MEMORANDUM

TO: The Honorable Brian J. J. Choy, Director
Office of Environmental Quality Control

FROM: William W. Paty, Chairperson
Board of Land and Natural Resources

SUBJECT: Document for Publication in the OEQC Bulletin
Environmental Assessment for Conservation District Use
Application KA-8/25/92-2589 for a Single Family Residence
and Accessory Uses at Aliomanu, Kawaihau, Kauai,
TMK: 4-9-05: 27

The above mentioned Chapter 343 document was reviewed and a
negative declaration is anticipated based upon the environmental
assessment provided with the CDUA.

Please feel free to call me or Roy Schaefer of our Office of
Conservation and Environmental Affairs, at 587-0377, if you have
any questions.
CONSERVATION DISTRICT USE APPLICATION:

DEPARTMENT MASTER APPLICATION FORM,
SUPPLEMENTAL INFORMATION,
and
ENVIRONMENTAL ASSESSMENT
for
PROPOSED RESIDENCE
ALIOMANU ESTATES, KAUA'I

Prepared for
NORMAN J. CARIS
MALIBU, CALIFORNIA

Prepared by
BELT COLLINS & ASSOCIATES

August 25, 1992
CONSERVATION DISTRICT USE APPLICATION
TABLE OF CONTENTS

I. LANDOWNER/WATER SOURCE OWNER .................................................. 1
II. APPLICANT ............................................................................. 1
III. TYPE OF PERMIT(S) APPLYING FOR ........................................... 1
IV. WELL OR LAND PARCEL LOCATION REQUESTED......................... 1

SUPPLEMENTAL INFORMATION ..................................................... 2
V. ENVIRONMENTAL REQUIREMENTS ............................................. 2
VI. SUMMARY OF PROPOSED USE ................................................. 2
VII. INFORMATION REQUIRED FOR ALL USES ................................. 2
A. DESCRIPTION OF PARCEL ....................................................... 2
   1. Existing Structures/Use ...................................................... 3
   2. Existing Utilities ............................................................... 3
   3. Existing Access ............................................................... 3
   4. Vegetation ....................................................................... 3
   5. Topography .................................................................. 4
   6. Shoreline Description .................................................... 4
   7. Existing Covenants, Easements and Restrictions ................. 4
   8. Historic Sites ................................................................. 5
B. DESCRIPTION OF PROPOSED ACTIVITY .................................. 5
C. DEVELOPMENT SCHEDULE ..................................................... 6
D. TYPE OF USE REQUESTED ................................................... 6
E. FILING FEE ...................................................................... 6

VIII. INFORMATION REQUIRED FOR CONDITIONAL USE ONLY ........ 6
A. PLANS ............................................................................. 6
   1. Area Plan ....................................................................... 6
   2. Site Plan ....................................................................... 9
   3. Construction Plan .......................................................... 9
   4. Maintenance Plans ......................................................... 9
   5. Management Plans ....................................................... 9
   6. Historic or Archaeological Site Plan ................................. 9
B. SUBZONE OBJECTIVE .......................................................... 17

FIGURES ............................................................................... 10
1. Location Map ..................................................................... 10
2. Vicinity Map ..................................................................... 11
3. Project Area ..................................................................... 12
4. Parcel Map ....................................................................... 13
5. Site Plan ......................................................................... 14
6. Floor Plan ....................................................................... 15
7. Building Elevation ........................................................... 16
## ENVIRONMENTAL ASSESSMENT

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. APPLICANT</td>
<td>18</td>
</tr>
<tr>
<td>II. APPROVING AGENCY</td>
<td>18</td>
</tr>
<tr>
<td>III. AGENCIES CONSULTED IN PREPARING ENVIRONMENTAL ASSESSMENT</td>
<td>18</td>
</tr>
<tr>
<td>IV. PROJECT SITE LOCATION</td>
<td>18</td>
</tr>
<tr>
<td>V. PROPOSED ACTION</td>
<td>18</td>
</tr>
<tr>
<td>VI. REQUIRED PERMITS</td>
<td>19</td>
</tr>
<tr>
<td>VII. PUBLIC POLICIES</td>
<td>19</td>
</tr>
<tr>
<td>A. STATE LAND USE LAW</td>
<td>19</td>
</tr>
<tr>
<td>B. COUNTY GENERAL PLAN</td>
<td>27</td>
</tr>
<tr>
<td>C. COUNTY ZONING</td>
<td>27</td>
</tr>
<tr>
<td>D. SPECIAL MANAGEMENT AREA</td>
<td>27</td>
</tr>
<tr>
<td>VIII. DESCRIPTION OF THE AFFECTED ENVIRONMENT AND PROBABLE ENVIRONMENTAL EFFECTS</td>
<td>27</td>
</tr>
<tr>
<td>A. EXISTING LAND USE</td>
<td>27</td>
</tr>
<tr>
<td>B. TOPOGRAPHY</td>
<td>28</td>
</tr>
<tr>
<td>C. SHORELINE AND MARINE ENVIRONMENT</td>
<td>28</td>
</tr>
<tr>
<td>D. SOILS</td>
<td>30</td>
</tr>
<tr>
<td>E. VEGETATION</td>
<td>32</td>
</tr>
<tr>
<td>F. FAUNA</td>
<td>32</td>
</tr>
<tr>
<td>G. VISUAL</td>
<td>34</td>
</tr>
<tr>
<td>H. AIR QUALITY</td>
<td>34</td>
</tr>
<tr>
<td>I. NOISE IMPACT</td>
<td>34</td>
</tr>
<tr>
<td>J. ARCHAEOLOGICAL SITES</td>
<td>35</td>
</tr>
<tr>
<td>K. NATURAL HAZARD</td>
<td>37</td>
</tr>
<tr>
<td>L. CIRCULATION</td>
<td>37</td>
</tr>
<tr>
<td>M. PUBLIC SERVICES AND FACILITIES</td>
<td>38</td>
</tr>
<tr>
<td>N. SOCIO-ECONOMIC CONSIDERATIONS</td>
<td>38</td>
</tr>
<tr>
<td>IX. SUMMARY OF MAJOR IMPACTS</td>
<td>39</td>
</tr>
<tr>
<td>X. ALTERNATIVES CONSIDERED</td>
<td>39</td>
</tr>
<tr>
<td>A. NO ACTION</td>
<td>39</td>
</tr>
<tr>
<td>B. ALTERNATIVE LOCATION</td>
<td>39</td>
</tr>
<tr>
<td>C. ALTERNATIVE USE</td>
<td>39</td>
</tr>
<tr>
<td>XI. SUMMARY OF MITIGATING MEASURES</td>
<td>39</td>
</tr>
</tbody>
</table>

### FIGURES

1. Location Map                                                        | 20   |
2. Vicinity Map                                                         | 21   |
3. Project Area                                                         | 22   |
4. Parcel Map                                                           | 23   |
5. Site Plan                                                            | 24   |
6. Floor Plan                                                           | 25   |
7. Building Elevation                                                   | 26   |
8. Topography and Slope                                                 | 29   |
9. Soil Classification .................................................. 31
10. Land Type/ALISH ................................................ 33
11. Archaeological Sites ............................................. 36

APPENDICES

A. Baseline Assessment of the Marine Environment in the Vicinity of Aliomanu, Kauai, Hawaii
B. Botanical Assessment—Aliomanu CDUA
C. Field Survey of the Avifauna and Feral Mammals at Aliomanu, Kauai
D. Archaeological Inventory Survey of 15.44 Acres (TMK 4-9-5: Por. 4, Lot 12)
CONSERVATION DISTRICT
USE APPLICATION
STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
P. O. BOX 621  
HONOLULU, HAWAII 96809  

DEPARTMENT MASTER APPLICATION FORM  

FOR DLNR USE ONLY  
Reviewed by ____________________________  
Date ____________________________  
Accepted by ____________________________  
Date ____________________________  
Docket/File No. ____________________________  
180-Day Exp. ____________________________  
EIS Required ____________________________  
PH Required ____________________________  
Board Approved ____________________________  
Disapproved ____________________________  
Well No. ____________________________  

(Print or Type)  

1. LANDOWNER/WATER SOURCE OWNER  
(If State land, to be filled in by Government Agency in control of property)  
Name: ____________________________  
Address: ____________________________  
Telephone No.: ____________________________  
Signature ____________________________  
Date ____________________________  

II. APPLICANT (Water Use, omit if applicant is landowner)  
Name: ____________________________  
Address: ____________________________  
Telephone No.: ____________________________  
Interest in Property: ____________________________  
(Indicate interest in property; submit written evidence of this interest)  
Signature ____________________________  
Date ____________________________  
*Signature ____________________________  
Date ____________________________  

*If for a Corporation, Partnership, Agency or Organization, must be signed by an authorized officer.  

III. TYPE OF PERMIT(S) APPLYING FOR  
( ) A. State Lands ______________________________________________________________________  
( ) B. Conservation District Use ____________________________________________________________  
( ) C. Withdraw Water From A Ground Water Control Area ______________________________________________________________________  
( ) D. Supply Water From A Ground Water Control Area ______________________________________________________________________  
( ) E. Well Drilling/Modification ______________________________________________________________________  

IV. WELL OR LAND PARCEL LOCATION REQUESTED  
District: Kawaihau ____________________________  
Island: Kauai ____________________________  
County: Kauai ____________________________  
Tax Map Key: 4th Div. 4-9-05:27 ____________________________  
Area of Parcel: 15.4 acres ____________________________  
(Indicate in acres or sq. ft.) ____________________________  
Term (if lease): ____________________________
SUPPLEMENTAL INFORMATION
CONSERVATION DISTRICT USE APPLICATION
ALIOMANU ESTATES

V. ENVIRONMENTAL REQUIREMENTS

Pursuant to Chapter 343, Hawaii Revised Statutes, and in accordance with Title 11,
Chapter 200, Environmental Impact Statement (EIS) Rules for Applicant Actions, an Environmental
Assessment for the proposed project has been prepared and is attached to this application.

VI. SUMMARY OF PROPOSED USE

The applicant, Norman J. Caris, is proposing to construct a single-family residence on a
15.4-acre parcel which is located along the shoreline in North Kauai within the State
Conservation District. Of the 15.4 acres which comprise the subject parcel, only about 2.5 acres
will be used for the proposed residence and its accessory uses.

VII. INFORMATION REQUIRED FOR ALL USES

A. DESCRIPTION OF PARCEL

1. Existing Structures/Use

The project site is presently vacant and undeveloped. It is located in a 12-lot
subdivision known as Aliomanu Estates. The average lot size in the subdivision is approximately
22 acres.

The project property, which contains 15.4 acres, is situated on the shoreline of the
Aliomanu subdivision. Access to the parcel is via a planned road through Aliomanu Estates from
the existing Kuhio Highway. The highway is a state right-of-way serving the north coast of Kauai.

Aliomanu Estates has begun construction of its infrastructure and should be completed by
the end of the year. Makai of the subject property is the shoreline which is comprised of a sand
beach and coral reef flat. The sand area is not heavily used and is frequented mostly by
fishermen and neighboring residents who relax on the sand or stroll leisurely along the water's
edge. Beach boulders occur in isolated clusters along the shoreline. Shore fishermen often use
them as a base for line throwing. Since the reef flats extends 300 to 400 feet from the shoreline
and the waters are relatively shallow, swimming and snorkeling are not very suitable for the area.

Adjacent to Aliomanu Estates and along the shoreline to the south toward Anahola Bay
are a number of beachfront homes. These homes have access from a rural road which originates
from Kuhio Highway. More than ten residences are located on this stretch of beach land. The State Land Use Commission classifies this area as Urban.

One of the residences along this beach and adjacent to the project site is situated within the Conservation District. It was constructed within the last ten years.

To the north at Papaa Bay is an area that is primarily vacant with only one home near the ocean. This area is designated in the Conservation District.

2. **Existing Utilities**

   The project site is located within a County-approved subdivision. Infrastructure for the subdivision is expected to be completed by the end of this year. When the subdivision’s roads and utilities are completed, access, water, electricity and telephone services will be available for the subject property.

   Utility service will be provided by Kauai’s public utility companies. Sewage generated from the project site will be accommodated by a private cesspool.

3. **Existing Access**

   Access to the project site from Kuhio Highway will be provided via standard 44-foot and 56-foot wide rights-of-way which will remain private. These standard roadways are part of the Aliomanu Estates subdivision which is scheduled for completion by the end of this year. The road connection to Kuhio Highway has been approved by the State Department of Transportation.

4. **Vegetation**

   A botanical assessment of the project site was conducted by Char & Associates in 1990. The study found that introduced species dominated the property. Almost the entire sloped area was occupied by ironwood trees. Various grass types were found beneath the thick cover of the ironwoods.

   At the base of the slope and above the sand area, native species such as naupaka, hala, hau, tree heliotrope, pa‘u-o-Hi‘i-aka and beach morning glory (pohuehue) were predominant. At the top of the slope were lantana, Christmas berry, Java plum and koa haole. In the two small gullies which traverse the project site were vegetation consisting primarily of Java plum trees and scattered ironwood trees. Shrubs of koa haole, lantana, Christmas berry and kolomona accompanied the two predominant trees.

   Char & Associates concluded that there are no plants on the project site that are listed by U.S. Fish and Wildlife Service as threatened or endangered nor are there any candidates for such status.
5. **Topography**

Aliomanu Estates, in which the project site is located, is a 12-lot subdivision that extends from Kuhio Highway at the 200-foot elevation to the shoreline approximately 3,800 to 4,000 feet to the east. A major portion of the subdivision sits on a plateau surrounded by the shoreline bluff to the east and a major ravine to the north and south. The north ravine was created over centuries and in part by Papaa Stream which flows into Papaa Bay. The south ravine was formed by Aliomanu Stream which currently flows into Aliomanu Bay near the project site. Both ravines are major drainageways for the mauka lands which encompass the northern flank of the Kalalea Mountain.

At the coastline of Aliomanu Estates, where the project site is located, the slope of the terrain averages approximately 15 to 30 percent, but a portion of the property where the proposed residence is to be located is relatively level and developable. Elevations on the overall project property range from 6 feet to approximately 75 feet over a distance of about 300 feet.

Two minor swales traverse the project site at approximately equal intervals from the side property lines. Each swale is a drainageway for the mauka land within Aliomanu Estates. Water from above the highway does not flow into the subdivision.

The makai boundary of the project site constitutes the shoreline of the area. A Shoreline Certification by the Board of Land and Natural Resources (BLNR) was obtained on January 4, 1990. In July 1992, the BLNR recertified the shoreline.

6. **Shoreline Description**

At the shoreline is a white sand beach composed of very coarse-grained calcareous sand of marine origin. The depth of the sand beach is about 70 to 100 feet. In several areas along the shoreline are clusters of large boulders which extend from the sand area out into the ocean. These boulders are visible throughout the year. Some areas of the sand beach are underlain by beach rock, composed of lithified sand.

The region of the marine environment closest to the beach consists of a broad, shallow reef flat. This marine feature is composed of material deposited by calcifying organisms, particularly coral and algae. The reef flat extends approximately 300 to 400 feet out to sea from the shoreline. Surf in the area does not break along the shoreline but at the edge of the reef flats.

7. **Existing Covenants, Easements and Restrictions**

The project site is traversed by a 10-foot wide public pedestrian easement which originates from a road within Aliomanu Estates and extends to the shoreline. An unimproved trail is planned within this access easement.

At the mauka end of the easement within the adjacent parcel is a public parking area. Access to this parking area is provided by a 30-foot wide vehicular access easement and Aliomanu Estates' standard paved roads.
Near the pedestrian easement is a drainageway and an accompanying building setback area. Both are defined within an easement. The latter, which is approximately 50 feet wide, extends 600 feet through the applicant's property to reach the shoreline. Aliomanu Estates' protective covenants restrict any buildings within this setback area.

8. **Historic Sites**

An archaeological inventory survey was conducted by Cultural Surveys Hawaii to determine the presence or absence of archaeological features on the property. The study findings, which included a 100 percent site coverage, revealed that there are two archaeological features present. The two sites, however, are located outside of the area of development and would not be impacted by the proposed residence. The applicant, however, is taking precautionary measures to assure the protection of the sites from damage during construction. Further, given the possibility that there may still be some sites below the surface of the property, the applicant is willing to cease construction activity in the immediate area if an archaeological site is uncovered during site work and resume construction only after archaeological clearance is obtained from the appropriate State and County agencies.

**B. DESCRIPTION OF PROPOSED ACTIVITY**

The applicant is proposing to construct a residence on a 15.4-acre parcel within Aliomanu Estates. The residence is planned to have a total floor area of approximately 7,200 sq. ft. and to spread over a one-story, linear-configuration structure. The attached garage will be approximately 950 sq. ft. The design of the building is intended to blend in harmony with the environment. No heavy grading is planned and no concrete building with massive walls and stark colors are proposed. The building will be of wood construction with wood tile roofing. Its architecture will be of contemporary-Polynesian vernacular.

Accessory uses or amenities will include a swimming pool, tennis court and landscaped garden. A paved driveway will provide access to the residence. Landscaping, consisting primarily of groundcover, shrubs and ornamental trees, will be provided around the house, swimming pool, tennis court and along the driveway. The sloping area along the shoreline and makai of the residence yard will be left in a natural state. Some trees be removed for construction and other trees between the residence and shoreline will be trimmed down for views. The majority of trees will be kept in place.

The proposed project, including residence, amenities, landscaping and driveway, will cover only 2.49 acres or 16.2 percent of the total 15.4-acre lot. The highest structure will be the residence which would be a one-story building. It will comply with the height requirements of the County Comprehensive Zoning Ordinance for single-family detached dwellings.

The foundation of the residence would consist of wood poles or rock walls to support the elevated floors. This form of construction will allow the building to adapt to the topography and reduce the amount of site grading.
C. DEVELOPMENT SCHEDULE

Commencement Date: First quarter, 1993
Completion Date: Second quarter, 1994

D. TYPE OF USE REQUESTED

The proposed residence comprises a conditional use in the General Subzone of the Conservation District.

Area of Proposed Use: Approximately 2.5 acres.

Name & Distance of Nearest Town or Landmark: Anahola, 2.6 miles

Boundary Interpretation: The Conservation District boundary along the mauka property line of the residential parcel was certified by the Board of Land and Natural Resources on September 6, 1989.

Conservation District Subzone: General
County General Plan Designation: Open

E. FILING FEE

The filing fee for this application is $50.00. The proposed action is not a commercial use, but it is a residence and a conditional use. An additional $50.00 may be required.

VIII. INFORMATION REQUIRED FOR CONDITIONAL USE ONLY

A. PLANS:

1. Area Plan: The location or area plan is presented as Figures 1 through 4 in this document. These figures represent the location map, vicinity map, project area and parcel map. The names and addresses of adjacent property owners are listed below.

   ADJACENT PROPERTY OWNERS

<table>
<thead>
<tr>
<th>Tax Map Key</th>
<th>Property Owner and Mailing Address</th>
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<tr>
<td>4-9-05: 2</td>
<td>Takesugi Esaki</td>
</tr>
<tr>
<td></td>
<td>aka Joseph T. Esaki</td>
</tr>
<tr>
<td></td>
<td>Joseph T. Esaki Trust</td>
</tr>
<tr>
<td></td>
<td>5755 Kaapuni Road</td>
</tr>
<tr>
<td></td>
<td>Kapaa, HI 96746</td>
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</table>
Joseph T. Esaki
Tetsuo Esaki, et al.
P.O. Box 237
Anahola, HI 96703

Rickey B. Carlsberg
P.O. Box 49892
Los Angeles, CA 90049

Hawaiian Trust Co. Ltd. Trustee
c/o Bank of California
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San Francisco, CA 94145

Martha A. Gerbode Tr. Est.
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San Francisco, CA 94145

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Ronald C. Yanke
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Paul D. Chryst
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11  
Frank Gerbode  
c/o M. Gerbode  
BANKCAL - DREYER  
P.O. Box 45000  
San Francisco, CA 94145

4-9-07: 1  
Martha Gerbode  
c/o Bank of California  
P.O. Box 45188 - TR REAL EST OP  
San Francisco, CA 94145
2. Site Plan: A site plan of the property is presented as Figure 5 of this document.

3. Construction Plan: Concept building plans for the proposed project are attached as Figures 6 and 7 of this document.

4. Maintenance Plans: Electricity, water and telephone will be provided by the public utility companies, and sewage will be accommodated by an on-site cesspool. The residence's yard and driveway will be maintained by the owner.

5. Management Plans: A management plan is not needed for a residence.

6. Historic or Archaeological Site Plan: Cultural Surveys Hawaii has found two archaeological sites on the property. The proposed residence is located mauka and to the south of the two sites. No impact on the archaeological sites is expected. Therefore, no archaeological data recovery plan will be prepared.
B. SUBZONE OBJECTIVE:

The project site is located in the Conservation District General Subzone. Section 13-2-14 (a) of General (G) Subzone states the objective of this subzone is “to designate open space where specific conservation uses may not be defined, but where urban use would be premature.” Section 13-2-14 also states the boundaries for this subzone “shall encompass (1) lands with topography, soils, climate, or other related environmental factors that may not be normally adaptable or presently needed for urban, rural, or agricultural use; and (2) lands suitable for farming, flower gardening, operation of nurseries or orchards, grazing; including facilities accessory to these uses when said facilities are compatible with the natural physical environment.”

The proposed project will be located on land which is not suited for farming, flower gardening, grazing or operation of nurseries or orchards. The project is located on a 15.4-acre parcel within an approved large-lot subdivision that has an overall density of 1 unit per 20.5 acres. The subdivision allows a residence on each lot.

The proposed project will not promote urban use of the property or urbanization of the area. Only 16.2 percent of the owner’s property will be used for the residence, amenities and driveway, which leaves more than 83 percent or almost 13 acres in open space. This minor degree of site coverage will allow the overall character of the shoreline to continue to have an open space quality.

The flexible design of the residence and its amenities will allow the construction of the project to adapt to the steep terrain. The site’s steepness provides unique opportunities for ocean views and for architectural innovations. Planned site and landscape designs will provide proper drainage and sedimentation and erosion controls on the property.

In sum, the proposed residence will employ an adaptive design suitable to the land and will use only a small portion of the subject parcel. Therefore, the proposed project will maintain the low density use of the site and will not disrupt the overall open space quality of the area. The proposed project will not result in urbanization of the project vicinity.
ATTACHMENT

ENVIRONMENTAL ASSESSMENT
PROPOSED RESIDENCE
ALIOMANU ESTATES, KAUAI
1. Identify the Applicant or Agency proposing the action. 

2. Identify the Approving Agency, DUNR, ocE A

3. Identify the Agencies consulted. 
   Was applicable county planning office notified of project? Yes. 
   Were any appropriate community groups notified? Yes.
   
4. General description of the proposed action: 
   Technical
   Economic (Proposed timing or phasing of project?)
   Project cost? (State and County projects)
   Social (How does the project affect the community?)
   Environmental characteristics §11-200-12(b)(11)
   Is the project located in an environmentally sensitive zone (floodplain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water, coastal waters, archaeological/historic/cultural sites, natural resources)? Yes.

5. Summary description of the affected environment including: 
   Site location map (U.S.G.S. Topographic map preferred)

6. Summary of the major impacts: §11-200-12(b)
   Short Term: 
   Construction Impacts?
   Long Term: 
   Significant effect on water or air resources? (Contact DOH, CWB, CAB?)
   Does project discuss noise, traffic, and visual impacts?
   Was DLNR/SHPD contacted concerning archaeological and historic district/sites concerns?
   Was a flora and fauna survey done to determine the presence of any rare, threatened, or endangered species or their habitat at the site? §11-200-12(b)(9).

7. Alternatives considered (if any). 

8. Mitigation measures proposed (if any). 

9. Agency letter of submittal (Draft EAs) or determination (Negative Declarations & EISPNA).
   Status of any other necessary approvals or permits? 

10. Findings and reasons to support the determination. 

11. Agencies to be consulted if an EIS is prepared. 

If this EA concerns only a portion of the overall project, has a previous EA/EIS been filed? 

Does project have a significant effect on environment? Re: Significance Criteria §11-200-12(b)

Revised: July 21, 1992
**ENVIRONMENTAL ASSESSMENT CHECKLIST**

*(511-200-10)*

<table>
<thead>
<tr>
<th>Draft Env. Assess.</th>
<th>Negative Declaration</th>
<th>EIS Preparation Notice</th>
<th>NEPA</th>
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</table>

**Document Title:** Caris Single Family Residence and Accessory Uses

**Submittal Date:** 10-1-92  
**Due Date:**

**Is project summary (form 91-1) complete?**  
**Is EA a complete and separate document?**

**Conditions which triggered the EIS Law. Check all that apply:**
- Use of State or County Land or Funds
- Use of Conservation District Lands
- Use of Shoreline Setback Area
- Use of Historic Site or District
- Use of lands in the Waikiki Special District
- Amendment to a County General Plan
- Reclassification of Conservation Lands
- Construction or Modiﬁ. of Helicopter Facilities
- City & County of Honolulu Special Management Area
- Other

**COMMENTS / RECOMMENDATION / JUSTIFICATION:**

1) Suggest consult our re: individual wastewater disposal system.
2) 12-3-92, Pay Schofer said that they chose not to respond to UHT Envi. Center letter because it was late.
4) Received response letter.

**APPROVED FOR PUBLICATION IN OEC BULLETIN:**

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**FINAL ENVIRONMENTAL ASSESSMENTS (Negative Declarations)**

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**Revised:** July 21, 1992
ATTACHMENT
ENVIRONMENTAL ASSESSMENT
PROPOSED RESIDENCE
ALIOMANU ESTATES, KAUAI

I. APPLICANT

The applicant is Norman J. Caris, owner of the subject property.

II. APPROVING AGENCY

The applicant is filing a Conservation District Use Application with the Department of Land and Natural Resources, State of Hawai‘i. The approving agency is the Board of Land and Natural Resources.

III. AGENCIES CONSULTED IN PREPARING ENVIRONMENTAL ASSESSMENT

The following agencies have reviewed and commented on the project or have been consulted in the preparation of this environmental assessment:

State Agencies
- Historic Preservation Division, Dept. of Land and Natural Resources
- Office of Conservation and Environmental Affairs, Dept. of Land and Natural Resources

County Agencies
- Planning Department
- Public Works Department
- Water Department

IV. PROJECT SITE LOCATION

The project site is located in the Aliomanu Estates subdivision approximately 1.2 miles north of Anahola Bay on the North Coast of Kauai. The Tax Map Key of the property is Fourth Division, 4-9-05; pnr. 27. The location or area plan is presented as Figures 1 through 4 in this document. These figures represent the location map, vicinity map, project area and parcel map.

V. PROPOSED ACTION

The applicant is proposing to construct a residence on a 15.4-acre parcel within Aliomanu Estates. The residence is designed to have a total floor area of approximately 7,200 sq. ft. in a
one-story building. The attached garage will be approximately 950 sq. ft. The architecture of the
building is intended to blend harmoniously with the site and surrounding environment. No
extensive grading is planned and no concrete structures are proposed. The building will be of
wood construction with wood tile roofing. Its architecture will be of contemporary-Polynesian vernacular. See Figures 5 through 7 for the site plan and concept building plans for the
proposed project.

Accessory uses or amenities will include a swimming pool, tennis court and landscaped
garden. A paved driveway will provide access to the residence. Landscaping, consisting
primarily of groundcover, shrubs and ornamental trees, will be provided around the house and
along the driveway. The sloping area along the shoreline and makai of the residence and yard
will be left in its natural state. Some trees will be selectively trimmed down for views but their
root system will remain in place to control potential soil erosion.

Of the total 15.4 acres which comprise the project parcel, only about 2.5 acres will be
used for the proposed residence, amenities, landscaping and driveway. The highest structure will
be the residence which will be a one-story building. Extensive grading will not be required for
the residence because wood poles or rock walls, and not on-slab construction, will be used for
the house foundation.

VI. REQUIRED PERMITS

The proposed action will require the filing of a Conservation District Use Application
(CDUA) with the Office of Conservation and Environmental Affairs, State Department of Land
and Natural Resources. The approving authority is the Board of Land and Natural Resources,
State of Hawaii.

Since the project site is located within the Special Management Area (SMA), it is subject to
the SMA Rules and Regulations of the County of Kauai; however, because the project is a single-
family residence, it is specifically exempt from the SMA requirements. Additionally, the
proposed project is located more than 40 feet from the shoreline and therefore is not subject to
the shoreline setback requirements of the County.

VII. PUBLIC POLICIES

A. STATE LAND USE LAW

The project site is situated within the Conservation District and is subject to Title 13,
Chapter 2 Rules and Regulations of the Department of Land and Natural Resources, State of
Hawaii, relating to land use within the Conservation District. The approving government body
for proposed actions within the Conservation District is the State Board of Land and Natural
Resources.
The applicant is proposing an action that is not specifically identified as a permitted use in
the District. Therefore, a conditional use permit is required for the project and is currently being
requested.

B. COUNTY GENERAL PLAN

The Kauai County General Plan designates the project site as Open Space. This represents
the County's desire to maintain the project area in open, recreational and natural use.

The applicant is proposing a residence on a small portion of the property comprising
approximately 16.2 percent of the area. The remaining 83.8 percent will be kept in open space
and in its natural state as provided in the County General Plan.

C. COUNTY ZONING

The proposed project is located in the Conservation zone of the County Zoning.

D. SPECIAL MANAGEMENT AREA

The boundary of the Special Management Area is located mauka of the parcel site along K
uho Highway. Although the proposed project is located within the SMA, it is exempt from the
SMA Rules and Regulations, because it is a single-family residence and is not part of a larger
development within its parcel.

VIII. DESCRIPTION OF THE AFFECTED ENVIRONMENT AND PROBABLE ENVIRONMENTAL
EFFECTS

A. EXISTING LAND USE

The project parcel is currently vacant and unused. It is part of a 12-lot subdivision known
as Aliomanu Estates. The average size of the lots is approximately 22 acres. The project parcel
is one of the smallest of the lots in the subdivision containing 15.4 acres, and is located along
the shoreline. Access to the project parcel is via planned roads through the subdivision from
Kuho Highway. The roads will be private.

Aliomanu Estates has begun construction of its infrastructure and should be completed by
the end of the year. Makai of the property is the shoreline comprised of a sand beach and
offshore coral reef flat. The sand area is not heavily used and is frequented primarily by
fishermen and neighboring residents who often relax on the sand or stroll leisurely along the
water's edge. Clusters of rock boulders occupy spots along the shoreline and are
used by shoreline fishermen as their base for fishing. Swimming and snorkeling are not suitable
for the area because the offshore reef flat extends 300 to 400 feet from the beach, and the depth
of the water over the flat is not sufficient.
Adjacent to Aliomanu Estates along the shoreline and to the south toward Anahola Bay are a number of beachfront homes. These homes which have access from a rural road originating from Kuhio Highway are located within the Urban District. One of these houses is located adjacent to the property site and is situated within the Conservation District. The house was constructed within the last ten years.

To the north at Papa Bay is an area that is primarily vacant with only one home near the ocean. This land is designated in the Conservation District.

B. TOPOGRAPHY

Aliomanu Estates is a 12-lot subdivision that extends from Kuhio Highway at the 200-foot elevation to the shoreline approximately 3,800 to 4,000 feet to the east. A major portion of the subdivision sits on a plateau surrounded by the shoreline bluff to the east and a major ravine to the north and south. The north ravine was created over centuries in part by Papaa Stream which flows into Papaa Bay. The south ravine was formed by Aliomanu Stream which currently flows into Aliomanu Bay near the project site. Both ravines are major drainageways for the mauka lands which encompass the northern flank of the Kalalea Mountain.

At the coastline of Aliomanu Estates, where the project site is located, the slope of the terrain averages approximately 15 to 30 percent, but a portion of the property where the proposed residence is to be located is relatively level and developable. Elevations on the overall property range from 0 feet to approximately 75 feet over a distance of about 300 feet. Topography and slope are shown on Figure 8.

Two minor swales traverse the project site at approximately equal intervals from the side property lines. These swales are drainageways for the mauka land within Aliomanu Estates. Water from above the highway does not flow into the subdivision.

The makai boundary of the project site constitutes the shoreline of the area. A Shoreline Certification by the Board of Land and Natural Resources (BLNR) was obtained in January 4, 1990. In July 1992, the BLNR recertified the shoreline.

C. SHORELINE AND MARINE ENVIRONMENT

In a study entitled Baseline Assessment of the Marine Environment in the Vicinity of Aliomanu, Kauai, Hawaii, prepared by Marine Research Consultants, January 30, 1992 (see Appendix A), the shoreline of the project site is described as comprising a white sand beach of very coarse-grained calcareous sand of marine origin. The depth of the beach is about 70 to 100 feet. In several spotted locations along the shoreline are clusters of large rock boulders which extend from the sand area out into the ocean. Some areas of the beach are underlain by beach rock, composed of lithified sand.
According to Marine Research Consultants' report, in the immediate offshore waters of the beach land is a broad, shallow reef flat. This marine feature is composed of material deposited by calcifying organisms, particularly corals and algae. Most of the colonies of the coral species are relatively small encrustations growing on the reef surface. Approximately 10 to 15 percent of the inner reef flat (closest to the shoreline) is covered with living coral colonies. Very few corals were observed on the outer reef flat where continual force of breaking waves occur. Beyond the reef edge where water depth increases, coral community structure widens in variety of species.

Other invertebrates observed in the waters were sea urchins and sea cucumbers. Marine algae of the filamentous and encrusting coralline variety cover essentially the entire reef flat.

Reef fish in the area included primarily wrasses, damselfish and surgeonfish. Beyond the reef, fish assemblages were comprised of species typically found in surge zones, such as parrotfish, rudderfish and various surgeonfish. Also abundant were a variety of butterflyfish, triggerfish and goatfish. One green sea turtle was observed off the reef.

Based in part on its baseline survey of the project area, Marine Research Consultants has assessed the probable impacts of the proposed residence on the shoreline and marine waters. Findings of the assessment indicate that the marine environment and biotic assemblages of the project site are typical of an exposed windward Hawaiian reef. None of the biotic assemblages observed in the water near the project site appear to be rare or commercially valuable resources.

Marine Research Consultants noted that since project construction will not impinge on the shoreline or areas seaward of the shoreline, there is no potential of the project directly altering or removing any components of the marine ecosystem. Should unforeseen events cause some increase in sediment movement to the marine environment, case studies have shown that the marine environment would not be seriously impacted providing there are active water movement in the area, proper behavioral adaptation by the existing marine communities and the probable short-term nature of the potential sediment input. It is cautioned that construction should proceed with care to the environment, however, with properly implemented erosion and sedimentation controls during construction.

D. SOILS

According to the Soil Survey of the Island of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, prepared by the U.S. Soil Conservation Service, Department of Agriculture, the project parcel is located on land classified as BL - Badland, LhB - Lihue silty clay (0 to 8 percent slopes), LhE2 - Lihue silty clay (25 to 40 percent slopes, eroded), and BS - Beaches. (See Figure 9.) The proposed residence will be located on only the BL - Badland soils of the property. This soil type is characterized as being steep to very steep, nearly barren and ordinarily not stony. Runoff is very rapid, and geological erosion is active. This soil is not suited for agricultural use. It has a Capability Classification of Villed, nonirrigated, which is the poorest rating in determining the suitability of soils for most kinds of crops.
According to the Land Study Bureau's Detailed Land Classification - Island of Kauai, the Soil Type for the property (the portion proposed for the residence) is "E". This Type "E" classification applies to land that is of very poor agricultural productivity.

The Agricultural Lands of Importance to the State of Hawaii (ALISH) Map No. K-9, shows no designation for the portion of the property affected by the proposed residence. Prime Agricultural Land is shown, however, on the portion of the property which provides access to the subdivision road. (See Figure 10.)

E. VEGETATION

A botanical assessment of the project site was conducted by Char & Associates in 1990 and is attached as Appendix B. The study found that introduced species dominated the property. Almost the entire sloped area was occupied by ironwood trees. Various grass types were found beneath the thick cover of the ironwoods.

At the base of the slope and above the sand area, native species such as naupaka, hala, hau, tree heliotrope, pa'u-o-Hi'i-kana and beach morning glory (pohuehue) were predominant. At the top of the slope were lantana, Christmas berry, Java plum and koa haole. In the two small gullies which traverse the project site were vegetation consisting primarily of Java plum trees and scattered ironwood trees. Shrubs of koa haole, lantana, Christmas berry and kolomona accompanied the two predominant trees.

Char & Associates concluded that there are no plants on the project site that are listed by U.S. Fish and Wildlife Service as threatened or endangered nor are there any candidates for such status.

Approximately 2.49 acres of the 15.4-acre property will be used for the proposed residence, amenities, landscaping and driveway. About 1.4 acres of the 2.49 acres are within the sloping portion of the property where there is a predominance of ironwood trees. It is estimated there are roughly 2 to 4 ironwood trees per 100 square feet of land. Therefore, approximately 1,220 to 2,440 trees may have to be removed in order to make way for the construction of the residence and accessory facilities. Many of these trees have small trunk diameters, measuring 3 inches or less. Approximately 200 to 400 trees will be selectively trimmed down to about 10-foot to 15-foot heights to allow a view corridor for the residence. The trimming will be done in a manner that will maintain the existing visual character of the area.

F. FAUNA

The coastal ironwood trees and windswept shoreline provide a habitat for a limited range of bird species. These species are primarily of the exotic variety such as:

- house finch
- ring-necked pheasant
- western meadowlark
- greater necklaced laughing-thrush
- Java sparrow

- common barn owl
- Japanese bush-warbler
- house sparrow
- red-crested cardinal
The project site is not suitable as a habitat for native resident species. In a recent survey by Phil Bruner, Ph.D., attached as Appendix C, no native endemic or indigenous birds were found on the property. On the other hand, migratory shorebirds, such as Pacific golden plover, ruddy turnstone, wandering tattler and sanderling, are likely to be found along the shoreline.

No mammal activity was observed, but rats, mice and cats may occur on the property and their quantitative presence would be comparable to what would be found in similar habitats elsewhere on Kauai.

In the survey's conclusion, no endangered or rare species as well as candidate species is evident on the project site. The project's environment as a fauna habitat is not unique or of any special importance to the region.

G.  VISUAL

The proposed residence is located more than 3,000 feet from Kuhio Highway. It will not be visible from the State right-of-way. The proposed residence will be hidden by the top of the project site's slope.

At the shoreline, the proposed residence will be visible but would be partially screened by existing ironwood trees. Some of the trees will be trimmed for view corridors, but most of the trees will remain intact to preserve the existing visual character of the area.

H.  AIR QUALITY

The quality of the air in the project area is excellent. The property is located along the shoreline and on the windward side of the island. It receives the initial tradewinds as they cross the island, and during the Kona seasons, the winds come from predominantly the southwest or inland areas which are occupied by vacant or farm lands. There are no known sources of air pollutants that would adversely affect the property.

During construction, short-term impacts on air quality will result from dust-generated grading activities. The impact would be temporary and generated from only a small area. Mitigative measures, such as sprinkling of water on exposed dirt areas and installation of dust screens, could be employed to control any adverse effects.

I.  NOISE IMPACT

The predominant sounds in the area are of natural origins. Located along the shoreline, the project site is susceptible to noise generated by the surf on the shore and winds rustling the foliage on existing vegetation. Other notable sources of noise would include talking from people frequenting the shoreline area and wildlife foraging or straying over the site and surrounding lands.

Temporary noise will be generated during the construction of the residence. This would include noise from earthmoving equipment and activity associated with the construction of the
house. Once the house is completed, the construction-related noise will cease. As a precaution
the applicant may apply mitigation measures to reduce the impact of the short-term noise. Such
precautions could include use of muffler devices on all gasoline or diesel-powered equipment
and restricting construction hours to daylight hours.

Long-term noise will be similar to those generated by other single-family residences on the
large country lots. No State noise laws are anticipated to be violated.

J. ARCHAEOLOGICAL SITES

An archaeological inventory survey was conducted by Cultural Surveys Hawaii in July
1992 to determine the presence or absence of archaeological features on the property and to
assess their significance. The results of the survey is provided in the report, Archaeological
Inventory Survey of 15.44 Acres (TMK 4-9-5: Por. 4 Lot 12) Caris Property, 'Aliomanu and
Papa'a, Kauai', attached as Appendix D. It indicated the survey made a 100 percent site
coverage and that there are two archaeological features present.

One of the features (State Site 50-30-4-1896, referenced as CSH 1 on Figure 11) is located
seaward of the proposed residence and is comprised of a single human burial, a 15-cm. thick
mixed sand and alluvium cultural layer and an adz grinding stone. The other feature (State Site
50-30-4-1897, referenced as CSH 2 on Figure 11) is a cultural layer on a beach terrace in the
northern section of the property. Testing was done on the two sites and the results showed that
they consisted of prehistoric antifactual material.

According to Cultural Surveys Hawaii, Site 50-30-4-1897 is evaluated as culturally and
informationally significant and Site 50-30-4-1897 is evaluated as informationally significant.

The present location of the proposed residence would not impact either archaeological
feature. During construction, however, site work may come close to Site 50-30-4-1896. Therefore, the archaeologist is recommending cautionary measures to protect the
sites from construction related damage. They include:

1) Reinforcement of the bank with a few large rocks and soil fill to ensure the protection of
the burial.

2) Removal of the adz grinding stone to a safer location on the bank above the cultural
layer (Site CSH 2) to ensure its protection during grading and excavation for the
residence.

3) Although grading for the residence should be far enough away from Site CSH 1
Features A and B to prevent damage, the site should be protected from slumping soil
construction debris, heavy equipment, etc., with construction of a metal stake fence
with plastic netting to protect it during construction.
4) Examination of the house plans in relation to the location of Site CSH 1 Features A and B shows that the site is far enough downslope to be avoided in construction. However, because of the slope involved and the possibility of inadvertent disturbance, all construction personnel should be made aware of the location of the site and burial.

For Site 50-30-4-1897, the archaeologist is recommending that the exposed portion of the site be protected with a cover of several inches of imported top soil. This area, because of its strategic location, has and will continue to be a parking place for beach visitors and fishermen. The site would be protected from damage by tire tracks and barbecue makers with some heavy clay soil overfill.

Given the possibility that there may still be some sites below the surface of the property, the applicant is willing to cease construction activity in the immediate area if an archaeological site is uncovered during construction and not resume construction until clearance is obtained from the appropriate State agency.

K. NATURAL HAZARD

The Flood Insurance Rate Map (FIRM) prepared by the National Flood Insurance Program designates the shoreline area of the property as Zone VE with a base flood elevation of 11 feet and a width of approximately 70 feet. Zone VE is an area susceptible to 100-year tsunami inundation.

The proposed residence will be constructed at the approximately 40-foot elevation. Based on the FIRM, runoff from a potential tsunami would not affect the residence.

Although the project site is covered with ironwood trees, it is generally windy and wet and not a strong candidate for forest fires.

There are no active or dormant volcanos in the area.

There is no evidence for a significant landslide on the property. Soil erosion is a possibility if the ground is left unprotected with the removal of groundcover or vegetation. The applicant is taking precautions by conducting soil studies and applying appropriate engineering and landscape design to control erosion and sedimentation on the property.

L. CIRCULATION

Access to the project parcel is via a subdivision road within Aliomanu Estates from Kuhio Highway. The road, which is scheduled to be completed by the end of this year, will remain private.

Kuhio Highway is a State right-of-way that serves the eastern and northern regions of the Island of Kauai. Traffic from the proposed residence would not result in any noticeable impact on the existing traffic of Kuhio Highway.
The project parcel is traversed by a public pedestrian access easement which begins from the top of the property and winds down the sloping site to the sand area below at the shoreline. No improvements are planned for the easement. Public parking for the pedestrian access will be provided on the adjacent property mauka of the applicant’s property.

The sand area is predominately makai of the Board of Land and Natural Resources’ certified shoreline and is open for public use. The proposed action will not disrupt the public pedestrian easement to the beach nor the public access along the shoreline.

M. PUBLIC SERVICES AND FACILITIES

Water, electricity and telephone will be provided by the public utility companies of Kauai. Installation of service lines will be done in conjunction with the construction of Aliomanu Estates infrastructure. A preliminary schedule for the Aliomanu Estates subdivision shows the improvements will be completed by the end of the year.

Sewage disposal for the proposed residence will be accommodated by cesspool. State Department of Health regulations will govern the location and installation of the private disposal system.

Public schools, library, neighborhood center and playgrounds are located in Kapaa about 7 miles to the south. The nearest police station is in Lihue, approximately 16 miles away and the nearest fire station is in Kapaa. The proposed residence is not expected to overburden any public facilities.

N. SOCIO-ECONOMIC CONSIDERATIONS

The proposed residence will not displace any existing agricultural use. No prime, unique or other important agricultural lands of importance to the State of Hawaii will be affected, except for a small portion of the residence’s driveway on the plateau section of the Aliomanu Estates subdivision.

The proposed use will not displace any existing residences. The project site is currently vacant and situated on a sloping property occupied primarily by ironwood trees.

The proposed residence will result in only a single new household in the region and therefore will not overburden existing public services and facilities.

The proposed use will generate short-term employment during project construction. The length of the construction period is estimated to be approximately 15 months. Long-term employment for the residence may include yard maintenance personnel and possibly housekeeping. Income paid to employment connected with the project will be spent in the economy which in turn would generate income in other sectors of the economy.
IX. SUMMARY OF MAJOR IMPACTS

An area which was once occupied by natural vegetation will have, in a portion of the property, a residence and landscaped yard. Site preparation and grading will be required and will result in removal of vegetation and alteration of the terrain; however, the building's architecture and landscaping will involve the integration of the facility with the natural environment and the minimization of the impact on the site.

Long-term impacts involving traffic generation and use of public utilities and facilities by a single household unit will be minimal. Short-term impacts will be larger but only temporary. Dust, noise and some traffic will be generated by the construction of the residence. Erosion and sedimentation also exist as a possible impact during the project's construction period.

X. ALTERNATIVES CONSIDERED

A. NO ACTION

The "no action" alternative will result in no construction of a residence on the project site. There will be no removal or trimming of trees, no alteration to the terrain and no displacement of fauna. There will be no construction activities and related employment prospects, and no increased land value and associated government revenues from higher property taxes. Moreover, the owner will not be able to use the property for his personal and preferred use. For this reason, the no action alternative is not a favorable alternative for the owner.

B. ALTERNATIVE LOCATION

The selected location for the residence within the applicant's property is the most developable and suitable within the parcel. The site is situated outside of the drainageways, on the leveller portion of the parcel and away from archaeological sites. It is also near the planned driveway access and utility connections to the site.

C. ALTERNATIVE USE

The applicant has not considered an alternative use for the project site. Construction of a residence was the primary reason for purchase of the property from the original owner.

XI. SUMMARY OF MITIGATING MEASURES

The major impacts of the proposed project will be generated during construction of the residence. As described above, they will include dust, noise and construction traffic. Erosion and sedimentation also pose as possible project impacts.

The applicant is prepared to implement mitigative measures to prevent or reduce anticipated impacts generated by construction activities associated with the proposed project.
Dust control measures will be employed during construction to minimize airborne particulates. Compliance with approved erosion control plans and the use of mitigative measures such as water sprinkling will reduce the potential for adverse impact on air quality.

Equipment used for on-site construction will emit air pollutants in the form of engine exhaust. With proper maintenance by the contractor, emissions from the equipment can be minimized. The tradewinds that prevail during most of the year will be helpful in dispersing the airborne pollutants.

Construction activity will create a temporary increase in noise levels. Heavy equipment used for site preparation work will be a source of noise. Mitigating measures such as the use of mufflers on diesel or gasoline-powered equipment and limiting construction to daylight hours will be employed. Noise levels shall comply with the State of Hawaii, Department of Health noise regulations.

The proposed residence will be located near but outside of two archaeological sites along the shoreline. For added protection, the archaeological sites will be provided with protective measures, such as slope reinforcements, relocation of an archaeological feature to a safer location, construction of temporary protective shields around the sites and educating construction personnel of existing site locations.

In regard to State Site 50-30-4-1897, the archaeologist is recommending that the exposed portion of the site be protected with a cover of several inches of imported top soil. This area, because of its strategic location, has and will continue to be a parking place for beach visitors and fishermen. The site would be protected from damage by tire tracks and barbecue makers with some heavy clay soil overfill.

Erosion and sedimentation controls will be employed under a plan prepared by the applicant and approved by the County Public Works Department.
APPENDIX A

Baseline Assessment of the Marine Environment in the Vicinity of Aliomanu, Kauai, Hawaii
Introduction

Planning is currently underway for construction of a residence and several associated structures on a parcel of land encompassing approximately one-half mile of coastline at Aulomau, on the northeastern coastline of Kaua'i, Hawaii. In order to assess if the proposed project might embody the potential to cause any detrimental impacts to the nearshore marine environment, it was deemed appropriate that a baseline survey of the area should be conducted. This report describes the results of the baseline survey in terms of descriptions of the physical and biological setting of the region offshore of the planned development, as well as an assessment of potential impacts that might result from completion of the project.

The methodology employed for this assessment consisted of a one-day reconnaissance survey. The survey consisted of a visual inspection of the nearshore region (from the shoreline out to a water depth of approximately 10 meters) impacting the subject property. During the course of the survey the wind conditions were light and variable, while a small northerly swell (2-4 feet) was impacting the shoreline. The baseline survey was not intended to produce a quantitative assessment of community structure, nor to tabulate an exhaustive species list of benthos.

Physical Structure

The shoreline of the subject property is composed of a beach composed of very coarse-grained calcareous sands of marine origin. Landward of the beach, the shoreline region is composed of steeply sloping area bisected by intermittent erosion gullies. The northern end of the property appeared to have been recently subjected to fire, and removal of ground cover has resulted in severe gully development. In several areas along the beachfront, aggregations of large boulders extend from the land slope out onto the reef flat. Some areas of the beach are also underlain by beachrock, composed of lithified sands. Such beachrock formation is often indicative of low-salinity groundwater influx. There were no indications of terebrae (sand-derived) materials, especially red mud, along the entire beachfront of the subject property.

The region of the marine environment closest to the beach is composed of a broad, shallow reef flat. The reef flat is composed of material deposited by calcifying organisms, particularly corals and algae. The northern end of the property, the reef flat narrows in width as an area that appears to be the site of a drowned stream mouth. The inner area of the reef flat is extremely shallow (less than 1 meter in depth), and devoid of substantial vertical relief. At a distance of approximately 100 meters from the shoreline, a reef crest with some emergent rock features separates the inner from the outer reef areas. The reef crest area receives the major erosional force of breaking waves that arrive near the area from long-period swells originating from both northwesterly and southerly directions. seaward of the reef crest, water depth over the outer reef increases, and bottom topography exhibits substantial vertical relief if the form of a well-developed ridge and channel system. This outer reef extends seaward for at least several hundred meters, and out to depths of at least 10 meters (the seaward limit of this survey).

The edges of the reef flat in the narrowed area in the northern region of the subject property differed somewhat from the description above. In the areas where the reef flat narrowed, the edges sloped sharply from the shallow platform down to sand flat at a depth of approximately 10 meters. The sides of the nearly vertical reef edge contained numerous undercuts and ledges which served as habitat for a variety of reef organisms.

Biological Communities

The predominant benthic (bottom-dwelling) assemblages occupying the reef flat on the study area were reef corals and algae. Owing to the protection from the erosional force of waves on the Inner flat, corals were relatively common, but were restricted to upward growth owing to the extremely shallow water depth. On the shallow nearshore reef platform the predominant corals were Pocillopora meandrina, P. damicrua, Montipora verrucosa, M. patula, M. flavellata, and Pavona varians. Most of the colonies of these species were relatively small encrustations growing on the reef surface. Approximately 10-15% of the inner reef flat was covered with living coral colonies.
Discussion and Conclusions

The primary issue faced in the proposed project is the potential for alteration to water quality and the associated impacts on the benthic community. The coral reefs in this region are known to support a diverse and unique assemblage of organisms, many of which are classified as sensitive or even endangered. Therefore, any alteration to the water quality or coral health could have significant ecological impacts.

The model used to assess the potential for alteration to water quality is based on a combination of field observations and existing literature. The model predicts that the proposed project could result in a decrease in water quality in the near vicinity of the project site. This decrease in water quality could impact the local benthic community, potentially leading to the loss of sensitive species and the degradation of coral health.

To mitigate these impacts, various measures are proposed, such as improving water quality standards, implementing strict monitoring protocols, and adopting best management practices. These measures are expected to help minimize the potential ecological impacts of the proposed project.

In conclusion, the proposed project is expected to have significant ecological impacts on the benthic community, particularly on sensitive species. Therefore, it is essential to implement appropriate measures to mitigate these impacts and safeguard the local environment.

References

In areas of unrestricted circulation such as Alutina, there have been instances of increased sedimentation reported that have not caused noticeable effects to neighboring areas. However, in the case of Mat-Su Harbor, the changes in marine circulation have caused increased sedimentation that has directly affected the habitat available to marine species. This has resulted in a decrease in the overall health of the ecosystem.

While the Knik Arm harbor, located in South Halibut, was created by extensive dredging, the current sedimentation processes are not believed to have significantly impacted the harbor's functionality.

In conclusion, the proposed project at Alutina appears to be of a lower environmental risk due to the lack of potential for significantly altering sedimentation patterns. However, the presence of natural sedimentation processes in the area should be carefully monitored to ensure that any future development does not exacerbate existing conditions.

The findings suggest that the proposed project at Alutina appears to be of a lower environmental risk due to the lack of potential for significantly altering sedimentation patterns. However, the presence of natural sedimentation processes in the area should be carefully monitored to ensure that any future development does not exacerbate existing conditions.
REFERENCES CITED


APPENDIX B

Botanical Assessment
'Aliomanu CDUA
BOTANICAL ASSESSMENT
'ALOMANU COUA

INTRODUCTION

The project site consists of approximately 15 acres of land located along the coastline between Papa'a Bay and 'Alomana Bay on the island of Kaua'i. The irregularly-shaped parcel is roughly 1,920 ft. long and 480 ft. deep at its widest point. Ironwood trees provide the major vegetation cover on the site. On its mauka (inland) boundary are former sugar cane lands now overgrown with lantana and various weedy species.

Field studies to assess the botanical resources on the site were conducted on 18 December 1990. The primary objectives of the survey were to describe the vegetation and search for threatened and endangered plants protected by Federal and State laws. This botanical assessment report will be in petition for a Conservation District Use Application (CDUA) permit. A private residence is planned for a portion of the subject property.

DESCRIPTION OF THE VEGETATION

The scientific names used in the following discussion are in accordance with Wagner et al. (1990). Common English and/or Hawaiian names follow St. John (1973) or Porter (1972).

Along the shoreline and on portions of the steep, seaward facing slopes, wind swept naupaka shrubs (Scaevola sericea) are common. A few scattered individuals or small clumps of hau (Hibiscus tiliaceus), tree heliotrope (Tournesolita argentea), and hala (Pandanus tectorius) can be found associated with the naupaka shrubs. Besides the naupaka and hala, other native species occurring here are puakenikeni or beach morning glory (Ipomoea pes-caprae) and pa'u-o-Hi'i-aka (Jacquemontia ovalifolia). These form low, spreading mats in the more open areas. On the steep, seaward facing slopes and on the coastal bluffs, ironwood trees (Casuarina equisetifolia) form a closed-canopy forest. The trees are shorter and wind-pruned facing the oncoming tradewinds and range from 15 to 25 ft. in height. On the mauka facing side of the forest, the trees are taller, from 40 to 50 ft. high. Because the "needles" from the ironwood trees form a dense carpet, ground cover vegetation is sparse and generally occurs in scattered, small patches where the ironwood trees are not as dense. Plants found in this forest area include Guinea grass (Panicum maximum), sourgrass (Digitaria insularis), Bermuda grass or manelene (Cynodon dactylon), Jamaica vervain (Stachytarpheta jamaicensis), white thumbergia (Thumbergia francisca), sourbush (Pychea symphysisfolia), and swollen finger grass (Chloris barbata). Large boulders are frequently found in this area. Locally abundant on the mauka edges of the forest are thickets of koa-haole (Leucaena leucocephala), lantana (Lantana camara), and Christmas berry (Schinus terebinthifolius) shrubs and stands of Java plum trees (Syzgium cumini).

In the two small gullies which cross the property, vegetation consists primarily of Java plum trees with scattered patches of ironwood. Shrubs of koa-haole, lantana, Christmas berry, and two species of kolomona (Senna surattensis, S. septentrionalis) are also abundant.

Where the property adjoins the former sugar cane fields now overgrown with scrub vegetation, lantana shrubs are abundant. The
shrubs have been cut back and are from 6 inches to one foot tall. Other weedy species commonly found in this scrub are Guinea grass, partridge pea (Chamaecrista nictitans), nettle-leaved vervain (Stachytarpheta urticifolia), Brachiaria subquadripap., Christmas berry, mauna-loa vine (Canavalia cathartica), and Phyllanthus debilis.

DISCUSSION AND RECOMMENDATIONS

The vegetation on the 45-acre property is dominated by introduced species, primarily ironwood trees. The native species found on the property occur throughout the Hawaiian Islands and elsewhere throughout the Pacific in similar environmental conditions. None of the plants found on the site are officially listed threatened and endangered species; nor are any proposed or candidate for such status (U. S. Fish and Wildlife Service 1989, 1990). The proposed development of a portion of the subject parcel is not expected to have a significant negative impact on the botanical resources.

No recommendations are offered at this time due to the limited nature of the proposed development.

References


APPENDIX C

Field Survey of the Avifauna and Feral Mammals at Aliomanu, Kauai
INTRODUCTION

The purpose of this report is to summarize the findings of a one day (20 October 1990) bird and mammal field survey conducted at Alfonsoa, Kauai (see Fig.1). Also included are references to pertinent literature and unpublished reports on the fauna located in similar habitats adjacent to this property and elsewhere on Kauai.

The objectives of the field survey were namely:
1- Document what bird and mammal species occur on the property or may likely occur given the types of habitats available.
2- Provide some baseline data on the relative abundance of each species.
3- Suggest some possible changes that might occur in the faunal populations of this area should the habitat be altered from its present state.
4- Identify any habitats that may be of particular importance to native birds.

GENERAL SITE DESCRIPTION

Two general habitats characterize this property: sandy beach/rocky shoreline; and a second growth coastal woodland comprised primarily of Ironwood (Casuarina spp.). Property immediately mauka of the site is covered by dense thickets of Christmas Berry (Achatia terebinthifolius) and Java Plum (Syzygium cumini). The shoreline habitat is accessible and hence is frequently used by fishermen.
Weather during the field survey was partly cloudy. Winds were from the east at 10-15.

**STUDY METHODS**

Field observations were made with the aid of binoculars and by listening for vocalizations. Attention was also paid to the presence of tracks and scats as indicators of birds and mammal activity. Census, or count stations were established and eight minute counts were made of all birds seen or heard at these stations (Fig.1). These counts provide the basis for the abundance estimates given in this report. The abundance estimates are actually relative figures since these numbers represent only data from one day at a particular time of the year and under a limited set of environmental conditions. Different data might be obtained at other times during the year. Between these count stations additional observations of birds were also kept. Reports of birds in similar habitats adjacent to and elsewhere on Kauai were consulted in order to acquire a more complete picture of the species that might be expected in this area (Brunner 1979, 1985, 1986, 1988a, 1989b, 1990b, 1990c, 1990a, 1990b, 1990c; Pratt et al. 1987; Hawaii Audubon Society 1990).

Observations of feral mammals were limited to visual sightings and evidence in the form of scats and tracks. No attempts were made to trap mammals in order to obtain data on their relative abundance and distribution.

Scientific names used herein follow those given in the most recent American Ornithologist's Union Checklist (A.O.U. 1983); Hawai'i's Birds (Hawaii Audubon Society 1989); A Field Guide to the Birds of Hawai'i and the Tropical Pacific (Pratt et al. 1987); Mammal Species of the World (Nowak et al. 1983) and Tropical Trees of the Pacific (B. and B. Hargreaves 1970).

**RESULTS AND DISCUSSION**

**Resident Endemic (Native) Land and Water Birds:**

No endemic land or waterbirds were recorded on this property. Given the nature of the habitat none would be expected.

**Resident Indigenous (Native) Birds:**

No indigenous resident species were found and it is unlikely any would occur at this location.

**Migratory Indigenous (Native) Birds:**

Ten Pacific Golden Plover (Pluvialis fulva) were found along the beach and access roads near the property. Plover prefer open areas such as mud flats, exposed reefs, plowed fields, pastures and large lawn areas such as golf courses and parks. Johnson et al. (1981) and Brunner (1993) have shown plovers are extremely site-faithful on their wintering grounds (returning each day and each year to the same spot and maintaining this behavior throughout their life time). Plover also establish foraging territories which they defend.
vigorously. Such behavior makes it possible to acquire a fairly good estimate of the abundance of plover in any one area. These populations likewise remain relatively stable over many years (Johnson et al. 1989). No other migratory shorebirds were recorded.

The Ruddy Turnstone (Arenaria interpres), Wandering Tattler (Heteroscelus incanus) and Sanderling (Calidris alba) are also likely to be found along the shoreline. Along with plover these three species comprise the common shorebird migrants to Hawaii (Pratt et al. 1987, Hawaii Audubon Society 1989).

Seabird:

No seabirds were observed. Several species of seabirds nest on Kauai (Hawaii Audubon Society 1989) but none of these would likely nest on this property.

Exotic (Introduced) Birds.

A total of eight species of exotic birds were recorded during the field survey. Table 1 below shows the relative abundance of these species. The most abundant bird was the House Finch (Carpodacus mexicanus). The monotypic nature of this property excludes a number of species that would occur in a more diversified environment. Species which might be found nearby but not necessarily on this site include: Ring-necked Pheasant (Phasianus colchicus), Western Meadowlark (Sturnella neglecta), Greater Necklaced Laughing-thrush (Garrulus vermiculatus), Java Sparrow (Padda oryzivora), Common Barn Owl (Tyto alba), Japanese Bush-warbler (Cettia diphone), House Sparrow (Passer domesticus) and Red-crested Cardinal (Paroaria coronata), (Pratt et al. 1987; Hawaii Audubon Society 1989; Bruner 1983, 1985, 1986, 1989a, 1989b, 1990a, 1990b, 1990c, 1990d).

Feral Mammals:

No feral cats were seen on the survey. Rats and mice were also not observed but may occur on the property. Without a trapping program it is difficult to conclude much about the relative abundance of rats, mice and cats at this site. However, it is likely that their numbers are not dramatically different from what one would find in similar habitats elsewhere on Kauai.

Records of the endemic and endangered Hawaiian Hoary Bat (Lasiurus cinereus semotus) are sketchy but the species does occur on Kauai (Tonich 1986; Kepler and Scott 1990). Little is known of their natural history, distribution and ecological requirements. No bats were recorded on this survey.

CONCLUSIONS

A brief survey such as this one can at best provide a limited perspective of the wildlife present in the area. Not all species will necessarily be observed during the actual survey, in addition, the number of species and the relative abundance of each species may vary throughout the year due to available resources and reproductive success. Species which are migratory will quite
obviously be a part of the ecological picture only at certain times during the year. Exotic species sometimes prosper only to later disappear or become a less significant part of the ecosystem (Williams 1997; Poulton et al. 1999). Thus only long-term studies can provide the insights necessary to acquire a definitive perspective of the bird and mammal populations in a particular area. However, when brief field studies are compared with data gathered from other similar habitats the value of the conclusions which can be drawn are significantly increased.

In terms of broad conclusions related to bird and mammal populations found on the property the following are offered:

1- The present environment of coastal Ironwood groves and wind swept shoreline provide a limited range of habitats which are utilized by the typical array of exotic birds one would expect at this elevation and on this type of land on Kauai. Populations (relative abundance) of exotic species in this area do not appear to differ dramatically from other surveys taken on adjacent lands and in similar habitat elsewhere on Kauai. House Finch was the most abundant species on the property. The affinity this bird has for Ironwood trees would explain this finding.

2- No endemic species were recorded on the survey. The type of habitats that are available are not suitable for native resident species. Migratory shorebirds do occur on the property.

3- The altering of the present habitat will likely increase the abundance of some exotic birds while at the same time decrease that of others. House Finch numbers would decline with the loss of the Ironwoods while Common Myna (Acridotheres cristatels) may show a slight increase in abundance.

4- In order to obtain more data on mammals, a trapping program would be required. The brief observations of this survey did not reveal any unusual mammal activity. The endemic and endangered Hawaiian Hoary Bat was not observed but potentially could occur in the region.

5- The present environment found on this property is neither unique nor of special importance to wildlife in this sector of the island. Disturbed second growth coastal woodlands comprise most of the vegetation along the windward coast of Kauai.
Fig. 1. Location of survey site with faunal census stations marked by solid circles.

Table 1

<table>
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<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
<th>RELATIVE ABUNDANCE</th>
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<td>Cattle Egret</td>
<td>Rubulicus phoebus</td>
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</tr>
<tr>
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<td>Streptopelia chinensis</td>
<td>U = 2</td>
</tr>
<tr>
<td>Zebra Dove</td>
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<td>Common Myna</td>
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<tr>
<td>Northern Cardinal</td>
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<tr>
<td>Japanese White-eye</td>
<td>Pterocopa japonica</td>
<td>U = 4</td>
</tr>
<tr>
<td>House Finch</td>
<td>Carpodacus mexicanus</td>
<td>A =12</td>
</tr>
</tbody>
</table>

* (see page 10 for key to symbols)
KEY TO TABLE 1

Relative abundance = Determined by frequency on eight minute
counts in appropriate habitat. Number which
follows is average of all counts over the
course of the entire survey for that species
in appropriate habitat.

A = abundant (ave. 10+)
C = common (ave. 5-10)
U = uncommon (ave. less than 5)
R = recorded but not on a count station (number which follows
equals total individuals recorded during entire field survey)

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Hawaii Audubon Society, Honolulu.


APPENDIX D

Archaeological Inventory Survey
of 15.44 Acres
(TMK 4-9-5: Por. 4, Lot 12)
ACKNOWLEDGEMENTS

We would like to thank Mr. Joe Viera and Mr. Glen Hoyes of Belt Collins and Associates for providing information on this project. Ms. Hannah Sircus and Mr. Frank Supsen of Pacific Ocean Properties were also very helpful in providing support. As always we wish to thank Mr. William Folk for assistance in fieldwork and Dr. Vicki Creed for typing and computer services.

TABLE OF CONTENTS

ABSTRACT ........................................................................................................ 1
ACKNOWLEDGEMENTS ............................................................................... ii
LIST OF FIGURES ....................................................................................... iv
LIST OF TABLES ............................................................................................. v

I. INTRODUCTION ......................................................................................... 1
   Scope of Work ......................................................................................... 1
   Survey Methods ..................................................................................... 2
   Testing .................................................................................................... 6
   Project Area Description ....................................................................... 7

II. PREVIOUS ARCHAEOLOGICAL RESEARCH ........................................... 10

III. CULTURAL AND HISTORICAL BACKGROUND ...................................... 13
   Early Settlement and Land Use ............................................................... 13

IV. SURVEY RESULTS ................................................................................. 24

V. SUMMARY SITE SIGNIFICANCE AND RECOMMENDATIONS ............. 40
   Summary ............................................................................................... 40
   Significance ........................................................................................... 40
   Recommendations ............................................................................... 41

VI. REFERENCES .......................................................................................... 43

Appendix I .................................................................................................. 44
Appendix II .................................................................................................. 46
I. INTRODUCTION

This report contains the results of an archaeological survey of a 15.44-acre shoreline property in 'Ali'iolani and 'Papa's, Kaua'i. The property is being proposed as the site of a single-family residence (Figs. 1-5).

Scope of Work

The scope of work was designed to satisfy the State and County requirements for an inventory survey level of effort for a CDIA aid and includes the following items:

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

2. Limited subsurface testing to determine depth and quantity of cultural materials within archaeological sites and to obtain datable samples for chronologic information if none is available for sites in the immediate area from previous studies.

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

4. Preparation of a survey report which will include the following:
   a. A topographic map of the survey area showing all archaeological sites and site areas;
   b. description of all archaeological sites with selected photographs, scale drawings, and discussions of function;
   c. historical and archaeological background sections summarizing prehistoric and historic land use as they relate to the archaeological features;
   d. a summary of site categories, their significance in an archaeological and historic context;
   e. recommendations based on all information generated which will specify what steps should be taken to mitigate impact of development on archaeological resources - such as data recovery (excavation) and preservation of specific areas. These recommendations will be developed in consultation with the landowner and the State and County agencies.
Survey Methods

Three archaeologists participated in the survey of the property; the two authors and Mr. William Folk. The ground coverage was accomplished with two survey sweeps, both paralleling the coastline and both covering an area of 60-90 meters (200-300 feet) wide. Most of the property is vegetated with ironwood trees (Casuarina equisetifolia), making ground visibility excellent. The shoreline has Naupaka (Hovea scabra) growth in the backshore zone. All of these areas were examined for archaeological remains. Special attention was given to examination of cut banks along the shoreline and gullies to locate subsurface cultural layers. The boundaries of the property, as well as the shoreline, had previously been staked and flagged by a land surveyor so that definition of the property limits was clear. The survey and testing took place in one full day.

Testing

Two archaeological sites were located and both were subjected to brief testing. State site 68-30-4-1860 (CSI 1) was on a cut bank directly above the beach. The site was observed in the survey because of the thin scatter of shell midden and the exposed human bone along the slope of the bank. The exposed bones were examined to confirm their identification as human and to determine that the burial is probably an intact single individual. Two areas where the shell midden was scattered were cleared to expose cultural strata and bulk samples of approximately .05 cubic meters of the cultural layer were screened through ½ inch mesh to collect artifacts and middens. The human burial itself was not disturbed but the two 60 cm. wide areas of the site were exposed on either side of the burial to establish the stratigraphic context of the burial.

The second site located in the survey was also subjected to brief subsurface testing. A single test pit was placed in the estimated center of the site and excavated through the cultural layer to document maximum depth. Approximately .05 cubic meters of cultural layer was screened through ½ inch mesh to collect midden and artifacts. A bulk sample was also collected and returned to the lab where it was sifted through window mesh screen to extract charcoal, midden (especially bone), and artifacts. In addition, once the central area of the site was characterized, shovel test pits were excavated in outlying areas to define the horizontal extent of the site.

The third area of testing was not at a specific archaeological site but at the location of the proposed residence. The purpose of the testing was to evaluate the possibility of encountering cultural materials during construction grading. In all test pits sterile Callitricha was encountered within 10-15 cm. of the surface and no cultural materials were encountered.

All trenches were backfilled and in the case of the exposed human bones, these were covered up and the bank restored enough to temporarily prevent re-exposure.

Laboratory work consisted of identification of midden and cataloging of artifacts (See Appendix). Unfortunately, insufficient charcoal was present in deposits for dating.

Project Area Description

The study area encompasses 15.44 acres of shoreline along the east coast of Kauai in the Kapaa area of Alau and Pa'aua. The property is a maximum of 2,300 feet long north/south paralleling the shoreline and a maximum of 600 feet mapuana/kahakai.

Elevation ranges from sea level to 100 feet above sea level.

The bulk of the property is around a 25% slope from the flat uplands to the sand beach. There are two gullies dissecting the property both of which have flow only during heavy seasonal rains. The northern gully shows signs of intermittent high energy flow which has cut vertical banks into interbedded alluvial and beach sand deposits, especially...
near the shoreline (Fig. 6). The deposits at the base of this gully show deposition by alternating high surf and terrestrial flooding. Gravel deposits in the gullies are not dominant, probably due to the makeup of the local soils, consisting more silt and clays than gravel. There is evidence of gradual slumping of the terrain and localized landslides erosion in unvegetated slopes (Fig. 7). Long-term commercial agricultural in level land directly onsite has led to occasional heavy alluviation during rains.

Vegetation is predominately, in fact nearly exclusively, ironwood on the slope of the property. The very mounds and the property line is roughly defined by the edge of the ironwood stand although some open tall grass areas are still in the property adjacent to the abandoned pineapple (and more recently papaya) fields. Access to the property is along a dirt road which descends from the uplands along the main gully. Along the vegetation line of the shoreline and disturbed slopes at the north end of the project area are fairly thick stands of beach naupaka.
II. PREVIOUS ARCHAEOLOGICAL RESEARCH

No previous archaeological work has been done in the project area. William Kikuchi (1932) did an assessment of a 1,273-acre coastal parcel on 'Aliomanu Bay.

According to his report, the area is very similar geographically to the parcel that is the subject of this report. No sites were located, but a few surface finds were made including an axe fragment, an adze, and a worked bone needle.

Two other surveys by Kikuchi (1979, 1983) in Anahola, just south of 'Aliomanu, turned up some agricultural terraces, walls, a C-shape, and animal corral. James Ota's reconnaissance (1985), also in Anahola, confirmed the destruction of 'Aikanesa and Kuhia Aeloa.

Wendell Bennett's survey of Kauai (1981) lists one site in 'Aliomanu and six in Papaa:

- Site 118. Walled enclosure, in 'Aliomanu, directly back of the field 10 pineapple reef, just within the forest line.

  This structure extends between two 'dower trees' and a square walled enclosure 110 by 110 feet, upstream, with an entrance 7 feet wide on the sea side, right in the center of the seaward walls. The crumbly walls are 4 feet high and wide made of river and mountain stones. It was probably a cattle corral. The country both ways from this walled enclosure has occasional stone walls and terraced house sites.

- Site 119. Kalauhehulu heiau, at the base of Kahahil pali, (the first pali south of the south branch of Papaa stream, inland marked with red dirt on top).

  This describes this heiau as, "A large L-shaped heiau with thick high walls at the base of Kahahil pali still standing." There are in the pineapple fields some walls said to be very old. One is 40 feet long, and the other runs about 50 feet perpendicular to it.

- Site 120. Pokahokahale heiau, probably on the talus slopes back of the pineapple fields, just north of Kahahil pali (Site 119).

  The site is fairly well raised so as to have an extensive view. It is a single-terrace platform house with partly crumbled walls. The north edge is built up 8 feet near the front, but only 4 feet at the back, due to the rising slope of the ground. The platform is level. To the south the ground is on a level with the platform for quite a ways. At the south edge there is a side wall 3 feet wide that begins a short way back from the front edge, and increases in height from 1 to 2 feet. Across the back there is a terrace 2 feet high faced with stones, that extends beyond the heiau to the south for 18 feet, and serves as a front for house sites. The south side wall does not quite meet this terrace but leaves a passage; 15 feet south of the side wall are two house sites, with stone faced terraces, 3 feet wide on their front and north side. They are located one behind the other and the north terrace wall meets the extension of the back terrace of the heiau.

Site 121. Walled enclosure, in the pineapple fields half way between the forest line and the government road, on the first main branch of Papaa stream to the south.

  This enclosure measures 53 by 230 feet with walls 3 feet wide and 2 to 3 feet high. The pineapples grow in and around it and many of the stones have been recently uncovered.

Site 122. Two terraces, oven, and house sites, around the heiau described in Site 123.

  The general plan of this little valley includes the heiau, an oven, stone walls, some house sites, two terraces, and ditches. One ditch seems to have come from a small reservoir, 30 by 30 feet, blocked with stones. It is not large enough to hold any great supply of water. The ditch is well lined and shallow and about 3 feet across. The other ditch comes from the end of an L-shaped wall and is lined with stones, not regularly now, but apparently so at one time. The L-shaped wall cuts across the stream and seems to have been used to direct the course of the water into the ditch. It is built of modern split stone. The two terraces are single lines of fairly good standing stones. The oven stands over 6 feet high, built of large, roughly hewn stones. The stones overlap and are chinked to make the top part arch, but are of one thickness only. There is an opening on the stream side. The oven probably is not very old.

Site 123. Heiau, within the forest line on one of the north branches of Papaa stream.

  In a valley called Kaua (back of pineapple field number 3) is the heiau shown in figure 42. It consists of two divisions: the lower division is a dirt-paved structure with walls adjusted to the slope of the ground. The north or seaward wall is 5 feet wide and 3 feet high on the inside, and 10 feet high on the outside. The south wall, extending for 20 feet with a height
III. CULTURAL AND HISTORICAL BACKGROUND

The project area is located on the shoreline, straddling the two ohupuʻu's of Pipaʻa and ʻAliomanu in the maka of Koʻolau (modern judicial district of Kauai), on the northeast side of the island of Kauai. Research for this section of the report concentrated on these two ohupuʻu's.

A thorough search of the major traditional legends of Kauai and Hawaiʻi revealed no references to Pipaʻa or ʻAliomanu. However, an obscure story collected by Armitage and Judd (Appendix I) attempts to explain the origin of the place name—ʻAliomanu.

Aka, a manuhu, was playing with friends on the shoreline when he was chased by a shark. He was able to escape the attack, after which Aka and his companions sought their revenge. The manuhuas made a net out of morning-glory vines, baited it and managed to snare the shark. They towed it into shallow water where it died and seafoods feasted on its carcass. The locality was named ʻAliomanu "where the water is made still by the soil from the sharks."

Mary Kawena Pukui et al. (1974) gives no translation of ʻAliomanu, but Pipaʻa literally means "secure enclosure."

Early Settlement and Land Use

The two ohupuʻu's (Fig. 8) are not mentioned in any journals of the late 18th and early 19th century voyagers. Nor are they described in the writings of the first missionaries on Kauai or early western visitors to the island, although undoubtedly many of them passed through the area. This may indicate the location was viewed as relatively unimportant and possibly supported only a sparse population.

The recorded Native Claims and their supportive Foreign Testimony presented before the Board of Commissioners to Quiet Land Titles (commonly referred to as the...
Land Commission) in the mid 1800s provide the most information of traditional land use in the area by native Hawaiians.

According to the Native Claims (Appendix III), agricultural activity was taking place in both ahupua‘a at the time. Crops cultivated included:

- **Traditional**
  - Kalo (Colocasia esculenta), woake (Broussonetia papyrifera),
  - nod (Moringa oleifera), nalo (Cocos nucifera), tala (Artocarpus altilis), ‘ulu 'auo'a'o, ‘ulu pō'ula (Lagenaria siceraria)

- **Non-traditional**
  - orange (Citrus sinensis), coffee (Coffea sp.)

Kalo (taro) was the staple of the Hawaiians, grown in lo'i or ponded fields and terraces. Individual claims included anywhere from two to eleven lo‘i.

Woake (paper mulberry) was cultivated mainly for its bark used in the manufacture of ha‘ape or bark cloth. A famous woake growing area on Kaua‘i was Maloa‘a, the ahupua‘a which borders Pāpā‘a to the north. The place name refers to the woake which grew so densely there that their roots (hi‘i) were matted (mala) together (Handy and Handy, 1972:422).

Various parts of the noni (Indian mulberry) plant were used for a variety of medicinal purposes and also for dye. The phrase "male of noni" (also "male of woake," "male of pōloli," etc.) mentioned often in many of the claims, refers to a garden or plot of unspecified size (mala) planted in noni. This apparently contradicts Handy and Handy (Ibid.:23) who believed the term mala referred to a plot of land specifically planted in ‘ulu or sweet potato.

The ‘ulu (breadfruit) had numerous uses. Favored planting areas on Kaua‘i were near sea level at Ha‘ena, Hanalei, Wailua, Nawiliwili, Kīōla, Lī’i‘ī, Wainiha, Kēhāhui and Mānoa (Ibid.:172).

The ‘ulu (breadfruit) was cultivated mainly as a source of food, although in Hawai‘i
<table>
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<tbody>
<tr>
<td>1</td>
<td>Definition 1</td>
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<td>2</td>
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<td>3</td>
<td>Definition 3</td>
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**Note:** The table above contains the primary textual content from the image. Further context or analysis is not provided.
Kamehameha II, she rose to the position of Au hi ko nau, controlling all business transactions of the Kingdom of Hawaii. She became a wife of Kaumuali'i in 1811 and died in 1832 (Ibid. 66-68, 133). Although the occupation of Pi'ipu'a and 'Aliomanu was probably taking place before the late 18th century, only archaeological dating techniques will be able to provide a more specific chronology.

Some other interesting pieces of information can be deduced from the Claims and Testimony. Two claimants of Pi'ipu'a, Puako and Kauula, died in 1840 before their claims were awarded. Their lands reverted back to the konohiki. Adamu was chosen konohiki of Pi'ipu'a in 1847, but by January 1848, he had been replaced by Nihaoleon. Kusi was the konohiki of 'Aliomanu. Lastly, sometime between 1848 and 1850, Poole gave up his land in Pi'ipu'a and moved to 'Aliomanu where he made another claim.

In summary it can be said that traditional Hawaiian agriculture was being practiced in Pi'ipu'a and 'Aliomanu in the mid-1800s when it was concentrated near the streams and that this activity was continuous and probably pre-dates the time of initial western contact. However it is likely, due to the few number of claims sought, especially in 'Aliomanu, that the population was relatively small at the time.

However, during the mid-18th century, the native Hawaiian population was still in a state of rapid decline. Estimates of population of Ka'ai during the time of Captain James Cook's visit in 1778 ranged from 40,000 to 54,000. The 1850 census recorded the entire population of the island as 6,958. It is entirely plausible that the area had a relatively higher population in pre-contact times (Schmitt, 1966:43).

Bennett's archaeological survey of the island (1931) found religious, habitation, and related sites sprawled on the hills above the stream-cut valleys, while the Land Commission Awards clustered along the floodplains of the streams which were used for wetland taro cultivation (Figs. 9-11) as well as for house lots. This may also point to a
decrease in land use and population, assuming the Kali sites were abandoned before the mid-1800s.

It should be noted that the headwaters of both Pīpīwai and Aliomanu streams comprise only a short section of the range just north of the Anahola Mountains where the highest elevation is less than 2,000 feet. These streams are small in comparison to others in the same mo'ok e.g. Kiluaea and Moloka'i to the north and Anahola to the south. As to whether they did foster an extensive, well-developed agricultural field system even at the peak of population can only be discerned by more extensive archaeological studies outside the project area.

**Recent History - the 20th Century**

Large-scale agri-business came to the area in 1913 or shortly thereafter, when Hawaiian Canners, Co. began planting pineapples there. The company was a local concern based at its cannery on the shore in Kapa'a, now the site of the Pono Kai condominiums. Pineapple fields mentioned in Bennett's survey of the area belonged to Hawaiian Canners.

The company closed its operations in 1969 and its fields were taken over by Hawaiian Fruit Packers Ltd. which was started in 1932 as a cooperative by Kapa'a homesteaders. Its pineapple canning operations were later taken over by Stokely-Van Camp.

Hawaiian Fruit Packers went out of business in 1973, although its fields in Pīpīwai and Aliomanu may have been abandoned sometime earlier. Lihue Plantation Co. commenced planting sugar cane in the area for a few years but this operation was phased out in the mid to late 70s when the plantation was able to secure more cane land from Grove Farm Co. that was closer to its milling operations in Lihue.

In the late 70s the Moloka'i Farmers Cooperative leased over 700 acres in the area from Lihue Plantation. The organization was formed to help individual farmers raise mainly papaya, but also other truck crops. The co-op would handle major purchases of agricultural supplies and equipment and also the processing and marketing of the papaya. Plastic mulching and drip irrigation material used in papaya cultivation was observed in the dry gulches of the project area during the field survey. These were probably washed down during the unusually heavy flood in the area in December 1991 (The Garden Island, various issues 1913-1991).

Reaching activities in the area have been on-going throughout this century in varying degrees. Meadow Gold moved its major dairy operation from Wainee to Pīpīwai in 1991.
IV. SURVEY RESULTS

Two archaeological sites were located and documented within the study area. They are described and evaluated below.

State Site 50-39-4-1856 (CSH 1)

Location: This site is located at the slope/beach interface along a bank approximately 60 feet south of the high tide line but at the base of the slope composed of terrestrial clays and marine sand. The site is 270 feet along the beach south of the gully which is adjacent to the beach access road.

General Description

A cultural layer is exposed along the top of a 3-meter high sloping bank. Adjacent to this layer is a human burial, whose bones were partly exposed (Fig. 12, 13). Further up the bank (115 feet) is a large grinding stone. The burial is described as Feature B, nearby cultural layers as Feature A, and the grinding stone as Feature C.

Feature A: This burial was found 10 cm. below the top of the bank and some of the bones had fallen to the base of the bank into the beach sand (Fig. 14). Identified, were vertebrae, scapula, rib, and a humerus. The bones were exposed horizontally along the bank for a distance of only 40 cm. Although no attempt was made to further expose the bones to determine position, age, sex, or other features, the stratigraphic and artifact association of the burial, there were a few basalt flakes and shell midden visible at the same level with the bones indicating the probable association of the burial to the adjacent...
cultural layer. Since the cultural layer is estimated to be of prehistoric age the burial is probably this age as well, unless it was buried in an intrusive pit not visible in the bank. The relative position of the in situ bones observed showed that the burial is articulated and probably the primary burial of a single individual.

Feature B (cultural layer) This cultural layer is estimated to extend horizontally along the shoreline bank for approximately 6 meters from the burial (Feature A) northward. The layer varies from 15 to 20 cm. thick and contains small amounts of charcoal, coral fleck, cut bone, basalt flakes and shell midden. The matrix of the layer consists of silty clay loam with 50% marine sand grains and the layer has fairly even and distinct upper and lower boundaries. Shovel testing mounds of the bank exposure showed that the cultural layer does not extend inland more than one meter or more. Much of the site it represents could have been eroded away by beach action.

Test Trenching Two areas along the bank were chosen for testing to determine horizontal extent and thickness of the cultural layer (Fig. 12, 13). This testing is better described as facing up of the bank and sampling rather than actual trenching. The two faced areas each 50 cm. wide are referred to as Localities 1 and 2.

Locality 1, Profile Description

Locality 1 consisted of a cleared portion of the cut bank 170 cm. to 230 cm. south of the exposed burial (Fig. 15). The description of the
profile is as follows:

Str. I  
A-horizon  0-15 cm. dark reddish brown silty loam slightly sticky slightly plastic weak fine-silty structure, very abrupt wavy boundary, a few pieces of rounded coral, but no midden present, coral present probably wave wash.

Str. II  
B-horizon  15-52 cm. very dark brown silty clay loam, more clay than above. Strong fine angular blocky with some weak columnar structure. Some clay coating. Abrupt wavy boundary. At 22 cm. 1 piece of iron bar 6 cm. long.

Str. III  
C-horizon  52-60 cm. very dark brown, clay loam, weak angular blocky to massive clay loam, decomposed basalt pebbles, more clay than above.

Locality 1 Summary

No cultural layer is present here. The only cultural find consisted of a 6 cm. long iron bar at 22 cm. in the B-horizon. The incorporation of an historic-era item into this layer is indicative of the ongoing cultural activity on this slope. Only Stratum I has evidence of a marine component from high surf. The other strata are entirely terrestrial in origin.

Locality 2 Profile Description

Locality 2 (Fig. 16) was located 4.2 to 2.7 meters north of the exposed burial north of 4 basalt boulders where a scatter of marine shell is visible. The profile description is as follows:

Str. I  
A-horizon  0-12 cm. dark reddish brown silty loam, very abrupt wavy boundary, no marine sand, scattered boundary, scattered coral, no midden in situ.
Localities

Stratum II 12-20 cm. weak structural B
very dark brown silty clay loam. No marine sand grains, no cultural material.

Stratum III 20-35 cm. dark brown silty clay loam to sandy clay loam with 10% marine sand grains. Cultural material basalts, 2 coral cores, cut bone, 2 basalt cores, very sparse charcoal (screened sample 2 buckets). 10% marine sand grains with some more concentrated discontinuous sand lenses. Lower boundary diffuse smooth.

Stratum IV 35-60 cm. dark brown clay loam with 5% sand grains, non-cultural, diffuse, smooth boundary.

Stratum V 50-65 cm. dark brown silty clay 10 cm. with 10-20% marine sand grains, similar to Stratum II, except no culture. Diffuse smooth boundary. Beach intrusives alluvium, sand interface, some decomposed basalts pebbles.

Stratum VI 65-84 cm. very pale yellowish brown medium to coarse beach sand with very coarse basal sand grains, weathered and stained with alluvial silt and clay. Prehistoric beach sand, but distinctly older than modern beach, older facies of beach.

Locality 2 Summary

It is apparent that the cultural material exposed along the bank is derived from Stratum II at 15-35 cm. depth. Sampling and screening through 1/4 in. mesh of 0.5 cubic meter shows an artificial assemblage of urchin spines and coral cores, cut shell and bone, and basalt flakes. For this small a sample artifact recovery is excellent. The layer probably represents a fishing-oriented beach occupation of prehistoric age. Unfortunately, the layer contained insufficient quantities of charcoal to collect for dating without more extensive exposure of the bank (Tables 1, 2).
The superimposed strata, with varying amounts of marine and terrestrial components, show a dynamic interface between deposition of terrestrial silts and clays during heavy rain and beach intrusion during ocean storms and high winds. The cultural layer itself shows around 10% marine sand. Of greatest geological interest is Stratum VI, which represents an older weathered beach sand predating the modern landscape and considerably older than the modern beach (possible early Holocene higher sea level). The weak B-horizon of Stratum II overlying the cultural stratum may be evidenced in itself for a prehistoric age of the archaeological materials.

Although there is no direct correlation, it is probably that the human burial to the south of this locality is contemporaneous with Stratum III. Stratum II B-horizon of Locality 1 and II clearly correlates. Maximum horizontal extent of the cultural layer is estimated at 12 square meters; 6 meters along the bank, and 2 meters mauka from the bank.

Feature C Ads Grinding Stone

This grinding stone is located inland, along the slope, 115 feet and 202° (true) from the exposed human burial along the bank. This grinding stone is 190 cm. long, one meter wide and 32 cm. deep (Fig. 17). It sits with a 20% slant toward the ocean. Grinding of the upper surface has made smooth concave areas which are of the size and shape appropriate for ads grinding and polishing. Because of the proximity of this stone to Features A and B, it is judged to be associated as the same archaeological site.

Shovel tests were conducted at the mauka and makai end of the stone but...
undisturbed C-horizon was encountered within 5-6 cm. of the surface with no cultural debris.

**Testing of the Proposed House Site**

Four separate shovel test pits were placed in the vicinity of the proposed residence to assess possible archaeological impacts of construction excavation. In all cases, 5-6 cm. of very dark brown silty clay loam A-horizon overlay dark reddish brown clay loam C-horizon containing weathered basalt pebbles (Fig. 18). This C-horizon is intact pre-cultural soil which is derived from in-place weathering of lavas and would considerably predate any known human occupation. No sign of cultural materials was found in any of the shovel tests. In selecting the locations of the test pit level areas as well as slopes were chosen.

State Site 60-304-1897 (CSH 8)

**Location**

This subsurface cultural layer was located on the backshore sand deposit 100 to 150 feet north of the main gully in the property and 35-60 feet downslope of the vegetation line (Fig. 5). The site is presently a level unvegetated parking area and camping site for fishermen who access the beach by the dirt road descending along the north side of the gully.

**General Description**

The main portion of the site is marked by a slight raised area of dark-colored sand approximately 4 m. across (Figs. 19, 20). Three water-rounded boulders form an alignment on the north side and there is one boulder on the north and one boulder on the south. The placement of these boulders could...
indicate a former house structure, but is more likely related to modern fishing use of the area.

Testing of Site SS-39-4-0187 (GSH 2)

A 50 cm. square test trench was placed in the approximate center of the raised sand area (Fig. 21). A brief profile description is as follows:

Stratified Cultural Layer

Str. I 0-5 cm. Gray medium to fine sand with organic staining and modern debris, bottle caps, glass, etc. Abrupt wavy boundary.

Str. II 5-35 cm. Very dark gray to black fine to medium sand with organic staining. Shell midden and artificial material. Dense cultural layer with fire-cracked pebbles. Very abrupt smooth boundary.

Str. III 35-60+ cm. White, fine to medium beach sand, culturally sterile. Contains water-rounded coral and shell.

Sampling of Cultural Layer

Approximately 25 cubic meters of Stratum II sediment was screened through ¼ inch mesh for artificial content. Two basalt flakes and one shell fishhook were recovered, enough to confirm the existence of the prehistoric cultural layer.

In addition a ¼ gallon size bulk sample of Stratum II was collected and returned to the laboratory where it was sifted through window screen to recover artifacts, midden and most importantly, charcoal for dating. Unfortunately, insufficient charcoal for a C14 date was recovered but basalt flakes, a coral file, and a bone fishhook fragment were recovered (See Table 1). In addition, some midden quantification was accomplished with components including a variety of reef shells and fishbone (See Table 2).
Shovel Testing

A series of 3 shovel tests were excavated north, south, and masaka to estimate the horizontal extent of the subsurface cultural layer. Directly masaka 5 meters from the center of the raised sand area in a grove of hau bushes only a week raised sand and clay A-horizon was observed within 15 cm. of the surface. This A-horizon probably correlates to the cultural material layer but would represent less intense occupation. Three meters to the north of the main test pit a weak cultural layer was observed from 0-30 cm. but again, mixed with alluvium. To the south toward the gully, a weak cultural layer was observed at a depth of 25-30 cm. buried below loose, modern beach sand.

Horizontal Extent of Site

The test pit in the center of the site and the 3 shovel tests, as well as observations of the distribution of organically stained sand, allow us to estimate that the richest area of the site is approximately 16 square meters and beyond this, the cultural layer is thinner and weaker form probably encompasses an area of 60 square meters.

Age of Site

The artifactual assemblage including basalt flakes, flint, and shell and bone fahooks clearly indicates a prehistoric age for this cultural layer.
V. SUMMARY SITE SIGNIFICANCE AND RECOMMENDATIONS

Settlement and Site Context

Review of previous archaeology in the alaupua’s of Aliomanu and Papa’s, and historical research on land use and Land Commission Awards, are combined with the nature of the archaeological findings within the project area, to offer the following general comments.

1. The previously recorded archaeological sites within these two alaupua’s, especially Bennett, are distributed mostly of the shoreline near the base of the steep sloping mountains as they meet the plain, and/or are associated with the flood plains of the streams themselves.

2. The level plain above the two stream valleys and between the ocean and the pali are devoid of sites. Today, this is because of many years of plantation agriculture which would have destroyed these areas. The traditional Hawaiian settlement would have included use of this plain for dryland agriculture and habitation. These activities, of course, would have been complimentary to and supportive of the more intensive use of the flood plains themselves for wetland cultivation. In this respect, it is more than coincidental that many dryland cultivations are mentioned in the Land Court testimonies.

3. By the mid 19th century, the native inhabitants of these two alaupua’s were using the two flood plains almost exclusively as shown by the distribution of the Land Commission awards. Although Aliomanu and Papa’s stream valleys are narrow and short compared to the drainages to the south and north (Anahola and Malua’s), the number of LC’s, and their close proximity to each other, indicate intensity of use comparable to the larger valleys. Total population was probably smaller because of the smaller land area, but the density per unit of land area was probably similar.

4. Concerning access to the ocean and use of ocean resources, Aliomanu and Papa’s are similar in toponymy and configuration of the shoreline. Each has a slightly indented bay at the mouth of its main stream with a channel through the reef entering the bay. The rest of the shoreline is fairly steep slope descending to a narrow beach and a fairly continuous, but narrow reef. With this in mind, we would expect that the major route of Hawaiians to the ocean would be through the stream mouths. Because of this, the large makai habitation would be concentrated at the stream mouths themselves, along the broad flats of the valley base. However, use of the reef resources between the bays was an integral part of everyday subsistence.

5. We view the sites within the project area in the context of the generalizations offered above. It is not surprising that major shoreline settlement was not encountered. Rather, the two sites represent temporary and/or recurrent use shoreline habitation associated with exploitation of the reef. The occurrence of the NET grinding stone here does not necessarily contradict this premise, as these are frequently found near the shoreline where water and sand are available. Use of the steeply sloping shoreline areas for interment of burials may again indicate that this segment of the
shoreside was out of the main traveling routes of the inhabitants, who could bury their dead here, apart from the main focus of settlement on the flood plains.

Summary of Sites

State Site 50-30-4-1896 (CSH 1) is a prehistoric cultural layer (Feature B) of maximum horizontal area of 15 square meters which probably represents a beach occupation layer. Directly to the south and probably contemporaneous is a single primary interred human burial (Feature A) which was discovered partly exposed along the same cut bank. More than 100 feet up-slope is a large adze grinding stone (Feature C) which may also be associated with this site and is also of prehistoric age.

State Site 50-30-4-1897 (CSH 2) is another prehistoric cultural layer in level backshore sand deposit on the north side of the main gully and at the terminus of the beach access road. The artifact assemblage recovered from testing shows beach occupation related to fishing. This site is protected from intermittent flooding down the adjacent gully which has, in the past, secured only the south side of the drainage. The thick portion of the cultural layer is estimated to be 16 square meters with thinner weaker deposits possibly extending to include 90 square meters.

Significance

State Site 50-30-4-1896 (CSH 1), as indicated by the artifactual content, is significant for informational content under significance Criterion D. Because a burial also occurs here, it also has cultural significance (Criterion E). The adze grinding stone nearby (Feature C) is evaluated as significant under Criterion C (Excellent example of a site type). State site 50-30-4-1897 (CSH 2) is another prehistoric cultural layer with substantial potential for yielding important information on the to-date little known prehistory of this coast of Kaua‘i and it is significant for its informational content (Criterion D).

Recommendations

Given the nature and location of the development-construction of a single-family residence, with careful planning and some simple follow-up measures it will be possible to preserve both archaeological sites in place and avoid impact on any archeological resources.

We are aware that detailed preservation measures should be presented in a short plan at a later date following review and approval of this report by the Historic Sites Division of the Department of Land and Natural Resources. However, the following measures are suggested on a preliminary basis.

State site 50-30-4-1896 (CSH 1)

1. Reinforcement of the bank with a few large rocks and soil fill to ensure the protection of the burial (Feature A).

2. Removal of the adz grinding stone (Feature C) to the bank above the cultural layer (Feature B) to ensure its protection during grading and excavation for the residence.

3. Although grading for the residence should be far enough away from the site to prevent damage, the site should be protected from dumping soil construction debris, heavy equipment, etc. with construction of a metal stake fence with plastic netting to protect it during construction.

4. Examination of the house plans in relation to the location of State site 50-30-4-1896 (CSH 1) shows that the site is far enough downslope to be avoided in construction (see Fig. 5). However, because of the slope involved and the possibility of inadvertent disturbance, all construction personnel
should be made aware of the location of the site and burial.

State Site 30-30-4-1937 (GIS II) (approximately 15 sq. meters)

5. The exposed portion of this site can be protected with a cover of several inches of imported top soil. This area, because of its strategic location, has
and will continue to be a parking place for beach visitors and fishermen.
The site would be protected from damage by tire tracks and barbecue
makers with some heavy clay soil overfill.

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Appendix I
A-Li-O-Ma-Nu


One day A-a-ka and his friends were standing on the brink of a cliff. Far below them lay a deep pool hollowed out of the lava rocks. It was as still as glass and so clear that even from their height the little men could see the bottom, smooth white coral sand.

A-a-ka held a stone in his hand as he stood poised on the lava shelf. His companions gathered around in a kind of breathless silence, waiting for him to drop the stone and then jump after it. What a thrill it was going to be to see the lava rock break the clear surface of the pool into a thousand wrinkles and sink slowly to the sandy bottom. What a moment it would be when A-a-ka dropped after the stone, and plunged with a great splash into the pool below, and touched bottom before the stone had broken the water's resistance.

A-a-ka let the stone fall and then like a plummet dropped after it. The little men lay on their stomachs and looked down. They saw the water splash high against the rocks, saw A-a-ka come slowly back to the surface again with the stone in his hand. They watched him paddle lustily in the pool as the railed water settled once more into crystalline transparency. How cool it looked down there in the water. The sun above the cliff was straight over their heads and the little men felt its scorching rays on their backs.

No breeze of wind stirred the hot noon-day air. Beyond the reef the surf plunging like thundering white stallions. The little men had just begun to get up their minds to follow A-a-ka's example when they noticed his idle swimming had suddenly changed to frantic splashing.

Peering closer, the little men saw the black outlines of a shark cut through the water of the pool. It was after their friend A-a-ka! Now and then they saw its gleaming white belly as it turned on its side.

The Menehune screamed in anger and shouted down to their friend.

"Hurry!" they cried. "Swim faster! Don't let the shark get you!"

Breathless and gasping, A-a-ka finally reached the edge of the pool and climbed to safety, leaving the great shark to gnash its teeth in disappointment.

A-a-ka's friends scrambled down the side of the cliff to see if their companion had been hurt. Their raspy voices were excited and angry and they all talked at once of a plan to capture the shark and kill him.

The plan was to weave a great basket of morning-glory vines, fill it with bait, and let it down into the pool. Once decided, the Menehune set to work gathering the morning-glory vines growing along the trails, and with meticulous care they wove a strong basket. When it was done they filled it with bait and let it down into the water. Then they waited.

The shark swimming the bait swam into the basket and became entangled in its meshes. The Menehune shouted in triumph, and with their combined strength, succeeded in pulling him out of the pool and dragging him along the reef into shallow water. There the shark lay, unable to swim in the warm shallow sea water, and gasped its life breathlessly away.

The odor of the shark soon brought thousands of sea birds to feast upon its flesh and to pick its bones clean. The place where the shark lay was called A-No-ma-Nu.

"where the water is made still by the oil from the shark."

The Menehune never swam in that pool again, but they built a heiau, and left a pile of stones, as monuments to the delivery of one of their men from the shark-god.
Appendix II

Native Register of the Land Commission for the ahupuaʻa of Papoa and ʻAlamau, Kauaʻi.

No. 5597 Puolo
Papoa, Kauai, December 24, 1847

The Land Commissioners, Greetings: I hereby state my claim for land in Papoa on the island of Kauai. There are seven [lot] and cultivated kulea adjoining the sides of these [lot], and my house, and there is a house site.

PUOLO

No. 3404 Adamu
Papoa, January 13, 1848

The Land Commissioners, Greetings: I, Adamu, a Hawaiian subject living at Papoa on the island of Kauai hereby state my claim for land. There are two [lot] and seven orange trees, and the breadfruit and one coconut tree. This is my claim, and a house site which adjoins my house, however they are all together in one place. I received it from Paulo Kauoa. Respectfully,

X his mark

Waka

No. 4038 Waka
Papoa, January 12, 1848

The Land Commissioners, Greetings: I hereby state my claim for land in Papoa, Island of Kauai. There are six [lot], three kulea planted with nuku, nukula, and a house adjoining the sides of the [lot], and the house lot.

Waka X

No. 4033 Waka
Anahola, Kauai, January 13, 1848

The Land Commissioners, Greetings: I hereby state my claim on the island of Kauai, land of Papoa. There are five [lot], four kulea planted with nuku, two kulea planted with nukula, one kulea planted with nuku, and two house lots.

FUAKO X

No. 5885 Kaima
January 12, 1848

The Land Commissioners, Greetings: I hereby state my claim for land in Papoa on the Island of Kauai. There are eight [lot] and the kulea and the nuku of nuku adjoining the house lot. There are two, together.

KAIPAHU

No. 5100 Kaulea
Papoa, Kauai, January 12, 1848

The Land Commissioners, Greetings: I hereby state my claims for land at Papoa on the Island of Kauai. There are three [lot], also a kulea and a house lot adjoining it.

KAULUA

No. 5765 Kulea
Papoa, Kauai, January 12, 1848

The Land Commissioners, Greetings: I hereby state my claim for land at Papoa on the Island of Kauai. There are two [lot], two nuku of nuku, one nuku of nuku, and a house lot.

KAULUA X

No. 6045 Uka
Pilaa, Kauai, Jan. 17, 1848

The Land Commissioners, Greetings: I hereby state my claims for five [lot]. There are five [lot] and a person who is under me, Kauoa, however, the large claim is mine and he is living under me. There is also a kulea adjoining these [lot], and the house site. These are my claims.

UKA X

No. 7533 Kulelehua
Papoa, Kauai, 28 January 1848

The Land Commissioners, Greetings: I hereby state my claim for land. I am the kulelehua on the land of Papoa, under Kaumuali and Diniia Ofton. All the benefits which pertain to the kulelehua are those which I claim, with my Hukau (the case who held the land). That is my statement.

KULELELOA
No. 4039  Puohina  Anahola, Kauai, January 12, 1848

The Land Commissioners, Greeting:  I hereby state my claim to you in the land of Aliomanu, Island of Kauai.  There are three lot $40, four kula planted with rumi, five malo, and the house lot.

POOHINA

No. 4038  Puohaula  Anahola, Kauai, January 12, 1848

The Land Commissioners, Greeting:  I hereby state my claim to you in the land of Aliomanu.  There are two lot, four kula planted with rumi, three places for planting kula, two house lots.

PUOHKAULA

No. 5047  Kohlauohau  Anahola, Kauai, January 12, 1848

The Land Commissioners, Greeting:  I hereby state my claim to you in the land of Aliomanu, Island of Kauai.  There are two malo of rumi, two lot and the wharaka, five malo of rumi, and a malo of rumi in another place, and the coffee trees and two house lots.

KAHOLAUOHU

Foreign Testimony of the Land Commission for the ahupua'a of Papa'a and Aliomanu, Kauai

No. 2527  Pulia Cil.

Keni sworn says I know Pulia's land in Aliomanu - 4 lots, kula & house lot all in one piece.

Bounded

- M. by Konohiki's kula
- Ma.  
- M.  
- K.  

Three lands were given Cil. by the Konohiki in 1847.  Pulia has left his claims in Papa'a.  The Konohiki of Papa'a has given those lands to Cil. as he has no other lands.  No one has disputed his claim.

Pohina sworn says - I know Pohina's lands as above testified by Kani the Konohiki of Aliomanu - all that he has testified is true.

No. 3404  Ahana Cil.

Ula sworn says - I know Ahana's land in Papa'a.  They consist of two pieces as follows:

No. 1. In House Lot in Mahahuli.
No. 2. Lot in Konohiki's land.

These lots are in the possession of Cil. by his being chosen Konohiki of Papa'a in 1847.  He has no claim on the lots before that time.  He has held them to this time, undisputed.

No. 1 is bounded

- M. by Konohiki's kula
- N.  " Loka " Kuhinui
- M.  " Konohiki's kula
- A.  "  

No. 2 is bounded

- M. by Pua's lot
- N.  " Konohiki's kula
- M.  "  
- A.  "  

Punia 2nd sworn says - I know the lands said to belong to Ahana - 2 lots & house lot.  I heard what Ula said - his testimony is true.

Pohina sworn says - I know Pohina's lands as above testified by Kani the Konohiki of Aliomanu - all that he has testified is true.

No. 4558  Wi Cil.

Puli sworn says - I know Wi's land in Papa'a as follows:

No. 1. In 6 lots & kula in "Malu".
No. 2. In 1 lot - "Awapuhi".
No. 3. " in "Kahai".

No. 1 is bounded

- M. by Konohiki's kula
- Ma.  "  
- M.  "  
- K.  "  

No. 2 is bounded

- M. by Konohiki's kula
- Ma.  "  
- M.  " Papa's brook
- K.  "  

No. 3 is bounded on all sides by Konohiki's kula.
These lands were given Gt. by the Konohiki in 1836. It has been held unmolested to this time. No one has disputed the claim.

Kahan sworn says — I know We lands in Panaa. I heard Pala's testimony — it is all true.

No. 4033 Puako Gt.
Hakahuku sworn says — I know that Puako died in 1849 & that his lands have reverted to the Konohiki.

No. 5055 Kilia Gt.
Kahan sworn says — I know Gt. lands in Panaa — all in one piece.

Bounded as follows —
M. by Kahaki'a's kola
M. by Konohiki's kola
R.

These lands were given by the Konohiki in 1838 & have been held unmolested to this time.

Wii sworn says — I know Gt. lands — all that Kahan has testified true.

No. 5010 Kekauli Gt.
Sima Puna came forward & testified that Kasula died in 1849. And that his lands have reverted to the konohiki.

No. 5011 Kekauli Gt.
Pala sworn says — I know Gt. lands in Panaa. They are in three pieces as follows
No. 1 is Hanahea Gt.
No. 2 is 5 lots in "Aukani"t
No. 3 is kola in Kapoho

No. 1 is bounded on all sides by Konohiki's kola

No. 2 is bounded
M. by Waie alo — "Kualikai"
M. by Konohiki's kola
R. by "Kamokahi"
K. by Panaa brook

No. 3 is bounded on all sides by Konohiki's kola

These lands were given Gt. by the Konohiki in 1837 & have been held unmolested up to this time.

Wii sworn says — I know Kahan's lands in above testimony I agree with.

No. 5045 Ultra Gt.
Lela sworn says — I know Ultra's lands in Panaa, they consist of 14 small lots in 4 lots.

"Kamokahi"

Bounded as follows —
Mauka by Konohiki's kola
Kahaki'a by Konohiki's kola
Makal by Kina Gt.
Napali by Kamaona Pali

These lands were from the Konohiki in 1847 & have been held henceforth to now.

No one has disputed the claim.

Kanaia sworn says — I know lands of Ultra — I have heard the testimony of Lela — it is true.

No. 7283 Kohatelea Gt.
Kahale sworn says — I know the lands Kohatelea in Panaa, it is in 4 pieces as follows
No. 1 is Huna lot & kola adj.
No. 2 is 1 lot — "Koana"
No. 3 is 1 large & 3 small lots & kola adj.
No. 4 is 2 small lots in "Kahale"

No. 1 is bounded
M. by Panaa brook
K. by Konohiki's kola

No. 2 is bounded
M. by Konohiki's kola

53
Ma. * Papua Brook
M. * Lilo "Kahoumakua"
K. * Konohiki's kula

No. 3 is bounded
M. by Pahu Road & bridge
Ma. " Konohiki's kula
M. * * * * * * * * *
K. * Papua Brook

No. 4 is bounded
M. by Papuka's lots
Ma. * Papua Brook
M. * McKaya's lot & kula
K. * Konohiki's kula

Cit. is Konohiki of Papua & has lived on the land since 1848. Cit. has no other lands.

We solemnly swear — I know the lands of Kahouma in Papua. No other person has any claims on these lands. — Cit. only.

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No. 4025  Puhina Cit.

Hahakua sworn says — I know Cit's lands in Allomanu. They are in two distinct pieces as follows —

No. 1 is House Lot in "Pahula"
No. 2 is Leilek kula adj. in "Kolahoua"

No. 1 is bounded
M. by Konohiki's kula
Ma. * * * *
M. * * * *
K. * * * *

No. 2 is bounded
M. by Pukakaula's lots
Ma. * Brook
M. * Kahoumakua's lot
K. * Konohiki's kula

These lands were given to Puhina by Konohiki in the days of Kemumu & from them fall to Cit. & have been held unmolested to this time.

Kahouma sworn says — I know Cit’s lands — I have heard all that Hahakua has said — it is all true.

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No. 4030  Puhina Cit.

Puhina sworn says — I know Cit's lands in Allomanu — they are in three pieces

as follows —

No. 1 is 1 large & 3 small lots in "Kapahulua"
No. 2 is House Lot in "Kalichua"
No. 3 is kula in "Aolea"

No. 1 is bounded
M. by Lot — "Kula"
Ma. * Brook
M. * My Lot "Kahoumakua"
K. * * & kula

No. 2 is bounded
M. by Kahoumakua's kula
Ma. * Puh. Road
M. * Sea Beach
K. * Konohiki's kula

No. 3 is bounded on all sides by Konohiki's kula.

These lands were given to Cit. by the Konohiki in 1848 but they had been held by Cit. father for many years before. They have been held in quiet use since no one has disputed their claim.

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No. 4037  Kahoumakua Cit.

Puhina sworn says — I know Cit's lands in Allomanu —

No. 1 is House Lot in "Kahouma"
No. 2 is 5 lots in "Kapahulua"
No. 3 is kula in "Aolea"

No. 1 is bounded
M. by Konohiki's kula
Ma. * Laka — "Kalichua"
M. * Sea Beach
K. * Konohiki's kula

No. 2 is bounded
M. by Konohiki's kula
Ma. * My Laka
M. * Kula's lot
K. * Konohiki's kula

54
ATTACHMENT

FINAL

ENVIRONMENTAL ASSESSMENT
PROPOSED RESIDENCE
ALIOMANU ESTATES, KAUAI

CDOA # KA-2589
ATTACHMENT
ENVIRONMENTAL ASSESSMENT
PROPOSED RESIDENCE
ALIOMANU ESTATES, KAUA'I

I. APPLICANT

The applicant is Norman J. Caris, owner of the subject property.

II. APPROVING AGENCY

The applicant is filing a Conservation District Use Application with the Department of Land and Natural Resources, State of Hawaii. The approving agency is the Board of Land and Natural Resources.

III. AGENCIES CONSULTED IN PREPARING ENVIRONMENTAL ASSESSMENT

The following agencies have reviewed and commented on the project or have been consulted in the preparation of this environmental assessment:

State Agencies
- Historic Preservation Division, Dept. of Land and Natural Resources
- Office of Conservation and Environmental Affairs, Dept. of Land and Natural Resources

County Agencies
- Planning Department
- Public Works Department
- Water Department

IV. PROJECT SITE LOCATION

The project site is located in the Aliomanu Estates subdivision approximately 1.2 miles north of Anahola Bay on the North Coast of Kauai. The Tax Map Key of the property is Fourth Division, 4-9-05: por. 27. The location or area plan is presented as Figures 1 through 4 in this document. These figures represent the location map, vicinity map, project area and parcel map.

V. PROPOSED ACTION

The applicant is proposing to construct a residence on a 15.4-acre parcel within Aliomanu Estates. The residence is designed to have a total floor area of approximately 7,200 sq. ft. in a
one-story building. The attached garage will be approximately 950 sq. ft. The architecture of the building is intended to blend harmoniously with the site and surrounding environment. No extensive grading is planned and no concrete structures are proposed. The building will be of wood construction with wood tile roofing. Its architecture will be of contemporary-Polynesian vernacular. See Figures 5 through 7 for the site plan and concept building plans for the proposed project.

Accessory uses or amenities will include a swimming pool, tennis court and landscaped garden. A paved driveway will provide access to the residence. Landscaping, consisting primarily of groundcover, shrubs and ornamental trees, will be provided around the house and along the driveway. The sloping area along the shoreline and makai of the residence and yard will be left in its natural state. Some trees will be selectively trimmed down for views but their root system will remain in place to control potential soil erosion.

Of the total 15.4 acres which comprise the project parcel, only about 2.5 acres will be used for the proposed residence, amenities, landscaping and driveway. The highest structure will be the residence which will be a one-story building. Extensive grading will not be required for the residence because wood poles or rock walls, and not on-slab construction, will be used for the house foundation.

VI. REQUIRED PERMITS

The proposed action will require the filing of a Conservation District Use Application (CDUA) with the Office of Conservation and Environmental Affairs, State Department of Land and Natural Resources. The approving authority is the Board of Land and Natural Resources, State of Hawaii.

Since the project site is located within the Special Management Area (SMA), it is subject to the SMA Rules and Regulations of the County of Kauai; however, because the project is a single-family residence, it is specifically exempt from the SMA requirements. Additionally, the proposed project is located more than 40 feet from the shoreline and therefore is not subject to the shoreline setback requirements of the County.

VII. PUBLIC POLICIES

A. STATE LAND USE LAW

The project site is situated within the Conservation District and is subject to Title 13, Chapter 2 Rules and Regulations of the Department of Land and Natural Resources, State of Hawaii, relating to land use within the Conservation District. The approving government body for proposed actions within the Conservation District is the State Board of Land and Natural Resources.
The applicant is proposing an action that is not specifically identified as a permitted use in the District. Therefore, a conditional use permit is required for the project and is currently being requested.

B. COUNTY GENERAL PLAN

The Kauai County General Plan designates the project site as Open Space. This represents the County's desire to maintain the project area in open, recreational and natural use.

The applicant is proposing a residence on a small portion of the property comprising approximately 16.2 percent of the area. The remaining 83.8 percent will be kept in open space and in its natural state as provided in the County General Plan.

C. COUNTY ZONING

The proposed project is located in the Conservation zone of the County Zoning.

D. SPECIAL MANAGEMENT AREA

The boundary of the Special Management Area is located mauka of the parcel site along Kuhio Highway. Although the proposed project is located within the SMA, it is exempt from the SMA Rules and Regulations, because it is a single-family residence and is not part of a larger development within its parcel.

VIII. DESCRIPTION OF THE AFFECTED ENVIRONMENT AND PROBABLE ENVIRONMENTAL EFFECTS

A. EXISTING LAND USE

The project parcel is currently vacant and unused. It is part of a 12-lot subdivision known as Aliomanu Estates. The average size of the lots is approximately 22 acres. The project parcel is one of the smallest of the lots in the subdivision containing 15.4 acres, and is located along the shoreline. Access to the project parcel is via planned roads through the subdivision from Kuhio Highway. The roads will be private.

Aliomanu Estates has begun construction of its infrastructure and should be completed by the end of the year. Makai of the property is the shoreline comprised of a sand beach and offshore coral reef flat. The sand area is not heavily used and is frequented primarily by fishermen and neighboring residents who often relax on the sand or stroll leisurely along the water's edge. Clusters of rock boulders occupy spotted locations along the shoreline and are used by shoreline fishermen as their base for fishing. Swimming and snorkeling are not suitable for the area because the offshore reef flat extends 300 to 400 feet from the beach, and the depth of the water over the flat is not sufficient.
Adjacent to Aliomanu Estates along the shoreline and to the south toward Anahola Bay are a number of beachfront homes. These homes which have access from a rural road originating from Kuhio Highway are located within the Urban District. One of these houses is located from a major ravine to the north and south. The north ravine was created over centuries in part by Papaa Stream which flows into Papaa Bay. The south ravine was formed by Aliomanu Stream which currently flows into Aliomanu Bay near the project site. Both ravines are major drainageways for the mauka lands which encompass the northern flank of the Kalalea Mountain.

At the coastline of Aliomanu Estates, where the project site is located, the slope of the terrain averages approximately 15 to 30 percent, but a portion of the property where the proposed residence is to be located is relatively level and developable. Elevations on the overall property range from 0 feet to approximately 75 feet over a distance of about 300 feet. Topography and slope are shown on Figure 8.

Two minor swales traverse the project site at approximately equal intervals from the side property lines. These swales are drainageways for the mauka land within Aliomanu Estates. Water from above the highway does not flow into the subdivision.

The makai boundary of the project site constitutes the shoreline of the area. A Shoreline Certification by the Board of Land and Natural Resources (BLNR) was obtained in January 4, 1990. In July 1992, the BLNR recertified the shoreline.

C. SHORELINE AND MARINE ENVIRONMENT

In a study entitled Baseline Assessment of the Marine Environment in the Vicinity of Aliomanu, Kauai, Hawaii, prepared by Marine Research Consultants, January 30, 1992 (see Appendix A), the shoreline of the project site is described as comprising a white sand beach of very coarse-grained calcareous sand of marine origin. The depth of the beach is about 70 to 100 feet. In several spotted locations along the shoreline are clusters of large rock boulders which extend from the sand area out into the ocean. Some areas of the beach are underlain by beach rock, composed of lithified sand.
According to Marine Research Consultants' report, in the immediate offshore waters of the beach land is a broad, shallow reef flat. This marine feature is composed of material deposited by calcifying organisms, particularly corals and algae. Most of the colonies of the coral species are relatively small encrustations growing on the reef surface. Approximately 10 to 15 percent of the inner reef flat (closest to the shoreline) is covered with living coral colonies. Very few corals were observed on the outer reef flat where continual force of breaking waves occur. Beyond the reef edge where water depth increases, coral community structure widens in variety of species.

Other invertebrates observed in the waters were sea urchins and sea cucumbers. Marine algae of the filamentous and encrusting coraline variety cover essentially the entire reef flat.

Reef fish in the area included primarily wrasses, damselfish and surgeonfish. Beyond the reef, fish assemblages were comprised of species typically found in surge zones, such as parrotfish, rudderfish and various surgeonfish. Also abundant were a variety of butterflyfish, triggerfish and goatfish. One green sea turtle was observed off the reef.

Based in part on its baseline survey of the project area, Marine Research Consultants has assessed the probable impacts of the proposed residence on the shoreline and marine waters. Findings of the assessment indicate that the marine environment and biotic assemblages of the project site are typical of an exposed windward Hawaiian reef. None of the biotic assemblages observed in the water near the project site appear to be rare or commercially valuable resources.

Marine Research Consultants noted that since project construction will not impinge on the shoreline or areas seaward of the shoreline, there is no potential of the project directly altering or removing any components of the marine ecosystem. Should unforeseen events cause some increase in sediment movement to the marine environment, case studies have shown that the marine environment would not be seriously impacted providing there are active water movement in the area, proper behavioral adaptation by the existing marine communities and the probable short-term nature of the potential sediment input. It is cautioned that construction should proceed with care to the environment, however, with properly implemented erosion and sedimentation controls during construction.

D. SOILS

According to the Soil Survey of the Island of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, prepared by the U.S. Soil Conservation Service, Department of Agriculture, the project parcel is located on land classified as BL - Badland, Lh8 - Lihue silty clay (0 to 8 percent slopes), Lh2 - Lihue silty clay (25 to 40 percent slopes, eroded), and BS - Beaches. (See Figure 9.) The proposed residence will be located on only the BL - Badland soils of the property. This soil type is characterized as being steep to very steep, nearly barren and ordinarily not stony. Runoff is very rapid, and geological erosion is active. This soil is not suited for agricultural use. It has a Capability Classification of Ville, nonirrigated, which is the poorest rating in determining the suitability of soils for most kinds of crops.
According to the Land Study Bureau's Detailed Land Classification - Island of Kauai, the Soil Type for the property (the portion proposed for the residence) is "E". This Type "E" classification applies to land that is of very poor agricultural productivity.

The Agricultural Lands of Importance to the State of Hawaii (ALISH) Map No. K-9, shows no designation for the portion of the property affected by the proposed residence. Prime Agricultural Land is shown, however, on the portion of the property which provides access to the subdivision road. (See Figure 10.)

E. VEGETATION

A botanical assessment of the project site was conducted by Char & Associates in 1990 and is attached as Appendix B. The study found that introduced species dominated the property. Almost the entire sloped area was occupied by ironwood trees. Various grass types were found beneath the thick cover of the ironwoods.

At the base of the slope and above the sand area, native species such as naupaka, hala, hau, tree heliotrope, pa'iu-o-Hi'i-f'aka and beach morning glory (pohuehue) were predominant. At the top of the slope were lantana, Christmas berry, Java plum and koa haole. In the two small gullies which traverse the project site were vegetation consisting primarily of Java plum trees and scattered ironwood trees. Shrub of koa haole, lantana, Christmas berry and kolomona accompanied the two predominant trees.

Char & Associates concluded that there are no plants on the project site that are listed by U.S. Fish and Wildlife Service as threatened or endangered nor are there any candidates for such status.

Approximately 2.49 acres of the 15.4-acre property will be used for the proposed residence, amenities, landscaping and driveway. About 1.4 acres of the 2.49 acres are within the sloping portion of the property where there is a predominance of ironwood trees. It is estimated there are roughly 2 to 4 ironwood trees per 100 square feet of land. Therefore, approximately 1,220 to 2,440 trees may have to be removed in order to make way for the construction of the residence and accessory facilities. Many of these trees have small trunk diameters, measuring 3 inches or less. Approximately 200 to 400 trees will be selectively trimmed down to about 10-foot to 15-foot heights to allow a view corridor for the residence. The trimming will be done in a manner that will maintain the existing visual character of the area.

F. FAUNA

The coastal ironwood trees and windswept shoreline provide a habitat for a limited range of bird species. These species are primarily of the exotic variety such as:

- house finch
- ring-necked pheasant
- western meadowlark
- greater necklaced laughing-thrush
- Java sparrow
- common barn owl
- Japanese bush-warbler
- house sparrow
- red-crested cardinal
The project site is not suitable as a habitat for native resident species. In a recent survey by Phil Bruner, Ph.D., attached as Appendix C, no native endemic or indigenous birds were found on the property. On the other hand, migratory shorebirds, such as Pacific golden plover, ruddy turnstone, wandering tattler and sanderling, are likely to be found along the shoreline.

No mammal activity was observed, but rats, mice and cats may occur on the property and their quantitative presence would be comparable to what would be found in similar habitats elsewhere on Kauai.

In the survey's conclusion, no endangered or rare species as well as candidate species is evident on the project site. The project's environment as a fauna habitat is not unique or of any special importance to the region.

G. VISUAL

The proposed residence is located more than 3,000 feet from Kuhio Highway. It will not be visible from the State right-of-way. The proposed residence will be hidden by the top of the project site’s slope.

At the shoreline, the proposed residence will be visible but would be partially screened by existing ironwood trees. Some of the trees will be trimmed for view corridors, but most of the trees will remain intact to preserve the existing visual character of the area.

H. AIR QUALITY

The quality of the air in the project area is excellent. The property is located along the shoreline and on the windward side of the island. It receives the initial tradewinds as they cross the island, and during the Kona seasons, the winds come from predominantly the southwest or inland areas which are occupied by vacant or farm lands. There are no known sources of air pollutants that would adversely affect the property.

During construction, short-term impacts on air quality will result from dust-generated grading activities. The impact would be temporary and generated from only a small area. Mitigative measures, such as sprinkling of water on exposed dirt areas and installation of dust screens, could be employed to control any adverse effects.

I. NOISE IMPACT

The predominant sounds in the area are of natural origins. Located along the shoreline, the project site is susceptible to noise generated by the surf on the shore and winds rustling the foliage on existing vegetation. Other notable sources of noise would include talking from people frequenting the shoreline area and wildlife foraging or straying over the site and surrounding lands.

Temporary noise will be generated during the construction of the residence. This would include noise from earthmoving equipment and activity associated with the construction of the
house. Once the house is completed, the construction-related noise will cease. As a precaution
the applicant may apply mitigation measures to reduce the impact of the short-term noise. Such
precautions could include use of muffler devices on all gasoline or diesel-powered equipment
and restricting construction hours to daylight hours.

Long-term noise will be similar to those generated by other single-family residences on the
large country lots. No State noise laws are anticipated to be violated.

J. ARCHAEOLOGICAL SITES

An archaeological inventory survey was conducted by Cultural Surveys Hawaii in July
1992 to determine the presence or absence of archaeological features on the property and to
assess their significance. The results of the survey is provided in the report, Archaeological
Inventory Survey of 15.44 Acres (TMK 4-9-5: Por. 4 Lot 12) Carls Property, ‘Aliomanu and
Papa’a, Kaua‘i, attached as Appendix D. It indicated the survey made a 100 percent site
coverage and that there are two archaeological features present.

One of the features (State Site 50-30-4-1896, referenced as CSH 1 on Figure 11) is located
seaward of the proposed residence and is comprised of a single human burial, a 15-cm. thick
mixed sand and alluvium cultural layer and an adz grinding stone. The other feature (State Site
50-30-4-1897, referenced as CSH 2 on Figure 11) is a cultural layer on a beach terrace in the
northern section of the property. Testing was done on the two sites and the results showed that
they consisted of prehistoric artifactual material.

According to Cultural Surveys Hawaii, Site 50-30-4-1897 is evaluated as culturally and
informationally significant and Site 50-30-4-1897 is evaluated as informationally significant.

The present location of the proposed residence would not impact either archaeological
feature. During construction, however, site work for the residence may come close to Site 50-
30-4-1896. Therefore, the archaeologist is recommending cautionary measures to protect the
sites from construction related damage. They include:

1) Reinforcement of the bank with a few large rocks and soil fill to ensure the protection
of the burial.

2) Removal of the adz grinding stone to a safer location on the bank above the cultural
layer (Site CSH 2) to ensure its protection during grading and excavation for the
residence.

3) Although grading for the residence should be far enough away from Site CSH 1
Features A and B to prevent damage, the site should be protected from slumping soil
construction debris, heavy equipment, etc., with construction of a metal stake fence
with plastic netting to protect it during construction.
4) Examination of the house plans in relation to the location of Site CSH 1 Features A and B shows that the site is far enough downslope to be avoided in construction. However, because of the slope involved and the possibility of inadvertent disturbance, all construction personnel should be made aware of the location of the site and burial.

For Site 50-30-4-1897, the archaeologist is recommending that the exposed portion of the site be protected with a cover of several inches of imported top soil. This area, because of its strategic location, has and will continue to be a parking place for beach visitors and fishermen. The site would be protected from damage by tire tracks and barbecue makers with some heavy clay soil overfill.

Given the possibility that there may still be some sites below the surface of the property, the applicant is willing to cease construction activity in the immediate area if an archaeological site is uncovered during construction and not resume construction until clearance is obtained from the appropriate State agency.

K. NATURAL HAZARD

The Flood Insurance Rate Map (FIRM) prepared by the National Flood Insurance Program designates the shoreline area of the property as Zone VE with a base flood elevation of 11 feet and a width of approximately 70 feet. Zone VE is an area susceptible to 100-year tsunami inundation.

The proposed residence will be constructed at the approximately 40-foot elevation. Based on the FIRM, runup from a potential tsunami would not affect the residence.

Although the project site is covered with ironwood trees, it is generally windy and wet and not a strong candidate for forest fires.

There are no active or dormant volcanoes in the area.

There is no evidence for a significant landslide on the property. Soil erosion is a possibility if the ground is left unprotected with the removal of groundcover or vegetation. The applicant is taking precautions by conducting soil studies and applying appropriate engineering and landscape design to control erosion and sedimentation on the property.

L. CIRCULATION

Access to the project parcel is via a subdivision road within Aliomanu Estates from KuHio Highway. The road, which is scheduled to be completed by the end of this year, will remain private.

KuHio Highway is a State right-of-way that serves the eastern and northern regions of the Island of Kauai. Traffic from the proposed residence would not result in any noticeable impact on the existing traffic of KuHio Highway.
The project parcel is traversed by a public pedestrian access easement which begins from the top of the property and winds down the sloping site to the sand area below at the shoreline. No improvements are planned for the easement. Public parking for the pedestrian access will be provided on the adjacent property mauka of the applicant’s property.

The sand area is predominantly makai of the Board of Land and Natural Resources’ certified shoreline and is open for public use. The proposed action will not disrupt the public pedestrian easement to the beach nor the public access along the shoreline.

M. PUBLIC SERVICES AND FACILITIES

Water, electricity and telephone will be provided by the public utility companies of Kauai. Installation of service lines will be done in conjunction with the construction of Aliomanu Estates infrastructure. A preliminary schedule for the Aliomanu Estates subdivision shows the improvements will be completed by the end of the year.

Sewage disposal for the proposed residence will be accommodated by cesspool. State Department of Health regulations will govern the location and installation of the private disposal system.

Public schools, library, neighborhood center and playgrounds are located in Kapaa about 7 miles to the south. The nearest police station is in Lihue, approximately 16 miles away and the nearest fire station is in Kapaa. The proposed residence is not expected to overburden any public facilities.

N. SOCIO-ECONOMIC CONSIDERATIONS

The proposed residence will not displace any existing agricultural use. No prime, unique or other important agricultural lands of importance to the State of Hawaii will be affected, except for a small portion of the residence’s driveway on the plateau section of the Aliomanu Estates subdivision.

The proposed use will not displace any existing residences. The project site is currently vacant and situated on a sloping property occupied primarily by ironwood trees.

The proposed residence will result in only a single new household in the region and therefore will not overburden existing public services and facilities.

The proposed use will generate short-term employment during project construction. The length of the construction period is estimated to be approximately 15 months. Long-term employment for the residence may include yard maintenance personnel and possibly housekeeping. Income paid to employment connected with the project will be spent in the economy which in turn would generate income in other sectors of the economy.
IX. SUMMARY OF MAJOR IMPACTS

An area which was once occupied by natural vegetation will have, in a portion of the property, a residence and landscaped yard. Site preparation and grading will be required and will result in removal of vegetation and alteration of the terrain; however, the building's architecture and landscaping will involve the integration of the facility with the natural environment and the minimization of the impact on the site.

Long-term impacts involving traffic generation and use of public utilities and facilities by a single household unit will be minimal. Short-term impacts will be larger but only temporary. Dust, noise and some traffic will be generated by the construction of the residence. Erosion and sedimentation also exist as a possible impact during the project's construction period.

X. ALTERNATIVES CONSIDERED

A. NO ACTION

The "no action" alternative will result in no construction of a residence on the project site. There will be no removal or trimming of trees, no alteration to the terrain and no displacement of fauna. There will be no construction activities and related employment prospects, and no increased land value and associated government revenues from higher property taxes. Moreover, the owner will not be able to use the property for his personal and preferred use. For this reason, the no action alternative is not a favorable alternative for the owner.

B. ALTERNATIVE LOCATION

The selected location for the residence within the applicant's property is the most developable and suitable within the parcel. The site is situated outside of the drainageways, on the leveller portion of the parcel and away from archaeological sites. It is also near the planned driveway access and utility connections to the site.

C. ALTERNATIVE USE

The applicant has not considered an alternative use for the project site. Construction of a residence was the primary reason for purchase of the property from the original owner.

XI. SUMMARY OF MITIGATING MEASURES

The major impacts of the proposed project will be generated during construction of the residence. As described above, they will include dust, noise and construction traffic. Erosion and sedimentation also pose as possible project impacts.

The applicant is prepared to implement mitigative measures to prevent or reduce anticipated impacts generated by construction activities associated with the proposed project.
Dust control measures will be employed during construction to minimize airborne particulates. Compliance with approved erosion control plans and the use of mitigative measures such as water sprinkling will reduce the potential for adverse impact on air quality.

Equipment used for on-site construction will emit air pollutants in the form of engine exhaust. With proper maintenance by the contractor, emissions from the equipment can be minimized. The tradewinds that prevail during most of the year will be helpful in dispersing the airborne pollutants.

Construction activity will create a temporary increase in noise levels. Heavy equipment used for site preparation work will be a source of noise. Mitigating measures such as the use of mufflers on diesel or gasoline-powered equipment and limiting construction to daylight hours will be employed. Noise levels shall comply with the State of Hawaii, Department of Health noise regulations.

The proposed residence will be located near but outside of two archaeological sites along the shoreline. For added protection, the archaeological sites will be provided with protective measures, such as slope reinforcements, relocation of an archaeological feature to a safer location, construction of temporary protective shields around the sites and educating construction personnel of existing site locations.

In regard to State Site 50-30-4-1897, the archaeologist is recommending that the exposed portion of the site be protected with a cover of several inches of imported top soil. This area, because of its strategic location, has and will continue to be a parking place for beach visitors and fishermen. The site would be protected from damage by tire tracks and barbecue makers with some heavy clay soil overfill.

Erosion and sedimentation controls will be employed under a plan prepared by the applicant and approved by the County Public Works Department.