JOHN WAIHEE
GOVERNOR OF HAWAII

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

JOHN P. KEPPELER, II
DONA L. HANAIKE

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
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CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P.O. BOX 621
HONOLULU, HAWAII 96809

FILE NO.: KA-8/25/92-2589
DOC. ID.: 1455

'92 OCT -1 P1:36

OFC. OF ENVIL. QUALITY CONT.

SEP 30 1992

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.

1992-10-01- KA #1- FEA- Caris Single CDUA # KA-2589
Family Residence & accessory Uses CDUA

CONSERVATION DISTRICT USE APPLICATION:

DEPARTMENT MASTER APPLICATION FORM, SUPPLEMENTAL INFORMATION, and ENVIRONMENTAL ASSESSMENT for PROPOSED RESIDENCE ALIOMANU ESTATES, KAUAI

Prepared for
NORMAN J. CARIS
MALIBU, CALIFORNIA

Prepared by
BELT COLLINS & ASSOCIATES

August 25, 1992

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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: Norman J. Caris

Address: 23110 Mariposo De Oro
Malibu, CA 90256

Telephone No.: (310) 288-7060

Signature Norman Caris

Date 5-3-12

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 _____

*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

(X) 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 0 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 calcarious 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

Tax Map Key	Property Owner and Mailing Address
4-9-05: 2	Taketsugi Esaki aka Joseph T. Esaki Joseph T. Esaki Trust 5755 Kaapuni Road Kapaa, HI 96746

3	Joseph T. Esaki Tetsuo Esaki, etal. P.O. Box 237 Anahola, HI 96703
5	Rickey B. Carlsberg P.O. Box 49892 Los Angeles, CA 90049
6	Hawaiian Trust Co. Ltd. Trustee c/o Bank of California P.O. Box 45188-TR REAL EST OP San Francisco, CA 94145
13	Martha A. Gerbode Tr. Est. c/o Bank of California P.O. Box 45188-TR REAL EST OP San Francisco, CA 94145
14	Jeffrey S. Undner P.O. Box 518 Anahola, HI 86703
15	Thomas E. Wood 400 S. Steele Street, #56 Denver, CO 80209
17	Ronald C. Yanke P.O. Box 5405 Boise, ID 83705
18	Ronald C. Yanke P.O. Box 5405 Boise, ID 83705
19	Ronald C. Yanke P.O. Box 5405 Boise, ID 83705
20	Ronald C. Yanke P.O. Box 5405 Boise, ID 83705
21	Paul D. Chryst Mariann V. Chryst Paul D. Chryst, etal. RR1, Box 1201 Kunkletown, PA 18058

	22	Ronald C. Yanke P.O. Box 5405 Boise, ID 83705	
	23	Ronald C. Yanke P.O. Box 5405 Boise, ID 83705	
	24	Ronald C. Yanke P.O. Box 5405 Boise, ID 83705	
	25	Ronald C. Yanke P.O. Box 5405 Boise, ID 83705	
	26	Ronald C. Yanke P.O. Box 5405 Boise, ID 83705	
4-9-06: 5		Martha A. Gerbode, Tr. Est. c/o Bank of California P.O. Box 45188 - TR REAL EST OP San Francisco, CA 94145	
	7	Martha A. Gerbode, Tr. Est. c/o Bank of California P.O. Box 45188 - TR REAL EST OP San Francisco, CA 94145	
	8	Martha A. Gerbode, Tr. Est. c/o Bank of California P.O. Box 45188 - TR REAL EST OP San Francisco, CA 94145	Marian A. Hurley, Dec'd c/o James Hurley 2877 Ilihai Street Lihue, Kauai, HI 96766
	9	Martha Gerbode c/o Bank of California P.O. Box 45188 - TR REAL EST OP San Francisco, CA 94145	
	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	Bertha Hano Estate c/o Bermodez Consuella K. 95-127 Ikawelani Place Mililani Town, HI 96789
4	Hano Ezekela c/o Bermodez Consuella K. 95-127 Ikawelani Place Mililani Town, HI 96789

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 maintenanced 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.

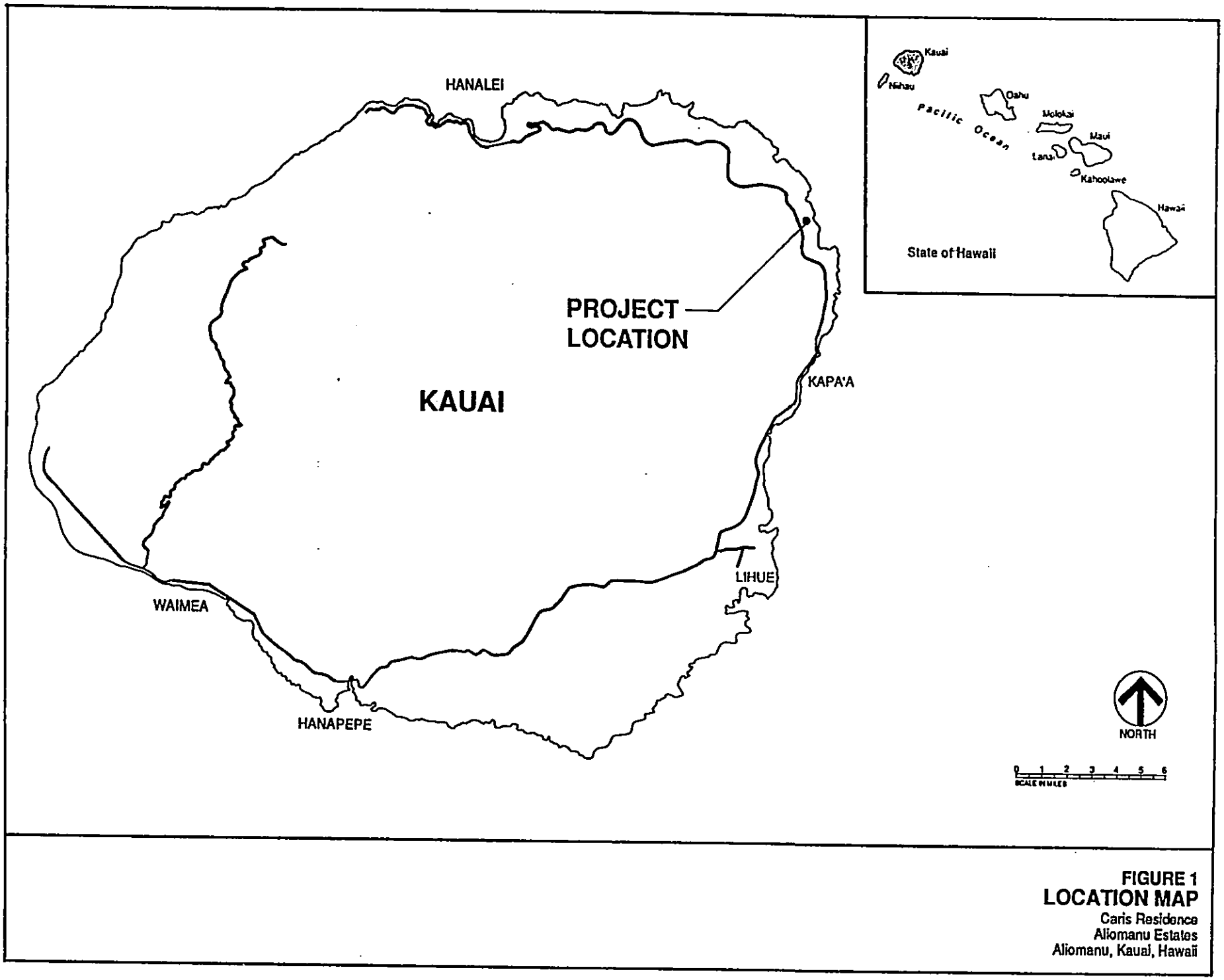


FIGURE 1
LOCATION MAP
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

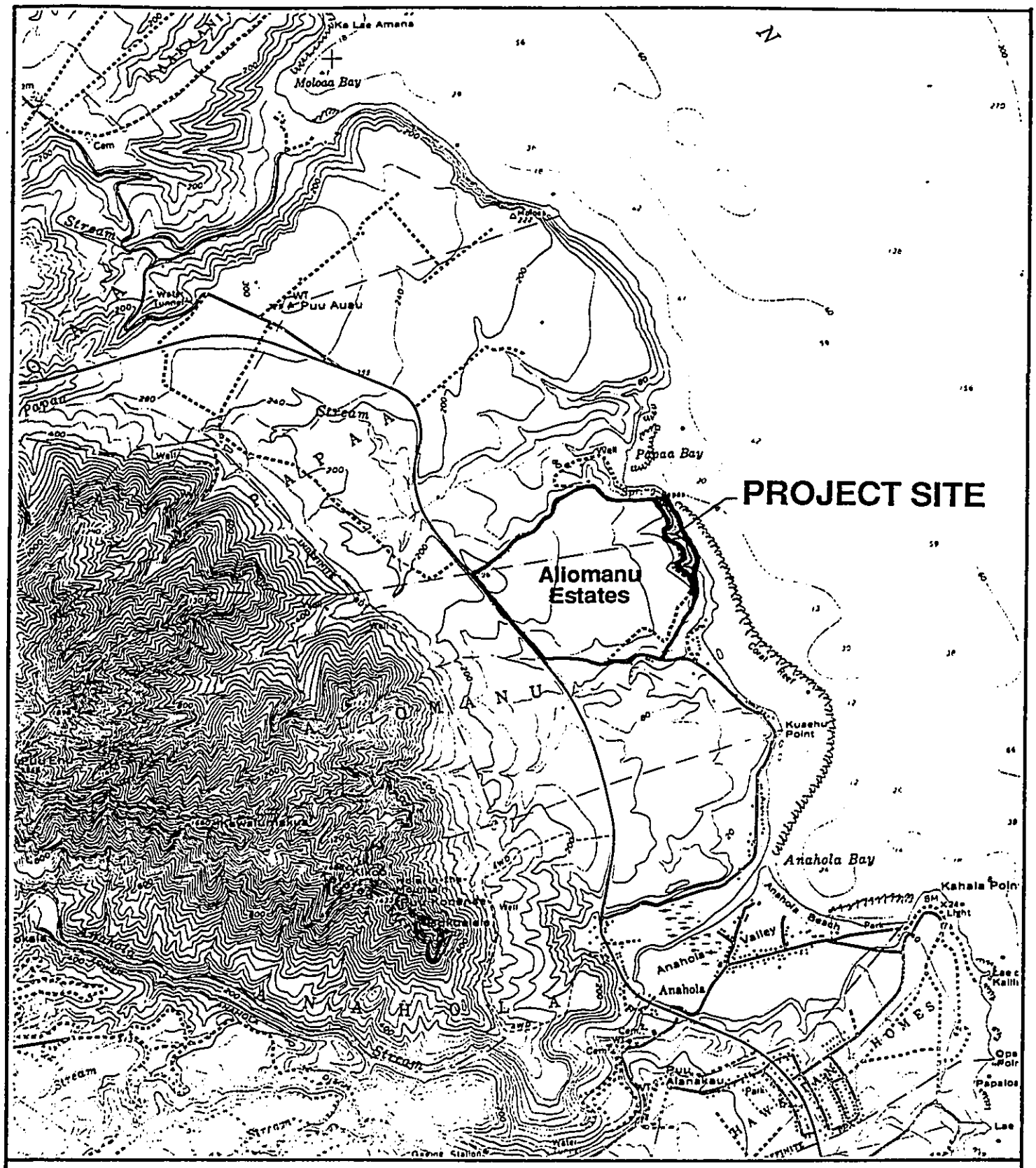


FIGURE 2
VICINITY MAP
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

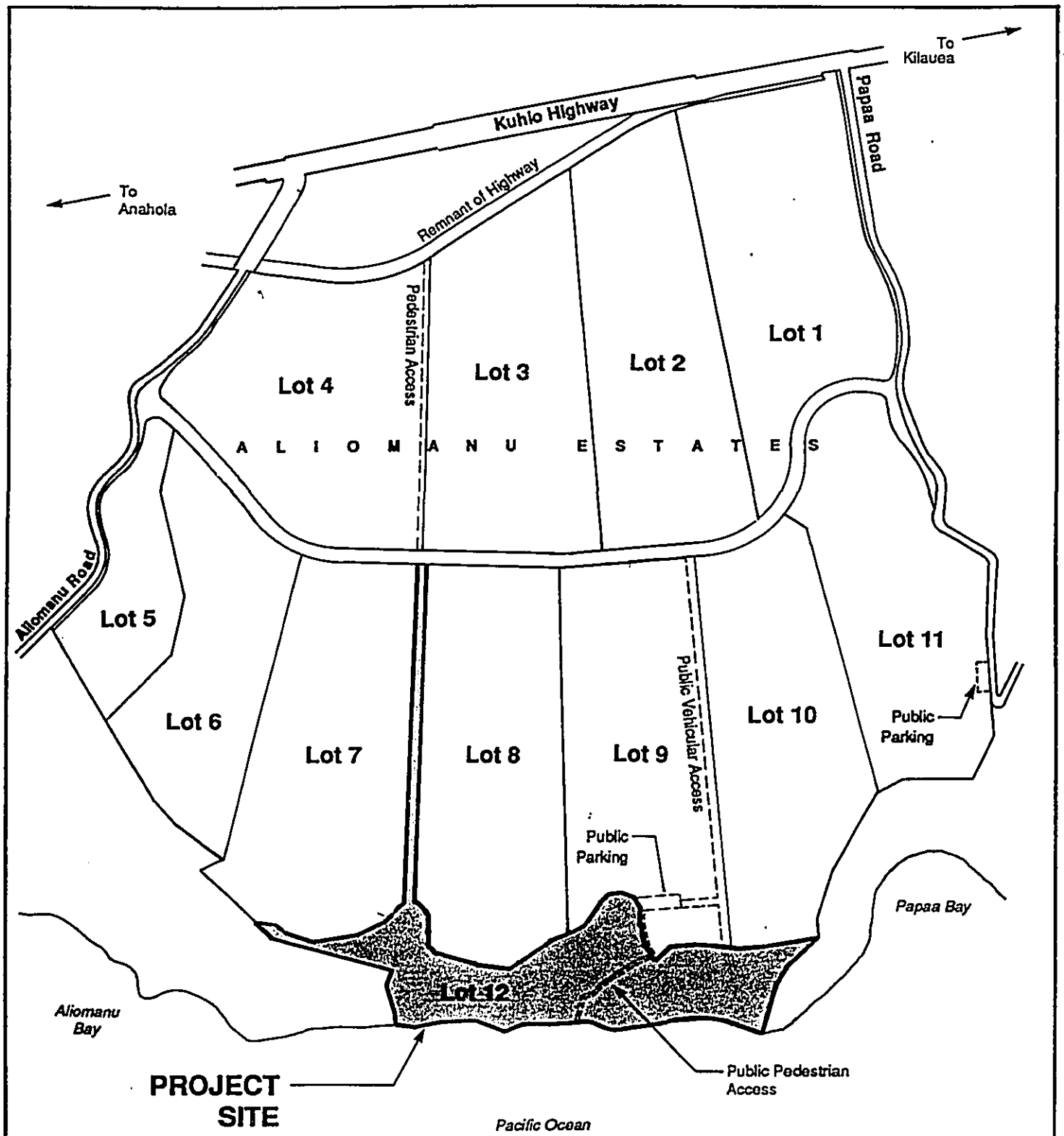
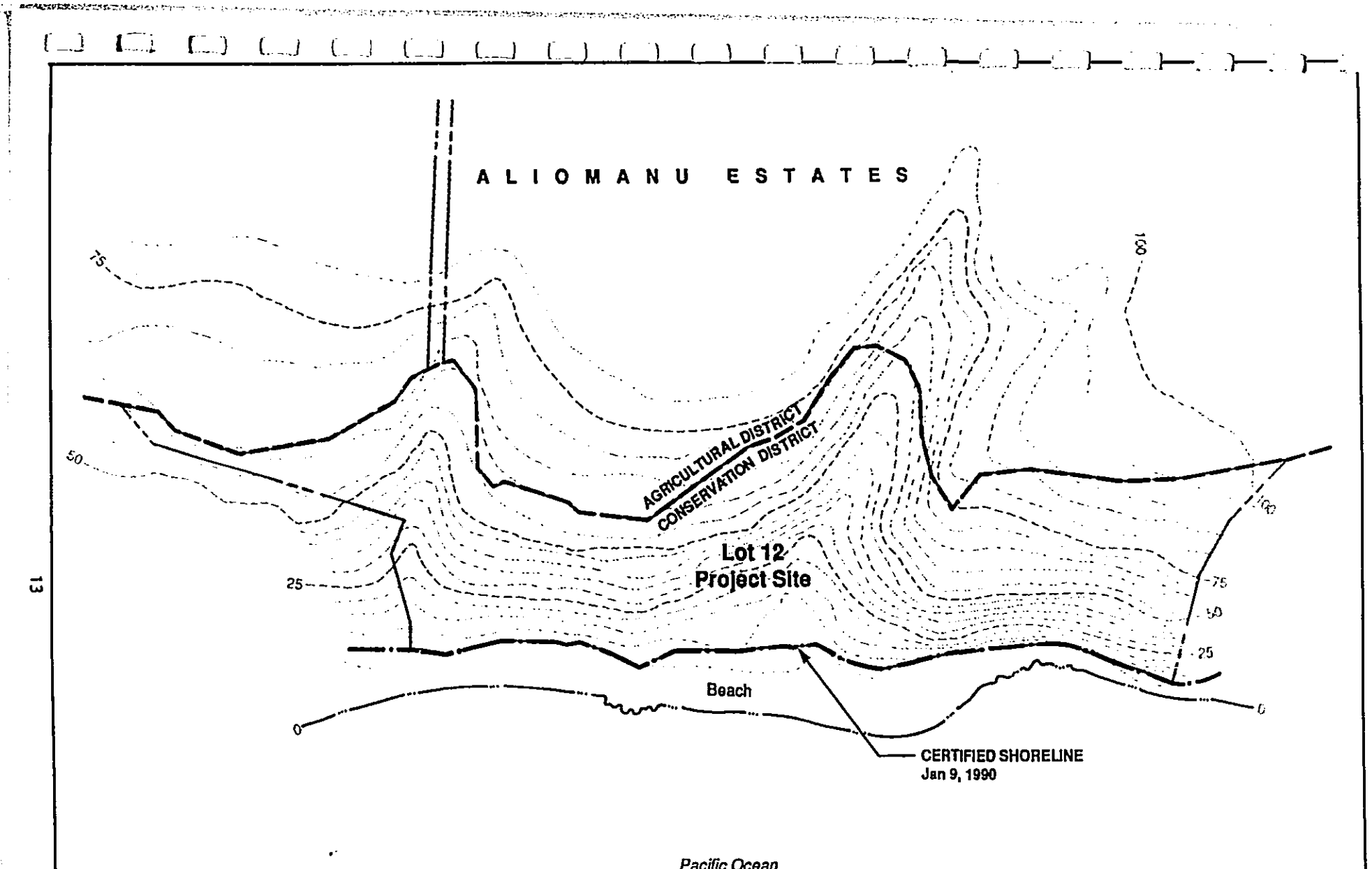


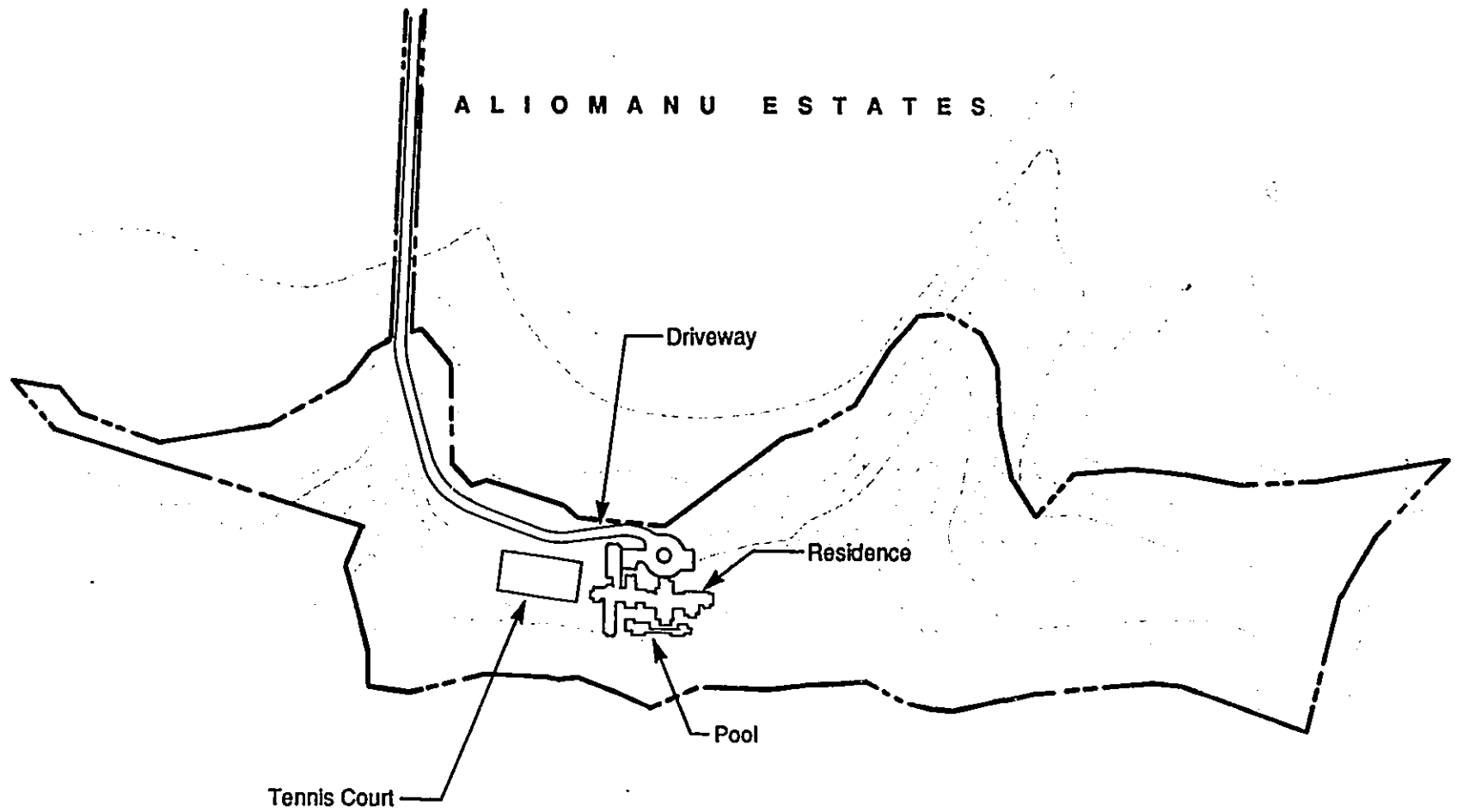
FIGURE 3
PROJECT AREA
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii



200 100 0 200
Scale in Feet

North

FIGURE 4
PARCEL MAP
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii



200 100 0 200
Scale in Feet

North

FIGURE 5
SITE PLAN
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

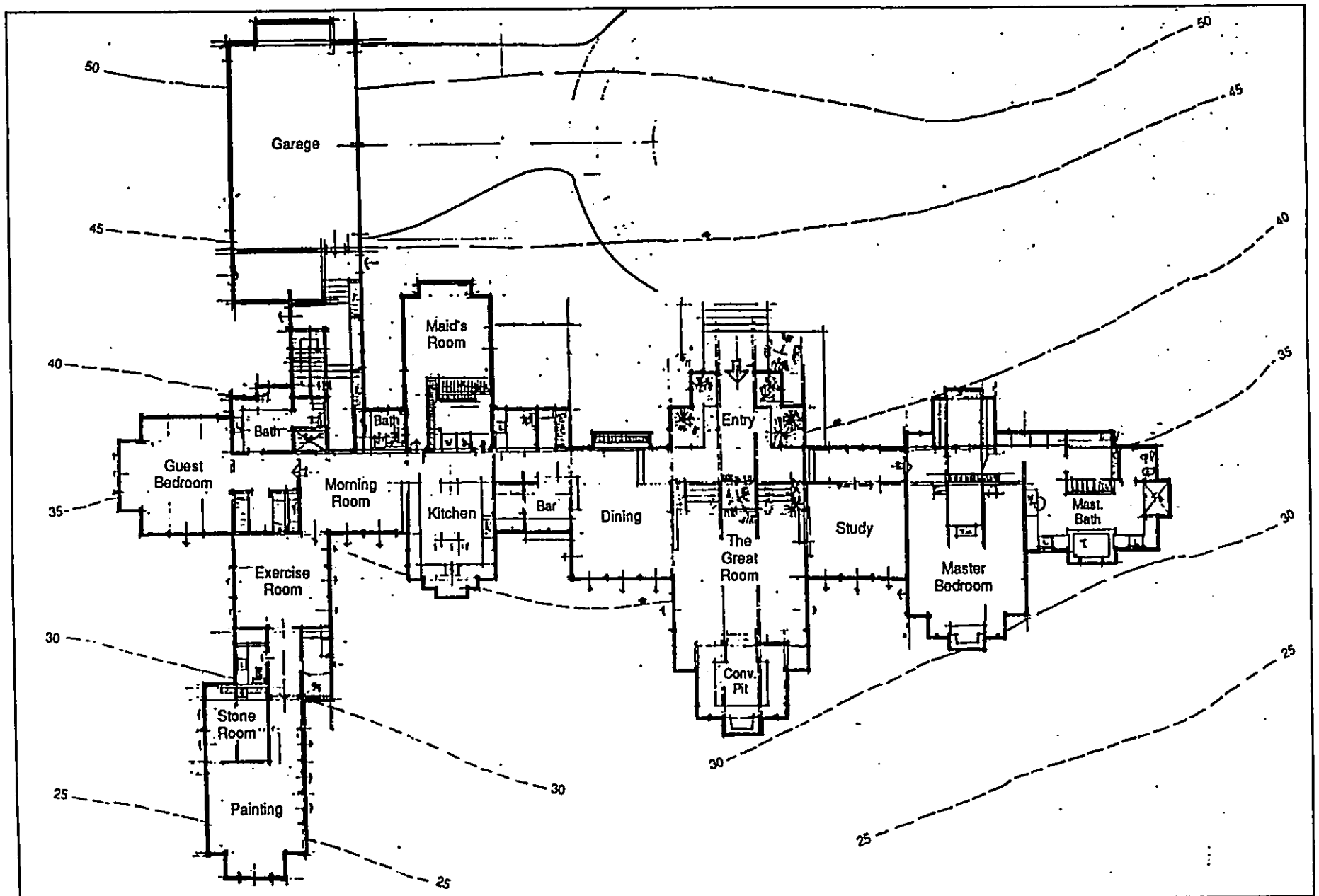
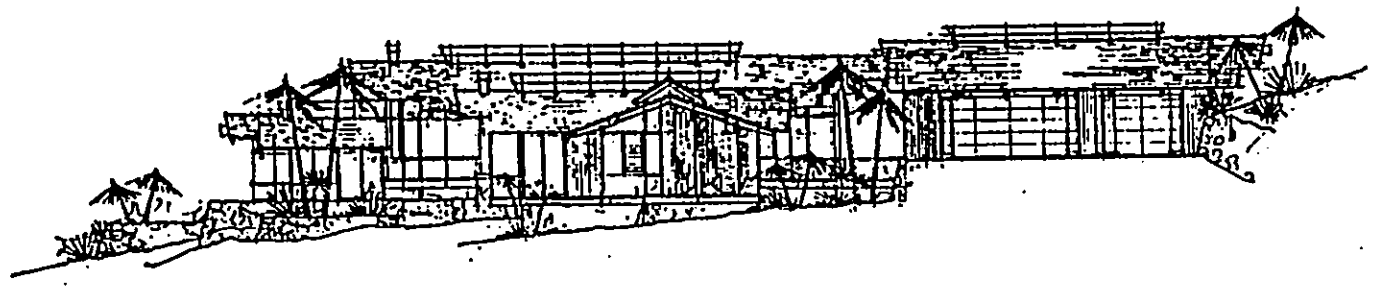
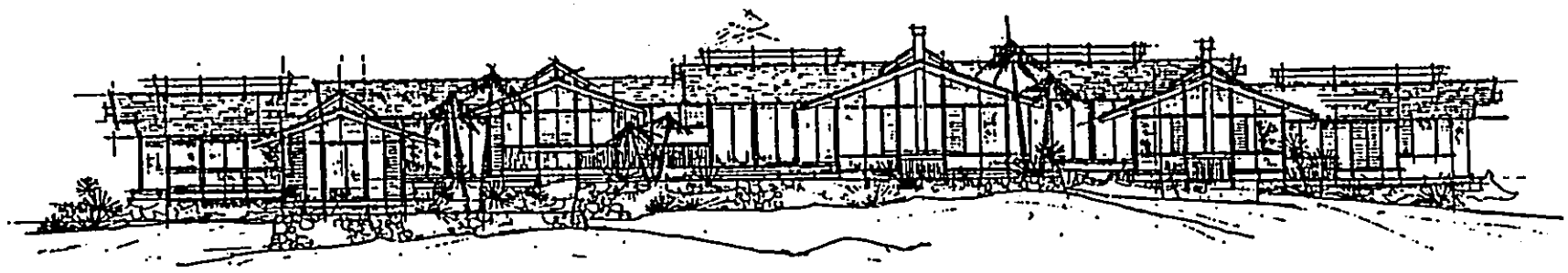


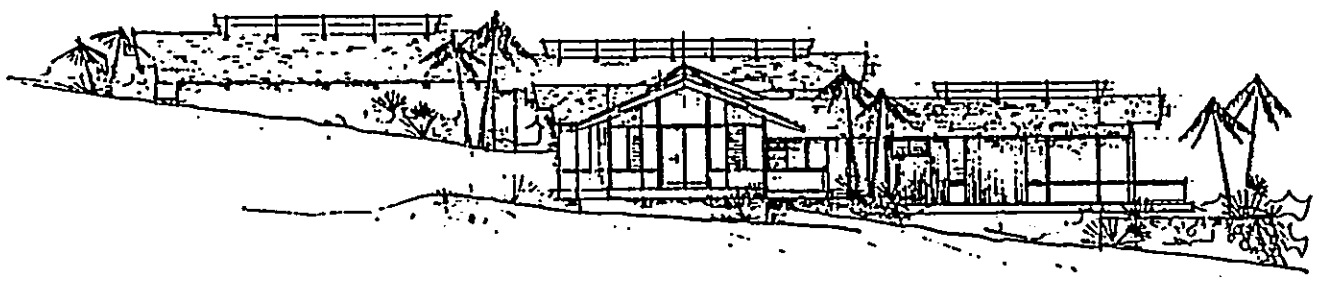
FIGURE 6
FLOOR PLAN
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii



NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION

FIGURE 7
BUILDING ELEVATION
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

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. p. 18

✓ 2. Identify the Approving Agency. DLNR, OCEA

✓ 3. Identify the Agencies consulted. p. 18

✓ NO Was applicable county planning office notified of project? consult DOH re: wastewater.
Were any appropriate community groups notified?

✓ ✓ ✓ NO Is the project in the Conservation District, Special Management Area, Shoreline Setback?
NA Has appropriate agency been contacted (concerning dual purpose EA)?

___ For Final EAs, were comment letters and responses included?
___ For Final EAs, were comments adequately addressed?

✓ 4. General description of the proposed action: p. 18

✓ 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)?

✓ 5. Summary description of the affected environment including: p. 27
✓ Site location map (U.S.G.S. Topographic map preferred) Figs. 2, 3

✓ 6. Summary of the major impacts: §11-200-12(b)

✓ Short Term: p. 27, 39
Construction Impacts?
✓ Long Term: p. 27, 39 ✓ ✓
Significant effect on water or air resources? (Contact DOH, CWB, CAB?)
Does project discuss noise, traffic, and visual impacts?
Was DLNR/SHPD contacted concerning archaeologic 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). p. 39

✓ 8. Mitigation measures proposed (if any). p. 39

✓ 9. Agency letter of submittal (Draft EAs) or determination (Negative Declarations & EISPNs).
Status of any other necessary approvals or permits? Neg. Dec. anticipated, Neg. Dec. by William Paty, 12/2/92 Bill Paty, 9/30/92

✓ O 10. Findings and reasons to support the determination. Based on EA

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

NA 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)

OEQC # 1074

Assigned to: Jayan

ENVIRONMENTAL ASSESSMENT CHECKLIST
(§11-200-10)

Draft Env. Assess. ✓ Negative Declaration ✓ EIS Preparation Notice ____ NEPA ____

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 Modif. of Helicopter Facilities
____ City & County of Honolulu Special Management Area
____ Other ____

COMMENTS / RECOMMENDATION / JUSTIFICATION:

1) Suggest consult DOH re: individual wastewater disposal system.
2) 12-3-92 Roy Schaefer said that they chose not to respond to UH Env. Center letter because it was late
3) Glen Koyama to fax respone to OEQC letter of Oct 6, 1992.
4) Received response letter.

APPROVED FOR PUBLICATION IN OEQC BULLETIN: Jeyan Thiagarajan

APPROVED BY SENIOR PLANNER: [illegible] DATE OF PUBLICATION: Oct 23, 1992

DRAFT EA COMMENT DEADLINE: 11-22-92

FINAL ENVIRONMENTAL ASSESSMENTS (Negative Declarations)

APPROVED FOR PUBLICATION IN OEQC BULLETIN: Jeyan Thiagarajan

APPROVED BY SENIOR PLANNER: [illegible] DATE OF PUBLICATION: 12-23-92

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 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.

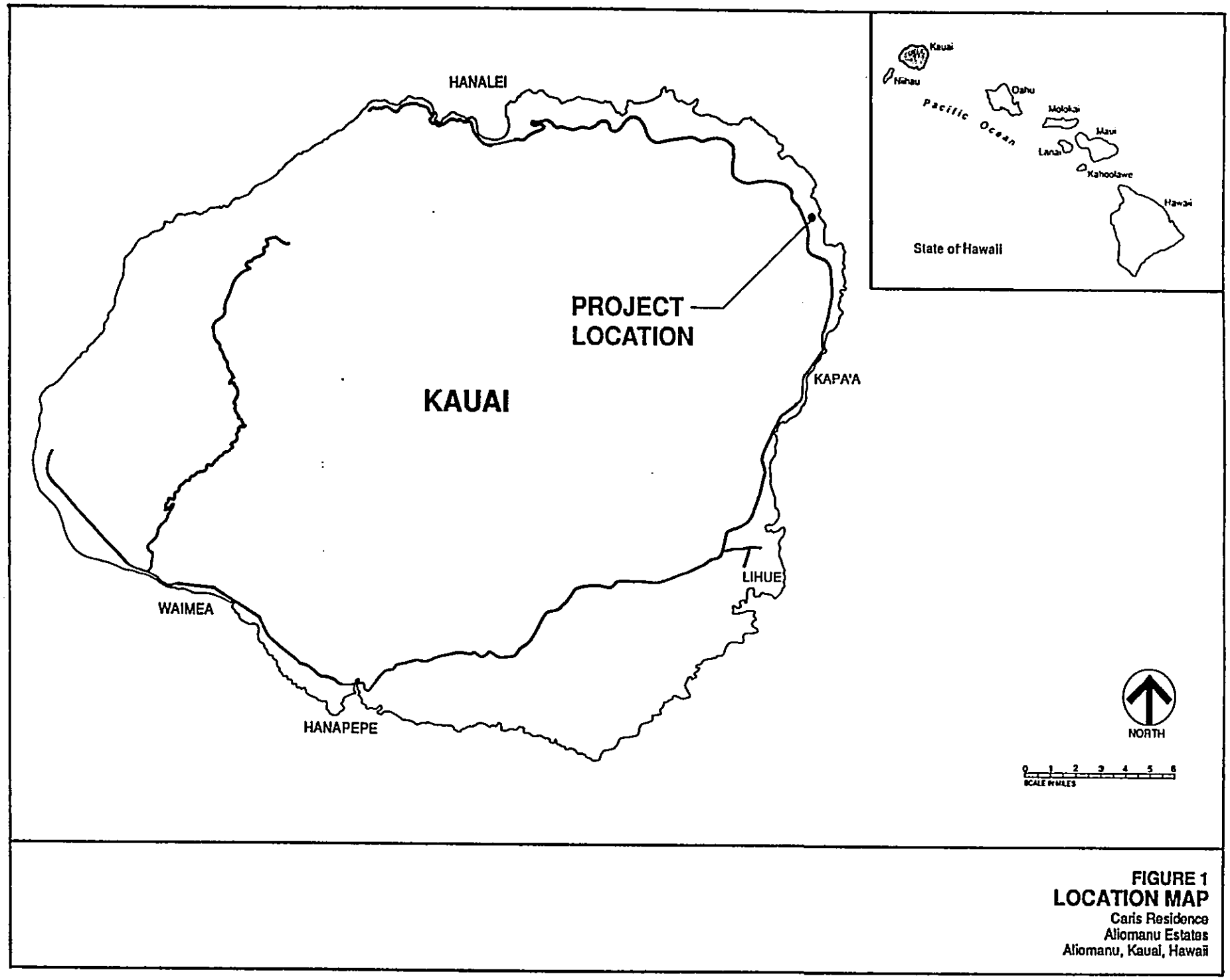


FIGURE 1
LOCATION MAP
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

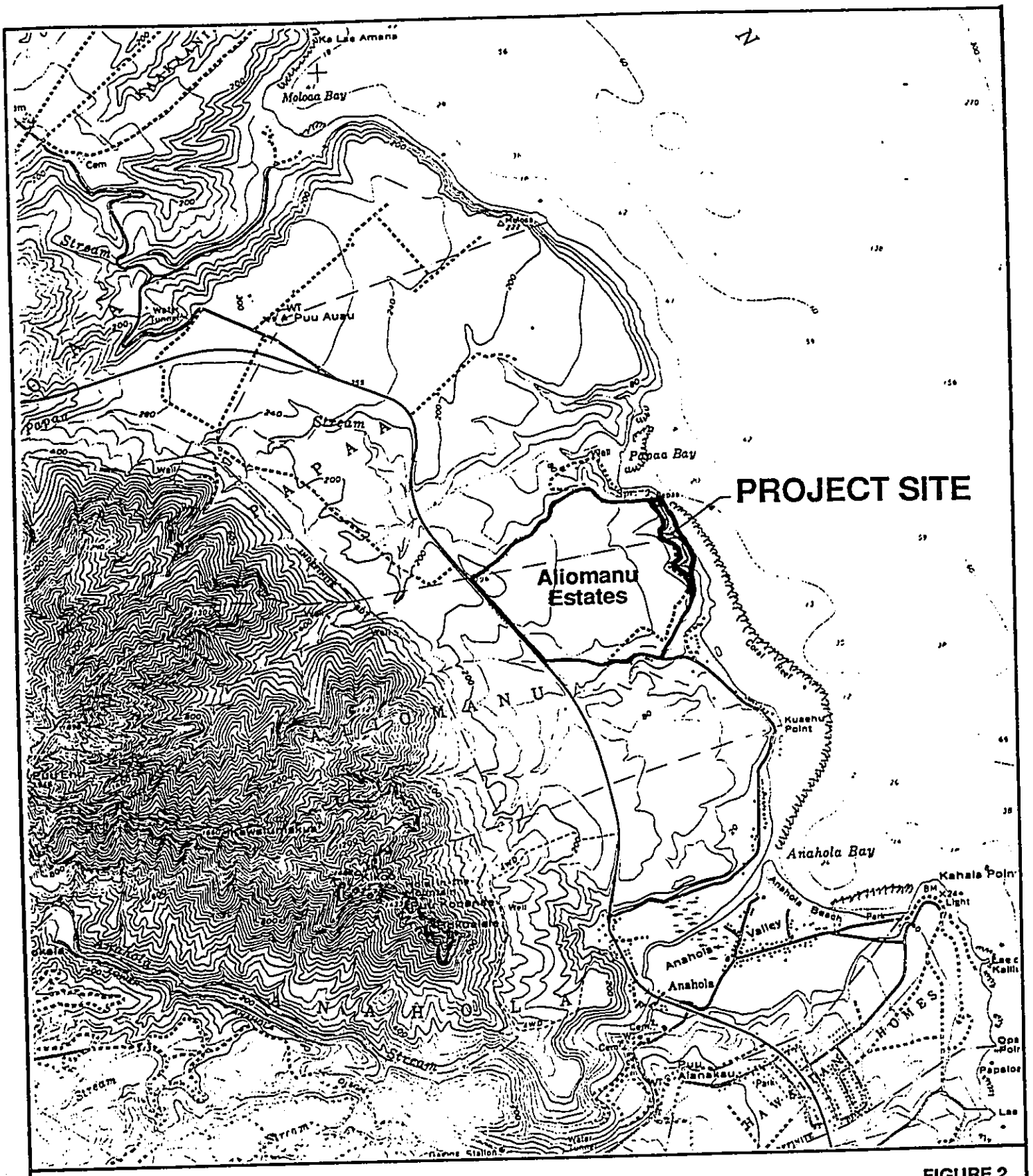


FIGURE 2
VICINITY MAP
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

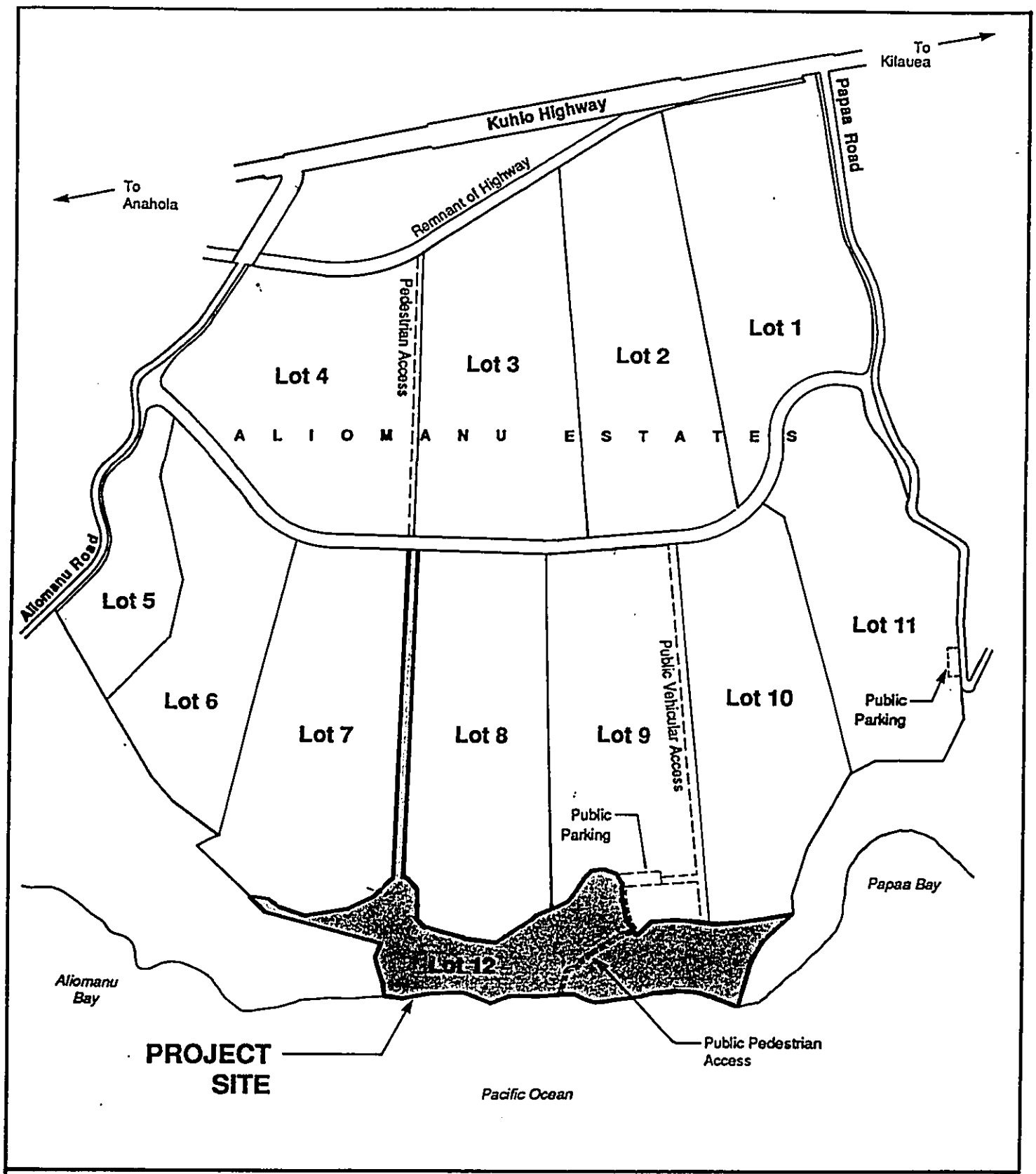


FIGURE 3
PROJECT AREA
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

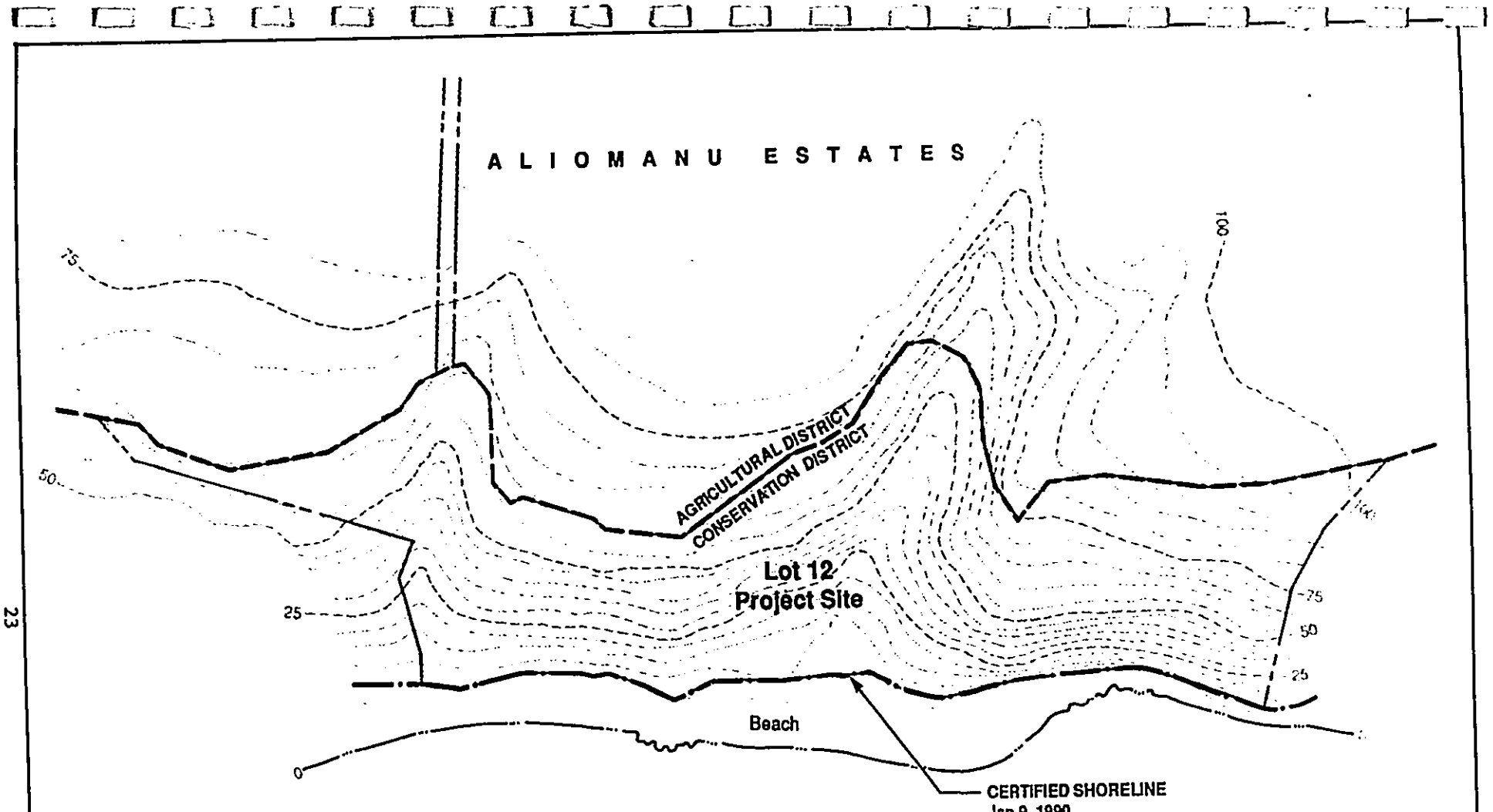
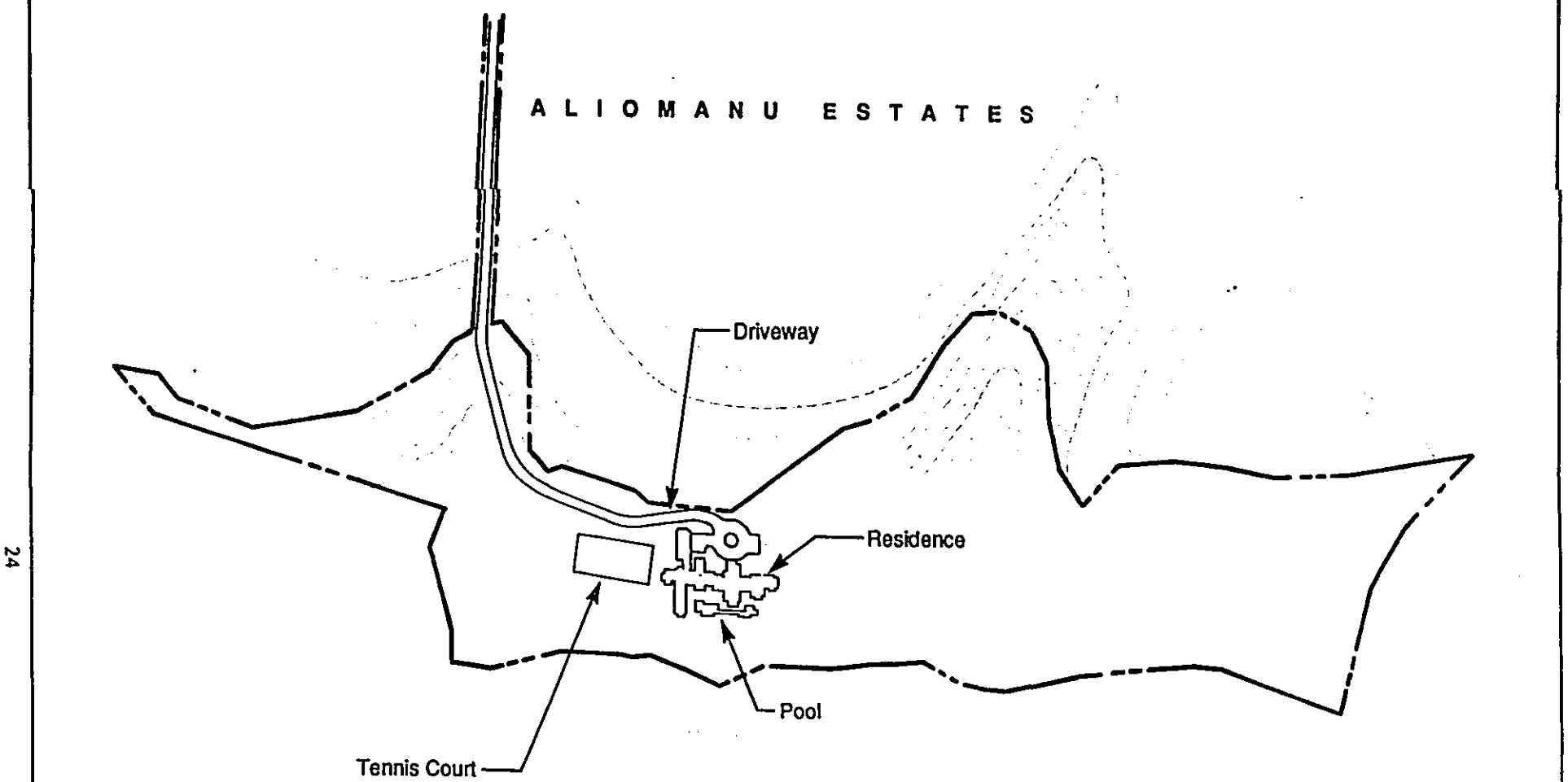


FIGURE 4
PARCEL MAP
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii



200 100 0 200
Scale in Feet

North

FIGURE 5
SITE PLAN
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

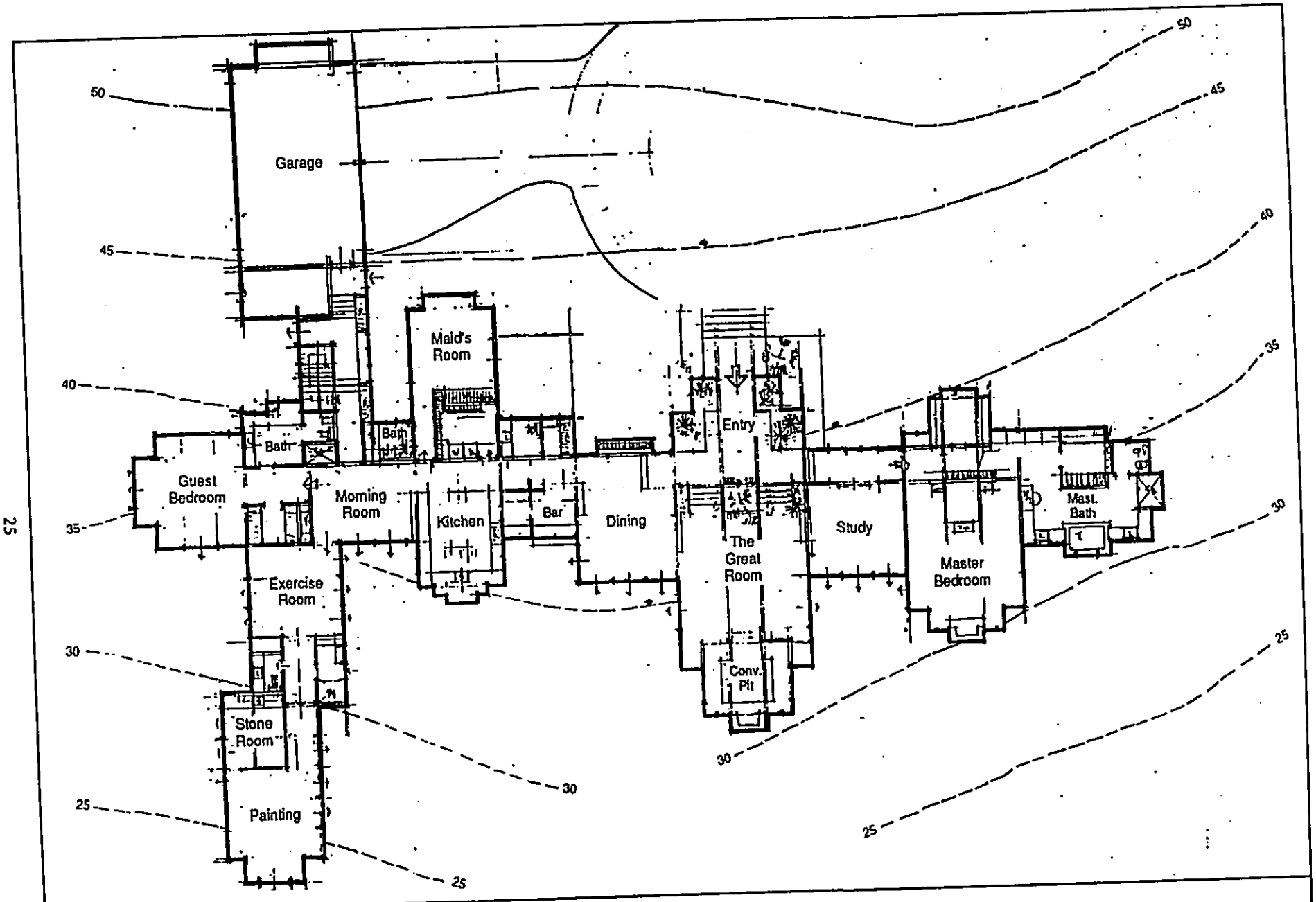
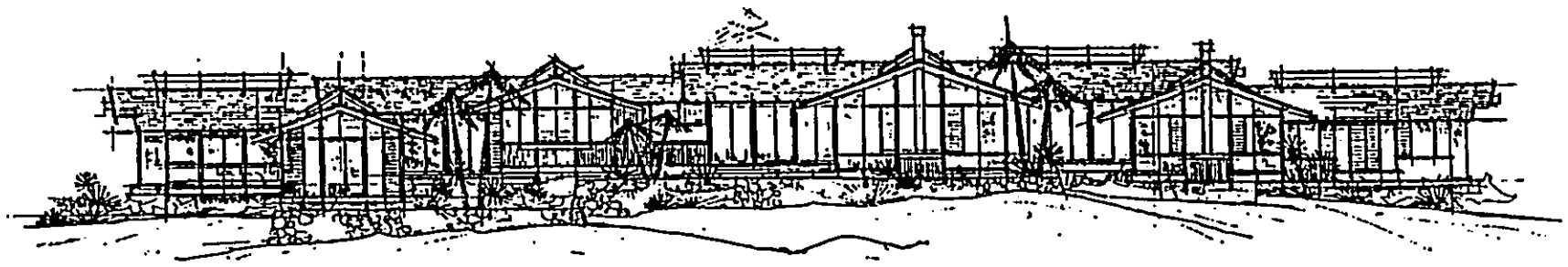
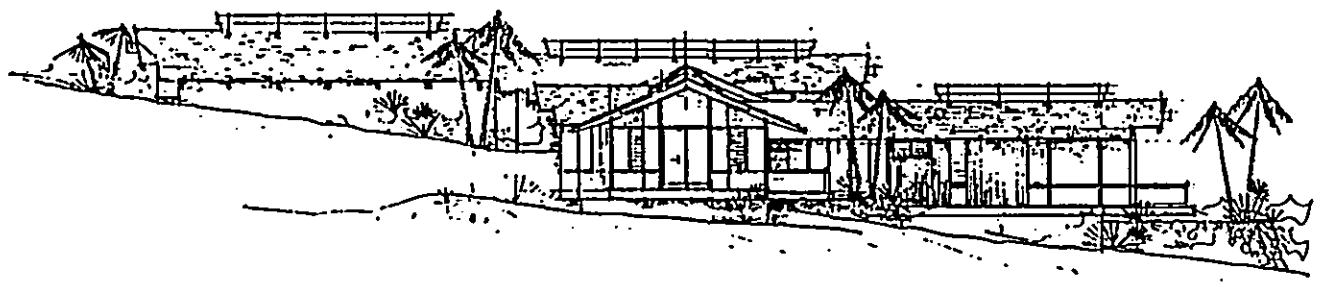


FIGURE 6
FLOOR PLAN
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION

FIGURE 7
BUILDING ELEVATION
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

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 uhio 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 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 Papaa 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.

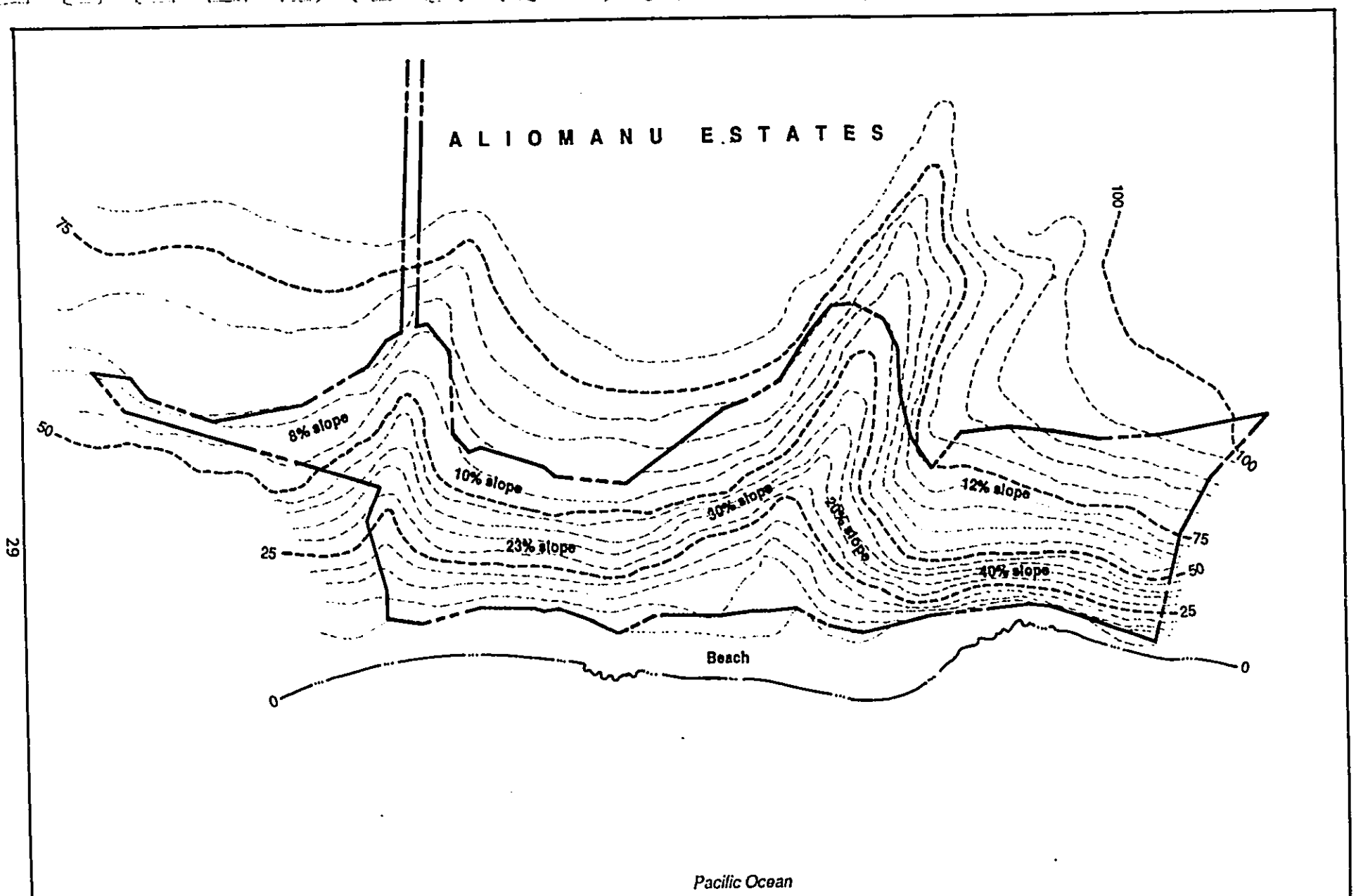
At the coastline of Aliomanu Estates, where the project site is located, the slope of the terrain averages approximately 15 to 30 percent, but a portion of the property where the proposed residence is to be located is relatively level and developable. Elevations on the overall property range from 0 feet 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 calcarious 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.



200 100 0 200
Scale in Feet

North

FIGURE 8
TOPOGRAPHY AND SLOPE
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

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.

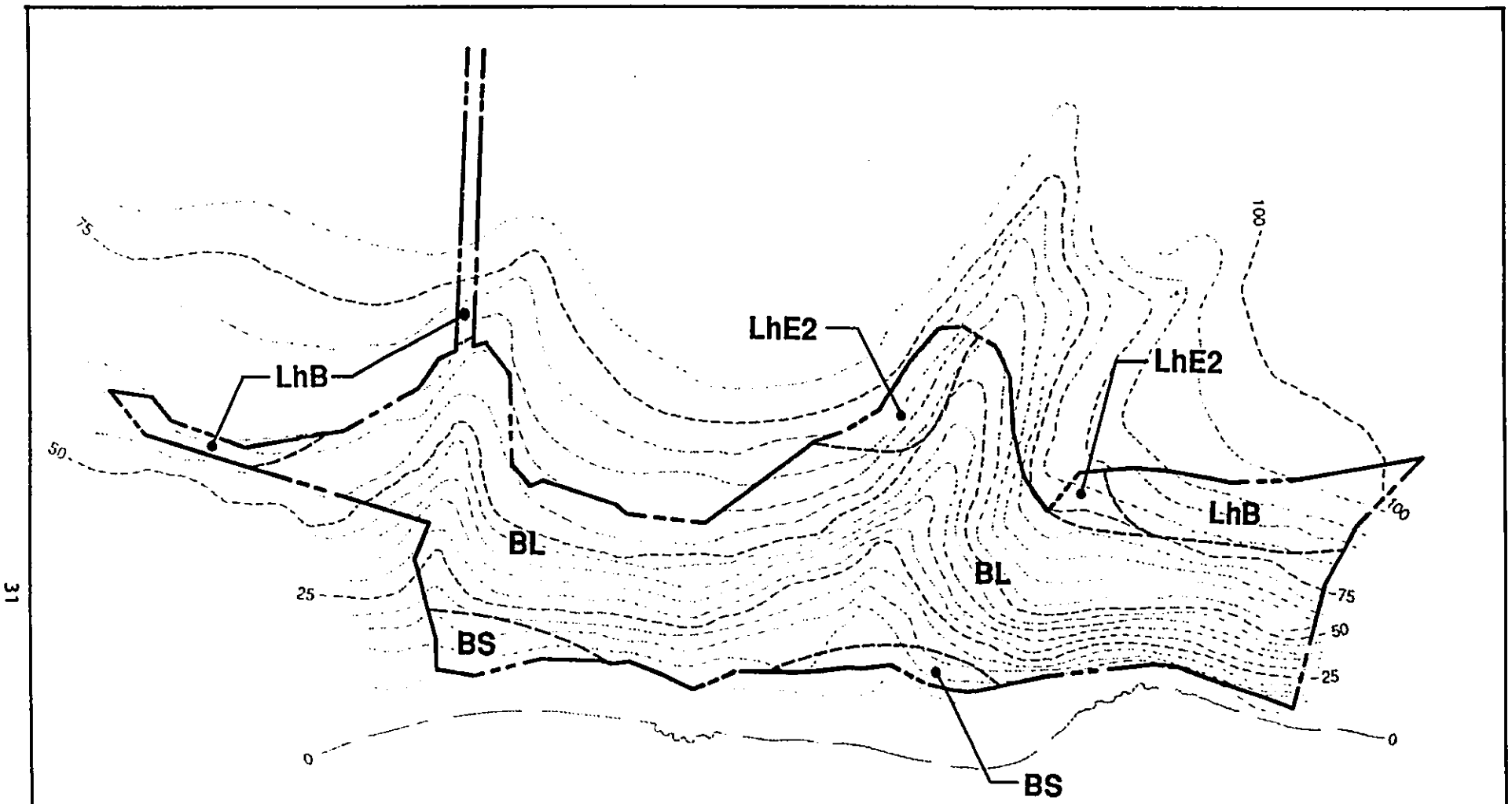
Reef fish in the area included primarily wrasses, damselfish and surgeonfish. Beyond the reef, fish assemblages were comprised of species typically found in surge zones, such as parrotfish, rudderfish and various surgeonfish. Also abundant were a variety of butterflyfish, triggerfish and goatfish. One 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 VIIIe, nonirrigated, which is the poorest rating in determining the suitability of soils for most kinds of crops.



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Scale in Feet

North

FIGURE 9
SOIL CLASSIFICATION
Caris Residence
Alomanu Estates
Alomanu, Kauai, Hawaii

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-'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.

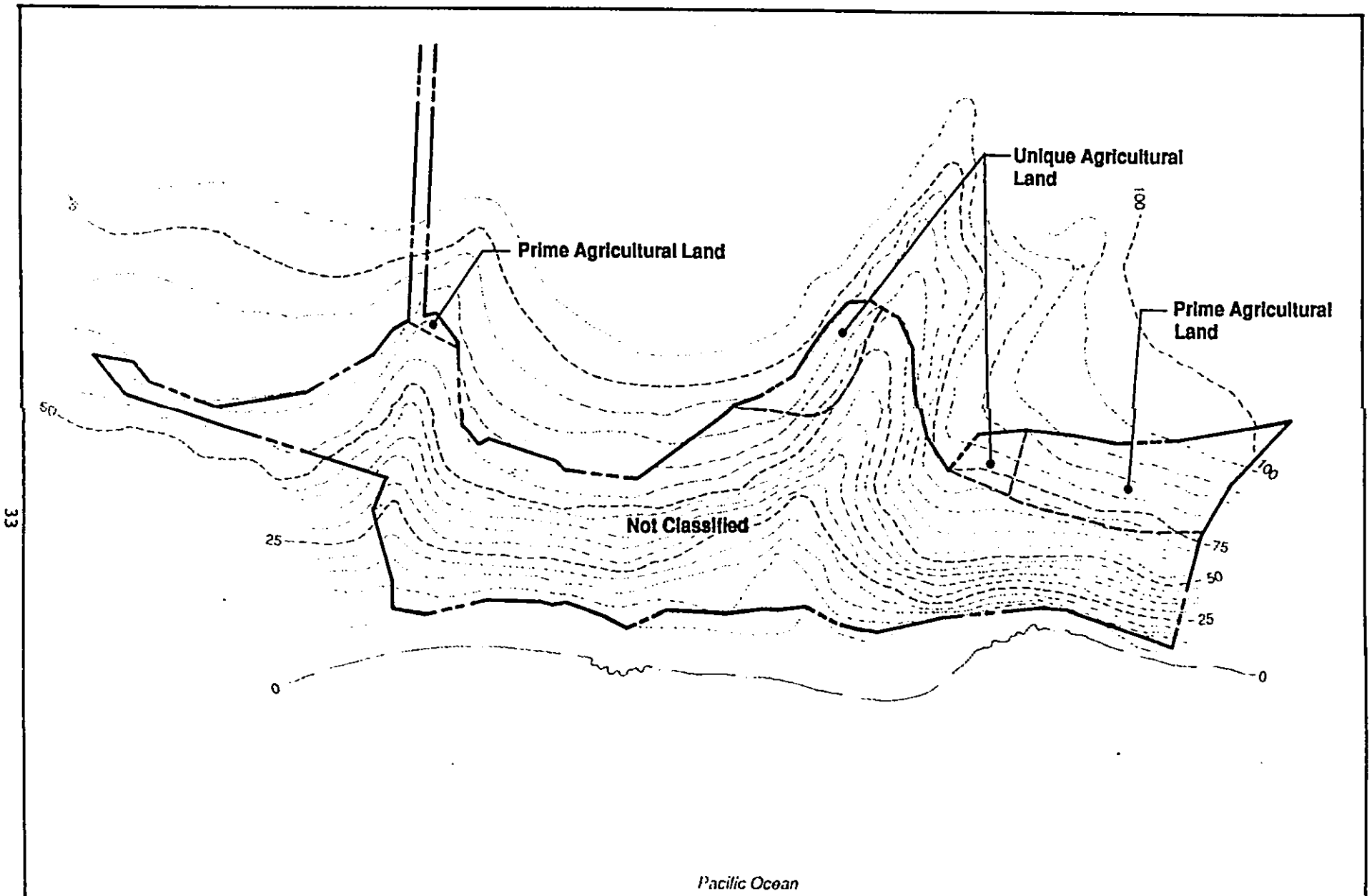
Char & Associates concluded that there are no plants on the project site that are listed by U.S. Fish and Wildlife Service as threatened or endangered nor are there any candidates for such status.

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



200 100 0 200
Scale in Feet

North

FIGURE 10
LAND TYPE/ALISH
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

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, 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.

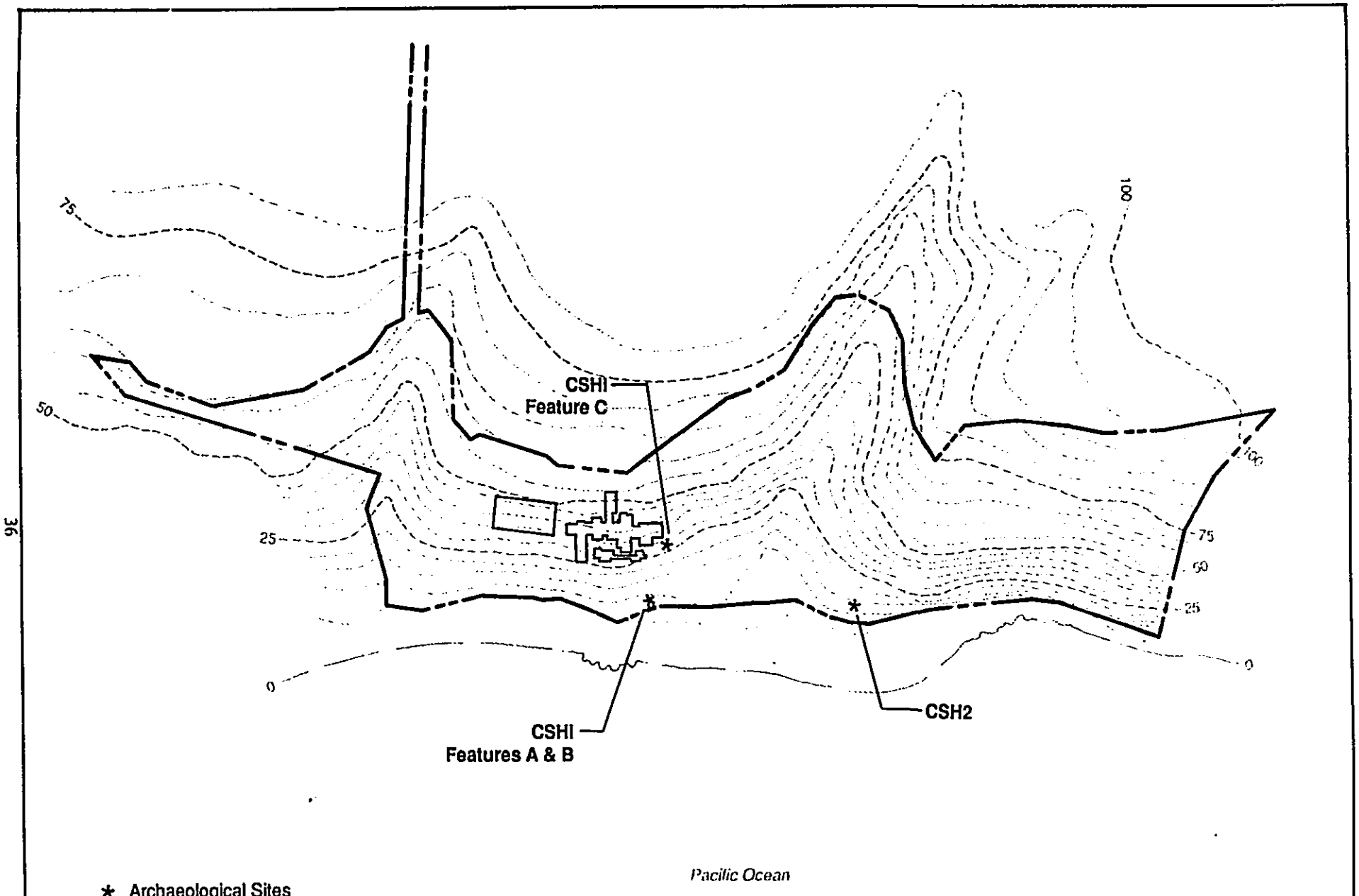


FIGURE 11
ARCHAEOLOGICAL SITES
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

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 pubic 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.

APPENDIX A

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

BASELINE ASSESSMENT OF THE MARINE ENVIRONMENT IN THE VICINITY OF ALIOMANU, KAUAI, HAWAII

Prepared for

Belt Collins & Assoc.
680 Ala Moana Blvd.
Honolulu, HI 96813

by

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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 Aliomanu, on the northeast coastline of Kauai, 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) fronting the subject property. During the course of the survey 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 biota.

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 basaltic boulders extent 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 efflux. There were no indications of terrigenous (land-derived) materials, especially red mud, along the entire beachfront off 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. At the northern end of the property, the reef flat narrows in width in 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 concussive force of breaking waves that arrive in the area from long-period swells originating from both northerly and southerly directions. Seaward of the reef crest, water depth over the outer reef increases, and bottom topography exhibit substantially more 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 off the study area were reef corals and algae. Owing to the protection from the concussive force of waves on the inner flat, corals were relatively common, but were restricted in upward growth owing to the extremely shallow water depth. On the shallow nearshore reef platform the predominant corals were *Pocillopora meandrina*, *P. damicornis*, *Montipora verrucosa*, *M. patula*, *M. flabellata*, 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.

Very few corals were observed on the reef crest, primarily as a result of the continual force of breaking waves. Beyond the reef crest, where water depth increased, coral community structure consisted of a wide variety of species. In addition to the species listed above, the most common stony corals found on the outer reef were *Porites lobata, Pavona duerdeni*, and *Leptastrea purpurea*. Also observed to occur very abundantly on the outer reef were the colonial octocorals ("soft corals") *Palythoa tuberculosa*, and *Anthelia edmondsoni*. These colonial animals formed extensive mats over many portions of the solid reef framework. Approximately 20-30% of the outer reef area was covered with stony and soft corals.

Other invertebrates that were commonly observed were sea urchins (Echinoidea) and sea cucumbers (Holothuridea). The most common urchins were *Echinometra matheai* and *E. oblonga*. These small, short-spined species occupy grooves and pits that they bore out of the carbonate reef framework, and are responsible for both the production of much of the sand in the nearshore environment, and the pitted appearance of the reef surface. Other, larger urchins which were observed abundantly on the reef surface included *Echinothrix diadema, Tripneustes gratilla*, and *Heterocentrotus mammillatus*. Sea cucumbers observed across the entire reef area included the species *Actinopyga mauritiana, Holothuria atra* and *H. nobilis*.

With respect to marine algae, essentially the entire reef surface is covered with either a short turf of filamentous algae, or a veneer of red, encrusting coralline algae. Encrusting coralline algae, especially *Porolithon spp.*, was most abundant in the reef crest area where wave energy is highest. A extensive variety of frondose and branching algal species were also observed throughout the area. On the shallow reef platform, the most abundant of these algae were *Padina spp., Gaulaxaura spp., Halimeda spp., Microdictyon spp., Dictyota spp.* and *Dictyopteris spp.* Other commonly noted species were *Martensia fragilis, Desmia spp.* On the outer reef, beyond the reef crest, the most abundant algae was *Amansia glomerata* which occurred in dense thickets up to 1 meter in diameter . Additional dominant species included *Asparagopsis spp., Laurencia spp.* and *Enteromorpha spp.*.

Reef fish observed over the reef flat and outer reef comprised a typical assemblage that is normally found in wave swept Hawaiian environments. On the shallow reef flat, most of the fishes observed were small individuals or juveniles. The most abundant species on the shallow reef flat were the wrasses, *Thallosoma duperrey* and *Stethojulis balteata*, the damselfish *Abudefduf abdominalis*, and *A. sordidus*, and the surgeonfish *Acanthurus sandvicensis*. Beyond the reef crest reef fish assemblages were comprised of species typically found in surge zones. Predominant species were the parrotfish *Scarus spp.*, rudderfish *Kyphosus bigibbus*, and a variety of surgeonfish (Acanthuridae). Also abundant were various species of butterflyfish (Cheatodonts), triggerfish (Balistidae) and goatfish (Mullidae). One green sea turtle (*Chelonia mydas*) was observed during the survey. Reef fish were most abundant in areas on the reef with the highest degree of substratum complexity, particularly the vertical reef edge on the northern end of the property.

Discussion and Conclusions

Implementing the proposed project will require grading and the removal of solid material from behind the shoreline; it is not anticipated that there will be modification of the intertidal zone or any regions of the coastal zone. Thus, there is no potential for direct impacts from construction (i.e. removal) of organisms that inhabit the reef zones described in the previous sections of this report.

Thus, the primary foreseeable factor that may present the potential for alteration to water quality and biotic structure as a result of the planned project is an increase in sedimentation and turbidity during the construction phase. During this period, lands will be exposed by grading, and substantial rainfall could result in erosion. If such activities do occur, they will likely be temporary in nature, lasting only until ground cover is reestablished with the completion of construction. Following completion of construction, it is likely that there will be no permanent or residual effects to the marine environment as a result of the change in land use from the situation as it exists at present. Such a conclusion is predicated on the assumption of judicious use of all chemical agents that might be employed on the developed property for the purposes of fertilization and pest control.

However, several factors observed at the site suggest that increased sediment delivery to the nearshore zone is not likely, even during the construction phase. Part of the backbeach area at the northern end of the property appears to have been burned in the recent past. As a result of the burning, ground cover in this region is essentially gone, and the area is furrowed with deep erosional channels. While there is substantial evidence of increased erosion on land, there is no evidence of erosional material on either the beach or in the nearshore marine environment.

While it is not likely that the proposed activity will result in any deleterious effects to the nearshore environment, it is nevertheless important to consider what the potential consequences might be should unforseen events during construction result in an increased delivery of terrigenous material to the nearshore zone.

A substantial literature exists on the effects of sediments to coral reefs, as well as numerous case studies that report effects owing to construction-generated sediment on marine environments. The effects of sediment stress to corals has been extensively reviewed by Johannes (1975), Dodge and Valsnys (1977), Bak (1978), Brown and Howard (1985) and Grigg and Dollar (1990). In summary, while it is clear that increased sedimentation can have deleterious effects on corals, especially when sediment input results in burial of living colonies, increased sedimentation does not necessarily result in negative impacts. Because sediments are suspended by natural processes in many reef environments (including Hawaii), most corals can withstand a certain level of sediment supply to the living surface, especially when the level of increase is for a short duration. Many species have the ability to remove sediment from their tissues by distension of the coenosarc with water, or ciliary action which can nullify lethal effects of sedimentation (Yonge 1931, Marshall and Orr 1931, Hubbard and Pocock 1972).

In areas of unrestricted circulation such as off Allomanu, there have been instances of increased sedimentation reported that have not caused negative effects to neighboring reefs. Sheppard (1980) reported that following dredging and blasting a military Harbor in Diego Garcia Lagoon, coral cover appeared to show no effects from increased siltation. Based on observations following construction of Honokohau Harbor in North Kona, Hawaii, there was also no indication that increased suspended sediment levels remained elevated beyond the period of construction (U.S. Army Corps of Engineers 1983).

While the Kawaihae Deep Draft Harbor located in South Kohala, Hawaii, was created by extensive blasting (Day et al. 1975) surveys of coral communities located just outside the harbor breakwater, as well as inside the harbor, indicated that coral and reef fish communities are flourishing (ORCA 1978). Before-and-after monitoring of the marine benthic communities in the vicinity of the Barbers Point Deep Draft Harbor on the leeward coast of Oahu indicated no impacts to corals beyond the edge of the dredged channel (AECOS 1985, 1986).

Monitoring of beach construction at the shoreline of a shallow, semi-enclosed inlet on the west coast of the island of Hawaii (Makaiwa Bay), characterized by very high coral cover and fish population densities, showed that while substantial sediment plumes were created by excavation of the shoreline, there were no temporary or permanent negative effects to benthos and fish communities. Rapid flushing of the bay by normal current exchange, and the ability of live corals to exercise sediment removal behavior appeared to prevent measurable changes in community structure parameters. The monitoring survey also showed that water quality parameters were not permanently affected by temporary sediment loads, and quickly returned to preconstruction levels after the new beach was completed (Dollar 1987, Daxboeck 1987).

Several other scenarios around the Hawaiian Islands can also be drawn upon to substantiate that increased sedimentation does not necessarily result in substantial, or irreversible damage to neighboring marine environments. Studies conducted at Princeville, Kauai (Grigg and Dollar, 1980), French Frigate Shoals (Dollar and Grigg 1981), and Hilo Bay (Dollar 1985), all investigated the impacts to reef coral communities subjected to high levels of sediment stress. Results of these studies indicate that Hawaiian reef communities possess the adaptive ability to maintain community integrity under conditions of substantial, but temporary, sediment stress. The common theme in all of these case studies is that as long as construction (sediment generating) activities occur in environments with unrestricted circulation, and that the sediment stress is episodic, rather than chronic in nature, it is not obligatory that there will be negative effects (either temporary or permanent) to coral reef communities.

The literature review presented above provides good documentation that impacts associated with short-term sediment producing events can be minimal or non-existent. At Allomanu, it is expected that activities on the shoreline associated with the project will not have any impacts to water quality or biota. In the unlikely event that there will be any additional input of material to the ocean, however, they should be of short duration (during construction). Results of the present survey indicate that

water quality presently shows very little effects from land. Mixing forces are so intense owing to wind and sea conditions that materials are rapidly dispersed in the nearshore zone. It is likely that any sediment entering the ocean as a result of grading activity and subsequent erosion will be suspended in the water column, and removal by current action. It is not likely that there will be any build-up of material on the sea floor, and existing biotic communities would not be effected in terms of alteration of the natural ability to maintain functional cleaning mechanisms. Airborne sediment created by excavation would have little or no chance of accumulating in the water column or on the sea floor during the period of construction.

In summary, the marine environment off the proposed project at Allomanu appears to be that of a typical exposed windward Hawaiian reef. The biotic assemblages observed in the baseline survey were typical of such areas in Hawaii. While a beautiful resource of aesthetic and recreational value, the biotic assemblages observed near the area of the project do not appear to consist of rare or commercially valuable resources. Because the area of construction will not impinge on the shoreline, or areas seaward of the shoreline, there is no potential for directly altering, or removing, any components of the marine ecosystem. The potential for runoff of sediment into the marine environment should be mitigated to the greatest extent possible by planning and construction practices. Should unforseen events cause some increase in sediment delivery to the marine environment, observations of other case studies indicate that it is not likely that serious or permanent impacts will occur. This conclusion is based on the physical processes associated with water movement in the subject area, behavioral adaptation by the existing communities, and probable short-term nature of the potential sediment input.

All of the conclusions presented above are predicated on utilizing the best and most relevant planning procedures that place environmental considerations at the forefront of the project. If such planning practices are utilized, it appears from all available information that construction and operation of the planned development at Allomanu, Kauai should not result in any degradation of the marine environment.

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APPENDIX B

Botanical Assessment
'Aliomanu CDUA

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BOTANICAL ASSESSMENT
'ALIOMANU CDUA

INTRODUCTION

The project site consists of approximately 15 acres of land located along the coastline between Papa'a Bay and 'Aliomanu 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, windswept naupaka shrubs (Scaevola sericea) are common. A few scattered individuals or small clumps of hau (Hibiscus tiliaceus), tree heliotrope (Tournefortia argentea), and hala (Pandanus tectorius) can be found associated with the naupaka shrubs. Besides the naupaka and hala, other native species occurring here are pohuehue 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 manienie (Cynodon dactylon), Jamaica vervain (Stachytarpheta jamaicensis), white thunbergia (Thunbergia fragrans), sourbush (Pluchea symphytifolia), 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 (Syzygium 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. septemtrionalis) 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 subquadripara, Christmas berry, mauna-loa vine (Canavalia cathartica), and Phyllanthus debilis.

DISCUSSION AND RECOMMENDATIONS

The vegetation on the ±15-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.

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APPENDIX C

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

FIELD SURVEY OF THE AVIFAUNA AND FERAL MAMMALS AT ALIOMANU, KAUAI

Prepared for

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30 October 1990

INTRODUCTION

The purpose of this report is to summarize the findings of a one day (28 October 1990) bird and mammal field survey conducted at Aliomanu, 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 (Schinus terebinthifolius) and Java Plum (Syzgium 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 (Bruner 1979, 1985, 1986, 1988a, 1988b, 1989a, 1989b, 1989c, 1990a, 1990b, 1990c; Pratt et al. 1987; Hawaii Audubon Society 1989).

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); Hawaii's Birds (Hawaii Audubon Society 1989); A Field Guide to the Birds of Hawaii and the Tropical Pacific (Pratt et. al. 1987); Mammal Species of the World (Honacki et al. 1982) and Tropical Trees of the Pacific (D. 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 Bruner (1983) have shown plover 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 One 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 (Garrulax pectoralis), Java Sparrow (Padda oryzivora), Common Barn Owl (Tyto alba), Japanese Bush-warbler (Cettia diphone), House Sparrow (Passer dometicus) and Red-crested Cardinal (Paroaria coronata), (Pratt et al. 1987; Hawaii Audubon Society 1989; Bruner 1989, 1985, 1986, 1988a, 1988b, 1989a, 1989b, 1989c, 1990a, 1990b, 1990c).

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 (Tomich 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 1987; Moulton et al. 1990). 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 Hyna (Acridotheres tristis) 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.

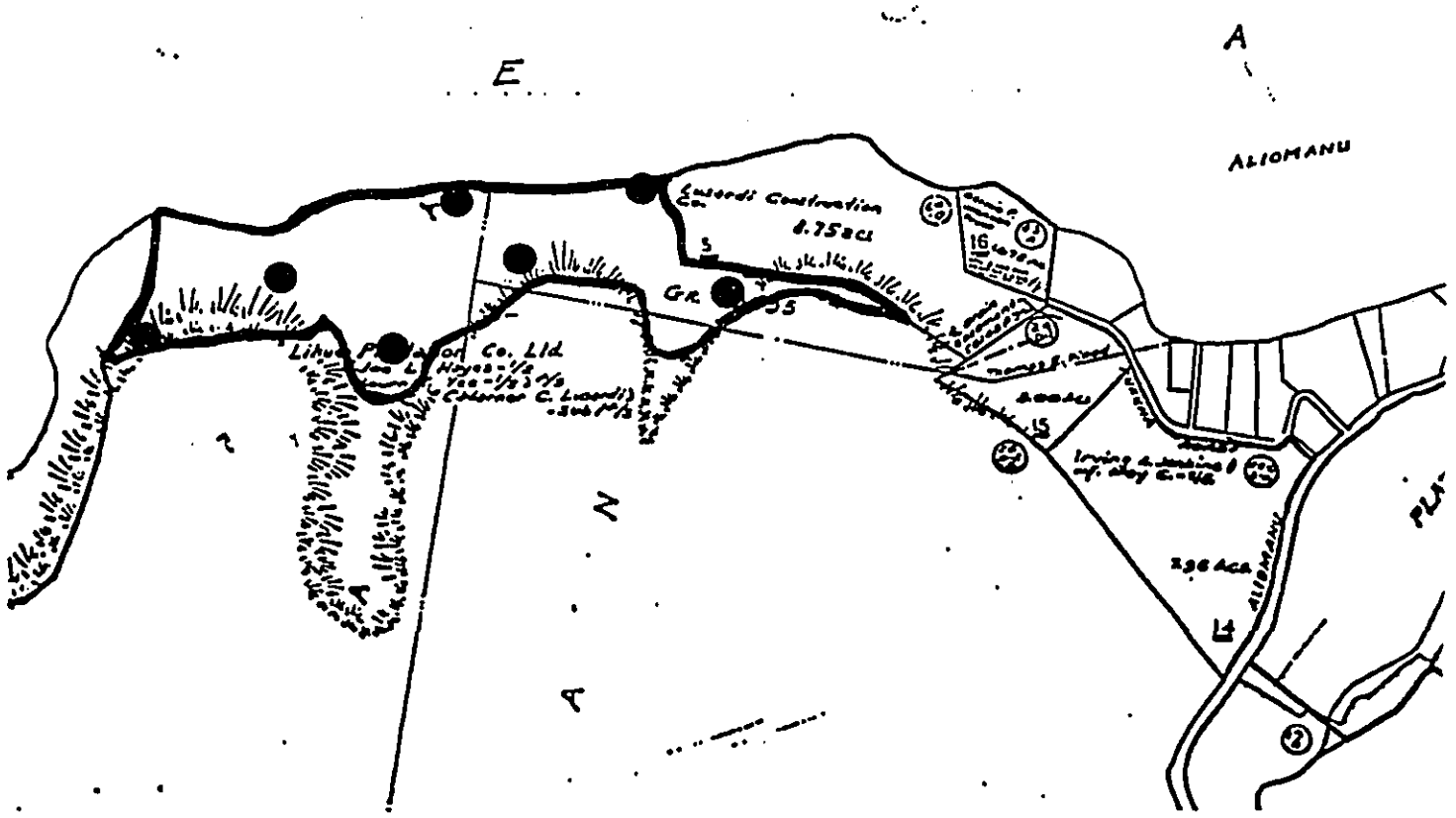

Fig. 1. Location of survey site with faunal census stations marked by solid circles.

TABLE 1

Relative abundance of exotic birds at Aliomanu, Kauai.

COMMON NAME	SCIENTIFIC NAME	RELATIVE ABUNDANCE *
Cattle Egret	Bubulcus ibis	R = 1
Spotted Dove	Streptopelia chinensis	U = 2
Zebra Dove	Geopelia striata	C = 6
Hwamei	Garrulax canorus	U = 4
Common Myna	Acridotheres tristis	U = 4
Northern Cardinal	Cardinalis cardinalis	U = 2
Japanese White-eye	Zosterops japonicus	U = 4
House Finch	Carpodacus mexicanus	A =12

* (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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APPENDIX D

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

Archaeological Inventory Survey

of 15.44 Acres (TMK 4-9-5: Por.4 Lot 12

Caris Property, 'Aliomanu and Pāpa'a, Kaua'i

by

Hallett H. Hammatt, Ph.D.
and
Gerald Ida, B.A.

for

Belt Collins and Associates

Cultural Surveys Hawaii
July 1992

ABSTRACT

An archaeological inventory survey was conducted of a 15.44-acre shoreline property in 'Aliomanu and Pāpa'a, Kaua'i. The property is on the northeast shore of Kaua'i and is proposed for single-family residential use. Historical research shows no Land Commission Awards or previously recorded sites in the study area. Two archaeological sites were located and subjected to limited subsurface testing.

State site 50-30-4-1896 (CSH 1) is on a sloping bank above the shore and includes a single human burial (Feature A), a 15 cm. thick mixed sand and alluvium cultural layer (Feature B), and 100 feet *mauka* an adz grinding stone. State site 50-30-4-1897 (CSH 2) is a cultural layer on a beach terrace toward the north end of the study area. Testing of both sites shows prehistoric artifactual material and both are assigned to the prehistoric period. State site 50-30-4-1896 (CSH 1) is evaluated as culturally and informationally significant and Site 50-30-4-1897 is evaluated as informationally significant. With a series of simple protective measures both sites, including the burial, can be preserved in place.

ACKNOWLEDGEMENTS

We would like to thank Mr. Joe Vierra and Mr. Glen Koyama of Belt Collins and Associates for providing information on this project. Ms. Hannah Sirois and Mr. Frank Supon 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.

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I. INTRODUCTION

This report contains the results of an archaeological survey of a 15.44-acre shoreline property in 'Aliomanu and Pāpa'a, 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 C.D.U.A. 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 scale 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 chronological 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.

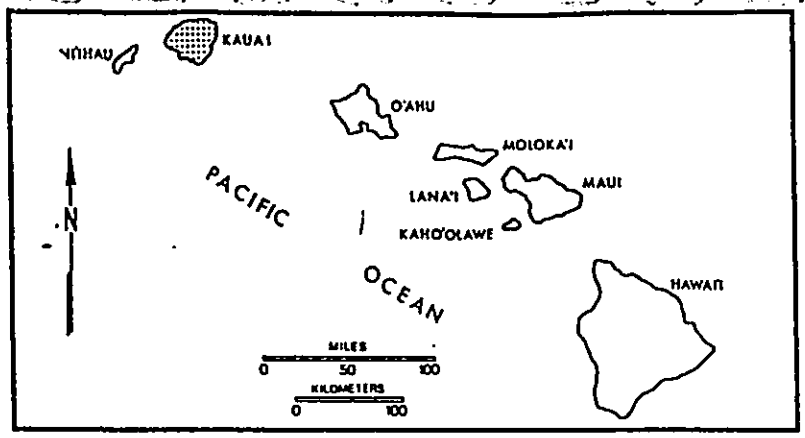

FIGURE 1
State of Hawai'i

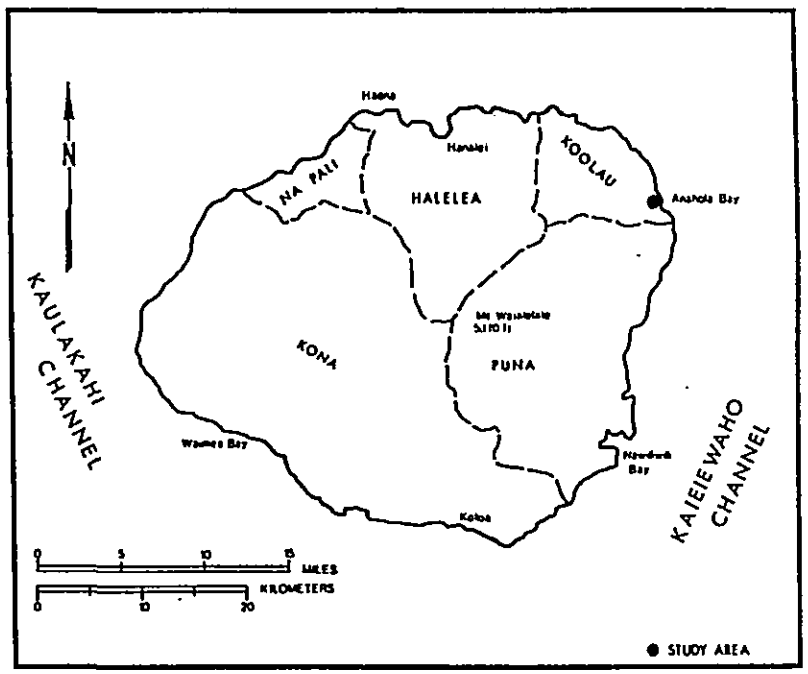

FIGURE 2
General Location Map, Kaua'i Island

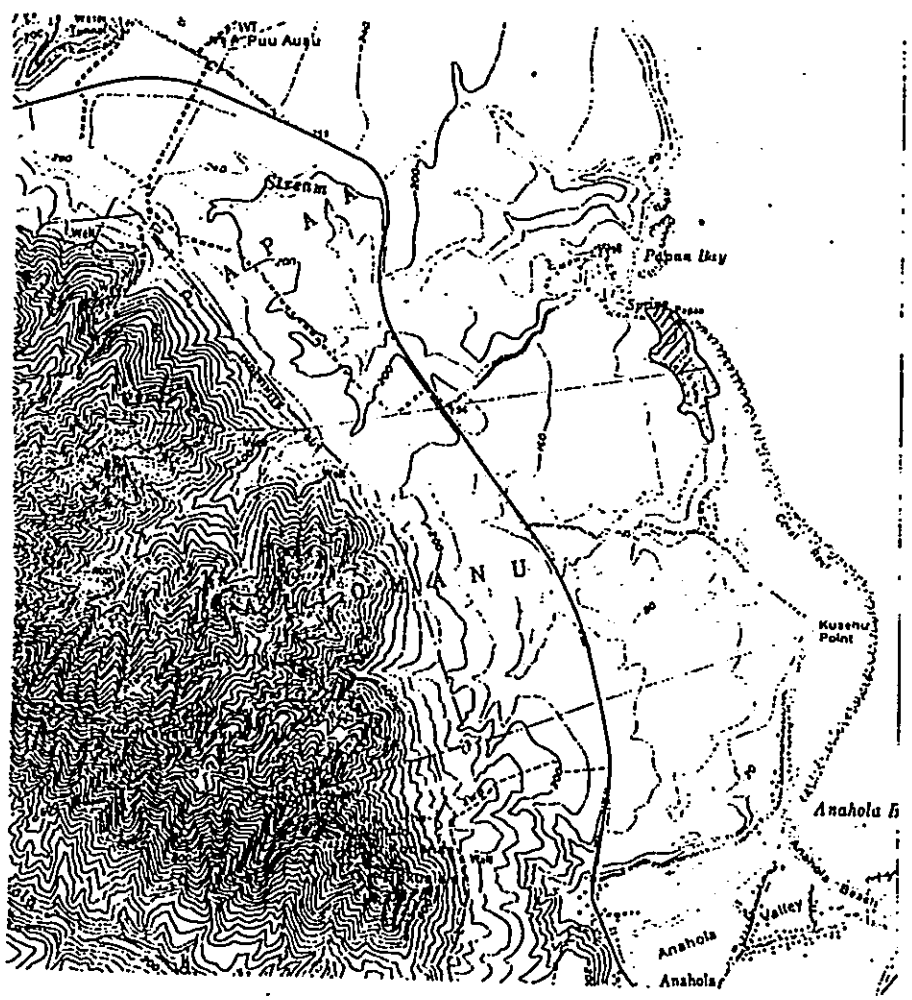

Fig. 3 USGS Anahola Quad Showing Project Area (Shaded)

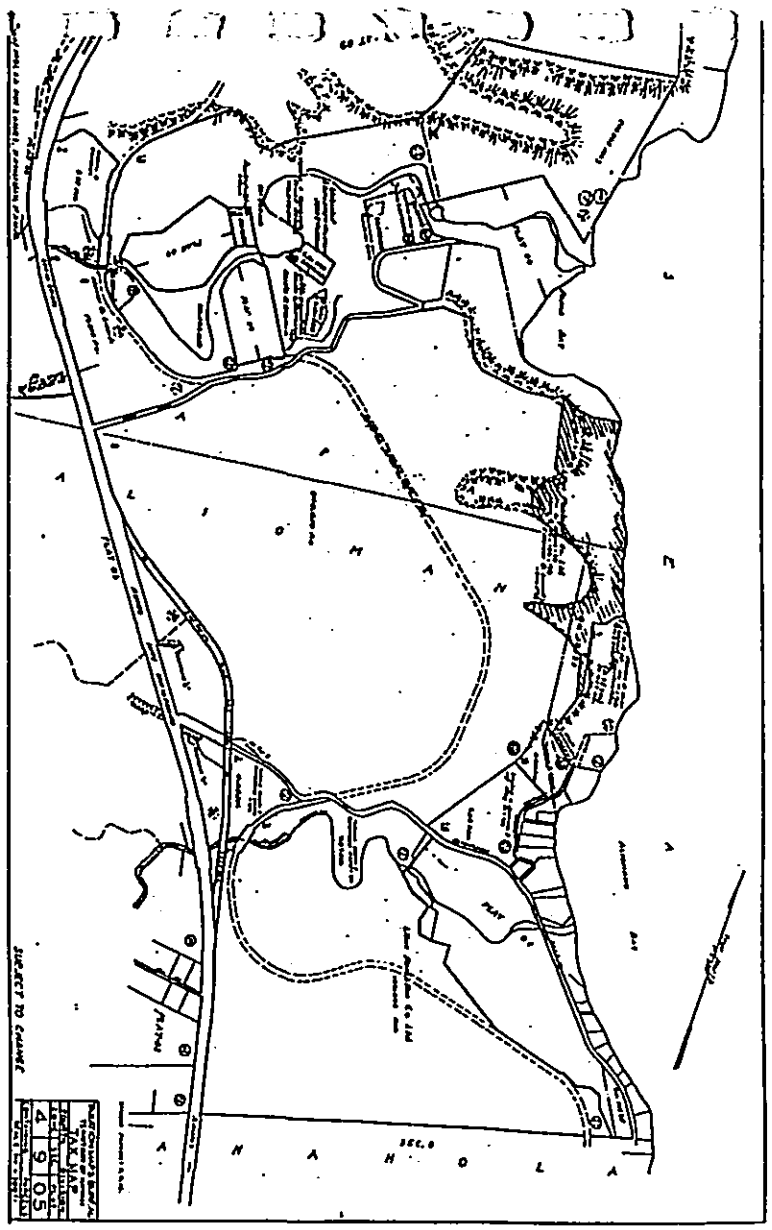

Fig. 4 Tax Map Showing Project Area

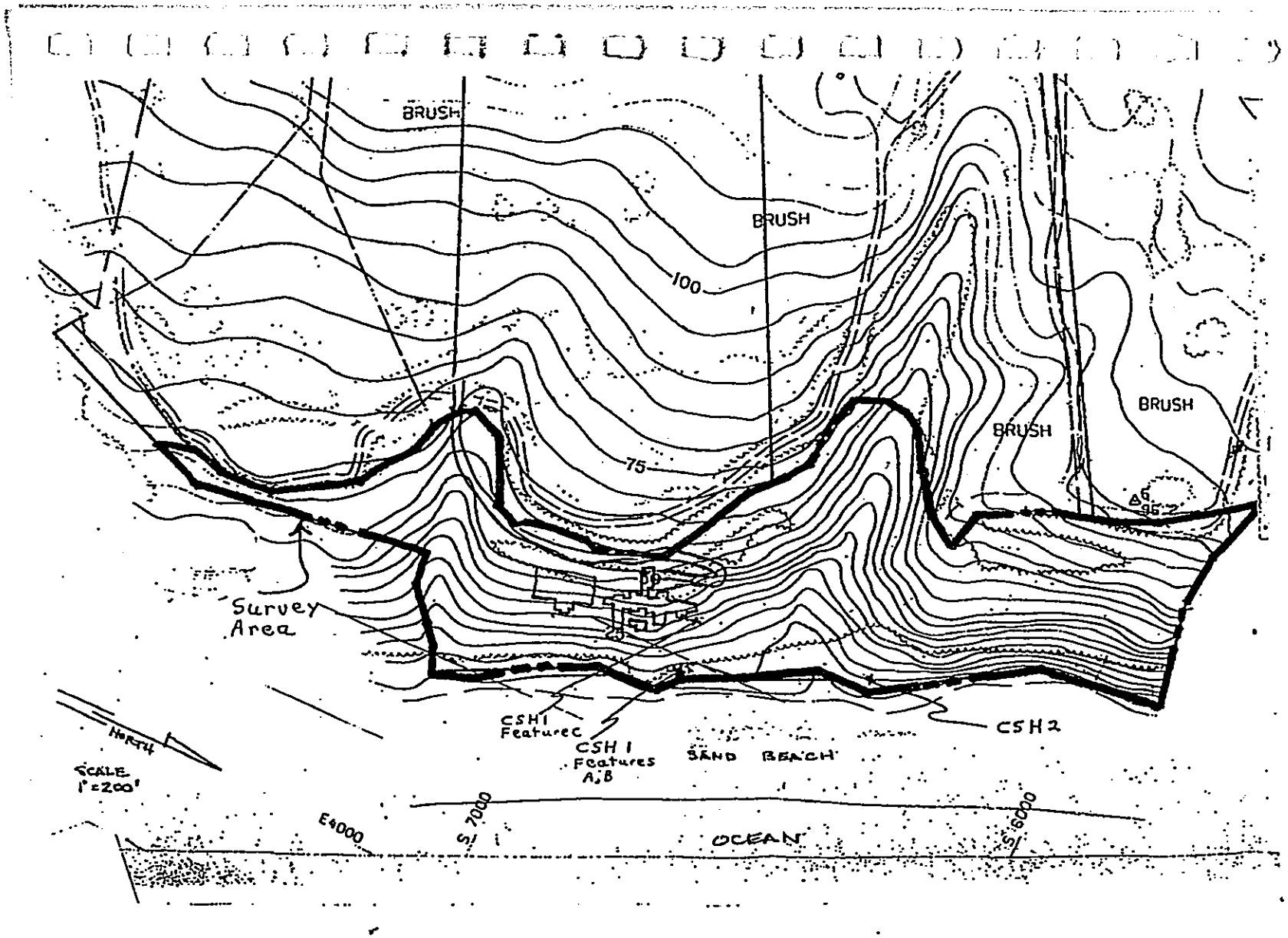

Fig. 5 Project Area Showing Location of Archaeological Sites and Location of Proposed House Site

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 (*Scaevola taccada*) 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 50-30-4-1896 (CSH 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 ¼ inch mesh to collect artifacts and midden. The human burial itself was not disturbed but the two 50 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 ¼ 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 C-horizon 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 Kaua'i in the *ahupua'a* of 'Aliomanu and Pāpa'a. The property is a maximum of 2,300 feet long north/south paralleling the shoreline and a maximum of 600 feet *mauka/makai*. 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, comprising more silts and clays than gravel. There is evidence of gradual slumping of the terrain and localized bad lands erosion in unvegetated slopes (Fig. 7). Long-term commercial agricultural in level land directly *mauka* has led to occasional heavy alluviation during rains.

Vegetation is predominately, in fact nearly exclusively, ironwood on the slope of the property. The very *mauka* end 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 gulch. Along the vegetation line of the shoreline and disturbed slopes of the north end of the project area are fairly thick stands of beach naupaka.

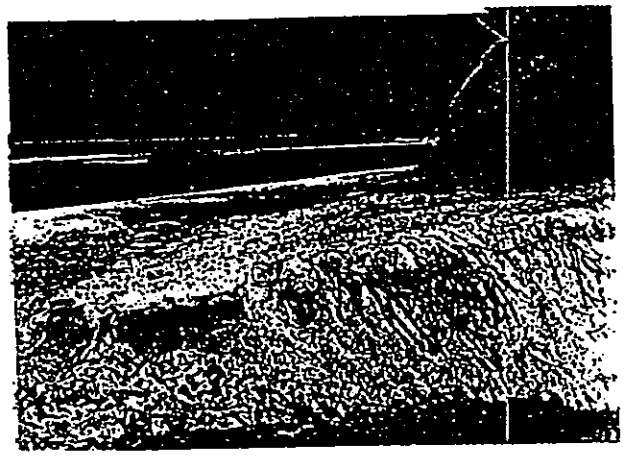

Fig. 6 Base of Gully Showing Interbedded Alluvium and Beach Sand, View to Southeast

Fig. 7 North Side of Project Area Showing Slope Erosion, View South

II. PREVIOUS ARCHAEOLOGICAL RESEARCH

No previous archaeological work has been done in the project area. William Kikuchi (1982) did an assessment of a 1.672-acre oceanfront 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 adz fragment, adz flake, and a worked beachrock sander.

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. Jason Ota's reconnaissance (1985), also in Anahola, confirmed the destruction of 'Aikanaka and Kuhua *heiau*.

Wendell Bennett's survey of Kaua'i (1931) lists one site in 'Aliomanu and six in Pāpa'a:

> Site 118. Walled enclosure, in Aliomanu, directly back of the field 10 pineapple road, just within the forest line.
>
> This structure extends between two "shower trees," and a square walled inclosure 119 by 119 feet, unpaved, 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 and 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. Kaluakehulu heiau, at the base of Kahahei pali, (the first pali south of the south branch of Papaa stream, (inland marked with red dirt on top).
>
> Thrum describes this *heiau* as, "A large L-shaped heiau with thick high walls at the abase of Kahahei 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 80 feet perpendicular to it.
>
> Site 120. Pohakuokalani heiau, probably on the talus slopes back of the pineapple fields, just north of Kahahei pali (Site 119).
>
> The site is fairly well raised so as to have an extensive view. It is a single-terrace platform heiau 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, 5 feet wide on their front and north sides. 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 132 by 236 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. Taro 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, taro terraces, and ditches. One ditch seems to have come from a small reservoir, 25 by 15 feet, blocked with stones. It is not large enough to hold any great supply of water. The ditch is unlined and shallow and about 3 feet across. The other ditch line 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 taro terraces are single lines of fairly good-sized stones. The oven stands over 6 feet high, built of large, roughly hewn stone. The stones overlap and are chinked to make the top part arch over, 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 Kihe (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

of 5 feet on the inside, continues westward and in from the east side for 20 feet, and from there on a foot stone-faced terrace 4 feet high marks the front edge of the upper division. The west wall of the lower division, 5 feet wide and 3 feet high, is built up on the outside as three steps. The lowest step continues around the corner and extends along the front side of the heiau without change in height; the two lower steps extend along the western side of the structure to an indefinite termination. The second division of the heiau, 4 feet above the first division, is surrounded by walls 2 feet wide, 4 feet high on the inside, and heights on the outside determined by the slope of the ground; like the lower division it has no stone paving. Three poorly paved rooms inside the lower section are divided by walls 2 to 3 feet high and about 1.5 feet wide. Facing the sea in front of the northwest corner of the heiau is a paved house platform and a house site, outlined with a single row of stones, both of which are connected by a rocky slope to the lowest step of the heiau walls. Off the northwest corner of the heiau is the oven described under Site 122.

Site 124. Papaa heiau, at Kawaipapa, Papaa at the junction of a side road and the government highway.

Thrum describes this as, "A walled heiau 60 by 80 feet in size; Kamohoalii its deity." It had been converted into a cattle pen and the internal divisions destroyed. It is of irregular shape with an entryway cut in the wall facing inland. The walls have been restored as shown by the split stone found all through them. The corners are square. The regular walls are 5 feet wide and about 4 feet high.

No attempt was made to locate the sites in Bennett's survey during our field work as they are all far outside the bounds of the project area.

In terms of settlement patterns, it is of interest that the sites Bennett recorded in these 2 *ahupua'a* are distributed *mauka* of the shoreline near the base of the steep sloping mountain as it meets the level plain and near the main streams of the *ahupua'a*.

III. CULTURAL AND HISTORICAL BACKGROUND

The project area is located on the shoreline, straddling the two *ahupua'a* of Pāpa'a and 'Aliomanu in the *moku* of Ko'olau (modern judicial district of Kawaihau), on the northeast side of the island of Kaua'i. Research for this section of the report concentrated on these two *ahupua'a*.

A thorough search of the major traditional legends of Kaua'i and Hawai'i revealed no references to Pāpa'a or 'Aliomanu. However, an obscure story collected by Armitage and Judd (Appendix I) attempts to explain the origin of the place name – 'Aliomanu.

Aaka, a *menehune*, was playing with friends on the shoreline when he was chased by a shark. He was able to escape the attack, after which Aaka and his companions sought their revenge. The *menehunes* 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 seabirds feasted on its carcass. The locality was named 'Aliomanu "where the water is made still by the soil from the shark."

Mary Kawena Pukui et al. (1974) gives no translation of 'Aliomanu, but Pāpa'a literally means "secure enclosure."

Early Settlement and Land Use

The two *ahupua'a* (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 Kaua'i 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

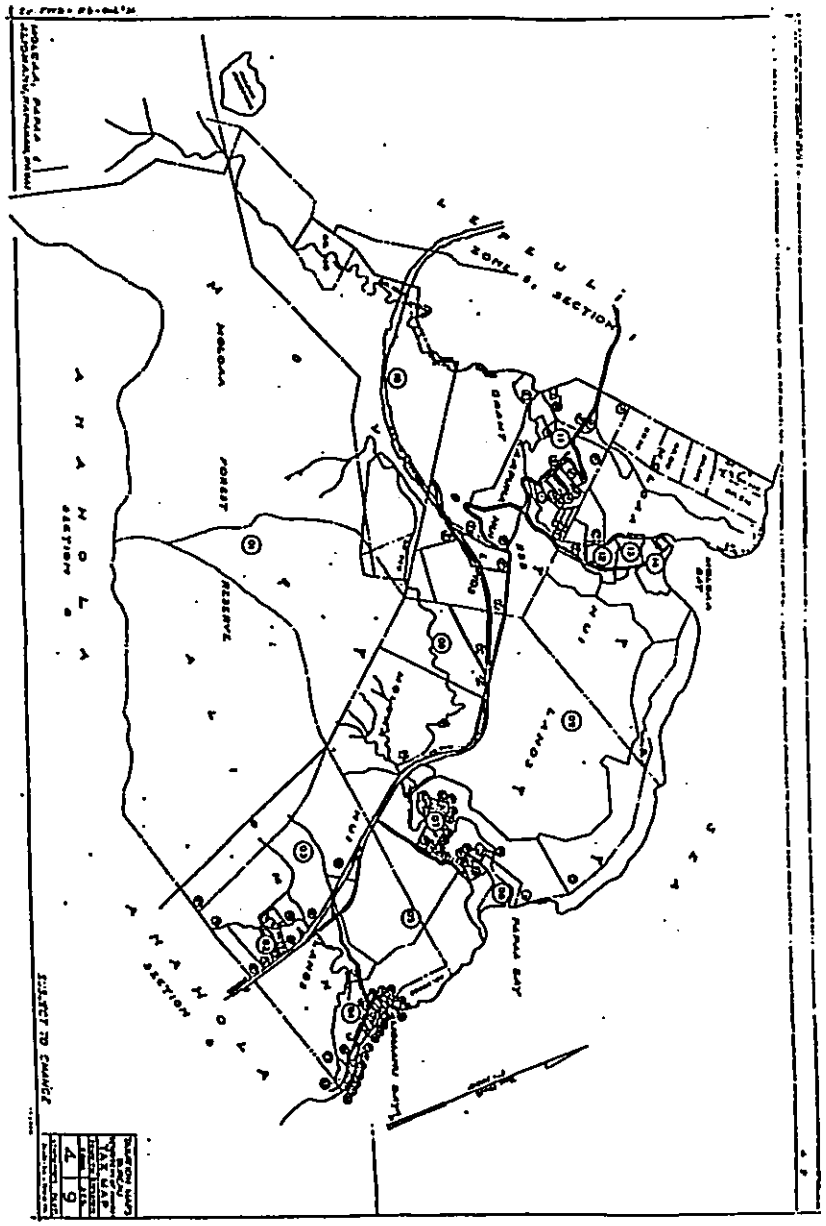

Fig. 8 Tax Map Showing Layout of 'Aliomanu and Pāpa'a *Ahupua'a*

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 II), agricultural activity was taking place in both *ahupua'a* at the time. Crops cultivated included:

Traditional - *kalo (Colocasia esculenta), wauke (Broussonetia papyrifera), noni (Morinda citrifolia), niu (Cocos nucifera), 'ulu (Artocarpus altilis), 'ipu 'awa'awa, 'ipu pō'ulu (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*.

Wauke (paper mulberry) was cultivated mainly for its bark used in the manufacture of *kapa* or bark cloth. A famous *wauke* growing area on Kaua'i was Moloa'a, the *ahupua'a* which borders Pāpa'a to the north. The place name refers to the *wauke* which grew so densely there that their roots (*a'a*) were matted (*molo*) 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 dyes. The phrase "mala of noni" (also "mala of wauke," "mala of poulu," 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.*:52) who believed the term *mala* referred to a plot of land specifically planted in *'uala* or sweet potato.

The *niu* or coconut had numerous uses. Favored planting areas on Kaua'i were near sea level at Ha'ena, Hanalei, Wailua, Nawiliwili, Kōloa, Lāwa'i, Waimea, Kekaha and Mānā (*Ibid.*:172).

The *'ulu* (breadfruit) was cultivated mainly as a source of food, although in Hawai'i

it never gained staple status as it did in the Marquesas and other south Pacific localities. Its medicinal uses were few but its latex-like sap was used as a multi-purpose glue and caulking material, and even chewing gum. The wood was prized for boards on which *kalo* was pounded into *poi* and also for some specific canoe parts. Only one variety of *'ulu* was grown in Hawai'i (*Ibid.*:153-155).

Pō'ulu refers to the young shoots of the *'ulu* which was cultivated for its bark that was made into cloth. It was processed similarly to the more commonly used *wauke* , but produced a comparatively inferior *kapa* (Buck, 1957:168-169).

The *ipu 'awa'awa* or bitter gourd was poisonous, although the flesh of the fruit was sometimes consumed in small quantities for medicinal purposes. Through a lengthy process, the gourds were made into containers to hold water, food and personal effects, and were also fashioned into a variety of musical instruments and utensils. Perhaps no other plant grown by the Hawaiians was given more care than the *ipu 'awa'awa*. To assure the fruit would not be damaged or misshapen, an elaborate system of grass bedding and wooden supports were often used. Kaua'i, and especially Ni'ihau were noted for their dyed and decorated gourds, a process rarely duplicated on the other islands (Handy and Handy 1972:212-128).

Although not specifically stated in the Native Claims, it was probable that the hearty *'uala*, *mai'a* (banana), and *kō* (sugar cane) were cultivated in the non-descript *kula*, adjoining *lo'i*, and in other areas.

Place names mentioned in the Foreign Testimony (Appendix II) are relatively few but worth some examination as they give some clues as to the character of the land and its use at the time.

Pāpa'a place names

general	-	Keomau, Maia, Kahai, Kapoho, Auahanui, Kaala
lo'i	-	Awapuhi, Kapoo, Auahanui, Aualaiki, Keokea, Kamookahi
loko	-	Kaloiwai, Kahoomakua
'ili	-	Kamoana
pali	-	Kamoana
brook	-	Papaa

'Aliomanu place names

general	-	Puhulu, Kololohe, Kapahuloko, Akole, Kapaele, Kapoho
lo'i	-	Kunia, Kahoolohe
loko	-	Kaluhau

It was common practice for planters to give names to their *lo'i*, especially larger ones or groups of lo'i. Six lo'i were named in Papa'a, and only two in 'Aliomanu. A *loko* (also called *loko wai*) is a standing pond of fresh water fed by a stream, *'auwai*, or spring. An *'ili* is a land division next in importance to an *ahupua'a*. Unusual here is the fact that no *'auwai* are named or mentioned.

The length of time which claimants purported to have tenured their land parcels varied. Testimony before the Land Commission shows several of them received their land rights as late as 1847, a year (or perhaps even months) before their official claims were made. Others held rights to the land by way of the ancestors (since the time of Kaumuali'i" or "since the time of Ka'ahumanu."

Kaumuali'i was the sovereign king of Kaua'i from 1794 through 1810 when Kamehameha brought the island under his rule. Kaumuali'i was allowed to govern Kaua'i until his death in 1824 (Kuykendall, 1938:49-51, 75).

Ka'ahumanu was one of the wives of Kamehameha I. During the reign of

Kamehameha II, she rose to the position of *kuhina-nui*, controlling all business transactions of the Kingdom of Hawai'i. She became a wife of Kaumuali'i in 1821 and died in 1832 (*Ibid.*:66-68, 133). Although the occupation of Pāpa'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 Pāpa'a, Puako and Kauula, died in 1849 before their claims were awarded. Their lands reverted back to the *konohiki*. Adamu was chosen *konohiki* of Pāpa'a in 1847, but by January 1848, he had been replaced by Kuheleloa. Kaui was the *konohiki* of 'Aliomanu. Lastly, sometime between 1848 and 1850, Puolo gave up his land in Pāpa'a and moved to 'Aliomanu where he made another claim.

In summary it can be said that traditional Hawaiian agriculture was being practiced in Pāpa'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-19th century, the native Hawaiian population was still in a state of radical decline. Estimates of population of Kaua'i 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 6,956. It is entirely plausible that the area had a relatively higher population in pre-contact times (Schmitt, 1968:42).

Bennett's archaeological survey of the island (1931) found religious, habitation, and related sites sprawled on the *kula* lands 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 houselots. This may also point to a

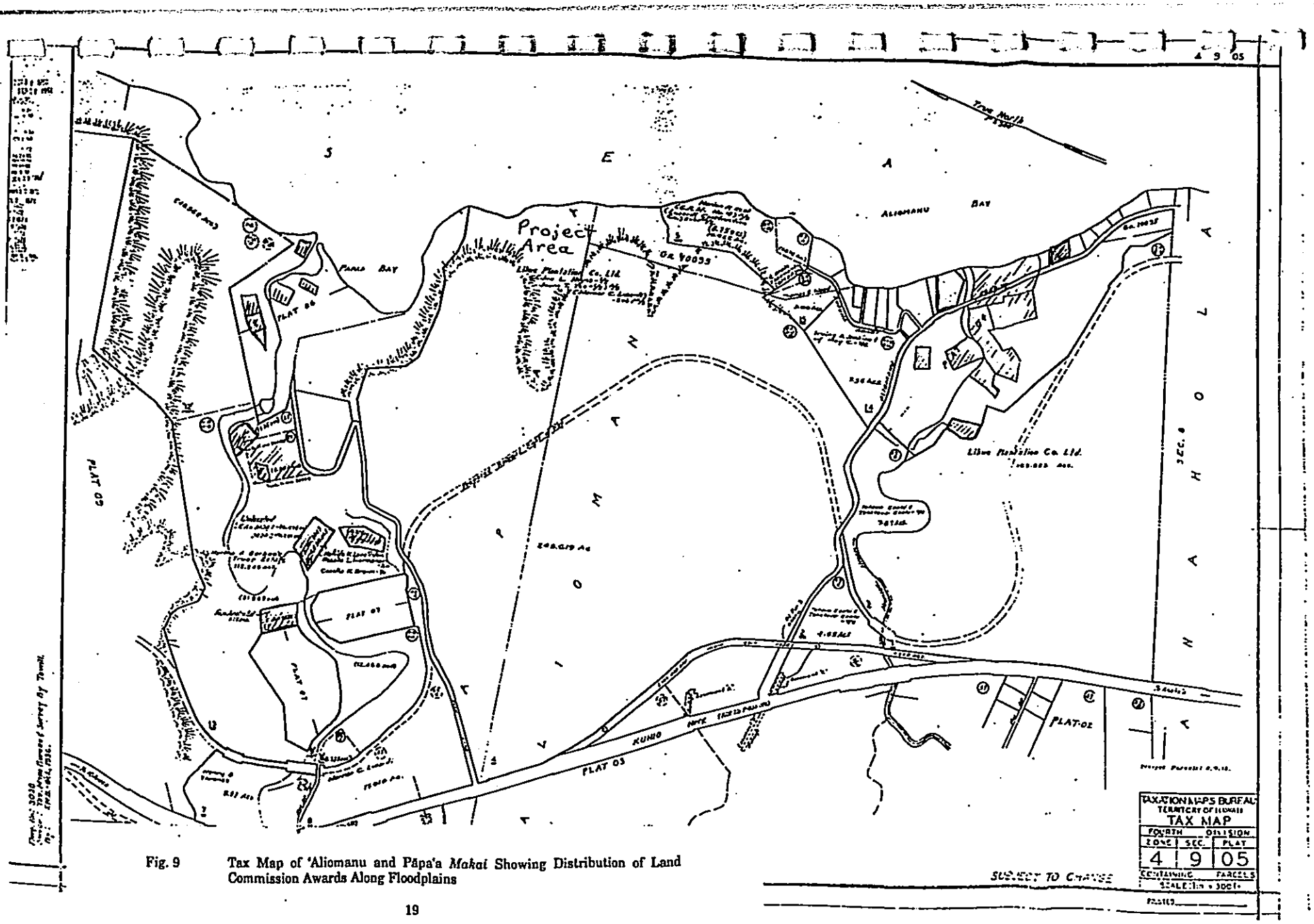

Fig. 9 Tax Map of 'Aliomanu and Pāpa'a *Makai* Showing Distribution of Land Commission Awards Along Floodplains

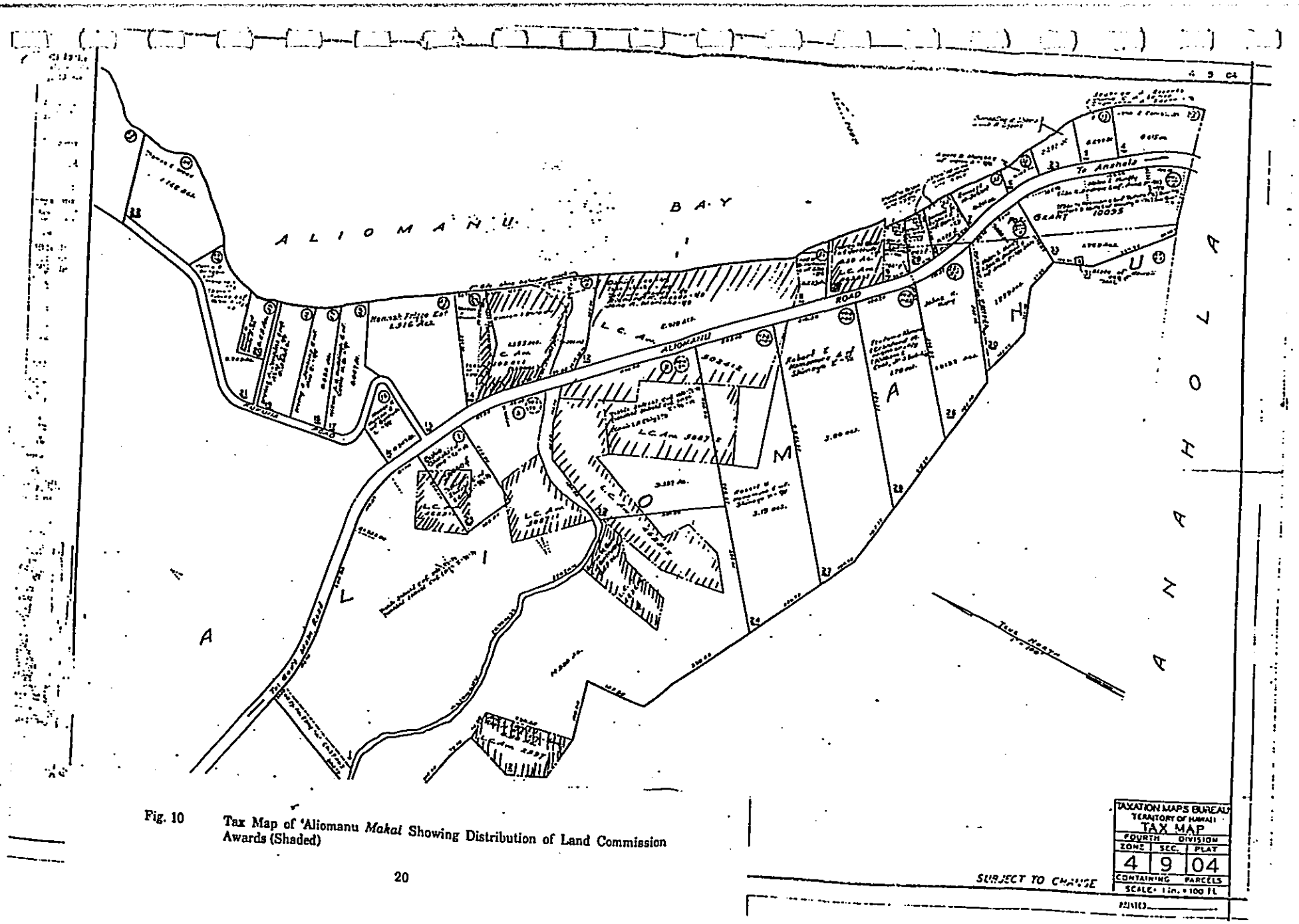

Fig. 10 Tax Map of 'Aliomanu *Makai* Showing Distribution of Land Commission Awards (Shaded)

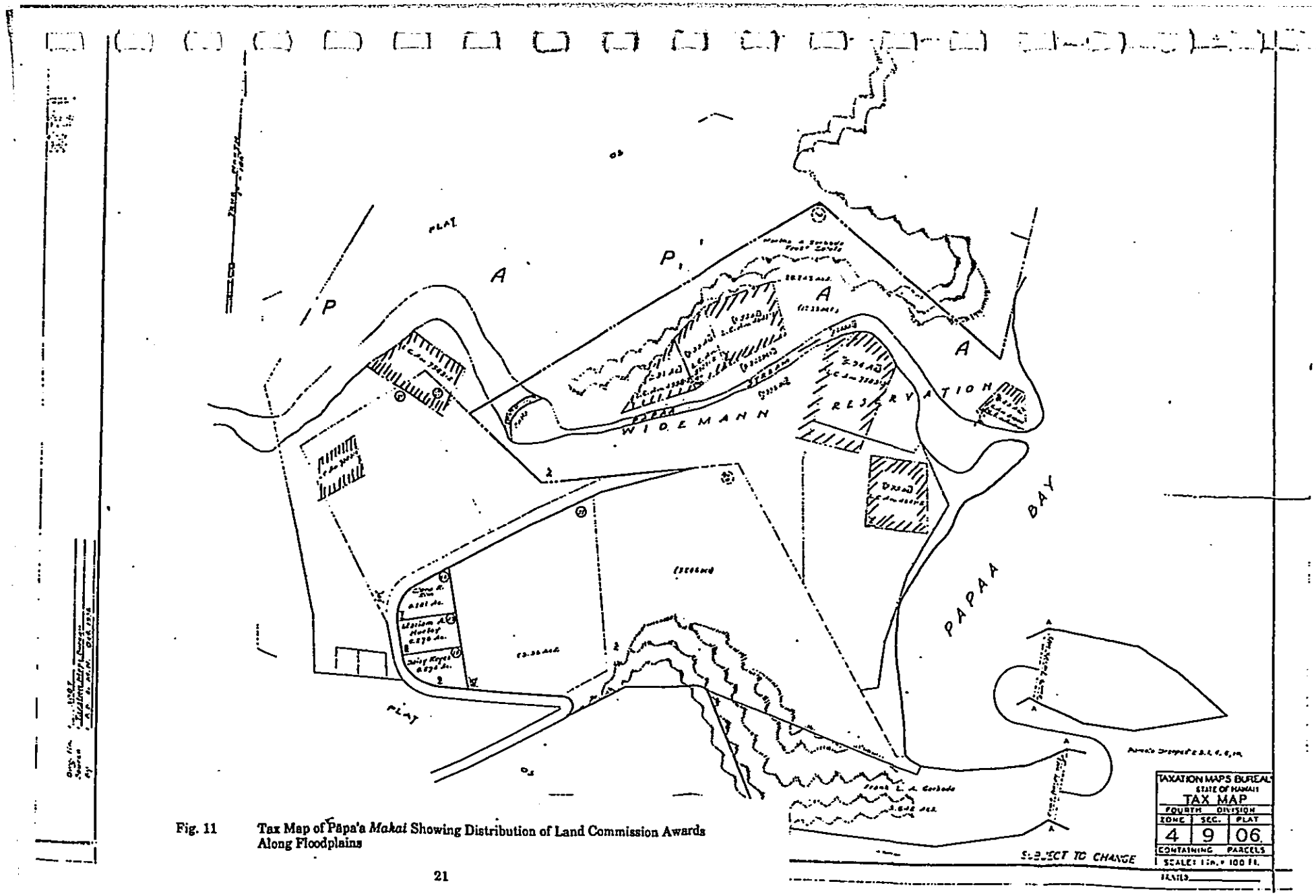

Fig. 11 Tax Map of Papa'a *Makai* Showing Distribution of Land Commission Awards Along Floodplains

decrease in land use and population, assuming the *kula* sites were abandoned before the mid-1800s.

It should be noted that the headwaters of both Pāpa'a 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 *moku* such as Kilauea and Moloa'a 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 Canneries, 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 Canneries.

The company closed its operations in 1960 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 Pāpa'a 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 Moloa'a Farmers Cooperative leased over 700 acres in the area from Lihue Plantation. The organization was formed to help individual farmers raise mainly papayas, 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 papayas. 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).

Ranching activities in the area have been on-going throughout this century in varying degrees. Meadow Gold moved its major dairy operation from Waimea to Pāpa'a in 1991.

IV. SURVEY RESULTS

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

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

Location This site is located at the slope/beach interface along a bank approximately 60 feet *mauka* 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 2-meter high sloping bank. Adjacent to this layer is a human burial, whose bones were partly exposed (Fig. 12, 13). Farther up the bank (115 feet) (at 262° True) is a large grinding stone. The burial is described as Feature A, nearby cultural layers as Feature B, and the grinding stone as Feature C.

Feature A (burial) This burial was found partly exposed 50 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, ribs, 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 artifactual and stratigraphic associations 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

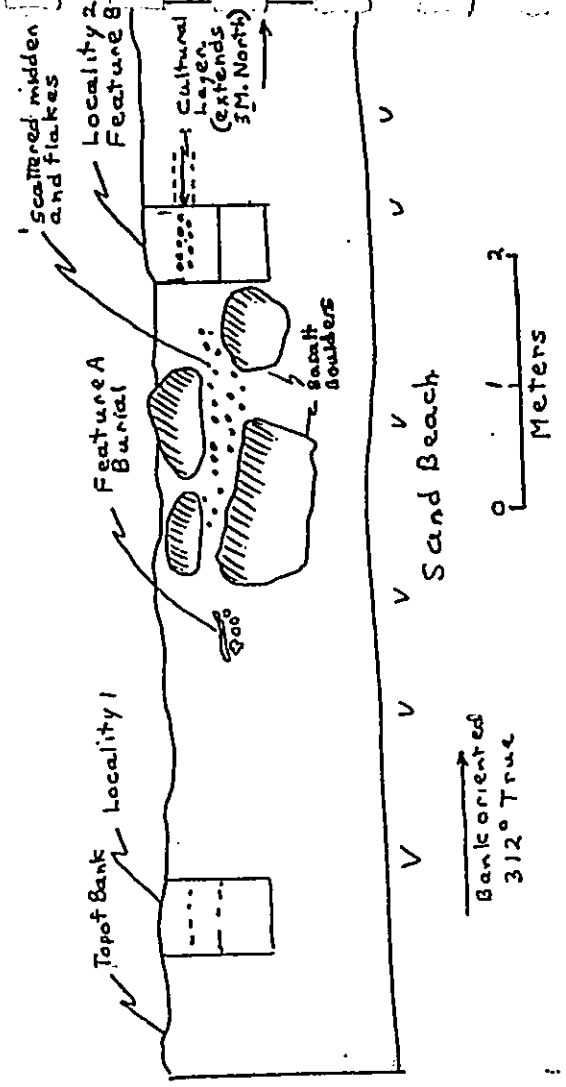

Fig. 12 Profile of Bank Showing Feature A Burial and Localities 1 and 2 of Feature B, State Site 50-30-4-1896 (CSH1)

Fig. 13 View of State Site 50-30-4-1896 (CSH 1) Showing Burial to Left of Large Rock and Locality 1 Pit (to Left) and Locality 2 Pit (to Right)

Fig. 14 State Site 50-30-4-1896 (CSH 1) Feature A Burial Exposed Along Bank

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 files, cut bone, basalt flakes and shell midden. The matrix of the layer consists of silty clay loam with 10% marine sand grains and the layer has fairly even and distinct upper and lower boundaries. Shovel testing *mauka* 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 silt loam slightly sticky slightly plastic weak fine crumb structure, very abrupt wavy boundary, a few pieces of rounded coral, but no midden present, coral present probably wave wash.
Str. II B-horizon	15-32 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	32-60+ 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 a historic-era item into this layer is indicative of the on-going colluvial 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 2.2 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 silt loam, very abrupt wavy boundary, no marine sand,scattered boundary, scattered coral, no midden *in situ*.

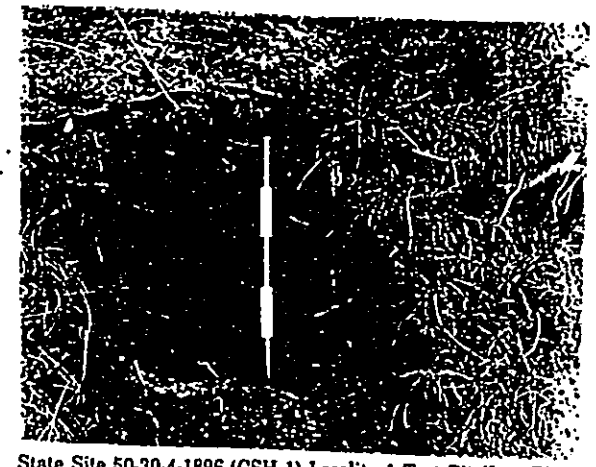

Fig. 15 State Site 50-30-4-1896 (CSH 1) Locality 1 Test Pit (Iron Piece in Upper Left)

Fig. 16 State Site 50-30-4-1896 (CSH 1) Locality 2 Test Pit

Locality 2 Test Description cont'

Str. II weak structural B	12-20 cm.	very dark brown silty clay loam. No marine sand grains, no cultural material.
Str. III cultural layer	20-35 cm.	dark brown silty clay loam to sandy clay loam with 10% marine sand grains. Cultural material basalt flakes, 2 coral files, 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.
Str. IV	35-50 cm.	dark brown clay loam with <5% sand grains, non-cultural, diffuse, smooth boundary
Str. V	50-65 cm.	dark brown silty clay 10 cm. with 10-20% marine sand grains, similar to Str. II, except no culture. Diffuse smooth boundary. Beach intrusion alluvium, sand interface, some decomposed basalt pebbles.
Str. VI	65-85+ cm.	very pale yellowish brown medium to coarse beach sand with very coarse basalt 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 20-35 cm. depth. Sampling and screening through ¼ in. mesh of .05 cubic meter shows an artifactual assemblage of urchin spine and coral files, 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).

TABLE 1: Indigenous Artifacts Catalog

CULTURAL SURVEYS HAWAII
PROJECT: ALIOMANU

Acc #	Site #	Feature #	Stratum	Depth	# pieces	Length	Width	Thickness	Weight	Material	Type/Item	Comments
1	1	Locality 2	II	10-50	1	4.1	4.5	2.4	104.9	Basalt	scraper	
2	1	Locality 2	II	10-50	4	1.27/1.5	0.8/1.3	0.4/0.7	50.5	Basalt	flakes	
3	1	Locality 2	II	10-50	1	4.6	0.6	0.6	1.5	Urchin	file	
4	1	Locality 2	II	10-50	1	2.4	1.6	0.3	1.8	Shell	cut	
5	1	Locality 2	II	10-50	1	1.5	0.8	0.3	0.3	Bone	cut	
6	1	Locality 2	II	10-50	1	3.5	1.1	1.1	2.7	Coral	file	
7	1	Locality 2	II	10-50	1	3.1	1.5	1.0	2.7	Coral	file	
8	2		II		2	1.5/2.5	1.4/1.5	0.4/0.2	1.8	Basalt	flakes	
9	2		II		1	2.6	0.5	0.2	0.6	Shell	fish hook	fragment
10	2	Unit C14	II		19	0.6/2.5	0.6/2.0	0.3/0.6	14.3	Basalt	flakes	
11	2	Unit C14	II		1	1.1	1.0	0.6	0.7	Coral	file	fragment
12	2	Unit C14	II		1	1.2	0.4	0.4	0.2	Bone	fish hook	bone tip fragment

TABLE 2: Midden Catalog

CULTURAL SURVEYS HAWAII
PROJECT: ALIOMANU

[illegible]	[illegible]
[illegible]	[illegible]
Cellana sp.	1
Littorina sp.	0.4
Nerita picea	12.8
Strombus maculatus	9.8
Thaididae sp.	6.3
Turbo sandwichensis	13.7
Brachidontes crebristriatus	0.7
Unidentified sp.	16.6
[illegible]	[illegible]
Echinoderm	12.8
Fish bone	1.4
[illegible]	[illegible]
Coral	24.8
Charcoal	1.4

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 I and II clearly correlate. 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 Adz Grinding Stone

This grinding stone is located inland, along the slope, 115 feet and 262° (true) from the exposed human burial along the bank. This grinding stone is 190 cm. long, one meter wide and 35 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 adz 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

Fig. 17 State Site 50-30-4-1896 (CSH 1) Feature C, Adz Grinding Stone

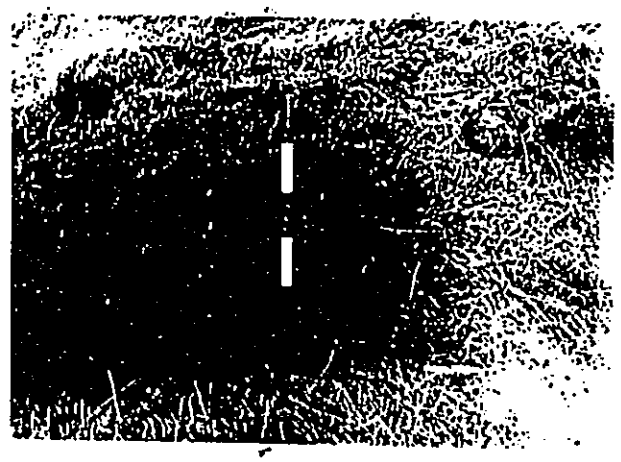

Fig. 18 Test Pit of Proposed House Site Showing Culturally Sterile C-Horizon

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, 3-6 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 pits level areas as well as slopes were chosen.

State Site 50-30-4-1897 (CSH 2)

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 *mauka* of the vegetation line (Fig. 5). The site is presently a level unvegetated parking area and camp 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. square (Figs. 19, 20). Three water-rounded boulders form an alignment on the *makai* side and there is one boulder on the north and one boulder on the south. The placement of these boulders could

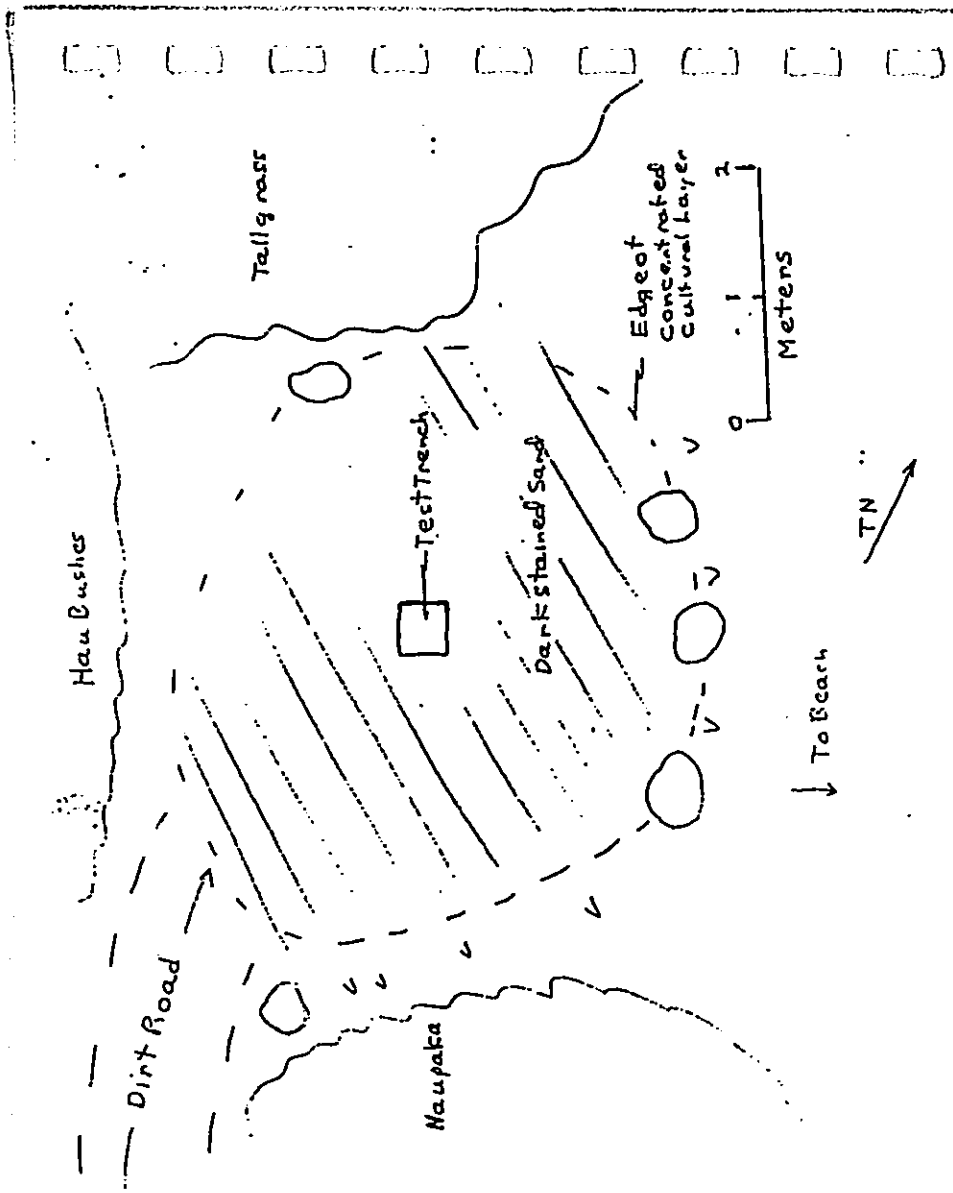

Fig. 19 State Site 50-30-4-1897 (CSH 2) Plan View Sketch Showing Test Pits

indicate a former house structure, but is more likely related to modern fishing use of the area.

Testing of Site 50-30-401897 (CSH2)

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:

Str. I Modern A	0-5 cm.	Gray medium to fine sand with organic staining and modern debris, bottle caps, glass, etc. Abrupt wavy boundary.
Str. II cultural layer	5-35 cm.	very dark gray to black fine to medium sand with organic staining. Shell midden and artifactual 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 .05 cubic meters of Stratum II sediment was screened through ⅛ inch mesh for artifactual content. Two basalt flakes and one shell fishhook were recovered, enough to confirm the existence of the prehistoric cultural layer.

In addition a ½-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).

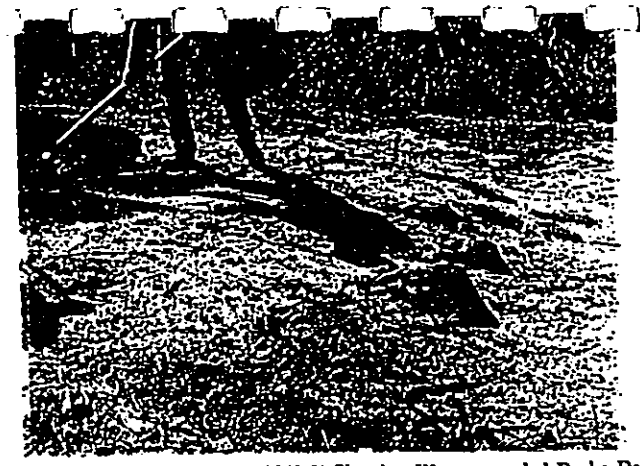

Fig. 20 State Site 50-30-4-1897 (CSH 2) Showing Water-rounded Rocks Defining Raised Area, View to North

Fig. 21 State Site 50-30-4-1897 (CSH 2) Showing Test Trench, Cultural Layer to 35 cm. Depth

Shovel Testing

A series of 3 shovel tests were excavated north, south, and *mauka* to estimate the horizontal extant of the subsurface cultural layer. Directly *mauka* 5 meters from the center of the raised sand area in a grove of hau bushes only a weak mixed 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 lesa intense occupation. Three meters to the north of the main test pit a weak cultural layer was observed from 0-20 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 in thinner and weaker form probably encompasses an area of 60 square meters.

Age of Site

The artifactual assemblage including basalt flakes, files, and shell and bone fishhooks 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 *ahupua'a* of Aliomanu and Papa'a, 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 *ahupua'a*, especially Bennett, are distributed *mauka* 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 cultigens are mentioned in the Land Court testimonies.
3. By the mid 19th century, the native inhabitants of these two *ahupua'a* were using the two flood plains almost exclusively as shown by the distribution of the Land Commission awards. Although Aliomanu and

Papa'a stream valleys are narrow and short compared to the drainages to the south and north (Anahola and Moloa'a). The number of LCAs, 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 similiar.

4. Concerning access to the ocean and use of ocean resources, Aliomanu and Papa'a are similiar in topography 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 occurence of the adz 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

shoreline 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 12 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 upslope is a large adz 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 deposits 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, scoured 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 adz grinding stone nearby (Feature C) is evaluated as significant under Criterion C (Excellent example of a site

type). State site 50-30-40-1897 (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 archaeological 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 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 State site 50-30-40-1896 (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 50-30-4-1897 (CSH 2) (approximately 16 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

from: *Ghost Dog and Other Hawaiian Legends* by George T. Armitage and Henry P. Judd, Advertiser Publishing Co., Ltd., 1944.

One day A-a-ka and his friends were standing on the brink of a high 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 of 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 lazily in the pool as the roiled 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 stinging rays on their backs. NO a breath of wind stirred the hot noon-day air. Beyond the reef the surf plunged like thundering white stallions. The little men had just bout made 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 outline 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 vine, fill it with bait, and let it down into the pool. Once decided, the dwarfs 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 smelling 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-li-o-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 ahupua'a
of Papa'a and 'Aliomanu, Kaua'i

No. 2597 Puolo Papaa, Kauai, December 24, 1847

The Land Commissioners, Greetings: I hereby state to you my claim for land in Papaa on the Island of Kauai. There are eleven lo'i and cultivated kulas adjoining the sides of these lo'is. I and my keiki, Palawina, have these kihapais; that is what I hereby state -- and there is a house site.

PUOLO

No. 3404 Adamu Papa'a, January 15, 1848

The Land Commissioners, Greetings: I, Adamu, a Hawaiian subject living at Papaa on the Island of Kauai hereby state my claim for land. There are five lo'i and seven orange trees, and the breadfruits and one coconut tree. This is my claim, and a kula which adjoins my house, however they are all together in one place. I received it from Paulo Kanoa. Respectfully,

X his mark

No. 4558 Wi Papa'a, Kauai, January 12, 1848

The Land Commissioners, Greetings: I hereby state my claims in the land of Papaa, Island of Kauai. There are six lo'i, three kula planted with noni, wauke, and a kula adjoining the sides of the lo'is, and the house lot.

WI X

No. 4633 Puako Anahola, Knuai, January 12, 1848

The Land Commissioners, Greetings: I hereby state my claims on the Island of Kauai, land of Papaa. There are five lo'i, four kula planted with noni, two kula planted with wauke, one kula planted with bitter gourd and two house lots.

PUAKO X

No. 5085 Kiaipa January 12, 1848

The Land Commissioners: I hereby tell you of the land of Papaa on the Island of Kauai. There are 6 taro lo'i and the kula and the mala of noni adjoining the house lot. There are two, together.

KIAIPA

No. 5100 Kauula Papaa, Kauai, January 12, 1848

The Land Commissioners, Greetings: I hereby state my claims for land at Papaa on the Island of Kauai. There are 8 taro lo'i, also a kula and a house lot adjoining it.

KAUULA

No. 5101 Kalua Papaa, Kauai, January 12, 1848

The Land Commissioners, Greetings: I hereby state my claim for land at Papaa on the Island of Kauai. There are two lo'i, two mala of wauke, 1 mala of noni, 1 mala of poulu*, 1 muliwai, and 1 house lot.
/*A breadfruit, used for coarse tapa/

KALUA X

No. 6645 Uka Pilaa, Kauai, Jan. 17, 1848

The Land Commissioners, Greetings: I hereby state my claims for five lo'i. Three lo'i are /for/ a person who is under me, Kuaua, however, the large claim is mine and he is living under me. There is also a kula adjoining these lo'i, and the house site. Those are my claims.

UKA X

No. 7583 Kuheleloa Papaa, Kauai, 28 January 1848

The Land Commissioners, Greeting: I hereby state my claim for land. I am the konohiki on the land of Papaa, under Kaukualii and Daniela Oleloa. All the benefits which pertain to the konohiki are those which I claim, with my Hakus /the ones who hold the land/. That is my statement.

KUHELELOA

No. 4625 Poohina 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 lo'i, four kula planted with noni, five mala, and the house lot.

POOHINA

No. 4636 Puaokaula Anahola, Kauai, January 12, 1848

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

PUAOKAULA

No. 5087 Kahawaiolaa 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 mala of noni, two lo'i and the wauke, five mala of noni, and a mala of noni in another place, and the coffee trees and two house lots.

KAHAWAIOLAA X

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

No. 2597 Puolo Clt.

Kaui sworn says I know Puolo's land in Aliomanu - 4 lois, kula & house lot all in one piece.

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

These lands were given Clt. by the Konohiki in 1847. Puolo has left his claim in Papaa. The Konohiki of Papaa has given those lands to Clt. as he has no other lands. No one has disputed his claim.

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

No. 3404 Adamu Clt.

Uka sworn says — I know Adamu's land in Papaa. They consist of two pieces as follows —

No. 1 Is House Lot in "Kaloiwai."
No. 2 " Lois in "Keomau" & some adj. kula

These lands come into the possession of clt. by his being chosen Konohiki of Papaa in 1847. He had no claims on the lands before that time. He has held them to this time, undisputed.

No. 1 Is bounded
M. by Konohiki's kula
N. " Loko - "Kaloiwai"
M. " Konohiki's kula
A. " " "

No. 2 Is bounded
M. by Pi's loi
N. " Konohiki's kula
M. " " "
A. " " "

Punia 2nd sworn says — I know the lands said to belong to Adamu — 2 lois & house lot. I heard what Uka said — his testimony is true.

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

No. 4558 Wi Clt.

Paile sworn says — I know Wi's land in Papaa as follows —
No. 1 Is 5 lois & kula in "Maia"
No. 2 " 1 loi — "Awapuhi"
No. 3 " kula in "Kahai"

No. 1 Is bounded
M. by Konohiki's kula
Ma. " " "
M. " Papaa brook
K. " " "

No. 2 Is bounded
M. by Loi "Kepoo"
Ma. " Konohiki's kula
M. " Kalua's loi — "Auahanui"
K. " Papaa brook

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

These lands were given Clt. by the Konohiki in 1838. It has been held unmolested to this time. No one has disputed the claim.

Kalua sworn says – I know Wi's lands in Papaa. I heard Paile's testimony – it is all true.

No. 4633 Puako Clt.

Hahakuka sworn says – I know that Puako died in 1849 & that his lands have reverted to the Konohiki.

No. 5085 Kiaipa Clt.

Kalua sworn says – I know Clt. lands in Papaa - all in one piece.

Bounded as follows -

M. by Kuhalaloa's lois
Ma. " Konohiki's Kula
M. " " "
K. " " "

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

Wi sworn says – I know Clt. lands – all that Kalua has testified is true.

No. 5100 Kauula Clt.

Sema Puole came forward & testified that Kauula died in 1849. And that his lands have reverted to the konohiki.

No. 5101 Kalua Clt.

Paele sworn says – I know Clt. lands in Papaa. They are in three pieces as follows

No. 1 Is House Site
No. 2 " 2 lois in "Auahanui"
No. 3 " a kula in Kapoho

No. 1 Is bounded on all sides by Konohiki's kula

No. 2 Is bounded

M. by Wi's loi – "Aualaiki"
Ma. " Konohiki's Kula
M. Loi - "Kamookahi" " "
K. Papaa brook

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

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

Wi sworn says – I know Kalua's lands in the above testimony I agree with.

No. 6645 Uka Clt.

Lola sworn says – I know Uka's lands in Papaa - they consist of 14 small lois in Ili "Kamoana."

Bounded as follows -

Mauka by Konohiki's lois
Napali " " Kula
Makai " " "
Anahola by Kamoana Pali

These lands were from the Konohiki in 1847 & have been held henceforth till now. No one has disputed the claim.

Konaina sworn says – I know lands of Uka – I have heard the testimony of Lola - it is true.

No. 7583 Kuheleloa Clt.

Kallua sworn says – I know the lands Kuheleloa in Papaa, it is in 4 pieces as follows –

No. 1 Is House Lot & kula adj.
No. 2 " 1 Loi – "Keokea"
No. 3 " 1 Large & 3 small lois & kula adj.
No. 4 " 6 small Lois in "Kaala"

No. 1 Is bounded

M. by Papaa Brook
Ma. " "
M. " Pub. Road
K. " Konohiki's kula

No. 2 Is bounded

M. by Konohiki's kula

Ma. " Papaa Brook
M. " Lolo "Kahoomakua"
K. " Konohiki's kula

No. 3 Is bounded
M. by Pub. road & bridge
Ma. " Konohiki's kula
M. " " "
K. " Papaa Brook

No. 4 Is bounded
M. by Papuka's lois
Ma. " Papaa Brook
M. " Kiaipa's loi & kula
K. " Konohiki's kula

Clt. is Konohiki of Papaa & has lived on the land since 1848. Clt. has no other lands.

Wi sworn says – I know the lands of Kuheleloa in Papaa. No other person has any claims on these lands – Clt. only.

No. 4625 Pohina Clt.
Hahakuka sworn says – I know Clt's lands in Aliomanu. they are in two distinct pieces as follows –
No. 1 Is House Lot in "Puhulu"
No. 2 " Lois& kula adj. in "Kololohe

No. 1 Is bounded
M. by Konohiki's kula
Ma. " " "
M. " " "
K. " " "

No. 2 Is bounded
M. by Puaokauala's lois
Ma. " brook
M. " Kahawaiolaa's "
K. " Konohiki's kula

These lands were given to Parents of Clt. by the Konohiki in the days of Kaumualii & from them fell to Clt. & have been held unmolested to this time.

Kalehua sworn says – I know Clt's lands – I have heard all that Hahakuka has said – it is all true.

No. 4636 Puaokauala Clt.
Pohina sworn says – I know Clt's lands in Aliomanu – they are in three pieces

as follows –
No. 1 Is 1 large & 3 small lois in "Kapahuloko"
No. 2 " House Lot in "Kaluhau"
No. 3 " kula in "Akole"

No. 1 Is bounded
M. by Loi – "Kunia"
Ma. " Brook
M. " My Loi "Kahoolohe"
K. " " & kula

No. 2 Is bounded
M. by Kahawaiolaa's kula
Ma. " Pub. Road
M. " Sea Break
K. " Konohiki's kula

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

These lands were given to Clt. by the Konohiki in 1846 but they had been held by Clts. father for many years before. They have been held in quiet lapse since no one has disputed their claim.

No. 5087 Kahawaiolaa Clt.
Pohina sworn says – I know Clt's land in Aliomanu –
No. 1 Is House Lot in "Kaluhau"
No. 2 " 5 lois in "Kapaele"
No. 3 " kula in "Kapoho"

No. 1 Is bounded
M. by Konohiki's kula
Ma. " Loko – "Kaluhau"
M. " Sea Beach
K. " Konohiki's kula

No. 2 Is bounded
M. by Konohiki's kula
Ma. " My Lois
M. " Kaui's loi
K. " Konohiki's kula

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

These lands were given Clt. by his parents in the days of Kaahumanu & no one has disputed the claim.

Kauhaialaa sworn says – I know Clt's lands & I have heard the testimony of Pohina – it is all true.

DEC 2 3 1992

ATTACHMENT

"FINAL"

ENVIRONMENTAL ASSESSMENT
PROPOSED RESIDENCE
ALIOMANU ESTATES, KAUAI

CDUA # KA-2589

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 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.

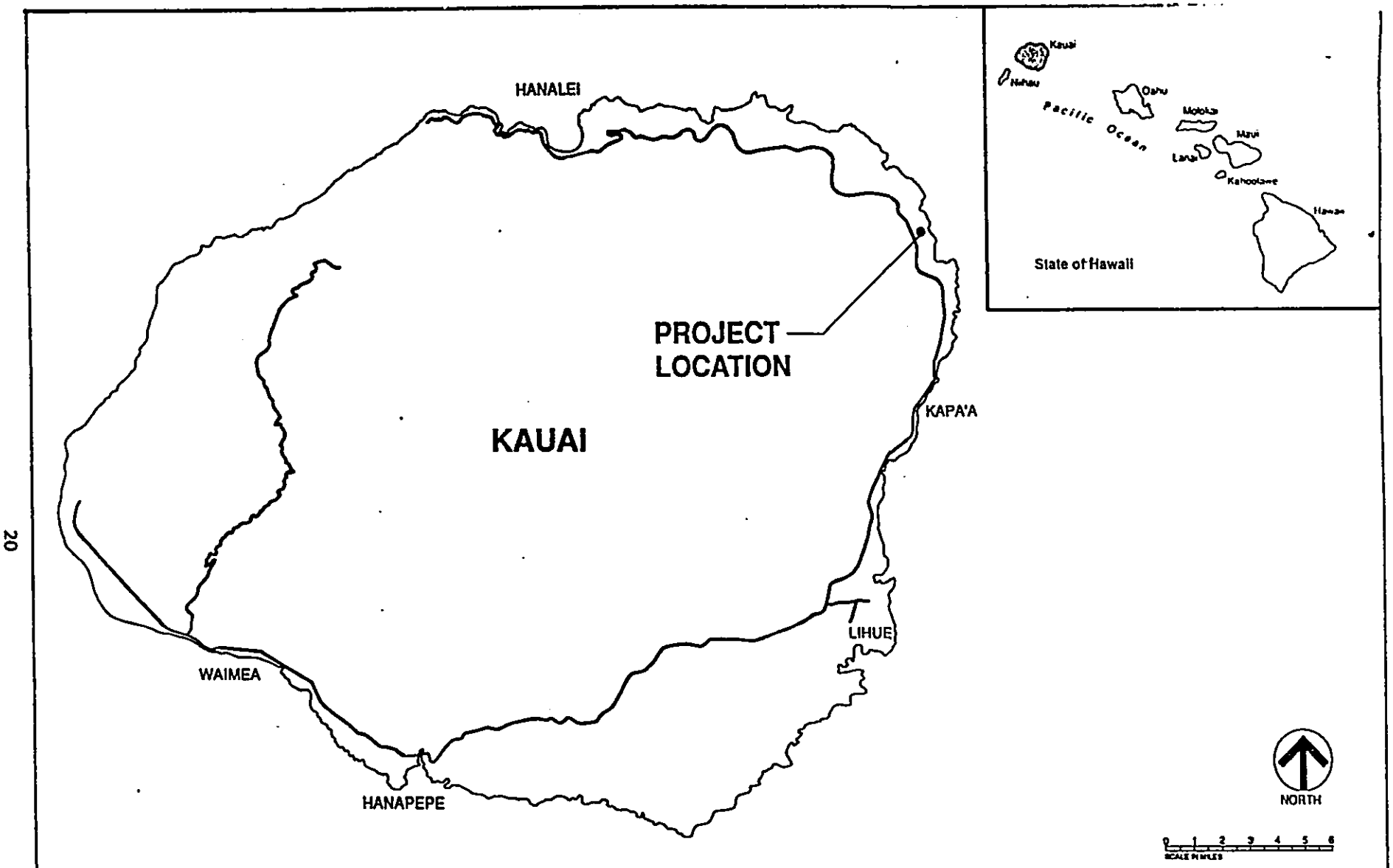


FIGURE 1
LOCATION MAP
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

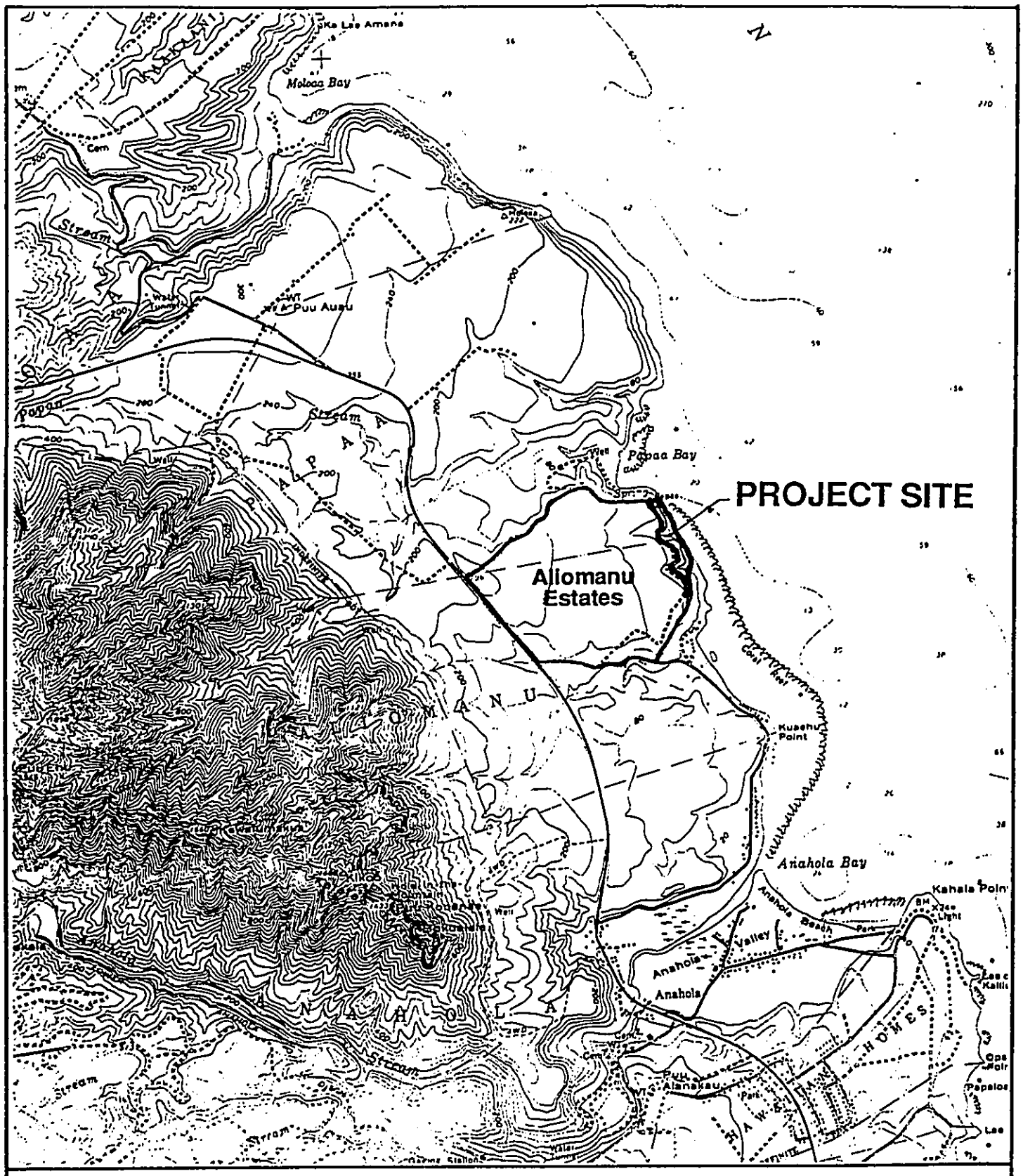


FIGURE 2
VICINITY MAP
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

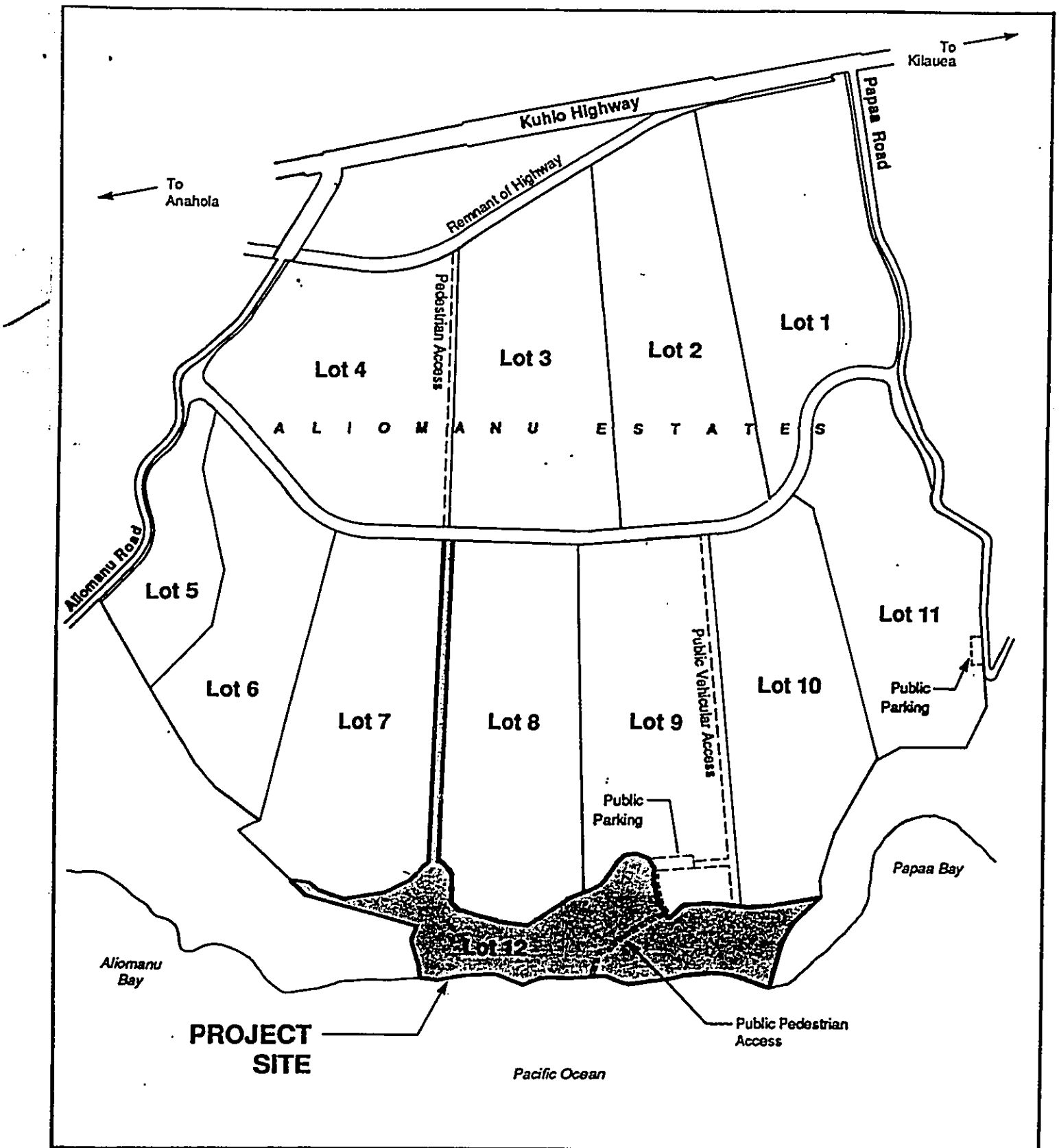


FIGURE 3
PROJECT AREA
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

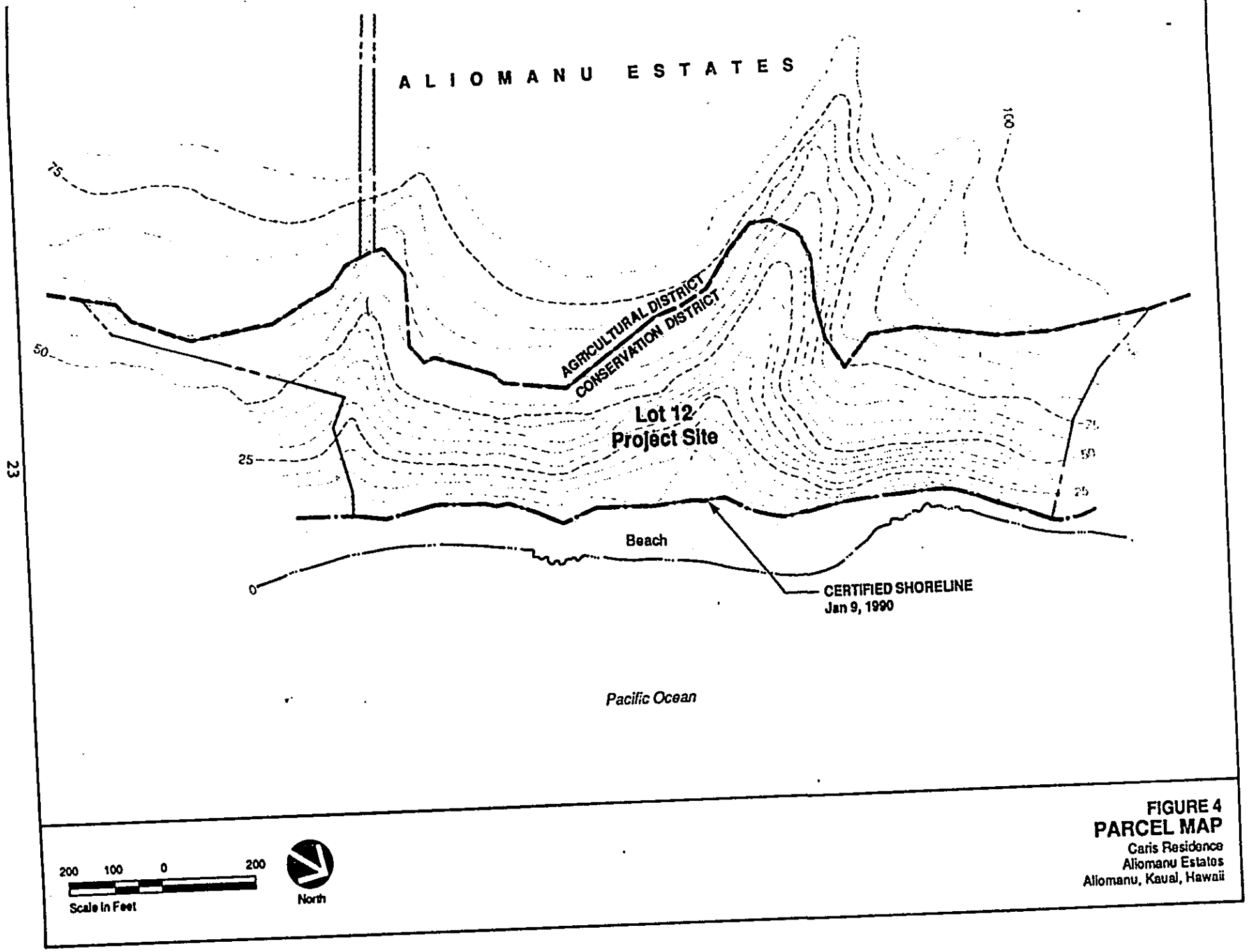
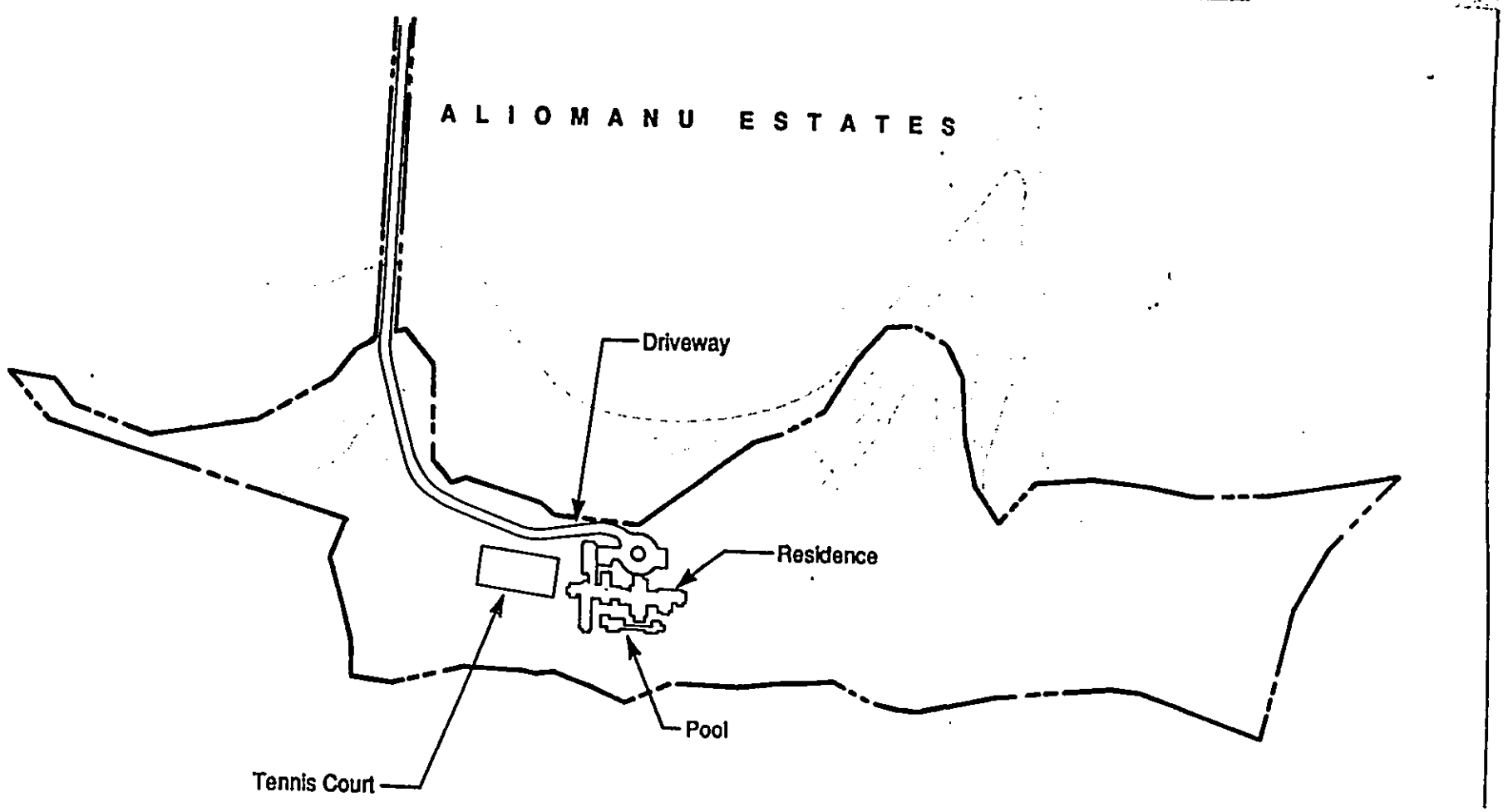


FIGURE 4
PARCEL MAP
Caris Residence
Aliomanu Estates
Aliomanu, Kaua'i, Hawai'i



200 100 0 200
Scale in Feet

North

FIGURE 5
SITE PLAN
Carls Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

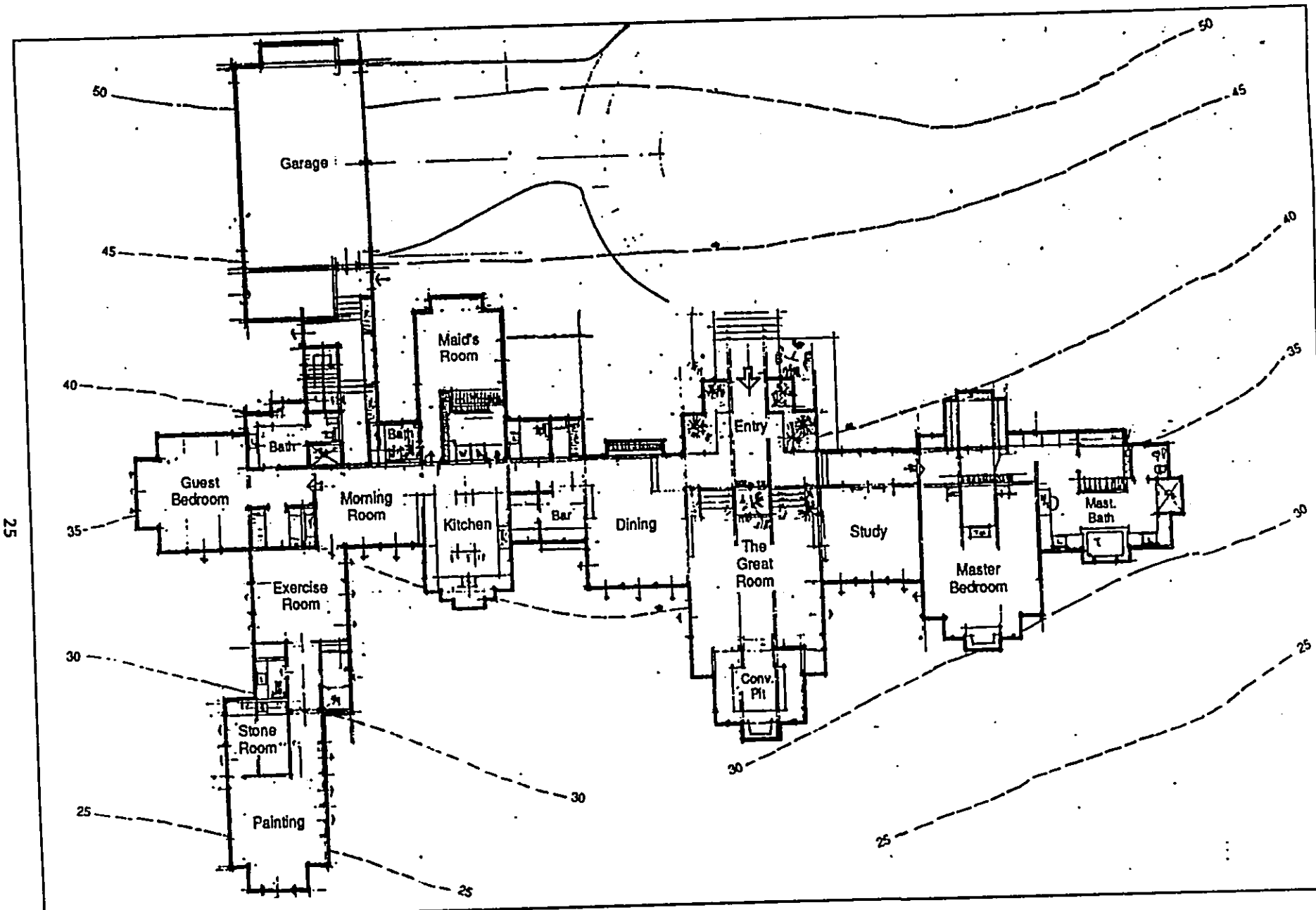
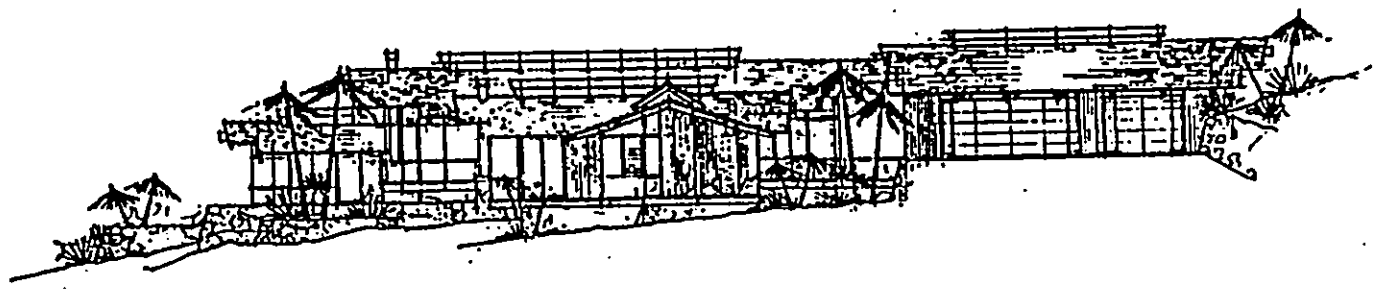
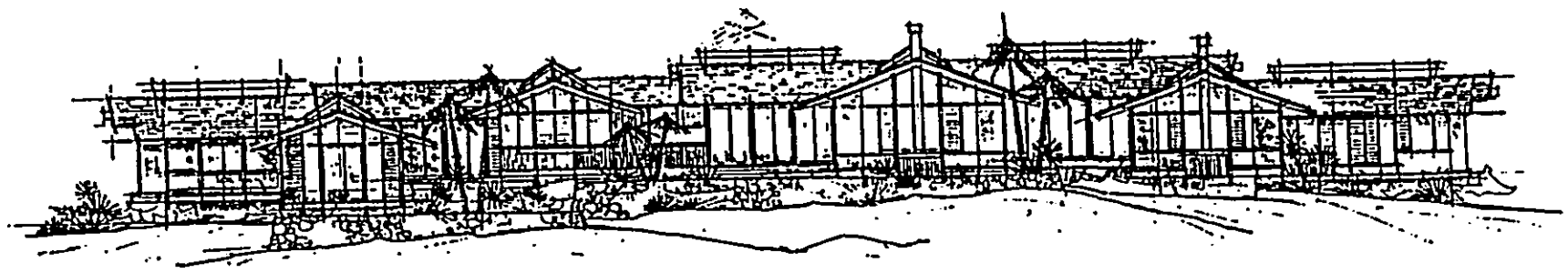


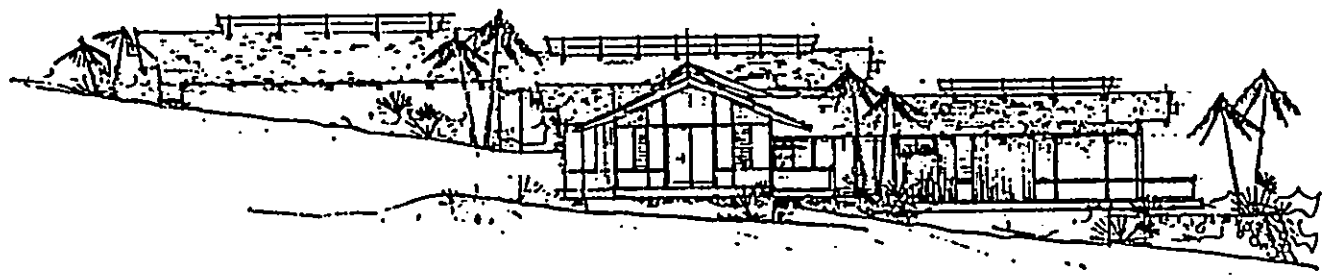
FIGURE 6
FLOOR PLAN
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii



NORTH ELEVATION



EAST ELEVATION



SOUTH ELEVATION

FIGURE 7
BUILDING ELEVATION
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

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 uhio 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 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 Papaa 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.

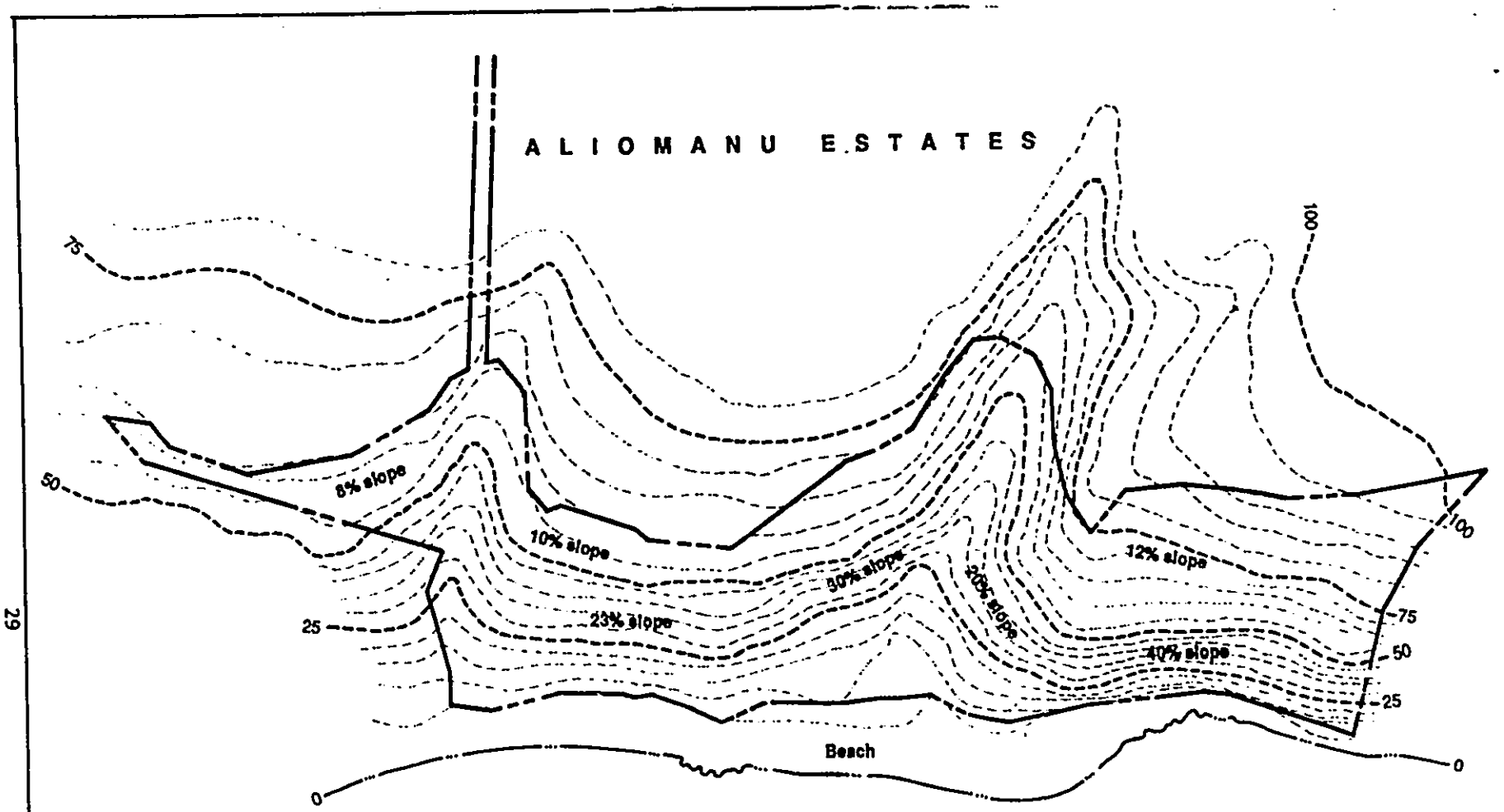
At the coastline of Aliomanu Estates, where the project site is located, the slope of the terrain averages approximately 15 to 30 percent, but a portion of the property where the proposed residence is to be located is relatively level and developable. Elevations on the overall property range from 0 feet 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 calcarious 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.



200 100 0 200

Scale in Feet

North

FIGURE 8
TOPOGRAPHY AND SLOPE
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

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 VIIIe, nonirrigated, which is the poorest rating in determining the suitability of soils for most kinds of crops.

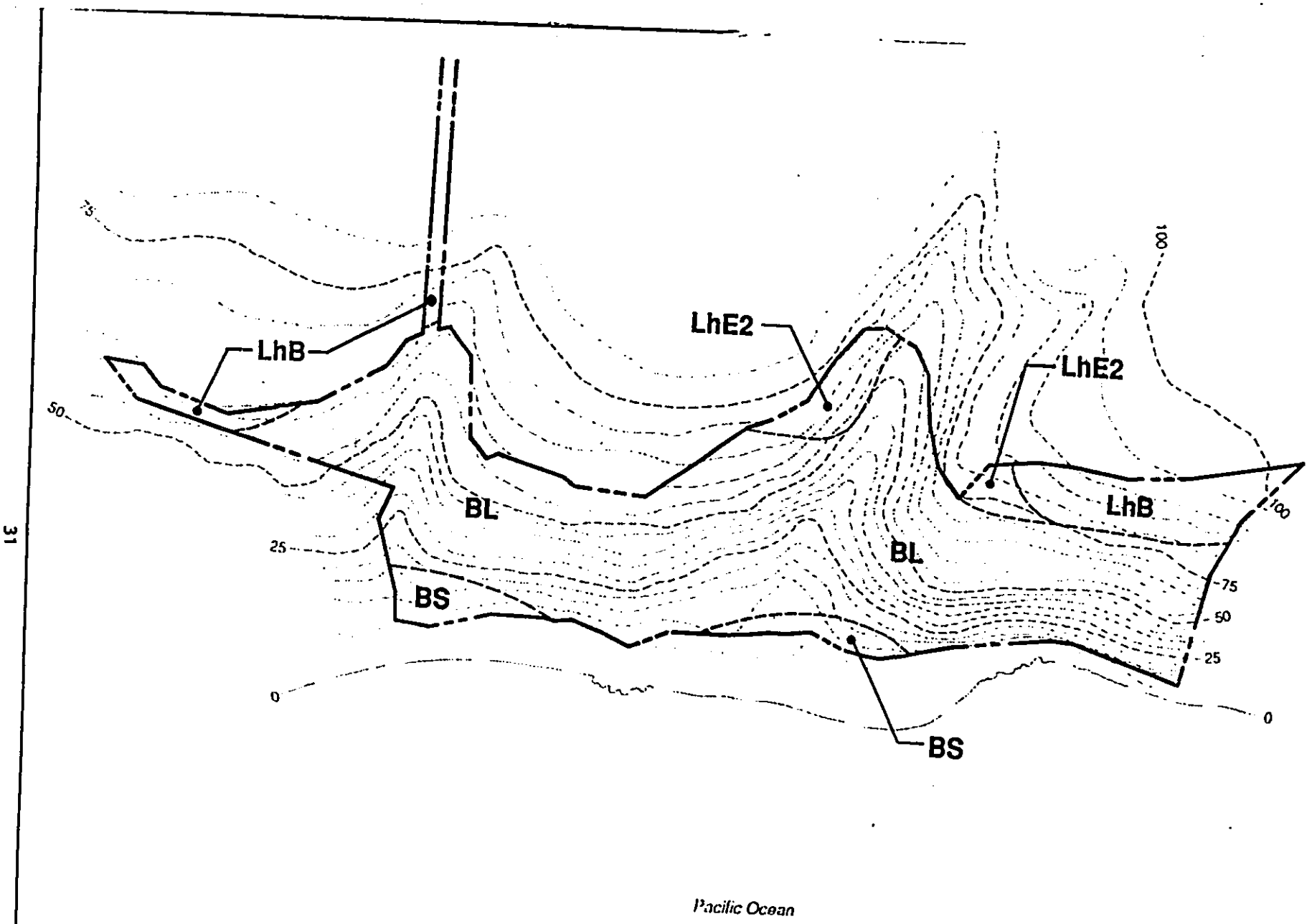


FIGURE 9
SOIL CLASSIFICATION
Carls Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

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-'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.

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

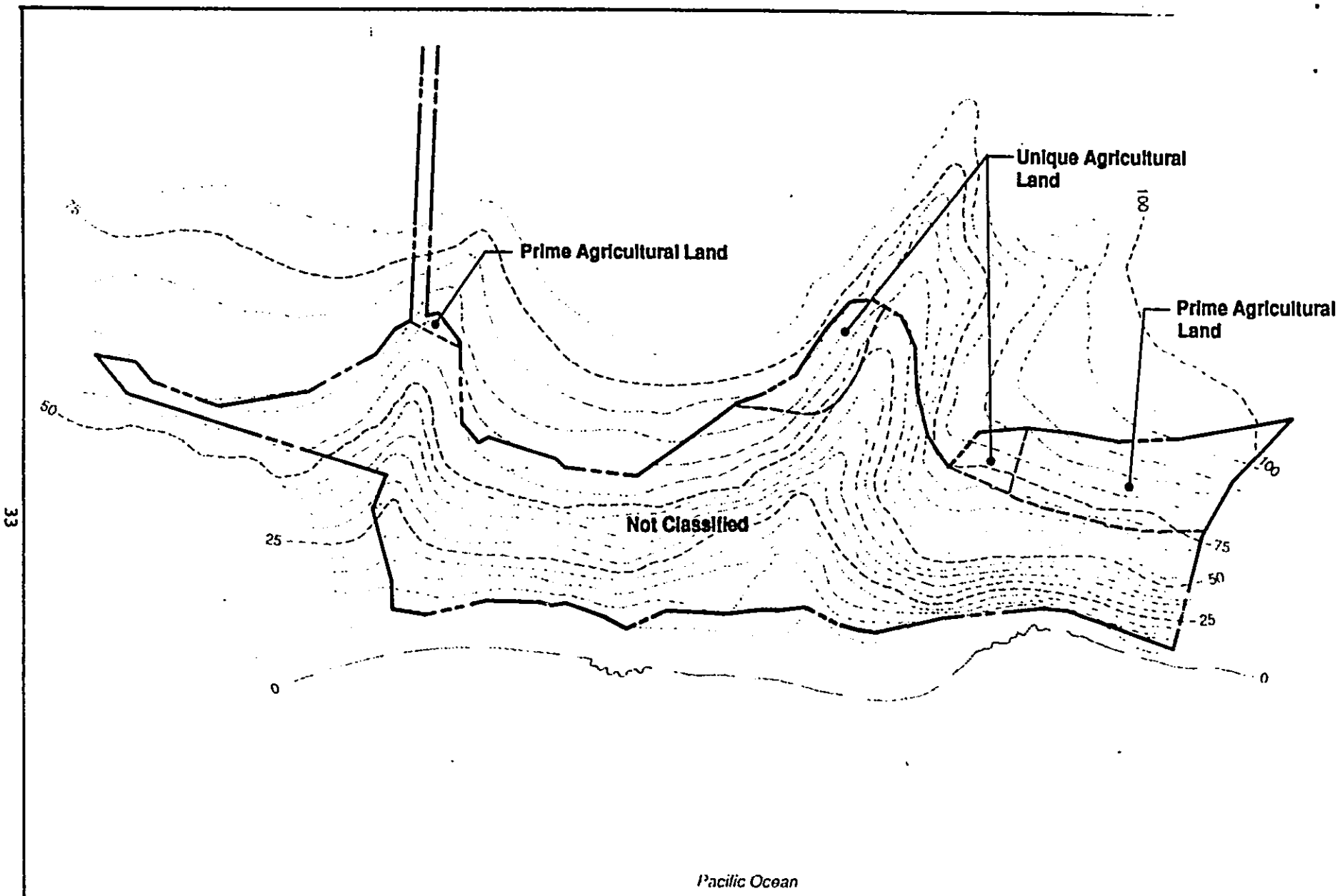


FIGURE 10
LAND TYPE/ALISH
Carls Residence
Alomanu Estates
Alomanu, Kauai, Hawaii

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, 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.

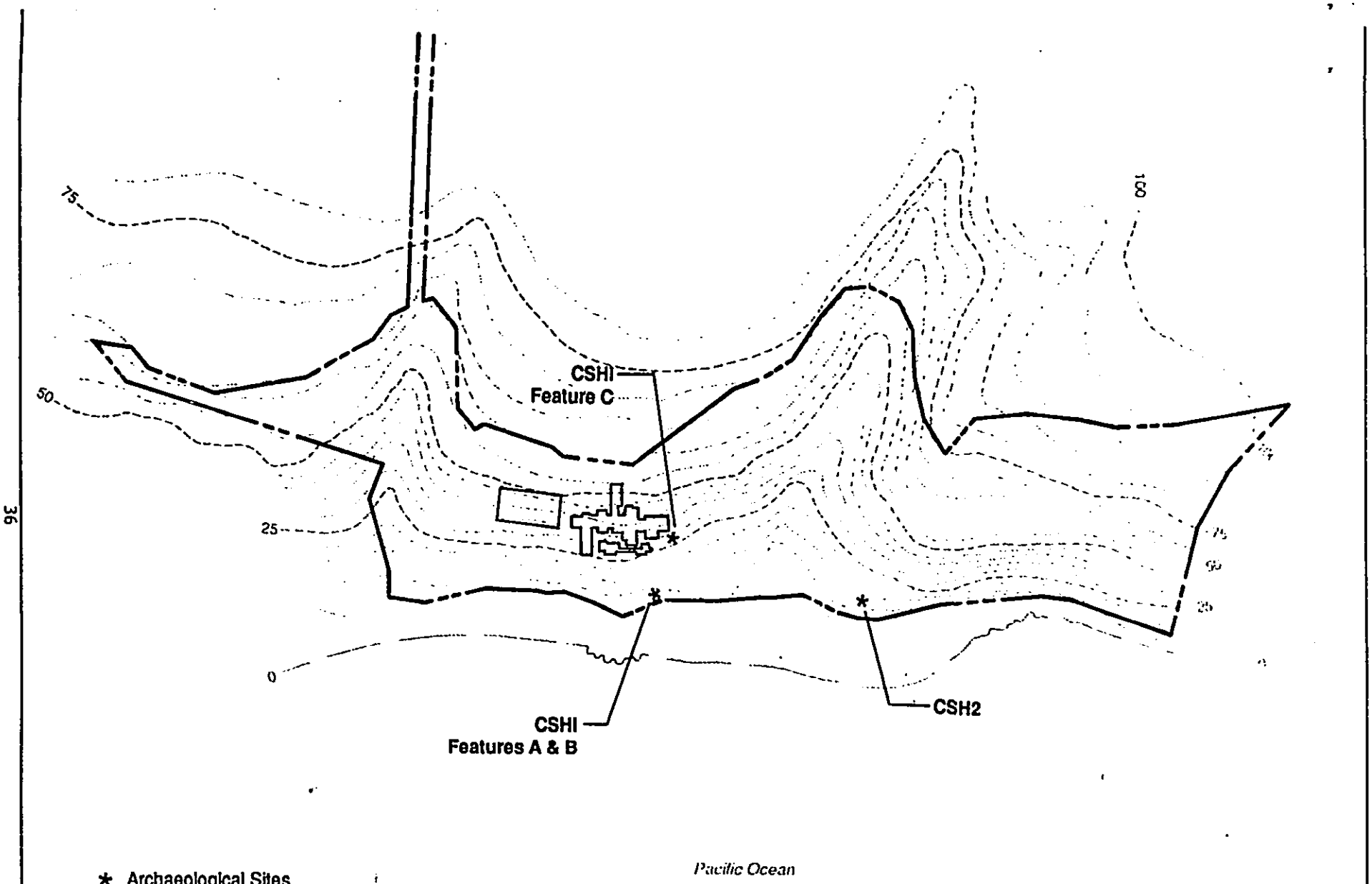


FIGURE 11
ARCHAEOLOGICAL SITES
Caris Residence
Aliomanu Estates
Aliomanu, Kauai, Hawaii

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 Āliomanu 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 pubic 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.