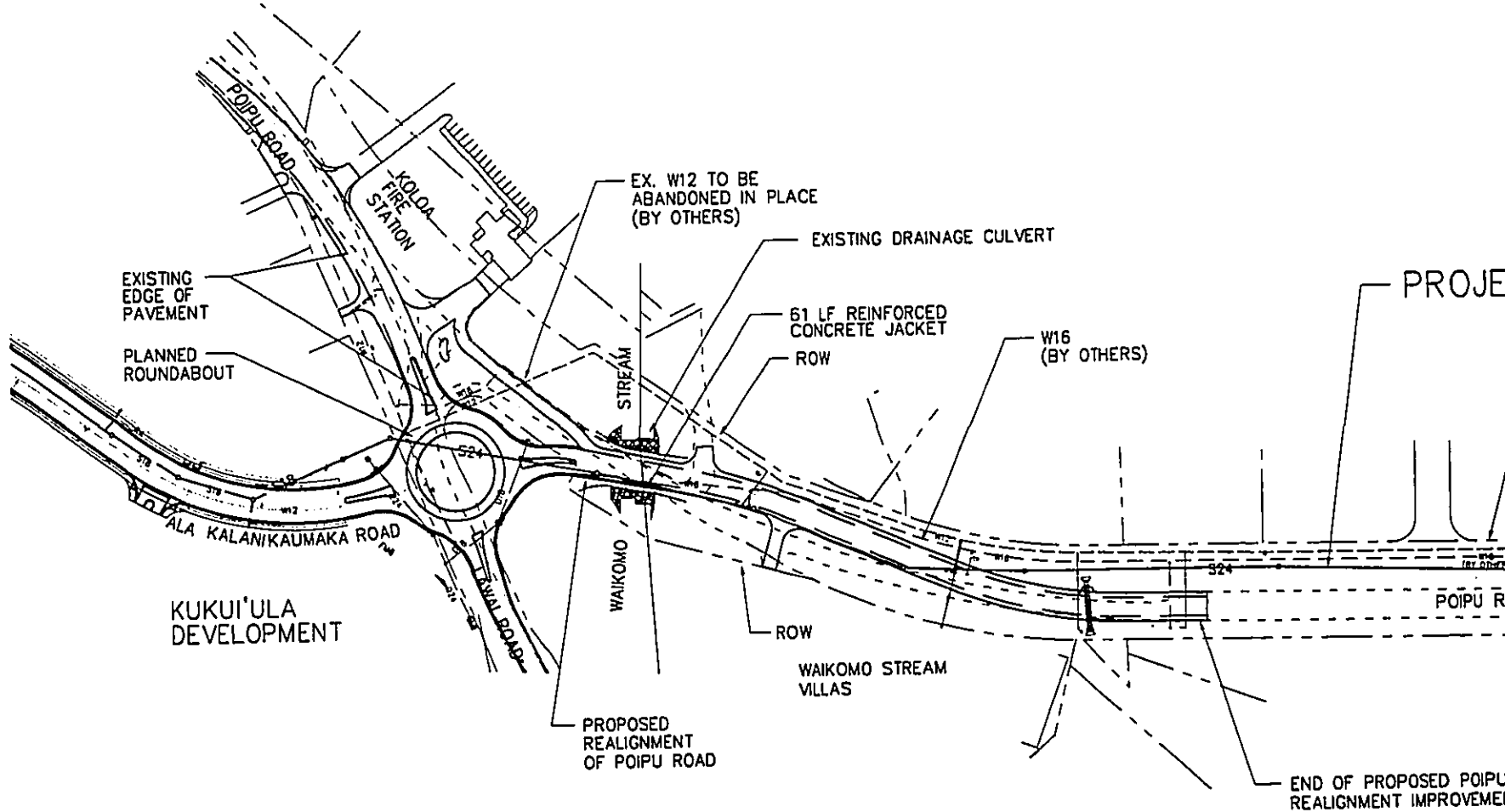
The Project includes the proposed installation of a private 24-inch gravity sanitary sewer line across a portion of Lawai Road and primarily within a portion of Poipu Road to convey wastewater from the planned Kukui'ula development to the existing Poipu Water Reclamation Facility, a private WWTP located approximately 0.4 mile to the east of the Kukui'ula development. The proposed sewer line will be built by the Applicant on behalf of Kukui'ula South Shore Community Services, LLC ("KSSCS"), a private wastewater utility regulated by the Hawaii Public Utilities Commission ("PUC"). KSSCS is a subsidiary of the Applicant. The proposed sewer line is sized to accommodate wastewater flows in excess of the flows to be generated by the Kukui'ula development.

The proposed sewer line will extend approximately 2,250 linear feet from a proposed 24-inch sewer line stub to be installed within the proposed roundabout at the intersection of Poipu Road, Lawai Road and the planned Ala Kalanikaumaka Road (Western Bypass Road) to the southern boundary of the existing Reclamation Facility as shown on Figure 2-1. The majority of the proposed sewer line will be constructed of polyvinyl chloride ("PVC"), except for an approximately 101 linear-foot segment in the vicinity of the Waikomo Stream crossing which will be constructed of ductile iron with a ceramic epoxy lining. From the roundabout, the proposed sewer line will extend southeast within the makai portion of the Poipu Road right-of-way for a distance of approximately 750 linear feet. The proposed sewer line will then cross Poipu Road and continue southeast along the mauka portion of the Poipu Road right-of-way for a distance of approximately 1,500 linear feet to the southern boundary of the Reclamation Facility. From the southern boundary of the Reclamation Facility, the proposed sewer line will connect to a proposed wastewater pump station to be built by the owner of the Reclamation Facility. The wastewater will then be pumped to the Reclamation Facility for treatment and disposal.

The existing Poipu Water Reclamation Facility is a privately-owned secondary treatment plant which provides wastewater service for various developments within the Poipu area. The Reclamation Facility, located on approximately 2 acres adjacent to and mauka of Poipu Road, about 0.4 mile east of the Kukui'ula development, is owned by HOH Utilities, LLC, a public utility company regulated by the PUC, and operated by Aqua Engineers, Inc. The Reclamation Facility is designed to treat an average flow of 1.0 million gallons per day ("mgd"), with a peak hour flow capacity of 3.5 mgd. The Reclamation Facility currently treats approximately 360,000 gallons per day ("gpd") of wastewater, with the effluent used to irrigate the Kiahuna Golf Course located mauka of the Project Site. Ongoing improvements to the Reclamation Facility include

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LEGEND
 ○ SEWER MANHOLE



PREPARED BY: AUSTIN, TSUTSUMI, & ASSOCIATES, INC. SEPTEMBER 2006

**POIPU ROAD 24-INCH
 SANITARY SEWER LINE**

KUKUI'ULA
 Koloa, Kauai, Hawaii

Site Plan

Prepared for:
 Kukui'ula Development Company (Hawaii), LLC

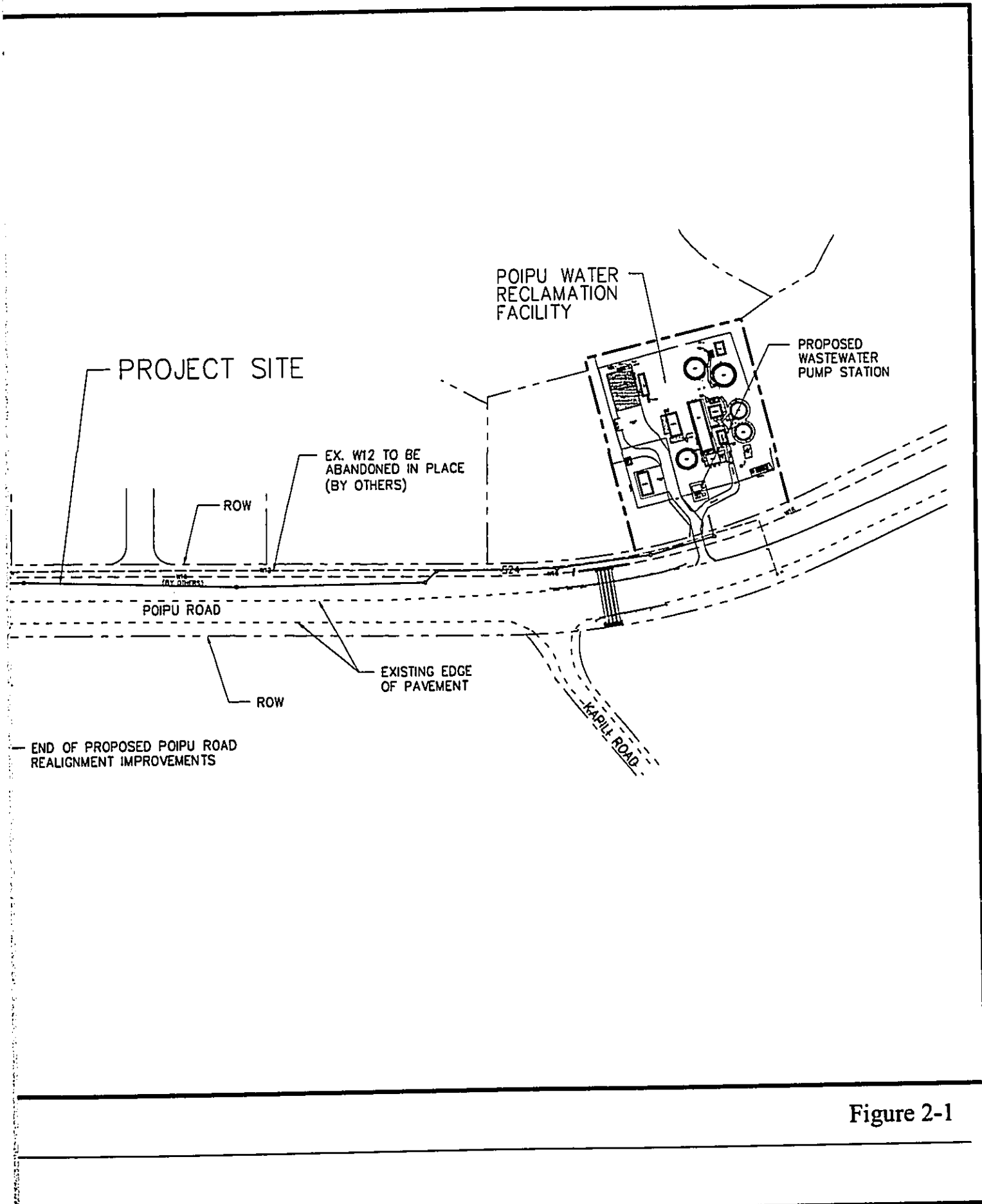


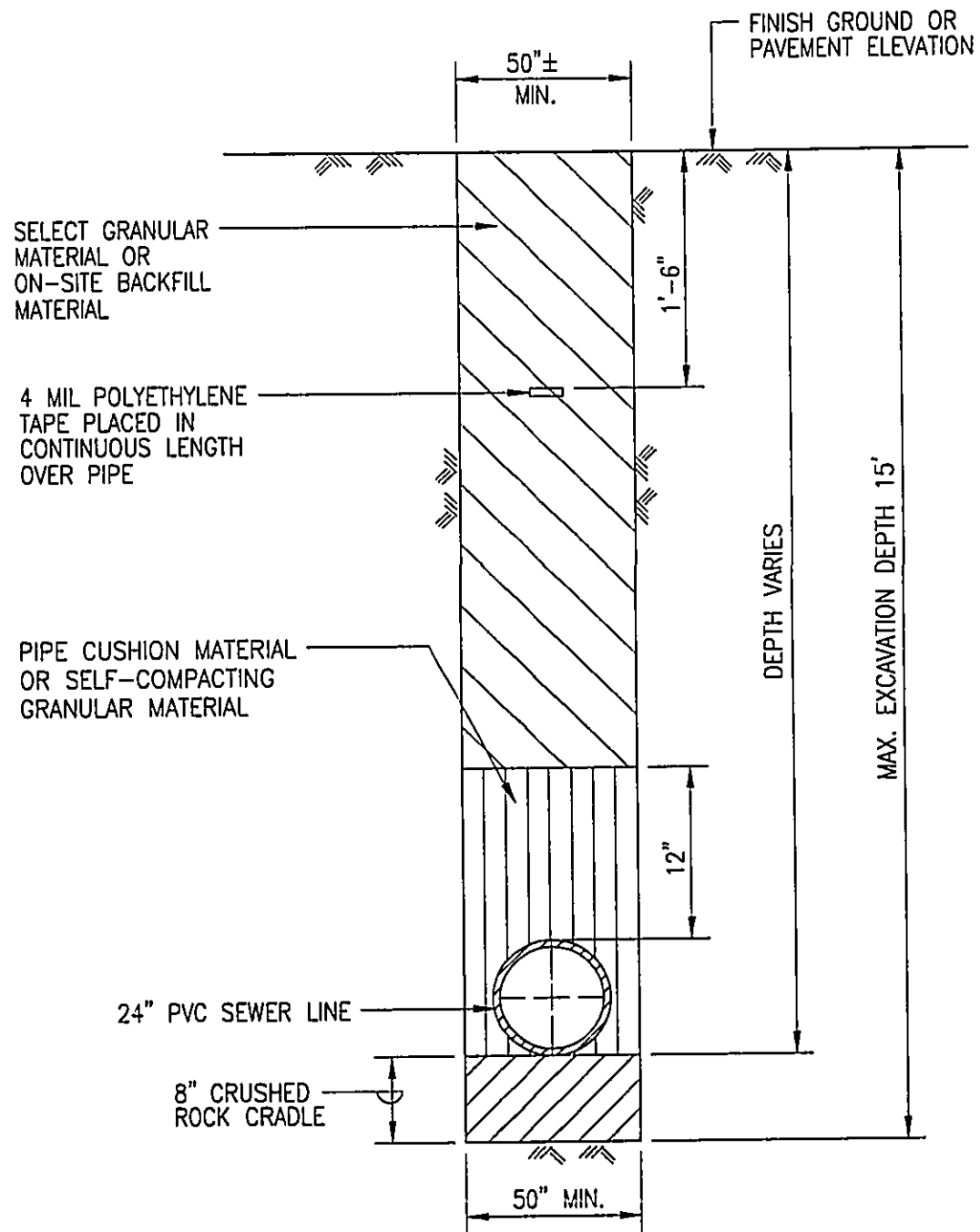
Figure 2-1

installation of an injection well, effluent filter and an ultraviolet ("UV") disinfection system. Future improvements are proposed to include flow equalization, new aerobic digesters, and odor control equipment including upgraded aeration pumps and dome tank covers. Upon completion of improvements, the Reclamation Facility is anticipated to meet R-1 standards, which is the highest level of effluent quality regulated by the State. As previously indicated, a new wastewater pump station will be built within the southern portion of the Reclamation Facility parcel by the owner of the facility. The pump station will receive wastewater from the proposed sewer line, in addition to flows from other developments in the area, which will then be pumped to the Reclamation Facility for treatment and processing.

Approximately 200,000 gpd of wastewater generated by the Kukui'ula development will be conveyed to the Reclamation Facility via the proposed 24-inch gravity sewer line. Treatment allocation for the 200,000 gpd has been secured from the owner of the Reclamation Facility. The treatment and disposal of the remaining wastewater to be generated by the Kukui'ula development will be accommodated at either a regional WWTP if developed or at a proposed replacement WWTP to be located within the Kukui'ula development. If a regional WWTP is to be developed, a subsequent environmental assessment document for that facility will need to be prepared at the appropriate time in compliance with applicable future requirements.

The proposed 24-inch sewer line will be installed using the open cut trench method. The maximum depth of excavation for the installation of the sewer line is proposed to be 15 feet, with a minimum width of approximately 4 feet as shown in Figure 2-2. The open cut trench method will involve excavating a trench, installing adequate shoring to protect the sidewalls of the trench in non-rock areas where vertical trench walls can be cut, laying the sewer line within the excavated area, and backfilling the trench. During trenching operations, subsurface materials will be incrementally removed and internal bracing installed between the walls to support the excavation. In addition to the normal trenching operations, a hoe ram will be used for trenching in areas where rock material is encountered as opposed to blasting. Once the desired depth is reached, the sewer line will be installed, followed by backfilling and restoration of the ground surface. A total of 13 new pre-cast concrete sewer manholes will also be installed along the alignment of the proposed sewer line via the open cut trench method. Existing landscaping that may need to be removed during installation of the sewer line will be replaced following construction. The remaining unpaved areas along the sewer line corridor within the Poipu Road right-of-way that will be disturbed during construction activities will be re-vegetated following construction.

In the vicinity of the Waikomo Stream crossing, the proposed sewer line will be installed over the existing drainage culverts on the makai side within the Poipu Road right-of-way using the open cut trench method as shown in Figure 2-3. An approximately 101 linear-foot segment of the proposed sewer line in the vicinity of the Waikomo Stream crossing will be constructed of ductile iron with a ceramic epoxy lining and will be encased in a reinforced concrete jacket approximately 10 feet past either side of the culverts. The use of ductile iron pipe is intended to provide for increased strength and rigidity of the sewer line at the stream crossing. The ceramic epoxy lining within the ductile iron pipe provides for a chemically-resistant and corrosion-protective lining. The encasement of the ductile iron pipe within a reinforced concrete jacket is intended to provide added protection for the sewer line from damage which may result from external forces. The depth of the proposed 24-inch sewer line at the Waikomo Stream crossing



NOT TO SCALE

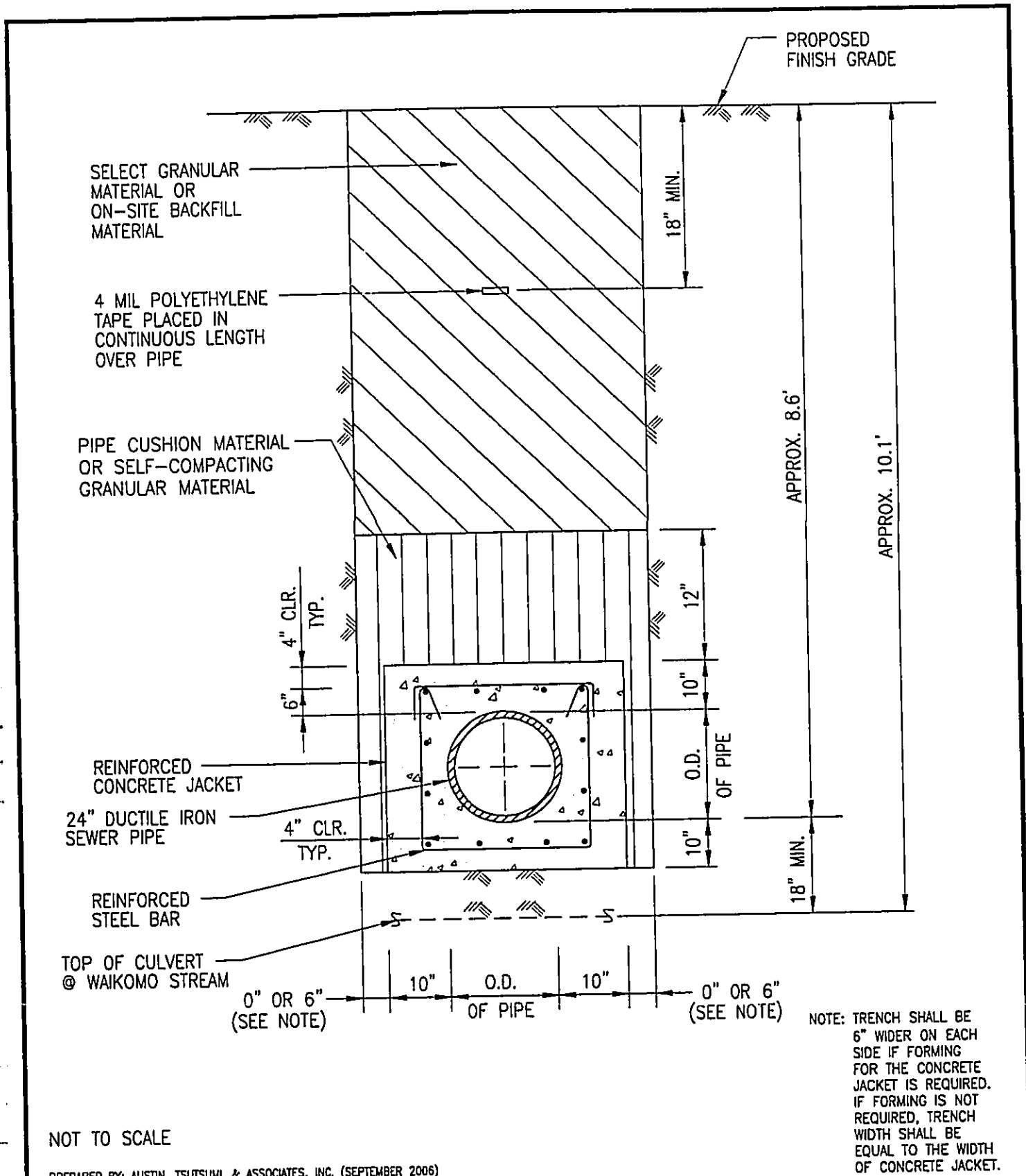
PREPARED BY: AUSTIN, TSUTSUMI, & ASSOCIATES, INC. (SEPTEMBER 2006)

**POIPU ROAD
24-INCH SANITARY
SEWER LINE**
KUKU'ULA
Koloa, Kauai, Hawaii

Typical Trench Section

Figure 2-2

Prepared for:
Kukul'ula Development Company (Hawaii), LLC



**POIPU ROAD
24-INCH SANITARY
SEWER LINE**
KUKUI'ULA
Koloa, Kauai, Hawaii

Waikomo Stream Crossing Section

Figure 2-3

Prepared for:
Kukui'ula Development Company (Hawaii), LLC

will be approximately 8.6 feet from the proposed finish grade. The depth of the proposed finish grade from the top of the culverts at Waikomo Stream will be approximately 10.1 feet. No construction activities in conjunction with the Project will occur within Waikomo Stream.

The Applicant is considering installing an approximately 1,600 linear-foot segment of the eastern portion of the proposed sewer line on privately-owned land located adjacent to and mauka of the Poipu Road right-of-way. This segment of the sewer line would be located approximately 60 feet mauka of its current proposed location within the southern portion of the properties identified as TMKs: (4) 2-8-14: portions of 28 and 35 and 2-8-15: portion 77. The location of this segment of the sewer line further mauka will allow for greater separation from the existing underground utilities within the Poipu Road right-of-way. There is anticipated to be no change in impacts associated with the location of this portion of the sewer line further mauka. The alignment of the remaining segments of the proposed sewer line will remain unchanged.

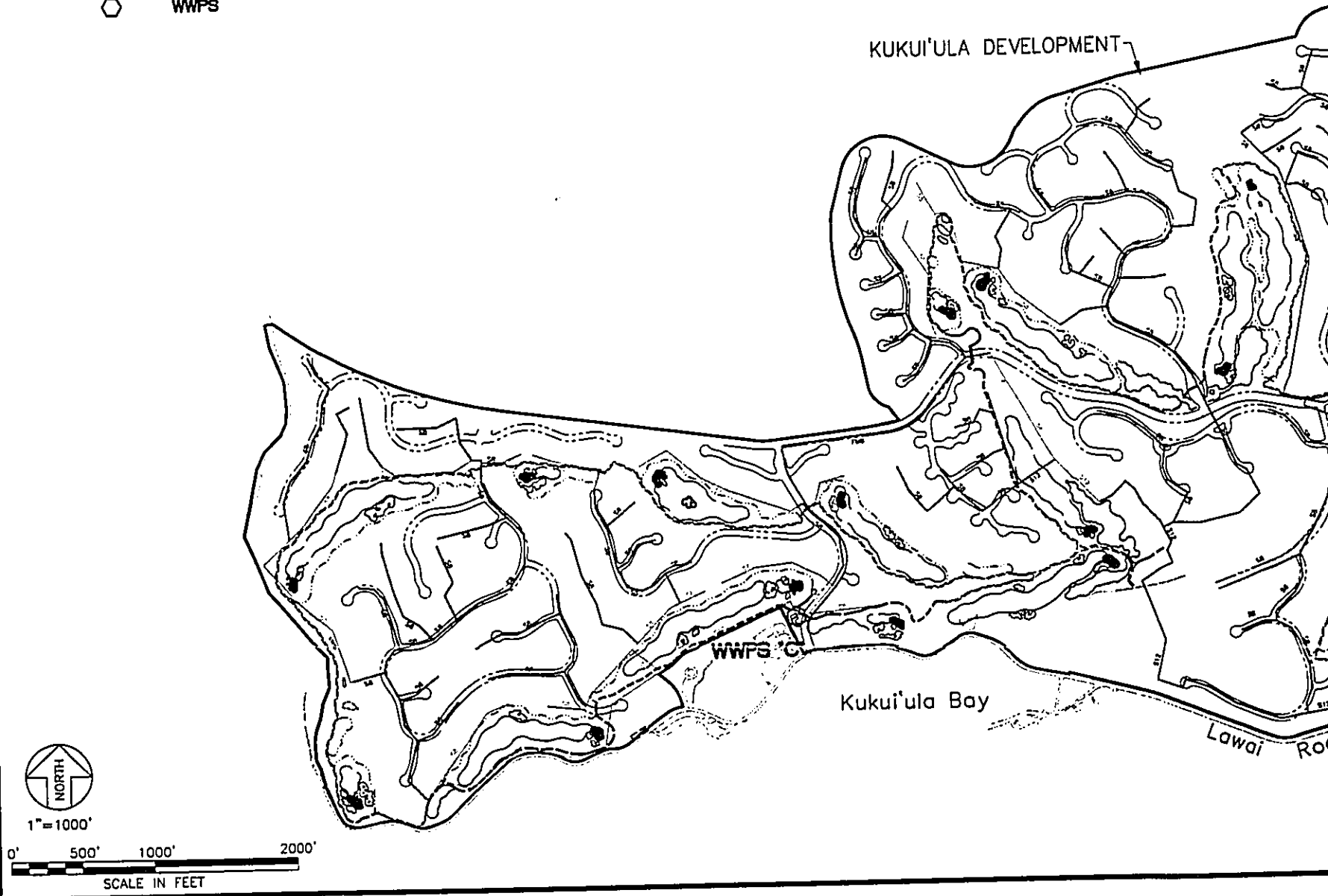
The open cut trench method is determined to be the most appropriate construction method for the installation of the proposed sewer line. Microtunneling was also considered, however, there is an inadequate amount of vertical separation from existing utilities to the proposed sewer line to implement this method. Furthermore, although microtunneling typically results in less construction traffic impacts, the open cut trench method is more conducive for the Project since the proposed sewer line will be installed in conjunction with the construction of the planned roundabout improvements.

The wastewater transmission system within the Kukui'ula development will include a network of gravity lines and force mains that will be installed primarily within the development's roadways. The Proposed Kukui'ula Wastewater System Plan is shown in Figure 2-4. A total of three (3) on-site wastewater pump stations ("WWPSs") will service the Kukui'ula development. Wastewater flows from the initial phase of the Kukui'ula development will be accommodated at WWPS A located within the southeast portion of the development. From WWPS A, the wastewater will be pumped via an 8-inch force main to a sewer manhole located approximately 2,300 feet mauka. From the sewer manhole, the wastewater will gravity flow east through an 18-inch sewer line to the planned Ala Kalanikaumaka Road (Western Bypass Road), and then south via an 18-inch sewer line along Ala Kalanikaumaka Road to the proposed 24-inch sewer line.

The proposed sewer line improvements will be constructed concurrently with the planned four-legged, single-lane roundabout at the intersection of Poipu Road, Lawai Road and the planned Ala Kalanikaumaka Road (Western Bypass Road) and associated improvements to the Poipu Road and Lawai Road approaches to be developed by the Applicant in conjunction with the Kukui'ula development. The improvements will include the realignment of a portion of the southeastern leg of the Poipu Road approach in the vicinity of the Project Site slightly mauka (north) as shown on Figure 2-1. The general nature of the roundabout improvements was assessed in the Supplemental EIS prepared in August 1998 in conjunction with the County General Plan amendment process for the Kukui'ula development's resort core. Furthermore, current information on the roundabout and its associated impacts were included in the zoning amendment and VDA amendment petitions for the Kukui'ula development which were approved by the County on July 28, 2004. A Special Management Area Use Permit for the roundabout improvements was approved by the County on June 14, 2005.

LEGEND

- SEWER FORCE MAINS - MAJOR INFRASTRUCTURE
- SEWER GRAVITY LINES - MAJOR INFRASTRUCTURE
- SEWER FORCE MAINS - GOLF COURSE, PHASE 1A
- SEWER GRAVITY LINES - GOLF COURSE, PHASE 1A
- SEWER GRAVITY LINES - GOLF COURSE, PHASE 1B
- SEWER GRAVITY LINES - SUBDIVISION
- SEWER FORCE MAINS - SUBDIVISION
- SEWER GRAVITY LINES - RESORT
- WWPS

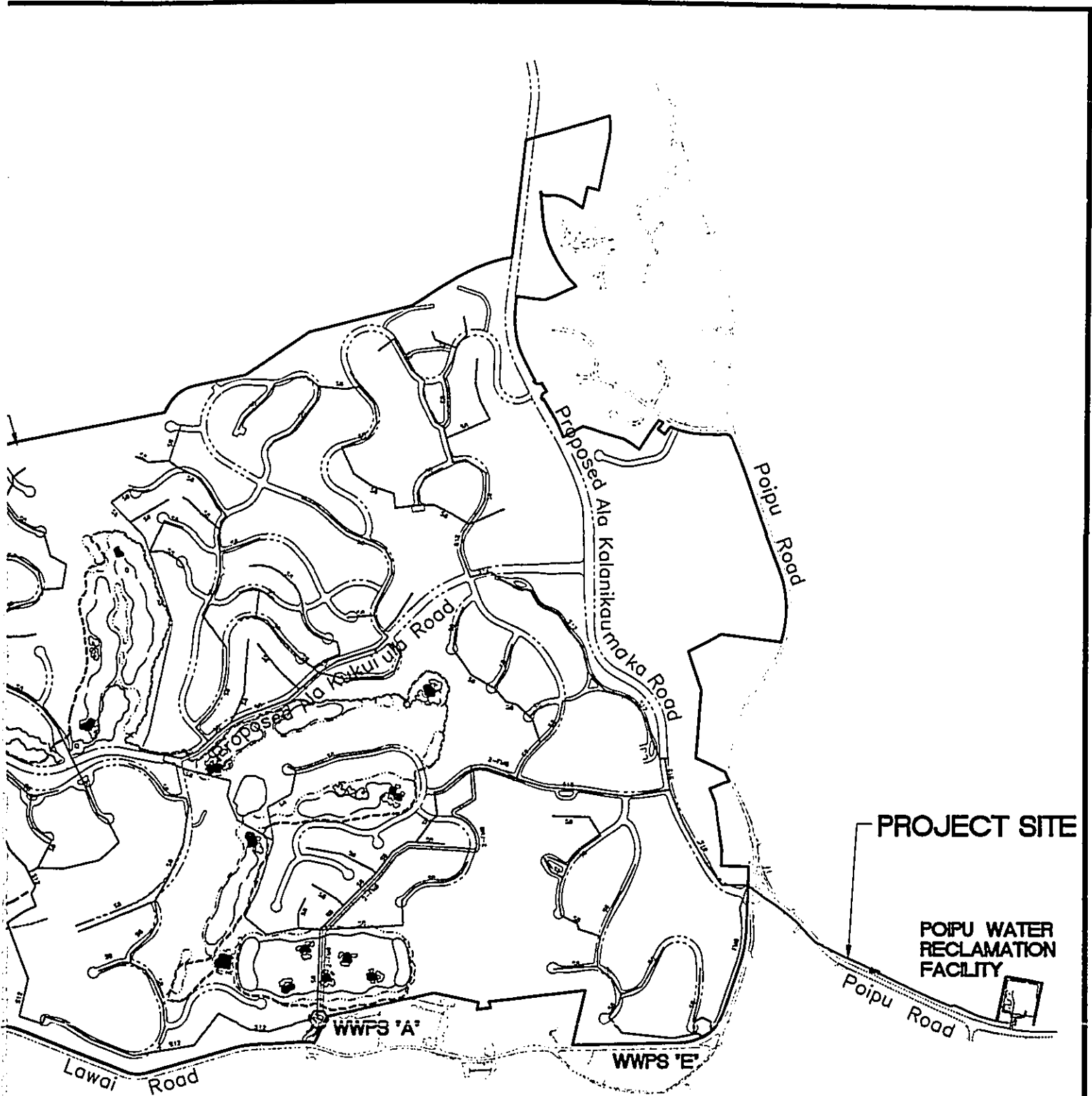


**POIPU ROAD 24-INCH
SANITARY SEWER LINE**

KUKUI'ULA
Koloa, Kauai, Hawaii

Proposed Kukui'ula Wastewater System Plan

Prepared for:
Kukui'ula Development Company (Hawaii), LLC



PREPARED BY: AUSTIN, TSUTSUMI, & ASSOCIATES, INC. SEPTEMBER 2006

Figure 2-4

Construction of the proposed Project will occur in three (3) phases. The first phase will start from the vicinity of the proposed Ala Kalanikaumaka Road (Western Bypass Road) and extend approximately 240 linear feet to the eastern end of the roundabout. The second phase will extend approximately 740 linear feet east along Poipu Road from the eastern end of the roundabout. The third phase will extend approximately 1,270 linear feet east from the eastern end of the second phase improvements to the Reclamation Facility.

The Applicant will coordinate obtaining an easement from the County as may be required for use of the County rights-of-way of Poipu Road and Lawai Road, respectively, for the proposed sewer line.

2.3 Project Schedule

Construction of the proposed Project is anticipated to commence by February 2007, with completion by February 2008, subject to the receipt of all necessary permits and plan approvals.

3. DESCRIPTION OF THE EXISTING ENVIRONMENT, PROJECT IMPACTS AND MITIGATION MEASURES

The following is a description of the existing environment, assessment of potential impacts and proposed measures to mitigate potential adverse impacts resulting from the proposed Project.

3.1 Climate

The climate of Kauai, relatively moderate throughout most of the year, is characterized as semi-tropical with two (2) seasons. The summer period from May through September is generally warm and dry, with predominantly northeast trade winds. In contrast, the winter season from October through April is associated with lower temperatures, higher rainfall and less prevalent trade winds.

The semi-arid climate of Poipu and Koloa is typically dry and sunny. Winds are predominantly trade winds from the east or northeast, with wind speeds averaging about 11 to 12 miles per hour. Occasional storms may generate strong winds from the south (Kona winds) for brief periods. Temperatures in the area are generally very moderate, with average daily temperatures ranging from about 68 degrees Fahrenheit (°F) to 81°F. Average annual rainfall in the Project area is approximately 40 to 45 inches, with the summer months being the driest.

3.2 Geology, Topography and Soils

Geology: The Island of Kauai is geologically one of the oldest and structurally complex islands in the State, consisting principally of a large volcano, the Kauai shield, which became active approximately four (4) million years ago. The Island's land mass was formed by two (2) major volcanic series identified as the Waimea Canyon Volcanic Series and the Koloa Volcanic Series. The Waimea Volcanic Series, which is more than 3 million years old, refers to the flows that formed the original volcanic shield and caldera of the Island. The Koloa Volcanic Series, which is less than 1.5 million years old, refers to subsequent flows that overlaid much of the Waimea Volcanic Series formations on the lower slopes of the Island. The Koloa Volcanic Series consists of a range of formations from olivine basalt to nepheline basalt. These rocks are much less permeable than some of the rocks of the Waimea Canyon Volcanic Series as they were deposited as nearly flat layers that tend to be massive and devoid of permeability elements.

The regional geology consists of the Koloa Volcanic Series overlying the Waimea Canyon Series. The Koloa Volcanic Series thickens toward the south coast of the Island and the composition ranges from alkalic olivine basalt through basanites to nephelinites and melilitites.

Topography: The topography of the Project Site consists of gradual sloped land ranging in elevation from approximately 37 feet above mean sea level ("msl") within the eastern portion to about 54 feet above msl within the western portion.

Soils: The U.S. Department of Agriculture Natural Resources Conservation Service classifies the soils within the Project Site as the Waikomo series, specifically the Waikomo very rocky silty clay (Wt) and the Waikomo stony silty clay (Ws) as shown on Figure 3-1. These soils are well-drained, gently sloping, stony, and rocky. Permeability is moderate, run-off is slow, and the erosion hazard is slight. Bedrock is typically at a depth of less than 20 inches.

The *Detailed Land Classification - Island of Kauai* published by the University of Hawaii Land Study Bureau ("LSB") evaluates the quality or productive capacity of certain lands on the Island for selected crops and overall suitability in agricultural use. A five-class productivity rating system was established with "A" representing the class of highest productivity and "E" the lowest. The majority of the Project Site is classified as "E" rated soils, which is considered very poor characteristics for productive agricultural areas. A small area within the western portion of the Project Site is classified as "B" rated soils, which indicates a high suitability for productive agriculture.

The *Agricultural Lands of Importance in the State of Hawaii* ("ALISH") map prepared by the State Department of Agriculture classifies the Project Site as lands of no agricultural importance.

Impacts and Mitigation Measures

No significant impacts to the geology, topography and soils are anticipated with the construction and operation of the proposed Project. Construction of the proposed sewer line improvements will involve grading, excavation and trenching of presently undeveloped and developed areas within the Project Site. In addition to the normal trenching operations, a hoe ram will be used for trenching in areas where rock material is encountered. Appropriate erosion and sediment controls will be instituted during Project grading operations and construction site work activities in compliance with the State Department of Health's ("DOH's") National Pollutant Discharge Elimination System ("NPDES") Permit program. Mitigation measures will be instituted following site-specific assessments, incorporating appropriate structural and/or non-structural Best Management Practices ("BMPs") such as silt fences and minimizing time of exposure between construction and re-vegetation. Following installation of the proposed sewer line improvements, the excavated areas will either be paved over or backfilled to its existing contours and re-vegetated to control erosion.

3.3 Water Resources

Surface Water: The major streams on Kauai originate in the rainy uplands and are relatively large and uniform in flow. The major streams, and most minor ones, are sustained in large measure by groundwater drainage. Waikomo Stream, a perennial stream, is located within the western portion of the Project Site and flows under Poipu Road. Currently, storm runoff from the Project Site in the vicinity of Waikomo Stream sheetflows off of the site into the stream. Waikomo Stream currently outlets into the ocean near Koloa Landing.

There are no wetlands located within or in the immediate vicinity of the Project Site.

Groundwater: The Island of Kauai is divided into three (3) groundwater sectors consisting of the Lihue Sector comprising the eastern portion of the Island, the Hanalei Sector comprising the northern portion of the Island, and the Waimea Sector comprising the western portion of the Island. The Sectors are divided into aquifer systems which are areas defined by hydrogeological continuity, particularly hydraulic connections among units.

Five (5) aquifer systems make up the Lihue Sector: Kilauea, Anahola, Wailua, Hanamaulu, and Koloa. The Project Site overlies the groundwater of the Koloa aquifer system. Groundwater occurrence and behavior is controlled by the Koloa formation which covers the Koloa aquifer

system, except for isolated ridges of the Napali volcanics located inland. Perched water in the Koloa aquifer system is the most common type of groundwater, but basal water occurs near the coast. (Yuen, 1990). The Koloa aquifer system has a sustainable yield of 30 mgd. (State Department of Land and Natural Resources ("DLNR"), Commission on Water Resource Management ("CWRM"), 2000).

Coastal Waters: The coastal waters in the vicinity of the Project Site are classified as Class AA waters by the State DOH. Class AA waters are high quality coastal waters classified by the DOH with the objective that "these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions." (*Water Quality Standards, Title 11, Chapter 54, Hawaii Administrative Rules*).

Impacts and Mitigation Measures

No significant impacts on surface waters, groundwater, and near shore coastal waters are anticipated as a result of the construction and operation of the proposed Project.

Potential water quality impacts to the Waikomo Stream and near shore coastal waters during construction of the Project will be mitigated by adherence to State water quality regulations governing grading, excavation and stockpiling. A NPDES General Permit for Storm Water Associated with Construction Activity administered by the State DOH will be required to control storm water discharges. Mitigation measures will be instituted following site-specific assessments, incorporating appropriate structural and/or non-structural BMPs such as silt fences and minimizing time of exposure between construction and re-vegetation. Following installation of the proposed sewer line improvements, the excavated areas will either be paved over or backfilled to its existing contours and re-vegetated to control erosion. No construction activities in conjunction with the Project will occur within Waikomo Stream.

Construction activities associated with the proposed sewer line improvements are not likely to introduce any materials which could adversely affect groundwater. Potential impacts to groundwater due to leakage or accidental breakage in the proposed sewer line will be mitigated by proper design, construction and operation of the facility. The use of PVC pipe for the majority of the proposed sewer line will provide for corrosion resistance and longevity, and is more durable and resistant to breakage. In addition, an approximately 101 linear-foot segment of the proposed sewer line in the vicinity of the Waikomo Stream crossing will be constructed of ductile iron with a ceramic epoxy lining and will be encased in a reinforced concrete jacket approximately 10 feet past either side of the stream culverts. Standard procedures for detecting leaks and breaks and for shutting down and repairing the sewer line will further minimize impacts.

Dewatering activities are not anticipated to be required during the construction of the proposed sewer line improvements since the bottom elevation of the proposed trenching activities will occur above the water table.

Development of the proposed sewer line improvements will produce no adverse effects from storm runoff to adjacent and downstream areas. Following construction, storm runoff within the eastern portion of the Project Site will remain unchanged from existing drainage flow conditions. Within the western portion of the Project Site, the proposed drainage in the immediate Project

vicinity will be accommodated as part of the drainage system improvements to be constructed for the roundabout improvements which will consist of drain lines and associated catch basins.

3.4 Flood Hazard

According to the Flood Insurance Rate Map ("FIRM") prepared by the Federal Emergency Management Agency ("FEMA"), the majority of the Project Site is located within Zone "X", "Areas determined to be outside the 0.2% annual chance floodplain" as shown on Figure 3-2. An area within the western portion of the Project Site is designated "Floodway areas in Zone AE", Zone "AE", "Special flood hazard areas subject to inundation by the 1% annual chance flood with base flood elevations determined", and Zone "X", "Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood." The base flood elevation for the "AE" zone within this portion of the Project Site is between 43 feet and 51 feet above msl.

Impacts and Mitigation Measures

Construction and operation of the proposed Project are not anticipated to result in flooding of the Project area or lower elevation properties. The proposed sewer line improvements that are located within the designated floodway area in Zone AE will occur within the existing Poipu Road and right-of-way. The proposed sewer line improvements within the designated flood zones will be designed and constructed in full compliance with the flood plain management requirements of the County.

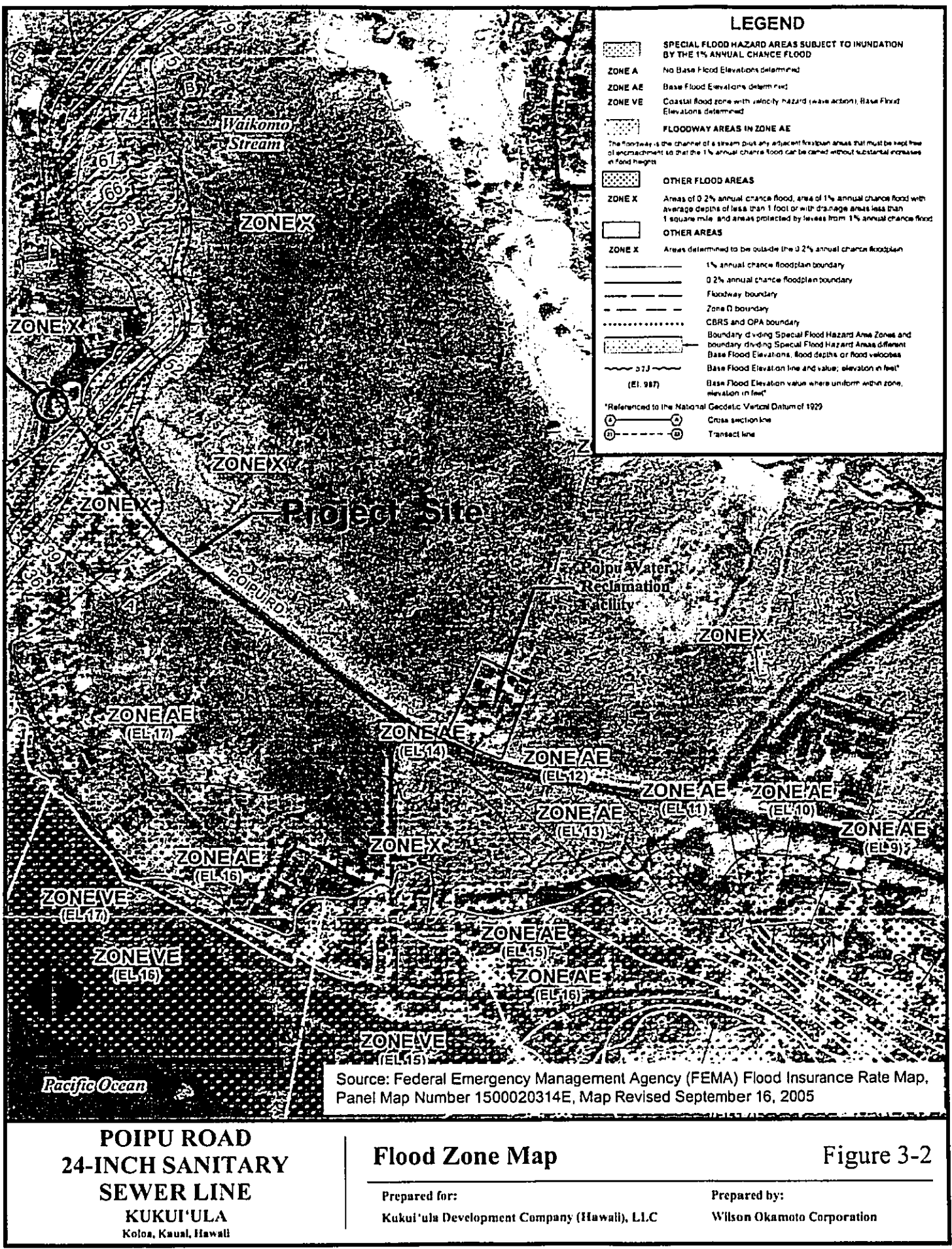
3.5 Flora

A botanical survey of the Project Site was conducted by AECOS Consultants in August 2006. The botanical survey is included in Appendix A and is summarized below.

Three (3) different general plant habitat occur within the Project Site: 1) roadside maintained areas that encourage mostly fast-growing, ruderal weeds, 2) a less disturbed Guinea grass (*Panicum maximum* Jacq.) and koa haole (*Leucaena leucocephala*) scrub association extending away from the Poipu Road right-of-way, and 3) landscaped areas of mixed naturalized and ornamental plants fronting various parcels along Poipu Road. A row of be-still trees or shrubs (*Thevetia peruviana*) lines most of the roadway corridor. The Guinea grass/koa haole association supports an abundance of hedge cactus (*Cereus uruguayanus*) and night-blooming cereus (*Hylocereus undatus*).

The botanical resources within the Project Site are dominated by alien plant species. Of the species recorded, only seven (7) species (or 7.4 percent) are associated with the Hawaiian Islands as either native species or Polynesian introductions, and all are very common species. The flora of the Project Site is typical of lands which have been extensively disturbed. No species of special interest, or currently protected or proposed for protection under the Federal or State endangered species statutes were observed within the Project Site during the survey.

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Impacts and Mitigation Measures

As the Project Site does not provide a unique habitat, no significant impacts on flora are anticipated from the construction and operation of the proposed Project. No species of special interest, or currently protected or proposed for protection under the Federal or State endangered species statutes will be disturbed as a result of the proposed Project. Existing landscaping that may need to be removed during installation of the proposed sewer line improvements will be replaced following construction. The remaining unpaved areas along the sewer line corridor within the Poipu Road right-of-way that will be disturbed during construction activities will be re-vegetated following construction.

3.6 Vertebrate Fauna

A faunal survey of the Project Site was conducted by Rana Productions, Ltd. in August 2006. The faunal survey is included in Appendix A and is summarized below.

During the survey, a total of 14 avian species, representing 12 separate families, were observed within the Project Site. All species detected are regularly encountered alien species, common in the low- to mid-elevation areas on the south side of the Island. Avian diversity was relatively low, although the densities of some species were relatively high. Three (3) species, Java Sparrow (*Padda oryzivora*), House Finch (*Carpodacus mexicanus frontalis*), and Common Myna (*Acridotheres tristis*) accounted for 43 percent of the total number of birds recorded. No avian species currently protected, or proposed for protection under the Federal or State endangered species statutes were recorded during the survey.

Although not recorded during the survey, it is likely that the endangered Hawaiian Petrel (*Pterodroma sandwichensis*) and the threatened, endemic sub-species of the Newell's Shearwater (*Puffinus auricularis newelli*) overfly the Project Site between April and the end of November each year. Both species have been well-documented crossing the northern, eastern and southern coastlines of Kauai during the breeding season. There are no nesting colonies or appropriate nesting habitat for either seabird species within or in close proximity to the Project Site.

Although no Hawaiian hoary bats (*Lasiurus cinereus semotus*) were detected, it is likely that this endangered species forages for insects over the Project Site. Hawaiian hoary bats are regularly seen in and around the Koloa and Poipu areas, as well as within most of the lowland areas on the Island.

Although no rodents were observed during the 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*) are found within the Project Site.

Impacts and Mitigation Measures

No significant impacts on fauna within the Project Site are anticipated from the construction and operation of the proposed Project. The modification of the existing habitat within the Project Site by the proposed sewer line improvements is not anticipated to adversely impact any avian or mammalian species currently listed as endangered or threatened, or currently proposed for listing under either Federal or State endangered species statutes.

3.7 Invertebrate Fauna

Although subterranean habitat for the endemic, endangered Kauai cave wolf spider (*Adelocosa anops*) and the Kauai cave amphipod (*Spelaeorchestia koloana*) have been identified in the Koloa-Poipu region, the Project Site is not located within any of the Critical Habitat Units designated for these two (2) cave species by the U.S. Fish & Wildlife Service ("USFWS") final rule published April 9, 2003. In addition, extensive ground alteration has previously occurred within the Project Site due to the development of Poipu Road and Lawai Road and prior sugar cane cultivation.

Impacts and Mitigation Measures

Since the Project Site is not located within any of the Critical Habitat Units designated for the endemic, endangered Kauai cave wolf spider and the Kauai cave amphipod by the USFWS final rule published April 9, 2003, it is not anticipated that the development of the Project will have an adverse impact on either species or their habitat. In the unlikely event that either listed species is encountered during development of the Project, construction will be halted, consultation with the USFWS will be initiated, and appropriate mitigative measures will be implemented.

3.8 Air Quality

Ambient air quality in the vicinity of the Project Site is primarily attributed to vehicular-related emissions in the form of carbon monoxide ("CO") generated from traffic traveling along Poipu Road, Lawai Road, and Kapili Road. Ambient air quality levels in the vicinity of the eastern portion of the Project Site are also periodically affected by odors emanating from the Poipu Water Reclamation Facility.

Impacts and Mitigation Measures

Potential air quality impacts resulting from soil excavation and grading activities during construction of the Project will be mitigated by complying with the State DOH Administrative Rules, Title 11, Chapter 60, Air Pollution Control. The construction contractor(s) will be responsible for complying with the State DOH regulations that prohibit visible dust emissions at property boundaries. Compliance with State regulations will require adequate measures to control airborne dust by methods such as water spraying, dust screens, and sprinkling of loose or exposed soil or ground surface areas and dust-generating equipment during construction. Exposed soil areas within the Project Site will be re-vegetated soon thereafter following construction to control dust.

No significant air quality impacts are anticipated from the operation of the proposed Project since the sewer line improvements will be fully underground.

3.9 Noise

Ambient noise in the vicinity of the Project Site is predominantly attributed to vehicular traffic along Poipu Road, Lawai Road and Kapili Road.

Impacts and Mitigation Measures

Construction noise will be unavoidable during the duration of the construction period of the proposed Project. Operation of construction equipment such as backhoes, hoe rams, trucks, compactors, pumps, generators, and pavers will raise ambient noise levels in the Project vicinity. Unavoidable construction noise impacts will be mitigated to some degree by complying with the provisions of the State DOH Administrative Rules, Title 11, Chapter 46, "Community

Noise Control" regulations which require a noise permit if the noise levels from construction activities are expected to exceed the allowable noise levels stated in the Rules. The hours of permitted construction noise operations specified in the Rules will be adhered to and enforced. It shall be the contractor's responsibility to minimize noise by properly maintaining noise mufflers and other noise-attenuating equipment, and to maintain noise levels within regulatory limits. Potential noise impacts will also be mitigated by performing construction work during daytime hours, as opposed to nighttime work.

No significant noise impacts are anticipated from the operation of the proposed Project since the sewer line improvements will be fully underground.

3.10 Historic and Archaeological Resources

An archaeological assessment of the portion of the Project Site within Poipu Road and Lawai Road was conducted by Cultural Surveys Hawaii in October 2006. The archaeological assessment is included in Appendix B and is summarized below.

Traditional, historical and archaeological background research shows that the Koloa ahupua'a has been extensively used since the arrival of Native Hawaiians centuries ago. Habitation and intensive irrigated agriculture were widespread in central and coastal Koloa. The Koloa Field System, an extensive irrigated complex, was used to divert the waters of the Waikomo Stream for taro, native sugar, and fish. In the early historic era (1795-1880), the Koloa Field System continued in use for foreign trade and was probably further intensified. With the arrival of Europeans, agriculture shifted to sugar cane and its associated infrastructure such as railroads and mills.

The ancient, heavily modified landscape of the Koloa Field System appears to be largely absent within the Project Site. Since habitation complexes, ceremonial sites, and irrigation systems have been located within adjacent properties during previous archaeological surveys, the absence of these features within the Project Site is likely due to the development of the existing Poipu Road.

The most notable characteristic of the Project Site is the heavy amount of disturbance that has previously occurred within the mauka portion of the Poipu Road right-of-way. This previous disturbance is likely attributed to at least two (2) separate activities. One activity is the recent installation of a water line by the County Department of Water. The other activity appears to have occurred prior to the installation of the water line based upon the amount of re-growth in the vegetation. The disturbance has been in the form of surface rock removal, grading, and subsurface trenching.

No historic properties were identified within the Project Site during the archaeological survey. However, it is possible that there are remnant historic properties located adjacent to and mauka of the Project Site.

An archaeological inventory survey conducted by Cultural Surveys Hawaii in 1988 as part of the Kukui'ula development included the portion of the Project Site located within the Kukui'ula development near the planned roundabout. No archaeological sites were found within that portion of the Project Site. The State Historic Preservation Officer reviewed the survey and concurred with the adequacy of the survey.

Impacts and Mitigation Measures

No significant impacts on archaeological/historic resources within the Project Site are anticipated from the construction and operation of the proposed Project. As documented during the archaeological surveys, no historic properties were identified within the Project Site. As such, a Project-specific effect recommendation of "no historic properties affected" is warranted. Based upon potential remnant historic properties located adjacent to and mauka of the Project Site, the potential for subsurface cultural deposits and lava tubes, and in accordance with the recommendations made by the State Department of Land and Natural Resources Historic Preservation Division ("SHPD") in a letter dated September 22, 2006 (copy attached to the Archaeological Assessment in Appendix B), an on-site monitoring program will be developed and implemented for all subsurface construction activities associated with the proposed Project. An archaeological monitoring plan will be prepared and submitted to the SHPD for review and approval. The monitoring program will specify that no construction activities occur outside of the Poipu Road right-of-way. The specific measures for handling any historic properties identified during the construction activities will be detailed in the monitoring plan.

Should any previously unidentified burial, archaeological or historic sites be found during the course of construction, the Applicant will stop work in the immediate vicinity and the SHPD will be notified immediately. The significance of these finds will then be determined and appropriate mitigation measures will be approved by the SHPD and the Kauai/Niihau Islands Burial Council, as appropriate. In the event that any burials are encountered during construction of the Project, a burial treatment plan will be prepared in accordance with the procedures of Chapter 6E-43, HRS, and submitted for approval. Subsequent work will proceed after SHPD authorization has been received and mitigative measures have been implemented.

3.11 Cultural Resources

A cultural impact assessment was undertaken for the Project by Cultural Surveys Hawaii in October 2006. The cultural impact assessment is included in Appendix C and is summarized below.

Based on previous archaeological studies and historic accounts, it appears that habitation and intensive irrigated agriculture were widespread in central and coastal Koloa. The Koloa Field System, an extensive irrigated complex, was used to divert the waters of the Waikomo Stream for taro, native sugar, and fish. It is likely that low inland areas were used for less intensive cultivation of patches of sweet potato, pia (arrowroot), and wauke (paper mulberry), and the gathering of hala (pandanus fiber), kukui nuts (for oils having medicinal applications), and other resources. The coastal portion of the Koloa ahupua'a would be a focus for permanent habitation, collection of marine resources, ceremonial activities, and burials.

Initial occupation of the Koloa ahupua'a was probably characterized by temporary and/or recurrent occupation. From A.D. 600-1400, settlements in the Koloa area were still limited to the coast. By A.D. 1040, temporary habitation occurred in the inland areas of Koloa.

In the early historic era (1795-1880), the Koloa Field System continued in use for foreign trade and was probably further intensified. The documents of the Great Mahele show that by the mid-1800s, there were still several traditional farmers within Koloa who both lived and worked within the area. The individual claims for both lo'i (wetland) and kula (dryland) suggest that while traditional farming of taro for subsistence was still taking place, sugar cane production in the

kula lands for sale to the nearby sugar mill had begun to dominate the landscape. Eventually, most of inland Koloa was planted with sugar cane and only the rockiest areas, unsuitable for cultivation, survived the dramatic changes in the landscape brought about during the early 20th century.

The abandonment of each phase of land use left archaeological remains scattered across the landscape. Within the Project Site, the ancient, heavily modified landscape of the Koloa Field System appears to be largely absent. Since habitation complexes, ceremonial sites, and irrigation systems have been identified within adjacent properties during previous archaeological surveys, the absence of these features within the Project Site is likely due to the development of the existing Poipu Road.

The community contacts queried for this cultural impact assessment identified a few cultural practices, namely coastal and freshwater fishing and collecting prawns from Waikomo Stream, that may still occur in the lowlands of Koloa. Utilization of the upper portions of the Koloa Ahupua'a for gathering of plant resources was mentioned as a cultural practice in the past. The community contacts identified the following concerns related specifically to the proposed installation of the sewer line within the Project Site:

- The proposed sewer line may not have the capacity to support the Kukui'ula development which will bring in several thousand new residents to Koloa. The sewer line could leak or rupture. If the sewer line breaks, cultural activities associated with Waikomo Stream and the coastal zone such as collecting prawns, limu, fishing, and surfing will be negatively affected by the sewage spill.
- Burials may be present in lava tubes and/or caves in and around the Project Site.

Although not specifically a cultural impact, it is noted that community contacts in this assessment also mentioned community concern in protecting the Kauai cave wolf spider and Kauai cave amphipod habitats which are included in the designated Critical Habitat Units established by the U.S. Fish and Wildlife Service final rule published April 9, 2003. The Project Site is not located within any of the Critical Habitat Units designated for these two (2) cave species by the U.S. Fish and Wildlife Service final rule published April 9, 2003.

Impacts and Mitigation Measures

Potential impacts to Waikomo Stream and near shore coastal waters due to leakage or accidental breakage in the proposed sewer line will be mitigated by proper design, construction and operation of the facility. The use of PVC pipe for the majority of the proposed sewer line will provide for corrosion resistance and longevity, and is more durable and resistant to breakage. In addition, an approximately 101 linear-foot segment of the proposed sewer line in the vicinity of the Waikomo Stream crossing will be constructed of ductile iron with a ceramic epoxy lining and will be encased in a reinforced concrete jacket approximately 10 feet past either side of the stream culverts. Standard procedures for detecting leaks and breaks and for shutting down and repairing the sewer line will further minimize impacts.

Excavation within the Project Site may possibly encounter lava tubes and/or caves (presently unknown) that may contain Hawaiian cultural properties, including human remains. In accordance with the recommendations of the SHPD by letter dated September 22, 2006, an on-

site archaeological monitoring program will be developed and implemented for all construction activities associated with the proposed Project. Should any lava tubes and/or caves be encountered during construction of the proposed sewer line improvements, work in the immediate vicinity will be halted and consultation will be conducted with the SHPD and the Kauai/Niihau Islands Burial Council regarding appropriate treatment.

With the proper mitigation of the cultural concerns identified above, the proposed Project will have minimal impact upon native Hawaiian cultural resources, beliefs and practices.

3.12 Visual Resources

Existing views of the Project Site are predominantly of roadside vegetation consisting of shrubs, weedy species, grasses, and landscaped areas, and portions of Poipu Road and Lawai Road. There are no coastal views of the Project Site.

Impacts and Mitigation Measures

No significant visual or aesthetic impacts are anticipated as a result of the proposed Project. The proposed sewer line improvements will be installed underground and will not be visible. Existing landscaping that may need to be removed during installation of the sewer line will be replaced following construction. The remaining unpaved areas along the sewer line corridor within the Poipu Road right-of-way that will be disturbed during construction activities will be re-vegetated following construction.

3.13 Traffic

The existing roadways traversing through the Project Site include portions of Poipu Road and Lawai Road. Poipu Road is a two-way, two-lane County collector roadway that is oriented in the north-south direction from Koloa Road to Lawai Road. Poipu Road changes to an east-west orientation after its intersection with Lawai Road, providing access to the Poipu resort area. In the immediate vicinity of the Project Site, paved driveways provide access from Poipu Road to the Waikomo Stream Villas on the makai side and the Reclamation Facility on the mauka side. An unpaved driveway to a maintenance storage area is located off of Poipu Road on the mauka side, just east of Waikomo Stream. Lawai Road is a two-way, two-lane County roadway that is generally oriented in the east-west direction, providing access to Spouting Horn Beach Park. Lawai Road follows the coastline in the westerly direction after its "Y" intersection with Poipu Road and terminates east of Lawai Bay. There are no crosswalks or sidewalks located within the immediate vicinity of the Project Site.

Impacts and Mitigation Measures

Short-term impacts on traffic in the Project vicinity will result from the construction of the proposed sewer line improvements. Given that a segment of the sewer line improvements will occur within Poipu Road and Lawai Road, disruption to vehicular traffic will be unavoidable for that period of the construction activity. As construction of the sewer line improvements will be conducted in three (3) phases, the construction traffic impacts will be temporary in nature and will shift to different locations within the Project Site as the previous phase is completed. Traffic control measures will be implemented during construction to mitigate potential traffic impacts along the roads in the immediate Project vicinity.

As indicated, the proposed sewer line improvements will be constructed concurrently with the planned four-legged, single-lane roundabout at the intersection of Poipu Road, Lawai Road and

the planned Ala Kalanikaumaka Road (Western Bypass Road) and associated improvements to the Poipu Road and Lawai Road approaches. The traffic control and phasing plan for the construction of the proposed sewer line improvements will be coordinated and simultaneously undertaken with the construction of the roundabout improvements to minimize the duration of the impacts to traffic.

Construction of the first phase of the sewer line improvements, which will start from the vicinity of the planned Ala Kalanikaumaka Road (Western Bypass Road) and extend approximately 240 linear feet to the eastern end of the roundabout, will occur concurrently with the construction of the roundabout and Lawai Road approach improvements. The segment of Lawai Road from the Poipu Road intersection to the Hoonani Road intersection will be closed to traffic during this phase of construction. During this temporary road closure, traffic traveling to and from Lawai Road will be detoured via a temporary roadway connection from Poipu Road near the Koloa Fire Station to Lawai Road at the Hoonani Road intersection. This temporary roadway connection will traverse within the Kukui'ula development, just west of the roundabout improvements.

Construction of the second phase of the sewer line improvements will extend approximately 740 linear feet east along Poipu Road from the eastern end of the roundabout and will occur concurrently with the construction of the realignment of the southeastern leg of the Poipu Road approach to the roundabout. During this phase of construction, the portion of Poipu Road from the area just east of the Lawai Road intersection to the eastern end of the Poipu Road realignment improvements will be closed to through traffic, with local traffic only allowed on Poipu Road from the east. A temporary driveway connection to the Waikomo Stream Villas at Poipu Road will be provided for the duration of this second phase of construction. During this temporary closure of Poipu Road, traffic traveling to and from the Poipu area will be detoured via Lawai Road, Hoonani Road and Kapili Road.

Construction of the third phase of the sewer line improvements will extend approximately 1,270 linear feet east from the eastern end of the second phase improvements to the Reclamation Facility. Construction during this phase will occur entirely within the mauka portion of the Poipu Road right-of-way and will not directly impact traffic flow on Poipu Road.

During construction of the proposed sewer line improvements, the construction contractor(s) will be required to mitigate potential vehicular and pedestrian traffic impacts through the following traffic control plan measures and safety devices, as appropriate:

- Provide a flyer showing the changes in traffic patterns and estimated times of use, with copies of the flyer provided to each business in the Poipu area for distribution to its employees and guests.
- Contact the Waikomo Stream Villas and Koloa Fire Station prior to the start of construction to inform them of changes in traffic patterns on Poipu Road and Lawai Road due to the proposed construction.
- Provide safe passage to all motorists turning out of the entrances to the Waikomo Stream Villas and Koloa Fire Station at all times. Provide for a flagger/police officer to direct traffic at the intersections.

- Notify the respective emergency services (police, fire and ambulance) of any required detours or road closures prior to actual implementation.
- Provide for advance signage and other warnings to alert approaching motorists and pedestrians to construction activities ahead.
- Provide for flaggers and/or police officers to control traffic and pedestrian flow during construction activities.
- Provide for barriers, cones, signage, non-skid covering over trenches, adequate intersection visibility, and other provisions to promote safe passage of vehicles and pedestrians through the construction zone.

No significant long-term impacts on vehicular traffic associated with the operation of the proposed sewer line improvements are anticipated.

3.14 Socio-Economic Characteristics

The Project Site is located within the Poipu Census Tract ("CT") 406. The following is an overview of the socio-economic characteristics of the Poipu CT as also indicated in Table 3-1.

Population and Housing: Based on the 2000 Census, the population in Poipu has increased just slightly since the 1990 Census. In 1990, Poipu (CT 406) had a population of 1,068 and in 2000 the population had increased to 1,075. During the same 10-year period, the population of the Island of Kauai had increased 14.2 percent, from 51,177 to 58,463. The slight population change in Poipu is indicative of stability.

- The median age of the population in Poipu is higher than on Kauai at 48.6 versus 38.4;
- By racial mix, there are more Whites and less Asians and Native Hawaiian and other Pacific Islanders in Poipu than Kauai;
- Households in Poipu have a smaller average size, but slightly higher married-couple families and more non-family householders than Kauai; and
- There are substantially more vacant units in Poipu than Kauai.

Economy: According to the 2000 Census, the median household income for the Poipu CT was 51,442, which is greater than the median household income for Kauai which was 45,020.

Subject	CT 406 (Poipu)		Kauai	
	Number	Percent	Number	Percent
Total Population	1,075	100	58,463	100
AGE				
Under 5 Years	37	3.4	3,605	6.2
5 – 19 years	151	14.0	13,147	22.5
20 – 64 years	667	62.0	33,642	57.5
65 years and over	220	20.5	8,069	13.8
Median age (years)	48.6	—	38.4	—
RACE				
White	746	69.4	17,255	29.5
Black or African American	1	0.1	177	0.3
American Indian and Alaska Native	4	0.4	212	0.4
Asian	182	16.9	21,042	36.0
Native Hawaiian and other Pacific Islander	21	2.0	5,334	9.1
Two or more races	113	10.5	13,938	23.8
Other	8	0.7	505	0.9
HOUSEHOLD (BY TYPE)				
Total Households	472	100	20,183	100
Family households (families)	311	65.9	14,572	72.2
With own children under 18 years	88	18.6	6,865	34.0
Married-couple family	271	57.4	10,881	53.9
With own children under 18 years	69	14.6	4,842	24.0
Female householder, no husband present	25	5.3	2,582	12.8
With own children under 18 years	14	3.0	1,424	7.1
Nonfamily households	161	34.1	5,611	27.8
Average household size	2.28	—	2.87	—
HOUSING OCCUPANCY AND TENURE				
Total Housing Units	1,969	100	25,331	100
Occupied units	472	24.0	20,183	79.7
By owner	287	60.8	12,384	61.4
By renter	185	39.2	7,799	38.6
Vacant units	1,497	76.0	5,148	20.3
SOCIAL CHARACTERISTICS				
Population 25 years and over	885	100	38,872	100
High school graduate or higher	855	96.6	32,368	83.3
Bachelor's degree or higher	306	34.6	7,551	19.4

Subject	CT 406 (Poipu)		Kauai	
	Number	Percent	Number	Percent
Total Population	1,075	100	58,463	100
ECONOMIC CHARACTERISTICS				
In labor force (pop. 16 & over)	573	59.7	28,355	63.1
Median household income (dollars)	51,442	--	45,020	--
Median family income (dollars)	62,396	--	51,378	--
Per capita income (dollars)	35,800	--	20,301	--

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

Impacts and Mitigation Measures

In the short term, the Project will confer positive benefits in the local area. Direct economic benefits will result from construction expenditures both through the purchase of material from local suppliers and through the employment of local labor, thereby stimulating that sector of the economy. Indirect economic benefits may include benefits to local retailing businesses resulting from construction activities.

Construction activities associated with the proposed Project will create some adverse short-term impacts such as temporary disruption of traffic, unavoidable noise impacts, and air quality impacts from soil excavation and grading activities in the vicinity of the Project Site. The construction contractor(s) will be required to mitigate potential vehicular and pedestrian traffic impacts through appropriate traffic control measures and safety devices (see Section 3.13 Traffic). Unavoidable construction noise impacts on nearby land uses in the immediate vicinity of the proposed Project will be mitigated to some degree by complying with the provisions of the State DOH Administrative Rules, Title 11, Chapter 46, Community Noise Control (see Section 3.9 Noise). Potential air quality impacts during construction of the proposed Project will be mitigated by complying with the State DOH Administrative Rules, Title 11, Chapter 60, Air Pollution Control (see Section 3.8 Air Quality).

There are no significant adverse long-term socio-economic impacts anticipated with the operation of the proposed Project. In the long-term, the proposed sewer line improvements will allow for the conveyance of wastewater from the Kukui'ula development to the Reclamation Facility as part of a systematic and consolidated approach to the conveyance, treatment and disposal of wastewater with other developments in the area.

3.15 Police, Fire and Ambulance Service

Police protection service in the Project area is provided by the County Police Department's Waimea District. The Waimea Police Station is located to the northwest of the Project Site along Kaunualii Highway at the intersection with Menehune Road. There is also a mini police substation located in the Project vicinity in Poipu Kai at the Pe'e Road/Poipu Road intersection.

Fire protection service for the Project area is provided by the County's Koloa Fire Station located at the intersection of Poipu Road and Lawai Road.

Emergency medical service in the Project area is provided by American Medical Response, a private ambulance service contracted by the County, located on Poipu Road across from the Koloa Fire Station.

Impacts and Mitigation Measures

Construction of the Project will not adversely impact the response time of police, fire and ambulance services in the nearby vicinity. The respective emergency services (police, fire and ambulance) will be notified by the construction contractor(s) of the required detours and road closures prior to actual implementation. Prior to the start of construction, the contractor will inform the Koloa Fire Station of the changes in traffic patterns on Poipu Road and Lawai Road resulting from the construction of the Project. Safe passage will be provided at the entrance to the Koloa Fire Station during the construction period.

3.16 Solid Waste Disposal

The County Department of Public Works ("DPW") maintains an Island-wide solid waste collection and disposal system. The existing Kekaha Landfill is the primary disposal site for solid waste on the Island. The County is currently seeking a lateral extension of the Kekaha Landfill which could extend its capacity by about six (6) years, and is also seeking another landfill site.

Impacts and Mitigation Measures

No significant impacts to solid waste disposal are anticipated from the construction and operation of the proposed Project. During construction of the Project, a trash management and recycling program will be developed and implemented to minimize impacts to the Kekaha Landfill.

Operation of the Project will generate little, if any solid waste and, therefore, will not impact the Kekaha Landfill.

3.17 Utilities

3.17.1 Water System

An existing 12-inch County Department of Water ("DOW") water line is located within the mauka portion of the Poipu Road right-of-way in the vicinity of the Project Site. The water line connects to an existing 12-inch water line within Lawai Road near the Poipu Road intersection and continues southeast within the mauka side of the Poipu Road right-of-way, terminating near the Poipu Water Reclamation Facility. The County DOW is currently installing a 16-inch replacement water line adjacent to the existing 12-inch water line within the mauka portion of the Poipu Road right-of-way. The existing 12-inch water line will be abandoned in place upon completion and operation of the 16-inch water line.

Impacts and Mitigation Measures

No significant impacts are anticipated on the existing water system in the Project vicinity as a result of the construction and operation of the proposed sewer line improvements. The Applicant has coordinated the design of the proposed sewer line improvements with the County DOW in consideration of DOW's installation of the 16-inch replacement water line within the Poipu Road right-of-way. The Applicant will review the as-built plans for the 16-inch water line prior to construction of the proposed sewer line improvements. Prior to construction of the

proposed sewer line improvements, the construction contractor(s) will be responsible for verifying the location and depth of all existing water system utilities within the Project Site to ensure that functions of the existing utilities are not impacted or impeded.

Operation of the proposed Project will not result in a significant increase in water consumption demand.

3.17.2 Drainage System

Currently storm runoff sheetflows from the Project Site following natural drainage patterns. In the vicinity of Waikomo Stream, storm runoff from the Project Site sheetflows into the stream.

The existing storm drainage utilities within the Poipu Road right-of-way includes drainage culverts at the Waikomo Stream crossing, drainage culverts located approximately 550 feet to the east of Waikomo Stream, and drainage culverts located just east of the Kapili Road intersection.

Impacts and Mitigation Measures

No significant impacts are anticipated on the existing storm drainage collection and transmission system as a result of the construction and operation of the proposed Project.

Potential water quality impacts to the Waikomo Stream and near shore coastal waters during construction of the Project will be mitigated by adherence to State water quality regulations governing grading, excavation and stockpiling. A NPDES General Permit for Storm Water Associated with Construction Activity administered by the State DOH will be required to control storm water discharges. Mitigation measures will be instituted following site-specific assessments, incorporating appropriate structural and/or non-structural BMPs such as silt fences and minimizing time of exposure between construction and re-vegetation. Following installation of the proposed sewer line improvements, the excavated areas will either be paved over or backfilled to its existing contours and re-vegetated to control erosion. No construction activities in conjunction with the Project will occur within Waikomo Stream.

Prior to construction of the proposed sewer line improvements, the construction contractor(s) will be responsible for verifying the location and depth of all existing storm drainage utilities within the Project Site to ensure that functions of the existing utilities are not impacted or impeded.

Development of the proposed sewer line improvements will produce no adverse effects from storm runoff to adjacent and downstream areas. Following construction, storm runoff within the eastern portion of the Project Site will remain unchanged from existing drainage flow conditions. Within the western portion of the Project Site, the proposed drainage in the immediate Project vicinity will be accommodated as part of the drainage system improvements to be constructed for the roundabout improvements which will consist of drain lines and associated catch basins.

3.17.3 Electrical System

Electrical service in the Project vicinity is provided by Kauai Island Utility Cooperative ("KIUC"). An existing underground electrical line with pull boxes are located within the mauka portion of the Poipu Road right-of-way.

Impacts and Mitigation Measures

No significant impacts on the existing electrical system are anticipated as a result of the construction and operation of the proposed Project. Prior to construction of the proposed sewer line improvements, the construction contractor(s) will be responsible for verifying the location and depth of all existing electrical utilities within the Project Site to ensure that functions of the utilities are not impacted or impeded.

Operation of the proposed sewer line improvements will not result in a significant increase in energy consumption demand.

4. RELATIONSHIP TO LAND USE PLANS AND POLICIES

The Project's consistency with relevant State and County land use plans and policies is discussed below.

4.1 State Land Use District

The State Land Use Law, Chapter 205, HRS, is intended to preserve, protect and encourage the development of lands in the State for uses that are best suited to the public health and welfare of Hawaii's people. The State Land Use Commission classifies all lands in the State into four (4) land use districts: Urban, Agricultural, Conservation, and Rural. The Project Site is within the State Urban District. The proposed Project is consistent with the Urban classification.

4.2 Hawaii State Plan

Hawaii State Plan: The Hawaii State Plan, embodied in Chapter 226, HRS, serves as a guide for goals, objectives, policies, and priorities for the State. The State Plan provides a basis for determining priorities, allocating limited resources, and improving coordination of State and County plans, policies, programs, projects, and regulatory activities. The proposed Project is consistent with the following State Plan objectives and policies.

Section 226-11 Objectives and policies for the physical environment – land-based, shoreline, and marine resources.

(b)(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.

(b)(3) Take into account the physical attributes of areas when planning and designing activities and facilities.

Sec. 226-13 Objectives and policies for the physical environment – land, air, and water quality.

(b)(3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.

Potential water quality impacts to the Waikomo Stream and near shore coastal waters during construction of the Project will be mitigated by adherence to State water quality regulations governing grading, excavation and stockpiling. A NPDES General Permit for Storm Water Associated with Construction Activity administered by the State DOH will be required to control storm water discharges. Mitigation measures will be instituted following site-specific assessments, incorporating appropriate structural and/or non-structural BMPs such as silt fences and minimizing time of exposure between construction and re-vegetation. Following installation of the proposed sewer line improvements, the excavated areas will either be paved over or backfilled to its existing contours and re-vegetated to control erosion. No construction activities in conjunction with the Project will occur within Waikomo Stream.

Development of the proposed sewer line improvements will produce no adverse effects from storm runoff to adjacent and downstream areas. Following construction, storm runoff within the eastern portion of the Project Site will remain unchanged from existing drainage flow conditions. Within the western portion of the Project Site, the proposed drainage in the immediate Project vicinity will be accommodated as part of the drainage system improvements to be constructed for the roundabout improvements which will consist of drain lines and associated catch basins.

Construction activities associated with the proposed sewer line improvements are not likely to introduce any materials which could adversely affect groundwater. Potential impacts to Waikomo Stream, near shore coastal waters and groundwater due to leakage or accidental breakage in the proposed sewer line will be mitigated by proper design, construction and operation of the facility. The use of PVC pipe for the majority of the proposed sewer line will provide for corrosion resistance and longevity, and is more durable and resistant to breakage. In addition, an approximately 101 linear-foot segment of the proposed sewer line in the vicinity of the Waikomo Stream crossing will be constructed of ductile iron with a ceramic epoxy lining and will be encased in a reinforced concrete jacket approximately 10 feet past either side of the stream culverts. Standard procedures for detecting leaks and breaks and for shutting down and repairing the sewer line will further minimize impacts.

4.3 Hawaii Coastal Zone Management Program

The National Coastal Zone Management Program was created through passage of the Coastal Zone Management Act of 1972. Hawaii's Coastal Zone Management Program, adopted as Chapter 205A, HRS, provides a basis for protecting, restoring and responsibly developing coastal communities and resources. A discussion of the Project's consistency with the objectives and policies of the Coastal Zone Management Program is provided below.

(1) Recreational Resources

Objective:

- (A) *Provide coastal recreational opportunities accessible to the public.*

Policies

- (A) *Improve coordination and funding of coastal recreational planning and management; and*
- (B) *Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:*
- (i) *Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;*
 - (ii) *Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or 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, and county authorities; and crediting such dedication against the requirements of section 46-6.*

The proposed Project, given its nature and location approximately 1,000 feet mauka of the coastline, will not provide or impact coastal recreational opportunities accessible to the public.

Potential water quality impacts to near shore coastal waters during construction of the Project will be mitigated by adherence to State water quality regulations governing grading, excavation and stockpiling. A NPDES General Permit for Storm Water Associated with Construction Activity administered by the State DOH will be required to control storm water discharges. Mitigation measures will be instituted following site-specific assessments, incorporating appropriate structural and/or non-structural BMPs such as silt fences and minimizing time of exposure between construction and re-vegetation. Following installation of the proposed sewer line improvements, the excavated areas will either be paved over or backfilled to its existing contours and re-vegetated to control erosion.

(2) *Historic Resources*

Objective:

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

Policies:

- (A) *Identify and analyze significant 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.*

As documented during the archaeological survey conducted for the proposed Project, no historic properties were identified within the Project Site. As such, a Project-specific effect recommendation of "no historic properties affected" is warranted. Based upon potential remnant historic properties located adjacent to and mauka of the Project Site, the potential for subsurface cultural deposits and lava tubes, and in accordance with the recommendations made by the SHPD in a letter dated September 22, 2006 (copy attached to the Archaeological Assessment in Appendix B), an on-site monitoring program will be developed and implemented for all subsurface construction activities associated with the proposed Project. An archaeological monitoring plan will be prepared and submitted to the SHPD for review and approval. The monitoring program will specify that no construction activities occur outside of the Poipu Road right-of-way. The specific measures for handling any historic properties identified during the construction activities will be detailed in the monitoring plan. In the event that any

burials are encountered during construction of the Project, a burial treatment plan will be prepared in accordance with the procedures of Chapter 6E-43, HRS, and submitted for approval.

(3) Scenic and Open Space Resources

Objective:

- (A) *Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.*

Policies:

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

No significant visual or aesthetic impacts are anticipated as a result of the proposed Project. The proposed sewer line improvements will be installed underground and will not be visible. Existing landscaping that may need to be removed during installation of the sewer line will be replaced following construction. The remaining unpaved areas along the sewer line corridor within the Poipu Road right-of-way that will be disturbed during construction activities will be re-vegetated following construction.

(4) Coastal Ecosystems

Objective:

- (A) *Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.*

Policies:

- (A) *Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;*
(B) *Improve the technical basis for natural resource management;*
(C) *Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;*
(D) *Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and*
(E) *Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.*

Potential water quality impacts to the Waikomo Stream and near shore coastal waters during construction of the Project will be mitigated by adherence to State water quality regulations governing grading, excavation and stockpiling. A NPDES General Permit for Storm Water Associated with Construction Activity administered by the State DOH will be required to control storm water discharges. Mitigation measures will be instituted following site-specific assessments, incorporating appropriate structural and/or non-structural BMPs such as silt fences and minimizing time of exposure between construction and re-vegetation. Following installation of the proposed sewer line improvements, the excavated areas will either be paved over or backfilled to its existing contours and re-vegetated to control erosion. No construction activities in conjunction with the Project will occur within Waikomo Stream.

Potential impacts to Waikomo Stream, near shore coastal waters and groundwater due to leakage or accidental breakage in the proposed sewer line will be mitigated by proper design, construction and operation of the facility. The use of PVC pipe for the majority of the proposed sewer line will provide for corrosion resistance and longevity, and is more durable and resistant to breakage. In addition, an approximately 101 linear-foot segment of the proposed sewer line in the vicinity of the Waikomo Stream crossing will be constructed of ductile iron with a ceramic epoxy lining and will be encased in a reinforced concrete jacket approximately 10 feet past either side of the stream culverts. Standard procedures for detecting leaks and breaks and for shutting down and repairing the sewer line will further minimize impacts.

(5) Economic Uses

Objective:

- (A) Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

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

The proposed sewer line improvements will be developed in conjunction with the planned Kukui'ula development, a resort-residential project located on approximately 1,002 acres to be developed by the Applicant. The Kukui'ula development is designated as Resort on the County's General Plan.

(6) Coastal Hazards

Objectives:

- (A) Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.

Policies

- (A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;
- (B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;
- (C) Ensure that developments comply with requirements of the Federal Flood Insurance Program;
- (D) Prevent coastal flooding from inland projects.

According to the FIRM prepared by FEMA, the majority of the Project Site is located within Zone "X", "Areas determined to be outside the 0.2% annual chance floodplain". An area within the western portion of the Project Site is designated "Floodway areas in Zone AE", Zone "AE", "Special flood hazard areas subject to inundation by the 1% annual chance flood with base flood elevations determined", and Zone "X", "Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood." The base flood elevation for the "AE" zone within this portion of the Project Site is between 43 feet and 51 feet above msl.

Construction and operation of the proposed Project are not anticipated to result in flooding of the Project area or lower elevation properties. The proposed sewer line improvements that are located within the designated floodway area in Zone AE will occur within the existing Poipu Road and right-of-way. The proposed sewer line improvements within the designated flood zones will be designed and constructed in full compliance with the flood plain management requirements of the County.

(7) Managing Development

Objective:

- (A) Improve the development review process, communication, and public participation in the management of coastal resource and hazards.

Policies:

- (A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
- (B) Facilitate timely processing of applications for development permits and resolve overlapping 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.

Government agencies, organizations and the general public are being notified of the proposed Project and provided an opportunity to comment on the Project through the environmental

review process. Short- and long-term impacts which may result from the construction and operation of the proposed Project have been assessed in this EA.

(8) Public Participation

Objective:

- (A) *Stimulate public awareness, education, and participation in coastal management.*

Policies:

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

Government agencies, organizations and the general public are being notified of the proposed Project and provided an opportunity to comment on the Project through the environmental review process. Short- and long-term impacts which may result from the construction and operation of the proposed Project have been assessed in this EA.

(9) Beach Protection

Objective:

- (A) *Protect beaches for public use and recreation.*

Policies:

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

The proposed Project, located approximately 1,000 feet mauka of the shoreline, does not involve the construction of improvements in the shoreline setback or require any erosion-protection structures.

(10) Marine Resources

Objective:

- (A) *Promote the protection, use, and development of marine and coastal resources to assure their sustainability.*

Policies:

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

The proposed Project is not anticipated to have any adverse impact on marine and coastal resources. Potential water quality impacts to near shore coastal waters during construction of the Project will be mitigated by adherence to State water quality regulations governing grading, excavation and stockpiling. Development of the proposed Project will produce no adverse effects from storm runoff to adjacent and downstream areas.

Potential impacts to Waikomo Stream, near shore coastal waters and groundwater due to leakage or accidental breakage in the proposed sewer line will be mitigated by proper design, construction and operation of the facility. The use of PVC pipe for the majority of the proposed sewer line will provide for corrosion resistance and longevity, and is more durable and resistant to breakage. In addition, an approximately 101 linear-foot segment of the proposed sewer line in the vicinity of the Waikomo Stream crossing will be constructed of ductile iron with a ceramic epoxy lining and will be encased in a reinforced concrete jacket approximately 10 feet past either side of the stream culverts. Standard procedures for detecting leaks and breaks and for shutting down and repairing the sewer line will further minimize impacts.

4.4 County of Kauai General Plan

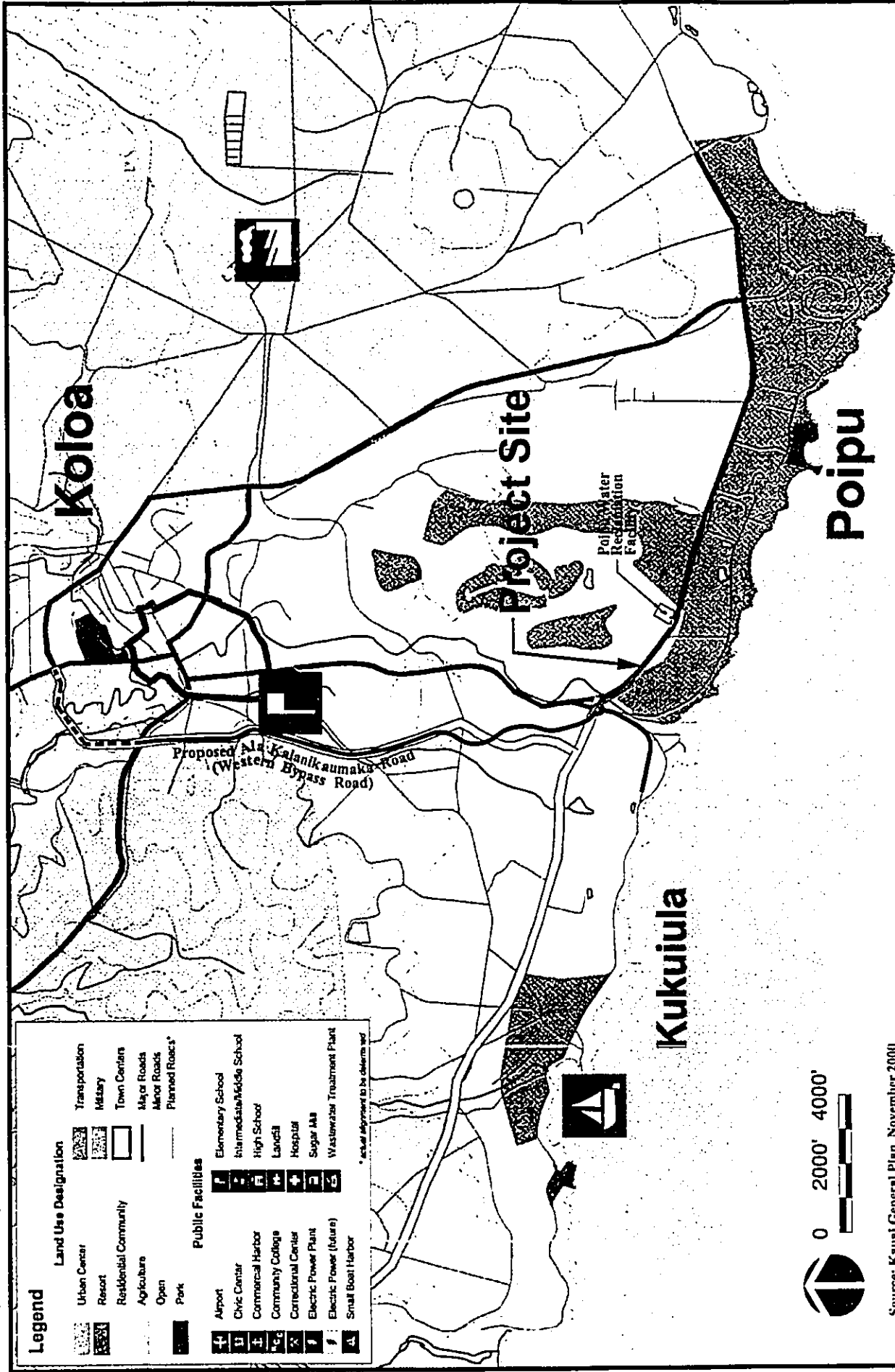
The County General Plan provides broad policy statements to guide land use regulations, new developments and facilities, and planning for County facilities and services. Relevant sections of the General Plan and their consistency with the Project are as follows:

General Plan Land Use Map Designation: The Koloa-Poipu-Kalaheo Planning District Land Use Map of the General Plan designates the Project Site as Open and Residential Community as shown in Figure 4-1.

The General Plan policy for the Open designation is as follows (Section 5.3.1 Policy):

- (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 ecological 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*

\\S:\P\111_0\16607-33_Kukui'ula\Figure 4-1 General Plan Map\Fig 4-1 Kauai General Planning PLOI DATE: Sep 14, 2006



Legend	
	Urban Center
	Resort
	Residential Community
	Agriculture
	Open
	Park
	Transportation
	Metropolitan
	Town Centers
	Major Roads
	Minor Roads
	Planned Roads
Public Facilities	
	Airport
	Chic Center
	Commercial Harbor
	Community College
	Correctional Center
	Electric Power Plant
	Electric Power (Nuclear)
	Small Boat Harbor
	Elementary School
	Intermediate/Middle School
	High School
	Landfill
	Hospital
	Sugar Mill
	Wastewater Treatment Plant



Source: Kauai General Plan, November 2000

**POIPU ROAD
24-INCH SANITARY
SEWER LINE
KUKUI'ULA
Koloa, Kauai, Hawaii**

Kauai General Plan Land Use Map Figure 4-1

Prepared for:
Kukui'ula Development Company (Hawaii), LLC

Prepared by:
Wilson Okamoto Corporation

- 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 land.

Areas within the Project Site are designated as Open due to their existing and intended use primarily as golf course. These Open-designated lands do not otherwise possess any significant ecological, scenic, or flood mitigation values typically attributed to the Open designation.

The General Plan policy for the Residential Community designation is as follows (Section 5.4.3.1 Policy):

- (a) Lands included within the Residential Community designation shall be used predominantly for low- to high-density housing in towns and other residential areas. Density shall be one to 20 units per acre. Residential Community areas may also be used for commercial and industrial businesses, government facilities, and institutions.
- (b) High-density residential use of 10 units per acre or more shall be confined to areas served by wastewater collection and treatment facilities and major roads.
- (c) The location of non-residential uses shall be established through zoning. The intent is to provide convenient shopping and services to improve the livability of the various residential communities.

The proposed Project is consistent with the Residential Community designation since it will provide wastewater transmission capabilities for the associated planned Kukui'ula development.

General Plan Policies: The proposed Project is consistent with the following applicable policies:

3.4 *Watersheds, Streams and Water Quality*

3.4.2 *Policy*

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

- (2) *Protect areas that are particularly susceptible to erosion and sediment loss – i.e., stream banks;*
- (4) *Limit land disturbance activities such as clearing and grading, and cut and fill to reduce erosion and sediment loss;*

(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.*

No significant impacts to the geology, topography and soils are anticipated with the construction and operation of the proposed Project. Construction of the proposed sewer line improvements will involve grading, excavation and trenching of presently undeveloped and developed areas within the Project Site. In addition to the normal trenching operations, a hoe ram will be used for trenching in areas where rock material is encountered. Appropriate erosion and sediment controls will be instituted during Project grading operations and construction site work activities in compliance with the State DOH's NPDES Permit program. Mitigation measures will be instituted following site-specific assessments, incorporating appropriate structural and/or non-structural BMPs such as silt fences and minimizing time of exposure between construction and re-vegetation. Following installation of the proposed sewer line improvements, the excavated areas will either be paved over or backfilled to its existing contours and re-vegetated to control erosion.

7.5 *Wastewater Treatment*

7.5.4 *Policy*

- (a) *The 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.*
- (b) *The County and private developers should coordinate planning, development, and operation and management of wastewater systems in accordance with long-range facility plans.*

The proposed 24-inch sewer line will convey wastewater from the planned Kukui'ula development to the existing Poipu Water Reclamation Facility, a private WWTP located approximately 0.4 mile to the east of the Kukui'ula development. The proposed sewer line will be sized to accommodate wastewater flows in excess of the flows to be generated by the Kukui'ula development. The conveyance of wastewater from the Kukui'ula development to the Poipu Water Reclamation Facility is intended to be part of a systematic and consolidated approach to the conveyance, treatment and disposal of wastewater with other developments in the area.

4.5 Koloa-Poipu-Kalaheo Development Plan

The County's Koloa-Poipu-Kalaheo Development Plan, adopted by County ordinance in 1983, provides physical, social and economic measures which relate specifically to these communities. The Koloa-Poipu-Kalaheo Development Plan land use designations for the Project Site are Public, Park, Residential, and Industrial.

4.6 County Comprehensive Zoning Ordinance

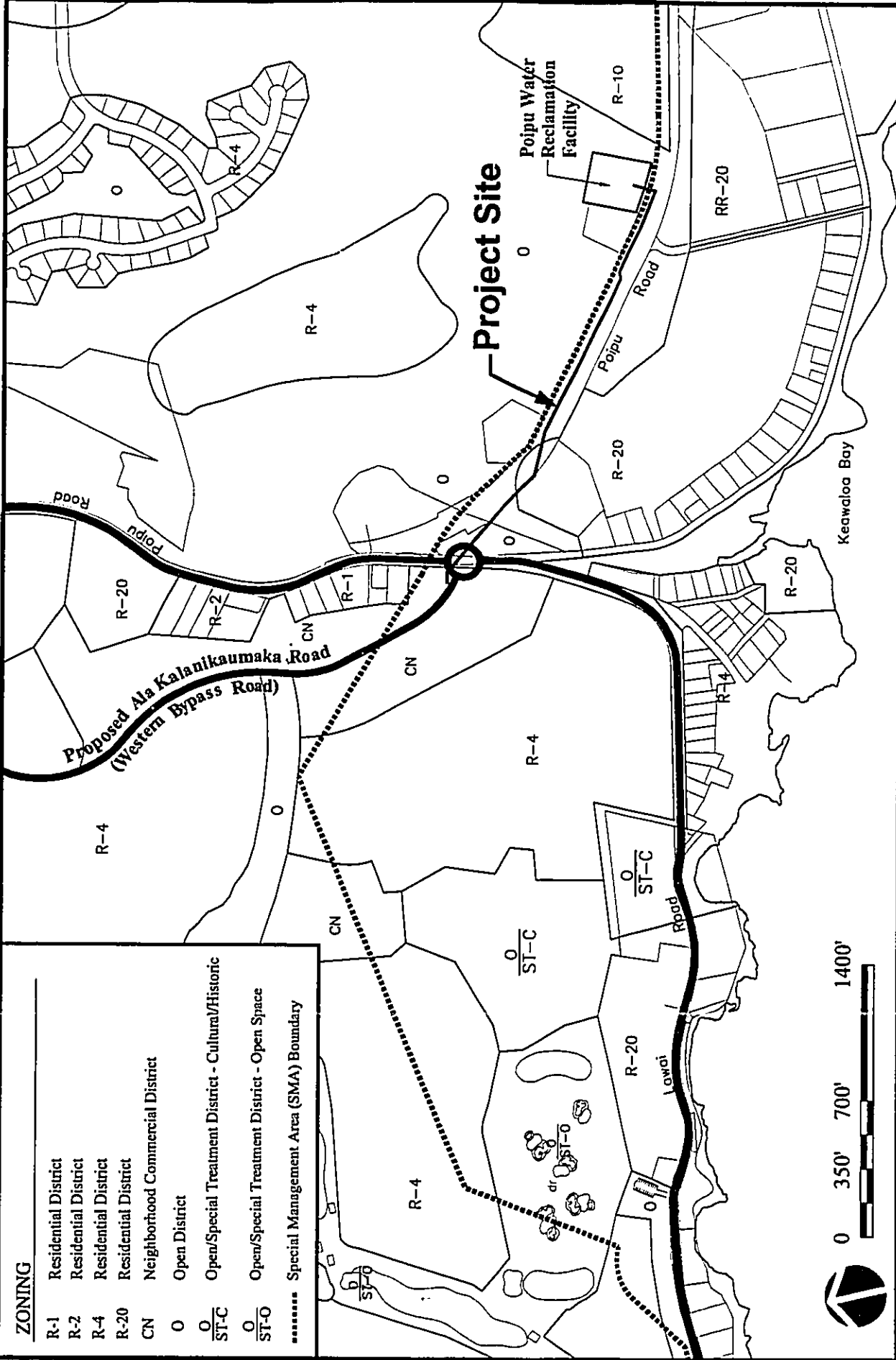
The County's Comprehensive Zoning Ordinance ("CZO") sets forth standards for land development and construction of buildings and other structures in the County. The CZO establishes land use districts and delineates the respective types of permitted uses and the development that can take place in those districts.

The zoning designations for the Project Site are Open District (O), Residential District (R-20), and Neighborhood Commercial District (CN) as shown in Figure 4-2.

4.7 County Special Management Area

The Project Site is located within the Special Management Area ("SMA") boundary established pursuant to the Hawaii Coastal Zone Management Law, Chapter 205A, HRS as shown in Figure 4-2. However, since the proposed Project is not defined as "development" under the SMA rules, a SMA Use Permit will not be required from the County.

FILE PATH: D:\6607-33 Kuku'ula\Map\Fig 4-2 Zoning - SMA Map\Fig 4-2 zoning.dwg PLOT DATE: Sep 14, 2006



ZONING

- R-1 Residential District
- R-2 Residential District
- R-4 Residential District
- R-20 Residential District
- CN Neighborhood Commercial District
- O Open District
- O ST-C Open/Special Treatment District - Cultural/Historic
- O ST-O Open/Special Treatment District - Open Space
- Special Management Area (SMA) Boundary

**POIPU ROAD
24-INCH SANITARY
SEWER LINE**

KUKU'ULA
Koloa, Kauai, Hawaii

Existing County Zoning and Special Management Area Map Figure 4-2

Prepared for:
Kukui'ula Development Company (Hawaii), LLC

Prepared by:
Wilson Okamoto Corporation

5. ALTERNATIVES TO THE PROPOSED ACTION

5.1 No Action Alternative

Under the No Action Alternative, the wastewater to be generated by the Kukui'ula development could be accommodated at either a regional WWTP if developed or at a proposed replacement WWTP to be located within the Kukui'ula development. Since the existing Kukui'ula WWTP is a secondary treatment facility with a lagoon system, a replacement WWTP would need to be constructed to provide a tertiary level of treatment to produce a higher quality effluent suitable for any type of effluent reuse. The development of a regional WWTP is uncertain at this time as a site has not been selected and an environmental assessment document for the facility would need to be prepared in compliance with applicable future requirements. With the No Action Alternative, the intent of the Kukui'ula development to be part of a systematic and consolidated approach to the conveyance, treatment and disposal of wastewater at the Poipu Water Reclamation Facility with other developments in the area would not occur.

The No Action Alternative would also preclude all other short- and long-term beneficial and adverse physical, environmental and socio-economic impacts described in this EA.

6. REQUIRED PERMITS AND APPROVALS

The following is a list of permits and approvals which may be required prior to construction of the proposed Project:

State of Hawaii

Department of Health

- National Pollutant Discharge Elimination System ("NPDES") Permit
- Community Noise Permit

Department of Land and Natural Resources Historic Preservation Division

- Chapter 6E, HRS Historic Preservation

County of Kauai

Department of Public Works

- Road Permit

7. NOTICE OF DETERMINATION

A. Applicant

Kukui'ula Development Company (Hawaii), LLC
P.O. Box 280
Koloa, Kauai, Hawaii 96756

Contact: Mr. Lindsay Crawford
Telephone: (808) 742-6304
Facsimile: (808) 742-6378

B. Approving Agency

County of Kauai Department of Public Works

C. Description of Proposed Action

The Applicant proposes to install a private 24-inch gravity sanitary sewer line within a portion of Poipu Road and Lawai Road in Koloa, Island of Kauai to convey wastewater from the planned Kukui'ula development to the existing Poipu Water Reclamation Facility ("Reclamation Facility"), a private wastewater treatment plant located approximately 0.4 mile to the east of the Kukui'ula development. Approximately 200,000 gallons per day ("gpd") of wastewater generated by the Kukui'ula development will be conveyed to the Reclamation Facility via the proposed 24-inch sewer line. Treatment allocation for the 200,000 gpd has been secured from the owner of the Reclamation Facility. The proposed sewer line is sized to accommodate wastewater flows in excess of the flows to be generated by the Kukui'ula development. The proposed sewer line will be built by the Applicant on behalf of Kukui'ula South Shore Community Services, LLC, a private wastewater utility regulated by the Hawaii Public Utilities Commission ("PUC"). The proposed sewer line will extend approximately 2,250 linear feet and will be installed using the open cut trench method.

D. Determination and Reasons Supporting Determination

The Poipu Road 24-Inch Sanitary Sewer Line Draft EA was filed with the State Office of Environmental Quality Control ("OEQC") and published in the October 23, 2006 publication of The Environmental Notice. A total of five (5) comment letters were received during the 30-day public review period which ended on November 22, 2006. Based on the significance criteria set forth in Section 11-200-12 of Title 11, Chapter 200, Administrative Rules, State Department of Health, the County of Kauai Department of Public Works has determined that the proposed Project will not have a significant effect on the environment, and that a Finding of No Significant Impact ("FONSI") will be filed with the State Office of Environmental Quality Control (OEQC).

The findings supporting this determination are discussed below:

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

The proposed Project will not involve the loss or destruction of any natural or cultural resources since the Project Site has been previously disturbed with the development of Poipu Road and Lawai Road. Archaeological monitoring will be conducted during all subsurface construction work associated with the Project, and an archaeological monitoring plan will be prepared and submitted to the State Historic Preservation Division ("SHPD") for review and approval. Should any lava tubes and/or caves that may contain Hawaiian cultural properties, including human remains, be encountered during construction of the proposed Project, work in the immediate vicinity will be halted and consultation will be conducted with the SHPD and the Kauai/Niihau Islands Burial Council regarding appropriate treatment. In the event that any burials are encountered during construction of the Project, a burial treatment plan will be prepared in accordance with the procedures of Chapter 6E-43, HRS, and submitted for approval.

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

The intention of the proposed Project is to commit the Project Site to the proposed use over the long-term. Beneficial uses of the Project Site and environment would not be curtailed since the Project is an appropriate use for the site in terms of planning and zoning.

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 proposed Project is consistent with the State's applicable long-term environmental policies and goals set forth in Chapter 344, HRS. The proposed sewer line improvements is intended to be part of a systematic and consolidated approach to the conveyance, treatment and disposal of wastewater with other developments in the area. The proposed Project will provide a means of delivering wastewater to be generated by the Kukui'ula development to the Poipu Water Reclamation Facility which currently has available capacity, and can produce a higher quality of effluent than the existing Kukui'ula WWTP, unless it is substantially upgraded.

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

In the short-term, the Project will confer positive benefits in the local area. Direct economic benefits will result from construction expenditures both through the purchase of material from local suppliers and through the employment of local labor, thereby stimulating that sector of the economy. Indirect economic benefits may include benefits to local retailing businesses resulting from construction activities.

In the long-term, the proposed sewer line improvements will allow for the conveyance of wastewater from the Kukui'ula development to the Reclamation Facility as part of a systematic and consolidated approach to the conveyance, treatment and disposal of wastewater with other developments in the area.

5) Substantially affects public health;

The proposed Project is not anticipated to adversely affect public health. In the long-term, no significant air quality or noise impacts are anticipated from the operation of the proposed Project since the sewer line improvements will be fully underground. Potential impacts to groundwater

due to leakage or accidental breakage in the proposed sewer line will be mitigated by proper design, construction and operation of the facility. Standard procedures for detecting leaks and breaks and for shutting down and repairing the sewer line will further minimize impacts.

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

The proposed Project is not anticipated to induce increased population growth since the proposed sewer line is part of an overall wastewater system which will service the planned Kukui'ula development of which the majority of the homeowners are expected to be part-time residents. The proposed sewer line is sized to accommodate additional wastewater flows from nearby developments, but use of the sewer line would require obtaining treatment allocation from the owner of the Poipu Water Reclamation Facility and would be dependent on the treatment capacity of the Poipu Water Reclamation Facility. The proposed Project will not result in adverse effects on public facilities since it will involve a private sewer line conveying wastewater flows from the Kukui'ula development to the privately owned and operated Poipu Water Reclamation Facility.

7) Involves a substantial degradation of environmental quality;

The proposed Project is not anticipated to involve a substantial degradation of environmental quality. Construction activities associated with the Project are anticipated to result in short-term impacts to noise, air quality and traffic in the immediate vicinity of which measures will be implemented to mitigate these impacts.

In the long-term, no significant air quality or noise impacts are anticipated from the operation of the proposed Project since the sewer line improvements will be fully underground.

Development of the proposed sewer line improvements will produce no adverse effects from storm runoff to adjacent and downstream areas. Following construction, storm runoff within the eastern portion of the Project Site will remain unchanged from existing drainage flow conditions. Within the western portion of the Project Site, the proposed drainage in the immediate Project vicinity will be accommodated as part of the drainage system improvements to be constructed for the roundabout improvements which will consist of drain lines and associated catch basins.

Potential impacts to Waikomo Stream, near shore coastal waters and groundwater due to leakage or accidental breakage in the proposed sewer line will be mitigated by proper design, construction and operation of the facility. The use of PVC pipe for the majority of the proposed sewer line will provide for corrosion resistance and longevity, and is more durable and resistant to breakage. In addition, an approximately 101 linear-foot segment of the proposed sewer line in the vicinity of the Waikomo Stream crossing will be constructed of ductile iron with a ceramic epoxy lining and will be encased in a reinforced concrete jacket approximately 10 feet past either side of the stream culverts. Standard procedures for detecting leaks and breaks and for shutting down and repairing the sewer line will further minimize impacts.

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

The Project itself is not anticipated to have a significant adverse cumulative effect on the environment, nor will it involve a commitment for larger actions. The Project is part of the larger Kukui'ula development which, given its resort and second home nature, is not anticipated to have a considerable cumulative effect upon the environment. Treatment allocation for the approximately 200,000 gpd of wastewater to be conveyed to the Poipu Water Reclamation Facility by the proposed sewer line has been secured from the owner of the Reclamation Facility. Furthermore, as previously indicated, the proposed sewer line is sized to accommodate additional wastewater flows from nearby developments, but use of the sewer line would require obtaining treatment allocation from the owner of the Reclamation Facility and would be dependent on the treatment capacity of the Reclamation Facility.

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

As the Project Site does not provide a unique habitat, no significant impacts on flora are anticipated from the construction and operation of the proposed Project. No flora species of special interest, or currently protected or proposed for protection under the Federal or State endangered species statutes will be disturbed as a result of the proposed Project.

No significant impacts on fauna within the Project Site are anticipated from the construction and operation of the proposed Project. The modification of the existing habitat within the Project Site by the proposed sewer line improvements is not anticipated to adversely impact any avian or mammalian species currently listed as endangered or threatened, or currently proposed for listing under either Federal or State endangered species statutes. The Project Site is not located within any of the Critical Habitat Units designated for the endemic, endangered Kauai cave wolf spider and Kauai cave amphipod by the USFWS final rule published April 9, 2003.

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

Construction activities associated with the proposed Project will create adverse short-term impacts such as unavoidable noise impacts and air quality impacts from soil excavation and grading activities in the vicinity of the Project Site. Unavoidable construction noise impacts on nearby land uses in the immediate vicinity of the proposed Project will be mitigated to some degree by complying with the provisions of the State DOH Administrative Rules, Title 11, Chapter 46, Community Noise Control. The hours of permitted construction noise operations specified in the Rules will be adhered to and enforced. Potential air quality impacts during construction of the proposed Project will be mitigated by complying with the State DOH Administrative Rules, Title 11, Chapter 60, Air Pollution Control.

Potential water quality impacts to the Waikomo Stream and near shore coastal waters during construction of the Project will be mitigated by adherence to State water quality regulations governing grading, excavation and stockpiling. A NPDES General Permit for Storm Water Associated with Construction Activity administered by the State DOH will be required to control storm water discharges. Mitigation measures will be instituted following site-specific assessments, incorporating appropriate structural and/or non-structural BMPs such as silt fences and minimizing time of exposure between construction and re-vegetation.

In the long-term, no significant air quality or noise impacts are anticipated from the operation of the proposed Project since the sewer line improvements will be fully underground.

Development of the proposed sewer line improvements will produce no adverse effects from storm runoff to adjacent and downstream areas. Following construction, storm runoff within the eastern portion of the Project Site will remain unchanged from existing drainage flow conditions. Within the western portion of the Project Site, the proposed drainage in the immediate Project vicinity will be accommodated as part of the drainage system improvements to be constructed for the roundabout improvements which will consist of drain lines and associated catch basins.

Potential impacts to Waikomo Stream and near shore coastal waters due to leakage or accidental breakage in the proposed sewer line will be mitigated by proper design, construction and operation of the facility. The use of PVC pipe for the majority of the proposed sewer line will provide for corrosion resistance and longevity, and is more durable and resistant to breakage. In addition, an approximately 101 linear-foot segment of the proposed sewer line in the vicinity of the Waikomo Stream crossing will be constructed of ductile iron with a ceramic epoxy lining and will be encased in a reinforced concrete jacket approximately 10 feet past either side of the stream culverts. Standard procedures for detecting leaks and breaks and for shutting down and repairing the sewer line will further minimize impacts.

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;

According to the FIRM prepared by the FEMA, the majority of the Project Site is located within Zone "X", "Areas determined to be outside the 0.2% annual chance floodplain". An area within the western portion of the Project Site is designated "Floodway areas in Zone AE", Zone "AE", "Special flood hazard areas subject to inundation by the 1% annual chance flood with base flood elevations determined", and Zone "X", "Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood." The base flood elevation for the "AE" zone within this portion of the Project Site is between 43 feet and 51 feet above msl.

Construction and operation of the proposed Project are not anticipated to result in flooding of the Project area or lower elevation properties. The proposed sewer line improvements that are located within the designated floodway area in Zone AE will occur within the existing Poipu Road and right-of-way. The proposed sewer line improvements within the designated flood zones will be designed and constructed in full compliance with the flood plain management requirements of the County.

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

There are no scenic vistas or view planes identified by any County or State plans or studies relative to the Project Site. The proposed sewer line improvements will be installed underground and will not be visible.

13) *Requires substantial energy consumption;*

Operation of the proposed sewer line improvements will not result in a significant increase in energy consumption demand.

8. REFERENCES

1. County of Kauai, Planning Department. *Kauai General Plan*. November 2000
2. County of Kauai. *Koloa-Poipu-Kalaheo Development Plan*. 1983.
3. Department of Land and Natural Resources (DLNR), Commission on Water Resource Management. *Ground Water Hydrologic Unit Map – Island of Kauai*. 2000.
4. Hawaii Cooperative Park Service Unit, National Park Service for the State of Hawaii Commission on Water Resource Management. *Hawaii Stream Assessment, A Preliminary Appraisal of Hawaii's Stream Resources, Report R84*. December 1990
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6. Macdonald, Gordon A., A.T. Abbott and Frank L. Peterson. *Volcanoes in the Sea, The Geology of Hawaii*. Second Edition 1986.
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8. R.M. Towill Corporation. *Kukui'ula Planned Community Final Environmental Impact Statement*. Prepared for A&B Properties, Inc. April 1989.
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10. The Garden Island. *Committee reviews waste plan options*. August 30, 2006.
11. The Limtiaco Consulting Group. *Draft Environmental Assessment for the Houghtailing Street Area Sewer Rehabilitation*. Prepared for the City and County of Honolulu Department of Design and Construction. May 2006.
12. Townscape, Inc. *Kukui'ula Bay Resort Final Supplemental Environmental Impact Statement*. Prepared for Kukui'ula Development Company, Inc. August 1998.
13. United States Department of Agriculture Soil Conservation Service. *Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*, August 1972.
14. U.S. Census Bureau. *Census 2000 Summary 100 Percent Data*.
15. Yuen, George, And Associates. *Water Resources Protection Plan: Volumes I and II*. June 1990.

9. CONSULTATION

9.1 Pre-Assessment Consultation

The following agencies and organizations were consulted during the preparation of the Draft EA. Those who formally replied are indicated by an asterisk (*). All written comments and responses are reproduced herein.

Federal

- * U.S. Army Corps of Engineers
- * U.S. Geological Survey
- U.S. Fish & Wildlife Service

State of Hawaii

- * Department of Health, Office of Environmental Quality Control
- Department of Health, Environmental Planning Office
- Department of Land and Natural Resources
- * Department of Land and Natural Resources, Historic Preservation Division
- * Office of Hawaiian Affairs

County of Kauai

- Planning Department
- * Department of Public Works
- * Department of Public Works, Division of Wastewater Management
- * Department of Water

Others

- HOH Utilities, LLC, Etal
- Eric A. Knudsen Trust, Etal
- Kiahuna Makai, LLC
- * Terry P. Kamen Family Trust, Etal
- Robert E. Keown Trust, Etal
- Waikomo Stream Associates
- * Waikomo Stream Villas

9.2 Draft Environmental Assessment Consultation

The following agencies and organizations were consulted during the public review period of the Draft EA. Those who formally replied are indicated by an asterisk (*). All written comments and responses are reproduced herein.

Federal

- * U.S. Army Corps of Engineers
- U.S. Geological Survey
- U.S. Fish & Wildlife Service
- U.S. Natural Resources Conservation Service

State of Hawaii

- Department of Business, Economic Development, and Tourism
- Department of Business, Economic Development, and Tourism, Office of Planning
- Department of Health
- Department of Health, Environmental Planning Office
- Department of Health, Environmental Management Division
- * Department of Health, Office of Environmental Quality Control
- Department of Land and Natural Resources
- * Department of Land and Natural Resources, Historic Preservation Division
- Office of Hawaiian Affairs

County of Kauai

- Planning Department
- Department of Public Works
- * Department of Public Works, Division of Wastewater Management
- Department of Water
- Police Department
- Fire Department

Others

- HOH Utilities, LLC
- Eric A. Knudsen Trust, Etal
- Kiahuna Makai, LLC
- Terry P. Kamen Family Trust, Etal
- Robert E. Keown Trust, Etal
- Waikomo Stream Villas Resort
- Waikomo Stream Associates
- Koloa Public/School Library
- Kauai Island Utility Cooperative
- * Poipu Beach Resort Association Board of Directors

Pre-Assessment Consultation Correspondence



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 223
FORT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF: CEPOH-EC-T

August 16, 2006

Civil Works Technical Branch

Ms. Frances Yamada
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

RECEIVED
AUG 17 2006

WILSON OKAMOTO CORPORATION

Dear Ms. Yamada:

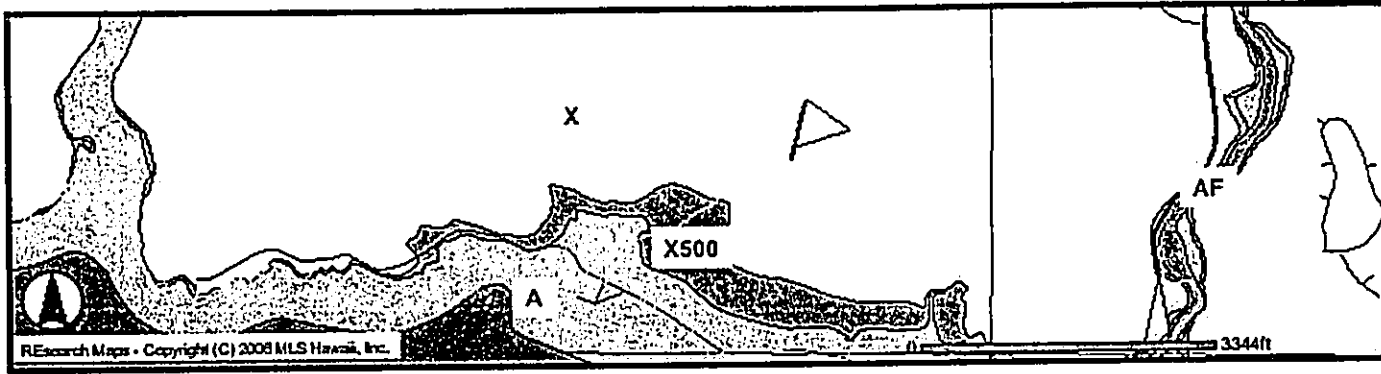
Thank you for the opportunity to review and comment on the Pre-Assessment Consultation to Prepare a Draft Environmental Assessment for the Poipu Road Sanitary Sewer Line Project, Kauai (TMKs 2-6-15: 1; 2-6-4: 3; and, 2-8-14: 27). Based on the information provided, the project parcels are located in Zone X (unshaded). These are areas outside of the 500-year floodplain. Should you require additional information, please contact Ms. Jessie Dobinchick of my staff at (808) 438-8876.

Sincerely,

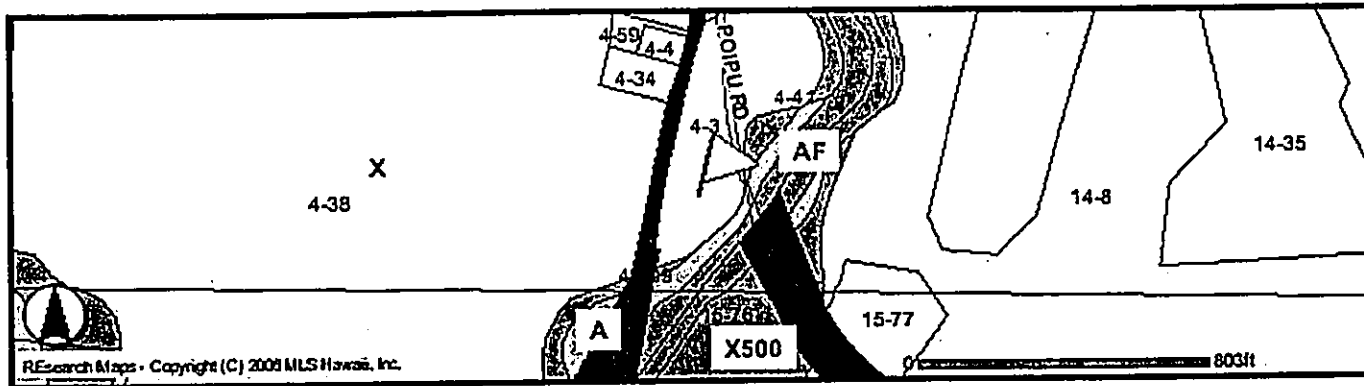

James Pennaz, P.E.
Chief, Civil Works Technical Branch

Enclosures

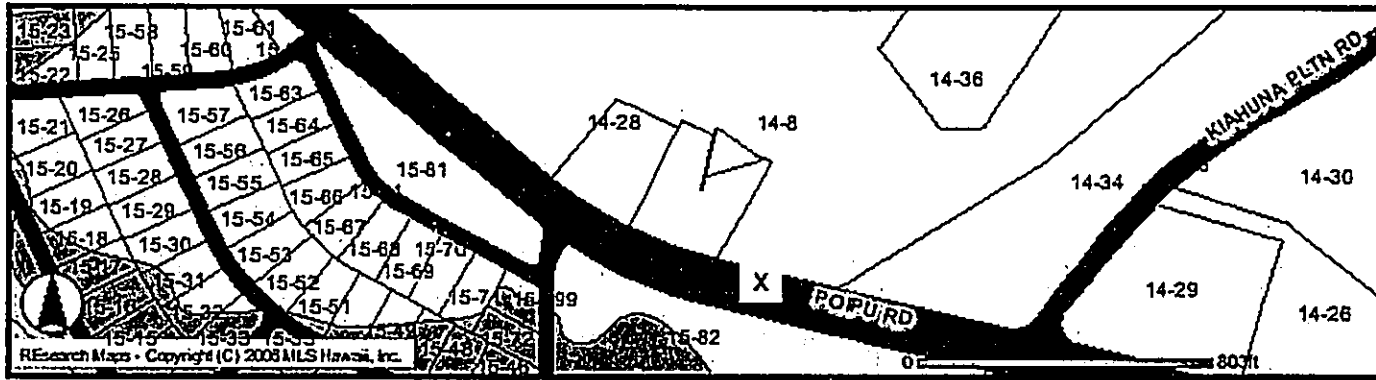
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6607-33
September 15, 2006

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ENGINEERS
PLANNERS

1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808)946-2277
FAX: (808)946-2253

Mr. James Pennaz, P.E., Chief
Civil Works Technical Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Building 223
Fort Shafter, Hawaii 96858-5440

Subject: Pre-Assessment Consultation
Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Tax Map Keys: (4) 2-6-15: por. 1, 2-6-04: por. 3, and 2-8-14: por. 27; and
portions of Poipu Road and Lawai Road
Koloa, Kauai, Hawaii

Dear Mr. Pennaz:

Thank you for your letter of August 16, 2006 (Ref: CEPOH-EC-T) indicating that the Project parcels are located in Zone X, areas outside of the 500-year floodplain.

In addition to Zone X, an area within the western portion of the Project Site is designated "Floodway areas in Zone AE", Zone "AE", "Special flood hazard areas subject to inundation by the 1% annual chance flood with base flood elevations determined", and Zone "X", "Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood." The base flood elevation for the "AE" zone within this portion of the Project Site is between 43 feet and 51 feet above mean sea level. The proposed sewer line improvements that are located within the designated floodway area in Zone AE will occur within the existing Poipu Road and right-of-way. The proposed sewer line improvements within the designated flood zones will be designed and constructed in full compliance with the flood plain management requirements of the County of Kauai.

Your letter, along with this response, will be included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation phase of the Project.

Sincerely,

Frances Yamada
Senior Planner

cc: Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Pacific Islands Water Science Center
677 Ala Moana Blvd., Suite 415
Honolulu, HI 96813
Phone: (808) 587-2400/Fax: (808) 587-2401

August 16, 2006

Attn: Ms. Frances Yamada
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

RECEIVED
AUG 21 2006
WILSON OKAMOTO CORPORATION

Dear Ms. Yamada:

Subject: Pre-Assessment Consultation
Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Tax Map Keys: (4) 2-6-15: por. 1, 2-6-04: por. 3, and 2-8-14: por. 27;
Koloa, Island of Kauai, Hawaii

Thank you for forwarding the subject Pre-Assessment Consultation for review and comment by the staff of the U.S. Geological Survey, Pacific Islands Water Science Center. We regret however, that due to prior commitments and lack of available staff, we are unable to review this document.

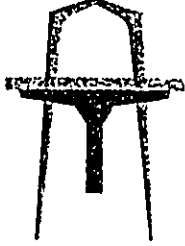
We appreciate the opportunity to participate in the review process.

Sincerely,

Gordon Tribble
Center Director

6607-33
September 5, 2006

**WILSON
OKAMOTO
CORPORATION**



**ENGINEERS
PLANNERS**

1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808)946-2277
FAX: (808)946-2253

Mr. Gordon Tribble, Center Director
U.S. Department of the Interior
U.S. Geological Survey
Pacific Islands Water Science Center
677 Ala Moana Boulevard, Suite 415
Honolulu, Hawaii 96813

Subject: Pre-Assessment Consultation
Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Tax Map Keys: (4) 2-6-15: por. 1, 2-6-04: por. 3, and 2-8-14: por. 27; and
portions of Poipu Road and Lawai Road
Koloa, Kauai, Hawaii

Dear Mr. Tribble:

Thank you for your letter of August 16, 2006 informing us that your staff was unable to review the Project Summary of the subject Project due to prior commitments and lack of available staff. We appreciate receipt of this notification.

Sincerely,

A handwritten signature in black ink, appearing to read 'Frances Yamada', written in a cursive style.

Frances Yamada
Senior Planner

cc: Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC

LINDA LINGLE
GOVERNOR OF HAWAII



GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: eoqc@health.state.hi.us

RECEIVED
SEP 06 2006

WILSON OKAMOTO CORPORATION

Ms. Frances Yamada
Wilson Okamoto
1907 S. Beretania St. #400
Honolulu, HI 96826

Subject: Pre-Assessment for Draft Environmental Assessment for Poipu Road
24 inch Sanitary Sewer Line

Dear Ms. Yamada:

We have received your letter dated August 14, 2006 about the Poipu Road 24 inch sanitary sewer line. You will need to include the Reclamation Facility and pump station in your draft environmental assessment.

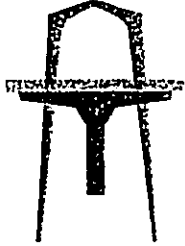
We have no further comments to offer at this time, but will reserve comments when the documents are submitted. Thank you for the opportunity to review your request and should you have any questions, please feel to call our office at 586-4185.

Sincerely,

Genevieve Salmonson
Genevieve Salmonson
Director

6607-33
September 15, 2006

WILSON
OKAMOTO
CORPORATION



ENGINEERS
PLANNERS
1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808) 946-2277
FAX: (808) 946-2253

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

Subject: Pre-Assessment Consultation
Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Tax Map Keys: (4) 2-6-15: por. 1, 2-6-04: por. 3, and 2-8-14: por. 27; and
portions of Poipu Road and Lawai Road
Koloa, Kauai, Hawaii

Dear Ms. Salmonson:

Thank you for your letter regarding the subject Project.

A discussion of the existing Poipu Water Reclamation Facility and the proposed wastewater pump station to be located within the Reclamation Facility parcel will be included in the Draft EA.

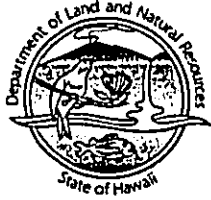
Your letter, along with this response, will be included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation phase of the Project.

Sincerely,

Frances Yamada
Senior Planner

cc: Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

September 22, 2006

RECEIVED
SEP 25 2006

Frances Yamada, Senior Planner
Wilson Okamoto
1907 S. Beretania Street, Suite 400
Honolulu, Hawaii 96826

WILSON OKAMUIU CORPORATION

LOG NO: 2006.2790
DOC NO: 0609NM01
Archaeology

Dear Ms. Yamada:

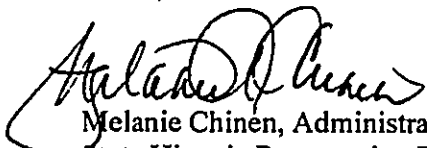
SUBJECT: Chapter 6E-42 Historic Preservation Review – Preliminary Comments on Draft EA for Poipu Road 24-inch Sanitary Sewer Line Koloa, Koloa, Kauai
TMK: (4) 2-6-015: por. 1; 2-6-004: por. 3; 2-8-014: por. 27

The aforementioned project proposes to install a 24-inch sanitary sewer line in Poipu. The County waterline project along Poipu Road is currently being monitored by an archaeologist during subsurface work. Due to several known archaeological sites in the area we have the following comments for your Draft EA:

1.) Archaeological monitoring shall take place during all subsurface construction work due to the high probability of finding human burials and historic properties. An archaeological monitoring plan shall be submitted in accordance with HAR 13-279 for review and approval by our office. A burial treatment plan shall be prepared and approved for burial discoveries encountered during the project. In addition, consultation with the appropriate ethnic groups, the procedures outlined in Chapter 6E-43 shall be followed. It is necessary for the treatment plan to be prepared after consultation with native Hawaiians, such as the Kaua'i Island Burial Council and the Office of Hawaiian Affairs.

If you have any questions please call Nancy McMahon at (808) 742-7033.

Aloha,


Melanie Chinen, Administrator
State Historic Preservation Division

NM:rtp

6607-33
September 29, 2006

Ms. Melanie Chinen, Administrator
State of Hawaii
Department of Land and Natural Resources
Historic Preservation Division
601 Kamokila Boulevard, Room 555
Kapolei, HI 96707

WILSON
OKAMOTO
CORPORATION



ENGINEERS
PLANNERS

1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808)946-2277
FAX: (808)946-2253

Subject: Pre-Assessment Consultation
Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Tax Map Keys: (4) 2-6-15: por. 1, 2-6-04: por. 3, and 2-8-14: por. 27; and
portions of Poipu Road and Lawai Road
Koloa, Island of Kauai, Hawaii

Dear Ms. Chinen:

Thank you for your letter of September 22, 2006 (Ref: LOG NO: 2006.2790, DOC NO: 0609NM01 Archaeology) regarding the subject Project.

We acknowledge that archaeological monitoring will be conducted during all subsurface construction work associated with the Project, and that an archaeological monitoring plan will be prepared and submitted to the State Historic Preservation Division for review and approval. In the event that any burials are encountered during construction of the Project, a burial treatment plan will be prepared in accordance with the procedures of Chapter 6E-43, Hawaii Revised Statutes, and submitted for approval.

Your letter, along with this response, will be included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation phase of the Project.

Sincerely,

A handwritten signature in cursive script, appearing to read "Frances Yamada". The signature is written in dark ink and is positioned above the typed name.

Frances Yamada
Senior Planner

cc: Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC

PHONE (808) 594-1888

FAX (808) 594-1865



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

HRD06/2666

October 5, 2006

Frances Yamada
Senior Planner
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, HI 96813

RE: Pre-Assessment Consultation, Draft Environmental Assessment, Poipu Road 24-Inch Sanitary Sewer Line, Kōloa, Kaua'i, 2-6-015:001 (por.), 2-6-004:003 (por.), and 2-8-014:027 (por.).

Dear Ms. Yamada,

The Office of Hawaiian Affairs (OHA) is in receipt of your request for consultation on the above-referenced project. We apologize for the delayed response and offer the following comments.

OHA staff recommends that your forthcoming Draft Environmental Assessment (DEA) include a professional "due diligence" study of the potential impact of these projects on archaeological, historic, and cultural resources. We also recommend contacting Cheryl Lovell to improve the consultation component of your study.

We further request your assurances that if this project goes forward, should iwi or Native Hawaiian cultural or traditional deposits be found during ground disturbance, work will cease, and the appropriate agencies will be contacted pursuant to applicable law.

Thank you for the opportunity to comment. We look forward to review of your forthcoming DEA as well. If you have further questions, please contact Kai Markell, Lead Advocate - Culture, at (808) 594-1945 or kaim@oha.org.

Frances Yamada
Senior Planner
October 5, 2006
Page 2

Sincerely,



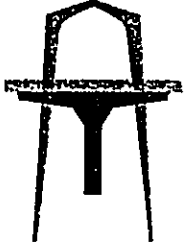
Clyde W. Nāmu'o
Administrator

C: Kanani Kagawa
Community Resource Coordinator
OHA - Kaua'i Office
3-3100 Kuhio Highway, Suite C4
Lihue, HI 96766-1153

6607-33
October 12, 2006

Mr. Clyde Namuo, Administrator
State of Hawaii
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, HI 96813

**WILSON
OKAMOTO
CORPORATION**



**ENGINEERS
PLANNERS**

1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808)946-2277
FAX: (808)946-2253

Subject: Pre-Assessment Consultation
Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Tax Map Keys: (4) 2-6-15: por. 1, 2-6-04: por. 3, and 2-8-14: por. 27;
and portions of Poipu Road and Lawai Road
Koloa, Island of Kauai, Hawaii

Dear Mr. Namuo:

Thank you for your letter of October 5, 2006 (Ref: HRD06/2666) regarding the subject Project.

A Cultural Impact Assessment has been conducted for the Project and will be included in the subject Draft EA. Ms. Cheryl Lovell-Obatake was contacted during the community consultation process for the Cultural Impact Assessment.

During the course of construction, should any previously unidentified burial, archaeological or historic sites be found within the Project Site, the Applicant will stop work in the immediate vicinity and the State Department of Land and Natural Resources Historic Preservation Division ("SHPD") will be notified immediately. The significance of these finds will then be determined and appropriate mitigation measures will be approved by the SHPD and the Kauai/Niihau Islands Burial Council, as appropriate. Subsequent work will proceed after SHPD authorization has been received and mitigative measures have been implemented.

We appreciate your participation in the pre-assessment consultation phase of the Project.

Sincerely,

Frances Yamada
Senior Planner

cc: Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC

BRYAN J. BAPTISTE
MAYOR



DONALD M. FUJIMOTO
COUNTY ENGINEER
TELEPHONE 241-6600

GARY K. HEU
ADMINISTRATIVE ASSISTANT

LADYE H. MARTIN
DEPUTY COUNTY ENGINEER
TELEPHONE 241-6600

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

August 24, 2006

RECEIVED
AUG 28 2006

WILSON OKAMOTO CORPORATION

Wilson Okamoto Corporation
1907 S. Beretania Street Suite 400
Honolulu, HI 96826-2277
ATTENTION: MS. FRANCES YAMADA

SUBJECT: PRE-ASSESSMENT CONSULTATION DRAFT ENVIRONMENTAL ASSESSMENT ("EA") PO'IPŪ ROAD 24-INCH SANITARY SEWER LINE TMK 2-8-15 POR. 1; 2-6-04-POR. 3; 2-8-14-POR.27; AND PORTIONS OF LĀWA'I ROAD AND PO'IPŪ ROAD PW 8.06.107

Dear Ms. Yamada,

We reviewed the subject pre-assessment consultation and offer the following comments:

1. We request that the sewer line project be coordinated with the Po'ipū Road Roundabout. The sewer line should be installed with this project and extended beyond the project limits to prevent future damage to the completed project. The County is close to approving the construction plans for the Po'ipū Road Roundabout. For your information and use, we are enclosing a copy of the planned roundabout construction at Po'ipū Road and Lāwa'i Road.

The project summary states that the sewer main will be installed over the existing drainage culverts at Waikomo Stream and that the depth of the 24 inch sewer main at the Waikomo Stream crossing will be approximately 8.6 feet from the proposed finish grade. We are enclosing a copy of the roundabout construction plans at the Waikomo Stream crossing. We believe the depth of the sewer main will be less than 8.6 feet as noted and may affect the design of the sewer main.

2. We recommend that the sewer line project be coordinated with the planned subdivision projects along Po'ipū Road. S-2004-16 Kiahuna Mauka Partners, LLC Subdivision requires acceleration and deceleration lanes, and sidewalk improvements as well as intersection improvements with Po'ipū Road (mauka shoulder).


Wilson Okamoto Corporation
August 24, 2006
Page (2)

Additionally, Z-IV-2004-35 & S-2006-53 Poī'pū Beach Villas, LLC required acceleration and deceleration lanes and sidewalk improvements as well as intersection improvements with Po'ipū Road (makai shoulder).


3. Installation of a 16 inch water line along the mauka Po'ipu Road shoulder is presently in the construction phase and ongoing.
4. We recommend comments be solicited from our Wastewater Division.

Thank you for this opportunity to provide our comments. Should you have any questions, please contact me at (808) 241-6498.

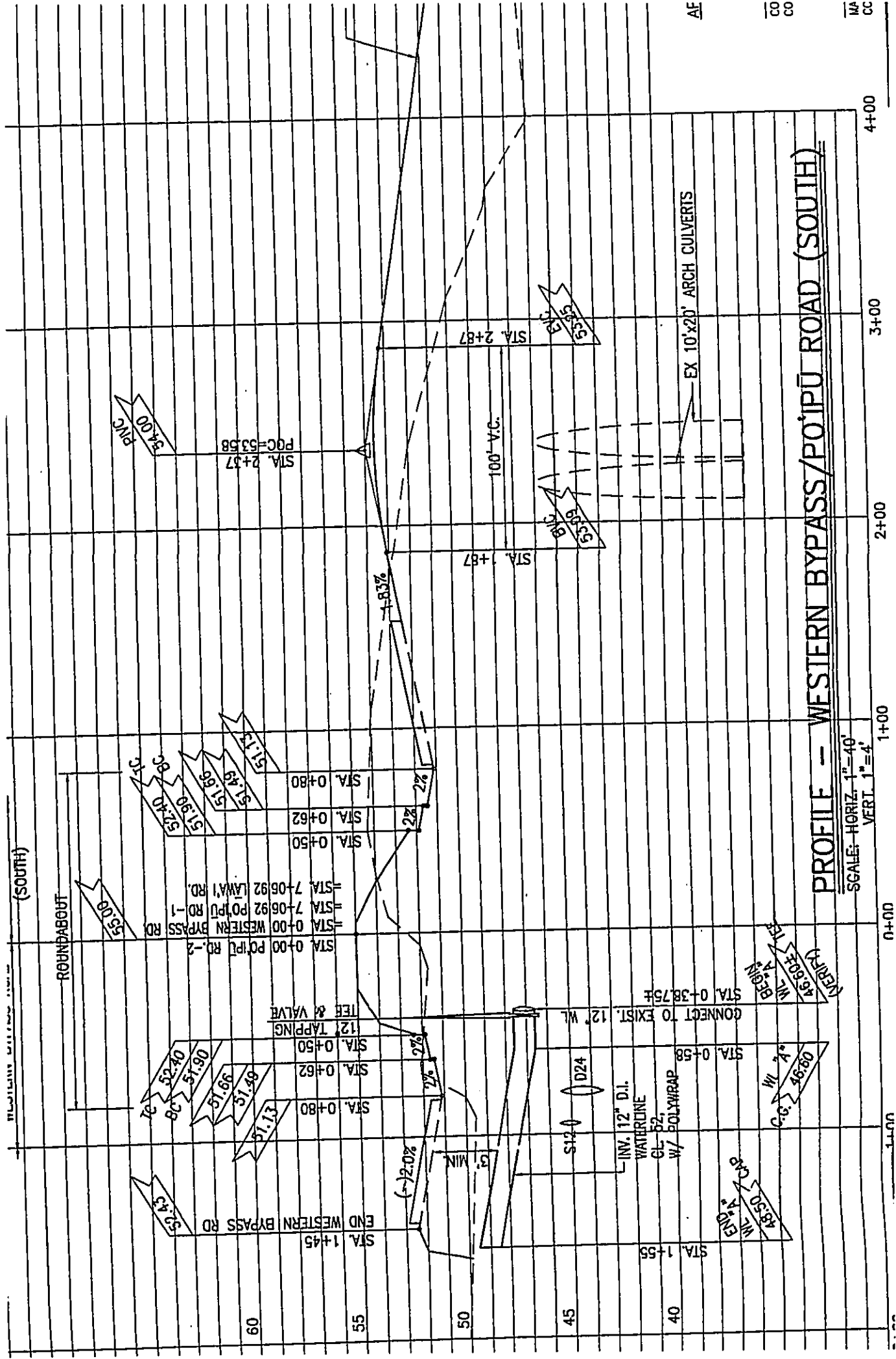
Very truly yours,


Wallace Kudo, P.E.
Chief, Engineering Division

CONCUR:


DONALD M. FUJIMOTO, P.E.
County Engineer

WK
Attachments



AF 80 80 MA CC



6607-33
September 15, 2006

Mr. Donald Fujimoto, P.E., County Engineer
County of Kauai
Department of Public Works
4444 Rice Street, Suite 275
Lihue, Hawaii 96766-1340

**WILSON
OKAMOTO
CORPORATION**



**ENGINEERS
PLANNERS**

1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808)946-2277
FAX: (808)946-2253

Subject: Pre-Assessment Consultation
Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Tax Map Keys: (4) 2-6-15: por. 1, 2-6-04: por. 3, and 2-8-14: por. 27; and
portions of Poipu Road and Lawai Road
Koloa, Kauai, Hawaii

Dear Mr. Fujimoto:

Thank you for your letter of August 24, 2006 (Ref: PW 8.06.107) regarding the subject Project. We offer the following responses:

1. Construction of the proposed sewer line will occur concurrently with the construction of the planned Roundabout improvements. The proposed sewer line will extend beyond the limits of the planned Roundabout improvements to prevent damage during future construction activities.

The depth of the proposed sewer line at the Waikomo Stream crossing is confirmed to be approximately 8.6 feet from the proposed finish grade. The updated Roundabout construction plans, which have been submitted to the County Department of Public Works, reflect the lower profile of the existing culverts at the Waikomo Stream crossing.

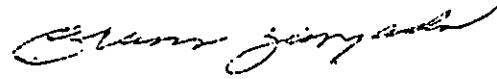
2. The Applicant is coordinating the proposed sewer line improvements with the planned Kiahuna Mauka Partners, LLC and Poipu Beach Villas, LLC developments. It is anticipated that the planned Poipu Beach Villas, LLC development, which is located makai of Poipu Road, will not be directly affected by the proposed sewer line improvements which will be installed along the mauka side of the Poipu Road right-of-way in the vicinity.
3. We acknowledge that the installation of the 16-inch water line along the mauka shoulder of Poipu Road is presently in the construction phase. The Applicant has coordinated the design of the proposed sewer line with the County Department of Water in consideration of the installation of the 16-inch water line. The Applicant will review the as-built conditions of the 16-inch water line prior to construction of the proposed sewer line improvements.
4. Comments to the subject Project were received from the Wastewater Division of the County Department of Public Works by letter dated August 25, 2006.

WILSON
OKAMOTO
CORPORATION

6607-33
Letter to Mr. Donald Fujimoto, P.E.
September 15, 2006
Page 2

Your letter, along with this response, will be included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation phase of the Project.

Sincerely,



Frances Yamada
Senior Planner

cc: Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC

BRYAN J. BAPTISTE
MAYOR



DONALD M. FUJIMOTO
COUNTY ENGINEER
TELEPHONE 241-6600

GARY K. HEU
ADMINISTRATIVE ASSISTANT

LADYE H. MARTIN
DEPUTY COUNTY ENGINEER
TELEPHONE 241-6600

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

August 25, 2006

Wilson Okamoto Corporation
1907 S. Beretania Street
Honolulu, Hawaii 96826

RECEIVED
AUG 29 2006

Attention: Ms. Frances Yamada

WILSON OKAMOTO CORPORATION

SUBJECT: PRE-ASSESSMENT CONSULTATION, DRAFT ENVIRONMENTAL
ASSESSMENT (EA), POIPU ROAD 24-INCH SANITARY SEWER LINE

We acknowledge receipt of your letter dated August 14, 2006 on the subject Draft EA, and appreciate the opportunity to provide our comments.

The County of Kauai, Department of Public Works recommends that all wastewater infrastructure should be designed and constructed per the County's Sewer Design Standards dated June 1973, and the applicable Hawaii Standard Specifications for Road, Bridge, and Public Works Construction. The 2005 version of the Standard Specifications is currently being published and distributed, and may have different provisions from the 1994 Standards that have been in use through the present.

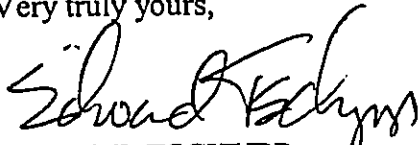
Section 706.09(A) of the Hawaii Standard Specifications for Road, Bridge, and Public Works Construction 1994, PVC Pipe for Sewer System states: PVC pipe and fittings shall conform to ASTM D 3034 and the minimum wall thickness and Standard Dimension Ratio (SDR) shall be thirty-five (35). The contractor shall use the pipe for agricultural, residential and apartment zoned areas and in sizes from six (6) inches to twelve (12) inches in diameter and only where a soils report shows the soil types met at the site with a Plasticity Index (P.I.) up to twenty-two (22). Note that PVC Pipe is not listed as approved material in Section 26 of the County of Kaua'i, Department of Public Works, Sewer Design Standards, June 1973.

The project involves development of private sewer lines partially within the County Right-of-Way. The applicant should be advised to obtain either an easement or establish a license agreement with the County for the use of the public property for private purposes.


Ms. Frances Yamada
Wilson Okamoto Corporation
August 25, 2006
Page 2

We look forward to receipt of your Draft EA for this project. If you have any questions, please call Edward Tschupp at (808) 241-6610.

Very truly yours,


EDWARD TSCHUPP
Chief, Wastewater Management Division

CONCUR:


DONALD M. FUJIMOTO
County Engineer

cc: Engineering Division

6607-33
September 15, 2006

**WILSON
OKAMOTO
CORPORATION**



**ENGINEERS
PLANNERS**

1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808) 946-2277
FAX: (808) 946-2253

Mr. Edward Tschupp, Chief
Wastewater Management Division
County of Kauai
Department of Public Works
4444 Rice Street, Suite 275
Lihue, Hawaii 96766-1340

Subject: Pre-Assessment Consultation
Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Tax Map Keys: (4) 2-6-15: por. 1, 2-6-04: por. 3, and 2-8-14: por. 27; and
portions of Poipu Road and Lawai Road
Koloa, Kauai, Hawaii

Dear Mr. Tschupp:

Thank you for your letter of August 25, 2006 regarding the subject Project.

The proposed sewer line improvements will be designed and constructed in accordance with the County of Kauai's Sewer Design Standards dated June 1973 and the applicable Hawaii Standard Specifications for Road, Bridge, and Public Works Construction 2005 version, with the exception of pipe material as described below.

The majority of the pipe material to be used for the proposed sewer line will be 24-inch diameter polyvinyl chloride ("PVC") with a Standard Dimension Ratio ("SDR") of 35. Since the existing soil type within the Project Site is primarily basalt, the backfill material will have a Plasticity Index of less than 22. An approximately 101 linear-foot section of the sewer line in the vicinity of the Waikomo Stream crossing will be constructed of ductile iron with a ceramic epoxy lining.

Although it is acknowledged that PVC pipe is not listed as approved material in Section 26 of the County of Kauai Department of Public Works Sewer Design Standards (June 1973), the Applicant is proposing the use of PVC pipe since it has become the industry standard in the State of Hawaii for gravity sewer mains. This is due to PVC pipe being much lighter in weight and not subject to breakage, as compared to vitrified clay pipe ("VCP"), making it much easier and less costly to install, while still offering corrosion resistance and longevity.

The Applicant will coordinate with the County in obtaining an easement as may be required for use of the County right-of-way for the proposed sewer line.

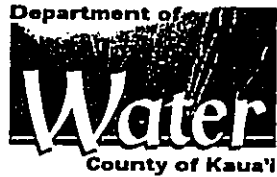
Your letter, along with this response, will be included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation phase of the Project.

Sincerely,

A handwritten signature in cursive script, appearing to read "Frances Yamada". The signature is written in dark ink and is positioned above the printed name.

Frances Yamada
Senior Planner

cc: Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC
M:\WOA\6607-33 Kukui'ula Poipu Rd 24-Inch Sewerline EA\DPW Wastewater Div Pre-Assmt Response Ltr; 9-15-06.doc



Water has no substitute.....Conserve it

September 12, 2006

RECEIVED
SEP 14 2006
WILSON OKAMOTO CORPORATION

Ms. Frances Yamada
Wilson Okamoto Corporation
1907 South Beretania Street Suite 400
Honolulu, HI 96826

Dear Ms. Yamada:

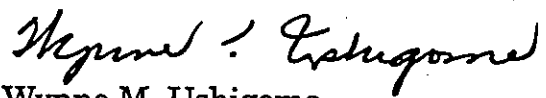
Subject: Pre-Assessment Consultation, Draft Environmental Assessment (EA),
Poi'puRoad 12-Inch Sanitary Sewer Line, Poi'pu Kaua'i, Hawai'i

The Department of Water (DOW), County of Kaua'i, presently has no comments regarding the pre-assessment consultation for the Draft EA for the subject project.

If construction plans for the Poi'puRoad 12-Inch Sanitary Sewer Line are prepared in the future, the portions of the project located within the County road right-of-way shall show all existing County-owned water facilities. The construction plan sheets that include the existing water facilities shall be submitted to the DOW for review.

If there are any questions, please call Mr. Bruce Inouye at (808) 245-5411.

Sincerely,


Wynne M. Ushigome
Acting Manager and Chief Engineer

BI:bdm
26-326\Docs\Poipu 12-Inch Sewer Line

6607-33
September 15, 2006

Ms. Wynne Ushigome, Acting Manager & Chief Engineer
County of Kauai
Department of Water
P.O. Box 1706
Lihue, Hawaii 96766

WILSON
OKAMOTO
CORPORATION



ENGINEERS
PLANNERS
1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808)946-2277
FAX: (808)946-2253

Subject: Pre-Assessment Consultation
Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Tax Map Keys: (4) 2-6-15: por. 1, 2-6-04: por. 3, and 2-8-14: por. 27; and
portions of Poipu Road and Lawai Road
Koloa, Kauai, Hawaii

Dear Ms. Ushigome:

Thank you for your letter of September 12, 2006 indicating that your Department has no comments regarding the pre-assessment consultation for the subject Project.

We acknowledge that construction plans prepared in the future for the proposed 24-inch sewer line will show all existing County-owned water facilities within the County road right-of-way and will be submitted to the DOW for review.

Your letter, along with this response, will be included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation phase of the Project.

Sincerely,

A handwritten signature in cursive script, appearing to read "Frances Yamada".

Frances Yamada
Senior Planner

cc: Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC

Kiahuna Makai LLC
Poipu Beach Estates
TMK 4-2-8-14-35
2291 Loke Rd.
Koloa Hawaii 96756

Sept. 5, 2006

Ms. Frances Yamada
Wilson Okamoto Corporation
1907 S. Beretania St
Suite 400
Honolulu Hawaii, 96826

Re: Proposed 24 inch Sewer Line on Poipu Rd. Koloa Hawaii

Dear Ms. Yamada,

Thank you for your letter of August 14, 2006 concerning the proposed Kukui'ula Development company sewer line in the Poipu Rd. public right-of-way.

Our comments are as follows:

1. The sewer line is in the County right of way and as such it should be installed to serve the public, not just Kukui'ula Development needs.
2. The sewer line should be at the correct depth to accommodate gravity flows from the Kiahuna Makai Subdivision (Poipu Beach Estates Subdivision) TMK 4-2-8-14-35/28. This may be coordinated with Wayne Wada of Esaki Surveying.
3. The Kukui'ula Development should install sufficient access points and facilities for the above subdivision.
4. The additional cost to accommodate the public (1,2,3, above) should be borne solely by Kukui'ula Development.
5. This project should be completed no later than September 30, 2007.
6. As stated in your Project summary "App 200,000 gallons per day (gpd) of wastewater shall be conveyed to the Reclamation facility...The treatment and disposal of the remaining wastewater to be generated by the Kukui'ula development will be accommodated at the proposed WWTP to be located within the Kukui'ula Development or at a regional WWTP if developed" Please add, "which will not be at this (HOH) facility location."

Aloha,


Terry Kamen

6607-33
September 15, 2006

Mr. Terry Kamen
Kiahuna Makai LLC
Poipu Beach Estates
2291 Loke Road
Koloa, Hawaii 96756

WILSON
OKAMOTO
CORPORATION



ENGINEERS
PLANNERS

1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808)946-2277
FAX: (808)946-2253

Subject: Pre-Assessment Consultation
Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Tax Map Keys: (4) 2-6-15: por. 1, 2-6-04: por. 3, and 2-8-14: por. 27; and
portions of Poipu Road and Lawai Road
Koloa, Kauai, Hawaii

Dear Mr. Kamen:

Thank you for your letter of September 5, 2006 regarding the subject Project. We offer the following responses:

1. The proposed sewer line is being built as a transmission line on behalf of the Kukui'ula South Shore Community Services, LLC ("KSSCS"), a private wastewater utility regulated by the Hawaii Public Utilities Commission ("PUC"). KSSCS is a subsidiary of Kukui'ula Development Company (Hawaii), LLC. As a Public Utility, KSSCS has the same rights to place its utilities in public rights-of-way as other utilities. Furthermore, as a regulated entity, by law KSSCS may only serve those customers and members of the public that it is authorized to serve by the PUC.
2. KSSCS has indicated a willingness to lower the proposed sewer line to accommodate flows from the Kiahuna Makai Subdivision, assuming confirmation by the Applicant's engineer that the lowering of the sewer line is feasible and will have no adverse engineering effects, and that Kiahuna Makai LLC agrees to pay its pro-rata share of the cost to accommodate such connections and such an arrangement is authorized by the PUC.
3. KSSCS has indicated a willingness to add connection "T's" in the sewer line and other facilities as necessary to accommodate flows from the Kiahuna Makai Subdivision, assuming confirmation by the Applicant's engineer that the "T" connections will have no adverse engineering effects, and that Kiahuna Makai LLC agrees to pay its pro-rata share of the cost to accommodate such connections and such an arrangement is authorized by the PUC.
4. KSSCS is willing to accommodate flows from the Kiahuna Makai Subdivision, provided that Kiahuna Makai LLC agrees to pay a contribution in aid of construction to reimburse KSSCS for its costs of accommodation as provided under its operating agreement as approved by the PUC. Under PUC regulations, the contribution in aid of construction applies to any party requesting such service.
5. KSSCS intends to complete the proposed sewer line improvements as soon as practical, however, the current schedule anticipates completion by the second quarter of 2008, assuming timely receipt of all necessary permits and plan approvals.

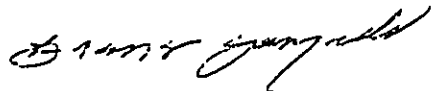
WILSON
OKAMOTO
CORPORATION

6607-33
Letter to Mr. Terry Kamen
September 15, 2006
Page 2

6. KSSCS is unable to make a commitment that the treatment and disposal of the remaining wastewater to be generated by the Kukui'ula development will not be accommodated at the existing Poipu Water Reclamation Facility. First, KSSCS wishes to retain the right to acquire additional capacity at the Poipu Water Reclamation Plant if any additional capacity should become available. Second, it would not be prudent business practice for KSSCS or Kukui'ula Development Company (Hawaii), LLC to foreclose their land planning and management options at this time. Furthermore, future decisions concerning the Poipu Water Reclamation Facility or the location of a new regional wastewater treatment plant are not within the sole control of the KSSCS.

Your letter, along with this response, will be included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation phase of the Project.

Sincerely,



Frances Yamada
Senior Planner

cc: Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC

Waikomo Stream Villas
Resort
Board of Directors

September 5, 2006

Ms. Frances Yamada

Wilson Okamoto Corporation
1907 So. Beretania Street, Suite 400
Honolulu, Hawaii 96826

RECEIVED
SEP 05 2006
WILSON OKAMOTO CORPORATION

Subject: Pre-Assessment Consultation
Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line

Dear Ms. Yamada:

Thank you for the opportunity to provide input for the proposed 24-Inch Sanitary Sewer Line down Poipu Road that passes by Waikomo Stream Villas Resort on both the Lawai and Poipu Road sides of our complex. We feel that several questions are raised by the proposal which we would like to have addressed prior to providing our support.

Perhaps the easiest way to address our questions is to simply list them as bullet points.

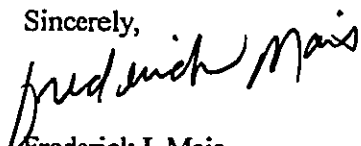
- **On-Site Treatment Plant vs. Sewer Line** – Our understanding of the originally approved development plans for Kukui 'ula called for an on-site treatment plant. It appears that option has now been abandoned in favor of transporting the sanitary waste to an off site treatment facility. How and when was the off site treatment option approved?
- **Existing 24 Inch Sewer Line** – The project description for this portion of the sewer line calls for a connection to an existing sewer line near the roundabout immediately west of our complex. The map that was included in your proposal shows what appears to be an existing sewer line along Lawai Road. Does this line already exist? Our complex is also adjacent to Lawai Road, and we do not recall receiving a notification to comment upon construction of a sewer line in Lawai Road?
- **24 Inch "Private Sewer Line"** – Although the project calls for a "private sewer line" is it possible that this sewer line could be shared? Our complex has an on-site sewage treatment facility that generates a maximum 16,000 gpd capacity. There is proposed development across Poipu Road from us, as well as adjacent to the eastern boundary of our complex, Kiahuna Poipu Golf Resort and Poipu Beach Villas respectively. Is there an opportunity for Waikomo Stream Villas Resorts as well as other existing and proposed developments to tap into the proposed "private sewer line". If so, would the 24 inch sewer line need to be upsized to accommodate additional connections and can the pumping and treatment facility process the total waste generated by all of the developments along the route. It seems that this would be the ideal time and opportunity for the County of Kauai to address the regional needs for all the developments which abut the proposed route of the sewer line.
- **Dust Abatement** – The recent construction of the Kukui'ula water line in Poipu Road resulted in a significant impact to the owners of several units at Waikomo Stream Villas Resorts. There

September 5, 2006

were no dust abatement measures in place during the construction of the water line which resulted in a need for the owners of several units to have an in-depth cleaning performed to remove the dust generated by the project. In addition two units adjacent to Lawai Road required the carpets to be cleaned as well as the in-depth dust cleaning. What dust abatement measures will be in place, and if there is an impact to our owners, how will they be reimbursed for the additional cost of cleanings?

In closing, we appreciate the opportunity to comment on the proposed sewer line, yet we do not feel that we can provide our support at this time until there is a resolution to the issues we have raised. Please feel free to contact us directly so that we may work together to address our concerns.

Sincerely,



Frederick J. Mais

President, WSV, Board of Directors

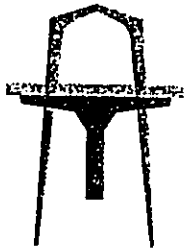
cc: County of Kauai, County Council Members

County of Kauai, Planning Commissioners

Poipu Beach Resort Association

6607-33
September 15, 2006

**WILSON
OKAMOTO
CORPORATION**



**ENGINEERS
PLANNERS**

1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808)946-2277
FAX: (808)946-2253

Mr. Frederick J. Mais, President
Waikomo Stream Villas Resort Board of Directors
c/o Certified Management
4-1579 Kuhio Highway
Kapaa, Hawaii 96746

Subject: Pre-Assessment Consultation
Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Tax Map Keys: (4) 2-6-15: por. 1, 2-6-04: por. 3, and 2-8-14: por. 27; and
portions of Poipu Road and Lawai Road
Koloa, Kauai, Hawaii

Dear Mr. Mais:

Thank you for your letter of September 5, 2006 regarding the subject Project. We offer the following responses:

- **On-Site Treatment Plant vs. Sewer Line:** We wish to clarify that the on-site Kukui'ula Wastewater Treatment Plant ("WWTP") will not be abandoned with the proposal to convey wastewater from the Kukui'ula development to the existing Poipu Water Reclamation Facility. Treatment and disposal of the remaining wastewater to be generated by the Kukui'ula development in excess of 200,000 gallons per day ("gpd") will be accommodated at a proposed WWTP to be located within the Kukui'ula development or at a regional WWTP if developed.
- **Existing 24-Inch Sewer Line:** We wish to clarify that the proposed 24-inch sewer line will connect to a *proposed* 24-inch sewer line to be located west of the planned roundabout, within the Kukui'ula development. To our knowledge, there is no existing sewer line within the portion of Lawai Road near the Waikomo Stream Villas.
- **24-Inch "Private Sewer Line":** The proposed 24-inch sewer line is being built on behalf of Kukui'ula South Shore Community Services, LLC ("KSSCS"), a private wastewater utility regulated by the Hawaii Public Utilities Commission ("PUC"). KSSCS is a subsidiary of Kukui'ula Development Company (Hawaii), LLC. The proposed sewer line will be sized to accommodate flows in excess of the flows to be generated by the Kukui'ula development. Since the proposed sewer line will have excess capacity, KSSCS is willing to add a connection point in the sewer line and other facilities as necessary to accommodate additional flows from Waikomo Stream Villas, provided that:
 - the additional flows can be accommodated at the existing Poipu Water Reclamation Facility,
 - the connection point in the sewer line will have no adverse engineering effects, and
 - Waikomo Stream Villas agrees to pay a contribution in aid of construction to reimburse the KSSCS for its costs of accommodation as provided under

its operating agreement as approved by the PUC. Under PUC regulations, the contribution in aid of construction applies to any party requesting such service.

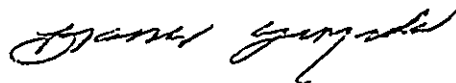
The ability of the existing Poipu Water Reclamation Facility to accommodate additional flows would need to be separately discussed with that Facility's operators. Such service would be subject to both a connection fee and monthly user fees in accordance with its tariff.

- **Dust Abatement:** We wish to clarify that the water line currently being installed within the Poipu Road right-of-way is not associated in any way with the Kukui'ula development. The County of Kauai Department of Water is installing that water line as a replacement for its existing 12-inch water line within Poipu Road.

Potential air quality impacts during construction of the proposed 24-inch sewer line improvements will be mitigated by complying with the State Department of Health ("DOH") Administrative Rules, Title 11, Chapter 60, Air Pollution Control. The construction contractor(s) is responsible for complying with State DOH regulations which prohibit visible dust emissions at property boundaries. Compliance with State regulations will require adequate measures to control airborne dust by methods such as water spraying, dust screens, and sprinkling of loose or exposed soil or ground surface areas and dust-generating equipment during construction.

Your letter, along with this response, will be included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation phase of the Project.

Sincerely,



Frances Yamada
Senior Planner

cc: Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC

**Draft Environmental
Assessment Correspondence**



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 223
FORT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF: CEPDH-EC-T

November 1, 2006

Civil Works Technical Branch

Ms. Frances Yamada
Wilson Okamoto Corporation
1907 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

RECEIVED
NOV 9 1 2006

WILSON OKAMOTO CORPORATION

Dear Ms. Yamada:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (DEA) for the Poipu Road Sanitary Sewer Line Project, Kauai (Tax Map Keys: 2-6-4: 3; 2-5-15: 1; and, 2-8-14: 27). The flood hazard information provided on page 3-5 of the DEA is correct.

The document has been forwarded to our Regulatory Branch to determine Department of the Army permit requirements. They will respond to your office under separate cover. Should you require additional information, please contact Ms. Jessie Dobinchick of my staff at (808) 438-8876.

Sincerely,

James Pennaz, P.E.
Chief, Civil Works Technical Branch

6607-33
December 6, 2006

**WILSON
OKAMOTO
CORPORATION**



**ENGINEERS
PLANNERS**

1907 S. BERETANIA ST
SUITE 400
HONOLULU, HI 96826
PH. (808)946-2277
FAX: (808)946-2253

Mr. James Pennaz, P.E., Chief
Civil Works Technical Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Building 223
Fort Shafter, Hawaii 96858-5440

Subject: Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Koloa, Kauai, Hawaii
Tax Map Keys: (4) 2-6-04: por. 3, 2-6-15: por. 1, and 2-8-14: por. 27, and
portions of Poipu Road and Lawai Road

Dear Mr. Pennaz:

Thank you for your letter of November 1, 2006 (Ref.: CEPOH-EC-T) indicating that the flood hazard information provided on page 3-5 of the Draft EA is correct.

We very much appreciate your time and effort in reviewing the subject EA.

Sincerely,

A handwritten signature in cursive script, appearing to read "Frances Yamada".

Frances Yamada
Senior Planner

cc: Mr. Wallace Kudo, P.E., County of Kauai Department of Public Works, Engineering
Division
Ms. Genevieve Salmonson, State Office of Environmental Quality Control
Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC

LINDA LINGLE
GOVERNOR OF HAWAII



GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

November 16, 2006

Mr. Donald Fujimoto
County of Kauai Engineer
4444 Rice Street, Suite 275
Lihue, HI 96766

RECEIVED
NOV 23 2006

WILSON OKAMOTO CORPORATION

Dear Mr. Fujimoto:

Subject: Draft Environmental Assessment for the Poipu Road 24-inch Sanitary Sewer Line

Thank you for the opportunity to review the subject document. We do not have any comments.

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

Sincerely,

Genevieve Salmonson
Genevieve Salmonson
Director

c: Kukui'ula Development
Wilson Okamoto

6607-33
December 6, 2006

**WILSON
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CORPORATION**



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1907 S. BERETANIA ST.
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HONOLULU, HI 96826
PH. (808)946-2277
FAX: (808)946-2253

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

Subject: Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Koloa, Kauai, Hawaii
Tax Map Keys: (4) 2-6-04: por. 3, 2-6-15: por. 1, and 2-8-14: por. 27, and
portions of Poipu Road and Lawai Road

Dear Ms. Salmonson:

Thank you for your letter of November 16, 2006 indicating that your Department has no comments regarding the subject Project.

We very much appreciate your time and effort in reviewing the subject EA.

Sincerely,

A handwritten signature in cursive script, appearing to read "Frances Yamada". The ink is dark and the signature is fluid.

Frances Yamada
Senior Planner

cc: Mr. Wallace Kudo, P.E., County of Kauai Department of Public Works, Engineering
Division
Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

November 8, 2006

Ms. Frances Yamada
Wilson Okamoto Corp
1907 South Beretania Street., Suite 400
Honolulu, Hawai'i 96826

RECEIVED
NOV 13 2006
WILSON OKAMOTU CORPORATION

LOG NO: 2006.3635
DOC NO: 0610NM33
Archaeology

Dear Ms. Yamada:

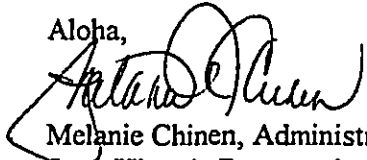
**SUBJECT: Chapter 6E-42 - Historic Preservation Review -Draft EA for Poipu Road 24 inch
Sewer Line, Kukuiula Development Corp.
Koloa Ahupuaa, Koloa District, Island of Kauai
TMK: (4) 2-8-014: por. 27, 2-6-015: por. 1 and 2-6-004: por. 003**

Thank you for submitting the aforementioned report which we received on October 26, 2006. We have reviewed and approved the *Archaeological Assessment for the Kukui'ula - Poipu Road 24 inch Sewer Line, Koloa Ahupuaa, Koloa District, Island of Kauai*, (O'Leary and Hammatt, CSH, 2006). A 100% surface survey was conducted. No historic sites were found. Archaeological monitoring is recommended due to the high probability of finding lava tubes and human burials. We concur with this recommendation. Therefore, we recommend the following comments to this Draft EA:

1.) Archaeological monitoring shall take place during all subsurface construction work due to the high probability of finding lava tubes and human burials. An archaeological monitoring plan shall be submitted in accordance with HAR 13-279 for review and approval by our office. A burial treatment plan shall be prepared and approved for burial discoveries encountered during the project. In addition, consultation with the appropriate ethnic groups, the procedures outlined in Chapter 6E-43 shall be followed. It is necessary for the treatment plan to be prepared after consultation with native Hawaiians, such as the Kaua'i Island Burial Council and the Office of Hawaiian Affairs.

If you have any questions, please call Nancy McMahon, the Kauai Lead Archaeologist, at 742-7033.

Aloha,


Melanie Chinen, Administrator
State Historic Preservation Division

NM:jen

c: Ms. Genevieve Salmonson, Director, Department of Health State of Hawaii OEQC
Mr. Wally Kudo, Engineering Division, County of Kauai, Department of Public Works

6607-33
December 6, 2006

**WILSON
OKAMOTO
CORPORATION**



**ENGINEERS
PLANNERS**

1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808)946-2277
FAX: (808)946-2253

Ms. Melanie Chinen, Administrator
State of Hawaii
Department of Land and Natural Resources
Historic Preservation Division
601 Kamokila Boulevard, Room 555
Kapolei, Hawaii 96707

Subject: Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Koloa, Kauai, Hawaii
Tax Map Keys: (4) 2-6-04: por. 3, 2-6-15: por. 1, and 2-8-14: por. 27, and
portions of Poipu Road and Lawai Road

Dear Ms. Chinen:

Thank you for your letter of November 8, 2006 (Ref.: LOG NO: 2006.3635, DOC NO: 0610NM33, Archaeology) indicating that your Department has reviewed and approved the Archaeological Assessment conducted for the subject Project and concurs with the recommendation of archaeological monitoring.

Archaeological monitoring will be conducted during all subsurface construction work associated with the Project, and an archaeological monitoring plan will be prepared and submitted to the State Historic Preservation Division for review and approval. In the event that any burials are encountered during construction of the Project, a burial treatment plan will be prepared in accordance with the procedures of Chapter 6E-43, Hawaii Revised Statutes, and submitted for approval. This information will be included in the Final EA.

We very much appreciate your time and effort in reviewing the subject EA.

Sincerely,



Frances Yamada
Senior Planner

cc: Mr. Wallace Kudo, P.E., County of Kauai Department of Public Works, Engineering Division
Ms. Genevieve Salmonson, State Office of Environmental Quality Control
Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC
Mr. David Shideler, Cultural Surveys Hawaii

BRYAN J. BAPTISTE
MAYOR



DONALD M. FUJIMOTO
COUNTY ENGINEER
TELEPHONE 241-6600

GARY K. HEU
ADMINISTRATIVE ASSISTANT

RECEIVED
NOV 16 2006

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

WILSON OKAMOTO CORPORATION

November 14, 2006

Wilson Okamoto Corporation
1907 S. Beretania Street
Honolulu, Hawaii 96826

Attention: Ms. Frances Yamada

**SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (EA), POIPU ROAD 24-INCH
SANITARY SEWER LINE**

The County of Kauai, Department of Public Works, Wastewater Management Division acknowledges receipt of your letter dated October 17, 2006 with a copy of the subject Draft EA. Previously, we were involved in the pre-consultation for this Draft EA; our pre-consultation comments and your response letter are included in the Draft EA. The response letter to our pre-consultation comments was acceptable to address all of our comments. At this time we have no additional comments on the subject project.

If you have any questions, please call Edward Tschupp at (808) 241-6610.

Very truly yours,

EDWARD TSCHUPP
Chief, Wastewater Management Division

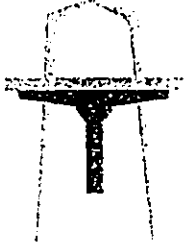
CONCUR:

DONALD M. FUJIMOTO
County Engineer

cc: Ms. Genevieve Salmonson, OEQC Director
Mr. Wallace Kudo, Chief, Kauai County Public Works Engineering Division

6607-33
December 6, 2006

**WILSON
OKAMOTO
CORPORATION**



**ENGINEERS
PLANNERS**

1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808) 946-2277
FAX: (808) 946-2253

Mr. Edward Tschupp, Chief
Wastewater Management Division
County of Kauai
Department of Public Works
4444 Rice Street, Suite 275
Lihue, Hawaii 96766-1340

Subject: Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Koloa, Kauai, Hawaii
Tax Map Keys: (4) 2-6-04: por. 3, 2-6-15: por. 1, and 2-8-14: por. 27, and
portions of Poipu Road and Lawai Road

Dear Mr. Tschupp:

Thank you for your letter of November 14, 2006 indicating that the response letter to your Department's pre-consultation comments was acceptable and that your Department has no additional comments at this time regarding the subject Project.

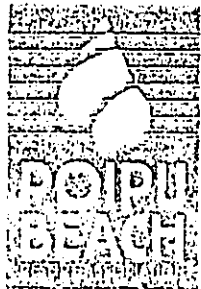
We very much appreciate your time and effort in reviewing the subject EA.

Sincerely,

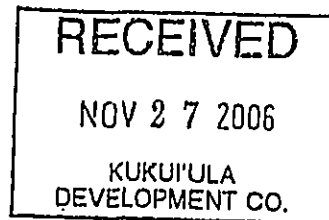


Frances Yamada
Senior Planner

cc: Mr. Wallace Kudo, P.E., County of Kauai Department of Public Works, Engineering
Division
Ms. Genevieve Salmonson, State Office of Environmental Quality Control
Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
Mr. Tom Shigemoto, Kukui'ula Development Company (Hawaii), LLC



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November 22, 2006

Lindsay Crawford
Kukui'ula Development Co. (Hawaii), LLC
P.O. Box 280
Koloa, HI 96756

Re: Proposed Poipu Rd. 24" Sanitary Sewer Line

Dear Mr. Crawford,

Thank you for taking the time, together with Mr. Diffley, to meet with us on Tuesday, November 14th to discuss the proposed 24" Sanitary Sewer Line along Poipu Road.

The purpose of this letter is to provide support for Kukui'ula Development Company's above referenced application as represented in the associated Draft Environmental Assessment.

After review of the document and discussion, we find the project to be consistent with our organization's Vision Statement (attached), which includes the stated goal of providing support to "Establish (a) regional sewer system which may consist of more than one "sub-regional" plant, but which covers the region and minimizes the number of small and individual plants."

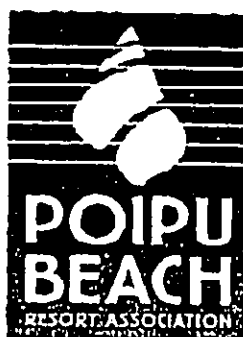
As represented, this proposed sewer line is sized to potentially accommodate wastewater flow not only from your development, but also from other area developments along its route that are expected to come on-line in the coming months and years. Additionally, as explained, if in the future a wastewater treatment utility operator were to construct a regional facility, this proposed Poipu Road 24" Sanitary Sewer Line could serve as a part of its infrastructure and help to make such a facility economically viable. Therefore, we find good reason to be supportive of this application as beneficial for the area.

Please keep in mind that as a place to live, work, and visit Poipu is dependant on having the best and most pleasant environment possible. As the Poipu Water Reclamation Facility that will be receiving the wastewater transmitted through this proposed sewer line is located in the heart of the resort destination, we'd like to take this as an opportunity to encourage the operator to install the odor control improvements as represented on page 2-4 of your Draft EA: injection well, effluent filter, ultraviolet disinfection system, new aerobic digesters, upgraded aeration pumps and dome tank covers.

Sincerely and with all best regards,

Roy Thompson, President

CC: Wallace Kudo, Kauai County, Department of Public Works
Frances Yamada, Wilson Okamoto Corporation
Ian Kagimoto, HOH Utilities
Rick Haviland, Poipu Beach Resort Association - Destination Quality Committee
Jody Kjeldsen, Poipu Beach Resort Association



VISION STATEMENT

Submitted to the Board of Directors for approval
August 25, 2005

By the
DESTINATION QUALITY COMMITTEE

Committee Members:

Louis Abrams
Edgar Gum
Rick Haviland, Chair
Greg Kamm
Doug Sears
Frances Simon
Angela Vento

Staff:

Jody Kjeldsen
Margy Parker

PBRA VISION STATEMENT

THE INTENDED PURPOSE, SCOPE, AND FUNCTIONS ARE TO:

1. Provide a clear understanding of the organization's vision for the future of the Poipu /Koloa region as a place to live, work and visit in the context of how social, natural, and public infrastructure affect the quality of the region.
2. Make specific recommendations for improvements and maintenance of infrastructure. Express desired outcomes for issues affecting the social, cultural natural, and man-made built environments of the destination.
3. Serve as the organization's guidelines for destination quality and provide such guidelines to private landowners, developers, community groups, and government agencies in order to foster planning initiatives, capital improvements, and legislation which will be focused and proactive in providing for the future of Poipu as a good place to live, work, visit, and do business.
4. Provide long-term guidance to the organization, particularly in formulating policy and positions on issues that affect the region as a destination.
5. Based on the Vision Statement, the Destination Quality Committee will develop Standard Operating Procedures (SOP's) for dealing with applications and issues affecting the Destination. These SOP's and the Vision Statement will be used as guidelines by which to measure applications and issues, and from which to make recommendations to the PBRA Board of Directors on courses of action, with the goal of reaching outcomes that are consistent and fair in all issues that impact the destination.
6. The Vision Statement is formulated with a long-term perspective, and will be revisited and revised from time to time as necessary by a PBRA Board appointed Destination Quality Committee.

GOALS AND OBJECTIVES

Planning Goal. Destination quality is assured through infrastructure development and maintenance (roads, pathways, parks, traffic circulation, waste, energy, communications, safety and security), which keeps pace with existing and planned private and public development. A sense of place is encouraged through the use of landscaping and architectural styles and qualities that reflect Island tradition and cultural diversity.

Planning Objectives:

1. Update Kauai County Development and Functional Plan for the Poipu /Koloa area as a basis from which to plan for capital and other improvements funded by Federal, State, County, or private sources.
2. Legislate a process, which is formulaic and takes into account impacts caused by existing uses, to determine equitable, fair, and even-handed impact fees and conditions for all new dwellings and applications.
3. Foster quality aesthetics through landscaped buffers and setbacks, and architectural design.
4. Foster community participation.

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PBRA Vision Statement

Roadways Goal. As the region sustains significant growth, there is smooth traffic circulation with minimal back up. Opportunities exist throughout for pedestrian and bicycle travel on dedicated pathways between neighborhoods, resorts, and commercial areas. Travel in non-motorized vehicles is encouraged by providing routes that are safe and scenic. All roadways and pathways are well landscaped. Parking options are expanded to improve access to commercial and recreational areas.

Roadways Objectives:

1. Accelerate the completion of the Kaunualii Highway widening project from Lihue to Maluhia Road.
2. Establish a full beltway road around the core of Koloa and Poipu, including a northerly connecting road between Koloa Road and Maluhia Road, and a new westerly by-pass connecting to Poipu Road and Ala Kinoiki. Establish interior roads and intersection solutions within the beltway as necessary to provide convenient circulation.
3. Develop a process to find and implement solutions for problematic Koloa Town intersections, along with increased Koloa Town parking.
4. Support safer and improved provisions for pedestrians in Koloa/Poipu that will lead to a healthy, vibrant shopping environment that features cultural highlights. Support a dedicated pedestrian and bike route between Koloa town and Poipu using Hapa Road. Support wide shoulders along roadways for safe bicycle and pedestrian travel.
5. Establish four lanes for Maluhia Road, which preserves the existing "tunnel" of trees, with one-way directions for each of two separate roadways.
6. Encourage and support better directional signage. Improve sign ordinance enforcement.
7. Support an east-west route, connected to the Poipu/Koloa beltway, as outlined in the State's Long Range Transportation Plan for Kauai - first priority being toward Eleele and the second toward Lihue.
8. Support the development and implementation of an improved long-term roadway maintenance plan.
9. Encourage and support better directional signage, consistent with the high standards appropriate for a first-class resort area.

Recreational Goals. There are ample opportunities for environmentally sensitive recreation, including improved beach, shoreline, and inland parks, boating facilities, and function space that is appealing to both residents and visitors. Access to facilities is convenient and parking is ample.

Recreational Objectives:

1. Implement a consistent maintenance schedule for park facilities and landscaping, with clean and adequate sanitary amenities, and beach sand replenishment as necessary and appropriate.

PBRA VISION STATEMENT

2. Enhance existing beach parks with more pavilions, showers, play equipment and parking. Create new shoreline parks and add facilities at secondary beaches.
3. Encourage a process that restricts commercial activity from beaches below the high water mark, and allows for ocean sports and sightseeing businesses such as surf schools, scuba and snorkel tours, and paddling tours, to operate from appropriately zoned lands and access the ocean only at specified ingress/egress locations as provided for by appropriate government regulation, oversight, and enforcement.
4. Improve existing shoreline and near-shore walkways to establish a continuous pedestrian path that highlights coastal scenery, from Maha'ulepu to Lawa'i Valley.
5. Improve pedestrian and bicycle pathways and roadway shoulders to better safety standards. Establish new pathways for recreational, fitness, and transportation purposes, to create a connected network of neighborhoods and communities throughout the area.
6. Provide children's play structures and, if appropriate, provide drinking fountains, at all interior neighborhood and regional parks.
7. Enhance and supplement function space to provide for recreational activities such as ball sports, and cultural practices such as canoe paddling, hula, and crafts.
8. Improve facilities at Koloa Landing for scuba, snorkel, and paddling.
9. Maintain superb class AA near shore water quality.
10. Implement the county parks master plan update, including provisions for dealing with commercial activities within parks.
11. Encourage a planning and implementation process for commercial and recreational improvements to facilities at Kukui'ula Harbor that provides for better access to the ocean for boaters, with additional and safer mooring areas.

Waste Goals. Sewer, green waste, redemption and refuse transfer facilities serve all residential, commercial and visitor needs in the Poipu / Koloa area.

Waste Objectives:

1. Establish a refuse transfer station and redemption center.
2. Establish a green waste station.
3. Establish regional sewer system which may consist of more than one "sub-regional" plant, but which covers the region and minimizes the number of small and individual plants.
4. Identify funding sources and mechanisms to achieve these costly objectives.
5. Maintain drainage standards (and monitoring) to minimize and ultimately eliminate water pollution.

PBRA Vision Statement

Public Transportation Goal. A regional shuttle transit system that reduces traffic by serving the residents, visitors and workers in Poipu and Koloa, connect the area's shopping, parking lots, library, recreational facilities and accommodations, ultimately with additional service connecting to Lihue Airport.

Public Transportation Objectives:

1. Identify sources of funding for improved public transportation.
2. Support regional transportation system among resorts, shopping and recreational facilities.
3. Support airport shuttle service.

Residential Housing Goal. There are sufficient housing opportunities in the region to foster a stable work force, and an economically and culturally diverse community, through public-private incentive based partnerships.

Residential Objectives:

1. Place a high value on cultural diversity within the community and encourage housing solutions for all economic groups within the Poipu/Koloa area.
2. Provide appropriate housing opportunities that encourage a stable workforce.
3. Support rental and ownership housing solutions for affordable, gap, and employee demographics groups.
4. Encourage housing solutions that are more incentive-based than exaction-based.

Community Center Goals. Community centers are enhanced and expanded in the region for education, internet access, community meetings, cultural activities, recreation, library facilities and medical services.

Community Center Objectives:

1. Establish new library at double the present size to serve community and visitor population.
2. Develop an Ocean Science and Technology Center as a visitor and learning center.
3. Expand choice of medical facilities, particularly to serve resort area guests and employees.
4. Establish a recreational center with pool and gymnasium.
5. Encourage an environment conducive to growth in wellness and health-based tourism.
6. Improve internet access for resident and visitor needs.

VISION STATEMENT

Environmental Goal. The land, air, and marine environment is preserved and protected from degradation.

Environmental Objectives:

1. Preserve and enhance the quality of the land, air and marine environment.
2. Manage and confine run-off to maintain water clarity, and protect reefs and marine life.
3. Maintain purity of ambient environment and water quality by controlling insects, odors, and minimizing chemical release.
4. Identify and control pests and nuisance plants and animals, particularly invasive species.
5. Encourage and foster an environment conducive to native species of wildlife on land and in the air and water.
6. Support initiatives that minimize invasive noise such as overhead and thrill-craft noise and mitigate noise pollution.

Cultural Goal. Cultural awareness and knowledge of Hawaiian and Island values, tradition, and lifestyle is common among employees and visitors.

Cultural Objectives:

1. Support historic recognition and preservation by encouraging businesses to incorporate cultural values and cultural interpretation into their operations, honoring and perpetuating the Hawaiian culture and community.
2. Develop a cultural center or cultural area important to the south shore, which reflects the history of the area and its people through language, art, and architecture.
3. Develop a central source of historical and cultural information related to the Poipu / Koloa area that traces, documents and memorializes the island's social and cultural history.

Safety and Security Goal. There is sufficient police, fire, ambulance and lifeguard protection to meet growing residential and visitor needs.

Safety and Security Objectives:

1. Establish a Poipu-based Police sub-station, a permanent ambulance station and a permanent search/rescue station.
2. Establish lifeguard stands at public access between Sheraton Kauai and Kiahuna, and at Shipwreck's Beach Park.
3. Ensure safety and security in parks and in public spaces by promoting the availability of safety information to residence and to visitors.

#####

DOCUMENT CAPTURED AS RECEIVED

6607-33
December 6, 2006

**WILSON
OKAMOTO
CORPORATION**



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PLANNERS**
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FAX: (808)946-2253

Mr. Roy Thompson, President
Poipu Beach Resort Association
P.O. Box 730
Koloa, Hawaii 96756

Subject: Draft Environmental Assessment ("EA")
Poipu Road 24-Inch Sanitary Sewer Line
Koloa, Kauai, Hawaii
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Dear Mr. Thompson:

Thank you for your letter of November 22, 2006 indicating the Poipu Beach Resort Association's support for the subject Project.

We very much appreciate your time and effort in reviewing the subject EA.

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Frances Yamada
Senior Planner

cc: Mr. Wallace Kudo, P.E., County of Kauai Department of Public Works, Engineering
Division
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Mr. Michael Roberts, Kukui'ula Development Company (Hawaii), LLC
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Appendix A

**A Survey of Botanical, Avian and
Terrestrial Mammalian Species
Conducted for a Proposed Sewer Line
Along Poipu Road
Prepared by Rana Productions, Ltd.
August 16, 2006**

A Survey of Botanical, Avian and Terrestrial
Mammalian Species Conducted for a Proposed
Sewer Line Along Po'ipū Road, Kōloa District,
Island of Kaua'i.

Prepared for:

Kukui'ula Development Company (Hawaii), LLC
P.O. Box 280
Kōloa, Hawai'i 96756

Prepared by:

Reginald E. David
Rana Productions, Ltd.
P.O. Box 1371
Kailua-Kona, Hawai'i 96745

&

Eric Guinther
AECOS Consultants
45-309 Akimala Place
Kaneohe, Hawai'i 96744

August 16, 2006

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Introduction

Kukui'ula Development Company (Hawaii), LLC is proposing to construct an approximately 2,250-foot long, 24-inch sewer line to connect the planned Kukui'ula development to the existing Po'ipū Water Reclamation Facility. The proposed alignment parallels Po'ipū Road from the planned roundabout at the intersection of Po'ipū Road and Lāwa'i Road, which will be located near the Kōloa Fire Station east to the Po'ipū Water Reclamation Facility which is located immediately west of the Po'ipū Shopping Village, on the *mauka* side of Po'ipū Road (Figure 1). This report summarizes the findings of botanical, ornithological and mammalian surveys conducted along the proposed sewer line route. Fieldwork was conducted in June 2006.

The primary purpose of the survey was to determine if there were any botanical, avian or mammalian species currently listed, or proposed for listing under either federal or State of Hawai'i endangered species statutes within or adjacent to the study area. The federal and State of Hawai'i listed species status follows species identified in the following referenced documents, (Division of Land and Natural Resources (DLNR) 1998, Federal Register 2005, U. S. Fish & Wildlife Service (USFWS) 2005, 2006).

The avian phylogenetic order and nomenclature used in this report follows *The American Ornithologists' Union Checklist of North American Birds 7th Edition* (American Ornithologists' Union 1998), and the 42nd through the 47th supplements to *Check-list of North American Birds* (American Ornithologists' Union 2000; Banks et al. 2002, 2003, 2004, 2005, 2006). Mammal scientific names follow *Mammals in Hawaii* (Tomich 1986). Higher native and naturalized plant names follow *Manual of the Flowering Plants of Hawai'i* (Wagner et al. and Wagner and Herbst, 1990, 1999). Ornamental plant names follow *A Tropical Garden Flora: Plants Cultivated in the Hawaiian Islands and Other Tropical Places* (Staples and Herbst 2005). Place names follow *Place Names of Hawaii* (Pukui et al. 1974).

Hawaiian and scientific names are italicized in the text. A glossary of technical terms and acronyms used in the document, which may be unfamiliar to the reader, are included at the end of the narrative text on Page 15.

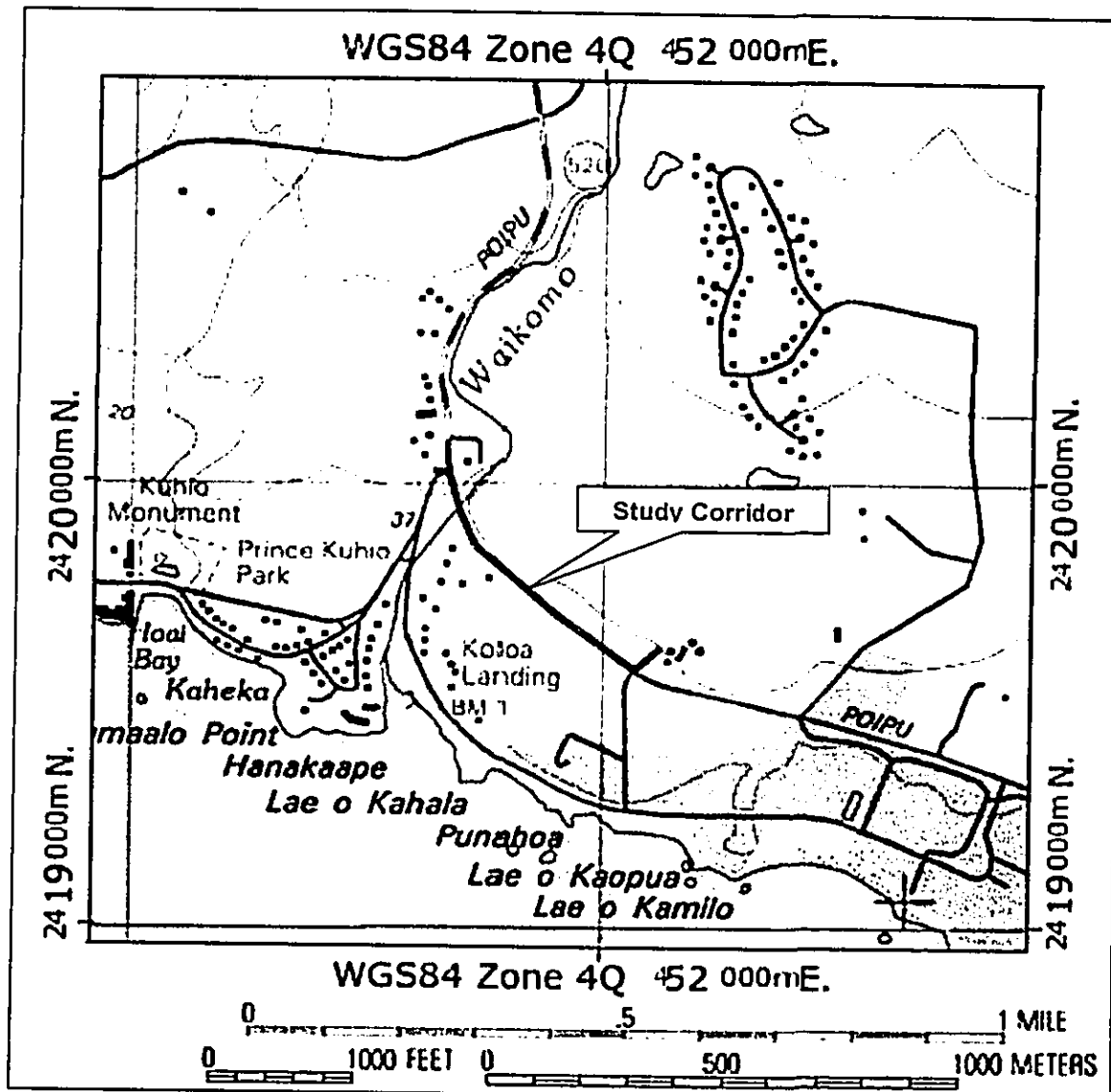
General Site Description

The study area extends east from the planned Kukui'ula Development, which is located west of Po'ipū Road approximately 2,250-feet to the existing Po'ipū Water Reclamation Facility located west of the Poipu Shopping Village, on the *mauka* side of Po'ipū Road (Figure 1). The terrain within the study corridor gently slopes from west to east, from an elevation of approximately 50-feet above mean sea level (ASL) at the site of the Planned Po'ipū roundabout, to approximately 44-feet ASL at the Water Reclamation Facility (Figure 1).

The vegetation within the study corridor is a mixture of 1) lowland disturbed shrubland dominated by Guinea grass (*Panicum maximum*) and *koa haole* (*Leucaena*

leucocephala); 2) roadside ruderal plant associations regularly disturbed by mowing, and 3) landscaped areas (Figure 2).

Figure 1 Po'ipū Road Sewer Line Study Corridor

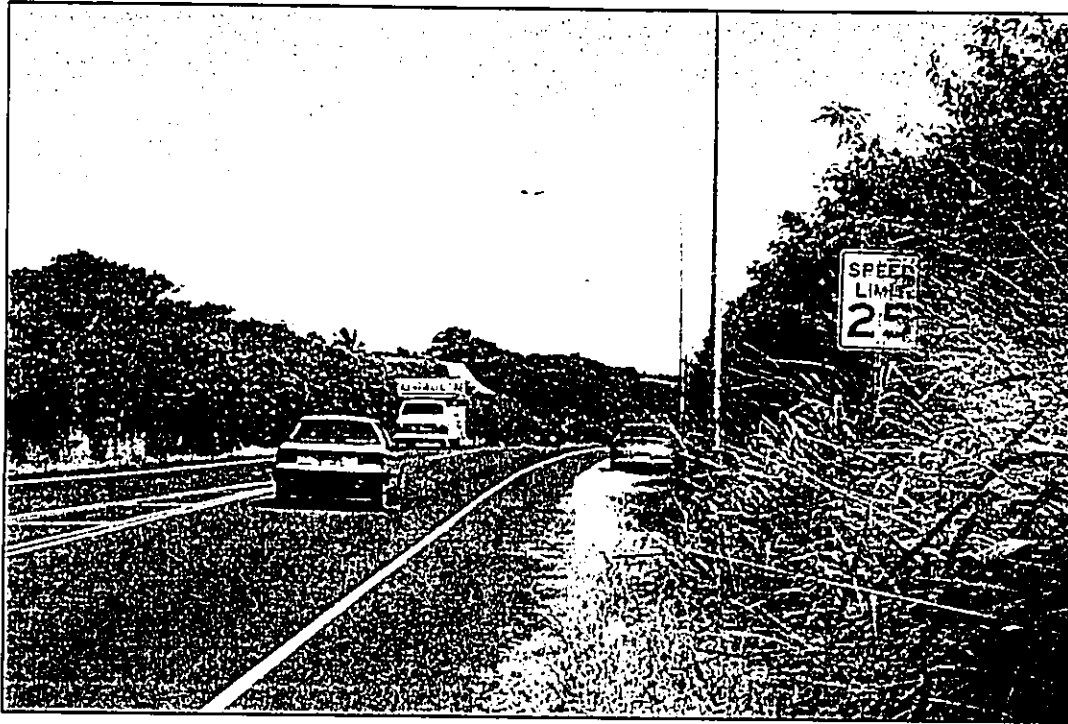


Mammalian Survey Methods

With the exception of the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), or 'ōpe'ape'a as it is known locally, all terrestrial mammals currently found on the Island of Kauai are alien species, and most are ubiquitous. The survey of mammals was limited to visual and auditory detection, coupled with visual observation of scat, tracks, and other

animal sign. A running tally was kept of all vertebrate species observed and heard within the project area. Visual and electronic scans, using a Broadband AnaBat II[®] ultrasonic bat detector, were made for bats during crepuscular periods on the evening of June 28, 2006.

Figure 2 Po'ipū Road Sewer Line Typical Vegetation



Mammalian Survey Results

Several dogs (*Canis f. familiaris*) were heard barking from areas outside of the study corridor. Additionally, we saw three cats (*Felis catus*) during the course of this survey. No mammalian species protected or proposed for protection under either the Federal or State of Hawai'i endangered species programs were detected during the course of this survey (DLNR 1998, Federal Register 2005, USFWS 2005, 2006).

Hawai'i's sole endemic terrestrial mammalian species, the endangered Hawaiian hoary bat, was not detected during this survey. Both of the alien mammalian species recorded during this survey are deleterious to avian and floristic components of the remaining native ecosystems present on the Island.

Avian Survey Methods

Four avian count stations were established approximately 300-meters apart along the study corridor. Eight-minute point counts were made at each station. Stations were each counted once. Additionally, the entire length of the study corridor was walked, both on the *mauka* and the *makai* side of Po'ipū Road. Field observations were made with the aid

of Leitz 10 X 42 binoculars and by listening for vocalizations. Counts were concentrated between 6 a.m. and 10 a.m., the peak of daily bird activity. Time not spent counting was used to search the area for species and habitats not detected during count sessions.

Avian Survey Results

A total of 213 individual birds of 14 species, representing 12 separate families, were recorded during station counts (Table 1). No additional species were recorded while transiting between count stations. All 15 species detected are regularly encountered alien species, common in the low to mid-elevation areas on the south side of the Island of Kaua'i.

Avian diversity was relatively low, though the densities of some species were relatively high. Three species, Java Sparrow (*Padda oryzivora*), House Finch (*Carpodacus mexicanus frontalis*), and Common Myna (*Acridotheres tristis*), accounted for 43% of the total number of all birds recorded during station counts. The most commonly recorded species was Java Sparrow, which accounted for 16% of the total number of individual birds recorded. An average of 53 birds were detected per station count.

No avian species currently protected, or proposed for protection under either the Federal or State of Hawai'i endangered species programs were detected during the course of this survey (DLNR 1998, Federal Register 2005, USFWS 2005, 2006).

Table 1. Avian Species Detected: Po'ipū Road Sewer Line Route

<i>Common Name</i>	<i>Scientific Name</i>	<i>ST</i>	<i>RA</i>
GALLIFORMES			
PHASIANIDAE - Pheasants & Partridges			
Phasianinae - Pheasants & Allies			
Red Junglefowl	<i>Gallus gallus</i>	A	6.00
CICONIIFORMES			
ARDEIDAE - Herons, Bitterns & Allies			
Cattle Egret	<i>Bubulcus ibis</i>	A	0.50
COLUMBIFORMES			
COLUMBIDAE - Pigeons & Doves			
Spotted Dove	<i>Streptopelia chinensis</i>	A	2.00
Zebra Dove	<i>Geopelia striata</i>	A	5.50
PASSERIFORMES			
TURDIDAE - Thrushes			

<i>Common Name</i>	<i>Scientific Name</i>	<i>ST</i>	<i>RA</i>
White-rumped Shama	<i>Copsychus malabaricus</i> ZOSTEROPIDAE - White-Eyes	A	1.75
Japanese White-eye	<i>Zosterops japonicus</i> MIMIDAE - Mockingbirds & Thrushes	A	5.50
Northern Mockingbird	<i>Mimus polyglottos</i> STURNIDAE - Starlings	A	0.25
Common Myna	<i>Acridotheres tristis</i> EMBERIZIDAE - Emberizids	A	7.00
Red-crested Cardinal	<i>Paroaria coronata</i> CARDINALIDAE - Cardinals Saltators & Allies	A	1.50
Northern Cardinal	<i>Cardinalis cardinalis</i> FRINGILLIDAE - Fringilline And Cardueline Finches & Allies Carduelinae - Carduline Finches	A	2.74
House Finch	<i>Carpodacus mexicanus</i> PASSERIDAE - Old World Sparrows	A	7.50
House Sparrow	<i>Passer domesticus</i> ESTRILDIDAE - Estrildid Finches Estrildinae - Estrildine Finches	A	2.50
Chestnut Munia	<i>Lonchura atricapilla</i>	A	2.00
Java Sparrow	<i>Padda oryzivora</i>	A	8.00

Key to Table 1.

ST Status

A Alien species

RA Relative Abundance: Number of birds detected divided by the number of count stations (4)

Botanical Survey Methods

A plant survey was undertaken of an approximately 50-foot wide corridor along both the *mauka* and *makai* sides of Po'ipū Road. A record of all of the species of plants present within the survey corridor was made, along with a semi-quantitative assessment of their abundance (e.g., rare, common, etc.). In several locations, short forays were made off the road to expand coverage of the survey to a wider corridor. The site was visited on June 13 and 14, 2006. Conditions were very dry, and no doubt additional herbaceous weeds would be recorded if the survey included a wetter period on southern Kauai.

Botanical Survey Results

Results of the botanical survey are summarized in Table 2. A total of 94 species of plants were recorded during the course of this survey (Table 2). Lichens and fungi, although present, were not recorded.

The list of plants includes the type of area in which each species was recorded, given by the numerical note references in Table 2. Three different general plant "habitats" occur in the project area: 1) roadside maintained areas that encourage mostly fast-growing, ruderal weeds; 2) a less-disturbed Guinea grass/koa haole scrub association extending away from the Po'ipū Road right-of-way on both sides of the roadway, and 3) maintained landscapes of mixed naturalized and ornamental plants, fronting various developed properties along the road. A row of be-still trees or shrubs (*Thevetia peruviana*) lines much of the roadway corridor. The Guinea grass/koa haole association supports an abundance of hedge cactus (*Cereus uruguayanus*) and night blooming cereus (*Hylocereus undatus*). This area was recently graded (after June 2006) just to the north of the road for a water line project.

Of the 94 species listed, only four species (4.2%) are regarded as being indigenous species, and an additional three species are of early Polynesian origin. The remaining 87 species are either plants that have become naturalized in the Hawaiian Islands since 1778 or have been planted as ornamentals, as indicated under the "status" column in Table 2. In fact, many more of the plants found in this area are doing better than one would expect given the relatively dry coastal setting because they are part of the landscaped areas and receive some care and supplemental watering (39 species or 41.5% of the total).

Table 2.
Botanical Species List: Pōipū Road Sewer Line Route

Species	Common name	Status	Abundance	
			AREA	Notes
<i>FERNS AND FERN ALLIES</i>				
NEPHROLEPIDACEAE				
<i>Nephrolepis</i> sp.	sword fern	Nat.	R2	(2)
POLYPODIACEAE				
<i>Microsorium scolopendria</i> (N.L. Burm.) E.B. Copeland	<i>lauae</i>	Nat.	U	(2)
<i>CONIFERS AND CYCADS</i>				
CYCADACEAE				
<i>Cycas</i> cf. <i>revoluta</i> Thunb.	Japanese sago-palm	Om..	R	(2)
<i>FLOWERING PLANTS</i>				
<i>DICOTYLEDONS</i>				
AMARANTHACEAE				
<i>Alternanthera pungens</i> Kunth	khaki weed	Nat.	R	
<i>Amaranthus spinosus</i> L.	spiny amaranth	Nat.	U	
<i>Gomphrena celosioides</i> Mart.	---	Nat.	R	(1)
<i>Iresine herbstii</i> W. J. Hooker	beefsteak plant	Om.	R	(2)

Species	Common name	Status	Abundance	
			AREA	Notes
APOCYNACEAE				
<i>Thevetia peruviana</i> (Pers) K.S. Schum	be-still tree	Nat.	C	(2)
<i>Catharanthus roseus</i> (L.) G. Don	periwinkle	Nat.	U	(2)
<i>Nerium oleander</i> L.	oleander	Orn.	U	(2)
<i>Plumeria rubra</i> L.	plumeria	Orn.	U	(2)
ASTERACEAE (COMPOSITAE)				
<i>Bidens cf. pilosa</i> L.	---	Nat.	U	(3)
<i>Calypocarpus vialis</i> Less.	---	Nat.	R	
<i>Parthenium hysterophorus</i> L.	false ragweed	Nat.	O	(1)
<i>Pluchea carolinensis</i> (Jacq.) G. Don	sourbush	Nat.	O	
<i>Sphagneticola trilobata</i> (L.) Pruski	wedelia	Nat.	U3	(2)
<i>Synedrella nodiflora</i> (L.) Gaertn.	nodeweed	Nat.	R	(1)
<i>Verbesina enceliodes</i> (Cav.) Benth. & Hook.	golden crownbeard	Nat.	R	
BALSAMINACEAE				
<i>Impatiens walleriana</i> J. D. Hook	busy lizzy	Nat.	U1	(2)
BIGNONIACEAE				
<i>Spathodea campanulata</i> P. Beauv.	African tulip tree	Nat.	R	
CACTACEAE				
<i>Cereus uruguayanus</i> Ritter ex R. Kiesling	hedge cactus	Nat.	C	
<i>Hylocereus undatus</i> (Haw.) Britton & Rose	night-blooming cereus	Nat.	O2	
CARICACEAE				
<i>Carica papaya</i> L.	papaya	Nat.	R	
CONVOLVULACEAE				
<i>Ipomoea obscura</i> (L.) Ker-Gawl.	---	Nat.	U	
<i>Ipomoea indica</i> (J. Burm.) Merr.	koali'awa	Ind.	R	
EUPHORBIACEAE				
<i>Aleurites moluccana</i> (L.) Wild.	kukui	Pol.	R	
<i>Chamaesyce hirta</i> (L.) Millsp.	garden spurge	Nat.	R	(1)
<i>Chamaesyce hypericifolia</i> (L.) Millsp.	graceful spurge	Nat.	U	(1)
<i>Codiaeum variegatum</i> (L.) Blume	croton	Orn.	R	(2)
<i>Euphorbia</i> sp.	---	Nat.	R	(3)
<i>Ricinus communis</i> L.	castor bean	Nat.	O	
FABACEAE				
<i>Cassia fistula</i> L.	golden shower tree	Orn.	R	(2)
<i>Cassia cf. grandis</i> L. fil.	coral shower tree	Orn.	R	(2,3)
<i>Crotalaria pallida</i> Aiton	smooth rattlepod	Nat.	U	
<i>Desmanthus virgatus</i> (L.) Willd.	virgate mimosa	Nat.	O	
<i>Desmodium triflorum</i> (L.) DC	beggarweed	Nat.	U	
<i>Indigofera spicata</i> Forssk.	creeping indigo	Nat.	C	(1)
<i>Indigofera suffruticosa</i> Mill.	indigo	Nat.	U	

<i>Species</i>	<i>Common name</i>	<i>Status</i>	<i>Abundance</i>	
			<i>AREA</i>	<i>Notes</i>
<i>Leucaena leucocephala</i> (Lam.) deWit	koa haole	Nat.	AA	
<i>Macroptilium atropurpureum</i> (DC) Urb.	---	Nat.	U	
<i>Mimosa pudica</i> L.	sensitive plant	Nat.	R	
<i>Samanea saman</i> (Jacq.) Merr.	monkey pod	Nat.	O2	(2)
<i>Senna surattensis</i> (N.L. Burm.) H. Irwin & Bameby	kolomana	Nat.	R	
LAMIACEAE				
<i>Leonotis nepetifolia</i> (L.) R.Br.	lion's ear	Nat.	O2	
<i>Mentha</i> sp.	mint	--	R	(3)
LYTHRACEAE				
<i>Cuphea hyssopifolia</i> Kunth	false heather	Nat.	U2	(2)
MALVACEAE				
<i>Abutilon grandifolium</i> (Willd.) Sweet	hairy abutilon	Nat.	O	
<i>Hibiscus rosa-sinensis</i> L.	Chinese hibiscus	Orn.	O	(2)
<i>Sida ciliaris</i> L.	---	Nat.	C	(1)
<i>Sida rhombifolia</i> L.	Cuba jute	Nat.	U	(1)
<i>Sida spinosa</i> L.	---	Nat.	R	
<i>Thespesia populnea</i> (L.) Sol. Ex Correa	milo	Ind.	R	(2)
MORACEAE				
<i>Ficus microcarpa</i> L. fil.	Chinese banyan	Nat.	R	
MYRTACEAE				
<i>Syzygium cumini</i> (L.) Skeels	Java plum	Nat.	R	
NYCTAGINACEAE				
<i>Boerhavia coccinea</i> Mill.	false alena	Nat.	U	(1)
<i>Bougainvillea spectabilis</i> Willd.	bougainvillea	Orn.	U2	(2)
PASSIFLORACEAE				
<i>Passiflora suberosa</i> L.	huehue haole	Nat.	R	
PHYTOLACCACEAE				
<i>Rivina humilis</i> L.	coral berry	Nat.	R	
RUBIACEAE				
<i>Paederia foetida</i> L.	maile pilau	Nat.	U	
<i>Pentas lanceolata</i> (Forssk.) Defflers	pentas	Nat.	U2	(2)
SOLANACEAE				
<i>Nicandra physalodes</i> (L.) Gaertn.	apple of Peru	Nat.	R	
<i>Physalis peruviana</i> L.	Cape gooseberry	Nat.	R	
<i>Solanum lycopersicum</i> var. <i>cerasiforme</i> (Dunal) Spooner, Anderson, & Jansen	cherry tomato	Nat.	R	
STERCULIACEAE				
<i>Waltheria indica</i> L.	'uhaloa	Ind.	U	

<i>Species</i>	<i>Common name</i>	<i>Status</i>	<i>Abundance</i>	
			<i>AREA</i>	<i>Notes</i>
MONOCOTYLEDONS				
AGAVACEAE				
<i>Cordyline fruticosa</i> R. Brown	ti, ki	Pol.	O	(2)
<i>Dracaena fragrans</i> (L.) Ker Gawl. cult.	fragrant dracaena	Orn.	R	(2)
<i>Dracaena marginata</i> Lam. cult. "Tricolor"	money tree	Orn.	R	(2)
<i>Furcraea foetida</i> (L.) Haw. cult. 'Mediopicta'	century plant	Orn.	R	(2)
<i>Sansevieria trifasciata</i> Prain	bowstring hemp	Orn.	U	(2)
ARACEAE				
<i>Dieffenbachia</i> cf. <i>maculata</i> (Loddiges) G. Don	dumb cane	Orn.	U	(2)
<i>Epipremnum pinnatum</i> (L.) Engler	pothos	Nat.	U	(2)
ARECACEAE				
<i>Cocos nucifera</i> L.	coconut palm	Pol.	R	(2)
<i>Dypsis lutescens</i> (H. Wendl.) Beentje & J. Dransfield	golden-fruited palm	Orn.	R	(2)
<i>Rapis</i> cf. <i>excelsa</i> W. Aiton	lady palm	Orn.	R	(2)
<i>Roystonea</i> cf. <i>regia</i> (Kunth) O.F. Cook	royal palm	Orn.	R	(2)
CANNACEAE				
<i>Canna x generalis</i> L.H. Baily	garden canna	Orn.	R	(2)
COMMELINACEAE				
<i>Commelina diffusa</i> N. L. Burm.	day flower	Nat.	R	
<i>Tradescantia pallida</i> (Rose) D.R. Hunt	purple tradescantia	Orn.	U	(2)
HELICONIACEAE				
<i>Heliconia</i> sp.	heliconia	Orn.	R	(2)
LILIACEAE				
<i>Chlorophyton comosum</i> (Thunb.) Jacq.	spider plant	Orn.	U2	(2)
<i>Hippeastrum puniceum</i> (Lam.) Voss	Barbados lily	Nat.	R	(2)
<i>Ophiopogon</i> sp.	mondo grass	Orn.	U3	(2)
PANDANACEAE				
<i>Pandanus tectorius</i> S. Parkinson ex Z	<i>hala</i>	Ind.	R	(2)
POACEAE (GRAMINEAE)				
<i>Axonopus compressus</i> (Sw.) P. Beauv.	carpetgrass	Nat.	U3	(2)
<i>Chloris radiata</i> (L.) Sw.	radiate fingergrass	Nat.	C	(1)
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass	Nat.	C	
<i>Eleusine indica</i> (L.) Gaertn.	beach wiregrass	Nat.	A	(1)
<i>Eragrostis tenella</i> (L.) P. Beauv.	love grass	Nat.	R	(1)
<i>Melinis repens</i> (Willd.) Zizka	Natal redtop	Nat.	U	
<i>Panicum maximum</i> Jacq.	Guinea grass	Nat.	C	
<i>Paspalum conjugatum</i> Bergius	Hilo grass	Nat.	U3	(2)
<i>Paspalum fimbriatum</i> Kunth	fimbriate paspalum	Nat.	U	
<i>Setaria verticillata</i> (L.) P. Beauv.	bristly foxtail	Nat.	U	

<i>Species</i>	<i>Common name</i>	<i>Status</i>	<i>Abundance</i>	<i>AREA</i>	<i>Notes</i>
STRELITZIACEAE					
<i>Strelitzia reginae</i> Dryander	bird-of-paradise	Orn.	R	(2)	

Legend to Table 2

Status = distributional status	
Ind. =	indigenous; native to Hawaii, but not unique to the Hawaiian Islands.
Nat. =	naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.
Orn. =	exotic, ornamental or cultivated; plant not naturalized (not well-established outside of cultivation).
Pol. =	Polynesian introduction before 1778.
Abundance = occurrence ratings for plants by area on February 21, 2005 (SITE 1 = along roadway(s) above Lawai Valley; SITE 2 = along paved roadway east of NTBG gate at end of County Road.	
R - Rare -	only one or two plants seen.
U - Uncommon -	several to a dozen plants observed.
O - Occasional -	found regularly, but not abundant anywhere.
C - Common -	considered an important part of the vegetation and observed numerous times.
A - Abundant -	found in large numbers; may be locally dominant.
AA - Abundant -	abundant and dominant; defining vegetation type.
Numbers following an occurrence rating indicate clusters within the survey area. The ratings above provide an estimate of the likelihood of encountering a species within the specified survey area; numbers modify this where abundance, where encountered, tends to be greater than the occurrence rating:	
1 -	several plants present
2 -	many plants present
3 -	locally abundant
Notes:	
(1)	Observed as a roadside, ruderal weed;
(2)	Planted in area as a landscape plant;
(3)	Identification tentative: plant not in fruit or flower.

Discussion

Faunal Resources

The findings of the mammalian survey are consistent with at least one survey conducted on a portion of the current study site (David 2004a), and with several other recent surveys conducted within close proximity of this site (David 2002a, 2003b, 2004a, 2004b, 2005a, 2005b, 2005c), and with other similar surveys conducted in other lowland areas on Kaua'i in the past five years (David 2000, 2001, 2002b, 2003b, 2004c, 2005c, 2006, David and Guinther 2005). Although no Hawaiian hoary bats were detected foraging above the study corridor, it is likely that this endangered species forages for insects over the project area. Hawaiian hoary bats are regularly seen in and around Kōloa and the Po'ipū area, as well as within most of the lowland areas on the Island of Kaua'i (Tomich 1986, David, 1995, 2001, 2002b, 2003b, 2004c, 2006b).

Unlike nocturnally flying seabirds, which often collide with man-made structures, bats are uniquely adapted to avoid collision with obstacles, man-made or natural. They navigate and locate their prey primarily by using ultrasonic echolocation, which is

sensitive enough to allow them to locate and capture small volant insects during crepuscular and nocturnal hours.

Very little research into the life cycle, distribution, or population estimates of this species has been conducted; and much of what has been studied were small, disconnected, or anecdotal studies as opposed to coherent controlled experiments. Fundamental research into this species distribution and life cycle have just begun (Bonaccorso et al. 2005).

Although no 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. All of these introduced rodents are deleterious to native ecosystems and the native faunal species dependant on them.

The findings of the avian survey are consistent with at least one survey conducted on a portion of the current study site (David 2004a), and with several other recent surveys conducted within close proximity of this site (David, 2002a, 2003b, 2004a, 2004b, 2005a, 2005b, 2005c), and within other alien species dominated habitats in other lowland areas on Kaua'i in the past five years (David 2000, 2001, 2002b, 2003b, 2004c, 2006a). All avian species detected during station counts were alien species.

Although not detected during this survey, it is likely that the endangered Hawaiian Petrel (*Pterodroma sandwichensis*) and the threatened endemic sub-species of the Newell's Shearwater (*Puffinus auricularis newelli*) over-fly the proposed sewer line and associated infrastructure between April and the end of November each year. Both species have been well documented crossing the northern, eastern and southern coastline of Kaua'i across a broad front and in relatively large numbers during the breeding season (Cooper and Day 1995, 1998, Day and Cooper 1997, 1999, 2001, Day et al., 2000, 2001a, 2001b, 2003, David et al., 2002, Morgan et al., 2003, 2004).

The primary cause of mortality in both Hawaiian Petrels and Newell's Shearwaters is thought to be predation by alien mammalian species at the nesting colonies (USFWS 1983, Simons and Hodges 1998, Ainley et al. 2001). Collision with man-made structures is considered to be the second most significant cause of mortality of these seabird species in Hawai'i. 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 (Hadley 1961, Telfer 1979, Sincock 1981, Reed et al. 1985, Telfer et al. 1987, Cooper and Day 1998, Podolsky et al. 1998, Ainley et al. 2001).

There are no nesting colonies or appropriate nesting habitat for either seabird species within or close to the study area. The closest Newell's Shearwater colony is located at Kāluahonu, some six kilometers northeast of the study area. This colony may no longer be active, due to major habitat changes caused by invasive alien plant species (David et al., 2002, David, 2003c).

No avian species currently protected, or proposed for protection under either the Federal or State of Hawai'i endangered species statutes were detected during the course of this survey (DLNR 1998, Federal Register 2005, USFWS 2005, 2006).

Botanical Resources

The botanical resources recorded within the survey areas and in the areas immediately adjacent to this area are overwhelmingly dominated by alien plant species. Considering the total list of species recorded, only seven species (or 7.4 %) are associated with the Hawaiian Islands as either native species or Polynesian introductions. All seven of these are very common species. The floristic makeup of this survey area is typical of lands which have been extensively disturbed, adjacent to once intensively cultivated sugar cane fields, now fallow. No plants of special interest or species listed by the state or federal government are present in the roadway corridor, although clearly some trees present within the landscaped areas on the *makai* side of Po'ipū Road should be avoided by the sewer-line project.

Conclusions

Faunal Resources

It is not expected that the modification of the habitat currently found along the proposed sewer line alignment will have a negative impact on any avian or mammalian species currently listed as endangered, threatened, or that are currently proposed for listing under either federal or State of Hawai'i endangered species statutes (DLNR 1998, Federal Register 2005, USFWS 2005, 2006). Furthermore it is not expected that the modification of this site will result in deleterious impacts to native avian and mammalian species in the Pōip'u area.

Botanical Resources

No species of special interest, or that are currently protected, or proposed for protection under either the Federal or State of Hawai'i endangered species statutes were detected during the course of this survey (DLNR 1998, Federal Register 2005, USFWS 2005, 2006).

Recommendations

Faunal Resources

If nighttime work will be required in conjunction with the construction of the proposed sewer line, it is recommended that lights be shielded to reduce the potential for interactions of nocturnally flying Hawaiian Petrels and Newell's Shearwaters with external lights and man-made structures (Reed et al. 1985, Telfer et al. 1987).

Botanical Resources

Existing landscaped areas occur at the intersection of connecting roads, around the Kōloa Fire Station, and fronting developed properties along the south side of Po'ipū Road, and at the Po'ipū Water Reclamation Facility. Although all of these areas cannot be avoided

by the sewer line project, a route that utilizes the *mauka* side of Po'ipū Road would minimize impacts to the most valuable landscaped areas and trees.

Glossary:

Alien - Introduced to Hawai'i by humans.

Crepuscular – Twilight hours either in the evening or the morning.

Endemic – Native and unique to the Hawaiian Islands.

Endangered – Listed and protected under the ESA as an endangered species.

Indigenous - Native to Hawai'i, but also found elsewhere naturally.

Makai – Down-slope, towards the ocean.

Mauka – Upslope, towards the mountains.

Naturalized – An alien organism that has become established in an area that it is not native to over time, without further human assisted releases or plantings.

Nocturnal – Night-time, after dark.

Pelagic – An animal that spends its life at sea – in the case of seabirds only returning to land to nest.

Ruderal – Disturbed, rocky, rubbishy areas, such as old agricultural fields and rock piles.

Volant – Flying, capable of flight - as in flying insect.

Threatened - Listed and protected under the ESA as a threatened species.

ASL – Above mean sea level .

ESA – Federal Endangered Species Act of 1973, as amended.

DLNR – Hawaii State Department of Land & Natural resources.

USFWS – U.S. Fish & Wildlife Service.

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Appendix B

**Archaeological Assessment for the
Kukui`ula – Poipu Road 24-Inch Sewer
Line**

**Prepared by Cultural Surveys Hawaii
October 2006**

**Archaeological Assessment
for the Kukui'ula – Po'ipū Road 24-inch Sewer Line,
Kōloa Ahupua'a, Kōloa District, Island of Kaua'i
TMK: [4] 2-6-004: por 3, 2-6-015: por. 1,
and 2-8-014: por. 27,
and portions of Po'ipū Road and Lāwa'i Road**

**Prepared for
Kukui'ula Development Company (Hawai'i), LLC**

**Prepared by
Owen L. O'Leary, M.A.
and
Hallett H. Hammatt, Ph.D.**

**Cultural Surveys Hawai'i, Inc.
Kailua, Hawai'i
(Job Code: KOLOA 7)**

October 2006

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Management Summary

Reference	Archaeological Assessment for the Kukui'ula – Po'ipū Road 24-inch Sewer Line, Kōloa Ahupua'a, Kōloa District, Island of Kaua'i (O'Leary and Hammatt 2006)
Date	October 2006
Project Number (s)	Cultural Surveys Hawai'i (CSH) Job Code: KOLOA 7
Investigation Permit Number	CSH completed the archaeological assessment fieldwork under State archaeological permit No. 0605 issued by SHPD, per Hawai'i Administrative Rules (HAR) Chapter 13-13-282.
Project Location	The project location is an approximately 686 m (2250 feet) long corridor located along Po'ipū Road running southeast from its intersection with Lāwa'i Road to the Po'ipū Water Reclamation Facility, a private wastewater treatment plant. The project site is identified as Tax Map Keys: (4) 2-6-015: por. 1, 2-6-004: por. 3, and 2-8-014: por. 27, and portions of Po'ipū Road and Lāwa'i Road.
Land Jurisdiction	The proposed project is located within property currently owned by the County of Kaua'i, State of Hawai'i, Kukui'ula Development Company (Hawai'i), LLC, and Eric A. Knudsen Trust, et al.
Agencies	State Historic Preservation Division (SHPD)
Project Description	The proposed 24-inch gravity sewer line will extend approximately 686 linear meters (2,250 linear feet) from a proposed 24-inch sewer line to be installed within the proposed roundabout at the intersection of Po'ipū Road, Lāwa'i Road and the planned Ala Kalanikaumaka Road (Western Bypass Road) to the southern boundary of the existing Po'ipū Water Reclamation Facility. The proposed 24-inch sewer line will be installed using the open cut trench method. The maximum depth of excavation for the installation of the sewer line is proposed to be 15 feet. The trench will have an average width of 6 feet. In the vicinity of the Waikomo Stream crossing, the depth of the proposed 24-inch sewer line will be approximately 8.6 feet from the proposed finish grade. The depth of the proposed finish grade from the top of the culverts at Waikomo Stream will be approximately 10.1 feet. No construction activities in conjunction with the project will occur within Waikomo Stream.
Project Acreage	The proposed sewer will extend for approximately 2250-feet. The project area extends for 17 feet on either side of the sewer line, equaling a total project area of 1.8-acres.
Area of Potential Effect (APE) and Survey Acreage	For this archaeological assessment, the project area, survey area, and area of potential effect (APE) are one and the same.

Historic Preservation Regulatory Context	Kukui'ula Development Company's proposal to install a new 24-inch sewer line within the Po'ipū Road right-of-way constitutes a project requiring compliance with and review under State of Hawai'i Historic Preservation review legislation (Hawai'i Revised Statutes (HRS) Chapter 6E-8 and Hawai'i Administrative Rules (HAR) 13-275). At the request of the Kukui'ula Development Company, CSH completed an archaeological inventory survey investigation, per the requirements of HAR Chapter 13-13-276, of the 686 m stretch of Po'ipū Road. Because no historic properties were located in the project area, this investigation is termed an archaeological assessment per HAR Chapter 13-13-275-5. This archaeological assessment report was prepared to support the proposed project's historic preservation review and any other project-related historic preservation consultation.
Fieldwork Effort	Owen L. O'Leary, M.A., John Tulchin, B.A., Hallett H. Hammatt, Ph.D., and Corelle Nakamura completed the fieldwork on June 20 and September 29, 2006. It required 2 person days to complete.
Number of Historic Properties Identified	Zero
Historic Properties Recommended Eligible to the Hawai'i Register of Historic Places (Hawai'i Register)	None
Historic Properties Recommended Ineligible to the Hawai'i Register	None
Effect Recommendation	CSH's project specific effect recommendation is "no historic properties affected".
Mitigation Recommendation	Based upon potential remnant historic properties located adjacent to and <i>mauka</i> of the current project area, the potential for subsurface cultural deposits and lava tubes, and in accordance with the recommendations made by the State Historic Preservation Division in a letter sent September 22, 2006 (LOG NO: 2006.2790; DOC NO: 0609NM01), CSH recommends that an on-site monitoring program be developed in accordance with HAR 13-279 and be implemented for all construction activities. This monitoring program will specify that no construction activities take place outside of the Po'ipū Road right-of-way. The specific measures for handling any historic properties identified during construction activities will be detailed in the monitoring plan.

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Section 1 Introduction

1.1 Project Background

At the request of Kukui'ula Development Company (Hawai'i), LLC, Cultural Surveys Hawai'i (CSH) has completed this archaeological assessment for the proposed installation of a 24-inch gravity sewer in Kōloa Ahupua'a, Kōloa District, Island of Kaua'i (Figure 1). The Project Site is identified as Tax Map Keys: (4) 2-6-04: por. 3, 2-6-15: por. 1, and 2-8-14: por. 27 (Figure 2), and portions of Po'ipū Road and Lāwa'i Road. The project area is also shown in an aerial photograph (Figure 3).

For this archaeological assessment, the project area, survey area, and area of potential effect (APE) are one and the same. The proposed sewer line will extend for approximately 2250 feet. The project area extends for 17 feet on either side of the sewer line, equaling a total project area of 1.8-acres.

Kukui'ula Development Company proposes to install a private 24-inch gravity sanitary sewer line within a portion of Po'ipū Road in Kōloa, Island of Kaua'i to convey wastewater from the planned Kukui'ula development to the existing Po'ipū Water Reclamation Facility ("Reclamation Facility"), a private wastewater treatment plant ("WWTP") located approximately 0.4 mile to the east of the Kukui'ula development (Figure 4). Installation of the sewer line will occur within property owned by the County of Kaua'i, State of Hawai'i, Kukui'ula Development Company (Hawai'i), LLC, and Eric A. Knudsen Trust, etal.

The proposed 24-inch sewer line will extend approximately 686 linear meters (2,250 linear feet) from a proposed 24-inch sewer line to be installed within the proposed roundabout at the intersection of Po'ipū Road, Lāwa'i Road and the planned Ala Kalanikaumaka Road (Western Bypass Road) to the southern boundary of the existing Reclamation Facility. From the roundabout, the proposed sewer line will extend southeast within the *makai* portion of the Po'ipū Road right-of-way for a distance of approximately 750 linear feet. The proposed sewer line will then cross Po'ipū Road and continue southeast along the *mauka* portion of the Po'ipū Road right-of-way for a distance of approximately 1,500 linear feet to the southern boundary of the Reclamation Facility. The right-of-way extends 65-feet from the edge of the current roadway. From the southern boundary of the Reclamation Facility, the proposed sewer line will connect to a proposed wastewater pump station to be built by the owners of the Reclamation Facility.

The proposed 24-inch sewer line will be installed using the open cut trench method. The maximum depth of excavation for the installation of the sewer line is proposed to be 15 feet. The trench will have an average width of 6 feet. The open cut trenching will involve excavating a trench, installing adequate shoring to protect the sidewalls of the trench, laying the sewer line within the excavated area, and backfilling the trench. In addition to the normal trenching operations, a hoe ram will be used for trenching in areas where rock material is encountered.

In the vicinity of the Waikomo Stream crossing, the proposed sewer line will be installed over the existing drainage culverts within Po'ipū Road using the open cut trench method. The segment of the proposed sewer line in the vicinity of the Waikomo Stream crossing will be constructed of ductile iron and will be encased in a reinforced concrete jacket approximately 10

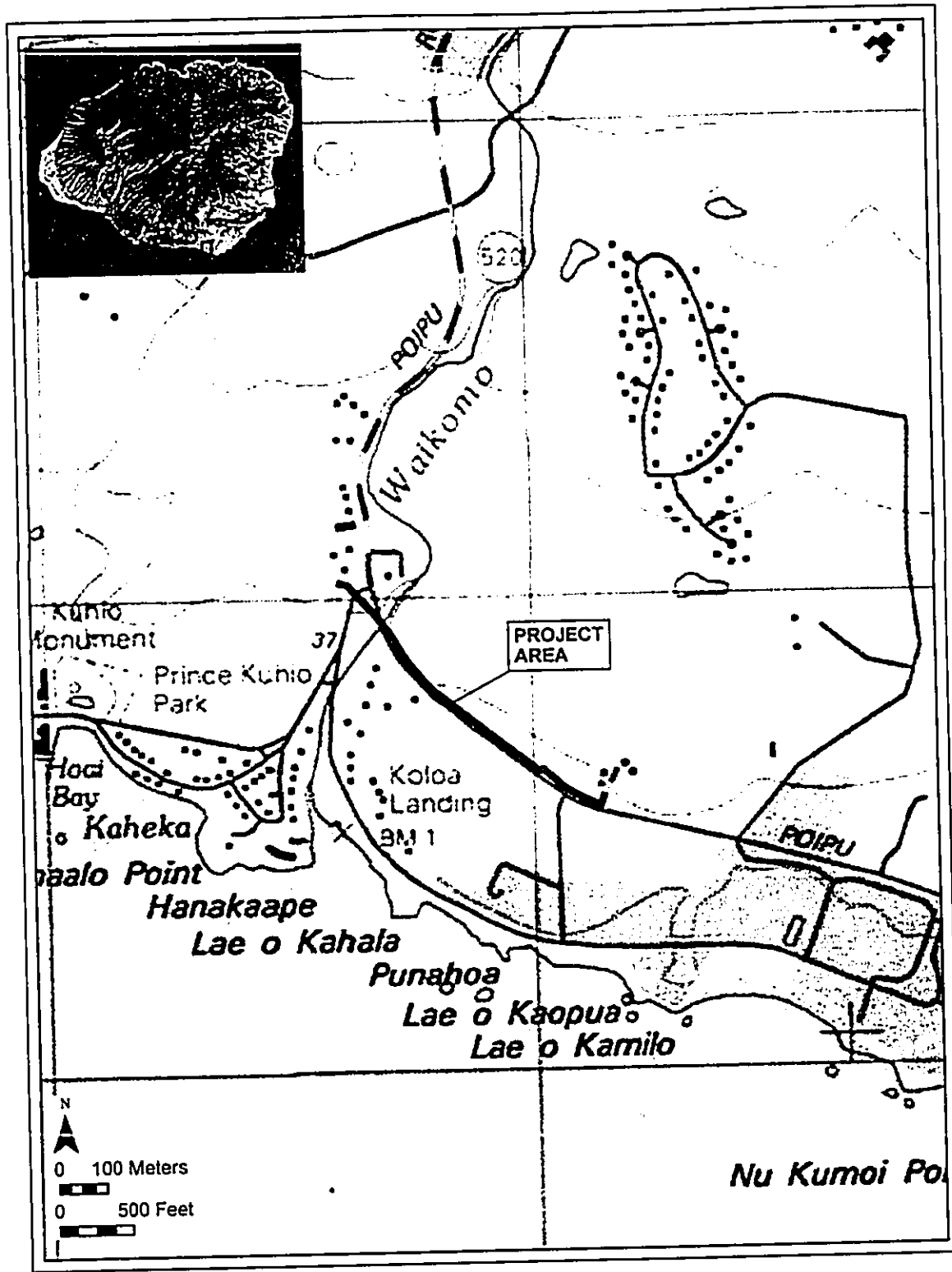


Figure 1. 1996 Koloa USGS 7.5-minute topographic quadrangle showing the location of the project area

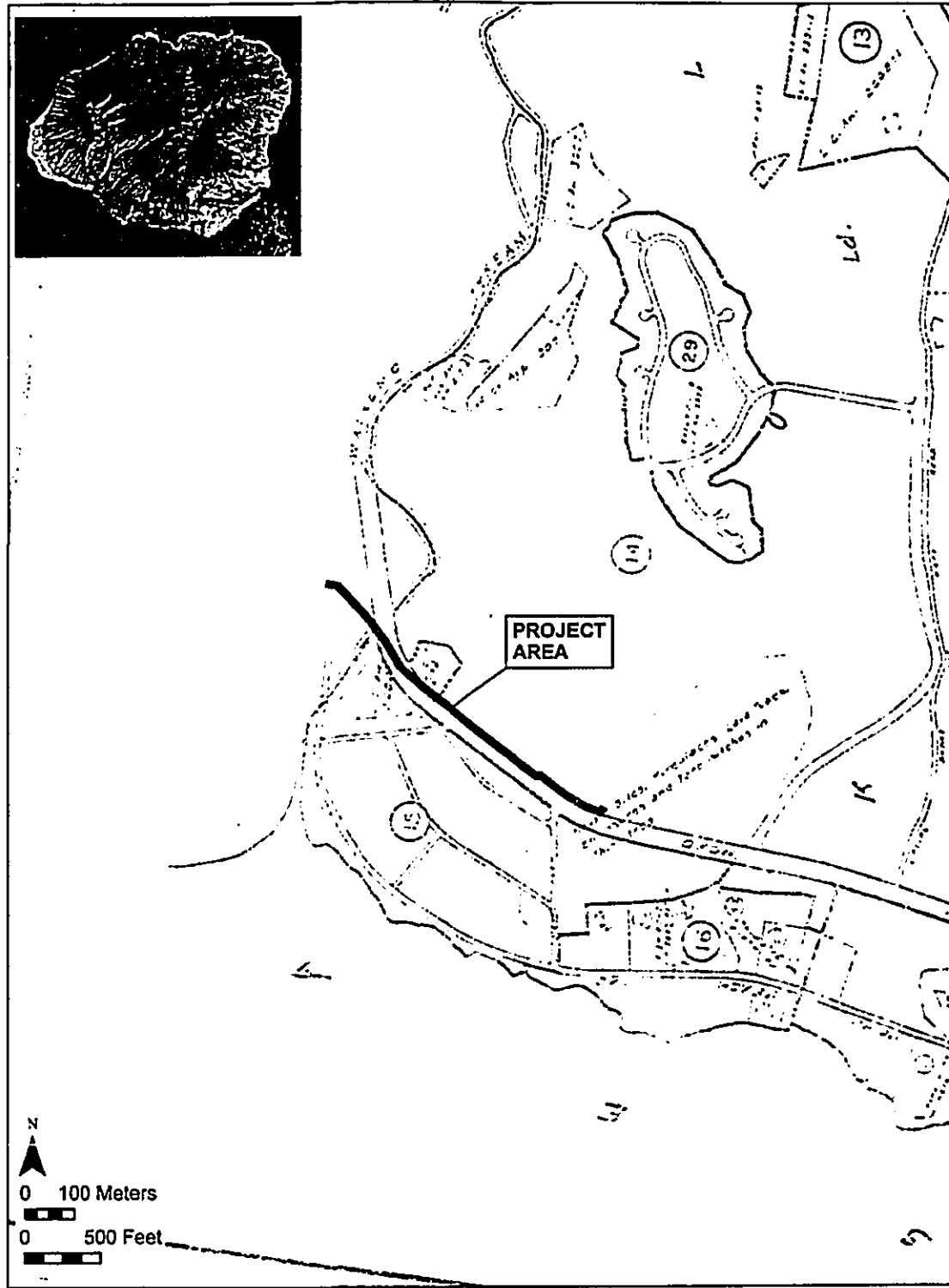


Figure 2. A portion of Tax Map Key section map 2-8 showing the location of the project area

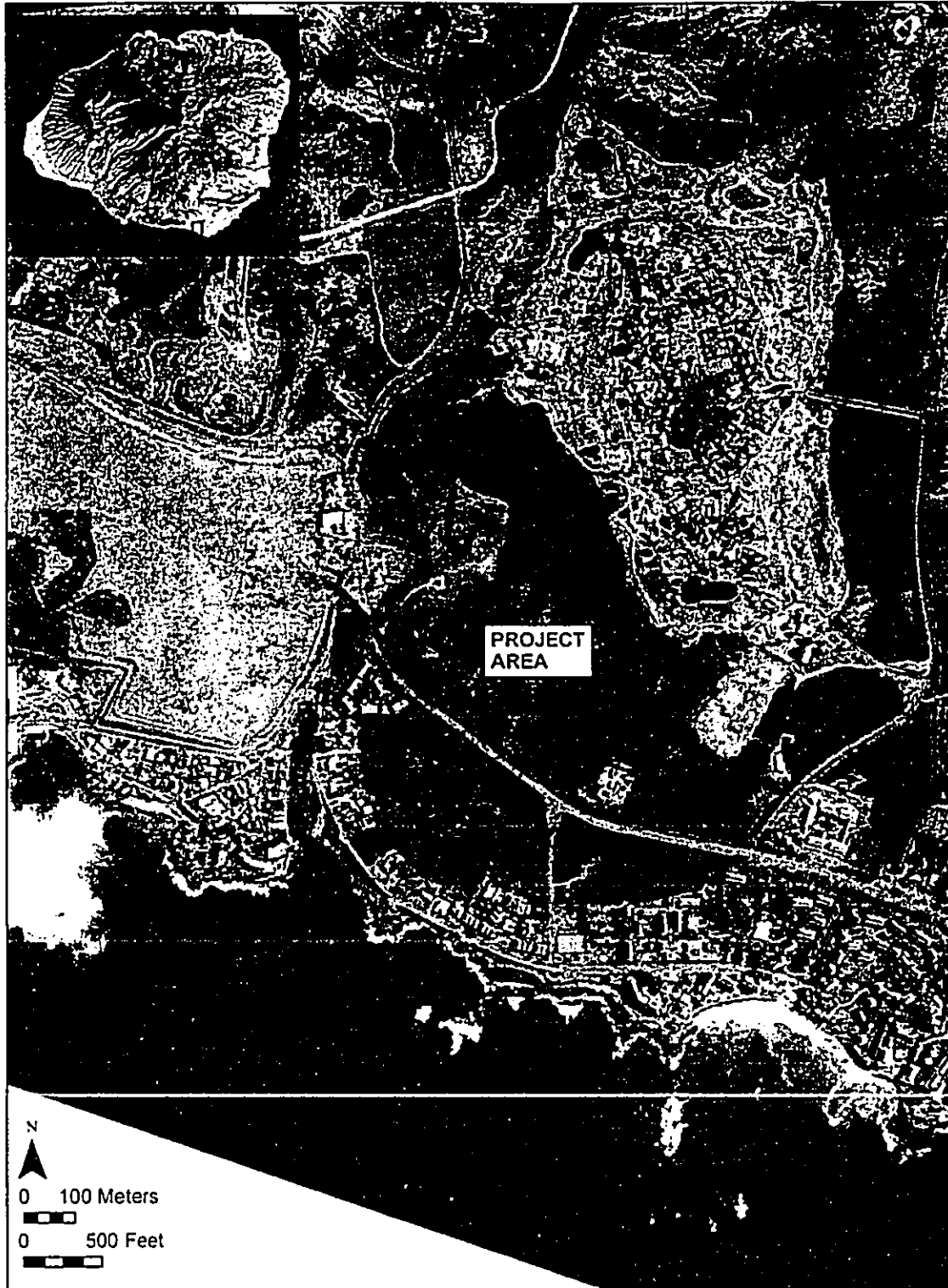


Figure 3. Aerial photograph showing the location of the project area

feet past either side of the culverts. The depth of the proposed 24-inch sewer line at the Waikomo Stream crossing will be approximately 8.6 feet from the proposed finish grade. The depth of the proposed finish grade from the top of the culverts at Waikomo Stream will be approximately 10.1 feet. No construction activities in conjunction with the project will occur within Waikomo Stream.

A water line is currently being installed by the County of Kaua'i Department of Water within the *mauka* portion of the Po'ipū Road right-of-way in the immediate vicinity of the proposed sewer line. This, as well as other unknown activities, has resulted in a heavy amount of disturbance in the form of grading and subsurface excavation within the current project area. In some places, disturbance has occurred as far as 150-feet *mauka* of the edge of present day Po'ipū Road. This prior disturbance likely removed any historic properties that might have once been in the current project area.

Kukui'ula Development Company's proposal to install a new 24-inch sewer line within Po'ipū Road right-of-way constitutes a project requiring compliance with and review under State of Hawai'i Historic Preservation review legislation (Hawai'i Revised Statutes (HRS) Chapter 6E-8 and Hawai'i Administrative Rules (HAR) 13-275). At the request of the Kukui'ula Development Company, CSH completed an archaeological inventory survey investigation, per the requirements of HAR Chapter 13-13-276, of the 686 m stretch of Po'ipū Road. Because no historic properties were located in the project area, this investigation is termed an archaeological assessment per HAR Chapter 13-13-275-5. This archaeological assessment was prepared to support the proposed project's historic preservation review and any other project-related historic preservation consultation.

No historic properties were identified within the project area during the archaeological inventory survey investigation.

1.2 Scope of Work

The archaeological inventory survey investigation and its accompanying archaeological assessment document all historic properties within the subject property. The prepared assessment is in compliance with State standards and has been submitted for review and approval to the State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR).

The following archaeological inventory survey/archaeological assessment scope of work satisfies the State and County requirements:

1. A complete ground survey of the entire project area for the purpose of site inventory was conducted. If sites had been located, they would have been described, and mapped with evaluation of function, interrelationships, and significance. Documentation would have included photographs and scale drawings of selected sites and complexes. All sites would have been assigned State site numbers.
2. Subsurface testing with a backhoe would have been conducted to determine if subsurface deposits are located in the project area, and, if so, evaluate their significance.
3. Research on historic and archaeological background, including search of historic maps, written records, and Land Commission Award documents was conducted. This research

focused on the specific area, with general background on the *ahupua'a* and district that emphasized settlement patterns.

4. Individuals knowledgeable with the project area and its history were contacted to gather additional information. This information has been included in a companion cultural impact assessment (Hammatt and Shideler *in prep.*)
5. Preparation of a survey report, which included the following:
 - a. A topographic map, if available, of the survey area showing all archaeological sites and site areas;
 - b. If historic properties had been identified this report would have included descriptions 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 would have been included had any historic properties been identified;
 - e. Recommendations based on all information generated that 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 the State agencies.

This scope of work also included full coordination with the State Historic Preservation Division (SHPD) and Kaua'i County relating to archaeological matters. This coordination took place after consent of the owner or representatives.

1.3 Environmental Setting

1.3.1 Natural Environment

Kōloa is a fairly large *ahupua'a* (9,500 acres), bounded on the east by Weliweli Ahupua'a, and on the west by Lāwa'i Ahupua'a. The perennial Waikomo Stream traverses most of Kōloa Ahupua'a. The project area is approximately 440 m from the coast where it crosses Waikomo Stream.

The elevation within the project area is approximately 40 ft. above mean sea level (AMSL). The landform in this region of Kaua'i is dominated by the broad, gently sloping pahoehoe lava flows of the post-erosional Kōloa Volcanic Series, laid down in the late Pleistocene era.

The portion of Kōloa where the present project area is located is classified as Waikomo stony silty clay (Ws) and Waikomo very rocky silty clay (Wt). Waikomo stony silty clay is on low uplands where the slope ranges from 2 to 6 percent. Waikomo very rocky silty clay is similar to Waikomo stony silty clay, except that rock outcrops cover 3 to 25 percent of the surface (Foote et al. 1972).

The project area receives less than 40 inches (1000 millimeters) of rainfall per year, falling mostly in the winter months (November through March) (Giambelluca *et al.* 1986:86). Temperatures range from highs around 90°F to maximum lows of about 50°F, with the greatest variations occurring between day and night rather than winter and summer.

The Po'ipū Road right-of-way has already been extensively disturbed for the original construction of the road. As a result, *koa haole* (*Leucaena leucocephala*), cactus (*Cereus uruguayensis*), and invasive grasses are now the dominant vegetation on both sides of the road.

1.3.2 Built Environment

At present, Po'ipū Road is a two-lane asphalt road with a broad shoulder. There are streetlights, but no curbs or sidewalks. There are no buildings along the road where the project is being proposed.

Section 2 Methods

This section details the methods used by CSH field personnel during the field, laboratory, and writing portions of the preparation of this archaeological inventory survey investigation and archaeological assessment report. Owen O'Leary, M.A., John Tulchin, B.A., Corelle Nakamura, and Hallett H. Hammatt, Ph.D., conducted the fieldwork on June 20 and September 29, 2006. It required 2 person days to complete.

CSH completed the inventory survey investigation fieldwork under state archaeological permit No. 0605 issued by the State Historic Preservation Division (SHPD), per Hawai'i Administrative Rules (HAR) Chapter 13-13-282.

2.1 Field Methods

CSH personnel spread out at 5-10 m spacing and walked the entire length of the project area / APE on both sides of Po'ipū Road looking for historic properties. CSH field personnel extended their survey to 100 feet *mauka* of Po'ipū Road. No historic properties were identified within the current project area / APE.

2.2 Laboratory Methods

Laboratory work was not necessary for this investigation.

2.3 Document Review

Historical documents, maps and existing archaeological information pertaining to the sites in the vicinity of this project were researched at the State Historic Preservation Division library, Cultural Surveys Hawai'i Library, and the University of Hawai'i's Hamilton Library.

2.4 Consultation

In addition to this archaeological inventory survey investigation, a cultural impact assessment to fulfill the requirements of Hawai'i Revised Statutes Chapter 343 (Hammatt and Shideler *in prep.*) has been undertaken for the same project. CSH anthropologist Lisa Gollin, Ph.D., has been conducting the consultations through e-mail, telephone calls, and personal meetings.

CSH has consulted with numerous individuals as part of the cultural impact assessment (Table 1). No archaeological historic properties have been identified within the current project area as a result of these consultations.

Table 1. Community Contacts

Name	Affiliation, Background
Ayau, Edward Halealoha	Hui Mālama I Nā Kūpuna O Hawai'i Nei, Chairperson
Blaich, Beryl Leilani	Mālama Māhā'ulepu, Group Coordinator
Bukoski, Elizabeth Kalehauamakanoe	<i>Kupuna</i> of Kōloa
Burgess, Stella	Hyatt Hotels & Resorts, Cultural Specialist
Cataluna, Don	Office of Hawaiian Affairs, Trustee
Chang, David	Local historian of Kōloa
Frank Bonilla	<i>Kama'āina</i> of Kōloa
Gage, Reginald	Kaua'i Historical Society, Board of <i>Directors</i>
Gonsalves, Leo	Royal Order of Kamehameha, Kaumuali'i Chapter 3
Holi, Wilma	Hui Mālama I Nā Kūpuna O Hawai'i Nei, Ho'ola Lahui Hawai'i, President
Ida, Ron	Royal Order of Kamehameha, Kaumuali'i Chapter 3
Kamai, Grace	Ni'ihau/Kaua'i Burial Council
Kane, Suzzette	A & B Properties
Kaohealauli'i, Billy	<i>Kama'āina</i> of Kōloa, <i>Kanaka Maoli</i> of Hui Mālama Kāne Iolo Uma
Kauwe, Chris	Cultural practitioner, <i>Kanaka Maoli</i> of Hui Mālama Kāne Iolo Uma
Kea, Peter	Royal Order of Kamehameha, Kaumuali'i Chapter 3
Kruse, John	Kaua'i/Ni'ihau Island Burial Council, Acting Chair
Medeiros, Bernard	Kōloa rancher

Name	Affiliation, Background
Medeiros, Max	Cultural Practitioner and former <i>Kama'āina</i> of Kōloa
Oi, Tommy	Department of Land and Natural Resources-Kaua'i Land Division
Perry, Warren	Royal Order of Kamehameha, Kaumuali'i Chapter 3
Rogers, Lucille	Alu Like Kūpuna Program
Rowe, Rupert Puni	<i>Kanaka Maoli</i> of Hui Mālama Kāne Iolo Uma
Sabra Kauka	Hawaiian Studies <i>kumu</i> and cultural practitioner
Sagum, Scotty	Royal Order of Kamehameha, Kaumuali'i Chapter 3
Shigemoto, Tom	Ni'ihau/Kaua'i Burial Council, former council member
Tsuchiya, Rick	Kaua'i Historic Preservation Review Commission
Yagodich, Darrel	Department of Hawaiian Homelands Planning Office

Section 3 Background Research

This section details traditional, historical, and archaeological background information for the section of Kōloa Ahupua'a that surrounds the current project area.

3.1 Traditional and Historical Background

3.1.1 Mythological and Traditional Accounts

The project area is in the *ahupua'a* of Kōloa in the Kona District on the island of Kaua'i. Few records exist that document traditional Hawaiian life in the *ahupua'a* of Kōloa. While settlement by westerners with religious and commercial interests made the area a focus of documentation after the first quarter of the 19th century, the accounts generally emphasized the lives and concerns of the westerners themselves, with only anecdotal references to the Hawaiian population. However, two 19th century documents, the Boundary Commission Testimony of 1874 and a Lahainaluna manuscript of 1885, were able to provide an insight into the history of Kōloa before the arrival of westerners.

A dispute over the northern boundary of Kōloa Ahupua'a in 1874 led to a hearing before Duncan McBryde, the Commissioner of Boundaries for Kaua'i. One native witness, Nao (who described himself as born in Kōloa but presently living in Ha'ikū), in order to show that Hoaea (the area in dispute) was indeed at the northern boundary of Kōloa, testified: "At Hoaea tea [*sic*] leaves were hung up to show that there were battles going on" (Boundary Commission, Kaua'i, vol. 1, 1874:124). That there were traditional "warning systems"; well-known to all natives: suggests that Kōloa may well have been the scene of some serious conflicts. Throughout the early settlement history of Kōloa, conflicts must have occurred at intervals serious enough and often enough to warrant having to devise such a system.

Additional evidence of a rich history within Kōloa was offered in a Lahainaluna document produced eleven years later. This document appears to have been based on an oral history project. On September 7, 1885 a student from Lahainaluna Schools (HMS 43 #17) interviewed Makea – "a native who is well acquainted with Kōloa" -- and recorded "what she said about the well-known places in the olden times." More than sixty-four years after the abolition of the *kapu* (taboo) system and almost as many years after contact with westerners, Makea was able to describe fourteen *heiau* (religious structures) within the Kōloa area. For example, she described the *heiau* of Maulili:

Maulili was the first *heiau* of south Kōloa. Kapulauki was the first chief of Kōloa, Kiha came next. That is the chief I know of. He was a ruling chief of Kaua'i in the olden days, when the *heiau* was standing there. It had already been built and men had been sacrificed on its altars. This Kiha was called Kiha-of-the-luxuriant-hair. Another name for him was Kakae and another was Ka-pueo-maka-walu [Right-eyed-owl].

This *heiau* was also famous for this reason -- it was the first *heiau* to which Kawelo was carried after he had swooned in Wahiawa, in the battle where stones were used as missiles.

The location of this *heiau* was not known, but a deaf mute knew and it was he who pointed it out to the chiefs, and that is how it was rediscovered in the olden days.

Kiha lived on the eastern side of the *heiau* and Aikanaka lived on the northeastern side. This chief, Aikanaka, was the one with whom Kawelo fought and he was the owner of this *heiau* at that time.

There are several place names within Kōloa that have legendary associations. The name Kōloa itself has several derivations. Kōloa is the name for the large, soft Hawaiian sugar cane (*Saccharum officinarum*) once grown by the Hawaiians; Kōloa is also the name of a steep rock on the banks of Waikomo Stream, from whence the *ahupua'a* got its name. This bank of the river was called Kōloa, after the native Hawaiian duck (*Anas wyvilliana*) (Kikuchi 1963:46; Pukui *et al.* 1974:116).

Maulili ([meaning] constant jealousy) is a deep pool in Waikomo Stream inland of the present project area. When the gods Kāne and Kanaloa first came to Kaua'i, legends say they explored the island and came to the pool at Maulili at evening. They stretched out beside the pool for their night's sleep on its eastern bank and left the impression of their forms within the rock: as can be seen in the *apapa* (a flat area). The Maulili *heiau* was first built by Ka-pueo-maka-walu, the son of Kapu-lau-kī. It was a place of human sacrifice (Wichman 1998:12). This *heiau* may be the Maulili *Heiau* described by Makea in the Lahainaluna document mentioned above. "The *apapa* in this vicinity is called an 'Unu,' and a 'Heiau,' but was never walled in, it is said. On the nights of Kāne, the drums are heard to beat there, also at the sacred rocks, or *unu's*, of Opuokahaku and Kanemilohae, near the beach of Po'ipū" (Farley 1907).

There are additional legends associated with the Maulili area.

In the Maulili pool lived a large *mo'o* [water spirit], named 'Kihawahine'...The eastern wall of the pool, just below the resting places of Kāne and Kanaloa, for a short distance, only, is called the 'Pali of Kōloa.' The District of Kōloa is named for this Pali, we are told by old Hawaiians. To the south of the Pali o Kōloa, in the wall is a rock named 'Waihānau' ([meaning] birth water)...as one of their *meles* has it:

Aloha wale ka Pali o Kōloa,

Ke Ala huli i Waihānau e, hānau.

To the south of Waihānau is a projecting rock named 'Ke elelo o ka Hawai'i' -- the tongue of Hawai'i, said to have been wrested and brought from Hawai'i by the Kaua'i warrior Kawelo, of Wailua. At the southern end of the Maulili pool started two large 'auwai's [irrigation ditches], that watered the land east and west of Kōloa (Farley 1907:93).

Thus, this sacred legend-imbued locus was the source that gave life to the lowland taro patches of Kōloa. These special associations would not have been lost on the Hawaiians dependent upon those waters. While taro would have been essential to the life of the *ahupua'a*, other agricultural niches were nurtured in order that harvests could be increased. Bernice Judd, writing in 1935, summarized most of what was known of the traditional Hawaiian life of Kōloa:

In the old days two large *'auwai* or ditches left the southern end of the Maulili pool to supply the taro patches to the east and west. On the *kuaunas* [embankments] the natives grew bananas and sugar cane for convenience in irrigating. Along the coast they had fish ponds and salt pans, ruins of which are still to be seen. Their dry land farming was done on the *kula*, where they raised sweet potatoes, of which both the tubers and the leaves were good to eat. The Hawaiians planted *pia* (arrowroot) as well as *wauke* (mulberry) in patches in the hills wherever they would grow naturally with but little cultivation. In the uplands they also gathered the leaves of the *hala* (screwpine) for mats and the nuts of the *kukui* (candle nut) for light (Judd 1935:53).

Beginning possibly as early as 1450, the 'Kōloa Field System' was planned and built on the shallow lava soils to the east and west of Waikomo Stream. The Kōloa Field System is characterized as a network of fields of both irrigated and dryland crops, built mainly upon one stream system. Waikomo Stream was adapted into an inverted tree model with smaller branches leading off larger branches. The associated dispersed housing and field shelters were located among the fields, particularly at junctions of the irrigation ditches (*'auwai*). In this way, the whole of the field system was contained within the entire *makai* (seaward) portion of the *ahupua'a* of Kōloa stretching east and west to the *ahupua'a* boundaries.

The field system, with associated clusters of permanent extended family habitations, was in place by the middle of the 16th century and was certainly expanded and intensified continuously from that time. Long *'auwai* were constructed along the tops of topographic high points formed by northeast to southwest oriented Kōloa lava flows. These *'auwai* extended all the way to the sea. Habitation sites, including small house platforms, enclosures and L-shaped shelters were built in rocky bluff areas which occupied high points in the landscape and were therefore close to *'auwai*, which typically ran along the side of these bluffs (Hammatt et al. 2004). From A.D. 1650-1795, the Hawaiian Islands were typified by the development of large communal residences, religious structures and an intensification of agriculture. Large *heiau* in Kōloa may date to this period.

The manufacture of salt was important for the Natives Hawaiians. Many of the larger salt pans on Kaua'i are located near Nōmilu, "where people came in the summer to gather salt when the winds blow the salt across the surface of the pond at the edge of the pond where it was carefully scooped out with the hands or with pieces of gourd shell and dried" (Wichman 1998:35). The importance of salt manufacture in the area was illustrated in the 1874 Boundary Commission determination for Kōloa, where the oral testimony of Pene Kalauau claimed he came all the way "from Koolau to go to Koloa for salt" (Boundary Commission, 1874, Kauai, Vol. No. 1:124).

The coastal portion *makai* (seaward) of the project area consisted of several curved sandy beaches between rocky promontories. Two of these rocky points, or *lae*, on each side of the present location of the Sheraton Kaua'i Resort, were named Lae o Ka'ōpua and Lae o Kamilo. No ethnographic sources for the meanings of these names could be found for these areas in Kaua'i. However, there is a point on the island of Hawai'i called "Lae o Kamilo", which is interpreted as "the twisting of ocean currents", or a place where driftwood would pile up on the shore (Pukui et al. 1989:127).

The god Kāne was also associated with this area. On the nights of Kāne, drums are heard at the *'unu*, or sacred rocks, at Maulili pool, and also at *'unu's*, of Opuokahaku and Kānemilohaie,

near the beach of Po'ipū (Farley 1907). In 1961, William Kikuchi conducted a survey of Kaua'i. He identified one site along the coast (Site 89) as *Kāne-milo-hai*, which consisted of several walls on a pahoehoe ridge, and two brackish water ponds on both sides of the ridge with walls within them (Kikuchi 1963:66). This site appears to be east of the current project area.

There are other accounts of the beating of drums along the Kōloa coast. A shrine on the beach was dedicated to Kūhaimona, the shark god. On the night of Kāne each month, a drum was beaten to proclaim a *kapu*. No one was allowed on the beach that night, since Kūhaimoana and the other shark gods came up to the beach and took spiritual possessions of their keepers. Anyone breaking the *kapu* would become food for the shark gods (Wichman 1998:43).

In 1963, Mr. and Mrs. Moir reported that they were sitting on the *lānai* of their house (now part of Moir's Cactus Garden) in the early evening and heard what sounded to be drums coming from the direction of a former *heiau* on the beach. This *heiau* was said to be a fertility *heiau* where women went.

3.1.2 Early Historic Period

Accounts by visitors and settlers at Kōloa Ahupua'a focused on the early westerners' own concerns--religious and commercial--as these concerns appeared within the historical record of Kōloa in the 1800's. However, scattered throughout the accounts are occasional references to the Hawaiians of the *ahupua'a* that may give some insights into their lives.

The American Board of Commissioners for Foreign Missions (ABCFM) missionary Samuel Whitney described, in an article in the *Missionary Herald* (June 1827:12), a visit to Kōloa with Kaikio'ewa, the governor of Kaua'i, in 1826:

The people of this place were collected in front of the house where the old chief lodged in order to hear his instructions. After a ceremony of shaking hands with men, women, and children they retired...

Our company consisted of more than a hundred persons of all ranks. The wife of the chief, with her train of female attendants, went before. The governor, seated on a large white mule with a Spaniard to lead him, and myself by his side, followed next. A large company of *aipupu*, [*'ā'īpu'upu'u*] cooks, attendants came on in the rear.

Whitney's account suggests something of the deference paid to the *ali'i* (chiefs) by the local populations and the scale at which the *ali'i* carried out their functions. An even grander view of that deference was provided in an account of a later visit by an *ali'i* to Kōloa. John Townsend, a naturalist staying in Kōloa in 1834, described a visit by Kamehameha III (In Palama and Stauder 1973:18):

In the afternoon, the natives from all parts of the island began to flock to the king's temporary residence. The petty chiefs, and head men of the villages, were mounted upon all sorts of horses from the high-headed and high-mettled California steed, to the shaggy and diminutive poney [sic] raised on their natives hills; men, women, and children were running on foot, laden with pigs, calabashes of *Poe* [sic], and every production of the soil; and though last certainly not least, in the evening there came the troops of the island, with fife and drum, and

'tinkling cymbal' to form a body guard for his majesty, the king. Little houses were put up all around the vicinity, and thatched in an incredibly short space of time, and when Mr. Nuttall, and myself visited the royal mansion, after nightfall, we found the whole neighborhood metamorphosed; a beautiful little village had sprung up as by magic, and the retired studio of the naturalists had been transformed into a royal banquet hall.

In 1835, Thomas Nuttall and John K. Townsend, two American naturalists, visited the Kōloa area. They noted "fields of taro, yam, and maize (possibly sugar cane), irrigation networks and sweet potato patches in the dryer areas." (Townsend 1839:206)

On December 31, 1834, Peter Gulick and his family arrived in Kōloa. Apparently the first foreigners to settle in the *ahupua'a*, they initiated the process of rapid change that would reshape the life of Kōloa in the nineteenth century. In 1835, a 30 by 60 foot grass house was erected as a meeting-house and school near the Maulili Pond. Mr. Gulick cultivated sugar cane and collected a cattle herd for the Protestant Mission. In 1837, a 45 by 90 ft. adobe church was built where Kōloa Church stands today, and the first mission doctor, Thomas Lafon, arrived to assist Mr. Gulick (Damon 1931:179, 187). The Kōloa mission station apparently flourished immediately. Navy Lieutenant Charles Wilkes, a member of the U.S. Exploring Expedition, during his visit to Kōloa in 1840, recorded:

The population in 1840, was one thousand three hundred and forty-eight. There is a church with one hundred and twenty-six members, but no schools. The teachers set apart for this service were employed by the chiefs, who frequently make use of them to keep their accounts, gather in their taxes &c. The population is here again increasing partly by immigration, whence it was difficult to ascertain its ratio (Wilkes 1845:64).

Other sources, however, give different population figures for Kōloa during the first half of the nineteenth century. In 1834, according to a report by missionaries on Kaua'i, the inhabitants of the *ahupua'a* numbered 2,166 (*Kauai answers...* 1833, cited in Palama and Stauder 1973:16; also found in the newspaper, *Garden Island* July, 27, 1935). However, in this census, Kōloa referred to the whole area between Wahiawa and Kalapaki. An article in the *Pacific Commercial Advertiser* of December 21, 1867 estimated that the population in 1838 was about 3,000. By 1867, it had been reduced to a third of that number. James Jackson Jarves, who visited Kōloa and Kaua'i for nine months during the early 1840's, recorded:

Kōloa is now a flourishing village. A number of neat cottages, prettily situated amid shrubbery have sprung up, within two years past. The population of the place, also, has been constantly increasing, by emigration from other parts of the island. It numbers, now, about two thousand people, including many foreigners, among whom are stationed a missionary preacher, and physician, with their families (Jarves 1844:100).

The arrival of many foreigners was the cause of, and the native emigration to Kōloa was the result of, the many commercial activities that burgeoned beginning in the 1830's. In 1835, Ladd and Company leased from the king and local chiefs about one thousand acres at Kōloa for 50 years at \$300 a year and were "allowed the use of the waterfall and an adjoining mill site at

Maulili pool, not far from the thousand acres, together with the right to build roads, the privilege of unrestricted buying and selling and freedom from local harbor dues" (Judd, 1935:57).

Ladd and Company was not the first venture to mill sugar cane in the area. There had been a Chinese-operated granite roller mill in operation at Māhā'ulepū, Kōloa, in 1830. Water buffalos had been imported as power for the grinding stones. To Ladd and Company goes the distinction of operating the first plantation-organized industry in Hawai'i (Damon, 1931:176, 198). Their original 12-acre sugar field was cultivated in 1835, the same year Ladd and Company was incorporated as a sugar enterprise (Gilmore 1936). The first mill was located at Maulili on the Waikomo Stream, employed wooden Koa rollers to crush the stalks, and whaling try-pots to boil the juice. This arrangement only produced 100 barrels of molasses. The next year a new dam was built just downstream, iron rollers and copper boiling pans were installed in a new mill, and 30 tons of sugar, and 170 barrels of molasses resulted (Donohugh 2001).

Labor was the plantation's most serious problem. Of this, Judd notes the following:

The company was permitted to hire natives to work on the plantation provided they paid Kauikeaouli, the king, and Kaikio'ewa, the governor of Kaua'i, a tax for each man employed and paid the men satisfactory wages. The workers were to be exempt from all taxation except the tax paid by their employers (Judd 1935:57).

Judd further described the revolutionary implication of this arrangement: "The significance of Ladd and Company's lease lay in the fact that it was the first public admission by the Hawaiian chiefs that their subjects had rights of personal property backed with a guaranty of protection to that property" (Judd 1935:58). Local chiefs, fearful of a usurpation of their power, resisted the company's first efforts to recruit workers, forcing the king's intervention.

Because land titles could not be purchased, the procurement of tools for the production of sugar was difficult. Labor troubles consisted of local taboos forbidding work on certain days. Crude evaporation methods resulted in sugars of inferior quality. Although the Chinese mill and Ladd's first mill had been established and abandoned at Kōloa prior to 1840, a third was built in 1841. Ladd and Company demonstrated that an investment in an organized plantation could produce impressive results. Thomas Thrum gives the production for 1838 as 5,039 pounds of sugar and 400 gallons of molasses. Managers with greater experience in the production of sugar were hired, and the quality of the product from Kaua'i was improved (Wadsworth 1936).

Kōloa Town and Kōloa Landing, at the mouth of the Waikomo Stream, became flourishing commercial centers because of these new agricultural initiatives. "An estimate in 1857 stated that 10,000 barrels of sweet potatoes were grown each year at Kōloa, and that the crop furnished nearly all the potatoes sent to California from Hawai'i. Sugar and molasses were also chief articles of export" (Judd 1935:326). Whalers used Kōloa Landing from 1830 to 1870, and took on provisions of squashes (pumpkins), salt beef, pigs, and cattle (Damon 1931:176). Hawaiians grew the pumpkins on the rocky land north of the landing. There were also numerous salt pans along the shore near the landing that were used to make the salt (Palama and Stauder 1973:20).

3.1.3 Mid-1800s and the Great Mahele

In the early Post-Contact period, the *ahupua'a* of Kōloa was controlled by the ruling chief of Kaua'i and was administered by lesser chiefs appointed by him. When Ka-umu-ali-i, last of the ruling chiefs of the island, died in 1824, his lands (Kaua'i and Ni'ihau) were given to the lineal

descendants of Kamehameha. Queen Ka'ahumanu redistributed the lands among chiefs of other islands who had been loyal to the bloodline of Kamehameha. By the mid-19th century, control of the *ahupua'a* of Kōloa was divided between Kamehameha III and Moses Kekūāiwa, a brother of Kamehameha IV (Alexander 1985). The *Māhele* records indicate that Kōloa Ahupua'a, which totaled 8,620 acres, was awarded (LCA 7714-B) to Moses Kekūāiwa, (the brother of Alexander Liholiho [Kamehameha IV]), Lot Kapuāiwa (Kamehameha V), and Victoria Kamāmalu.

One award, granted in the coastal portion of Kōloa in the *'ili* of Wai'ohai (east of the current project area), illustrates a typical *kuleana* for the coastal area.

Kaumu 3607

Located in Koloa Hikina, consisting of two pieces: No. 1 is *'ili* O Kapo'o: No. 2 is a *kauhale* [habitation structure(s)] in *'ili* O Waiohai

No. 1 is bounded: *mauka* [toward the mountains] by *'ili* O Kaohia; Puna [east] by *'ili* O Makapala; *makai* [seaward] by *'ili* O Puokahaku; Hanapēpē [west] by the Kahawai O Koloa.

No. 2 is bounded: *mauka* [toward the mountains] by the *kula* O Waiohai; Puna [east] by *'ili* O Makapala; *makai* [seaward] by the sea beach; Hanapēpē [west] by the *kula* o Waiohai. F.T., v. 13;19, February 18, 1850; 5 acres, 1 road, 17 rods.

Eighty-eight other *kuleana* awards were given to individuals within Kōloa Ahupua'a. The majority of these Land Commission Awards were located in and around Kōloa Town itself. The current project area cuts through two LCAs that were granted to two individuals. Both awards are shown on the current county TMK map for [4] 2-8-015 (Figure 5), as well as an 1891 Government Survey (Hawaiian Kingdom Department of the Interior) map of surveyor M.D. Monsarrat (Figure 6). The 1891 map shows brick buildings at Kōloa Landing, taro *lo'i* located just inland at Hanakā'ape, and the boundaries of LCA 3606 (to Kamae) and LCA 10272 (to Makalulu).

The terms of LCA 3606 transferred a section of the *ili* of Pu'u-ohaku to the claimant "Kamae" using the traditional "metes and bounds" description in use at the time. Distance was measured in "chains". An amount of "*kula*" land, twelve taro patches, two potato patches, a house lot, and a cattle yard were claimed as appurtenant to LCA 3606. There was a reference within this LCA as to the planting of "sugar cane and yams" before 1848 (No. 3606, Kamae, Koloa, Kauai, January 12, 1848, *Native Register* 71v9/ *Foreign Testimony* 30-31v13/ *Native Testimony* 35v13, Royal Patent 7269).

The terms of LCA 10272 transferred a section of the *'ili* of Ma'ulili to the claimant "Makalulu" using traditional boundary descriptions. An amount of "*kula*" land, a house lot, one taro patch, and four dry taro patches were claimed as appurtenant to LCA 10272 (No. 10272, Makalulu, Koloa, Kauai, January 7, 1848, *Native Register* 272v9/ *Foreign Testimony* 24v13/ *Native testimony* 27v13, Royal Patent 8367, Registration Map 1694 Monsarrat).

The cane growing activities of Ladd and Company had affected the lives of the inhabitants of the rest of the *ahupua'a* and changed traditional settlement patterns. Prior to the commercial cultivation of sugar, permanent and temporary habitation was interspersed throughout the

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Background Research

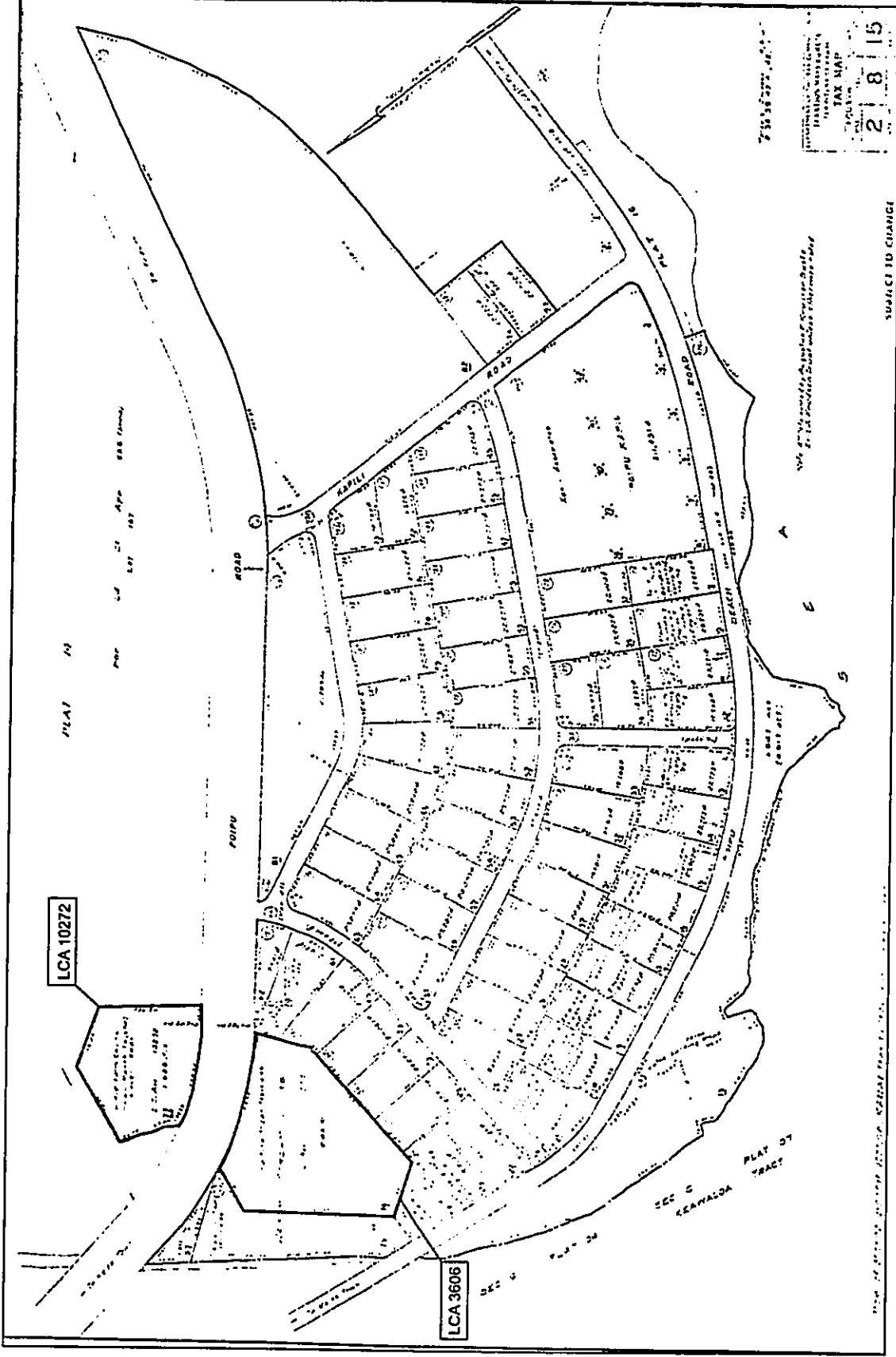


Figure 5. Tax Map Key [4] 2-8-015 showing the project area (Po'ipū Road) and the two adjacent LCAs

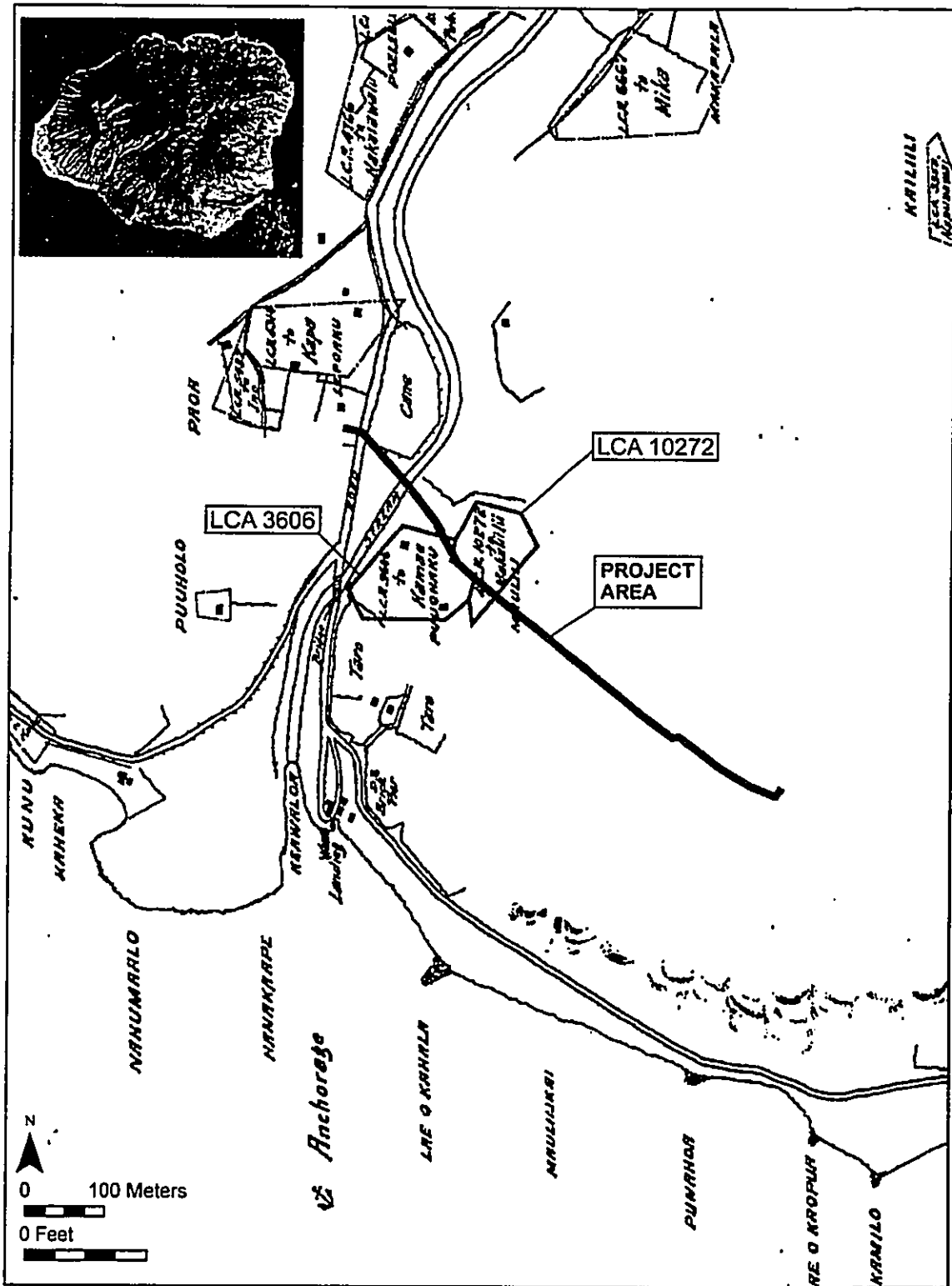


Figure 6. 1891 Government Survey map of Surveyor M.D. Monsarrat showing the location of LCAs 10272 and 3606 and the approximate location of the current project area

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irrigated agricultural fields near the coastal zone and occurred adjacent to traditional farms established along streams. Settlement shifted to the town of Kōloa, where opportunities at the sugar cane mill existed. The corresponding shift toward the mechanization of agriculture was inevitable. The hand-cultivation of taro patches and the hand-preparation of *poi* fell to those who did not take jobs with the sugar enterprise

By the early 1800's, Kōloa Landing had become the principal port of Kaua'i. Shipments of North American furs and pelts to the Orient depended on the provisioning of ships at Kōloa Landing, as well as other Hawaiian ports. As the fur trade grew, markets in China became aware of sandalwood (*Santalum sp.*) grown in the Hawaiian Islands. The shipment of most of Kaua'i's sandalwood to the Orient took place at Kōloa Landing, until the supply of the fragrant wood was exhausted around 1830.

Although Ladd and Company ended sugar operations in 1845, its earlier success was an impetus for other entrepreneurial attempts within Kōloa. Silkworm farming, oil extraction from *kukui* nuts, cigar manufacturing, sago raising, and tapioca manufacturing were all attempted with varied success during the middle third of the nineteenth century. The Great Māhele of 1848, with its promise of surety of land titles, should have stimulated the production of sugar, however, a period of low prices, coupled with a drought in 1851, drove many of the smaller enterprises out of business. By 1854, The Koloa Sugar Company had acquired all of the sugar interests of Ladd and Company, and had erected a new, more modern sugar mill (Gilmore 1936).

The Koloa Plantation sugar crop of 1854 yielded 300 tons of sugar, which sold for \$150 per ton. 450 acres of land were under cultivation, and development of additional acreage continued gradually until the annexation of the Hawaiian Islands by the United States in 1898. The structure of government, which had recently changed from a Monarchy to that of a Republic in 1893, had become a more stable Territorial government. At the turn of the century, investment in sugar cane lands grew exponentially all across Hawaii. The development of cane lands harvested annually by the Koloa Sugar Company doubled to 950 acres by 1900, and doubled again to 2,040 acres by 1920. By 1935, over 4,000 acres of Koloa Sugar Company lands were in cultivation, which resulted in average annual harvests of over 2,600 acres (Gilmore 1936).

The Koloa Boarding School for Girls was established in 1861 by Mrs. Milicent Knapp Smith. The American Board of Commissioners for Foreign Missions sent James William Smith, M.D., and his wife to the Kōloa station in 1842. James Smith became the second permanent doctor at Kōloa station, and remained there until his death in 1887. Milicent Knapp Smith died in Kōloa in 1891. The Kōloa station had been established in 1834, and was able to maintain a strong influence in Kōloa throughout the years of turmoil associated with fur trading, sandalwood, and whaling (Donohugh 2001).

Another major area of commercial enterprise was associated with the whaling industry at Kōloa Landing, whose peak years ran from the 1830's to the 1860s. Accounts of visitors suggest that the inhabitants of Kōloa took advantage of their proximity to Kōloa Landing to participate in the booming trade of the port. An article in the *Pacific Commercial Advertiser* of Feb. 19, 1857 described the significant characteristics of the port at mid-century and mentions:

From the landing there is a good carriage road to the town, distant about two miles. Large quantities of firewood, bullocks and sweet potatoes are furnished to whalers in this port, and these chattels can nowhere be procured cheaper or better. It is estimated that 10,000 barrels of sweet potatoes are cultivated annually here,

which are thought to be the best on the islands. Nearly all the potatoes furnished for the California market are produced here...Sweet potatoes, sugar and molasses constitute the chief trade of the port.

In 1882, The Koloa Sugar Company announced it had ordered all the components for a plantation railroad. According to the *Planter's Monthly*, Vol. 1 of 1882, "It will consist of four miles of 30 inch gauge track, forty cars 5 x 10 feet, and one locomotive" (Conde 1993: 28). According to Arthur C. Alexander, in *Koloa Plantation 1835-1935*, "Cut cane was hauled to the mill by oxcart until 1882. In that year, 3½ miles of 30-inch gauge, 18 pound railroad track and 50 cars were purchased"(Conde 1993: 28).

The Koloa Sugar Company added additional permanent track to cultivate Māhā'ulepū Valley in 1887. By 1885, the rails extended to Kōloa Landing where the steamers transported the bags of sugar to the mainland. By 1895, the branch line of the railroad to Kōloa Landing was renovated by adding a short spur line along the eastern side of the landing so trains could back cars onto it for easy unloading of bagged sugar and loading of supplies (Donohugh 2001). A motorized derrick winched the bagged sugar from the railroad cars to the warehouse on the west side of the landing. From there, bagged sugar was loaded onto small lighters, which would row the sugar out to waiting ships in the harbor.

In 1910, the *San Francisco Chronicle* commented:

Cane is transported from the fields to the mill over a railroad system that consists of fifteen miles of permanent track, two miles of portable track, 250 cane cars and four locomotives. About two miles from the mill and connected with by rail is the steamer landing, with a warehouse that will hold 20,000 bags of sugar (cited in Conde and Best 1973:159).

3.1.4 1900's

The Koloa Sugar Company had previously purchased the *ahupua'a* of Pā'ā southeast of the town, and a large parcel of it was unproductive. A new and much larger mill was built there in 1913 about a mile from Kōloa. New railroad track was laid, and an asphalt road was built to connect the new mill with Kōloa Landing. World War I caused a huge demand for sugar. By the end of hostilities in 1918, the Koloa Sugar Company was producing 9,000 tons of sugar each year, and adding additional acreage.

Kōloa Landing was phased out around 1925 when McBryde Sugar Company and the Koloa Sugar Company began shipping their product out of Port Allen Harbor at Hanapēpē. The McBryde Plantation had been improving the facilities at Ele'ele Landing since the turn of the century, and a private company, the Kauai Terminal Limited Railway, had developed a modern bridge crossing the Hanapēpē River. Soon after this, the Koloa Sugar Company ceased to use the *makai* (seaward) Kōloa fields, and much of the area was converted into cattle-grazing pasture by the Knudsen family. Most of the *mauka* (upland) areas of Kōloa remained under sugar cane cultivation as late as the 1970s, when these cane lands were converted into pasture.

Steam powered plows, which had replaced animal teams in the fields in the 1890's, had been replaced by tractors by the 1920's. The plantation railroad, which continued to carry sugar and workers throughout World War II, was dismantled in 1947. In 1948, Grove Farm Company bought the Koloa Sugar Company. These two adjacent plantations were separated by a mountain range, so the construction of a half-mile-long vehicular tunnel through the mountain resulted in a

true operational merger of the two plantations. Although all railroading within the Kōloa Division of Grove Farm had been replaced by trucking, the Haiku Division was still operating about 1/3rd of their railway into 1954.

Adjacent to the east side of the Sheraton Kaua'i Resort is the Plantation Gardens Restaurant, which was built by Eric A. Knudsen in 1930. He gave the house as a wedding present to his daughter, Alexandra (Sandie) Knudsen and her husband, Hector Moir, who became the manager of the Kōloa Plantation in 1933. The cactus garden was begun by Sandie Moir as a hobby, but by 1948, had become a world-class cactus garden. In 1954, the gardens were opened to the public. In 1968, the house was leased as a restaurant, and it was eventually taken over by the Kīahuna Plantation Resort (Hoverson 1985:22).

3.1.5 Modern Land Use

Following the merger of the plantation lands of the Koloa Sugar Company and Grove Farm Company in 1948, the combined lands under cultivation required new sources of irrigation water. In 1965, Grove Farm built a tunnel to bring the waters from Ku'ia directly into the Waitā (Kōloa) Reservoir. Grove Farm leased these cane lands to McBryde Sugar Company when it terminated sugar operations in 1974 (Wilcox 1996).

By the late 1960's, the main town of Kōloa experienced a type of reverse migration back to the shoreline. Although the town had established a Civic Center in 1977, the pace of tourist-driven development at the shoreline had been drawing construction and service jobs away from the town center. In 1962, the Wai'ohai Resort opened, with the Sheraton Kaua'i Resort following in 1965. The Kīahuna Plantation Resort opened in 1967, followed by the construction of various condominiums throughout the 70's and 80's. Finally, the Hyatt Regency Resort, with its' expansive golf course, opened in 1991.

By this time, the tourist industry had successfully attached the name "Po'ipū Beach" to the entire coastline beginning at Kōloa Landing and continuing east to Makahū'ena Ledge. With the development of the Po'ipū Bay Resort Golf Course and the Hyatt Regency Kaua'i Resort Hotel, the Po'ipū Beach name became synonymous with all two miles of coastline fronting the Wai'ohai, Kīahuna, and Sheraton developments, ending at Po'ipū Beach Park (Donohugh 2001).

3.2 Previous Archaeological Research

3.2.1 Overview of Archaeological Studies at Kōloa

Thomas Thrum was the first to discuss sites in the Kōloa area in his list of the *heiau* of Kaua'i (Thrum 1907). He discussed six *heiau* in the district of Kōloa, which once extended from Hanapēpē to Māhā'ulepū. The *heiau* were Hanakalauae, Kanehaule (inland Kōloa Ahupua'a), Kihouna (Kōloa Ahupua'a), Kaneiolouma (Kōloa Ahupua'a), Weliweli (Weliweli Ahupua'a), and Waiopili (Māhā'ulepū Ahupua'a). The two *heiau* on the Kōloa coast, Kaneiolouma and Kihouna, were described as: "Near the Po'ipū beach, at Kōloa, are two walled *heiaus* but a short distance apart." (Thrum 1907:36-37;68).

Wendell Bennett conducted the earliest systematic archaeological survey on the Island of Kaua'i in the late 1920s. Bennett examined and recorded 202 sites on the island. According to his site location map (Figure 7; Bennett 1931:98), Sites 74 to 81, 85-86, and 91-92 may be in the *ahupua'a* of Kōloa.

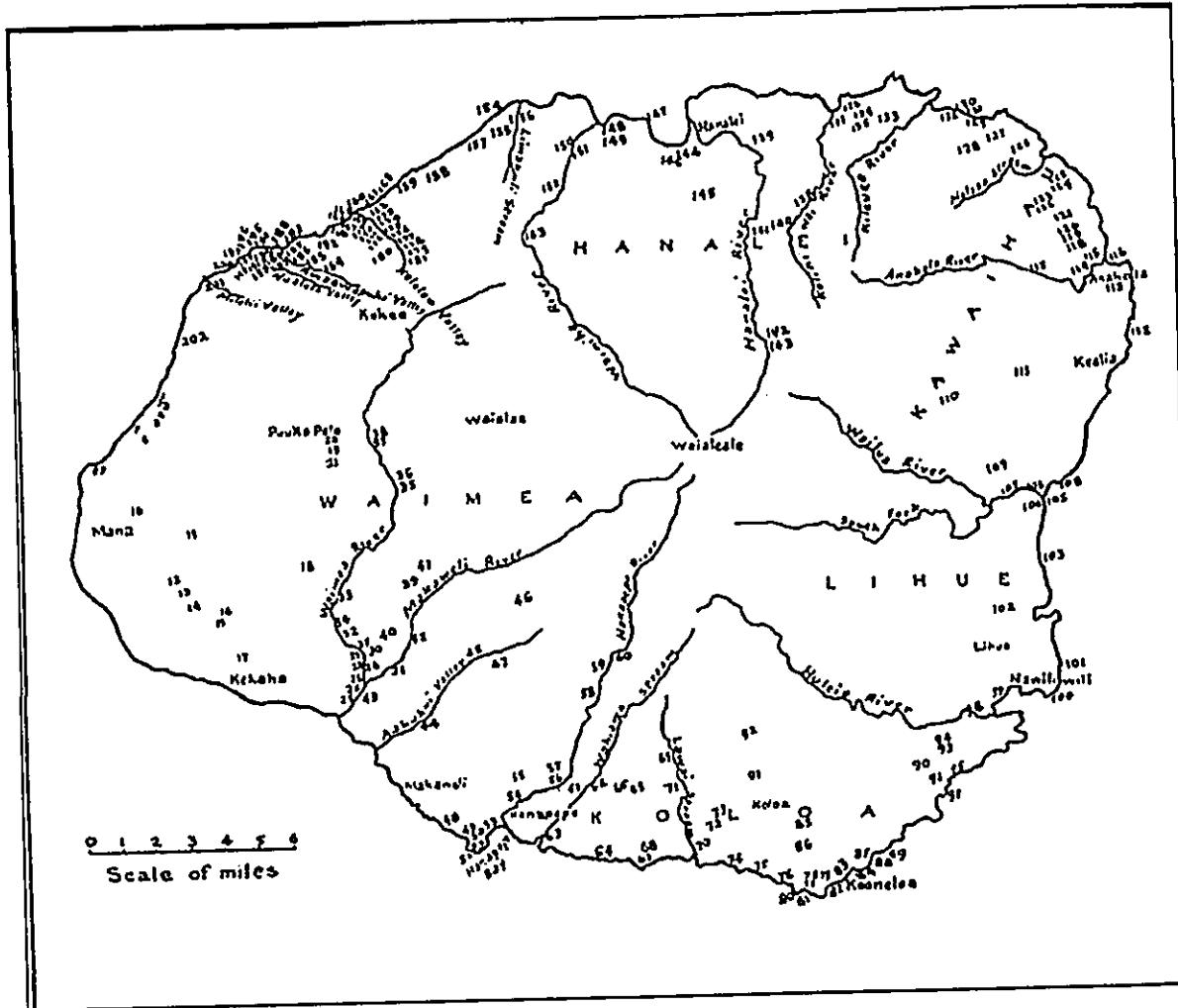


Figure 7. 1931 map by Wendell Bennett showing the locations of the 202 sites he recorded during his survey

Selected Bennett archaeological sites located in Koloa Ahupua'a:

- Site 74. Fishing shelter. On the shore near the mouth of Kukui'ula valley there is a fishing shelter.
- Site 75. Kuhio Park, on the shore west of Waikomo stream, Koloa. Taro patches, a small heiau, an oven, paved house platform, fish pond, game ground with seats around, and a fishing shrine are the principal features shown.
- Site 76. Salt pans, east of Waikomo stream along the shore.
- Site 77. Ponds, just inland from the shore road at the east side of the Weliweli, Koloa.
- Site 78. Taro terraces and house sites, just east of Site 77 and adjoining it.
- Site 79. Walled inclosure [*sic*] and house sites, just northeast of Site 78, Koloa.
- Site 80. Kihouna heiau, at Kihouna point, Po'ipū, Koloa.
- Site 81. Kaneiolouma heiau, on the shore a short distance east of Site 80.
- Site 85. Walls, inclosures[*sic*], house sites, in the cactus-covered country around the Koloa reservoir and extending to the sea.
- Site 86. House site, in the area described in Site 85.
- Site 91. Holua slide, on the hill named Puu o Hewa just above Koloa off the main road.
- Site 92. Kanehaule heiau, at Kaunuieie, Koloa.

Table 2 contains a summary of all previously identified sites/features located within the vicinity of the project area including recommended treatment provided in earlier studies. Figure 8 illustrates areas of previous archaeological studies in the Kōloa Ahupua'a.

Bennett's Sites 74 and 75 appear on his site map (Bennett et al. 1931:98) as immediately *makai* (seaward) of the project area. These sites were further described by Bennett as:

Site 74. Fishing shelter. On the shore near the mouth of the Kukuiula valley there fishing shelter (Pl. VI, C). It is 5 feet high, and 6 feet wide at the base. It is arched up of stone and used principally for a wind break.

Site 75. Kuhio Park, on the shore west of Waikomo stream, Koloa. Taro patches, a small heiau, an oven, paved house platform, fish pond, game ground with seats around, and a fishing shrine are the principal features shown

Table 2. Previous Archaeological Studies Near the Current Project Area

Name	Year	Location	Study Type
Bennett	1931	Kukui'ula Valley, Prince Kūhiō Park	General Survey
Kikuchi	1963	Kona District	General Survey
Sinoto	1975	Knudsen Trust Lands	Reconnaissance Survey
Hammatt et al.	1978	Kīahuna Complex	General Survey
Hammatt et al.	1988	Kukui'ula Bay Planned Community	Inventory Survey
Hammatt	1992	Po'ipū Road and Lāwa'i Road Junction	Archaeological Reconnaissance
Hammatt et al.	1993	Po'ipū Road 7.6-acre Parcel	Inventory Survey
Creed et al.	1995	Po'ipū Road	Inventory Survey
Hammatt et al.	1998	Kukui'ula Planned Community Phase I	Data Recovery
O'Hare et al.	2003	Sheraton Kaua'i Resort	Archaeological Assessment
Rohrer et al.	2003	Kapili Road at Po'ipū Road 10.6 acre parcel	Archaeological Assessment
Hammatt et al.	2005a	Kīahuna Complex	Inventory Survey
Hammatt et al.	2005b	Kīahuna Complex	Data Recovery
Yorck and Hammatt	2005	Kapili, Po'ipū and Ho'onani Roads	Archaeological Monitoring
Yorck et al.	2005	Po'ipū Beach Villas	Inventory Survey

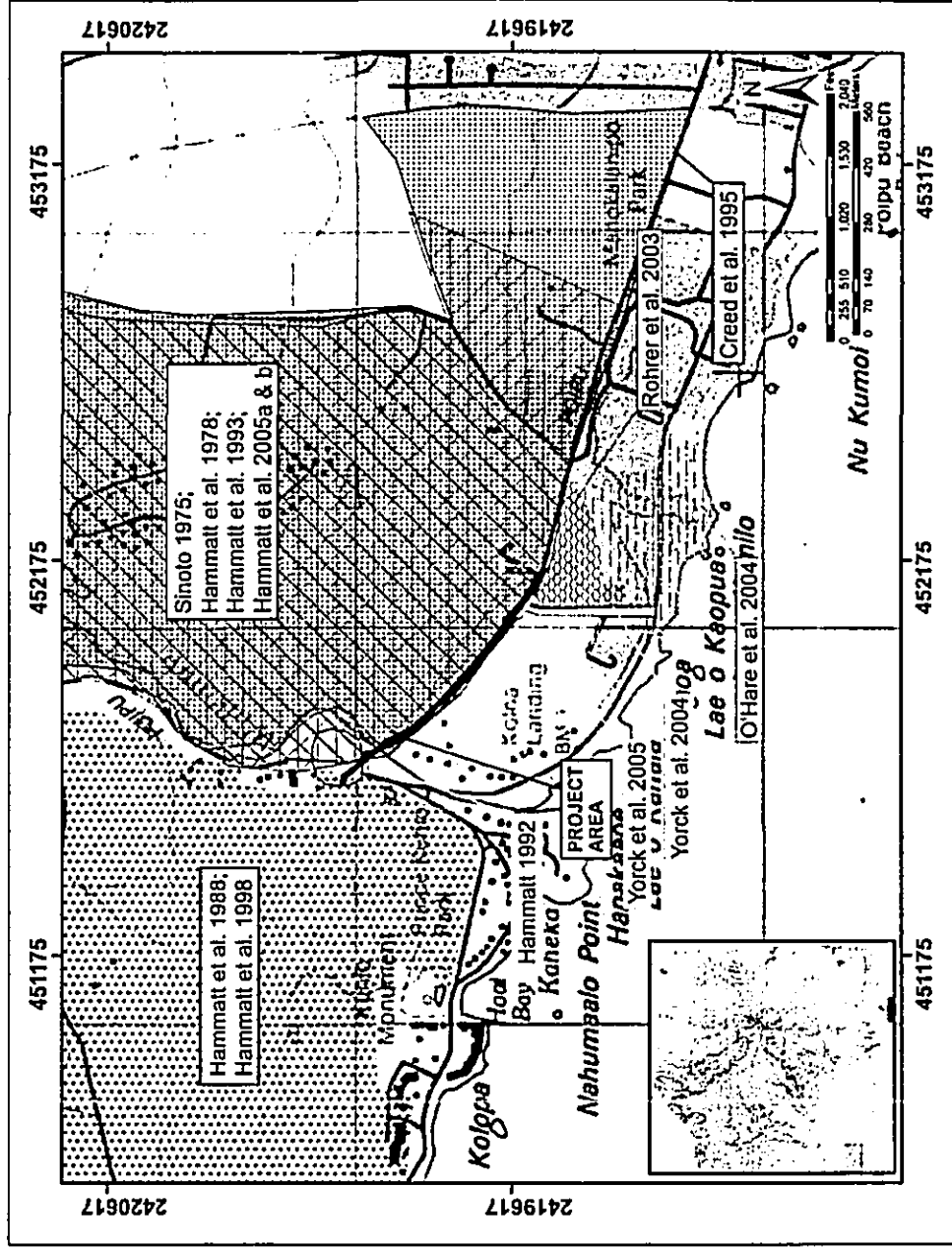


Figure 8. 1996 Koloa USGS 7.5-minute topographic quadrangle showing the location of the project area and surrounding previous archaeological investigations

Bennett's Sites 76 and 77 (later designated State of Hawai'i Sites 50-10-30-076 and -077) are shown on his site map (Bennett et al. 1931:98) to the east of the current project area. These sites were further described as:

Site 76. Salt pans, east of Waikomo stream along the shore. In these numerous salt pans, some divisions are made by a single row of flat stones on edge, others by round stones in line, still others by a double row of stones with dirt or sand filled in between for a sort of a walk.

Site 77. Ponds, just inland from the shore road at the east side of Weliweli, Koloa. One of these ponds is of an oval shape 185 yards in circumference. It is encircled with a raised wall of dirt the edges faced with large stones. This raised portion is about 12 feet wide and built up 2 feet high most of the way around. Within this pond is a small circular wall of stones 2 feet wide, 2 feet high, and about 15 feet in diameter. A built-up path leads out to this circle. This pond is one of a series of four all similar in size and construction. There are not internal divisions, nor any great depth to these ponds (*ibid* 98).

William Kikuchi (1963) conducted a general survey of the Kona District of Kaua'i including all *ahupua'a* from Hanapēpē, eastward to Kīpū Kai. Information from Thrum (1907), Bennett (1931), a Lahainaluna School manuscript (1885), and other sources was instrumental in helping to locate major archaeological sites during the field survey. Kikuchi's survey was selective, as it was not designed to be a complete inventory, and focused on generally larger or more coastal sites. Kikuchi identified seven sites within east Kōloa (Sites 89-95), three of which were just west of Moir's Cactus Garden at the Kīahuna Plantation Resort, which is adjacent to the eastern boundary of the Sheraton Kaua'i Resort. All of these sites are to the south east of the current project area.

Site 89. Structures, Kane-milo-hai The area a little west of Moir's Cactus Garden and on the seaward side of the road was surveyed by the crew. On a pahoehoe ridge several walls were found most of doubtful antiquity. However, these walls could have been expanded from the original native walls in this area. Two brackish ponds on both sides of the ridge was [*sic*] found to have had walls within them. The probable use of these ponds as saltpans are very likely. A bulldozer had cleared much of the beach area and had uncovered much midden thus destroying sites here (Kikuchi 1963:66).

Kikuchi located this site between Kamilo and Ka'ōpua Points and south of Po'ipū Road on the coast. He identified the site as *Kane-milo hai*. According to legends, on the nights of Kāne the drums are heard to beat at the pool of Maulili, on Waikomo stream, and also at the sacred rocks, or *unu's*, of Opuokahaku and Kānemilohae, near the beach of Po'ipū. In 1963, Mr. and Mrs. Moir reported that they were sitting on the *lanai* of their house (a part of Moir's Cactus Garden) in the early evening and heard what sounded to be drums coming from the direction of the drum *heiau*. This *heiau* was said to have been a fertility *heiau* for women.

Site 90. Shelters. The land back of Moir's Cactus Garden was noted to have several round mounds of rock each with its opening facing seaward. If these were used as ovens

the rocks would have been scorched, they were not. These would be ideal shelters but rather small in size.

Site 91. Fish Shrine. The brackish pond west of Moir's Cactus Garden was noted to have an overgrown platform just north of the road at the southwestern end of the pond. A low wall ran across the pond from this platform and formed a retaining wall on the eastern side. The small low platform, probably 5 by 9 feet, could be a shrine. However, closer inspection was not possible to confirm the theory (*ibid:66*).

Kikuchi (1963:66) located Sites 90 and 91 just west of Moir's Cactus Garden, which may have placed them within the northeast corner of the Sheraton Kaua'i Resort. These sites were later given State (SIHP) Site Numbers 50-30-10-3086 and -3087, respectively. Kikuchi did not try to correlate these two sites to any described by Bennett, and according to SHPD lists, sites described by Bennett and Kikuchi are considered separate sites.

Kikuchi's Site 92 was Pa'ū-a Laka, (SIHP 50-30-10-3088), a place where the *hula* was considered sacred. The *hula* grounds were reputed to have been located on the seaward side of Moir's Cactus Garden. Mrs. Sandie Moir originally named her gardens Pa'ū-a-Laka due to the proximity to the *hula* grounds. Site 93 was a pond east of Pa'ū-a-Laka, with walled divisions salt pans. Site 95 was Kihouna Heiau, a *heiau* on the coast that was reconstructed by Kikuchi after damage from Hurricane 'Iwa. Site 95 was Kāne-i-olo-uma Heiau, a *heiau* on the eastern boundary of the *ahupua'a* of Kōloa.

Kikuchi also listed sites mentioned in other sources, but not relocated by him. In Kōloa, this included the *heiau* of Ma'ulili. There are three areas in Kōloa named Ma'ulili, the shore area, called Ma'ulili-kai, the area inland of this, and an area in the town of Kōloa. Kikuchi believed that the *heiau* once was on the shore. He also reviewed the *heiau* listed by the Lahainaluna manuscript. This included Manini Heiau:

Manini was another heiau of Koloa. It stood near the beach. The heiau was for the gods of the sea, that is Kuhaimoana and others. On the nights of Kane these fish-gods came up to the beach. Their spirits took possession of their keepers, then these men went into the heiau to drink *awa*. The people were accustomed to doing this in the olden days. One each night of Kane in every month, the drum was beaten to proclaim a kapu on the beach. Men were not allowed to go to the beach at night, lest they step on the fish (gods). (Lahainaluna School, cited from Kikuchi 1963:85)

Akihiko Sinoto (1975) conducted a reconnaissance survey of 400+ acres of Knudsen Trust Lands at Kōloa, in the area north of Po'ipū Road. He recorded several features and suggested they were the northern remnants of Bennett's Sites 78, 79, 85 and 86. This survey was adjacent to the northern boundary of the current project area.

Hallett Hammatt, Richard Bordner, and Myra Tomonari Tuggle (Hammatt et al. 1978) as part of Archaeological Research Center of Hawaii (ARCH), reported on a general survey of 460 acres for the then-proposed Kīāhuna Golf Village, located on the east side of Waikomo Stream and Po'ipū Road. The Kīāhuna survey recorded 583 archaeological sites including 175 stone

enclosures and 108 stone house platforms, some of which appeared as clusters of family compounds. The water channels (*'auwai*), ponded fields, terraced plots, and mounded fields all indicated extensive wet and dry land agriculture (Hammatt et al. 1978). The water source for this highly integrated agricultural system, called the Kīahuna Complex, was Waikomo Stream, which was tapped upstream. Additional sites included 10 occupation caves and a *heiau*. This work overlapped with Sinoto (1975) and is adjacent to the northern edge of the current project area.

Hallett Hammatt, Douglas Borthwick, David Shideler, and Mark Stride (Hammatt et al. 1988) conducted an archaeological inventory survey in the 1000-acre proposed Kukui'ula Bay Planned Community. Fifty-eight archaeological sites were recorded; many associated with the Kōloa Field System. Two to three *heiau* were found, possibly including the remains of Kamaloula Heiau. This investigation is close to the western end of the current project area.

Hallett H. Hammatt (1992) carried out an archaeological reconnaissance of the Po'ipū Road and Lāwa'i Road Junction near the mouth of Waikomo Stream, but again there were no significant findings, owing to prior land disturbance. This work took place very close to the western most portion of the current project area.

Hallett H. Hammatt, Gerald Ida, and William Folk (Hammatt et al. 1993) conducted an archaeological inventory survey, with limited subsurface testing, of a 7.6-acre parcel. (TMK 2-8-14:30) in east Kōloa. This parcel is north of Po'ipū Road and south of the former railroad grade. Site 3758, a house platform or possible *heiau*, was re-mapped, and three new sites habitation/agricultural complexes were recorded. According to Hammatt et al. (1993:21), these sites are remnants of traditional *'auwai*, walls, fields, enclosures and habitation platforms, and appear to be a part of the larger Kōloa Field System, which encompassed over 1000 acres.

Victoria Creed, Gerald Ida and Hallett H. Hammatt (1995) reported on an inventory survey within a 1.4-mile corridor along the *mauka* (inland) side of Po'ipū Road (TMK 2-8-15, 16, 17 & 18) in the *ahupua'a* of Kōloa and Weliweli. Three sites, including enclosures, a terrace, and the Kōloa-Weliweli boundary wall, survived previous bulldozing of the area and were understood as components of the Kōloa Field System. The current project area partially overlaps with this previous study.

Cultural Surveys Hawai'i, Inc. (Hammatt, et al, 1998) reported on data recovery of the Kukui'ula Planned Community Project Phase 1 area encompassing approximately 219 acres (Hammatt et al. 1998). The project included excavations at 20 different sites, which encompassed 64 individual features. There were a total of 212 excavation units (212 square meters) and 19 backhoe trenches (only 14 backhoe trenches were chosen for study). Large quantities of midden (approx. 23.7 kilograms) and artifacts (10,635 items) were recovered and were reported on. The artifacts include a wide range of types with both indigenous (2,592 items) and historic (8,043 items) represented. Radiocarbon (C14) dates ranged from ca. A.D. 1050 onward. The earliest date came from the habitation/burial cave Site 50-30-10-1927A. In addition to the habitation sites and features dated, seven dating samples from agricultural features were also analyzed. The Kukui'ula Development is located to the west of the current project area.

In 2003, an archaeological survey was conducted along the coast in the Sheraton Kaua'i Hotel property, southwest of the current project area (O'Hare et al. 2003). Saltpans, abraded areas, and possible bait cups were recorded along the rocky coast; these may correspond to Bennett's Site

76 "Salt pans, east of Waikomo Stream along the shore" (Bennett 1931:98). Five features were noted in the interior section of the project area, two platforms, one mound, one terraced area, and one enclosure. The two platforms were later partially dismantled to test for burials. No human remains or any other cultural materials were recovered from the features.

Rohrer et al. (2003) completed an archaeological assessment of 10.6-acres at the southeast corner of Po'ipū Road and Kapili Road. Two historic properties, an enclosure and an overhang shelter were identified. SIHP # 50-30-10-0362, the enclosure, is located in the northwest corner of the project area; and SIHP # 50-30-10 0363, the overhang shelter, is located in the southwest corner. Both archaeological sites were documented with photographs, descriptions and GPS position.

Hammatt, et al, (2005a) conducted an inventory survey of five project areas on approximately 400 acres of the Kīahuna Golf Village; wherein 509 historic properties were documented and 80 historic properties were excavated. The 509 historic properties included 238 permanent habitation sites, 150 temporary habitation sites, 2 habitation/agricultural sites, 104 agricultural sites, 2 artifact sites, 1 rock art site, 1 historic grave, 1 ceremonial site, and 10 miscellaneous sites used for either storage or livestock.

The Kīahuna Golf Village inventory survey included data recovery within 80 historic properties. 12,153.7 grams of midden were excavated, which included 1017 indigenous artifacts (607 lithic items, 174 bone items, 148 coral items, 45 shell items, 41 sea urchin items and 2 "other") and 109 historic artifacts (glass, metal, ceramic and slate items). The "Koloa Field System" observed within the project area was summarized as being:

"most likely an early seasonal agricultural & habitation site that became more extensively utilized as resources become more available and agriculture endeavors became more stable and intensified. From the artifact and midden collected, food resources were still collected via hunting and fishing. The manufacturing of tools and ornaments at the project area was also apparent from lithic flakes and unfinished items. Habitation shifted to being more permanent as indicated by permanent and extended habitation complexes, however instead of expanding the territory, infilling of unsettled/unused land was employed within the project area" (Hammatt et al. 2005b:163).

The earliest Kīahuna Golf Village sites were carbon-14 dated to the thirteenth through the fifteenth centuries A.D. (SHIP 50-30-10-3841), with sites dated into the sixteenth century (SHIP 50-30-10-3822). According to this inventory survey, the Kōloa Field System continued to expand throughout the eighteenth century A.D., and ceased to function as a field system when sugar cane cultivation took over the existing *'auwai* system for its own use.

Yorck and Hammatt (2005) completed an archaeological monitoring program for electrical utility improvements along Kapili, Po'ipū and Ho'onani Roads. No historic properties were identified during the course of the monitoring. A very small portion of this project area overlaps with the current project area.

Yorck et al. (2005) conducted an inventory survey of an approximately 25-acre parcel located northwest of the Sheraton Kaua'i Resort at the intersection of Po'ipū and Kapili Roads. Twenty-one archaeological sites consisting of approximately 70 associated features were documented in

an area that contained two LCA's. LCA 3606 (to Kamae) and LCA 10272 (to Makalulu) were both located along the eastern bank of Waikomo Stream, at the western edge of the project area. Approximately 12 enclosures, 14 walls or wall segments, 6 mounds, 8 terraces, 11 C-shapes, 8 modified outcrops, a railroad berm and 12 specialized features were located and documented. The report recommended preservation and limited data recovery of Site 50-30-10-0374 (habitation caves and associated rock-filled areas), and data recovery of Sites -0368, -0369, -0370, -0373, -0376, and -0947 (the railroad berm). The parcel was characterized as containing mostly pre-contact habitation sites. Some walls were identified as historic ranching-era structures.

3.3 Background Summary and Predictive Model

From previous archaeological studies and historic accounts it appears that habitation and intensive irrigated agriculture were widespread in central and coastal Kōloa. As an extensive irrigated complex, the Kōloa Field System was used to divert the waters of the Waikomo Stream for taro, native sugar, and fish. As the Judd (1935) account asserts, it is likely that low inland areas were used for less intensive cultivation of patches of sweet potato, *pia*, (arrowroot) and *wauke* (paper mulberry) and the gathering of *hala*, (pandanus fiber) *kukui* nuts (oils having medicinal applications) and other resources. The coastal portion of the *ahupua'a* would be a focus for permanent habitation, collection of marine resources, ceremonial activities, and burials. The archaeology of the region also seems to bear out the accuracy of Judd's account.

Chronological analysis from Kōloa, and the two neighboring *ahupua'a*, Pa'a and Weliweli, suggests an early initial occupation within the Pa'a Ahupua'a of circa A.D. 535 (Walker and Rosendahl, 1990:131). No coinciding early dates have been found within Kōloa Ahupua'a, probably due to vagaries of sampling since most of the shoreline area of Kōloa had been heavily impacted by commercial, residential, and resort development. Initial occupation probably was characterized by temporary and/or recurrent occupation. From A.D. 600-1400, settlements in the Kōloa area were still limited to the coast. By A.D. 1040, lava tubes were used for burial and temporary habitation in the inland areas of Kōloa (Hammatt et al. 1999:7)

In the early historic era (1795-1880), the Kōloa Field System continued in use for foreign trade and was probably further intensified. Sweet potatoes were a main crop for the whaling and merchant ships, and the purchase of pigs, salt, oranges and other items are noted in many ship journals. The documents of the Great Māhele show that by the mid-1800s there were still several traditional farmers within Kōloa who both lived and worked within the area. The individual claims – for both *lo'i* (wetland) and *kula* (dryland) suggest that while traditional farming of taro for subsistence was still taking place, in *kula* lands – sugar cane production for sale to the nearby sugar mill, had begun to dominate the landscape. Of the LCAs within Kōloa, several claim a *kula* planted with cane or a cane field or sugar cane garden. Several also identify cane lands as boundaries for the LCAs. Clearly, *kula* lands in the project area were being converted into sugar lands at an increasing rate. Within three years of sugar cultivation by Ladd and Company in 1835, residents in and surrounding Kōloa were quickly moving to adapt to the new economy based on the production of sugar cane. Eventually, most of inland Kōloa was planted with sugar cane and only the most rocky areas, unsuitable for cultivation, survived the dramatic changes in the landscape brought about during the early 20th century.

In the present project area, the ancient, heavily modified landscape known as the Kōloa Field System appears to be largely absent. Because habitation complexes, ceremonial sites, and irrigation systems have been identified during archaeological surveys of adjacent properties (Hammatt *et al.* 1978; 2004; Yorck *et al.* 2005), the absence of these features within the present project area is likely due to the construction of Po'ipū Road and the disturbance associated with the recent installation of a water line by the County of Kaua'i Department of Water.

Section 4 Results of Fieldwork

4.1 Survey Findings

The most notable characteristic of the project area was the heavy amount of disturbance that has previously taken place (Figure 9). This disturbance is likely due to at least two separate events. The first is the recent installation of a water line by the County of Kaua'i Department of Water. The second is other miscellaneous disturbance activities that appear to have taken place prior to the installation of the water line. This was determined based upon the amount of regrowth in the vegetation. The disturbance has been in the form of surface rock removal, grading, and subsurface trenching. In most places the disturbance extends well beyond the 65-foot *mauka* right of way of Po'ipū Road (Figure 10), and in some locations is as far as 150 feet from the edge of the road.

No historic properties were identified within the current project area as a result of the archaeological inventory survey investigation. However, it is possible that remnant historic properties still exist *mauka* of the current project area / APE.

Additional photos of the project area are included as Figure 11, Figure 12, and Figure 13.

4.2 Test Excavations Findings

No subsurface testing was undertaken as part of the archaeological inventory survey investigation.

4.3 Site Descriptions

No site descriptions were necessary for this archaeological inventory survey investigation.



Figure 9. Photograph showing the extensive disturbance within the current project area, view to the northwest. The disturbance shown here was the result of the installation of the water line



Figure 10. Photograph looking northwest showing how far the disturbance extends *mauka* from Po'ipū Road. Po'ipū Road is on the left and the CSH crewmember marks the edge of the 65-foot *mauka* right-of-way. The disturbance shown here was the result of the installation of the water line

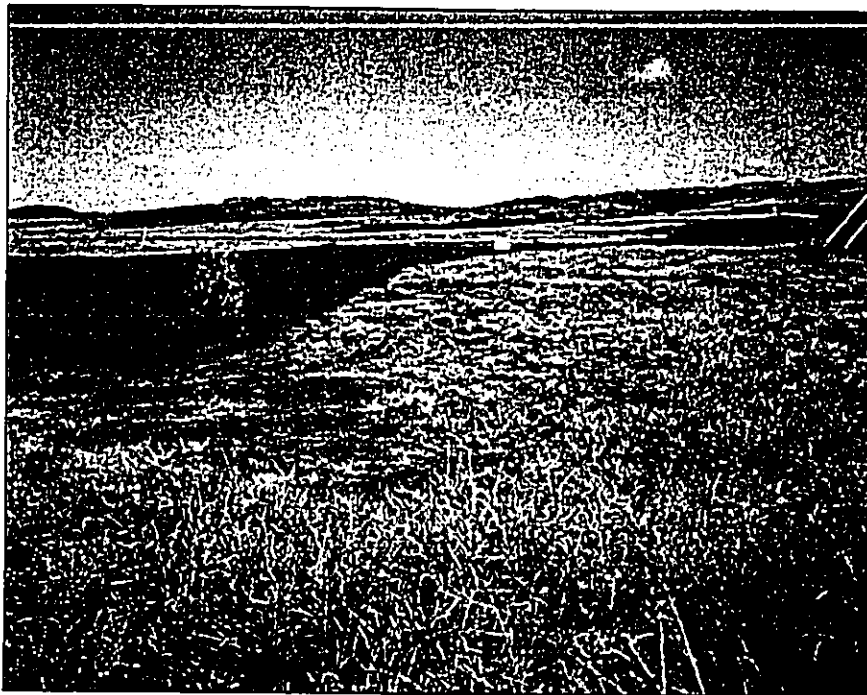


Figure 11. Photograph looking west showing where the sewer line will originate from the Kukui'ula development at the western-most end of the current project area



Figure 12. Photograph looking southeast from a point approximately 75 meters from where the proposed sewer line crosses to the *mauka* side of Po'ipū Road. The disturbance seen here was caused by the installation of the water line

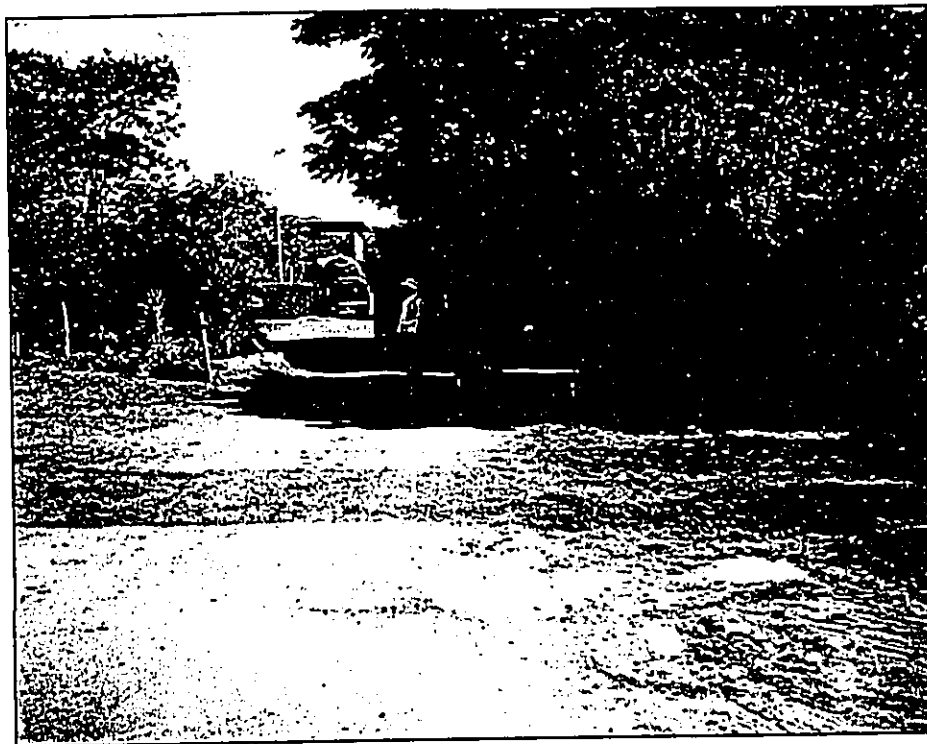


Figure 13. Photograph looking northeast showing the Po'ipū Water Reclamation Facility entranceway at the eastern-most end of the current project area

Section 5 Results of Laboratory Analysis

No laboratory analysis was necessary as part of the archaeological inventory survey investigation.

Section 6 Summary and Interpretation

Cultural Surveys Hawai'i has completed an archaeological inventory survey investigation and prepared this archaeological assessment at the request of Kukui'ula Development Company (Hawai'i), LLC, for the installation of 686 linear meters (2,250 linear feet) of a 24-inch gravity sewer line within the Po'ipū Road right-of-way in Kōloa, Kaua'i.

Traditional, historical, and archaeological background research showed that people have extensively used Kōloa Ahupua'a since the arrival of Native Hawaiians centuries ago. Taro pond field systems were constructed and fed with water from Waikomo Stream. With the arrival of Europeans, agriculture shifted to sugar cane and its associated infrastructure such as railroads and mills.

The abandonment of each phase of land use left archaeological remains scattered across the landscape. Archaeologists have systematically studied these remnants as the tourist industry has developed and residential neighborhoods have been constructed.

A pedestrian survey of the current project area did not identify any historic properties within the project area. However, it is possible that there are remnant historic properties in the adjacent Kiahuna property, which is *mauka* of the current project area.

Section 7 Significance Assessments

7.1 Significance Assessments

No historic properties were identified within the project area during the archaeological inventory survey investigation.

Section 8 Project Effect and Mitigation Recommendations

8.1 Project Effect

CSH's project specific effect recommendation is "no historic properties affected" within the project area.

8.2 Mitigation Recommendations

Based upon potential remnant historic properties located adjacent to and *mauka* of the current project area, the potential for subsurface cultural deposits and lava tubes, and in accordance with the recommendations made by the State Historic Preservation Division in a letter sent September 22, 2006 (LOG NO: 2006.2790; DOC NO: 0609NM01), CSH recommends that an on-site monitoring program be developed in accordance with HAR 13-279 and be implemented for all construction activities. This monitoring program will specify that no construction activities take place outside of the Po'ipū Road right-of-way. The specific measures for handling any historic properties identified during construction activities will be detailed in the monitoring plan.

8.3 Disposition of Materials

No materials were discovered that necessitate disposition.

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Appendix A SHPD Correspondence

LINDA LINGLE
GOVERNOR OF HAWAII

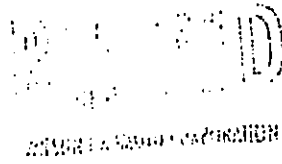


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September 22, 2006

Frances Yamada, Senior Planner
Wilson Okamoto
1907 S. Beretania Street, Suite 400
Honolulu, Hawaii 96826



LOG NO: 2006.2790
DOC NO: 0609N.M01
Archaeology

Dear Ms. Yamada:

SUBJECT: Chapter 6E-42 Historic Preservation Review – Preliminary Comments on Draft EA for Poipu Road 24-inch Sanitary Sewer Line Koloa, Koloa, Kauai
TMK: (4) 2-6-015: por. 1; 2-6-004: por. 3; 2-8-014: por. 27

The aforementioned project proposes to install a 24-inch sanitary sewer line in Poipu. The County waterline project along Poipu Road is currently being monitored by an archaeologist during subsurface work. Due to several known archaeological sites in the area we have the following comments for your Draft EA:

1.) Archaeological monitoring shall take place during all subsurface construction work due to the high probability of finding human burials and historic properties. An archaeological monitoring plan shall be submitted in accordance with HAR 13-279 for review and approval by our office. A burial treatment plan shall be prepared and approved for burial discoveries encountered during the project. In addition, consultation with the appropriate ethnic groups, the procedures outlined in Chapter 6E-43 shall be followed. It is necessary for the treatment plan to be prepared after consultation with native Hawaiians, such as the Kauai Island Burial Council and the Office of Hawaiian Affairs.

If you have any questions please call Nancy McMahon at (808) 742-7033.

Aloha,

Melanie Chinen, Administrator
State Historic Preservation Division

NM:rtp

Appendix C

**Cultural Impact Assessment for the
Kukui`ula – Poipu Road 24-Inch Sewer
Line**

**Prepared by Cultural Surveys Hawaii
October 2006**

**Cultural Impact Assessment for the
Kukui'ula – Po'ipū Road 24-inch Sewer Line,
Kōloa Ahupua'a, Kōloa District, Island of Kaua'i
TMK: [4] 2-6-004: por 3, 2-6-015: por. 1,
and 2-8-014: por. 27,
and portions of Po'ipū Road and Lāwa'i Road**

**Prepared for
Kukui'ula Development Company (Hawaii), LLC**

**Prepared by
Hallett H. Hammatt, Ph.D.
and
David W. Shideler, M.A.,**

**Cultural Surveys Hawai'i, Inc.
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(Job Code: KOLOA 8)**

October 9 2006

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Management Summary

Reference	Cultural Impact Assessment for the Kukui'ula – Po'ipū Road 24-inch Sewer Line, Kōloa Ahupua'a, Kōloa District, Island of Kaua'i
Date	October 2006
Project Number (s)	Cultural Surveys Hawai'i (CSH) Job Code: KOLOA 8
Agencies	State of Hawai'i Department of Health / Office of Environmental Quality Control (DOH / OEQC)
Project Location	The project location is an approximately 686 m (2250 feet) long corridor located along Po'ipū Road running southeast from its intersection with Lāwa'i Road to the Po'ipū Water Reclamation Facility, a private wastewater treatment plant. The project site is identified as Tax Map Keys: (4) 2-6-015: por. 1, 2-6-004: por. 3, and 2-8-014: por. 27, and portions of Po'ipū Road and Lāwa'i Road.
Land Jurisdiction	The proposed project is located within property currently owned by the County of Kaua'i, State of Hawai'i, Kukui'ula Development Company (Hawai'i), LLC, and Eric A. Knudsen Trust, et al.
Project Description	The proposed 24-inch gravity sewer line will extend approximately 686 linear meters (2,250 linear feet) from a proposed 24-inch sewer line to be installed within the proposed roundabout at the intersection of Po'ipū Road, Lāwa'i Road and the planned Ala Kalanikaumaka Road (Western Bypass Road) to the southern boundary of the existing Po'ipū Water Reclamation Facility. The proposed 24-inch sewer line will be installed using the open cut trench method. The maximum depth of excavation for the installation of the sewer line is proposed to be 15 feet. The trench will have an average width of 6 feet. In the vicinity of the Waikomo Stream crossing, the depth of the proposed 24-inch sewer line will be approximately 8.6 feet from the proposed finish grade. The depth of the proposed finish grade from the top of the culverts at Waikomo Stream will be approximately 10.1 feet. No construction activities in conjunction with the project will occur within Waikomo Stream.
Project Acreage	The proposed sewer will extend for approximately 2250-feet. The project area extends for 17 feet on either side of the sewer line, equaling a total project area of 1.8-acres.

<p>Area of Potential Effect (APE) and Survey Acreage</p>	<p>For the purposes of this assessment, the project's APE is defined as the approximately 1.8 -acre project plus areas upstream and downstream of Po'ipū Road, which could be affected by the proposed sewer line (mostly on the <i>makai</i> side of the Waikomo Stream crossing where shallow reef and estuarine cultural activities could be affected, and to some extent on the <i>mauka</i> side of Waikomo Stream). The APE should be evaluated by the project proponents based on the project's potential for direct and indirect effect to cultural resources and practices outside the proposed 1.8-acre sewer line project. While this investigation focused on the project APE, the study area included the entire <i>ahupua'a</i> of Kōloa.</p>
<p>Document Purpose</p>	<p>The project requires compliance with the State of Hawai'i environmental review process (Hawai'i Revised Statutes (HRS) Chapter 343), which requires consideration of a proposed project's effect on traditional cultural practices. At the request of Kukui'ula Development Company (Hawaii), LLC, CSH undertook this cultural impact assessment. Through document research and cultural consultation efforts this document provides information pertinent to the assessment of the proposed project's impacts to cultural practices [per the OEQC's <i>Guidelines for Assessing Cultural Impacts</i>]. The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS Chapter 6E-42 and Hawai'i Administrative Rules Chapter 13-284.</p>
<p>Consultation Effort</p>	<p>Hawaiian organizations, agencies and community members were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the project area and the vicinity. The organizations consulted included the State Historic Preservation Division (SHPD), the Office of Hawaiian Affairs (OHA), and the Kaua'i/Ni'ihau Islands Burial Council.</p>

<p>Cultural Impact Recommendations</p>	<p>Community contacts raised two primary concerns related to the proposed installation of the 24-inch sewer line within the project area:</p> <ul style="list-style-type: none"> • If the proposed sewer line breaks (as has happened in the past) cultural activities associated with Waikomo Stream and the adjacent coast such as collecting prawns, fishing and surfing will be affected. • Burials may be present in lava tubes and/or caves in and around the proposed project area. <p>Consultation with the client was held regarding the need to address community concerns for the possibility of sewage spills near Waikomo Stream. The client provided the following account of mitigation efforts:</p> <p>Potential impacts to Waikomo Stream and near shore coastal waters due to leakage or accidental breakage in the proposed sewer line will be mitigated by proper design, construction and operation of the facility. The use of PVC pipe for the majority of the proposed sewer line will provide for corrosion resistance and longevity, and is more durable and resistant to breakage. In addition, an approximately 101 linear-foot segment of the proposed sewer line in the vicinity of the Waikomo Stream crossing will be constructed of ductile iron with a ceramic epoxy lining and will be encased in a reinforced concrete jacket approximately 10 feet past either sided of the stream culverts. Standard procedures for detecting leaks and breaks and for shutting down and repairing the sewer line will further minimize impacts.</p> <p>The archaeological inventory survey report (O'Leary et al. October, 2006), completed concurrently with this cultural impact assessment, recommends a program of archaeological monitoring. Excavation within the project area may possibly encounter lava tubes and/or caves (presently unknown) that may contain Hawaiian cultural properties including human remains. It is recommended that in the event of the discovery of any lava tubes and/or caves during construction of the proposed sewer line, consultation be promptly carried out with the SHPD and the Kaua'i/Ni'ihau Islands Burial Council regarding appropriate treatment.</p> <p>With proper mitigation of these two expressed cultural concerns the proposed project will have minimal impacts upon native Hawaiian cultural resources, beliefs and practices.</p>
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Section 1 Introduction

1.1 Project Background

At the request of Kukui'ula Development Company (Hawai'i), LLC, Cultural Surveys Hawai'i (CSH) has completed this cultural impact assessment for the proposed installation of a 24-inch gravity sewer in Kōloa Ahupua'a, Kōloa District, Island of Kaua'i (Figure 1). The Project Site is identified as Tax Map Keys: (4) 2-6-04: por. 3, 2-6-15: por. 1, and 2-8-14: por. 27 (Figure 2), and portions of Po'ipū Road and Lāwa'i Road. The project area is also shown in an aerial photograph (Figure 3).

For this cultural impact assessment, the project area, survey area, and area of potential effect (APE) are one and the same. The proposed sewer line will extend for approximately 2250 feet. The project area extends for 17 feet on either side of the sewer line, equaling a total project area of 1.8-acres.

Kukui'ula Development Company proposes to install a private 24-inch gravity sanitary sewer line within a portion of Po'ipū Road in Kōloa, Island of Kaua'i to convey wastewater from the planned Kukui'ula development to the existing Po'ipū Water Reclamation Facility ("Reclamation Facility"), a private wastewater treatment plant ("WWTP") located approximately 0.4 mile to the east of the Kukui'ula development (Figure 4). Installation of the sewer line will occur within property owned by the County of Kaua'i, State of Hawai'i, Kukui'ula Development Company (Hawai'i), LLC, and Eric A. Knudsen Trust, et al.

The proposed 24-inch sewer line will extend approximately 686 linear meters (2,250 linear feet) from a proposed 24-inch sewer line to be installed within the proposed roundabout at the intersection of Po'ipū Road, Lāwa'i Road and the planned Ala Kalanikaumaka Road (Western Bypass Road) to the southern boundary of the existing Reclamation Facility. From the roundabout, the proposed sewer line will extend southeast within the *makai* portion of the Po'ipū Road right-of-way for a distance of approximately 750 linear feet. The proposed sewer line will then cross Po'ipū Road and continue southeast along the *mauka* portion of the Po'ipū Road right-of-way for a distance of approximately 1,500 linear feet to the southern boundary of the Reclamation Facility. The right-of-way extends 65-feet from the edge of the current roadway. From the southern boundary of the Reclamation Facility, the proposed sewer line will connect to a proposed wastewater pump station to be built by the owners of the Reclamation Facility.

The proposed 24-inch sewer line will be installed using the open cut trench method. The maximum depth of excavation for the installation of the sewer line is proposed to be 15 feet. The trench will have an average width of 6 feet. The open cut trenching will involve excavating a trench, installing adequate shoring to protect the sidewalls of the trench, laying the sewer line within the excavated area, and backfilling the trench. In addition to the normal trenching operations, a hoe ram will be used for trenching in areas where rock material is encountered.

In the vicinity of the Waikomo Stream crossing, the proposed sewer line will be installed over the existing drainage culverts within Po'ipū Road using the open cut trench method. The segment of the proposed sewer line in the vicinity of the Waikomo Stream crossing will be constructed of ductile iron and will be encased in a reinforced concrete jacket approximately 10

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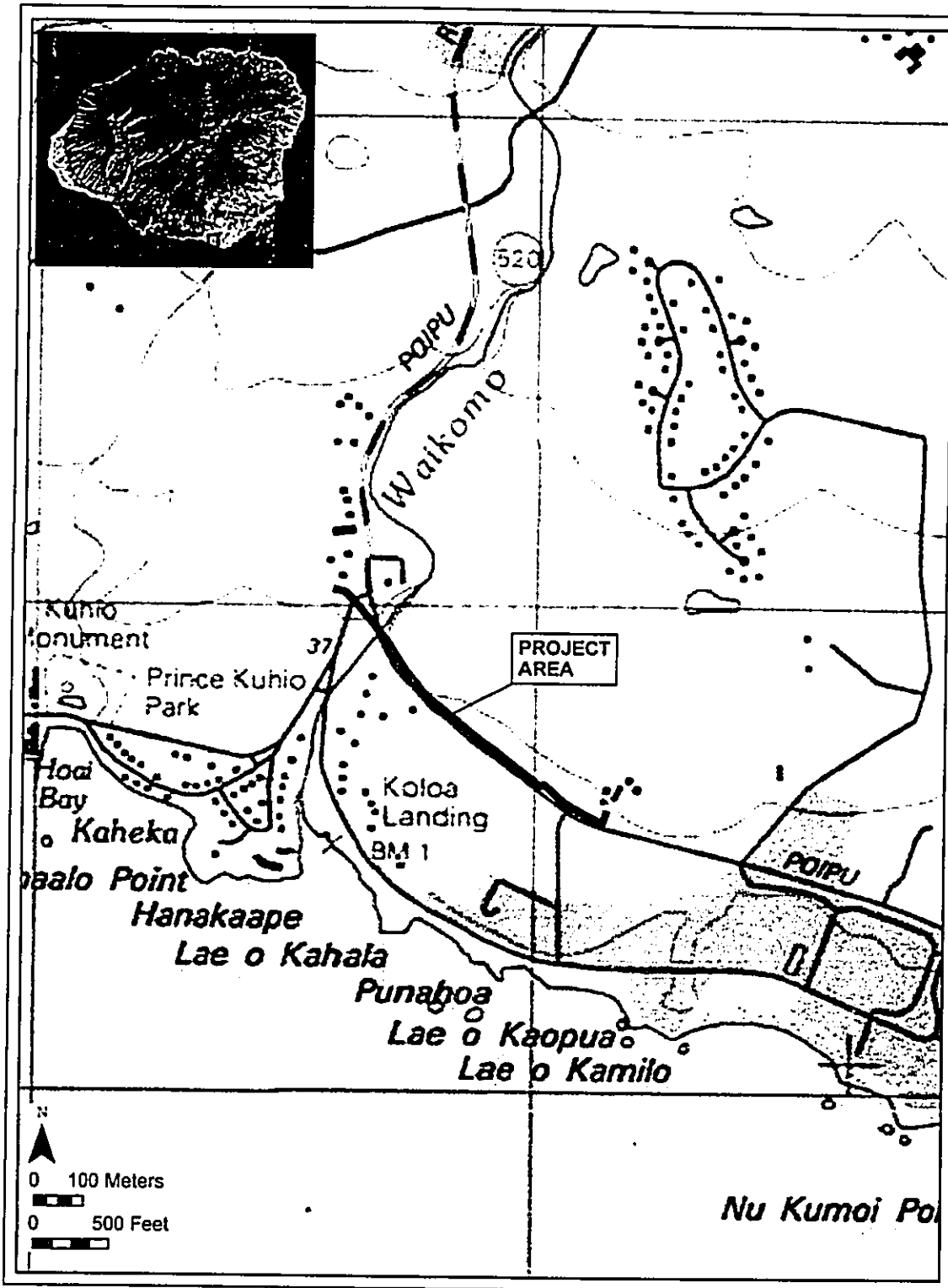


Figure 1. 1996 Koloa USGS 7.5-minute topographic quadrangle showing the location of the project area

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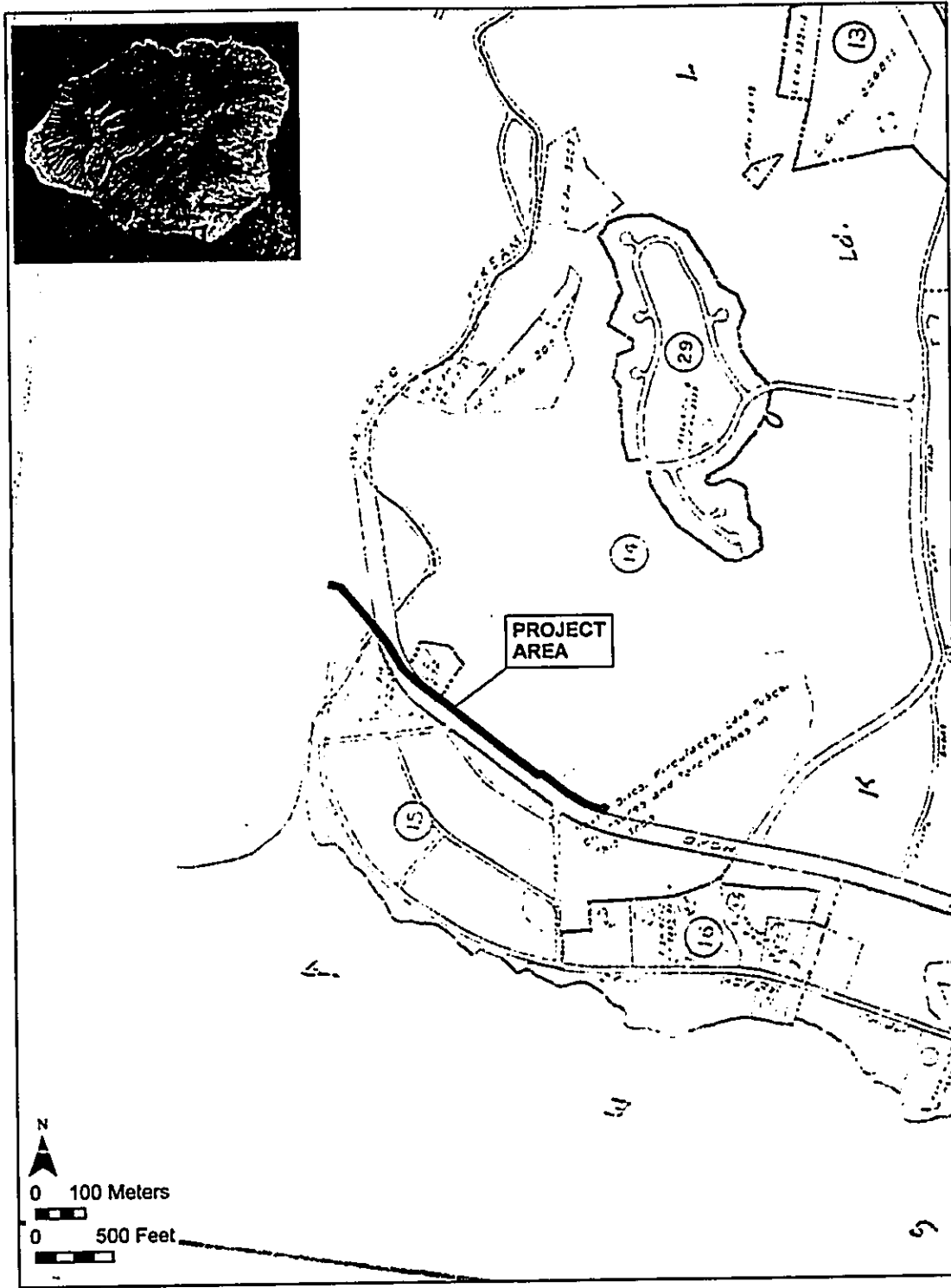


Figure 2. A portion of Tax Map Key 2-8 section map showing the location of the project area

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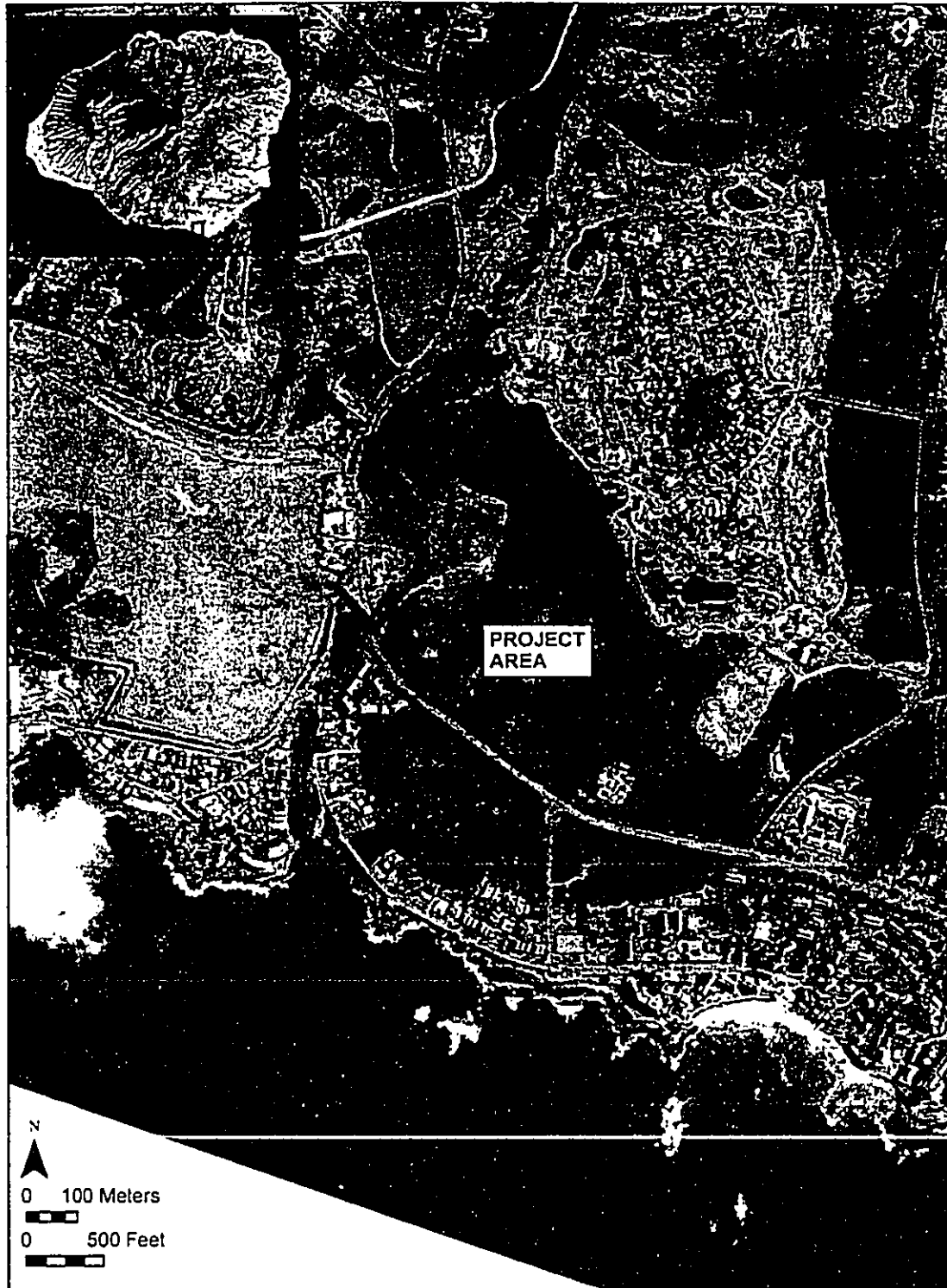


Figure 3. Aerial photograph showing the location of the project area

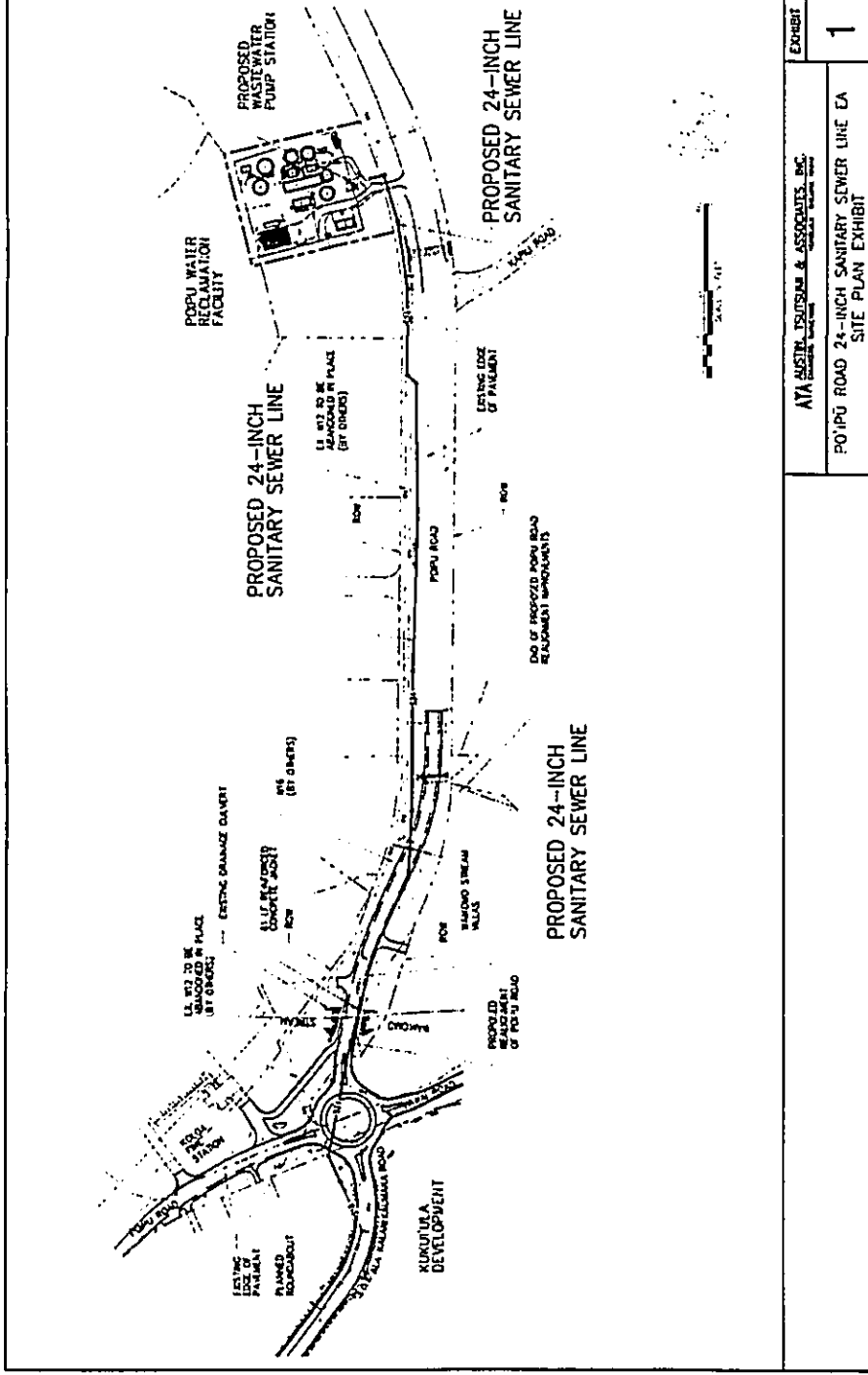


Figure 4. Design plans showing the location of the proposed 24-inch sewer line in red

feet past either side of the culverts. The depth of the proposed 24-inch sewer line at the Waikomo Stream crossing will be approximately 8.6 feet from the proposed finish grade. The depth of the proposed finish grade from the top of the culverts at Waikomo Stream will be approximately 10.1 feet. No construction activities in conjunction with the project will occur within Waikomo Stream.

A water line is currently being installed by the County of Kaua'i Department of Water within the *mauka* portion of the Po'ipū Road right-of-way in the immediate vicinity of the proposed sewer line. This, as well as other unknown activities, has resulted in a heavy amount of disturbance in the form of grading and subsurface excavation within the current project area. In some places, disturbance has occurred as far as 150-feet *mauka* of the edge of present day Po'ipū Road. This prior disturbance likely removed any historic properties that might have once been in the current project area.

Kukui'ula Development Company's proposal to install a new 24-inch sewer line within the Po'ipū Road right-of-way constitutes a project requiring compliance with the State of Hawai'i environmental review process (Hawai'i Revised Statutes (HRS) Chapter 343), which requires consideration of a proposed project's effect on traditional cultural practices. At the request of Kukui'ula Development Company (Hawaii), LLC, CSH undertook this cultural impact assessment. Through document research and cultural consultation efforts this document provides information pertinent to the assessment of the proposed project's impacts to cultural practices [per the OEQC's *Guidelines for Assessing Cultural Impacts*]. This cultural impact assessment was prepared to support the project's environmental review and may also serve to support the project's historic preservation review under HRS Chapter 6E-42 and Hawai'i Administrative Rules Chapter 13-284.

No historic properties were identified within the project area during the archaeological inventory survey investigation.

1.2 Scope of Work

The scope for the cultural impact assessment includes:

1. Examination of historical documents, Land Commission Awards, and historic maps with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal and other resources or agricultural pursuits as may be indicated in the historic record.
2. A review of the existing archaeological information pertaining to the sites on the property as they may allow us to reconstruct traditional land use activities and identify and describe the cultural resources, practices and beliefs associated with the parcel and identify present uses, if appropriate.
3. Interviews with persons knowledgeable about the historic and traditional practices in the project area and region.

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.

1.3 Environmental Setting

1.3.1 Natural Environment

Kōloa is a fairly large *ahupua'a* (9,500 acres), bounded on the east by Weliweli Ahupua'a, and on the west by Lāwa'i Ahupua'a. The perennial Waikomo Stream traverses most of Kōloa Ahupua'a. The project area is approximately 440 m from the coast where it crosses Waikomo Stream.

The elevation within the project area is approximately 40 ft. above mean sea level (AMSL). The landform in this region of Kaua'i is dominated by the broad, gently sloping *pahoehoe* lava flows of the post-erosional Kōloa Volcanic Series, laid down in the late Pleistocene era.

The portion of Kōloa where the present project area is located is classified as Waikomo stony silty clay (Ws) and Waikomo very rocky silty clay (Wt). Waikomo stony silty clay is on low uplands where the slope ranges from 2 to 6 percent. Waikomo very rocky silty clay is similar to Waikomo stony silty clay, except that rock outcrops cover 3 to 25 percent of the surface (Foote et al. 1972).

The project area receives less than 40 inches (1000 millimeters) of rainfall per year, falling mostly in the winter months (November through March) (Giambelluca et al. 1986:86). Temperatures range from highs around 90°F to maximum lows of about 50°F, with the greatest variations occurring between day and night rather than winter and summer.

The Po'ipū Road right-of-way has already been extensively disturbed for the original construction of the road. As a result, *koa haole* (*Leucaena leucocephala*), cactus (*Cereus uruguayensis*), and invasive grasses are now the dominant vegetation on both sides of the road.

1.3.2 Built Environment

At present, Po'ipū Road is a two-lane asphalt road with a broad shoulder. There are streetlights, but no curbs or sidewalks. There are no buildings along the road where the project is being proposed.

Section 2 Methods

Historical documents, maps and existing archaeological information pertaining to the sites in the vicinity of this project were researched at the State Historic Preservation Division library, and the Cultural Surveys Hawai'i library. Information on Land Commission Awards was accessed through Waihona Aina Corporation's Māhele Data Base (<www.waihona.com>). The State Historic Preservation Division, Office of Hawaiian Affairs, Kaua'i/Ni'ihau Islands Burial Council, and members of other community organizations were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the study area and the surrounding vicinity. The names for potential community contacts were also provided by colleagues at CSH and from the researcher's familiarity with people who live in or around the study area. Some of the prospective community contacts were not available to be interviewed as part of this project. A discussion of the consultation process can be found in the section on "Community Consultations". Please refer to Table 2 for a complete list of individuals and organizations contacted.

Section 3 Background Research

This section details traditional, historical, and archaeological background information for the section of Kōloa Ahupua'a that surrounds the current project area.

3.1 Traditional and Historical Background

3.1.1 Mythological and Traditional Accounts

The project area is in the *ahupua'a* of Kōloa in the Kona District on the island of Kaua'i. Few records exist that document traditional Hawaiian life in the *ahupua'a* of Kōloa. While settlement by westerners with religious and commercial interests made the area a focus of documentation after the first quarter of the 19th century, the accounts generally emphasized the lives and concerns of the westerners themselves, with only anecdotal references to the Hawaiian population. However, two 19th century documents, the Boundary Commission Testimony of 1874 and a Lahainaluna manuscript of 1885, were able to provide an insight into the history of Kōloa before the arrival of westerners.

A dispute over the northern boundary of Kōloa Ahupua'a in 1874 led to a hearing before Duncan McBryde, the Commissioner of Boundaries for Kaua'i. One native witness, Nao (who described himself as born in Kōloa but presently living in Ha'ikū), in order to show that Hoaea (the area in dispute) was indeed at the northern boundary of Kōloa, testified: "At Hoaea tea [*sic*] leaves were hung up to show that there were battles going on" (Boundary Commission, Kaua'i, vol. 1, 1874:124). That there were traditional "warning systems"; well-known to all natives: suggests that Kōloa may well have been the scene of some serious conflicts. Throughout the early settlement history of Kōloa, conflicts must have occurred at intervals serious enough and often enough to warrant having to devise such a system.

Additional evidence of a rich history within Kōloa was offered in a Lahainaluna document produced eleven years later. This document appears to have been based on an oral history project. On September 7, 1885 a student from Lahainaluna Schools (HMS 43 #17) interviewed Makea – "a native who is well acquainted with Kōloa" -- and recorded "what she said about the well-known places in the olden times." More than sixty-four years after the abolition of the *kapu* (taboo) system and almost as many years after contact with westerners, Makea was able to describe fourteen *heiau* (religious structures) within the Kōloa area. For example, she described the *heiau* of Maulili:

Maulili was the first *heiau* of south Kōloa. Kapulauki was the first chief of Kōloa, Kiha came next. That is the chief I know of. He was a ruling chief of Kaua'i in the olden days, when the *heiau* was standing there. It had already been built and men had been sacrificed on its altars. This Kiha was called Kiha-of-the-luxuriant-hair. Another name for him was Kakae and another was Ka-pueo-maka-walu [Right-eyed-owl].

This *heiau* was also famous for this reason -- it was the first *heiau* to which Kawelo was carried after he had swooned in Wahiawa, in the battle where stones were used as missiles.

The location of this *heiau* was not known, but a deaf mute knew and it was he who pointed it out to the chiefs, and that is how it was rediscovered in the olden days.

Kiha lived on the eastern side of the *heiau* and Aikanaka lived on the northeastern side. This chief, Aikanaka, was the one with whom Kawelo fought and he was the owner of this *heiau* at that time.

There are several place names within Kōloa that have legendary associations. The name Kōloa itself has several derivations. Kōloa is the name for the large, soft sugar cane (*Saccharum officinarum*) once grown by the Hawaiians; Kōloa is also the name of a steep rock on the banks of Waikomo Stream, from whence some say the *ahupua'a* got its name. This bank of the river was called Kōloa, after the native Hawaiian duck (*Kōloa, Anas wyvilliana*) (Kikuchi 1963:46; Pukui et al. 1974:116).

Maulili (meaning 'constant jealousy') is a deep pool in Waikomo Stream inland of the present project area. When the gods Kāne and Kanaloa first came to Kaua'i, legends say they explored the island and came to the pool at Maulili at evening. They stretched out beside the pool for their night's sleep on its eastern bank and left the impression of their forms within the rock: as can be seen in the *apapa* (a flat area). The Maulili *heiau* was first built by Ka-pueo-maka-walu, the son of Kapu-lau-kī. It was a place of human sacrifice (Wichman 1998:12). This *heiau* may be the Maulili *Heiau* described by Makea in the Lahainaluna document mentioned above. "The *apapa* in this vicinity is called an 'Unu.' and a 'Heiau,' but was never walled in, it is said. On the nights of Kāne, the drums are heard to beat there, also at the sacred rocks, or *unu's*, of Opuokahaku and Kanemilohae, near the beach of Po'ipū" (Farley 1907).

There are additional legends associated with the Maulili area.

In the Maulili pool lived a large *mo'o* [water spirit], named 'Kihawahine'...The eastern wall of the pool, just below the resting places of Kāne and Kanaloa, for a short distance, only, is called the 'Pali of Kōloa.' The District of Kōloa is named for this Pali, we are told by old Hawaiians. To the south of the Pali o Kōloa, in the wall is a rock named 'Waihānau' ([meaning] birth water)...as one of their *meles* has it:

Aloha wale ka Pali o Kōloa,

Ke Ala huli i Waihānau e, hānau.

To the south of Waihānau is a projecting rock named 'Ke elelo o ka Hawai'i' -- the tongue of Hawai'i, said to have been wrested and brought from Hawai'i by the Kaua'i warrior Kawelo, of Wailua. At the southern end of the Maulili pool started two large '*auwai's* [irrigation ditches], that watered the land east and west of Kōloa (Farley 1907:93).

Thus, this sacred legend-imbued locus was the source that gave life to the lowland taro patches of Kōloa. These special associations would not have been lost on the Hawaiians dependent upon those waters. While taro would have been essential to the life of the *ahupua'a*, other agricultural niches were nurtured in order that harvests could be increased. Bernice Judd, writing in 1935, summarized most of what was known of the traditional Hawaiian life of Kōloa:

In the old days two large *'auwai* or ditches left the southern end of the Maulili pool to supply the taro patches to the east and west. On the *kuaunas* [embankments] the natives grew bananas and sugar cane for convenience in irrigating. Along the coast they had fish ponds and salt pans, ruins of which are still to be seen. Their dry land farming was done on the *kula*, where they raised sweet potatoes, of which both the tubers and the leaves were good to eat. The Hawaiians planted *pia* (arrowroot) as well as *wauke* (mulberry) in patches in the hills wherever they would grow naturally with but little cultivation. In the uplands they also gathered the leaves of the *hala* (screwpine) for mats and the nuts of the *kukui* (candlenut) for light (Judd 1935:53).

Beginning possibly as early as 1450, the 'Kōloa Field System' was planned and built on the shallow lava soils to the east and west of Waikomo Stream. The Kōloa Field System is characterized as a network of fields of both irrigated and dryland crops, built mainly upon one stream system. Waikomo Stream was adapted into an inverted tree model with smaller branches leading off larger branches. The associated dispersed housing and field shelters were located among the fields, particularly at junctions of the irrigation ditches (*'auwai*). In this way, the whole of the field system was contained within the entire *makai* (seaward) portion of the *ahupua'a* of Kōloa stretching east and west to the *ahupua'a* boundaries.

The field system, with associated clusters of permanent extended family habitations, was in place by the middle of the 16th century and was certainly expanded and intensified continuously from that time. Long *'auwai* were constructed along the tops of topographic high points formed by northeast to southwest oriented Kōloa lava flows. These *'auwai* extended all the way to the sea. Habitation sites, including small house platforms, enclosures and L-shaped shelters were built in rocky bluff areas which occupied high points in the landscape and were therefore close to *'auwai*, which typically ran along the side of these bluffs (Hammatt et al. 2004). From A.D. 1650-1795, the Hawaiian Islands were typified by the development of large communal residences, religious structures and an intensification of agriculture. Large *heiau* in Kōloa may date to this period.

The manufacture of salt was important for the Natives Hawaiians. Many of the larger salt pans on Kaua'i are located near Nōmilu, "where people came in the summer to gather salt when the winds blow the salt across the surface of the pond at the edge of the pond where it was carefully scooped out with the hands or with pieces of gourd shell and dried" (Wichman 1998:35). The importance of salt manufacture in the area was illustrated in the 1874 Boundary Commission determination for Kōloa, where the oral testimony of Pene Kalauau claimed he came all the way "from Koolau to go to Koloa for salt" (Boundary Commission, 1874, Kauai, Vol. No. 1:124).

The coastal portion *makai* (seaward) of the project area consisted of several curved sandy beaches between rocky promontories. Two of these rocky points, or *lae*, on each side of the present location of the Sheraton Kaua'i Resort, were named *Lae o Ka'ōpua* and *Lae o Kamilo*. No ethnographic sources for the meanings of these names could be found for these areas in Kaua'i. However, there is a point on the island of Hawai'i called "Lae o Kamilo", which is interpreted as "the twisting of ocean currents", or a place where driftwood would pile up on the shore (Pukui et al. 1989:127).

The god Kāne was also associated with this area. On the nights of Kāne, drums are heard at the 'unu, or sacred rocks, at Maulili pool, and also at 'unu's, of Opuokahaku and Kānemilohaie, near the beach of Po'ipū (Farley 1907). In 1961, William Kikuchi conducted a survey of Kaua'i. He identified one site along the coast (Site 89) as *Kāne-milo-hai*, which consisted of several walls on a pahoehoe ridge, and two brackish water ponds on both sides of the ridge with walls within them (Kikuchi 1963:66). This site appears to be east of the current project area.

There are other accounts of the beating of drums along the Kōloa coast. A shrine on the beach was dedicated to Kūhaimona, the shark god. On the night of Kāne each month, a drum was beaten to proclaim a *kapu*. No one was allowed on the beach that night, since Kūhaimoana and the other shark gods came up to the beach and took spiritual possessions of their keepers. Anyone breaking the *kapu* would become food for the shark gods (Wichman 1998:43).

In 1963, Mr. and Mrs. Moir reported that they were sitting on the *lānai* of their house (now part of Moir's Cactus Garden) in the early evening and heard what sounded to be drums coming from the direction of a former *heiau* on the beach. This *heiau* was said to be a fertility *heiau* where women went.

3.1.2 Early Historic Period

Accounts by visitors and settlers at Kōloa Ahupua'a focused on the early westerners' own concerns--religious and commercial--as these concerns appeared within the historical record of Kōloa in the 1800's. However, scattered throughout the accounts are occasional references to the Hawaiians of the *ahupua'a* that may give some insights into their lives.

The American Board of Commissioners for Foreign Missions (ABCFM) missionary Samuel Whitney described, in an article in the *Missionary Herald* (June 1827:12), a visit to Kōloa with Kaikio'ewa, the governor of Kaua'i, in 1826:

The people of this place were collected in front of the house where the old chief lodged in order to hear his instructions. After a ceremony of shaking hands with men, women, and children they retired...

Our company consisted of more than a hundred persons of all ranks. The wife of the chief, with her train of female attendants, went before. The governor, seated on a large white mule with a Spaniard to lead him, and myself by his side, followed next. A large company of *aipupu*, ['ā'īpu'upu'u] cooks, attendants came on in the rear.

Whitney's account suggests something of the deference paid to the *ali'i* (chiefs) by the local populations and the scale at which the *ali'i* carried out their functions. An even grander view of that deference was provided in an account of a later visit by an *ali'i* to Kōloa. John Townsend, a naturalist staying in Kōloa in 1834, described a visit by Kamehameha III (In Palama and Stauder 1973:18):

In the afternoon, the natives from all parts of the island began to flock to the king's temporary residence. The petty chiefs, and head men of the villages, were mounted upon all sorts of horses from the high-headed and high-mettled California steed, to the shaggy and diminutive poney [sic] raised on their natives hills; men, women, and children were running on foot, laden with pigs, calabashes

of *Poe* [sic], and every production of the soil; and though last certainly not least, in the evening there came the troops of the island, with fife and drum, and 'tinkling cymbal' to form a body guard for his majesty, the king. Little houses were put up all around the vicinity, and thatched in an incredibly short space of time, and when Mr. Nuttall, and myself visited the royal mansion, after nightfall, we found the whole neighborhood metamorphosed; a beautiful little village had sprung up as by magic, and the retired studio of the naturalists had been transformed into a royal banquet hall.

In 1835, Thomas Nuttall and John K. Townsend, two American naturalists, visited the Kōloa area. They noted "fields of taro, yam, and maize (possibly sugar cane), irrigation networks and sweet potato patches in the dryer areas." (Townsend 1839:206)

On December 31, 1834, Peter Gulick and his family arrived in Kōloa. Apparently the first foreigners to settle in the *ahupua'a*, they initiated the process of rapid change that would reshape the life of Kōloa in the nineteenth century. In 1835, a 30 by 60 foot grass house was erected as a meeting-house and school near the Maulili Pond. Mr. Gulick cultivated sugar cane and collected a cattle herd for the Protestant Mission. In 1837, a 45 by 90 ft. adobe church was built where Kōloa Church stands today, and the first mission doctor, Thomas Lafon, arrived to assist Mr. Gulick (Damon 1931:179, 187). The Kōloa mission station apparently flourished immediately. Navy Lieutenant Charles Wilkes, a member of the U.S. Exploring Expedition, during his visit to Kōloa in 1840, recorded:

The population in 1840, was one thousand three hundred and forty-eight. There is a church with one hundred and twenty-six members, but no schools. The teachers set apart for this service were employed by the chiefs, who frequently make use of them to keep their accounts, gather in their taxes &c. The population is here again increasing partly by immigration, whence it was difficult to ascertain its ratio (Wilkes 1845:64).

Other sources, however, give different population figures for Kōloa during the first half of the nineteenth century. In 1834, according to a report by missionaries on Kaua'i, the inhabitants of the *ahupua'a* numbered 2,166 (*Kauai answers...1833*, cited in Palama and Stauder 1973:16; also found in the newspaper, *Garden Island* July, 27, 1935). However, in this census, Kōloa referred to the whole area between Wahiawa and Kalapaki. An article in the *Pacific Commercial Advertiser* of December 21, 1867 estimated that the population in 1838 was about 3,000. By 1867, it had been reduced to a third of that number. James Jackson Jarves, who visited Kōloa and Kaua'i for nine months during the early 1840's, recorded:

Kōloa is now a flourishing village. A number of neat cottages, prettily situated amid shrubbery have sprung up, within two years past. The population of the place, also, has been constantly increasing, by emigration from other parts of the island. It numbers, now, about two thousand people, including many foreigners, among whom are stationed a missionary preacher, and physician, with their families (Jarves 1844:100).

The arrival of many foreigners was the cause of, and the native emigration to Kōloa was the result of, the many commercial activities that burgeoned beginning in the 1830's. In 1835, Ladd and Company leased from the king and local chiefs about one thousand acres at Kōloa for 50

years at \$300 a year and were "allowed the use of the waterfall and an adjoining mill site at Maulili pool, not far from the thousand acres, together with the right to build roads, the privilege of unrestricted buying and selling and freedom from local harbor dues" (Judd, 1935:57).

Ladd and Company was not the first venture to mill sugar cane in the area. There had been a Chinese-operated granite roller mill in operation at Māhā'ulepū, Kōloa, in 1830. Water buffalos had been imported as power for the grinding stones. To Ladd and Company goes the distinction of operating the first plantation-organized industry in Hawai'i (Damon, 1931:176, 198). Their original 12-acre sugar field was cultivated in 1835, the same year Ladd and Company was incorporated as a sugar enterprise (Gilmore 1936). The first mill was located at Maulili on the Waikomo Stream, employed wooden Koa rollers to crush the stalks, and whaling try-pots to boil the juice. This arrangement only produced 100 barrels of molasses. The next year a new dam was built just downstream, iron rollers and copper boiling pans were installed in a new mill, and 30 tons of sugar, and 170 barrels of molasses resulted (Donohugh 2001).

Labor was the plantation's most serious problem. Of this, Judd notes the following:

The company was permitted to hire natives to work on the plantation provided they paid Kauikeaouli, the king, and Kaikio'ewa, the governor of Kaua'i, a tax for each man employed and paid the men satisfactory wages. The workers were to be exempt from all taxation except the tax paid by their employers (Judd 1935:57).

Judd further described the revolutionary implication of this arrangement: "The significance of Ladd and Company's lease lay in the fact that it was the first public admission by the Hawaiian chiefs that their subjects had rights of personal property backed with a guaranty of protection to that property" (Judd 1935:58). Local chiefs, fearful of a usurpation of their power, resisted the company's first efforts to recruit workers, forcing the king's intervention.

Because land titles could not be purchased, the procurement of tools for the production of sugar was difficult. Labor troubles consisted of local taboos forbidding work on certain days. Crude evaporation methods resulted in sugars of inferior quality. Although the Chinese mill and Ladd's first mill had been established and abandoned at Kōloa prior to 1840, a third was built in 1841. Ladd and Company demonstrated that an investment in an organized plantation could produce impressive results. Thomas Thrum gives the production for 1838 as 5,039 pounds of sugar and 400 gallons of molasses. Managers with greater experience in the production of sugar were hired, and the quality of the product from Kaua'i was improved (Wadsworth 1936).

Kōloa Town and Kōloa Landing, at the mouth of the Waikomo Stream, became flourishing commercial centers because of these new agricultural initiatives. "An estimate in 1857 stated that 10,000 barrels of sweet potatoes were grown each year at Kōloa, and that the crop furnished nearly all the potatoes sent to California from Hawai'i. Sugar and molasses were also chief articles of export" (Judd 1935:326). Whalers used Kōloa Landing from 1830 to 1870, and took on provisions of squashes (pumpkins), salt beef, pigs, and cattle (Damon 1931:176). Hawaiians grew the pumpkins on the rocky land north of the landing. There were also numerous salt pans along the shore near the landing that were used to make the salt (Palama and Stauder 1973:20).

3.1.3 Mid-1800s and the Māhele

In the early Post-Contact period, the *ahupua'a* of Kōloa was controlled by the ruling chief of Kaua'i and was administered by lesser chiefs appointed by him. When Ka-umu-ali-i, last of the

ruling chiefs of the island, died in 1824, his lands (Kaua'i and Ni'ihau) were given to the lineal descendants of Kamehameha. Queen Ka'ahumanu redistributed the lands among chiefs of other islands who had been loyal to the bloodline of Kamehameha. By the mid-19th century, control of the *ahupua'a* of Kōloa was divided between Kamehameha III and Moses Kekūāiwa, a brother of Kamehameha IV (Alexander 1985). The *Māhele* records indicate that Kōloa Ahupua'a, which totaled 8,620 acres, was awarded (LCA 7714-B) to Moses Kekūāiwa, (the brother of Alexander Liholiho [Kamehameha IV]), Lot Kapuāiwa (Kamehameha V), and Victoria Kamāmalu.

One award, granted in the coastal portion of Kōloa in the 'ili of Wai'ohai (east of the current project area), illustrates a typical *kuleana* for the coastal area.

Kaumu 3607

Located in Koloa Hikina, consisting of two pieces: No. 1 is 'ili O Kapo'o: No. 2 is a *kauhale* [habitation structure(s)] in 'ili O Waiohai

No. 1 is bounded: *mauka* [toward the mountains] by 'ili O Kaohia; Puna [east] by 'ili O Makapala; *makai* [seaward] by 'ili O Puokahaku; Hanapēpē [west] by the Kahawai O Koloa.

No. 2 is bounded: *mauka* [toward the mountains] by the kula O Waiohai; Puna [east] by 'ili O Makapala; *makai* [seaward] by the sea beach; Hanapēpē [west] by the *kula* o Waiohai. F.T., v. 13;19, February 18, 1850; 5 acres, 1 road, 17 rods.

Eighty-eight other *kuleana* awards were given to individuals within Kōloa Ahupua'a. The majority of these Land Commission Awards were located in and around Kōloa Town itself. The current project area cuts through two LCAs that were granted to two individuals. Both awards are shown on the current county TMK map for [4] 2-8-015 (Figure 5), as well as an 1891 Government Survey (Hawaiian Kingdom Department of the Interior) map of surveyor M.D. Monsarrat (Figure 6). The 1891 map shows brick buildings at Kōloa Landing, taro *lo'i* located just inland at Hanakā'ape, and the boundaries of LCA 3606 (to Kamae) and LCA 10272 (to Makalulu).

The terms of LCA 3606 transferred a section of the *ili* of Pu'u-ohaku to the claimant "Kamae" using the traditional "metes and bounds" description in use at the time. Distance was measured in "chains". An amount of "*kula*" land, twelve taro patches, two potato patches, a house lot, and a cattle yard were claimed as appurtenant to LCA 3606. There was a reference within this LCA as to the planting of "sugar cane and yams" before 1848 (No. 3606, Kamae, Koloa, Kauai, January 12, 1848, *Native Register* 71v9/ *Foreign Testimony* 30-31v13/ *Native Testimony* 35v13, Royal Patent 7269).

The terms of LCA 10272 transferred a section of the 'ili of Ma'ulili to the claimant "Makalulu" using traditional boundary descriptions. An amount of "*kula*" land, a house lot, one taro patch, and four dry taro patches were claimed as appurtenant to LCA 10272 (No. 10272, Makalulu, Koloa, Kauai, January 7, 1848, *Native Register* 272v9/ *Foreign Testimony* 24v13/ *Native testimony* 27v13, Royal Patent 8367, Registration Map 1694 Monsarrat).

The cane growing activities of Ladd and Company had affected the lives of the inhabitants of the rest of the *ahupua'a* and changed traditional settlement patterns. Prior to the commercial cultivation of sugar, permanent and temporary habitation was interspersed throughout the

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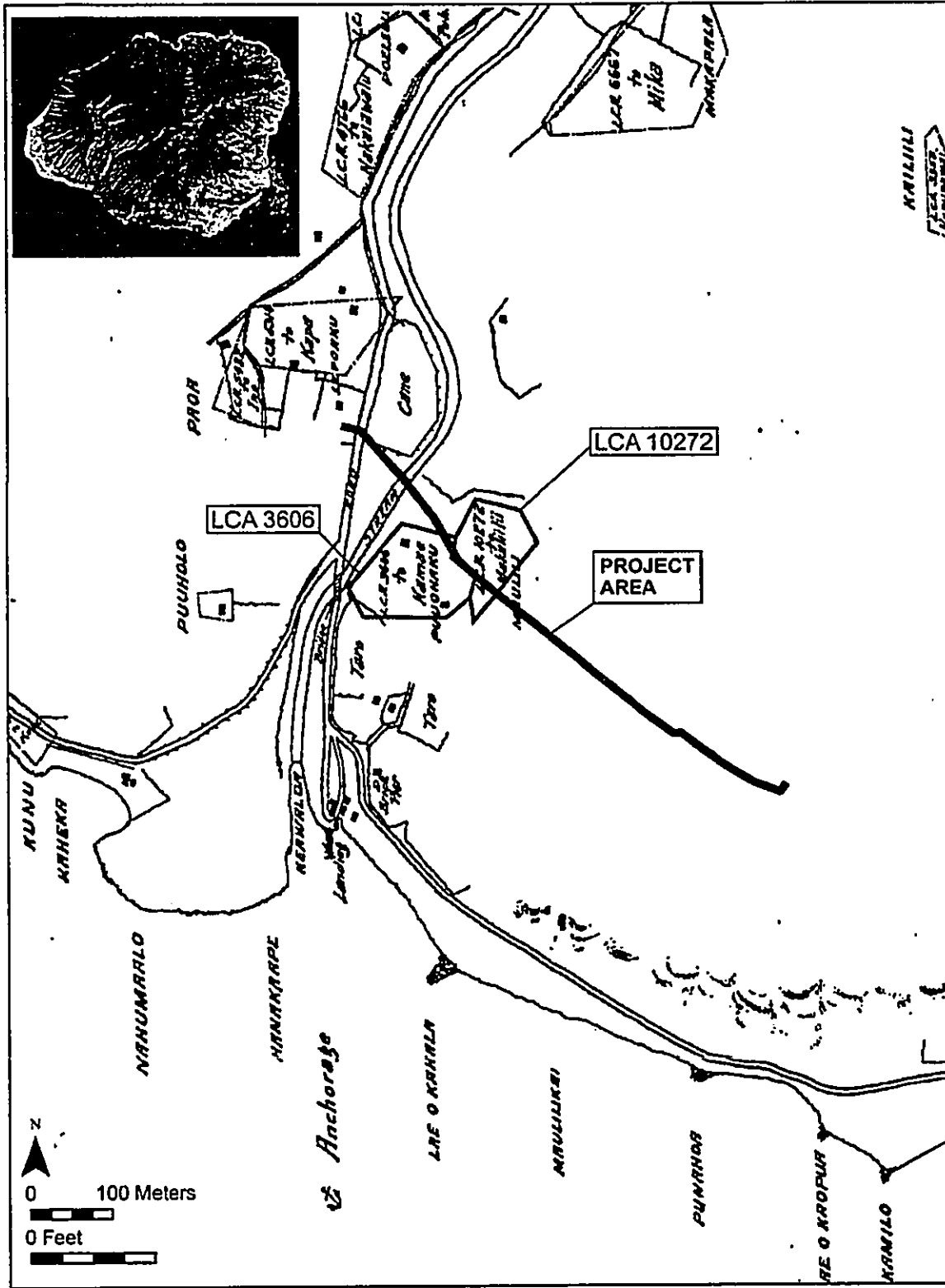


Figure 6. 1891 Government Survey map of Surveyor M.D. Monsarrat showing the location of LCAs 10272 and 3606 and the approximate location of the current project area

irrigated agricultural fields near the coastal zone and occurred adjacent to traditional farms established along streams. Settlement shifted to the town of Kōloa, where opportunities at the sugar cane mill existed. The corresponding shift toward the mechanization of agriculture was inevitable. The hand-cultivation of taro patches and the hand-preparation of *poi* fell to those who did not take jobs with the sugar enterprise

By the early 1800's, Kōloa Landing had become the principal port of Kaua'i. Shipments of North American furs and pelts to the Orient depended on the provisioning of ships at Kōloa Landing, as well as other Hawaiian ports. As the fur trade grew, markets in China became aware of sandalwood (*Santalum sp.*) grown in the Hawaiian Islands. The shipment of most of Kaua'i's sandalwood to the Orient took place at Kōloa Landing, until the supply of the fragrant wood was exhausted around 1830.

Although Ladd and Company ended sugar operations in 1845, its earlier success was an impetus for other entrepreneurial attempts within Kōloa. Silkworm farming, oil extraction from *kukui* nuts, cigar manufacturing, sago raising, and tapioca manufacturing were all attempted with varied success during the middle third of the nineteenth century. The Māhele of 1848, with its promise of surety of land titles, should have stimulated the production of sugar, however, a period of low prices, coupled with a drought in 1851, drove many of the smaller enterprises out of business. By 1854, The Koloa Sugar Company had acquired all of the sugar interests of Ladd and Company, and had erected a new, more modern sugar mill (Gilmore 1936).

The Koloa Plantation sugar crop of 1854 yielded 300 tons of sugar, which sold for \$150 per ton. 450 acres of land were under cultivation, and development of additional acreage continued gradually until the annexation of the Hawaiian Islands by the United States in 1898. The structure of government, which had recently changed from a Monarchy to that of a Republic in 1893, had become a more stable Territorial government. At the turn of the century, investment in sugar cane lands grew exponentially all across Hawaii. The development of cane lands harvested annually by the Koloa Sugar Company doubled to 950 acres by 1900, and doubled again to 2,040 acres by 1920. By 1935, over 4,000 acres of Koloa Sugar Company lands were in cultivation, which resulted in average annual harvests of over 2,600 acres (Gilmore 1936).

The Koloa Boarding School for Girls was established in 1861 by Mrs. Milicent Knapp Smith. The American Board of Commissioners for Foreign Missions sent James William Smith, M.D., and his wife to the Kōloa station in 1842. James Smith became the second permanent doctor at Kōloa station, and remained there until his death in 1887. Milicent Knapp Smith died in Kōloa in 1891. The Kōloa station had been established in 1834, and was able to maintain a strong influence in Kōloa throughout the years of turmoil associated with fur trading, sandalwood, and whaling (Donohugh 2001).

Another major area of commercial enterprise was associated with the whaling industry at Kōloa Landing, whose peak years ran from the 1830's to the 1860s. Accounts of visitors suggest that the inhabitants of Kōloa took advantage of their proximity to Kōloa Landing to participate in the booming trade of the port. An article in the *Pacific Commercial Advertiser* of Feb. 19, 1857 described the significant characteristics of the port at mid-century and mentions:

From the landing there is a good carriage road to the town, distant about two miles. Large quantities of firewood, bullocks and sweet potatoes are furnished to whalers in this port, and these chattels can nowhere be procured cheaper or better. It is estimated that 10,000 barrels of sweet potatoes are cultivated annually here,

which are thought to be the best on the islands. Nearly all the potatoes furnished for the California market are produced here...Sweet potatoes, sugar and molasses constitute the chief trade of the port.

In 1882, The Koloa Sugar Company announced it had ordered all the components for a plantation railroad. According to the *Planter's Monthly*, Vol. 1 of 1882, "It will consist of four miles of 30 inch gauge track, forty cars 5 x 10 feet, and one locomotive" (Conde 1993: 28). According to Arthur C. Alexander, in *Koloa Plantation 1835-1935*, "Cut cane was hauled to the mill by oxcart until 1882. In that year, 3½ miles of 30-inch gauge, 18 pound railroad track and 50 cars were purchased"(Conde 1993: 28).

The Koloa Sugar Company added additional permanent track to cultivate Māhā'ulepū Valley in 1887. By 1885, the rails extended to Kōloa Landing where the steamers transported the bags of sugar to the mainland. By 1895, the branch line of the railroad to Kōloa Landing was renovated by adding a short spur line along the eastern side of the landing so trains could back cars onto it for easy unloading of bagged sugar and loading of supplies (Donohugh 2001). A motorized derrick winched the bagged sugar from the railroad cars to the warehouse on the west side of the landing. From there, bagged sugar was loaded onto small lighters, which would row the sugar out to waiting ships in the harbor.

In 1910, the *San Francisco Chronicle* commented:

Cane is transported from the fields to the mill over a railroad system that consists of fifteen miles of permanent track, two miles of portable track, 250 cane cars and four locomotives. About two miles from the mill and connected with by rail is the steamer landing, with a warehouse that will hold 20,000 bags of sugar (cited in Conde and Best 1973:159).

3.1.4 1900's

The Koloa Sugar Company had previously purchased the *ahupua'a* of Pā'ā southeast of the town, and a large parcel of it was unproductive. A new and much larger mill was built there in 1913 about a mile from Kōloa. New railroad track was laid, and an asphalt road was built to connect the new mill with Kōloa Landing. World War I caused a huge demand for sugar. By the end of hostilities in 1918, the Koloa Sugar Company was producing 9,000 tons of sugar each year, and adding additional acreage.

Kōloa Landing was phased out around 1925 when McBryde Sugar Company and the Koloa Sugar Company began shipping their product out of Port Allen Harbor at Hanapēpē. The McBryde Plantation had been improving the facilities at Ele'ele Landing since the turn of the century, and a private company, the Kauai Terminal Limited Railway, had developed a modern bridge crossing the Hanapēpē River. Soon after this, the Koloa Sugar Company ceased to use the *makai* (seaward) Kōloa fields, and much of the area was converted into cattle-grazing pasture by the Knudsen family. Most of the *mauka* (upland) areas of Kōloa remained under sugar cane cultivation as late as the 1970s, when these cane lands were converted into pasture.

Steam powered plows, which had replaced animal teams in the fields in the 1890's, had been replaced by tractors by the 1920's. The plantation railroad, which continued to carry sugar and workers throughout World War II, was dismantled in 1947. In 1948, Grove Farm Company bought the Koloa Sugar Company. These two adjacent plantations were separated by a mountain range, so the construction of a half-mile-long vehicular tunnel through the mountain resulted in a

true operational merger of the two plantations. Although all railroading within the Kōloa Division of Grove Farm had been replaced by trucking, the Haiku Division was still operating about 1/3rd of their railway into 1954.

Adjacent to the east side of the Sheraton Kaua'i Resort is the Plantation Gardens Restaurant, which was built by Eric A. Knudsen in 1930. He gave the house as a wedding present to his daughter, Alexandra (Sandie) Knudsen and her husband, Hector Moir, who became the manager of the Kōloa Plantation in 1933. The cactus garden was begun by Sandie Moir as a hobby, but by 1948, had become a world-class cactus garden. In 1954, the gardens were opened to the public. In 1968, the house was leased as a restaurant, and it was eventually taken over by the Kiahuna Plantation Resort (Hoverson 1985:22).

3.1.5 Modern Land Use

Following the merger of the plantation lands of the Koloa Sugar Company and Grove Farm Company in 1948, the combined lands under cultivation required new sources of irrigation water. In 1965, Grove Farm built a tunnel to bring the waters from Ku'ia directly into the Waitā (Kōloa) Reservoir. Grove Farm leased these cane lands to McBryde Sugar Company when it terminated sugar operations in 1974 (Wilcox 1996).

By the late 1960's, the main town of Kōloa experienced a type of reverse migration back to the shoreline. Although the town had established a Civic Center in 1977, the pace of tourist-driven development at the shoreline had been drawing construction and service jobs away from the town center. In 1962, the Wai'ohai Resort opened, with the Sheraton Kaua'i Resort following in 1965. The Kīahuna Plantation Resort opened in 1967, followed by the construction of various condominiums throughout the 70's and 80's. Finally, the Hyatt Regency Resort, with its' expansive golf course, opened in 1991.

By this time, the tourist industry had successfully attached the name "Po'ipū Beach" to the entire coastline beginning at Kōloa Landing and continuing east to Makahū'ena Ledge. With the development of the Po'ipū Bay Resort Golf Course and the Hyatt Regency Kaua'i Resort Hotel, the Po'ipū Beach name became synonymous with all two miles of coastline fronting the Wai'ohai, Kiahuna, and Sheraton developments, ending at Po'ipū Beach Park (Donohugh 2001).

3.2 Previous Archaeological Research

3.2.1 Overview of Archaeological Studies at Kōloa

Thomas Thrum was the first to discuss sites in the Kōloa area in his list of the *heiau* of Kaua'i (Thrum 1907). He discussed six *heiau* in the district of Kōloa, which once extended from Hanapēpē to Māhā'ulepū. The *heiau* were Hanakalauae, Kānehaule (inland Kōloa Ahupua'a), Kihouna (Kōloa Ahupua'a), Kāneiolouma (Kōloa Ahupua'a), Weliweli (Weliweli Ahupua'a), and Waiopili (Māhā'ulepū Ahupua'a). The two *heiau* on the Kōloa coast, Kāneiolouma and Kihouna, were described as: "Near the Po'ipū beach, at Kōloa, are two walled *heiaus* but a short distance apart." (Thrum 1907:36-37;68).

Wendell Bennett conducted the earliest systematic archaeological survey on the Island of Kaua'i in the late 1920s. Bennett examined and recorded 202 sites on the island. According to his site location map (Figure 7; Bennett 1931:98), Sites 74 to 81, 85-86, and 91-92 may be in the *ahupua'a* of Kōloa.

Selected Bennett archaeological sites located in Koloa Ahupua'a:

- Site 74. Fishing shelter. On the shore near the mouth of Kukui'ula valley there is a fishing shelter.
- Site 75. Kuhio Park, on the shore west of Waikomo stream, Koloa. Taro patches, a small heiau, an oven, paved house platform, fish pond, game ground with seats around, and a fishing shrine are the principal features shown.
- Site 76. Salt pans, east of Waikomo stream along the shore.
- Site 77. Ponds, just inland from the shore road at the east side of the Weliweli, Koloa.
- Site 78. Taro terraces and house sites, just east of Site 77 and adjoining it.
- Site 79. Walled inclosure [*sic*] and house sites, just northeast of Site 78, Koloa.
- Site 80. Kihouna heiau, at Kihouna point, Po'ipū, Koloa.
- Site 81. Kaneiolouma heiau, on the shore a short distance east of Site 80.
- Site 85. Walls, inclosures[*sic*], house sites, in the cactus-covered country around the Koloa reservoir and extending to the sea.
- Site 86. House site, in the area described in Site 85.
- Site 91. Holua slide, on the hill named Puu o Hewa just above Koloa off the main road.
- Site 92. Kanehaule heiau, at Kaunuieie, Koloa.

Table 1 contains a summary of all previously identified sites/features located within the vicinity of the project area including recommended treatment provided in earlier studies. Figure 8 illustrates areas of previous archaeological studies in the Kōloa Ahupua'a.

Bennett's Sites 74 and 75 appear on his site map (Bennett et al. 1931:98) as immediately *makai* (seaward) of the project area. These sites were further described by Bennett as:

Site 74. Fishing shelter. On the shore near the mouth of the Kukuiula valley there fishing shelter (Pl. VI, C). It is 5 feet high, and 6 feet wide at the base. It is arched up of stone and used principally for a wind break.

Site 75. Kuhio Park, on the shore west of Waikomo stream, Koloa. Taro patches, a small heiau, an oven, paved house platform, fish pond, game ground with seats around, and a fishing shrine are the principal features shown

Table 1. Previous Archaeological Studies Near the Current Project Area

Name	Year	Location	Study Type
Bennett	1931	Kukui'ula Valley, Prince Kūhiō Park	General Survey
Kikuchi	1963	Kona District	General Survey
Sinoto	1975	Knudsen Trust Lands	Reconnaissance Survey
Hammatt et al.	1978	Kīāhuna Complex	General Survey
Hammatt et al.	1988	Kukui'ula Bay Planned Community	Inventory Survey
Hammatt	1992	Po'ipū Road and Lāwa'i Road Junction	Archaeological Reconnaissance
Hammatt et al.	1993	Po'ipū Road 7.6-acre Parcel	Inventory Survey
Creed et al.	1995	Po'ipū Road	Inventory Survey
Hammatt et al.	1998	Kukui'ula Planned Community Phase I	Data Recovery
O'Hare et al.	2003	Sheraton Kaua'i Resort	Archaeological Assessment
Rohrer et al.	2003	Kapili Road at Po'ipū Road 10.6 acre parcel	Archaeological Assessment
Hammatt et al.	2005a	Kīāhuna Complex	Inventory Survey
Hammatt et al.	2005b	Kīāhuna Complex	Data Recovery
Yorck and Hammatt	2005	Kapili, Po'ipū and Ho'onani Roads	Archaeological Monitoring
Yorck et al.	2005	Po'ipū Beach Villas	Inventory Survey

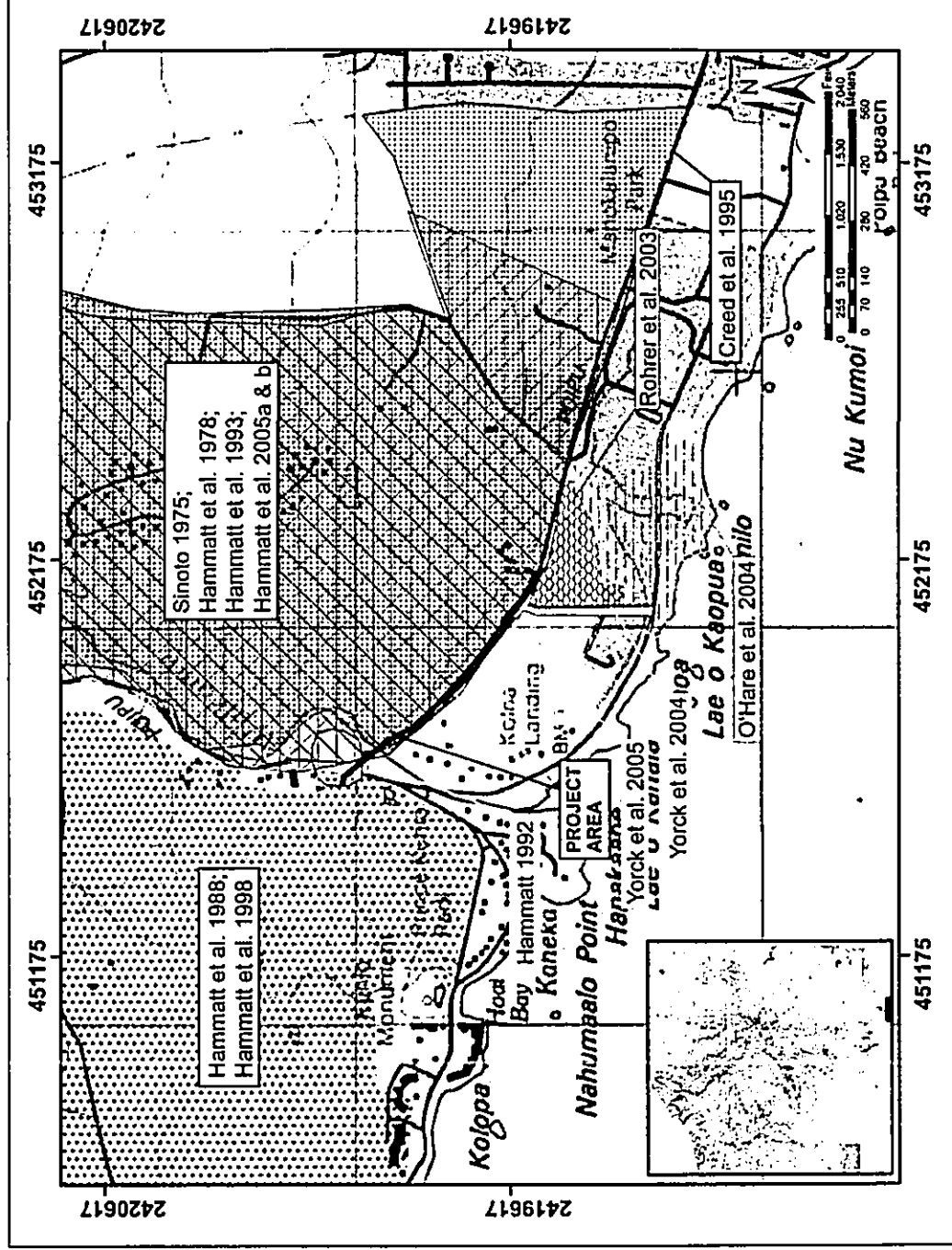


Figure 8. 1996 Koloa USGS 7.5-minute topographic quadrangle showing the location of the project area and surrounding previous archaeological investigations

Bennett's Sites 76 and 77 (later designated State of Hawai'i Sites 50-10-30-076 and -077) are shown on his site map (Bennett et al. 1931:98) to the east of the current project area. These sites were further described as:

Site 76. Salt pans, east of Waikomo stream along the shore. In these numerous salt pans, some divisions are made by a single row of flat stones on edge, others by round stones in line, still others by a double row of stones with dirt or sand filled in between for a sort of a walk.

Site 77. Ponds, just inland from the shore road at the east side of Weliweli, Koloa. One of these ponds is of an oval shape 185 yards in circumference. It is encircled with a raised wall of dirt the edges faced with large stones. This raised portion is about 12 feet wide and built up 2 feet high most of the way around. Within this pond is a small circular wall of stones 2 feet wide, 2 feet high, and about 15 feet in diameter. A built-up path leads out to this circle. This pond is one of a series of four all similar in size and construction. There are not internal divisions, nor any great depth to these ponds (*ibid* 98).

William Kikuchi (1963) conducted a general survey of the Kona District of Kaua'i including all *ahupua'a* from Hanapēpē, eastward to Kīpū Kai. Information from Thrum (1907), Bennett (1931), a Lahainaluna School manuscript (1885), and other sources was instrumental in helping to locate major archaeological sites during the field survey. Kikuchi's survey was selective, as it was not designed to be a complete inventory, and focused on generally larger or more coastal sites. Kikuchi identified seven sites within east Kōloa (Sites 89-95), three of which were just west of Moir's Cactus Garden at the Kīahuna Plantation Resort, which is adjacent to the eastern boundary of the Sheraton Kaua'i Resort. All of these sites are to the south east of the current project area.

Site 89. Structures, Kane-milo-hai The area a little west of Moir's Cactus Garden and on the seaward side of the road was surveyed by the crew. On a pahoehoe ridge several walls were found most of doubtful antiquity. However, these walls could have been expanded from the original native walls in this area. Two brackish ponds on both sides of the ridge was [*sic*] found to have had walls within them. The probable use of these ponds as salt pans are very likely. A bulldozer had cleared much of the beach area and had uncovered much midden thus destroying sites here (Kikuchi 1963:66).

Kikuchi located this site between Kamilo and Ka'ōpua Points and south of Po'ipū Road on the coast. He identified the site as *Kane-milo hai*. According to legends, on the nights of Kāne the drums are heard to beat at the pool of Maulili, on Waikomo stream, and also at the sacred rocks, or *unu's*, of Opuokahaku and Kānemilohae, near the beach of Po'ipū. In 1963, Mr. and Mrs. Moir reported that they were sitting on the *lanai* of their house (a part of Moir's Cactus Garden) in the early evening and heard what sounded to be drums coming from the direction of the drum *heiau*. This *heiau* was said to have been a fertility *heiau* for women.

Site 90. Shelters. The land back of Moir's Cactus Garden was noted to have several round mounds of rock each with its opening facing seaward. If these were used as ovens

the rocks would have been scorched, they were not. These would be ideal shelters but rather small in size.

Site 91. Fish Shrine. The brackish pond west of Moir's Cactus Garden was noted to have an overgrown platform just north of the road at the southwestern end of the pond. A low wall ran across the pond from this platform and formed a retaining wall on the eastern side. The small low platform, probably 5 by 9 feet, could be a shrine. However, closer inspection was not possible to confirm the theory (*ibid*:66).

Kikuchi (1963:66) located Sites 90 and 91 just west of Moir's Cactus Garden, which may have placed them within the northeast corner of the Sheraton Kaua'i Resort. These sites were later given State (SIHP) Site Numbers 50-30-10-3086 and -3087, respectively. Kikuchi did not try to correlate these two sites to any described by Bennett, and according to SHPD lists, sites described by Bennett and Kikuchi are considered separate sites.

Kikuchi's Site 92 was Pa'ū-a Laka, (SIHP 50-30-10-3088), a place where the *hula* was considered sacred. The *hula* grounds were reputed to have been located on the seaward side of Moir's Cactus Garden. Mrs. Sandie Moir originally named her gardens Pa'ū-a-Laka due to the proximity to the *hula* grounds. Site 93 was a pond east of Pa'ū-a-Laka, with walled divisions salt pans. Site 95 was Kihouna Heiau, a *heiau* on the coast that was reconstructed by Kikuchi after damage from Hurricane 'Iwa. Site 95 was Kāne-i-olo-uma Heiau, a *heiau* on the eastern boundary of the *ahupua'a* of Kōloa.

Kikuchi also listed sites mentioned in other sources, but not relocated by him. In Kōloa, this included the *heiau* of Ma'ulili. There are three areas in Kōloa named Ma'ulili, the shore area, called Ma'ulili-kai, the area inland of this, and an area in the town of Kōloa. Kikuchi believed that the *heiau* once was on the shore. He also reviewed the *heiau* listed by the Lahainaluna manuscript. This included Manini Heiau:

Manini was another *heiau* of Koloa. It stood near the beach. The *heiau* was for the gods of the sea, that is Kuhaimoana and others. On the nights of Kane these fish-gods came up to the beach. Their spirits took possession of their keepers, then these men went into the *heiau* to drink *awa*. The people were accustomed to doing this in the olden days. One each night of Kane in every month, the drum was beaten to proclaim a kapu on the beach. Men were not allowed to go to the beach at night, lest they step on the fish (gods). (Lahainaluna School, cited from Kikuchi 1963:85)

Akihiko Sinoto (1975) conducted a reconnaissance survey of 400+ acres of Knudsen Trust Lands at Kōloa, in the area north of Po'ipū Road. He recorded several features and suggested they were the northern remnants of Bennett's Sites 78, 79, 85 and 86. This survey was adjacent to the northern boundary of the current project area.

Hallett Hammatt, Richard Bordner, and Myra Tomonari Tuggle (Hammatt et al. 1978) as part of Archaeological Research Center of Hawaii (ARCH), reported on a general survey of 460 acres for the then-proposed Kīahuna Golf Village, located on the east side of Waikomo Stream and Po'ipū Road. The Kīahuna survey recorded 583 archaeological sites including 175 stone

enclosures and 108 stone house platforms, some of which appeared as clusters of family compounds. The water channels (*'auwai*), ponded fields, terraced plots, and mounded fields all indicated extensive wet and dry land agriculture (Hammatt et al. 1978). The water source for this highly integrated agricultural system, called the Kīahuna Complex, was Waikomo Stream, which was tapped upstream. Additional sites included 10 occupation caves and a *heiau*. This work overlapped with Sinoto (1975) and is adjacent to the northern edge of the current project area.

Hallett Hammatt, Douglas Borthwick, David Shideler, and Mark Stride (Hammatt et al. 1988) conducted an archaeological inventory survey in the 1000-acre proposed Kukui'ula Bay Planned Community. Fifty-eight archaeological sites were recorded; many associated with the Kōloa Field System. Two to three *heiau* were found, possibly including the remains of Kamaloula Heiau. This investigation is close to the western end of the current project area.

Hallett H. Hammatt (1992) carried out an archaeological reconnaissance of the Po'ipū Road and Lāwa'i Road Junction near the mouth of Waikomo Stream, but again there were no significant findings, owing to prior land disturbance. This work took place very close to the western most portion of the current project area.

Hallett H. Hammatt, Gerald Ida, and William Folk (Hammatt et al. 1993) conducted an archaeological inventory survey, with limited subsurface testing, of a 7.6-acre parcel. (TMK 2-8-14:30) in east Kōloa. This parcel is north of Po'ipū Road and south of the former railroad grade. Site 3758, a house platform or possible *heiau*, was re-mapped, and three new sites habitation/agricultural complexes were recorded. According to Hammatt et al. (1993:21), these sites are remnants of traditional *'auwai*, walls, fields, enclosures and habitation platforms, and appear to be a part of the larger Kōloa Field System, which encompassed over 1000 acres.

Victoria Creed, Gerald Ida and Hallett H. Hammatt (1995) reported on an inventory survey within a 1.4-mile corridor along the *mauka* (inland) side of Po'ipū Road (TMK 2-8-15, 16, 17 & 18) in the *ahupua'a* of Kōloa and Weliweli. Three sites, including enclosures, a terrace, and the Kōloa-Weliweli boundary wall, survived previous bulldozing of the area and were understood as components of the Kōloa Field System. The current project area partially overlaps with this previous study.

Cultural Surveys Hawai'i, Inc. (Hammatt, et al, 1998) reported on data recovery of the Kukui'ula Planned Community Project Phase 1 area encompassing approximately 219 acres (Hammatt et al. 1998). The project included excavations at 20 different sites, which encompassed 64 individual features. There were a total of 212 excavation units (212 square meters) and 19 backhoe trenches (only 14 backhoe trenches were chosen for study). Large quantities of midden (approx. 23.7 kilograms) and artifacts (10,635 items) were recovered and were reported on. The artifacts include a wide range of types with both indigenous (2,592 items) and historic (8,043 items) represented. Radiocarbon (C14) dates ranged from ca. A.D. 1050 onward. The earliest date came from the habitation/burial cave Site 50-30-10-1927A. In addition to the habitation sites and features dated, seven dating samples from agricultural features were also analyzed. The Kukui'ula Development is located to the west of the current project area.

In 2003, an archaeological survey was conducted along the coast in the Sheraton Kaua'i Hotel property, southwest of the current project area (O'Hare et al. 2003). Saltpans, abraded areas, and possible bait cups were recorded along the rocky coast; these may correspond to Bennett's Site

76 "Salt pans, east of Waikomo Stream along the shore" (Bennett 1931:98). Five features were noted in the interior section of the project area, two platforms, one mound, one terraced area, and one enclosure. The two platforms were later partially dismantled to test for burials. No human remains or any other cultural materials were recovered from the features.

Rohrer et al. (2003) completed an archaeological assessment of 10.6-acres at the southeast corner of Po'ipū Road and Kapili Road. Two historic properties, an enclosure and an overhang shelter were identified. SIHP # 50-30-10-0362, the enclosure, is located in the northwest corner of the project area; and SIHP # 50-30-10 0363, the overhang shelter, is located in the southwest corner. Both archaeological sites were documented with photographs, descriptions and GPS position.

Hammatt, et al, (2005a) conducted an inventory survey of five project areas on approximately 400 acres of the Kīahuna Golf Village; wherein 509 historic properties were documented and 80 historic properties were excavated. The 509 historic properties included 238 permanent habitation sites, 150 temporary habitation sites, 2 habitation/agricultural sites, 104 agricultural sites, 2 artifact sites, 1 rock art site, 1 historic grave, 1 ceremonial site, and 10 miscellaneous sites used for either storage or livestock.

The Kīahuna Golf Village inventory survey included data recovery within 80 historic properties. 12,153.7 grams of midden were excavated, which included 1017 indigenous artifacts (607 lithic items, 174 bone items, 148 coral items, 45 shell items, 41 sea urchin items and 2 "other") and 109 historic artifacts (glass, metal, ceramic and slate items). The "Koloa Field System" observed within the project area was summarized as being:

"most likely an early seasonal agricultural & habitation site that became more extensively utilized as resources become more available and agriculture endeavors became more stable and intensified. From the artifact and midden collected, food resources were still collected via hunting and fishing. The manufacturing of tools and ornaments at the project area was also apparent from lithic flakes and unfinished items. Habitation shifted to being more permanent as indicated by permanent and extended habitation complexes, however instead of expanding the territory, infilling of unsettled/unused land was employed within the project area" (Hammatt et al. 2005b:163).

The earliest Kīahuna Golf Village sites were carbon-14 dated to the thirteenth through the fifteenth centuries A.D. (SHIP 50-30-10-3841), with sites dated into the sixteenth century (SHIP 50-30-10-3822). According to this inventory survey, the Kōloa Field System continued to expand throughout the eighteenth century A.D., and ceased to function as a field system when sugar cane cultivation took over the existing 'auwai system for its own use.

Yorck and Hammatt (2005) completed an archaeological monitoring program for electrical utility improvements along Kapili, Po'ipū and Ho'onani Roads. No historic properties were identified during the course of the monitoring. A very small portion of this project area overlaps with the current project area.

Yorck et al. (2005) conducted an inventory survey of an approximately 25-acre parcel located northwest of the Sheraton Kaua'i Resort at the intersection of Po'ipū and Kapili Roads. Twenty-one archaeological sites consisting of approximately 70 associated features were documented in

an area that contained two LCA's. LCA 3606 (to Kamae) and LCA 10272 (to Makalulu) were both located along the eastern bank of Waikomo Stream, at the western edge of the project area. Approximately 12 enclosures, 14 walls or wall segments, 6 mounds, 8 terraces, 11 C-shapes, 8 modified outcrops, a railroad berm and 12 specialized features were located and documented. The report recommended preservation and limited data recovery of Site 50-30-10-0374 (habitation caves and associated rock-filled areas), and data recovery of Sites -0368, -0369, -0370, -0373, -0376, and -0947 (the railroad berm). The parcel was characterized as containing mostly pre-contact habitation sites. Some walls were identified as historic ranching-era structures.

3.3 Background Summary and Predictive Model

From previous archaeological studies and historic accounts it appears that habitation and intensive irrigated agriculture were widespread in central and coastal Kōloa. As an extensive irrigated complex, the Kōloa Field System was used to divert the waters of the Waikomo Stream for taro, native sugar, and fish. As the Judd (1935) account asserts, it is likely that low inland areas were used for less intensive cultivation of patches of sweet potato, *pia*, (arrowroot) and *wauke* (paper mulberry) and the gathering of *hala*, (pandanus fiber) *kukui* nuts (oils having medicinal applications) and other resources. The coastal portion of the *ahupua'a* would be a focus for permanent habitation, collection of marine resources, ceremonial activities, and burials. The archaeology of the region also seems to bear out the accuracy of Judd's account.

Chronological analysis from Kōloa, and the two neighboring *ahupua'a*, Pa'a and Weliweli, suggests an early initial occupation within the Pa'a *Ahupua'a* of circa A.D. 535 (Walker and Rosendahl, 1990:131). No coinciding early dates have been found within Kōloa *Ahupua'a*, probably due to vagaries of sampling since most of the shoreline area of Kōloa had been heavily impacted by commercial, residential, and resort development. Initial occupation probably was characterized by temporary and/or recurrent occupation. From A.D. 600-1400, settlements in the Kōloa area were still limited to the coast. By A.D. 1040, lava tubes were used for burial and temporary habitation in the inland areas of Kōloa (Hammatt et al. 1999:7)

In the early historic era (1795-1880), the Kōloa Field System continued in use for foreign trade and was probably further intensified. Sweet potatoes were a main crop for the whaling and merchant ships, and the purchase of pigs, salt, oranges and other items are noted in many ship journals. The documents of the Great Māhele show that by the mid-1800s there were still several traditional farmers within Kōloa who both lived and worked within the area. The individual claims – for both *lo'i* (wetland) and *kula* (dryland) suggest that while traditional farming of taro for subsistence was still taking place, in *kula* lands – sugar cane production for sale to the nearby sugar mill, had begun to dominate the landscape. Of the LCAs within Kōloa, several claim a *kula* planted with cane or a cane field or sugar cane garden. Several also identify cane lands as boundaries for the LCAs. Clearly, *kula* lands in the project area were being converted into sugar lands at an increasing rate. Within three years of sugar cultivation by Ladd and Company in 1835, residents in and surrounding Kōloa were quickly moving to adapt to the new economy based on the production of sugar cane. Eventually, most of inland Kōloa was planted with sugar cane and only the most rocky areas, unsuitable for cultivation, survived the dramatic changes in the landscape brought about during the early 20th century.

In the present project area, the ancient, heavily modified landscape known as the Kōloa Field System appears to be largely absent. Because habitation complexes, ceremonial sites, and irrigation systems have been identified during archaeological surveys of adjacent properties (Hammatt *et al.* 1978; 2004; Yorck *et al.* 2005), the absence of these features within the present project area is likely due to the construction of Po'ipū Road.

Section 4 Community Consultations

Throughout the course of this assessment, an effort was made to contact and consult with Hawaiian cultural organizations, government agencies, and individuals who might have knowledge of and/or concerns about traditional cultural practices specifically related to the project area. This effort was made by letter, e-mail, telephone and in person contact. In the majority of cases, letters along with a map and aerial photograph of the project area were mailed with the following text:

At the request of Kukui'ula Development Company, Cultural Surveys Hawai'i Inc. is conducting a cultural impact assessment of the roadway from the intersection of Po'ipū Road and Lāwa'i Road to the existing Po'ipū Water Reclamation Facility in Kōloa Ahupua'a, Kona District, Kaua'i. Kukui'ula Development Company proposes to install a 24-inch sewer line within a portion of Po'ipū Road to carry wastewater from the planned Kukui'ula development to the existing Po'ipū Water Reclamation Facility located approximately 0.4 mile to the east. The proposed sewer line will extend approximately 2,450 linear feet from a proposed 24-inch sewer line to be installed within the planned roundabout at the intersection of Po'ipū Road, Lāwa'i Road and the Ala Kalanikaumaka Road (Western Bypass Road) to the southern boundary of the Po'ipū Water Reclamation Facility. The majority of the proposed 24-inch sewer line will be located within the Po'ipū Road right-of-way (see enclosed maps).

The purpose of the Cultural Impact Assessment is to assess potential impacts to traditional cultural practices as a result of future development along Po'ipū Road in Kōloa.

We are seeking your *kōkua* or help and guidance regarding the following aspects of our study:

- General history and present and past land use of the project area.
- Knowledge of cultural sites which may be impacted by future development of the project area - for example, historic sites, archaeological sites, and burials.
- Knowledge of traditional gathering practices in the project both past and ongoing.
- Cultural associations of the project area, such as legends and traditional uses.
- Referrals of *kūpuna* or elders and *kama'āina* who might be willing to share their cultural knowledge of the project area and the surrounding *ahupua'a* lands.

- Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.

Several (3-9) attempts were made to contact individuals, organizations, and agencies apposite to the cultural impact assessment for Kōloa. The results of the community consultation process are presented in Table 2 below. More extensive responses were provided by the Kaua'i/Ni'ihau Islands Burial Council, the Kaua'i Historic Preservation Review Commission, and Cultural Specialist with Hyatt Hotels & Resorts, Stella Burgess. These are presented in full below Table 2.

Kama'āina, and two *kūpuna* with knowledge of the Kōloa Ahupua'a dating back to the 1920s and 1930s, were among the interviewees for earlier cultural impact assessments of Kōloa conducted by CSH in 2005 (Mitchell et al. 2005a, 2005b). Excerpts from their interviews specifically related to Kōloa and its environs are presented in Section 5 below.

Table 2. Community Contacts

Name	Affiliation, Background	Comments
Ayau, Edward Halealoha	Hui Mālama I Nā Kūpuna O Hawai'i Nei, Chairperson	Made referrals to Sabra Kauka, Kehau Kekua, Cheryl Lovell-Obatake, Ted & Tatiana Blake, Kainani Kahaunaele
Blaich, Beryl Leilani	Mālama Māhā'ulepu, Group Coordinator	Made referrals to Warren Perry and David Chang
Blake, Hartwell	Kōloa Community Association	No response.
Blake, Ted Kawahinehelelani and Tatiana	<i>Kama'āina</i> of Kōloa	No response.
Bukoski, Elizabeth Kalehauamakanoē	<i>Kupuna</i> of Kōloa	See interview in Section 5.
Burgess, Stella	Hyatt Hotels & Resorts, Cultural Specialist	See statement below table.
Cataluna, Don	Office of Hawaiian Affairs, Trustee	Mr. Cataluna had no comments on the study, but recommended contacting: Stella Burgess, Nancy McMahan, and <i>kupuna</i> , Frances Frazier.
Chang, David	Local historian of Kōloa	See interview in Section 5.
Chang, Pi'ilani	State Historic Preservation Division- Culture and History Branch	No response.
Dias, David	<i>Kama'āina</i> of Kōloa	No response.

Name	Affiliation, Background	Comments
Frank Bonilla	<i>Kama'āina</i> of Kōloa	Unable to participate due to ill-health
Gage, Reginald	Kaua'i Historical Society, Board of Directors	Mr. Gage referred CSH to 2004 interview on Kōloa and gave his permission for CSH to include the past interview in this CIA report. See interview excerpt in Section 5.
Gonsalves, Leo	Royal Order of Kamehameha, Kaumuali'i Chapter 3	See interview in Section 5.
Holi, Wilma	Hui Mālama I Nā Kūpuna O Hawai'i Nei, Ho'ola Lahui Hawai'i, President	See statement below table.
Ida, Ron	Royal Order of Kamehameha, Kaumuali'i Chapter 3	See interview in Section 5.
Kahaunaele, Kainani	Hawaiian language and culture singer and educator	No response.
Kamai, Grace	Kaua'i/Ni'ihau Islands Burial Council	Made referral to Lucille Rogers and the <i>Alu Like Kūpuna Program</i> and facilitated brief introduction and discussion of the cultural impact assessment process.
Kane, Suzzette	A & B Properties	Made referrals to Bernard Medeiros, Max Medeiros, Hartwell Blake, and David Dias.
Kaohealauli'i, Billy	<i>Kama'āina</i> of Kōloa, <i>Kanaka Maoli</i> of Hui Mālama Kāne Iolo Uma	See interview in Section 5.
Kaohi, Lionel	Association of Hawaiian Civic Clubs-Kaua'i Council-President	No response.
Kauwe, Chris	Cultural practitioner, <i>Kanaka Maoli</i> of Hui Mālama Kāne Iolo Uma	See interview in Section 5.
Kea, Peter	Royal Order of Kamehameha, Kaumuali'i Chapter 3	See interview in Section 5.

Name	Affiliation, Background	Comments
Kekua, Kehau	Executive Director of the Kaua'i Heritage Center	No response.
Kruse, John	Kaua'i/Ni'ihau Islands Burial Council, Acting Chair	Mr. Kruse shared in a phone interview on August 25 his concern that, "geologically the area along Po'ipū Road is a lava tube city". He remarked that the sewer line could go through one of the lava tubes and inadvertently hit a burial as the area is "rich in lava tube burials". He recommended CSH also contact: Hartwell Blake and Don Cataluna.
Lovell-Obatake, Cheryl	Kaua'i Resident	No response.
McMahon, Nancy	State Historic Preservation Division, Kaua'i Archaeologist	No response.
Medeiros, Bernard	Kōloa rancher	Made referral to Hartwell Blake.
Medeiros, Gilbert	<i>Kama'āina</i> of Kōloa	No response.
Medeiros, Max	Cultural Practitioner and former <i>Kama'āina</i> of Kōloa	Mr. Medeiros is a cultural practitioner of the traditional art of <i>he'e nalu</i> (surfing). He shared in a phone interview on September 8 the following story (see Royal Order of Kamehameha Interview in Section 5). His grandmother was Elizabeth Pi'imoku Ha'alou (her maiden name before she married into the Medeiros family). Her family used to feed the sharks, their <i>'aumakua</i> , in ancient times. One day she got swept out to sea and was knocked unconscious. A shark picked her up and brought her back to shore. The story is reported in her journal. This happened at Hawai'i Kai, Spouting Horn. "My grandmother's dad was feeding the sharks. So the sharks saved his daughter." Mr. Medeiros recommended CSH contact his older brother, Gilbert Medeiros.
Nāmu'o, Clyde	Office of Hawaiian Affairs	No response received

Name	Affiliation, Background	Comments
Oi, Tommy	Department of Land and Natural Resources- Kaua'i Land Division	Recommended contacting the State Historic Preservation Division and the Office of Hawaiian Affairs.
Perry, Warren	Royal Order of Kamehameha, Kaumuali'i Chapter 3	See interview in Section 5.
Rogers, Lucille	Alu Like Kūpuna Program	A discussion of the CIA process and informal interview with elders of the Alu Like Kūpuna Program held at Waimea Plantation Cottages on August 3 rd was facilitated by Ms. Kamai (above), Ms. Rogers, and CSH. Facilitators solicited (confidential) suggestions from the <i>kupuna</i> group. Generally, Alu Like Kūpuna Program attendees were concerned about the cultural impacts of the "massive development project" the sewer line is being installed to support, rather than the sewer line itself. <i>Kūpuna</i> made 3 referrals to other <i>kama'āina</i> and <i>kūpuna</i> , one of which is included in this CIA report.
Rowe, Rupert Puni	<i>Kanaka Maoli</i> of Hui Mālama Kāne Iolo Uma	See interview in Section 5.
Sabra Kauka	Hawaiian Studies <i>kumu</i> and cultural practitioner	Made referrals to Stella Burgess, Chris Kauwe and Peter Kea
Sagum, Scotty	Royal Order of Kamehameha, Kaumuali'i Chapter 3	See interview in Section 5.
Shigemoto, Tom	Kaua'i/Ni'ihau Islands Burial Council, former council member	Made referral to John Kruse. See statement below table.
Summers, Molly Kaimiloa	Kaua'i Community College, Hawaiian Language and Culture instructor	No response.
Tsuchiya, Rick	Kaua'i Historic Preservation Review Commission	See statement below table. Recommended contacting John Kruse.

Name	Affiliation, Background	Comments
Yagodich, Darrel	Department of Hawaiian Homelands Planning Office	No comments at this time.

Mr. Tom Shigemoto, former member of the Kaua'i/Ni'ihau Islands Burial Council, shared in a phone call on August 28 his comments about the Kukui'ula development project on the west side of Po'ipū Road:

The area is rich in archaeology and history. Many fishing shrines and historical sites have been documented and removed as is allowed as part of the data recovery phase of archaeological work. A burial site was also discovered during the survey phase, which has been secured, as recommended by the Kaua'i/Ni'ihau Islands Burial Council and as part of A & B's Burial Treatment Plan. Also discovered on site were blind cave spider habitat, which are now included in designated Critical Habitats established by the U.S. Fish and Wildlife Service. The archaeological studies had been done some time ago, but this does not rule out the possibility of new findings. However, this is highly unlikely because much of the area has been disturbed. Mr. Shigemoto does not believe there are any ongoing cultural or gathering practices that could be disrupted by the proposed development. The area is overgrown with lantana, cacti, scrub brush, guinea grass and *haole koa*. He noted that on the *mauka* side of the Prince Kuhio park there were *lo'i* and a system of raised *'auwai* which will be preserved as part of a 16-acre archaeological park. Mr. Shigemoto stated he couldn't think of many remaining burial council members with expertise on Kōloa, but did suggest we contact John Kruse.

The specific burial site and blind cave spider habitat referred to above lie approximately 500 m and 400 m respectively northwest of the northwest end of the present study area.

Mr. Rick Tsuchiya, of the Kaua'i Historic Preservation Review Commission, sent the following email memorandum on August 1, 2006:

This is to inform you that the Kauai Historic Preservation Review Commission (KHPRC) will be unable to meet on August 3, 2006. As such, it is uncertain whether their comments can be solicited within your early September deadline.

In light of this, we are providing you with an example of the comments that the KHPRC has offered on other cultural impact assessments:

- That the applicant consult with the State Historic Preservation Division (and Burial Council), the Department of Hawaiian Homelands and the Office of Hawaiian Affairs;

- That a community input program (e.g. Flyers, notices, meeting with community association, etc.) be initiated by the applicant to obtain information on cultural practices or resources in the project area;
- That individual KHPRC members contact CSH directly (or visa versa) with the names of *kūpuna* in the area who may participate in the consultation process;
- That an oral history of the project area be undertaken with input from past and nearby residents;
- That the applicant consider integrating a historic education program as part of the proposed project; and
- That opportunity for further consultation with the KHPRC occur as this project progresses.

Thank you for affording the KHPRC the opportunity to comment on this project. We will provide the members with a copy of your transmittal and this response.

Please feel free to contact us should you require any further assistance.

Ms. Stella Burgess, a Kōloa resident and Cultural Specialist at the Hyatt Hotels & Resorts in Po'ipū, recommended in a phone interview on August 25 that CSH and the Applicant review the study *Archaeological Preservation Plan for Preserve 5 Kiahuna Mauka Partners LLC (KMP) Project Area, Koloa Ahupua'a, Kona District, Kaua'i Island* (Kamm 2006). Ms. Burgess notes that she believes there is a burial nearby in the Pō'ele'ele plot. She believes this may be the burial of Nakaiewalu, but it is best to check the report [understood as a reference to the Kamm 2006 report]. CSH found no reference to this specific burial in the Kamm 2006 report. She also noted that her family has burials in the vicinity and she indicated her understanding that at the intersection of Kapili Road and Po'ipū Road, above the Kapili Resorts (new subdivision), a cave with *iwi* was found. Following is a prior interview CSH conducted with Ms. Burgess in 2005 (Mitchell et al. 2005b).

Ms. Stella Burgess, a Kōloa resident and cultural specialist for the Hyatt Hotels and Resorts in Po'ipū was contacted a number of times in the course of this cultural assessment. She participated in a telephone interview with Cultural Surveys Hawai'i on October 25, 2004. During this interview she expressed concern for the possible presence of a family burial located in the vicinity of the area between the "Welcome to Pō'ipū Beach" sign/stone wall and Waikomo Stream. She indicated that Naki, Mania, Kala, and Kuewa are her family relations and that she believed one of those were buried there. She related her understanding that there are no grave markers, just stones where her mom made offerings.

Subsequently, Ms. Burgess accompanied Gerald Ida (CSH Kaua'i Staff) on an onsite visit to the project area on December 3, 2004. Ms. Burgess clarified that when she was a child her elders would go visit a grave in the vicinity but that she herself had never seen the location. Ms. Burgess indicated her intention to speak with her family to attempt to clarify the location of the family grave. On January 28 2005 we received a phone call from Ms. Burgess in which she mentioned that her son had walked around the area, that she never traveled the path with her mother, and that there was still uncertainty whether the family grave was within the project area or not.

Ms. Wilma Holi, former member of Hui Mālama I Nā Kūpuna O Hawai'i Nei, current President of Ho'ola Lahui Hawai'i, and *kupuna* of Waimea, shared in a phone interview on September 8:

Francis Ching did a survey of Kōloa, one of many, but nothing has really been done on the subterranean level. In that area there are a lot of burials in lava tubes. This is something that needs to be monitored. These are sewer lines. So, the distance and proximity to cultural sites is a concern. As far as other kinds of activities, I'm not really familiar with other kinds of activities. I don't know where the path is to the *leina* [place where spirits leap into the nether world] except to say that there are cultural sites. But I don't know which way the *leina* runs. We don't know where the lava tubes are and where the burials are (but we know that they are there). There should be monitors for subterranean burials.

When I was growing up in that area it was covered in *haole koa*. You really had no sense of what was in there. It wasn't until the late 70s when the cultural surveys were conducted and we got to see what was really there. The KCC archaeology club would go there with Dr. Kikuchi. We would walk through the *haole koa* and see all the features. If you were to do an overlay of the entire Kōloa area and you were to map out all of the features, it would paint a very different picture.

Section 5 Summaries of *Kama'āina* "Talk Story" Interviews

Kama'āina and *kūpuna* with knowledge of the Kōloa Ahupua'a and the area within the vicinity of the proposed Po'ipū Road sewer line project participated in "talk-story" sessions for this assessment. The approach of Cultural Surveys Hawai'i Inc. to cultural impact studies affords those community contacts an opportunity to review transcriptions and/or interview notes and to make any corrections, deletions or additions to the substance of their testimony. Our interview selection process usually focuses on knowledgeable older individuals (*kūpuna*) who are often in ill health or of a mind not to be rushed. It is often the case that the coercive demands of time that drive the contemporary development process do not fit well with those who have memories of an earlier time.

Cultural Surveys Hawai'i Inc. employed an informed consent process and conducted semi-structured interviews (Bernard 2002) with 11 *kūpuna* and *kama'āina* (including the group interview with 6 members of the Royal Order of Kamehameha below). Additionally, the 2005 interview with Mr. Reginald Gage has been excerpted below. To assist in discussion of natural and cultural resources and any traditional cultural practices specific to the project area, CSH initiated the "talk-story" session questions from the five broad categories. The categories include: Burials, Trails, Native Gathering Practices of Plants, Marine and Freshwater Resources and Historic Properties. Presented below are brief backgrounds of participants' "talk-story" sessions and their comments and concerns about the proposed project area.

Reginald Gage

Mr. Gage gave his permission for CSH to include pertinent excerpts from the interview on Kōloa conducted in 2005 (Mitchell et al. 2005a):

Reginald Gage was born in Chicago, Illinois in the year 1935 to Reginald Gage and Evelyn Gage. His parents came to Hawai'i during WW II, and he followed after the conclusion of the war in 1945 aboard the SS Lurline. Mr. Gage was raised in Mānoa and Kahala and later graduated from the University of Hawai'i Mānoa with a Bachelor's Degree in Business Education. After working several years on the island of Maui he became an appraiser. He was later offered the job of Chief Appraiser for the County of Kaua'i. Mr. Gage came to Kaua'i in 1968 and has been here ever since, living in the Kōloa (Kona) District and in Kalāheo. Mr. Gage serves on the Board of Directors of the Kaua'i Historical Society.

When asked about Hawaiian place names specifically in Kōloa, Mr. Gage remembered:

I believe Kōloa got its name from the ducks. There was a wetland in back of Kōloa in ancient history. The wetland was drained by Kōloa Sugar and some of it was dammed to make the Waipā Reservoir, but much of the wetland was drained. Prehistorically there were many ducks in Kōloa. The people from McBryde Plantation think *kō* is cane and *loa* is long, they think it means "long cane", but I think it is historically inaccurate. I have read about the steep rock (Pali-O-Kōloa) on the east bank of the Waikomo Stream in *Thrum's Hawaiian Annual*. There is supposed to be a petroglyph on it and also a picture, but I have never seen it.

Mr. Gage mentioned that there are legends associated with Kōloa:

Frederick Wichman is the guy who wrote about Kaua'i legends. His grandfather was Charlie Rice, and he wrote an early text on legends. Wichman used to collect those kinds of things and other books. So Wichman would be an excellent source for the legends. He and I sit on the Board of Directors for the Kaua'i Historical Society. He is the President of the Board, and I am Vice-President.

Regarding cultural practices [in Kōloa], Mr. Gage noted:

I have not witnessed any gathering of resources or cultural practices by Native Hawaiians or other ethnic groups during my lifetime other than the cultivation of sugar cane. Prehistorically, Kōloa was an area inhabited by the Hawaiians, and they used it for agriculture, not in the sense as we think of agriculture today, because it was a dry area. All throughout the Kōloa region there were *'auwai*. The *'auwai* were bringing water into the Kōloa area. I think Kōloa was primarily used to grow sweet potato and dryland taro. Primarily sweet potato was grown with *'auwai* bringing in water to the fields and the water coming from Waipā and Waikomo streams.

Asked about his knowledge of any cultural sites, trails or burials within the project area Mr. Gage stated:

...I know a great deal about caves in Kōloa because of my work with Storrs Olson, a curator of birds at the Smithsonian Institution. He is an ornithologist. We have searched the caves in Kōloa for bird remains and looking back I cannot recall ever having seen a burial in Kōloa, except along the shorelines. There were many burials along the shorelines, but not in caves. I think the Kōloa caves were most likely used for habitation rather than burials.

Kaua'i trails are not like Hawai'i Island trails where they are paved. Kaua'i trails tend to get overgrown and lost. I don't know of any trails. But undoubtedly they were there.

Elizabeth Kalehuamakanoe Bukoski

Kupuna Elizabeth Kalehuamakanoe Bukoski was born on December 31, 1921 to Puaokina Taniguchi and Elizabeth Charmin Taniguchi in Waimea Valley on the island of Kaua'i. Mrs. Bukoski came to live in Kōloa in the 1930s and went to live with her relatives, the Spencer Family. After graduation from high school she worked on the Kōloa Plantation owned by Alexander and Baldwin where she met her future husband. Mr. Frank Bukoski was a *luna* or overseer to the plantation workers. Later Mrs. Bukoski obtained interest in the Charmin Family lands and exchanged the lands for the eight acres on which she and her children live today. The eight acres are located on Hapa Road immediately west of the proposed project area. Today *kupuna* Elizabeth is very active in the *Kūpuna* Program in Kōloa. Ms. Bukoski was interviewed at her home on August 4, 2006. She also gave CSH permission to include segments of a past interview (Mitchell et al. 2005a) in this assessment. Excerpts from the 2005 interview:

Asked about the translation for Kōloa Mrs. Bukoski stated:

Kōloa's name derived from the cane they were hauling at that time in the early days during my grandfather's time. They had to come through Māhā'ulepū at that time. The cane was put in the cane carts and was pulled by horses and mules. The carts were pulled to the mill and then ground.

Mrs. Bukoski recalls sending her children into the land across the road from her home to gather native plants for medicine:

When my children were young I used to send them in the fields across the way [pointing across Hapa Road into the project area] to gather plants for medicine. When they were sick I had them gather the *'uhaloa*. They would bring the plant back home and I used to scrape it then remove the stem inside. If my children only had a sore throat I would have them chew on the leaves. Other than that I would boil it and make a tea out of it. I also sent them to gather in that same area the *pōpolo* that we used for the top of the head of a child to keep the *manawa* [fontanel] open. The longer you leave it open the better it is for the child. There was less chance for the child to get sick. In those days people believed, but if you tell people today about that practice they do not believe. Believe it or not your children did not get sick as much as other children. I used to pound the leaf. Along the old road [now Hapa Road] there were many different native trees like koa and the one that had a big seed and yellow flower called *kamane*. They were all later cleared out.

I used *alae* with sea salt. It becomes medicine when you mix the *alae* with it. When a child has a cold instead of drinking plain water, you warm up the water and put the *alae* salt and then they drink it. I also would gather the *'opihi* down at Po'ipū. I used to sell them to Honolulu. I was fortunate to pick *'opihi* from all the different places that I went. I kept a few shells and made pendants out of them. I would dive deep down in the ocean to get the big ones coming up for air and back down again, poke them until I got if off the rock. Today the *'opihi* is so scarce. The other traditional practice was down at the beach. We used to *hukilau* [fishing with a long net] with Jim Kimokeo at that time. The *hukilau* was big in those days. Down at Pō'ipu we used to catch *'ō'io*. Those days people would rather have *'ō'io* rather than *akule*. The Japanese liked the *'ō'io* to make fish cake. I used to love that. My husband used to like it the Portuguese way. He would put them in vinegar and then fry them. Now days there are no more *hukilau* like we used to have. How sad.

I raised my oldest *mo'opuna* the traditional Hawaiian style. The oldest grand daughter I took her for me. I just raised her like my own. She is here now from the mainland. I later legally adopted her. She is now going to build a house on the land behind us here.

Mrs. Bukoski mentions that the first road dividing her family's land and the Knudsen Trust Lands was not paved:

The Pō'ipu Road used to be where Hapa Road is today. [Hapa Road borders Mrs. Bukoski's family residence.] That is the first road they had and it was not paved. The County put in a dumping ground near where the St. Raphael Church is today. My husband later worked for the county and took care of the dumping grounds. Hapa Road was the only road in the early days. During the early Kōloa days we used to have an annual parade starting from Kōloa Town down to here using the old road. That was a big event in those days. Everyone would come together and cook different kinds of food. I do not recall any other trails in this area other than the old road.

She recalls how the streams were the family's source of water and food:

There were streams that used to flow from Māulili Pond. The water came from Waipā all over to Kōloa right by Sueoka Store which has the river over there the Waikomo Stream and used to come all the way down to Māulili Pond over here. We used to go fishing inside the stream. We fished for *'akupa*, something like the *'o'opu*. We used to call that *adduce* when we were kids.

In the interview recorded for the current assessment, Mrs. Bukoski discussed her job at the sugar plantation when she was a young woman:

During the early days the plantation would burn the cane and then machine...well it wasn't a machine...we had to do it by hand. We had to pile the cane up in a pile and then take the cane and throw it over your shoulder and throw them into the cane cars. That was the thing that I did.

Mrs. Bukoski commented about her life at home:

I had milking cows. I didn't have to buy milk. I didn't have to buy butter. I made my own butter. I grew a lot of things at home that we didn't have to go to the store and buy. Like my vegetables, he [Mr. Bukoski] planted all my vegetables. I had string beans around the year. I never was out. He was a great man. And he never went out alone. The only time he went out alone was when he went to work. But to go out and visit friends or whatever, he never went out alone. I had to be there with him. I don't go, he don't go. That's the reason a lot of times I miss him.

Regarding the history of the immediate area, she commented:

Well this road used to be the old road. This road going down to the St. Raphael Catholic Church and from the Catholic Church down we had a road to the [inaudible] of Po'ipū. [There was] only a road going down there...because my husband went to the Catholic school. They had a Catholic school here in Kōloa. And he went to school there. There were some Hawaiians that lived [down there]. One of them I know [was] the Pratt family...They're all gone. They used to live there...near the Catholic Church near the road. As you get to the Catholic Church instead of taking the road to the church there was a road on the side here and that was the road they used to use to go to Po'ipū beach in the earlier days. But that

was not a road for cars. It was a road for them to walk down. But in those days they never had cars so they used to walk down there.

Mrs. Bukoski shared her concerns about the proposed sewer line:

Well... if you are going to build a sewer line with all that rocks in there...oh my goodness! We cannot build it here in Kōloa. We don't need any more. Kōloa is too small for all this building that we are going to have. You know, it's just a small town. During our early days we weren't afraid to leave our homes unlocked, and you would just go. But today you can't even do that, you are so afraid because you don't know who your neighbors are these days. And leaving your door unlocked is too unsafe. The thing is that if other people are going to come here and stay I really cannot tell you but, what is their lifestyle? How do they get along with others? With Hawaiians you get along with anybody, anyone, no matter what even if you're a stranger...because Hawaiians are a people that, you know, I share with you, you share with me. And once they know one another now...for instance my children, and maybe your children, they will not call you "Mrs. So-And-So", they will call you "auntie". If those call me "*tutu*" that is fine. I'm not *tutu* to all these kids around. But as far as they are concerned I am *tutu*. And I accept that.

Billy Kaohelaui'i and Rupert Puni Rowe

Billy Kaohelaui'i and Rupert Puni Rowe are members of Hui Malama Kāne I Olo Uma, a group of *kānaka maoli* or Hawaiian native-born who perpetuate the culture of Hawai'i. The group's members are presently caring for the lands and cultural sites used by early Hawaiians just *mauka* of Pō'ipu Beach Park behind Brennecke's Restaurant bordered by Pō'ipu Road, southeast of the proposed project area. Billy Kaohelaui'i was born on July 4, 1950 to Henry Kalima Kaohelaui'i from Ni'ihau and his wife Hazel Tita Kimokeo. Mr. Kaohelaui'i was raised in Kōloa where he presently resides. Rupert Puni Rowe was born to Eunice Kekumailani Puni during WWII. Mrs. Puni was adopted by Eunice Kekumailani Koia Puni and John Puni her grandparents from Kaua'i. His father's family is from Kalapana on the island of Hawai'i. Mr. Kaohelaui'i and Mr. Rowe were interviewed together on August 3, 06 in Mr. Kaohelaui'i's backyard.

Asked about fishing, hunting, and gathering practices in and around the project area, Mr. Kaohelaui'i responded:

BK: I fish [for] all kinds of different fish, all kinds of different varieties - Hawaiian fish... Waikomo [Stream] most of the times we get mullet and *āholehole* and usually *wī* [inaudible] and they had prawns and 'o 'opu. But I don't know about now because they ruined the stream. I don't know if there is any fish in there now. They ruined the stream because most of the people take water out of that stream. They're taking all of the water out. There's hardly any water coming down Waikomo Stream any more.

CSH: I can see quite clearly that you are a plant person. Do you ever gather any plants...

BK: Yeah, I used to get...I don't think the plants are there anymore... we used to go get black-eyed-susies to make leis. It's not there anymore.

CSH: Where would you get that?

BK: [Referring on map to lands mauka of the project area] All in this development area [where] we used to go as kids. It had fruit trees, mango trees, tangerine trees...all inside here [points on map]. [black-eyed-susies] it's a red thing with black spots... is gone already. They had all kinds of sand dune trees, all kinds of trees.

CSH: Do you still do anymore gathering?

BK: Not now. I don't think they have the trees anymore. No mango trees anymore. I've never seen one mango tree for almost 30 years up there. Before, in the old days, all the fruit trees were up there. This was the old Hapa Road. It's right next to the development going on. It's the only road we had in the 50s going to Kōloa town. From here you cross the road and there is this small little road and you go all the way up there and as far as you can see, all you can see is rocks, formation of rocks, walls... Right here from this Hapa Road, right next to the sewer plant.

CSH: How about *makai* of the project area?

BK: I don't know...too many people. Fishing over here is getting scarce because of too many fishermen. People are coming from all kinds of places to come fish over here. The Federal [government] brought in the seals, and the seals eat all the food. They say the seals came from some place, but - no way. All my life there were no seals and then 10 years ago there were loads of seals. I think that is one of the problems we have from the ocean and I think another problem we have is big development - all the runoff, all the poison into the ocean. And it's killing the ocean. Like all the houses over here with swimming pools and it's going into the ocean and killing... the reef... I know because when I fish on the rocks I can see that the rocks are all dead. The water is still...it kills everything...all the *limu* on the rocks - it just dies. It's not only in the Po'ipū area, it's all over the island. Anybody who has got a swimming pool, it is going to go in the ocean.

Mr. Kaohelauli'i discussed cultural sites *mauka* of the proposed project area:

There are a lot of heiau, and a lot of islands, a lot of caves a lot of birth places, a lot of [Hawaiian traditional] housing... They had birth rocks and bell stones. They had all kinds of big stones in there.

CSH: Tell me about the Bell stones?

BK: It looks like a big rock like that [pointing to a rock in his yard]. You hit it from the back the thing goes 'baaaannng'. There are a lot of caves. There used to be a lot of artifacts but everybody already took [them]... the bell stones were used to call people. You hit stone to stone and the sound echoed throughout the valley.

Mr. Rowe mentioned that there may be burials in and around the project area, and suggested another possible cultural impact:

RPR: There was once a barter system between mauka and makai communities with taro and *ti* (from *mauka* people) being traded for *limu*, fish and salt with *makai* people. That is threatened [by proposed development].

Mr. Kaohelaui'i and Mr. Rowe expressed their concerns about the proposed project:

RPR: This particular sewer line will make this whole thing [the massive development] happen on the south side... all the way down to the Hyatt Hotel... So this is the beginning of the kill. Because everything *mauka* and *makai* will be pumped into this whole system that will be going up hill to the bigger treatment plant. So now what happens when a hurricane comes and the power and the plants all shut down? Where will all this water go? We must have an answer. We cannot just move this shit around. It is the same thing that happened in Honolulu. It took them 47 years to figure out the sewers in Waikīkī are obsolete. It will show that if it does happen the economical impact of everything, even the ocean when all this development starts, is going to affect things. We are not going to be able to control the shit going into the ocean... With all this development, it could happen. If there is a hurricane how will it back up? It will back up into the ocean from all the hotels and everything on the bottom. How do you stop it? So it will affect the shoreline all the way around. Since Billy is a fisherman he can highlight you on the whole thing.

BK: Yeah, it is really going to ruin the fishing grounds.

CSH: Tell me, looking at the map, are there areas where you fish like around Kōloa Landing or ...

BK: Well yeah, I fish this whole coast. You see, right by Waikomo Stream is where you are going to go and it's going to go flowing into the stream if anything breaks or the line... it is going to go right into the ocean.

CSH: Do you still fish down there?

BK: Yeah there is a lot of fish. You just have to know the right time to go get them.

Mr. Rowe was especially concerned about the impact of the larger Kukui'ula development project planned *mauka* of the project area (the sewer line is being installed to support):

RPR: You see it's already an impact no matter what you do on development. It's already an impact because there is no social fabric of an island community... They think this is Coney Island on the mainland. The environment works with all you preserve for the future. And you cannot put all of [this new development] over there and make people live the way they live on Honolulu. So the rural atmosphere [is lost]. How do you preserve that part of an island that doesn't want

to live like Honolulu? In the culture, this is the most sacred place of all of its spiritual things, this island right here...this island of Kaua'i. Wai'ale'ale is the home of Kāne.

... All this land around here [points to map] has been approved already. This [CIA study] is the last part of the thing. This should've been the first part. Everything below this line right here from the sewer treatment plant has already been cleared and then everything in the back right here down to this restaurant over here Keoki's has been developed...and way up here. So all the cultural sites were violated. How can the state protect the culture if it is already gone? ...Now, you look at this map, try looking at all the houses there...you have to envision in your mind all the growth in this green area, this area that you will never get to see again. All of the culture is everything in this green area that has been wiped out already. So what does the sewer line [have] to do with everything they already violated. I cannot say anymore.

Mr. Kaohelaui'i expressed his concern that the proposed sewer line may pose problems similar to the current sewage system in his neighborhood:

...We always complain about that sewer plant over there right on the road. We never wanted that there. Because every time we [cross] the water we can smell that sewer plant. We can smell it in the house. Sometimes if we get the west winds then we can smell the sewer plant from here. Call in the Board of Health because we don't want to breathe that.

Asked about the cultural history of Kōloa Mr. Rowe concluded the interview by saying:

Some of the stories and some of the things that I hear are sacred to the culture and shouldn't be disclosed. And, when you say 'area' and you're looking at 10 years down the road you're looking at people who are living off the land, how will your existence be affected? You see the culture of Hawai'i does not give that information. You need information about the changing lifestyle of the person...all what you enjoy today will not be here in 10 years from now through the development, the rain, the dumping of fertilizers. How will we know the ocean will be the same 10 years from now? The ocean may change because of all the runoff. How will it affect him and his children and grandchildren? Now if you could put that in a CSH report, then you would have an "impact" of the culture not just the history of the culture.

After the interview Mr. Kaohelaui'i showed CSH staff researcher his backyard, the land his family once had a far more substantial piece of, including the bog. He pointed out the *heiau Hui Malama Kāne I Olo Uma* is taking care of across from the bog, rock walls, *ahu*, etc. He talked about how his father used, "all of the Hawaiian herbs such as *'uhaloa, pōpolo...*".

Royal Order of Kamehameha I, Kaumuali'i, Chapter 3

The mission of the Royal Order of Kamehameha I is to guard, maintain, and preserve the rituals and the memory of King Kamehameha and to preserve and perpetuate the Hawaiian

culture. Members of the Royal Order of Kamehameha, Kaumuali'i Chapter No. 3 meet twice a month to care-take the land and the cultural sites at Prince Kūhiō Park in Po'ipū southwest of the proposed project area. Five members of the Kaumuali'i Chapter participated in a group interview held at Prince Kūhiō Park on August 5, 2006. The interview was tape recorded and included: Warren Perry, Peter Kea, Scotty Sagum, Ron Ida, and Leo Gonsalves. Additionally, Chris Kauwe, a member of Hui Mālama Kāne Iolo Uma (see Kaohealauli'i and Rowe interview below), joined in the discussion. Mr. Kauwe is a current resident of Kōloa and a cultural practitioner who teaches the traditional art of surfing (*he'e nalu*) on the beach at Pō'ipu.

Asked about cultural, historic, and archaeological sites of Kōloa, interview participants described sites in and around the project area. This discussion of Kōloa legends and cultural and historic landmarks was facilitated by presenting the group with a map (48" by 103" - 1891 Government Survey map by Surveyor M.D. Monsarrat) of the Kōloa Ahupua'a for participants to write notes on about specific features of the landscape. The group provided the following sites and comments (Figures 9 & 10):

Holua, Hawaiian sled area

Village site: pig pens, houses

Heiau – Kāne-i-olo-uma

Kiha, a chief, has a house site, but it is not marked. The site is close to sewer line.

1960s – There was a private salt pond, different than the salt ponds, just a small one.

Ōpae ula, shrimp in the ponds is for community use

Manokalanipo, amphitheater

All along Kōloa Road people had *lo'i*, but the water was diverted.

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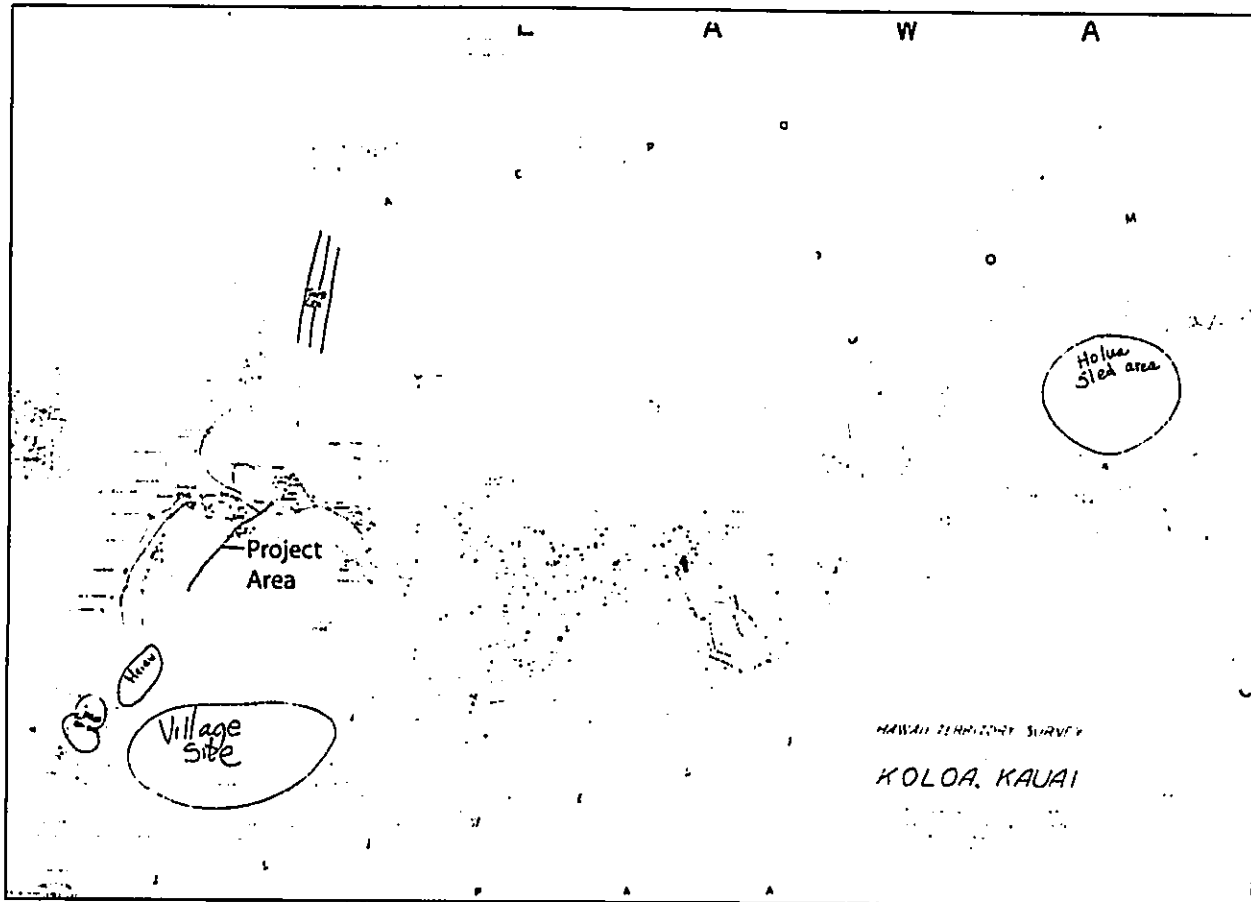


Figure 9. 1891 Government Survey map by Surveyor M.D. Monsarrat with project area and Royal Order of Kamehameha group interview notations

One interviewee shared a story about Kōloa (see Max Medeiros interview in Table 2):

Some of these sharks are peoples' family *'aumakua*... Gilbert Medeiros's grandmother, who was the descendent of the *moku* of this side of the island, she was swept out to sea at Sprouting Horn and the shark picked her up and put her back on this side of the rock. She was fishing and she got swept out...

In response to the question, "Does anybody fish in Waikomo Stream, collect plants or use the stream banks in any way?" two respondents explained:

Speaker 1: I don't think they use it in the vicinity that the sewer line crosses the stream. They may fish above that, but not below it.

CSH: How far above?

Speaker 2: Half a mile, a quarter mile. Walk up the stream gather prawns... There are some fish in there.

Speaker 1: Tilapia - a valuable food fish.

Asked about the project in relation to Prince Kūhiō Park and the activities and *kuleana* of the Kaumuali'i Chapter No. 3, interviewees had no specific concerns about the proposed sewer line itself. Two participants emphasized that the proposed project area be carefully monitored for burials. Regarding cultural impacts, the general consensus was, to quote one participant, "if everything functions right, there is no impact". However, interview participants expressed concerns about the sewer line not being big enough to support the number of residents that will eventually move into the area once the new (housing) development is complete. They raised questions about the pipe rupturing, and contingency plans in the event of an accident, and detailed the impact to cultural practices in the event of an accident. Following is a selection of comments that express the speakers' primary concerns:

OK, if that pipe is not big enough, make it big enough so we don't have to redo it. Make it one time.

I think one of the biggest things is a safeguard if it breaks...like Waikīkī [reference to Winter 2006 sewer line break in which sewage spilled into the Ala Wai Canal and Waikīkī beaches on O'ahu].

Changes in the water in Waikomo Stream might affect our ability to restore the *lo'i* here [in Prince Kūhiō Park].

If Waikomo overflows it actually could come down here, down the road into the Park.

Sewage [from] Waikomo Stream could overflow. I am concerned that Prince Kūhiō Park could be flooded.

...it would affect the flow of water to Waikomo Stream if it ruptured. That's one of the major concerns. What safety features are there?

Culturally, if anything did go into the river the immediate affect... would be that we couldn't use the river for canoe paddling as a launching place because that's where Kōloa Canoe Club leaves...They meet at the river mouth, Kōloa Landing...how much can that hold and where will it end up? Where is the outfall? If it affects the ocean than it affects a whole bunch of cultural stuff, like surfing, fishing because there is *akule*. So where does it go?

You know the way they have done it in the past is that it goes into the river, usually. You know that time they had ruptures in the pipe, they do an overflow [reference to past sewer line break in Kōloa]. It would be interesting to know what their contingency is?

What is the contingency for overflow?

These are all potential shortcomings [of the project]. The worse case scenario is that if the thing craps out...it is going to go everywhere.

I just wish we had a way to find out [the] capacity [of the pipe].

Raw sewage goes into the ocean. [Also,] if there is a lava tube that goes into the ocean – you can't see it – it will go into the ocean [and not be detected].

How can we tell if it [sewage] goes into the ocean? Is that something we can ask the developers? Will there be monitors [for sewage spills]?

And one interviewee pointed out:

Another cultural impact would be...all of these sharks. Some of these sharks are peoples' family *'aumakua*.

CSH then posed the question, "are they still feeding the sharks today?" to which the speaker responded:

I don't know about today, but until the late 80s they did.

David Chang

David Chang was born in Waimea on the island of Kaua'i and raised in Kōloa where he resides today. He is a local historian of Kōloa. Mr. Chang was interviewed in Kōloa Town behind Lappert's Ice Cream shop on August 6, 2006:

Mr. Chang shared the following history and childhood remembrances of Kōloa Ahupua'a:

Two-three hundred years ago Kōloa was all water, but the plantations diverted the water...The Waikomo Stream was diverted in the plantation days.... The stream goes under the land and emerges in the ocean... Waikomo means 'water that

disappears'. Whales come into Kōloa Landing. You could sit on the wall and hear them sing...When I was younger I would go frogging [up Waikomo]. But I wouldn't do that now because of all the pesticides. Before there were 'o'opu, wi, 'opae, and Chinese catfish. They were all eaten by Tilapia. The stream is sterile now and not used by the Hawaiians anymore. You can still go up the stream on the side near the government road, but much of the Waikomo Stream is now on private property.

He discussed an historical trail along Waikomo Stream:

There was a trail on the east side of the river that went from Kōloa Landing all the way up. It paralleled Waikomo from the bridge all the way up the valley. It provided a shortcut for the sugar plantations. [There was the] Hanawai Ditch – they would tell the plantation workers, when you need water, open the gate and take [water]... Water was very valuable, it couldn't be used all the time.

Mr. Chang suggested researching a Hawaiian family associated with the project area:

The Moki family — from my recollection — had a *kupuna* who could control the elements. They lived near the current fire station. But the family died out with the Hawaiian culture. The Moki family may have burials near the Waikomo stream, near the fire station...During the Māhele a lot of families lost their land. The Moki family was lucky, they did not. But then they all died off. They would have been across from the fire station, which is the gateway to the property to be developed.

He touched on a few legends of the area including references to Kamapua'a, Kaikapū, a man eater *mo'o*, and the god Kewalo. He provided childhood remembrances of Kōloa:

At, Green Pond – the devil lives there. My grandfather told us that we had to sing a song before going into the pond." Up until the 1950s, you couldn't say 'I'm going fishing' as the gods of the ocean could hear you... At Hapa Road there used to be night marchers.

Mr. Chang shared his main concern about the habitat of the eyeless wolf spider and one of its prey, a shrimp-like eyeless amphipod. Both are troglodytes that require a cave environment to survive. In an interview conducted with CSH (Mitchell et al. 2005a) Mr. Chang explained that:

The only known habitat for two of Kaua'i's strangest endangered animals recently received critical habitat designation from the U.S. Fish and Wildlife Service. The eyeless wolf spider and one of its preys, a shrimp-like eyeless amphipod, both live deep inside the dark, damp caves of Kaua'i's Kōloa District, and nowhere else in the world. There are perhaps fewer than 30 Kaua'i cave spiders in existence, all living in a single cave. The cave amphipod, also blind, is regularly found in three caves, including the one where the cave wolf spider is found.

For this assessment report he added that:

They were found in 1974. They can't test the range of the spiders. They are planting GMO plants, using pesticides like Round-Up. They don't know how this is going to impact the spiders. Does the poison get into the lava tubes (where there are spiders... I'm afraid they will go farther than this proposal and destroy more... Destroying the blind spiders is like destroying a unicorn.

When asked about possible burial sites Mr. Chang, pointing to the *makai* side of the project, noted that *pāhoehoe* rock is all burials:

It is guaranteed that they will find graves. Po'ipū Road looks like just a bunch of koa haole, but there are many burials... Right under this area there is a huge lava tube that extends from the Big Save to the Catholic Church down all the way to the ocean. You can only see the top of the lava tube, not the extent of it.

Mr. Chang explained that:

The developers are using the wrong [road] names on the maps. Hoonani Road used to be Po'ipū Road, but the maps call it "Old Po'ipū Road". The new Po'ipū Road had no name before. You can't have two roads with the same name. Please pass this on... Po'ipū is not a local name but a Honolulu introduced name. When they built the new Po'ipū Road in 1972, EISs and CIAs were not required. So the existing road has never been surveyed.

And he added the following community concern:

Make sure they do it right. The pipe to the sewage plant better be the right size for so many people. It always stinks. The line broken is right now. If they cannot even control what is going on now, don't expect them to know what they are doing down the line. We [the community] are concerned.

Section 5 Cultural Landscape of the Project Area

Discussions of specific aspects of traditional Hawaiian culture as they may relate to the project area are presented below. The concluding discussion examines resources and practices identified within the project area in the broader context of the encompassing *Kōloa* Ahupua'a landscape. Excerpts from talk story sessions are incorporated throughout this section where applicable.

Hawaiian Habitation and Agriculture

Settlement patterns in pre- and post- contact *Kōloa* are described in Section 3 above. While interviewees for this study discussed the long history of *kalo lo'i* (taro ponds), sugar growing, and salt ponds in the *ahupua'a*, no mention was made of ongoing traditional agricultural or horticultural practice in or around the proposed project area. Members of the Royal Order of Kamehameha, Kaumuali'i Chapter No. 3 discussed agricultural and habitation sites, including *lo'i*, salt ponds, village sites with pig pens, houses, and more (Section 5, Figures 9 & 10).

Gathering of Plant Resources

Hawaiians utilized upland resources for a multitude of purposes. Forest resources were gathered, for not only the basic needs of food and clothing, but for tools, weapons, canoe building, house construction, dyes, adornments, *hula*, medicinal and religious purposes. During this assessment cultural consultants only occasionally mentioned the gathering of plant resources. Mr. Kaohelauli'i mentioned formerly gathering fruit (mangos, tangerines) and occasionally other plant resources (e.g., *lei* flowers), and that his father used to collect medicinal plants such as *pōpolo* (*Solanum nigrum*) and *'uhaloa* (*Waltheria indica*) upland of the project area. Mrs. Bukoski also discussed using *pōpolo* and *'uhaloa* in the past.

Marine and Freshwater Resources

The sea is a rich resource and the Hawaiian people were traditionally expert fishermen. Fish of all types supplied the Hawaiian diet with a rich source of protein. Cultural contacts talked about estuarine and coastal resources, namely fish, seafood, and *limu* (seaweed and freshwater or brackish water algae). Mr. Kaohelauli'i spoke of catching mullet, *āholehole* (the young/immature form of an endemic fish, *Kuhlia sandvicensis*), prawns, *wī* (referring to either the endemic fresh and brackish water snail - *Neritina granosa*, or the shellfish - *Nerita vespertina*), and *'o'opu* (species of Hawaiian endemic fish in the Goby family). One participant in the Royal Order of Kamehameha interview noted that people fish for *akule* (*Trachurops crumenophthalmus*), and Mrs. Bukoski talked about catching *'ō'io* (*Albula vulpes*) in her younger years.

Traditional Hawaiian Sites and Historic Properties

The archaeological inventory survey of the current project area did not identify any historic properties within the APE of the proposed sewer line. However, it is possible that remnant historic properties still exist *mauka* of the current project area/APE

A few of the individuals participating in this cultural assessment discussed Hawaiian sites and historic properties in *Kōloa* Ahupua'a. Members of the Royal Order of Kamehameha,

Kaumuali'i Chapter No. 3 described Hawaiian features of the landscape, including *Holua*, Hawaiian sled area, *Heiau* – Kāne-i-olo-uma, the house site of the Chief Kiha, Manokalanipō amphitheater, and more (Section 5, Figures 9 & 10).

Burials

SHPD/DLNR staff related no accounts of burials in the project area. CSH asked knowledgeable people in the community if they were aware of any specific burials in the project area. No one knows of any specific burial sites. However, it was stated in consultation sessions that burials are to be expected in and around the project area in lava tubes and/or caves.

Native Hawaiian Hunting Practices

None of the individuals participating in this cultural impact assessment mentioned past or ongoing hunting practices in or around the proposed project area.

Hawaiian Trails

Mrs. Bukoski described the old unpaved pedestrian roads and trails going down the *ahupua'a* to Po'ipū Beach. Mr. Chang discussed the former trail on the east side of the Waikomo Stream that went from Kōloa Landing all the way up to the top of Kōloa (extant during plantation times).

***Wahi pana* (Storied Places)**

Kōloa Ahupua'a is known for *mo'olelo* about Kewalo and Kāne, and to some extent the pig god, Kamapua'a, as underscored by the stories provided by community participants interviewed for this assessment. Ms. Holi emphasized that there is a *leina* (place where spirits leap into the nether world) in or near the project area. And, Mr. Chang told stories about *mo'o* of Kōloa.

Section 6 Summary and Recommendations

Cultural Surveys Hawai'i has completed a cultural impact survey and prepared this assessment at the request of Kukui'ula Development Company (Hawai'i), LLC, for the proposed installation of 686 linear meters (2,250 linear feet) of a 24-inch gravity sewer line within the Po'ipū Road right-of-way in Kōloa, Kaua'i.

Traditional, historical, and archaeological background research showed that people have extensively used Kōloa Ahupua'a since the arrival of Native Hawaiians centuries ago. Taro pond field systems were constructed and fed with water from Waikomo Stream. With the arrival of Europeans, agriculture shifted to sugar cane and its associated infrastructure such as railroads and mills.

The abandonment of each phase of land use left archaeological remains scattered across the landscape. Archaeologists have systematically studied these remnants as the tourist industry has developed and residential neighborhoods have been constructed.

An effort was made to contact and consult with Hawaiian cultural organizations, government agencies, and individuals who might have knowledge of and/or concerns about the project area. Thirty-nine people were contacted for the purposes of this cultural impact assessment. There were 28 responses and 11 *kama'āina* and *kūpuna* with knowledge of the Kōloa Ahupua'a were interviewed for more in-depth contributions to the cultural survey.

In the course of this assessment, study participants identified a few cultural practices (namely coastal and freshwater fishing and collecting prawns from Waikomo Stream) that may still be taking place in the lowlands of Kōloa. Utilization of the upper portion of Kōloa for gathering of plant resources (e.g., fruit) was mentioned as a cultural practice in the past. The community contacts queried for this assessment identified the following key concerns related specifically to the proposed installation of the 24-inch sewer line within the project area:

- The proposed sewer line may not have the capacity to support the Kukui'ula development that will bring in several thousand new residents to Kōloa (northwest of the proposed project area). The sewer line could leak or rupture. If the sewer line breaks (as has happened in the past with other sewer lines) cultural activities associated with Waikomo Stream and the coastal zone such as collecting prawns, *limu*, fishing and surfing will be negatively affected by the sewage spill.
- Burials may be present in lava tubes and/or caves in and around the proposed project area.

Although not specifically a cultural impact, it is worth noting that participants in this study also mentioned community concern in protecting the Kaua'i blind cave spider and cave amphipod habitats, which are now included in designated Critical Habitat Units established by the U.S. Fish and Wildlife Service final rule published April 9, 2003. The project area for the proposed sewer line is not located within any of the Critical Habitat Units designated for these two cave species by the U.S. Fish and Wildlife Service final rule published April 9, 2003.

Consultation with the client was held regarding the need to address community concerns for the possibility of sewage spills near Waikomo Stream. The client provided the following account of mitigation efforts:

Potential impacts to Waikomo Stream and near shore coastal waters due to leakage or accidental breakage in the proposed sewer line will be mitigated by proper design, construction and operation of the facility. The use of PVC pipe for the majority of the proposed sewer line will provide for corrosion resistance and longevity, and is more durable and resistant to breakage. In addition, an approximately 101 linear-foot segment of the proposed sewer line in the vicinity of the Waikomo Stream crossing will be constructed of ductile iron with a ceramic epoxy lining and will be encased in a reinforced concrete jacket approximately 10 feet past either side of the stream culverts. Standard procedures for detecting leaks and breaks and for shutting down and repairing the sewer line will further minimize impacts.

The archaeological inventory survey report (O'Leary et al. October, 2006), completed concurrently with this cultural impact assessment, recommends a program of archaeological monitoring. A monitoring program is being required by the State Historic Preservation Division (letter of September 22, 2006; Log No 2006.2790, Doc No. 0609NM01). Excavation within the project area may possibly encounter lava tubes and/or caves (presently unknown) that may contain Hawaiian cultural properties including human remains. It is recommended that in the event of the discovery of any lava tubes and/or caves during construction of the proposed sewer line, consultation be promptly carried out with the SHPD and the Kaua'i/Ni'ihau Islands Burial Council regarding appropriate treatment.

The archaeological monitoring program required by the State Historic Preservation Division directly addresses the concerns expressed regarding burials and/or other cultural properties presently unknown as may lie within the project area. Mitigation efforts to address the concern to avoid sewage spills are indicated above. With proper mitigation of these two expressed cultural concerns, the proposed project will have minimal impact upon native Hawaiian cultural resources, beliefs and practices.

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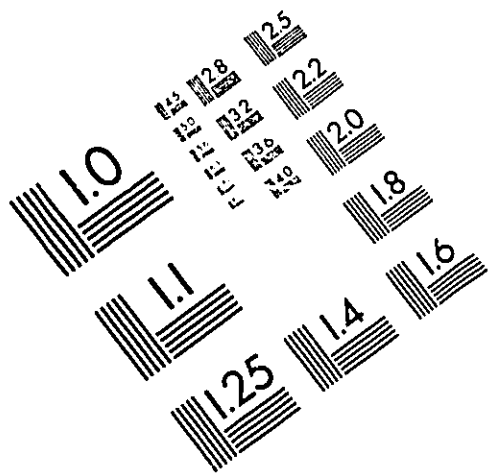
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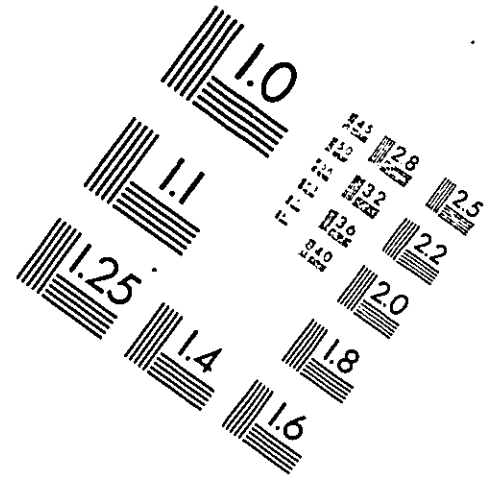
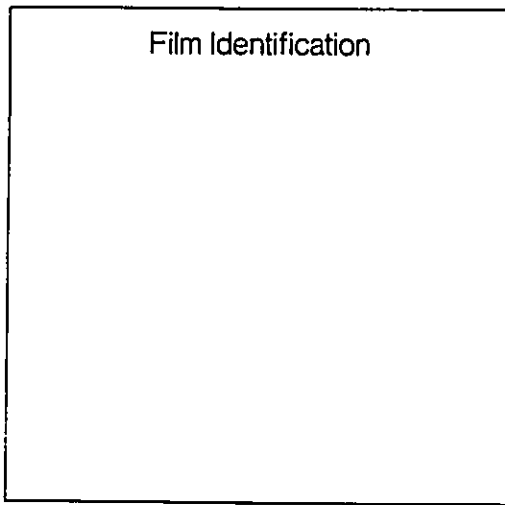
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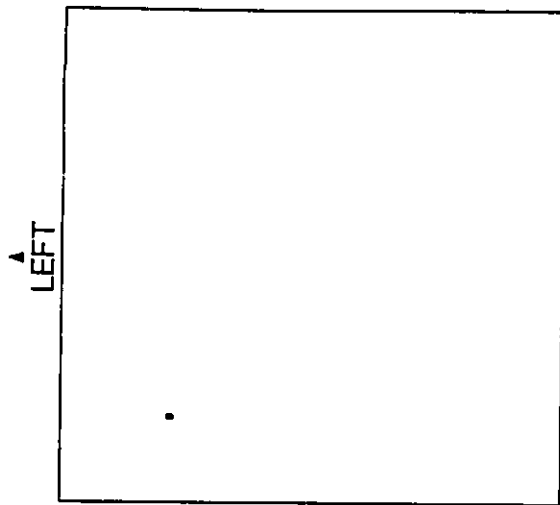
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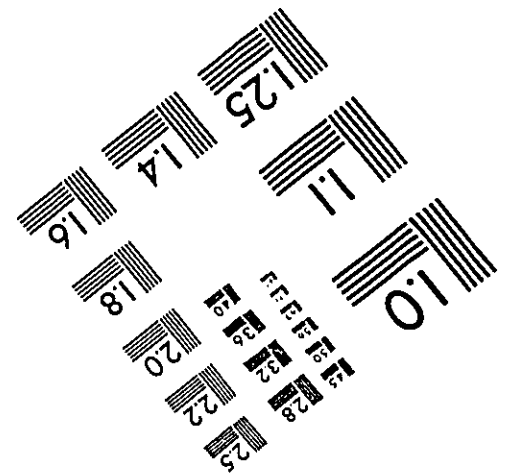
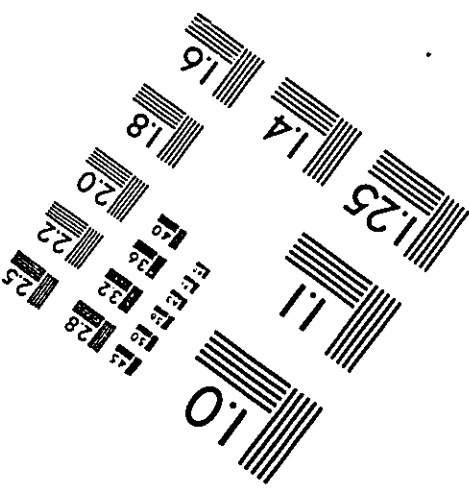
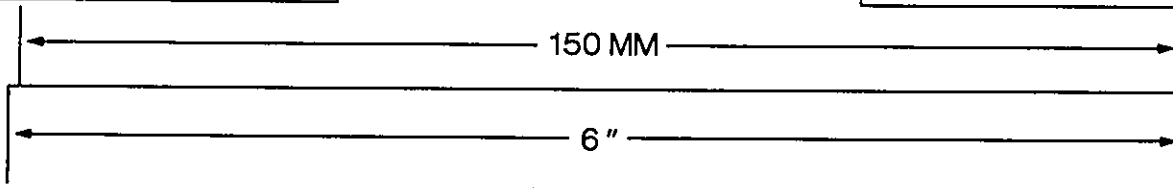
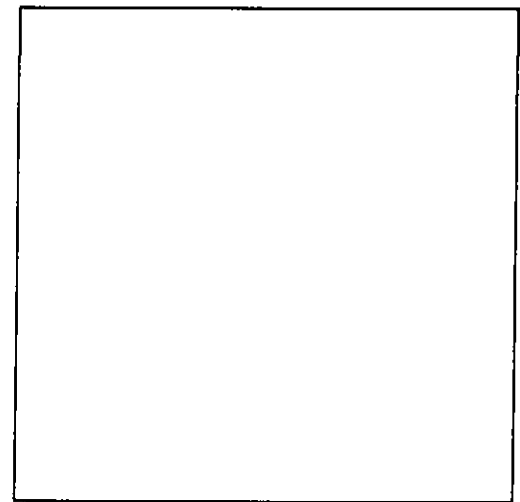
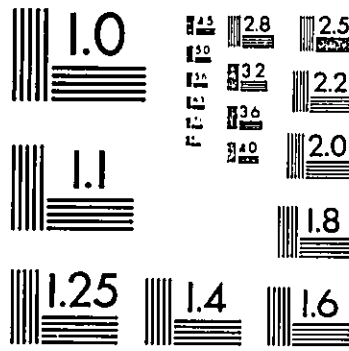
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