Kikiaola Beach Sand Nourishment

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

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

'98 JUL -9 P2:44

Ref.:PB:SL

QUALITY CONTROL

File: No. KA-2900

MEMORANDUM

To: Gary Gill, Director
Office of Environmental Quality Control

From: Dean Y. Uchida, Administrator
Land Division, Department of Land and Natural Resources

Subject: Final Environmental Assessment and Finding of No Significant Impact to the Environment (FONSI) for Sand Nourishment at Kikiaola Beach, Kauai (TMK:1-2-13:35, 34, 31)

The Department of Land and Natural Resources (DLNR) received a final Environmental Assessment (EA) for sand nourishment west of the Kikiaola Small Boat Harbor on the southwest side of the island of Kauai. The EA was submitted by Oceanit Coastal Corporation on behalf on Mr. Ronald Beckenfeld who is a coastal property owner.

The DLNR has reviewed the final environmental assessment, including comments received during the 30-day public review period and the applicant's response to comments, and hereby issues a finding of no significant impact to the environment (FONSI). Please publish notice of availability of the final EA in the OEQC Environmental Notice as soon as possible.

We have enclosed a completed OEQC Bulletin Publication Form (on disk) and four copies of the final EA. Please contact Sam Lemmo of our Land Divisions's Planning and Technical Services Branch, at 587-0381 should you have any questions.

Attachments

cc: Chairman's Office
Kauai Board Member
Warren Bucher

76

1998-07-23-KA-FEA-Kikiaola Beach Sand Nourishment

JUL 23 1998

FILE COPY

Oceanit Coastal Corporation
coastal engineering services

A subsidiary of Oceanit Laboratories, Inc.

FINAL
ENVIRONMENTAL ASSESSMENT FOR BEACH NOURISHMENT AT KIKIAOLA BEACH IN THE VICINITY OF 4470 MAMO ROAD KEKAHA, KAUAI, TMK 1-2-13:35

submitted to:

DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE OF HAWAII

JULY 1998

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I. GENERAL INFORMATION

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B. RECORDED FEE OWNER: Same as Applicant

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Telephone: (808) 531-3017
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D. TAX MAP KEY: 1-2-13:35

E. APPROVING AGENCY: Department of Land and Natural Resources

F. AGENCIES CONSULTED IN MAKING ASSESSMENT

Planning Department, County of Kauai
Department of Land and Natural Resources, Land Division
Department of Land and Natural Resources, Division of
Boating and Ocean Recreation

G. LAND USE General Plan: Open Zoning: Open SLUD: Urban

H. SPECIAL DESIGNATION: Special Management Area

I. ANTICIPATED DETERMINATION: FONSI

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Boating and Ocean Recreation

G. LAND USE General Plan: Open Zoning: Open SLUD: Urban

H. SPECIAL DESIGNATION: Special Management Area

I. ANTICIPATED DETERMINATION: FONSI

II. DESCRIPTION OF PROPOSED ACTION

A. GENERAL DESCRIPTION

Coastal erosion from high waves caused severe beach loss at several privately owned lots at Kekaha Beach on Kauai in the summer of 1994 and again during the winter of 1997-1998 (TMK 1-2-13:35,34,31). The applicant's lot (Parcel 35) had been protected by a rock revetment constructed in late 1994 under emergency permit from the County of Kauai. The environmental assessment (EA) written in February 1995 for that permit application is included in Appendix D.

The 1997-1998 erosion resulted in much discussion among the applicant, the Kauai County Planning Department, the Department of Land and Natural Resources (DLNR) Land Division, and the applicant's consultant, Oceanit Coastal Corporation. The consensus of opinion was that sand nourishment would be an appropriate and viable erosion control alternative. The DLNR Division of Boating and Ocean Recreation (DOBOR) offered a supply of sand trapped in nearby Kikiaola Boat Harbor as a source for nourishment. Correspondence with DOBOR regarding permission to remove sand from inside and east of the harbor is included in Appendix A.

B. TECHNICAL CHARACTERISTICS

Erosion of Kikiaola Beach has been noted since 1959. Past erosion conditions are discussed in Section B, page 6 of the appended 1995 EA.

A site vicinity map is given in Figure 1. Figure 2 is an aerial photograph. Oceanit made a field trip to the site on February 25, 1998. Erosion damage was investigated, and beach profiles were surveyed at four locations on Parcel 35 and estimated for Parcel 34, where access was not available. The profiles are shown in Figures 3-5. Photographs are shown in Figures 6-7. Profile locations are shown in Figure 8.

The beach at Parcel 34 receded over 20 feet during the winter of 1997-98 leaving a vertical embankment between 5 and 8 feet high. The embankment consisted of consolidated sand with a layer of topsoil. The cohesiveness of the sand allowed the vertical structure; however, the sand could easily be broken up by hand and by wave action. The beach at the east end of Parcel 35 had eroded back to the revetment, but the beach at the west end was over 40 feet wide. Waves were impacting the seaward corner of the revetment (Figure 6). The erosion was flanking the east end of the revetment, which was in danger of collapse. It appeared that if the revetment collapsed, Mr. Beckenfeld's property, Parcel 35, would immediately lose shoreline equivalent to the neighbor's, or over 20 feet. The swimming pool would then likely be damaged with the home threatened as erosion proceeded. Parcel 31 had suffered erosion similar to Parcel 34 but with a somewhat lower embankment.

The proposed approach to minimizing further recession of the shoreline is to nourish the beach with sand taken from deposits inside Kikiaola Harbor. Oceanit recommends that sufficient sand be added to initially move the waterline seaward at least 30 feet at Mr. Beckenfeld's property and to fill the neighboring eroded areas until the beach extends to the top of the eroded embankments. The beach will extend from the top of the embankments on a slope of 1 vertical to 5 horizontal, the approximate slope of the existing beach. By building the beach to the embankment top, waves will no longer reflect from the vertical face and cause increased sand transport. The neighboring beach to the east must also be nourished to protect the Beckenfeld property. The designed beach is shown in cross section in Figures 3-5 and in plan view in Figure 8. Sand will be placed above the mean high water (MHW) or high tide line (Figure 8). Waves and current will move the sand seaward to form the design beach. Due to the limited space, nourishment will have to be done incrementally, probably over several weeks or months. A minimum of 3,800 cubic yards of sand is needed; however, at least 6,900 cubic yards will be required to form the design beach. As the beach stabilizes, some sand will move offshore or along shore, and some loss of the subaerial (above water) beach is expected. Therefore, the beach will have to be maintained periodically with additional sand. The longer-term goal for nourishment is to move the shoreline seaward 50 feet, requiring more than 12,000 cubic yards.

TABLE 1. INITIALLY REQUIRED SAND VOLUME

PROPERTY	DESIGN VOLUME, cu yd	MIN. VOLUME, cu yd
Beckenfeld, Parcel 35	2700	1800
Parcel 34	2600	1200
Parcel 31	1600	800
Total	6900	3800

The sand will be trucked to the site from the harbor (approximately 1,800 feet) and dumped and/or spread in the designated areas. Access to the beach will be through private and state property. The proposed schedule for initial placement is during July and August 1998; however, earlier placement is desired to minimize further erosion.

The sand source is beach sand that has been deposited both inside Kikiaola Harbor and on the updrift beach. The inside material must be removed to make this portion of the harbor serviceable for boating. The area of accumulated sand is shown in Figure 9. Photographs are shown in Figure 10. The sand trapped on the updrift (Waimea) side of the harbor is shown in Figure 2. Another potential source is sand that will eventually be removed from the harbor by dredging.

Most of the sand on Kikiaola Beach is eroded volcanic material that is carried to the shoreline by Waimea River. From the river mouth, sand is normally transported to the west along the beach. The sand is brown colored with approximately 0.5 mm median grain size (see Figure 11). This sand contains less than 15 percent calcium carbonate or calcareous material.

After initial nourishment, sand will have to be added to the beach periodically. If storm erosion occurs again, sand should be added immediately. Under continuing erosion, sand may be added at 1-5 year intervals. A monitoring program would determine the re-nourishment frequency. Monitoring consists of periodically measuring beach profiles and waterline location. Oceanit recommends measuring monthly for three months after initial sand placement and at least quarterly for the first year. Subsequent measurements could be semiannual or annual. Permission for continuing nourishment should be included in permits issued by the County or DLNR.

Long-term options for erosion control on Kikiaola Beach include sand bypassing, currently being considered by the US Army Corps of Engineers; offshore breakwaters, which reduce wave energy; and groins, which trap sand. The small reef fronting the west side of the Beckenfeld property now acts as a breakwater and causes the beach at that point to extend seaward farther than the neighboring beach. Neither bypassing, offshore breakwaters, nor groins are economically or legally feasible for the private landowners. Another erosion control option that possibly could be used after the beach is stable is a vegetated sand berm at the top of the beach.

C. SOCIO-ECONOMIC CHARACTERISTICS

The most immediate economic impact is the loss of property on the ocean side of the eroding lots. The potential economic impacts are loss of residences and a swimming pool. The existing erosion conditions also effectively prevent the owners from selling their property, and sales have reportedly been lost. Continued erosion of Kikiaola beach will damage harbor structures and may eventually threaten a cemetery located on the Kekaha side of the harbor.

The erosion makes lateral beach access difficult between Parcels 35 and 34 because waves now hit the embankment.

The state will save money because material that would normally be dredged from the harbor will now be moved at no cost to the state. A local contractor will be paid by the landowners to transport the sand. The sand will nourish a state beach, increasing its recreational value.

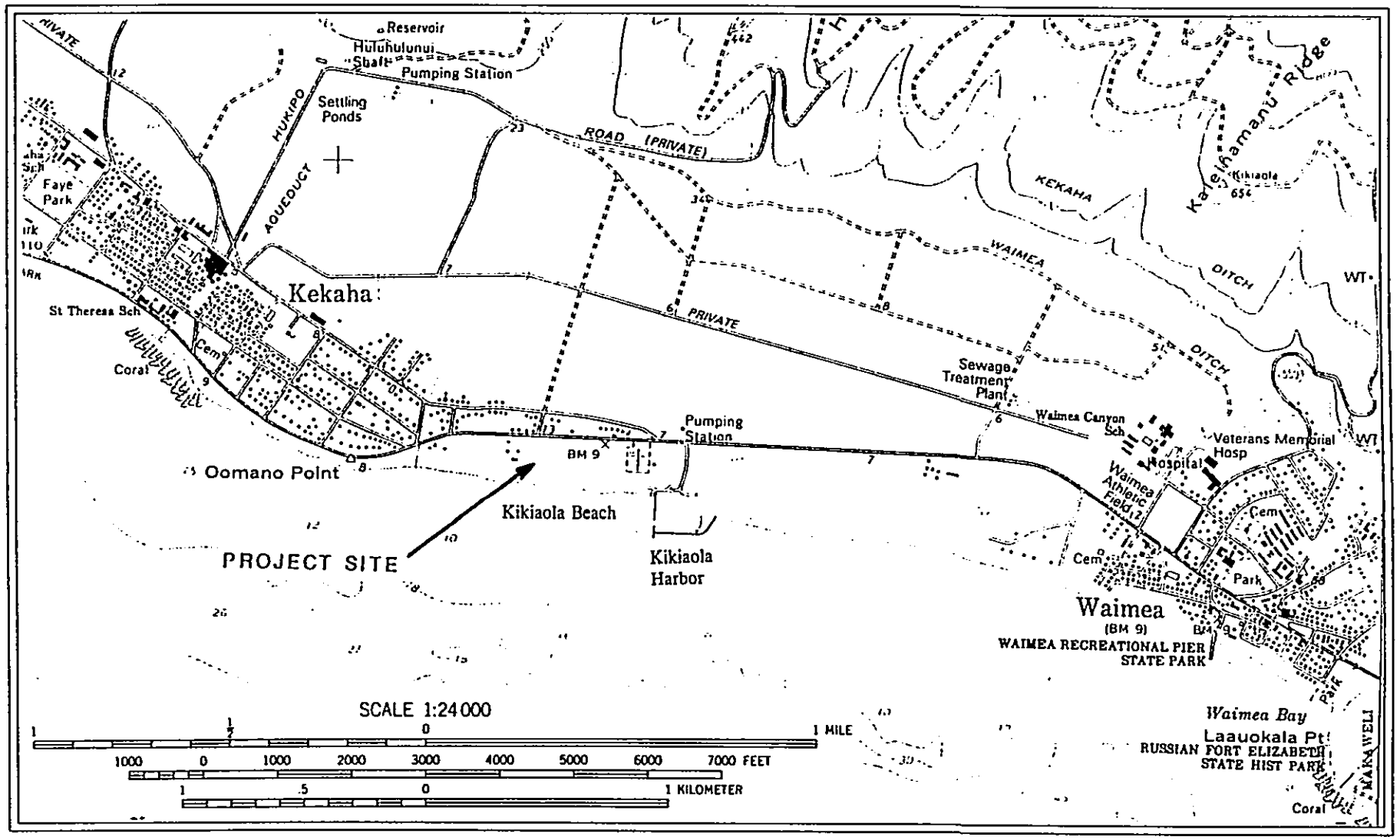

FIGURE 1 VICINITY MAP

4470 MAMO ROAD, KEKAHA, KAUAI

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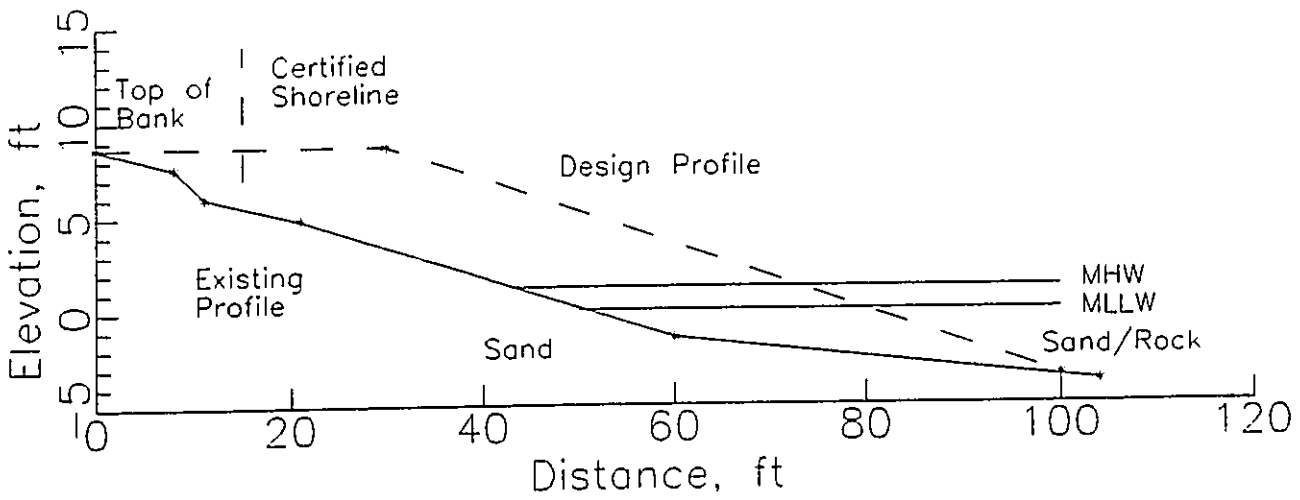
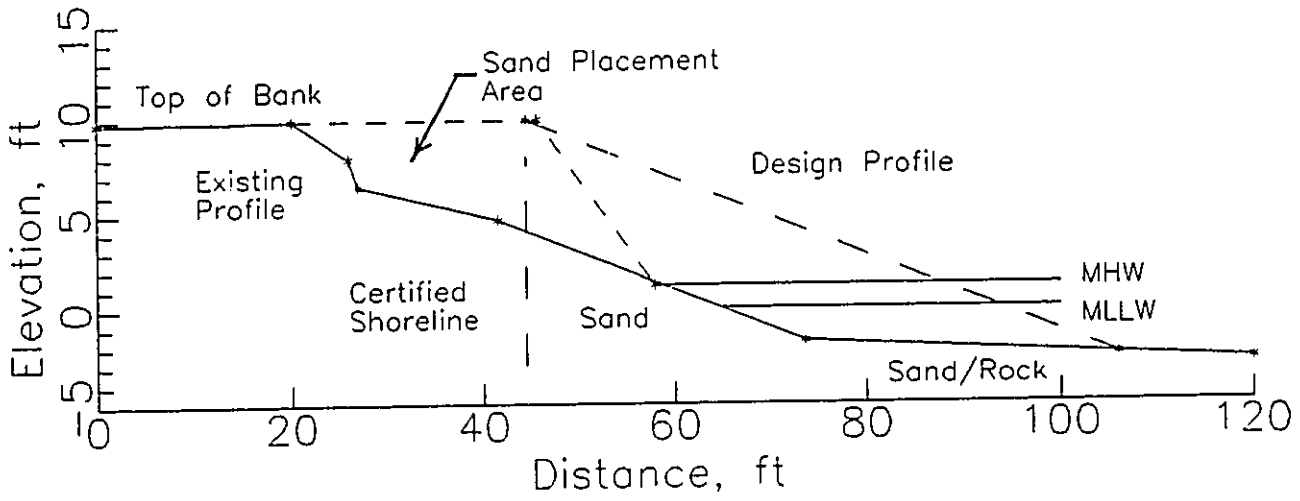
2. AERIAL PHOTOGRAPH

BEACH AND HARBOR

Oceanit Coastal Corporation

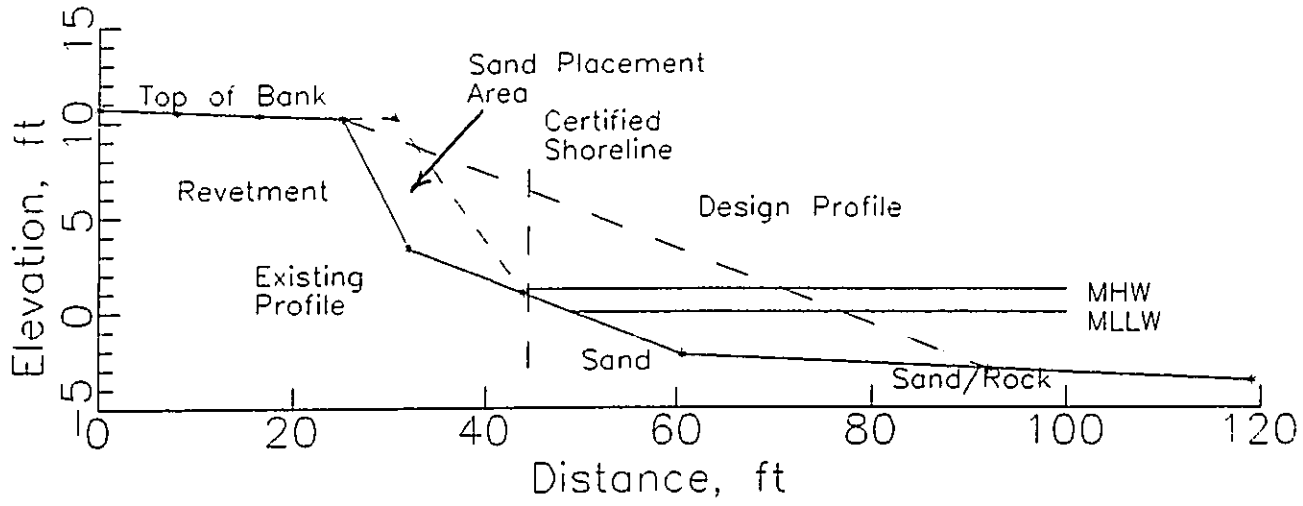


PROFILE 1

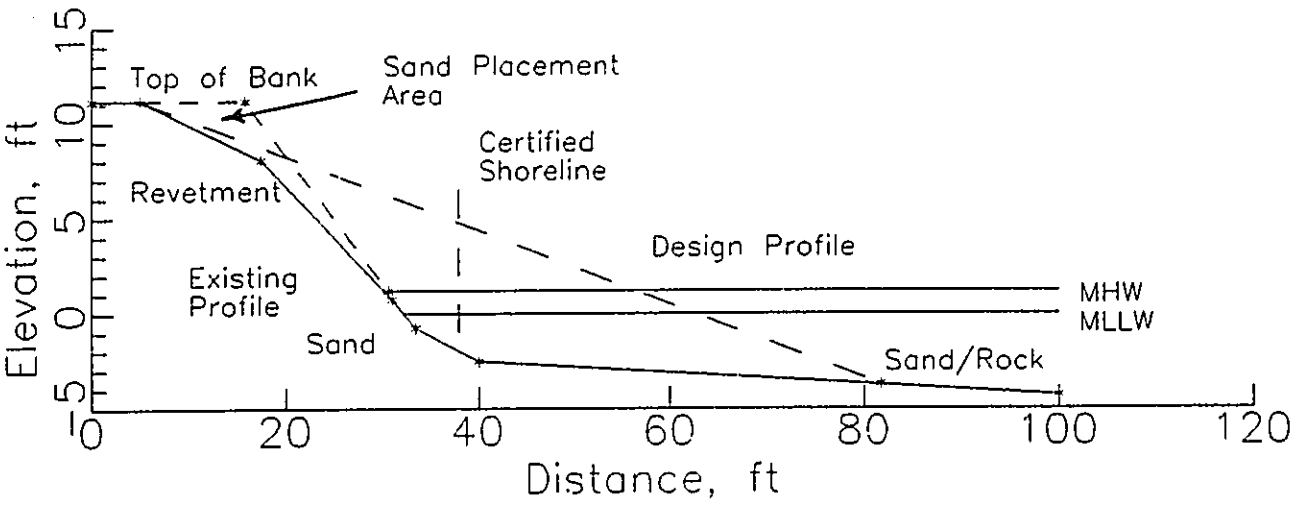


PROFILE 2

Figure 3. Beach Profiles 1 and 2

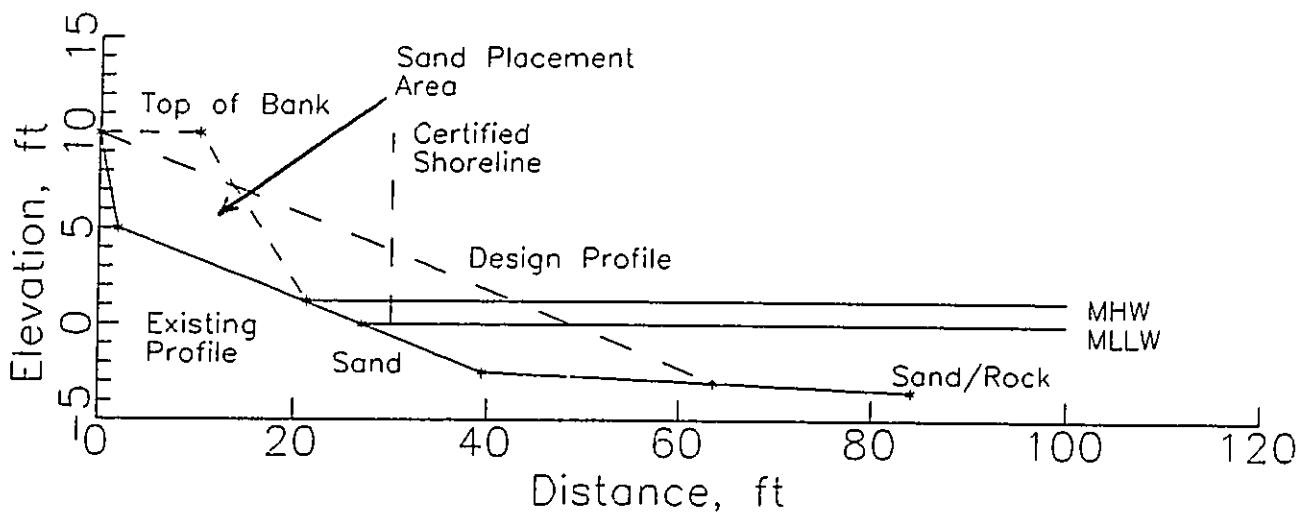


PROFILE 3



PROFILE 4

Figure 4. Beach Profiles 3 and 4



PROFILE 5

Figure 5. Beach Profile 5

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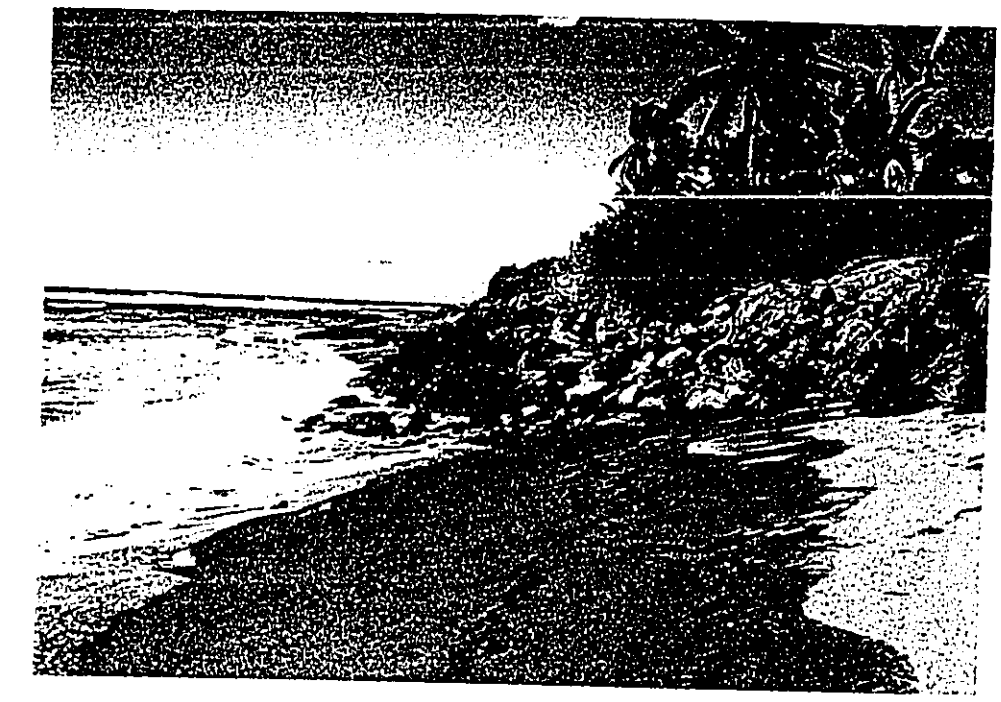


Figure 6. Top - Eroded Corner Between Parcel 35 and 34, 2/25/98
Bottom - Parcel 35 Facing East

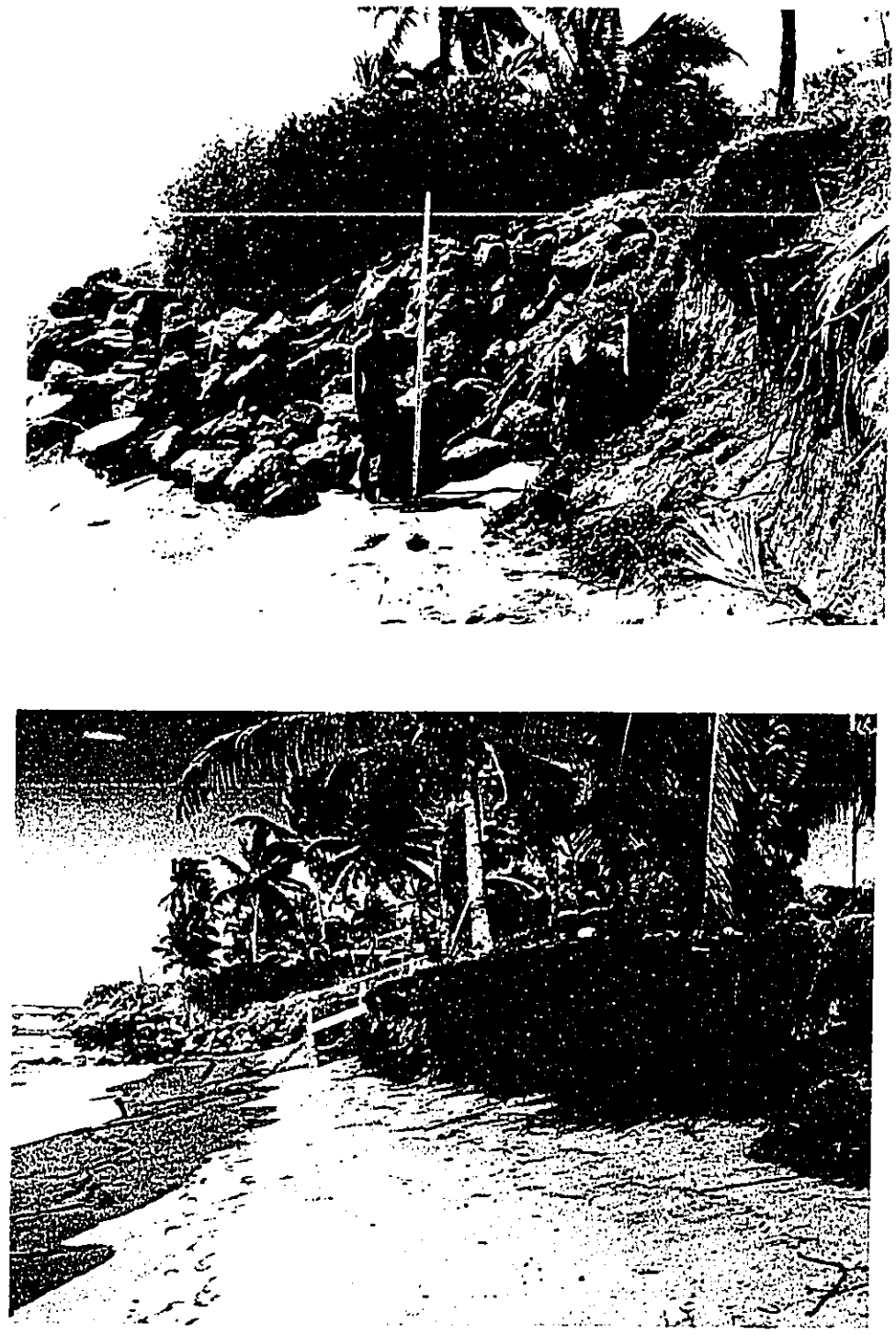
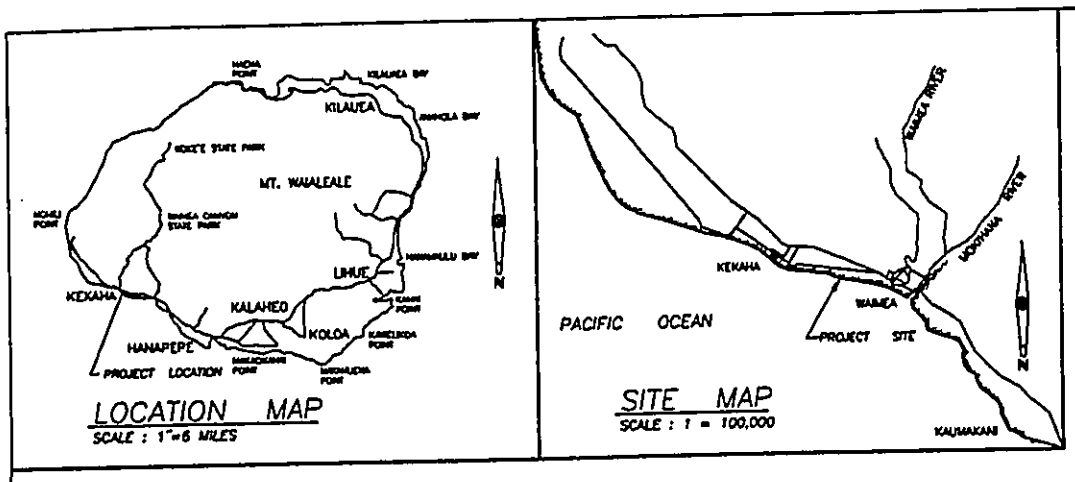
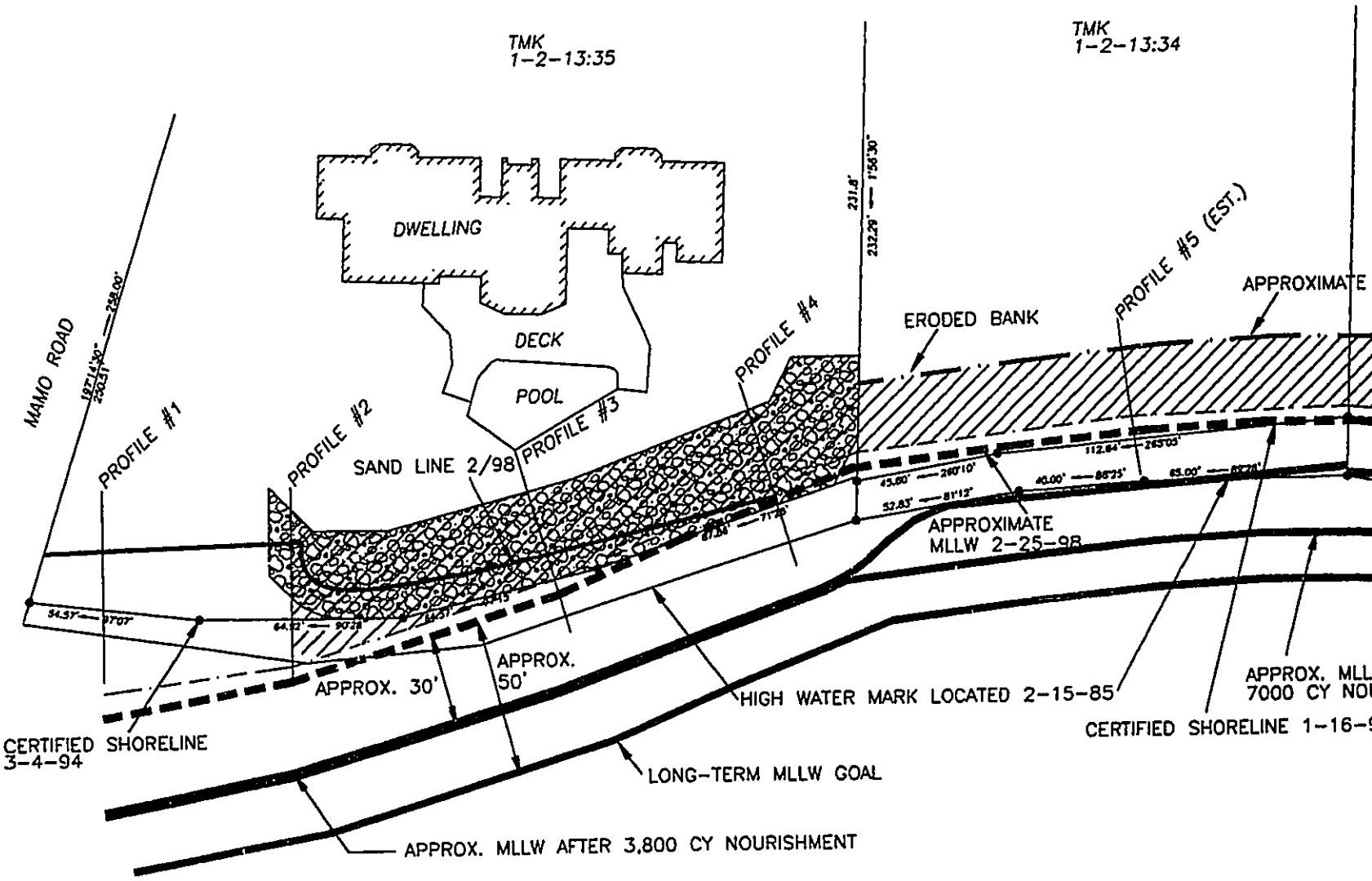


Figure 7. Top - Eroded Embankment West End Parcel 34, 2/25/98
Bottom - Eroded Embankment and Shoreline, Parcel 31-34


KILAUEA
MT. WAIALEALE
LIHUE
KEKAHA
KALAHEO
KOLOA
HANAPEPE
PROJECT LOCATION
LOCATION MAP
SCALE : 1"=6 MILES
KEKAHA
WAIMEA
PROJECT SITE
PACIFIC OCEAN
KAUMAKANI
SITE MAP
SCALE : 1 = 100,000
HIGH WATER MARK LOCATED 2-15-
APPROX. MLLW AFTER 3,800 CY NO
APPROX. MLLW AFTER XXXX CY NOU
APPROX. MLLW AFTER XXXX CY NOU
APPROX. MHW 2-25-98
MEAN LOWER OW WATER (MLLW) 2-
CERTIFIED SHORELINES 1-16-92 A
APPROXIMATE TOP OF BANK
SAND LINE 2/98
INITIAL SAND PLACEMENT AREA


TMK
1-2-13:35
TMK
1-2-13:34
DWELLING
DECK
POOL
MAMO ROAD
PROFILE #1
PROFILE #2
PROFILE #3
PROFILE #4
PROFILE #5 (EST.)
SAND LINE 2/98
ERODED BANK
APPROXIMATE
APPROXIMATE
MLLW 2-25-98
APPROX. 30'
APPROX.
50'
HIGH WATER MARK LOCATED 2-15-85
CERTIFIED SHORELINE
3-4-94
LONG-TERM MLLW GOAL
APPROX. MLLW AFTER 3,800 CY NOURISHMENT
CERTIFIED SHORELINE 1-16-
APPROX. MLL
7000 CY NO

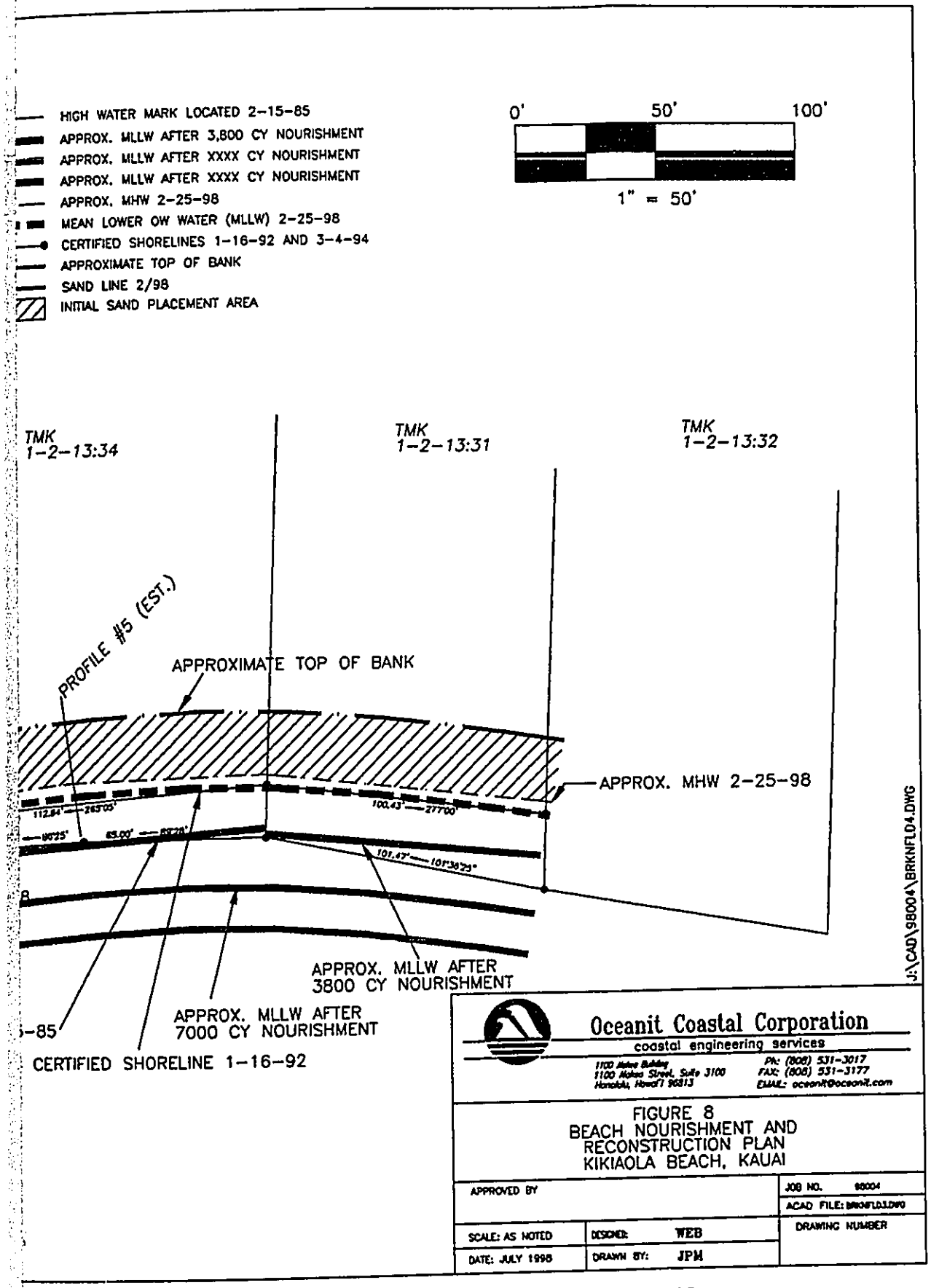


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FIGURE 8
BEACH NOURISHMENT AND
RECONSTRUCTION PLAN
KIKIAOLA BEACH, KAUAI

APPROVED BY	JOB NO. 98004
	ACAD FILE: BRKNFLD3.DWG
SCALE: AS NOTED / DESIGNER: WEB	DRAWING NUMBER
DATE: JULY 1998 / DRAWN BY: JPM	

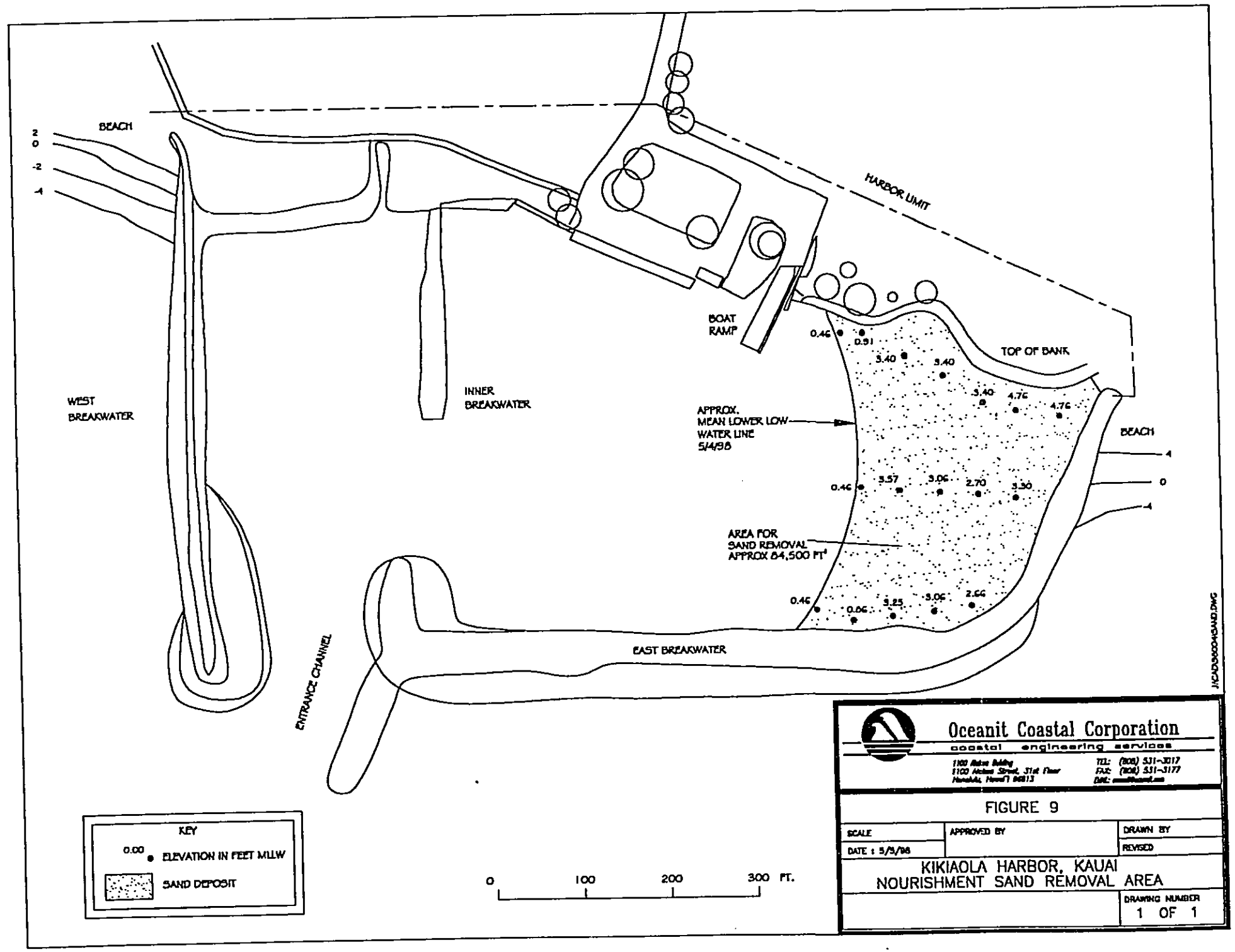

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FIGURE 9

SCALE	APPROVED BY	DRAWN BY
DATE : 5/5/98		REVISED

KIKIAOLA HARBOR, KAUAI
NOURISHMENT SAND REMOVAL AREA

DRAWING NUMBER 1 OF 1

Figure 10. Photographs of Sand Removal Area, Kikiaola Harbor

Figure 10 (Cont.) Photographs of Updrift Sand Removal Area

D. ENVIRONMENTAL CHARACTERISTICS

A description of the affected environment is given in Chapter III, page 23 of the appended EA. Sand used for nourishment is sand that came from Kikiaola Beach and would have been transported by waves and currents to the eroded properties if it had not been trapped in the harbor.

1. Impacts and Alternatives

Potential impacts include the following:

Reduced Shoreline Recession - Sufficient nourishment will minimize further shoreline recession and reduce the amount of topsoil and vegetation that is washed into the ocean. Water quality should improve in the nearshore area.

Possible Increased Turbidity - During sand placement nearshore turbidity may increase. The increase will be temporary, and the net effect should be much less than that caused by the ongoing erosion. When the beach is stabilized, water quality in the nearshore area should improve.

Covering of Nearshore Bottom - As the sand moves it will re-cover nearshore bottom that was exposed by erosion. Some bottom dwelling plants or animals that may have occupied the exposed area may be buried by the added sand. None of these species are known to be endangered (see page 25 of the 1995 EA).

Traffic - Trucks hauling sand from the harbor to the project site will increase traffic temporarily. Traffic is not normally heavy in this area of Kauai.

Noise - Trucks and earth moving equipment will generate some noise. The vicinity of the work site has very low population density.

The following erosion control alternatives were considered.

No Action - No action would result in substantial loss of property including land area and possibly residences.

Seawall/Revetment - Parcels 35, 34, and 31 all have had rock walls or revetments. The walls on Parcels 34 and 31 were removed in 1997 at the direction of the County of Kauai. Parcel 35 has a rock revetment built under emergency permit in 1994. The County of Kauai subsequently required that this revetment be removed; however, the county has agreed to delay removal for a period of 2 years to determine if nourishment will protect the property.

Groins - If the nourished sand moves along shore at a rate that cannot be compensated for with additional sand, groins should be considered as a method to hold some of the transported sand. Groins would be placed along the shoreline between Kikiaola Harbor and Oomano Point to the west of the affected properties. Groins will change the shape of the beach and should be used in conjunction with nourishment but are an attractive option for future evaluation.

Offshore Breakwaters - Offshore breakwaters can reduce wave energy and change wave direction thereby causing sand deposition between the breakwater and the shoreline. One of the reasons that the existing beach has been wider at Parcel 35 is the small reef just offshore, which acts as a breakwater. Breakwaters are expensive to construct and require permits from the Corps of Engineers. Generally, breakwaters are constructed by governments rather than private individuals. Breakwaters should be considered if loss of nourished sand becomes too great.

Sand Bypassing - The Corps of Engineers is considering sand bypassing for Kikiaola Harbor. Sand bypassing means that sand would be pumped or trucked from the updrift (east) side of the harbor and placed on the downdrift beach where waves and currents could move it naturally. If sufficient sand is moved, the erosion could be stabilized. Sand bypassing should be done regardless of the nourishment proposed herein and might relieve the landowners from the burden of maintaining the beach.

Recommended Alternative - Sand nourishment is the recommended alternative for erosion control at the privately owned property. Of the alternatives discussed above, only nourishment is both viable and within the regulatory and economic means of the private landowners. Nourishment would likely have the lowest negative impact on the nearshore environment. Nourishment is also considered by many people more aesthetically acceptable than rock structures.

2. Mitigation Measures

To mitigate the possible effects of increased turbidity in nearshore waters, only material that is primarily sand will be used for nourishment. Work will not be done during high wave or storm conditions to minimize movement of turbid water. Sand will be placed above the high tide line rather than dumped directly into the water so that it may be moved by wave and tide action. Because nourishment is considered low impact at this location, no major mitigation measures are proposed.

III. FINDINGS AND EVALUATION OF SIGNIFICANCE CRITERIA

A. SIGNIFICANCE CRITERIA

According to Department of Health Rules (11-200-20) evaluation of the following significance criteria is used to determine whether significant environmental impact will occur from the proposed action.

1. Involves irrevocable commitment to loss or destruction of any natural or cultural resources.

Moving sand from one location on Kikiaola Beach to another results in no loss or destruction of resources. Losses are occurring however by the unmitigated erosion of the backshore. These would be reduced by nourishment.

2. Curtails the range of beneficial uses of the environment.

Nourishment will actually increase the range of beneficial uses of the beach. Presently, wave action ofter prohibits use of the beach by the public. Nourishment would widen the beach allowing better access.

3. Conflicts with the State's long-term environmental policies or goals and guidelines as in Chapter 344, HRS; and any revisions thereof and amendments thereto, court decisions, or executive orders.

One of the guidelines of Chapter 344 is to "Establish, preserve and maintain ....recreation areas, including the shorelines, for public recreational, educational, and scientific uses;". Nourishment will maintain a beach for recreational use that otherwise will be eroded and muddy causing degraded nearshore water quality and possible damage to fish and edible seaweeds.

4. Substantially affects the economic or social welfare of the community or state.

Continued erosion will likely result in damage to private property including homes, reduction in property values, and coastal conditions that will prevent homeowners on Kikiaola Beach from selling their property. One of the owners who will benefit from nourishment has already lost offers to buy his property because of the erosion. A successful nourishment program will alleviate some of this problem.

5. Substantially affects public health.

Beach nourishment, by reducing erosion, will improve water quality and reduce the threat to public health from polluted nearshore water.

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

Beach nourishment will have no impact on population. Removing sand from Kikiaola harbor will have a positive effect in that the increased water area will allow easier and more efficient use by boats.

7. Involves a substantial degradation of environmental quality.

Beach nourishment should cause a substantial increase in environmental quality by decreasing the erosion of red topsoil into nearshore waters.

8. Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment for larger actions.

Nourishment should not result in any cumulative effect on the environment. The only commitment is that maintenance of the beach should continue, which is a positive thing.

9. Substantially affects a rare, threatened or endangered species or its habitat.

Nourishment will not affect any rare, threatened or endangered species at Kikiaola.

10. Detrimentally affects air or water quality or ambient noise levels.

Successful beach nourishment will prevent backshore erosion and actually result in increased water quality.

11. Affects or is likely to suffer damage by being located in an environmentally sensitive area, such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters.

Nourishment will occur on an erosion-prone beach and reduce the potential for erosion by providing a buffer between the ocean and valuable in-shore property, which might otherwise be damaged.

12. Substantially affects scenic vistas and view planes identified in county or state plans or studies.

Nourishment may actually improve the view of the beach, but will have no negative effect on any scenic vista.

13. Requires substantial energy consumption.

No energy consumption, other than fuel for earth moving equipment, results from rebuilding the beach.

B. DETERMINATION

Based on evaluation of the significance factors presented above, Oceanit anticipates a finding of no significant impact (FONSI) from nourishing Kikiaola Beach with sand.

APPENDIX A
CORRESPONDENCE WITH DEPARTMENT OF LAND AND NATURAL RESOURCES REGARDING PERMISSION TO USE SAND FROM INSIDE AND UPDRIFT OF KIKIAOLA HARBOR

Oceanit Coastal Corporation
coastal engineering services
A subsidiary of Oceanit Laboratories, Inc.

COPY

May 5, 1998

Mr. Howard B. Gehring
Acting Administrator
Department of Land and Natural Resources
Division of Boating and Ocean Recreation
333 Queen Street, Suite 300
Honolulu, HI 96813

Subject: Request for Beach Nourishment Sand from Kikiaola Harbor

Dear Mr. Gehring:

Oceanit Coastal Corporation (OCC) is representing a client who has severe beach erosion at his property on Kikiaola Beach, Kekaha, Kauai (see attached location map). We are aware that Kikiaola Light Draft Harbor, which is located nearby, contains sand deposits that the state will eventually remove. The attached aerial photograph shows the build-up of sand inside and on the updrift side of the harbor. The purpose of this letter is to request permission to take the sand that has partially filled the harbor and place it on the downdrift beach fronting the eroding properties of our client and his neighbors.

The beach at our client's property has eroded between 1 and 2 feet per year since 1959. However, during high wave conditions, the shoreline has receded over 20 feet in less than 3 months. This accelerated erosion occurred in 1994 and again during this past winter. At present a 5-8 foot eroded vertical embankment exists at the shoreline where once there was a sloping beach. We consider the current erosion to be an emergency condition, because a home and swimming pool are threatened. The erosion could reach the structures if we have one more period of high waves.

We prepared a plan for the County of Kauai Planning Department titled, Beach Nourishment and Reconstruction Beckenfeld Property, 4470 Mamo Road, Kekaha, Kauai, TMK 1-2-13:35 (attached). We have been working with the County to find a solution for the erosion. Beach nourishment appears to be the only solution acceptable to the County, i.e.; revetments or other structural methods have been rejected. We have also forwarded a copy of the nourishment plan to Mr. Sam Lemmo at DLNR's Planning and Technical Services Branch for review and are working with him on required state permits.

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Our client is willing to pay for excavating, hauling, and spreading the sand. All sand would be taken from locations above the waterline so the removal would not be considered dredging. Approximately 7,000 cubic yards are needed to rebuild the shoreline sufficiently to protect the threatened property. A minimum of 3,800 cubic yards should be added as soon as possible with the remaining sand placed over a period of 6 months to one year. In the future, sand will have to be added periodically to maintain the beach or respond to storms. The harbor now contains an area of approximately 84,500 square feet of deposited sand (see attached map). This area would yield approximately 3,000 cubic yards of sand for every foot of depth; therefore, there appears to be enough sand for nourishment. If sand updrift of the harbor becomes available, nourishment of the entire downdrift beach may become feasible.

We realize that DLNR and the Corps of Engineers have plans to dredge the harbor and possibly to bypass sand around the harbor. Dredged and/or bypassed sand will be necessary in the future. However, quick availability of sand will help reverse the emergency erosion now threatening private property. We believe this is a win-win situation for our client and his neighbors, the State of Hawaii, and the County of Kauai. The State will have sand, which would eventually be dredged, removed at no cost. The County will have an acceptable solution for controlling erosion. And the landowners will be able to protect their property at minimal cost.

We respectfully request permission to take beach nourishment sand as discussed above. We would be happy to discuss our proposed plan with you or your staff at your convenience.

Sincerely,

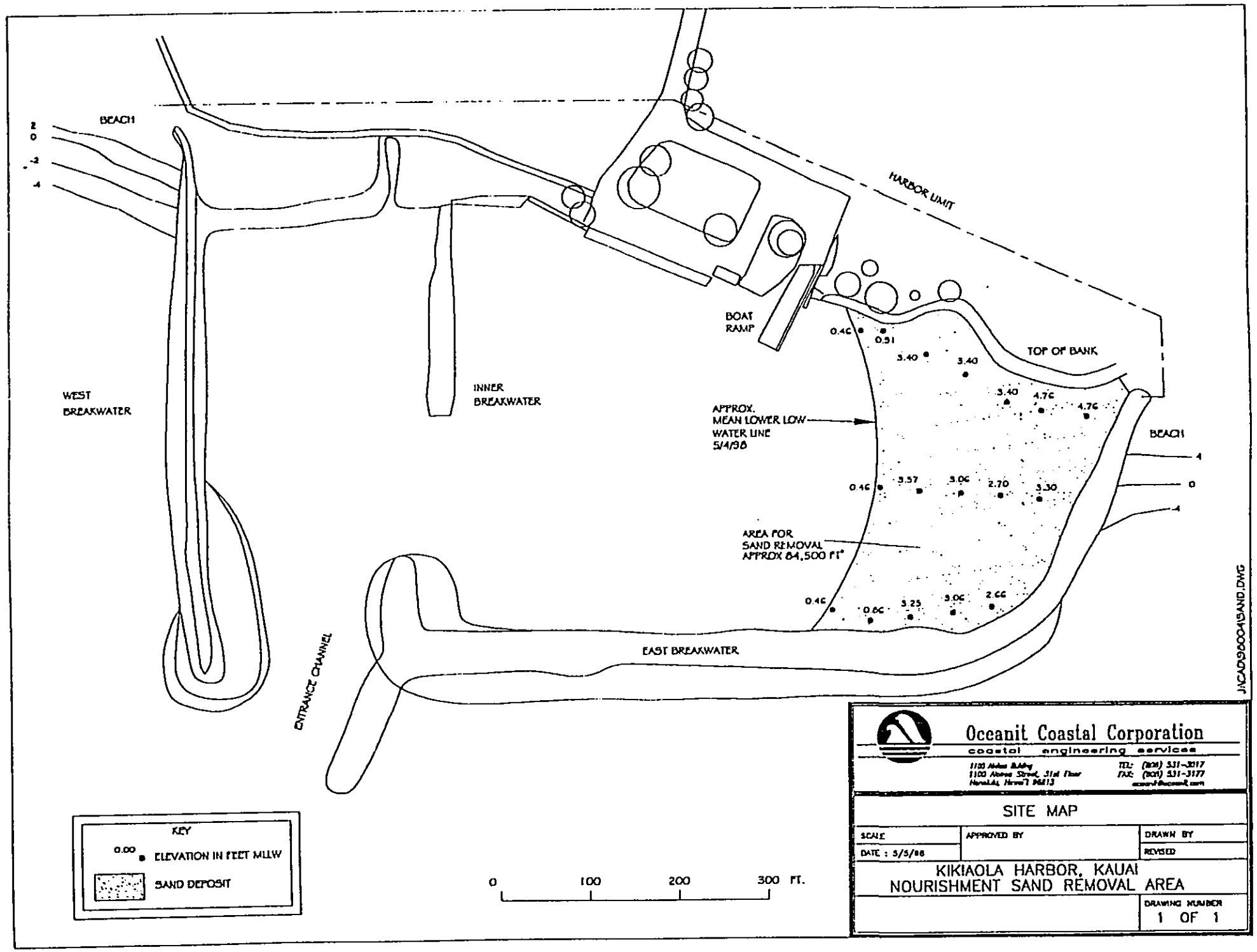
Warren E. Bucher

Warren E. Bucher, Ph.D.
Vice President

Attachments

cc: Mr. Ron Beckenfeld

L05058bor.doc



Oceanit Coastal Corporation
coastal engineering services
1100 Alakea Building
1100 Alakea Street, 31st Floor
Honolulu, Hawai'i 96813
TEL: (808) 531-3017
FAX: (808) 531-3177
oceanit@oceanit.com

SITE MAP

SCALE	APPROVED BY	DRAWN BY
DATE : 5/5/98		REVISED

KIKIAOLA HARBOR, KAUAI
NOURISHMENT SAND REMOVAL AREA

DRAWING NUMBER
1 OF 1

BENJAMIN J CAYETANO
GOVERNOR

MICHAEL D. WILSON
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY DIRECTOR
GILBERT S COLOMA-AGARAN

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF BOATING AND OCEAN RECREATION
333 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813

May 11, 1998

BOR-E 0893.98

Mr. Warren E. Bucher, Ph.D.
Vice President
Oceanit Coastal Corporation
1100 Alakea Street, 31st Floor
Honolulu, Hawaii 96813

Dear Mr. Bucher:

Subject: Request for Beach Nourishment Sand from Kikiaola Harbor

This is in reference to your letter of April 5, 1998, which requested permission to remove a minimum of 3,800 cubic yards of sand from within a 270 feet by 300 feet land area within the Kikiaola SBH boundaries.

Since your request will be of mutual benefit to all concerned, permission is granted to remove 3,800 cubic yards of sand from within the Kikiaola SBH, to be used as material for beach replenishment. We request that you work directly with Vaughan Tyndzik, Kauai District Manager (BOR-K), and his staff as to the specific area of sand removal (location of width and length and depth), the hours of operations, and the route to be taken by the dump trucks. Insure that the contractor will not interfere with the launching of the fishing boats or the commercial operations. Also insure that the contractor will not damage any of the harbor structures, or undermine any of the breakwater structures. Advise the contractor to be extremely cautious in driving his trucks across the buried electric service line. All costs of removing and transporting the sand will be borne by your client. Insure that the site of the sand removal is graded, and left in an acceptable manner to the Kauai District Manager. You will be responsible to obtain all permits as required by various agencies and will coordinate and notify all parties involved.

If you should have any questions, please call me at 587-1966, or contact Manuel Emiliano of our Boating Engineering Branch at 587-0122.

Very truly yours,

Howard B. Gehring
Acting Administrator

c: Lynn McCrory, Land Board Member
Vaughan Tyndzik, Kauai District Manager
Sam Lemo, DLNR-LD-Planning

BENJAMIN J. CAYETANO
GOVERNOR

MICHAEL D. WILSON
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY DIRECTOR
GILBERT S. COLOMA-AGARAN

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF BOATING AND OCEAN RECREATION
333 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813

May 28, 1998

BOR-E 0956.98

Mr. Warren E. Bucher, Ph.D.
Vice President
Oceanit Coastal Corporation
1100 Alakea Street, 31st Floor
Honolulu, Hawaii 96813

Dear Mr. Bucher:

Subject: Beach Nourishment Sand

This is in reference to your letter of April 5, 1998, which requested permission to remove a minimum of 3,800 cubic yards of sand from within the Kikiaola SBH. Permission was subsequently granted by our letter of May 11, 1998.

We have engaged the services of a consultant to accomplish a topographic and hydrographic survey of Kikiaola SBH, and to prepare a dredging and sand transport plan. Enclosed is a drawing showing the proposed areas being considered for sand removal. We recommend that you also obtain permission from the appropriate agencies to also remove sand from Area I.

Should you have any questions please contact Manuel Emiliano of our Boating Engineering Branch at 587-0122.

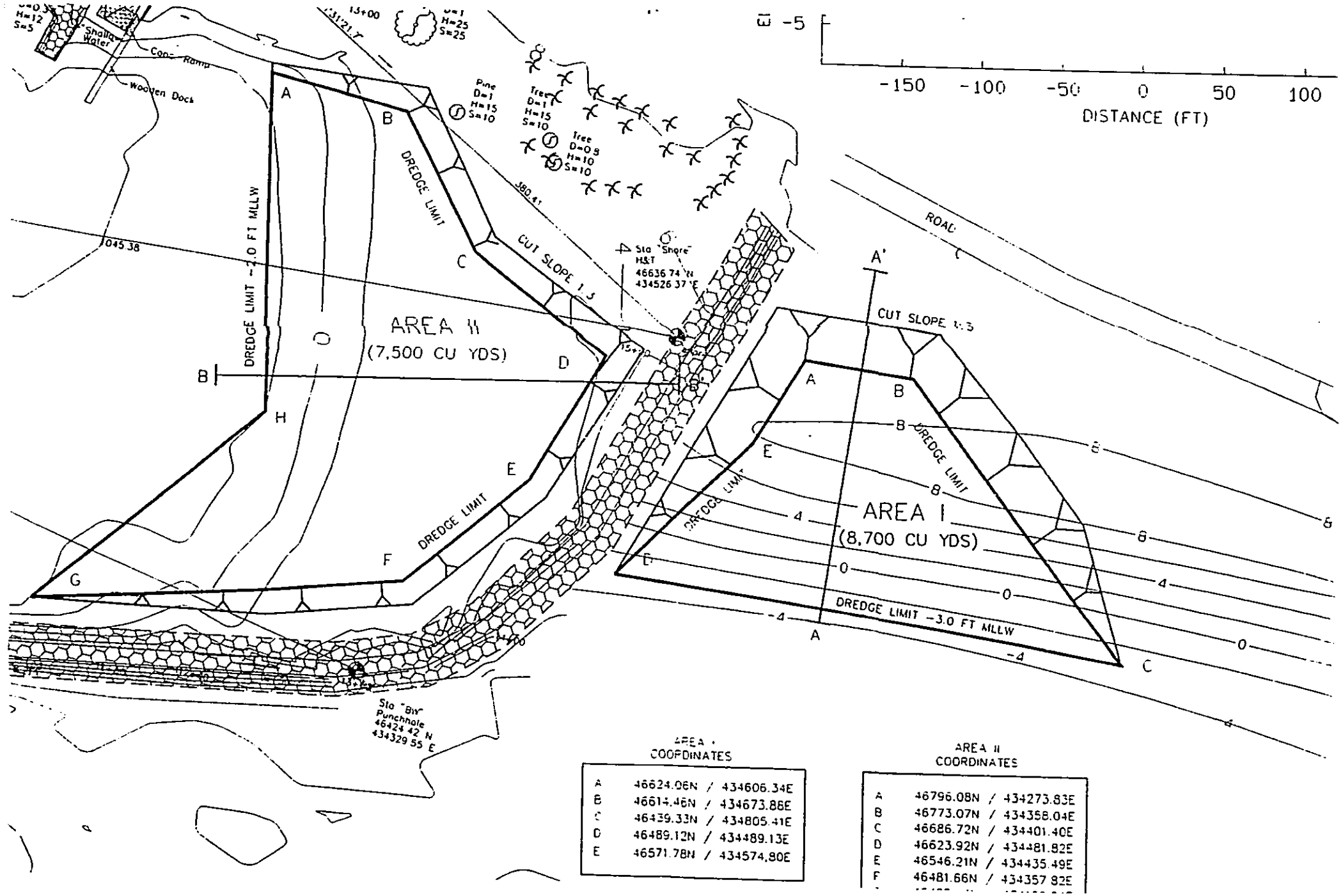
Very truly yours,

Howard B. Gehring
Acting Administrator

Enclosure

c: Vaughan Tyndzik, Kauai District Manager
Frank DeCosta, Kauai District Office

2 1998



AREA I
COORDINATES

A	46624.06N	434606.34E
B	46614.46N	434673.86E
C	46439.33N	434805.41E
D	46489.12N	434489.13E
E	46571.78N	434574.80E

AREA II
COORDINATES

A	46796.08N	434273.83E
B	46773.07N	434358.04E
C	46686.72N	434401.40E
D	46623.92N	434481.82E
E	46546.21N	434435.49E
F	46481.66N	434357.82E

BENJAMIN J CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF BOATING AND OCEAN RECREATION
333 QUEEN STREET, SUITE 300
HONOLULU, HAWAII 96813

MICHAEL D. WILSON
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY DIRECTOR
GILBERT S. COLOMA-AGARAN

1998

July 6, 1998

BOR-E 0010.99

Mr. Warren E. Bucher, Ph.D.
Vice President
Oceanit Coastal Corporation
110 Alakea Street, 31st Floor
Honolulu, Hawaii 96813

Dear Mr. Bucher:

SUBJECT: Request for Beach Nourishment Sand from Kikiaola Harbor

This is in reference to our letters of May 11, 1998, which granted permission to remove a minimum of 3,800 cubic yards of sand from Kikiaola SBH, and May 28, 1998, which recommended that you obtain permission from the appropriate agencies to remove sand from the eastern beaches adjacent to the harbor. We have since received a copy of the enclosed letter, addressed to Mr. Dean Y. Uchida, Administrator, Land Division, from the U.S. Army Corps of Engineers (COE), which strongly recommended that an alternative sand source located along the eastern shoreline (updrift side) be considered for use as sand replenishment of the western shoreline.

The COE has completed the Final General Reevaluation Report and Environmental Assessment for Navigation Improvements at the Kikiaola Light Draft Harbor. The construction cost estimate for this project assumed that material within the existing harbor would be available for the construction contractor to use as fill material for construction of a temporary causeway. Accordingly, we request that you comply with the COE and our recommendations that you obtain permission from the appropriate agencies to remove sand along the eastern shoreline (updrift side). If this alternative source of sand is not sufficient, then you may remove a limited amount of sand from within the Kikiaola SBH, to a final grade elevation of not lower than plus (+) 1.5 feet mean low low water (MLLW), that no material shall be removed within 20 feet of the toe of the breakwater structure, and that this work area be evenly graded after completion of the sand removal.

Should you have any questions, please call me at 587-1966, or contact Manuel Emiliano of our Boating Engineering Branch at 587-0122.

Very truly yours,

Howard B. Gehring
Acting Administrator

Enclosures

c: Lynn McCrory, Land Board Member
Dean Y. Uchida, Administrator, Land Division
Sam Lemo, DLNR-LD-Planning
Vaughan Tyndzik, Kauai District Manager
Frank DeCosta, Kauai District Office
Tim Young, COE

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

REPLY TO
ATTENTION OF

June 19, 1998

Civil Works Branch

Mr. Dean Y. Uchida, Administrator
Land Division
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Uchida:

In reference to your letter dated June 1, 1998, relating to Conservation District Use Application (Board Permit - File No. KA-2900) for Sand Nourishment at Kikiaola Beach, Kekaha, Kauai, the following information and comments are submitted for your consideration:

- We strongly recommend that an alternative sand source located along the eastern shoreline (updrift side) be considered for use as sand replenishment of the western shoreline (downdrift side) (see enclosure 1). Sand removed above the high tide line and placed above the high tide line does not require a Department of the Army permit. Based on State, County and individual comments provided on the draft report for navigation improvements at the Kikiaola Light Draft Harbor, a detailed discussion on "Sand Bypasssing" has been incorporated into the final report. The sand bypass program would be implemented by the State of Hawaii upon project completion and involves the removal of approximately 16,000 cubic yards of material every 4.5 years by dump truck and loader. A letter received from Oceanit Coastal Corporation dated August 1, 1997, and the Department of Land and Natural Resources (project sponsor), fully supports this concept of sand bypassing. Since the applicant has expressed an interest to accomplish this work as soon as possible, he will be responsible for complying with and obtaining all applicable State, County and Federal regulations and permits. In addition, coordination is recommended with the respective landowners of the adjacent property.

• The U.S. Army Corps of Engineers, Honolulu District, Civil Works Branch has just completed the Final General Reevaluation Report and Environmental Assessment for Navigation Improvements at the Kikiaola Light Draft Harbor. The construction cost estimate for this proposed project assumed that some of the material within the existing harbor would be available to the contractor for potential use as fill material for construction of a temporary causeway during construction. This material would also be made available to the contractor during subsequent repair work on the protective structures. If the applicant chooses to utilize this sand source, the finish elevation of the sand area (Cross Hatched Area) after removal work shall be no lower than +1.5 feet mean lower low water and no material shall be removed within 20 feet of the toe of the breakwater structure (see enclosure 2). In addition, we also recommend that this area be evenly graded upon completion of the removal work.

If you have any further questions regarding our comments, please feel free to call Mr. Tim Young of my Civil Works staff at 438-7013.

Sincerely,

Ray H. Jyo, P.E.
Chief, Engineering Division

Enclosures

Copy Furnished:

Mr. Manny Emiliano
Department of Land and Natural Resources
Division of Boating and Ocean Recreation
Engineering Branch
333 Queen Street, Suite 300
Honolulu, Hawaii 96813

KA-2: WAIMEA BEACH (WEST END)

BEACH DESCRIPTION

- Waimea Beach is an 8000 foot long beach located between Kikiaola Small Boat Harbor and Waimea River. As discussed for Sector KA-1, the brown color of the sand is due to the terrestrial material discharged by Waimea River.
- The beach is relatively wide (70 feet) at the west end and narrows to 30 feet at the east end.

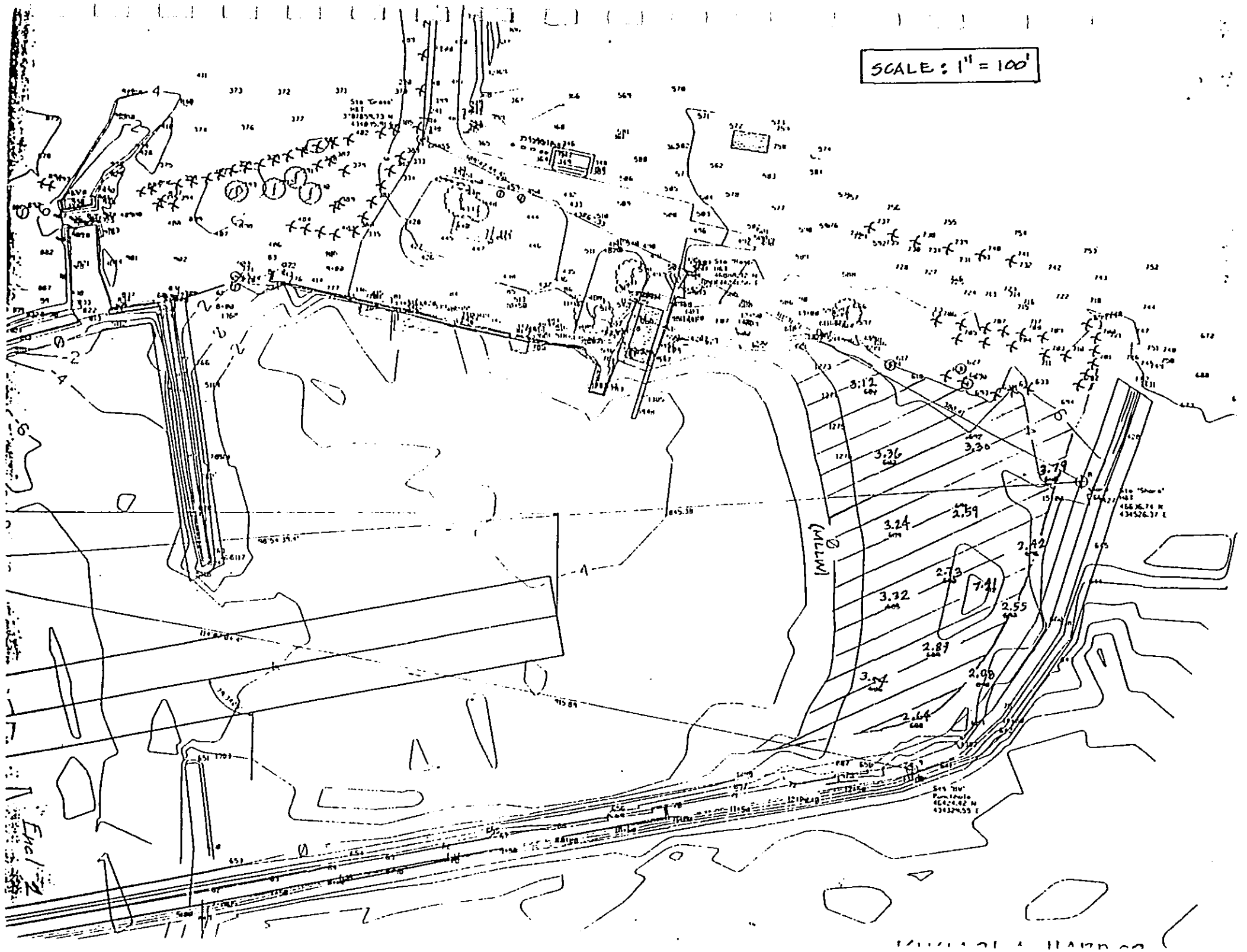
BACKSHORE

- Except for the small boat harbor, the backshore of this subsector is in agricultural use. There are no buildings near the shoreline.

SHORELINE HISTORY

- Kikiaola Harbor has acted as a large groin by blocking predominant westward sand transport. This subsector is on the updrift side of

SCALE : 1" = 100'



APPENDIX B
CORRESPONDENCE WITH NEIGHBORING PROPERTY OWNERS

Oceanit Coastal Corporation
coastal engineering services

Richard D. Brobyn, M.D.
P.O. Box 296
4491 Kikiaola Place
Kekaha, Hawaii 96752

May 14, 1998

Mr. Sam Lemo
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Lemo:

I would like to formally request the deposition of the sand from Kikiaola Boat Harbor be put along the beach front of our property as well as in front of the property owned by Mr. Beckenfeld and Ms. Montgomery.

We estimate that 10,000 cubic yards can be deposited along this area to adequately protect the land. We approve of the initial 3,800 cubic yards minimum and we strongly suggest that a larger amount be authorized as soon as possible, since the first step is only about 40% of the amount needed.

We also recommend the continued program of dredging of the sand and deposition on the west side of the harbor be authorized in the very near future. The small amount of sand now authorized will probably not protect our property adequately if there is significant wave action or a hurricane that even passes a few hundred miles south of Kauai.

Even though the land along here is owned by different people, nature does not consider this. Grains of sand put in one place do not stay there permanently and we must all share in the benefits and hazards of migrating sand. As you know from our previous conversations I am anxious that <u>all</u> the homeowners along this stretch of beach benefit and no one suffers.

Please give this request your support so that we can adequately protect our land from erosion and provide a reasonable buffer for our homes that have already lost approximately one-half of their front yards. We, personally have lost 51 feet at the east end of our property and 42 feet on the west end. This amounts to 4,500 square feet about six feet deep or about 1/9th of an acre of prime waterfront land.

Post-it® Fax Note 7671	Date 7/7	# of pages ▶ 3
To Warren B	From Sam Lemmo	
Co./Dept.	Co.	
Phone # 531-3177	Phone # 587-0381	
Fax #	Fax #	

Thank you in advance for your consideration of this matter. A much more complete document will be sent to you before the end of June to enable you to present the full problem to the State of Hawaii.

Very truly yours,

Richard D. Brobyn M.D

Richard D. Brobyn, M.D.

BY FAX -HARD COPY TO FOLLOW

5-6-98

RECEIVED
MAY 7 9 22 AM '98

Attention, SAM LEMO,

TMK (4) 1-2-13-34
LOT 61 B -

I Need an emergency permit for putting sand in front of my property -

I beleive you are familiar with this problem on this side of the island -

All my regards -

Anne Marie Montgomery

Anne Marie Montgomery
P.O. Box 140
WAIMEA. Hi 96796.
Tel. 808-3379353
Work 808 7421115

APPENDIX C
COMMENTS ON THE DRAFT EA AND OCEANIT RESPONSES

Oceanit Coastal Corporation

coastal engineering services

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

GARY GILL
DIRECTOR

June 22, 1998

Michael D. Wilson, Director
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Attention: Sam Lemmo

Dear Mr. Wilson:

Subject: Draft Environmental Assessment (EA) for Kikiaola Beach Sand Nourishment, Kauai; TMK 1-2-13: 35

Please include the following in the final EA:

1. Contacts: Indicate the fee owners of neighboring parcels 31 and 34 and notify them regarding the proposed project, allowing them sufficient time to review the draft EA and submit comments. Document all contacts in the final EA and include copies of any correspondence.

2. Permits and approvals: List the status of the special management area and shoreline setback variance applications and include a copy of a recent certified shoreline survey.

3. Determination and significance criteria: A determination stating that an environmental impact statement will not be required is listed in section III of the draft EA. The EIS law prohibits a determination of significant impact or lack of significant impact before the end of the 30-day public review period and prior to receipt, response and analysis of all written comments. For a draft EA the proper determination is *anticipated FONSI* (Finding of No Significant Impact). In the final EA include a discussion of findings and reasons, according to the significance criteria listed in HAR 11-200-12, that support your forthcoming determination, either Finding of No Signifcant Impact or EIS preparation notice. You may use the enclosed sample as a guideline for a FONSI.

4. Impacts: The offshore substrate consists of an algal ridge reef community and two live coral colonies. Please evaluate the impact of the beach nourishment project on the adjacent reefs. Will there be increased turbidity? List mitigation measures to reduce this and any other impacts.

5. Monitoring: The draft EA recommends a monitoring program to determine renourishment frequency. Who will be responsible for this monitoring program and any future nourishment projects?

If you have any questions, please call Nancy Heinrich at 586-4185.

Sincerely,

GARY GILL
Director

c: Ronald Beckenfeld
Warren Bucher

Oceanit Coastal Corporation
coastal engineering services
A subsidiary of Oceanit Laboratories, Inc.

July 6, 1998

Attn: Ms. Nancy Heinrich
Mr. Gary Gill, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, HI 96813

Subject: Draft Environmental Assessment (EA) for Kikiaola Beach Sand Nourishment, Kauai; TMK 1-2-13:35

Dear Mr. Gill:

Thank you for your comments on the subject EA. The following is our response to each of your points The final EA will incorporate the response as appropriate.

1. *Contacts: Indicate the fee owners of neighboring parcels 31 and 34 and notify them regarding the proposed project, allowing them sufficient time to review the draft EA and submit comments. Document all contacts in the final EA and include copies of any correspondence.*

The fee owners of parcel 31 are Dr. and Mrs. Richard D. Brobyn. The fee owner of parcel 34 is Ms. Ann-Marie Montgomery. Each has been informed of the proposed beach nourishment action and has indicated concurrence by letters to the County of Kauai Planning Department and to the State of Hawaii Department of Land and Natural Resources (DLNR). Copies of these letters will be included in the final EA. A copy of the draft EA was provided to each owner.

2. *Permits and approvals: List the status of the special management area and shoreline setback variance applications and include a copy of a recent certified shoreline survey.*

The County of Kauai will grant a Special Management Area Use Permit for work above the shoreline. All required documents have been received by the county and the permit is anticipated within days of the date of this letter. The most recent certified shoreline (1994) is shown in the draft EA on page 30 of Appendix B.

3. *Determination and significance criteria: A determination stating that an environmental impact statement will not be required is listed in section III of the draft EA. The EIS law prohibits a determination of significant impact or lack of significant impact before the end of the 30-day public review period and prior to receipt, response and analysis*

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of all written comments. For a draft EA the proper determination is anticipated FONSI (Finding of No Significant Impact). In the final EA include a discussion of findings and reasons, according tho the significance criteria listed in HAR 11-200-12, that support your forthcoming determination, either Finding of No Significant Impact or EIS preparation notice. You may use the enclosed sample as a guideline for a FONSI.

We anticipate a FONSI for this project. This finding will be supported in the final EA according to the significance criteria listed in HAR 11-200-12 after July 8, 1998, the deadline for comments.

4. *Impacts: The offshore substrate consists of an algal ridge reef community and two live coral colonies. Please evaluate the impact of the beach nourishment project on the adjacent reefs. Will there be any increased turbidity? List mitigation measures to reduce this and any other impacts.*

We anticipate that beach nourishment will improve environmental conditions for the reefs. The erosion of red topsoil from the shoreline over the past four years and the outflow of silty runoff drainage water through Kikiaola Harbor result frequently in very turbid nearshore water. Also, waters along this coastline normally receive sediment from the Waimea River and other runoff sources. Rebuilding the beach will reduce the amount of topsoil eroded from the presently exposed embankments. Some turbidity is expected during sand placement; however, we expect water quality to be improved after the beach has had time to stabilize. The only effective mitigation measure for turbidity caused by nourishment is to ensure that the cleanest possible sand is placed on the beach.

5. *Monitoring: The draft EA recommends a monitoring program to determine renourishment frequency. Who will be responsible for this monitoring program and any future nourishment projects?*

The CDUP applicant, Mr. Beckenfeld will be responsible for the monitoring program. Both the County of Kauai and DLNR will require a monitoring program as a condition of their respective permits. Mr. Beckenfeld will likely use Oceanit Coastal Corporation and his construction contractor to assist in carrying out the program. The required monitoring program will be included in the final EA.

Please let us know if we can provide further information.

Sincerely,

Warren E. Bucher, Ph.D.
Vice President

Oceanit Coastal Corporation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Ecoregion
300 Ala Moana Boulevard, Room 3-122
Box 50088
Honolulu, Hawaii 96850

JUN 13 9 25 AM '98

JUN 18 Rec'd

In Reply Refer To: CAW

Mr. Dean Y. Uchida
Administrator Land Division
State of Hawaii
Department of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, Hawaii 96809

Re. CDUA No. KA-2990 - Conservation District Use Application for Sand Nourishment at Kikiaola Beach, Kekaha, Kauai

Dear Mr. Uchida:

The U.S. Fish and Wildlife Service (Service) has reviewed the application for a Department of Land and Natural Resources permit for sand nourishment at Kikiaola beach, Kekaha, Kauai. The report was prepared by Oceanit Laboratories, Inc. for the Hawaii Department of Land and Natural Resources (DLNR). The applicant is Mr. Ronald Beckenfeld. The proposed project involves placement of 6,900 cubic yards of sand on the makai side (beach side) of three lots along Kekaha beach (TMK 1-213:35,34,31). The intent of the project is to replace sand in front of the existing rock revetment that has eroded away during winter storms. The Department of Land and Natural Resources, Division of Boating and Ocean Recreation has offered an initial volume of 3,800 cubic yards of sand from Kikiaola Small Boat Harbor. Additional sand may be available for future nourishment from Waimea harbor dredging. The Service offers the following comments for consideration.

The Service does not condone the use of rip rap and sand fill for shoreline protection. Based on our review and knowledge of the project site, impacts to federally listed or protected species are not expected to result from the proposed project. However, the Service recommends that the following measures to minimize the degradation of water quality and impacts to fish and wildlife resources and habitats be incorporated into the project:

a. No construction materials should be stockpiled in the marine environment;

b No contamination of the marine environment (trash or debris disposal, etc.) should result from project-related activities;

c A contingency plan to control petroleum products accidentally spilled during construction should be developed. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of petroleum spills;

CDUA No. KA-2990
Sand Nourishment
Kikiaola Beach, Kekaha, Kauai

d. Turbidity and siltation from excavation activities should be minimized and contained to the immediate vicinity of the excavation site through the use of effective silt containment devices, restricting the majority of work during low tide periods, and curtailment of work during adverse weather conditions.

The Service believes that the incorporation of these measures into the project will greatly minimize the potential for project-related adverse impacts to fish and wildlife resources. Provided that the permit is conditioned to reflect our recommendations, we will not object to the permit issuance.

The Service appreciates the opportunity to provide comments on the proposed project. If you have questions regarding these comments, please contact Fish and Wildlife Biologist Christine Willis at 808/541-3441 (fax: 808/541-3470).

Sincerely

for/ Brooks Harper
Field Supervisor
Ecological Services

cc: USACOE, Honolulu
DAR, Honolulu
DAR, Kauai
CWB, Honolulu
CZMP, Honolulu

Oceanit Coastal Corporation
coastal engineering services
A subsidiary of Oceanit Laboratories, Inc.

July 8, 1998

Mr. Brooks Harper
Field Supervisor, Ecological Services
United States Department of the Interior
Fish and Wildlife Service
Pacific Islands Ecoregion
Box 50088
Honolulu, HI 96850

Subject: Conservation District Use Application for Sand Nourishment at Kikiaola Beach, Kekaha, Kauai

Dear Mr. Harper:

Thank you for your comments on the subject Conservation District Use Application (CDUA). Your letter stated that the Service does not condone the use of rip rap and sand fill for shoreline protection. Beach nourishment, as recommended in this project, consists of rebuilding the former beach. At Kikiaola in particular, we believe nourishment has a relatively high probability of success while causing minimal negative environmental impact. Your recommended measures to minimize the degradation of water quality and impacts to fish and wildlife resources and habitats have been incorporated as conditions of granting the CDUA. They will be included in a beach and environmental monitoring plan that will be followed during and after sand placement.

Please contact us if you need additional information.

Sincerely,

Warren E. Bucher

Warren E. Bucher, Ph.D.
Vice President

fwsresp.wpd

1100 Alakea Building • 1100 Alakea Street, 31st Floor • Honolulu, Hawaii 96813
TELEX: 7431404 • MCI: OCEANIT • TEL: (808) 531-3017 • FAX: (808) 531-3177

University of Hawai'i at Mānoa

Environmental Center
A Unit of Water Resources Research Center
Crawford 317 • 2550 Campus Road • Honolulu, Hawai'i 96822
Telephone: (808) 956-7361 • Facsimile: (808) 956-3980

July 8, 1998
EA:00177

Warren Bucher
Oceanit Coastal Corporation
1100 Alakea
Honolulu, Hawaii 96813

Dear Dr. Bucher:

Draft Environmental Assessment
Kikiaola Beach Sand Renourishment
Waimea, Hawai'i

The applicant proposes to fund and implement placement of sand in the beachfront area of three adjacent lots in order to remediate severe erosion. A minimum of 6,900 cubic yards of sand will be required to stabilize the beach and maintenance measures are planned for further renourishment. An initial volume of 3,800 cubic yards of sand will be taken from Kikiaola Small Boat Harbor.

We reviewed this draft Environmental Assessment (EA) with the assistance of David Smith, Ocean Engineering; Jacqueline Miller and Victoria Cullins of the Environmental Center.

General Comments

Our reviewers commend the applicant for using beach nourishment to stabilize the beach fronting the subject property. Photos depicting the project site are descriptive, and exhibit the before and after comparisons competently.

However, the document fails to provide the date the residential structure was constructed. On page 2, it is noted that erosion of Kikiaola Beach has been occurring since 1959. With inherent erosional qualities of the beach apparent, sufficient building setbacks

should have been employed, and nourishment measures should have been undertaken earlier.

Comments on Engineering

The physical characteristics of the sand excavated from the harbor should be discussed in detail and compared to the profiles taken from the subject property (Fig. 15). Figure 15; is confusing, the legend should describe what "prof." refers to. The document does not specify if the sand will come from the shore of the harbor or from submerged land. If the sand is to be dredged, than dewatering and odor mitigation methods need to be discussed. Also, the hours of excavations may need to be tailored to best accommodate public uses of the harbor.

Conclusion

Our reviewers are in support of the nourishment plan, and we feel that the Final EA, with the information requested, will adequately describe the proposed action. The applicant may want to consider planting additional native plants above the revetment along with the *naupaka* that appears to be currently present. Other native plants commonly found in healthy dune areas include *'aki 'aki, pōhuehue, and 'ākulikuli.* These plants are salt-tolerant, have dense root systems and are effective windbreaks and wind buffers.

Thank you for the opportunity to comment on this draft EA.

Sincerely,

John T. Harrison
Environmental Coordinator

cc: OEQC
Roger Fujioka
City and County of Honolulu, Department of Land Utilization
David Smith
Victoria Cullins

Oceanit Coastal Corporation
coastal engineering services
A subsidiary of Oceanit Laboratories, Inc.

July 7, 1998

Mr. John T. Harrison, Environmental Coordinator
Environmental Center
University of Hawai`I at Manoa
Crawford 317, 2550 Campus Road
Honolulu, HI 96822

Subject: Draft Environmental Assessment, Kikiaola Beach Sand Renourishment, Waimea, Hawai`i

Dear Mr. Harrison:

Thank you for your comments on the subject environmental assessment (EA). Your comments follow in italics with our response in standard font.

> *However, the document fails to provide the date the residential structure was constructed. On page 2, it is noted that erosion of Kikiaola Beach has been occurring since 1959. With inherent erosional qualities of the beach apparent, sufficient building setbacks should have been employed, and nourishment measures should have been undertaken earlier.*

Although the exact date of construction is not known, the residence appears in aerial photographs of 1982. At that time and prior to 1994, the shoreline was eroding at approximately 1.5 feet per year. A certified shoreline was established in 1985 that was 55 feet from the swimming pool, which is beyond the required 40 foot setback. Erosion did not become critical until the summer of 1994 when waves from three hurricanes passing south of Kauai caused a loss of over 24 feet to the property. To stop this erosion, the owner was granted an emergency permit from the County of Kauai to build a rock revetment, which was completed in November 1994. The County then required the owner to apply for full permits for the revetment. Nourishment and sand bypassing were recommended by Oceanit and several other participants in the approval process; however, neither the state, the county, or the Corps of Engineers offered any means or mechanism to obtain the necessary sand from Kikiaola Harbor or any other source. Without the support of these government agencies, sand nourishment is difficult and expensive for a private, small landowner to do. Therefore, it was not attempted in 1994-95. Only recently has agency cooperation been such that nourishment is now viable.

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> *The physical characteristics of the sand excavated from the harbor should be discussed in detail and compared to the profiles taken from the subject property (Fig. 15). Figure 15: is confusing, the legend should describe what "prof." refers to. The document does not specify if the sand will come from the shore of the harbor or from submerged land. If the sand is to be dredged, than dewatering and odor mitigation methods need to be discussed. Also, the hours of excavations may need to be tailored to best accommodate public uses of the harbor.*

We believe you are referring to Figure 11 on page 15 of the EA. The sand samples used for this figure were taken at beach profiles 1-4 shown in Figure 8. No samples have yet been taken from the sand source but will likely be taken prior to excavation. Sampling is under discussion with DLNR. Sand will be excavated (not dredged) from areas above the high tide line, not from submerged land. No dewatering or odor mitigation will be necessary. Both DLNR and the Corps of Engineers have given restrictions on where sand can be taken. DLNR has also imposed conditions for not interfering with public use of the harbor.

Thank you for your suggestion on using salt tolerant plants in addition to naupaka. Vegetation growth on the existing revetment and fence is so abundant that inspecting the revetment for damage is quite difficult. The new nourished embankment will be landscaped with salt tolerant plants as soon as it is feasible.

Please contact us if you need further information.

Sincerely,

Warren E. Bucher, Ph.D.
Vice President

emcrr.wpd

Oceanit Coastal Corporation

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

JUL 6 9 14 AM '98

STATE OF HAWAII
DEPARTMENT OF HEALTH
P O BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to

July 1, 1998

98-123/epo

TO: Dean Y. Uchida, Administrator
Land Division
Department of Land and Natural Resources

FROM: Lawrence Miike
Director of Health

SUBJECT: CONSERVATION DISTRICT USE APPLICATION

Applicant: Ronald Beckenfeld
File No.: KA 2900
Request: Sand Nourishment
Location: Kikiaola Beach, Kekaha, Kauai
TMK: 1-2-13: 31, 34, 35

Thank you for allowing us to review and comment on the subject request. We have the following comments to offer:

1. The project involves dredging in Kikiaola Small Boat Harbor and placing the sand on Kikiaola Beach. The applicant needs to consult with the U. S. Army Corps of Engineers (COE), Honolulu Engineer District, to determine if a Department of the Army (DA) Section 404 permit is required.

   A Section 401 Water Quality Certification is required from the Department of Health if a DA 404 permit is required.

2. Best Management Practices (BMPs) specific to the project construction should be established and properly implemented.

3. An applicable water quality monitoring plan specific to the project construction and maintenance should also be established and properly implemented.

Should you have any questions on these comments, please contact Mr. Ed Chen of our Clean Water Branch at 586-4309.

c: CWB
KDHO

Post-it® Fax Note 7671	Date 7/6	# of pages ▶ 1
To Warren B.	From S. Emmo	
Co./Dept.	Co.	
Phone #	Phone # 587-0381	
Fax # 531-3171	Fax #	

Oceanit Coastal Corporation
coastal engineering services
A subsidiary of Oceanit Laboratories, Inc.

July 7, 1998

Dr. Lawrence Miike, Director of Health
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, HI 96801

Subject: Conservation District Use Application for Sand Nourishment at Kikiaola Beach
Kekaha, Kauai

Dear Dr. Miike:

Thank you for your comments on the subject Conservation District Use Application (CDUA). Your comments are given below in italics and our response in standard font.

1. *The project involves dredging in Kikiaola Small Boat Harbor and placing the sand on Kikiaola Beach. The applicant need to consult with the U.S. Army Corps of Engineers (COE), Honolulu Engineer District, to determine if a Department of the Army (DA) Section 404 permit is required.*

Sand will be excavated and placed above the high tide line, and the Corps of Engineers has determined that no Department of the Army Permit is required.

2 *Best Management Practices (BMPs) specific to the project construction should be established and properly implemented.*

3 *An applicable water quality monitoring plan specific to the project construction and maintenance should also be established and properly implemented.*

The Department of Land and Natural Resources (DLNR) requires a monitoring plan as a condition of the CDUA. The plan will cover physical measurements of the beach, water quality, and best management practices. The environmental portion of the monitoring plan will include turbidity measurements before, during, and after sand placement; petroleum spill control; debris and pollution control; restrictions on sand placement during higher tides; and other construction guidelines. The plan will be submitted to DLNR for approval prior to starting work.

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If you need further information, please contact us.

Sincerely,

Warren E. Bucher, Ph.D.
Vice President

ltrdohresp.wpd

Oceanit Coastal Corporation

BENJAMIN J. CAYETANO
GOVERNOR
SELNA F. NAYA
DIRECTOR
BRADLEY J. MOSSMAN
DEPUTY DIRECTOR
RICK EGGED
DIRECTOR OFFICE OF PLANNING

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

OFFICE OF PLANNING
235 South Beretania Street, 6th Flr., Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Tel: (808) 587-2846
Fax (808) 587-2824

Ref. No. P-7504

June 17, 1998

MEMORANDUM

TO: Dean Uchida, Administrator
Land Division
Department of Land and Natural Resources

FROM: Rick Egged
Director, Office of Planning

SUBJECT: Conservation District Use Application (Departmental Permit) and Draft Environmental Assessment for Sand Nourishment at Kikiaola Beach, Kekaha, Kauai (File No. OA-2900)

We have reviewed the proposed project which entails nourishing the beach in front of the applicant's property with up to 6,900 cubic yards of beach quality sand dredged from nearby Kikiaola Harbor.

The general intent of the project to restore a portion of sandy beach is consistent with the statutory objectives of the State's Coastal Zone Management (CZM) Program regarding the protection of beaches for public use, and the reduction of risk to life and property from erosion and other coastal hazards. Considering the information presented, the environmental assessment (EA) appears to accurately identify the potential environmental impacts of the project, and the mitigation measures that are proposed appear to address these impacts.

While the EA supports a finding of no significant impact, we are in favor of the recommendation made on page 4 of the EA that periodic beach profile monitoring be undertaken to measure the short- and long-term stability of the beach. Any rapid and/or extensive sand loss from the site revealed via this monitoring could help to indicate potential adverse impacts on local water quality and/or nearby coral reef ecology. We would appreciate receiving copies of the monitoring reports to help us in our broader planning and resource management initiatives.

If there are any questions regarding these comments, please contact Jeffrey Walters of our CZM Program at 587-2883.

Oceanit Coastal Corporation
coastal engineering services
A subsidiary of Oceanit Laboratories, Inc.

July 8, 1998

Mr. Rick Egged, Director
Office of Planning
Department of Business, Economic Development & Tourism
P.O. Box 2359
Honolulu, HI 96804

Subject: Conservation District Use Application and Draft Environmental Assessment for Sand Nourishment at Kikiaola Beach, Kekaha, Kauai

Dear Mr. Egged:

Thank you for your comments on the subject permit application and environmental assessment (EA). We restated some of your concerns in italics below. They are followed by our response in standard font.

> *While the EA supports a finding of no significant impact, we are in favor of the recommendation made on page 4 of the EA that periodic beach profile monitoring be undertaken to measure the short- and long-term stability of the beach. Any rapid and/or extensive sand loss from the site revealed via this monitoring could help to indicate potential adverse impacts on local water quality and/or nearby coral reef ecology. We would appreciate receiving copies of the monitoring reports to help us in our broader planning and resource management initiatives.*

A monitoring plan has been made a condition of the Conservation District Use Permit. The plan, which will include both beach profiles and environmental monitoring, will be submitted to DLNR for approval prior to starting work. We would be happy to include your office on the distribution list for the monitoring reports.

Please let us know if we can provide further information.

Sincerely,

Warren E. Bucher, Ph.D.
Vice President

czmresp.wpd

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

REPLY TO ATTENTION OF

June 15, 1998

Operations Branch

JUN 19 9 30 AM '98

Mr. Dean Uchida
Administrator, Land Division
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Uchida:

Thank you for the opportunity to review the Conservation District Use Application for Sand Nourishment at Kikiaola Beach, Kekaha, Kauai. The applicant proposes to place 3,800-6,900 cubic yards of sand, dredged from Kikiaola Harbor, on a beach lot located at TMK 1-2-13:35. The sand will be placed above the high tide line. Placement of the sand above the high tide line will not require a Department of the Army (DA) permit. A DA permit will be required for any dredging of sand within the Harbor that takes place below the high tide line.

Comments from our Civil Works Branch regarding the location of dredging activities have been sent under separate cover.

If you have any further questions, please contact Mr. Alan Everson of my staff at 438-9258, extension 11 and refer to File Number 980000223.

Sincerely,

George P. Young, P.E.
Chief, Operations Branch

Oceanit Coastal Corporation
coastal engineering services

A subsidiary of Oceanit Laboratories, Inc.

July 7, 1998

Mr. George P. Young, P.E.
Chief, Operations Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Ft. Shafter, HI 96858-5440

Subject: Conservation District Use Application for Sand Nourishment at Kikiaola Beach, Kekaha, Kauai

Ref: File Number 980000223

Dear Mr. Young:

Thank you for your comments on the subject permit application. Our response to your statements on sand placement is as follows:

> *Placement of sand above the high tide line will not require a Department of the Army (DA) permit. A DA permit will be required for any dredging of sand within the Harbor that takes place below the high tide line.*

Per our draft environmental assessment and the nourishment plan provided to the Department of Land and Natural Resources (DLNR) and the County of Kauai, all sand will be placed above the high tide line. Sand from Kikiaola Harbor will be taken above the high tide line per the instructions of DLNR's Division of Boating and Ocean Recreation. This sand has drifted over the eastern rock wall and filled part of the harbor to elevations several feet above the high tide line.

Please contact us if you need further information.

Sincerely,

Warren E. Bucher, Ph.D.
Vice President

ccexper.wpd

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

REPLY TO ATTENTION OF

June 19, 1998

Civil Works Branch

Mr. Dean Y. Uchida, Administrator
Land Division
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Uchida:

In reference to your letter dated June 1, 1998, relating to Conservation District Use Application (Board Permit - File No. KA-2900) for Sand Nourishment at Kikiaola Beach, Kekaha, Kauai, the following information and comments are submitted for your consideration:

- We strongly recommend that an alternative sand source located along the eastern shoreline (updrift side) be considered for use as sand replenishment of the western shoreline (downdrift side) (see enclosure 1). Sand removed above the high tide line and placed above the high tide line does not require a Department of the Army permit. Based on State, County and individual comments provided on the draft report for navigation improvements at the Kikiaola Light Draft Harbor, a detailed discussion on "Sand Bypasssing" has been incorporated into the final report. The sand bypass program would be implemented by the State of Hawaii upon project completion and involves the removal of approximately 16,000 cubic yards of material every 4.5 years by dump truck and loader. A letter received from Oceanit Coastal Corporation dated August 1, 1997, and the Department of Land and Natural Resources (project sponsor), fully supports this concept of sand bypassing. Since the applicant has expressed an interest to accomplish this work as soon as possible, he will be responsible for complying with and obtaining all applicable State, County and Federal regulations and permits. In addition, coordination is recommended with the respective landowners of the adjacent property.

- The U.S. Army Corps of Engineers, Honolulu District, Civil Works Branch has just completed the Final General Reevaluation Report and Environmental Assessment for Navigation Improvements at the Kikiaola Light Draft Harbor. The construction cost estimate for this proposed project assumed that some of the material within the existing harbor would be available to the contractor for potential use as fill material for construction of a temporary causeway during construction. This material would also be made available to the contractor during subsequent repair work on the protective structures. If the applicant chooses to utilize this sand source, the finish elevation of the sand area (Cross Hatched Area) after removal work shall be no lower than +1.5 feet mean lower low water and no material shall be removed within 20 feet of the toe of the breakwater structure (see enclosure 2). In addition, we also recommend that this area be evenly graded upon completion of the removal work.

If you have any further questions regarding our comments, please feel free to call Mr. Tim Young of my Civil Works staff at 438-7013.

Sincerely,

Ray H. Jyo, P.E.
Chief, Engineering Division

Enclosures

Copy Furnished:

Mr. Manny Emiliano
Department of Land and Natural Resources
Division of Boating and Ocean Recreation
Engineering Branch
333 Queen Street, Suite 300
Honolulu, Hawaii 96813

Oceanit Coastal Corporation
coastal engineering services

A subsidiary of Oceanit Laboratories, Inc.

July 7, 1998

Mr. Ray H. Jyo, P.E.
Chief, Engineering Division
Department of the Army
U.S. Army Engineer District, Honolulu
Ft. Shafter, HI 96858-5440

Subject: Conservation District Use Application for Sand Nourishment at Kikiaola Beach, Kekaha, Kauai

Thank you for your comments on the subject permit application. Our response to selected comments are given below.

> *We strongly recommend that an alternative sand source located along the eastern shoreline (updrift side) be considered as sand replenishment of the western shoreline (downdrift side).*

The Department of Land and Natural Resources (DLNR) Division of Boating and Ocean Recreation (DOBOR) made a similar recommendation and provided a map of the area planned for future dredging on the eastern side of the harbor. We will use as much of this sand as is permitted.

> *Sand removed above the high tide line and placed above the high tide line does not require a Department of the Army Permit.*

All of the sand removal and placement will be above the high tide line.

> *Based on State, County and individual comments provided on the draft report for navigation improvements at the Kikiaola Light Draft Harbor, a detailed discussion on "Sand Bypassing" has been incorporated into the final report. The sand bypass program would be implemented by the State of Hawaii upon project completion and involves the removal of approximately 16,000 cubic yards of material every 4.5 years by dump truck and loader.*

Oceanit believes that sand bypassing is essential to reducing the erosion rate of the downdrift beach. We recommend that some of the bypassed sand be placed directly at the three properties addressed in the CDUA. The volume of sand that will initially be placed under the CDUP is not sufficient to fully restore the eroded beach, and more sand will be needed

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periodically. We also recommend that sand bypassing be done more often than every 4.5 years It will be more beneficial to the landowners if sand is moved semi-annually or annually.

> *Since the applicant has expressed an interest to accomplish this work as soon as possible, he will be responsible for complying with and obtaining all applicable State, County and Federal regulations and permits. In addition, coordination is recommended with the respective landowners of the adjacent property.*

The applicant has submitted the subject CDUA and has applied for a Special Management Area Use Permit from the County of Kauai. The applicant's contractor will apply for a right-of-entry permit for transporting sand as necessary. The landowners of adjacent property have written letters to DLNR and to the County of Kauai supporting this project. They have also been sent copies of the draft environmental assessment.

> *If the applicant chooses to utilize this sand source, the finish elevation of the sand area (cross hatched area) after removal work shall be no lower than +1.5 feet mean lower low water and no material shall be removed within 20 feet of the toe of the breakwater structure (see enclosure 2). In addition, we also recommend that this area be evenly graded upon completion of the removal work.*

These instructions will be provided to the applicant's construction contractor.

Please contact us if you require further information.

Sincerely,

Warren E. Bucher, Ph.D.
Vice President

coecrul.wpd

Oceanit Coastal Corporation

Suspense Date: 06/24/98

State of Hawaii
Department of Land and Natural Resources
Division of Aquatic Resources

Date: 06/24/98

TO: William Devick, Acting Administrator
THROUGH: Richard Sixberry
FROM: Brian Kanenaka, Aquatic Biologist
SUBJECT: Comments on File No.: KA-2990

Comment Requested by: S. Lemmo, Planner, Land Division
Date of Request: 06/01
Date Rec'd: 06/03

Summary of Proposed Project

Title: Sand Nourishment

Project by: Ronald Beckenfield

Location: Kikiaola Beach, Kekaha, Kauai (adjoining TMKs:1-2-13:31,34,35)

Brief Description:

The applicant is requesting to add more than 6,900 cubic feet of sand on the makai side of the subject properties to stabilize the beach and to control severe erosion. Permission was granted to transport a portion of the sand (3,800 cubic feet) accreted in the eastern end of Kikiaola Small Boat Harbor to the project site at no cost to the State.

Comments:

Although the Division feels the impact on aquatic resources from this proposed inital sand norishment project to be minimal, we are concerned about the long term effects of the recommended periodic additions of sand due to continuing beach erosion. The applicants monitoring program should also include the impacts to the nearby aquatic resources.

Furthermore, if the endangered Hawaiian Monk Seal and the threaten Green Sea Turtle are using the beach fronting the subject properties the project must be stopped until these animals relocate themselves and our Kauai Aquatic Biologist, Donald Heacock (Phone No.: 274-3344) will need to be contacted on this matter.

Oceanit Coastal Corporation
coastal engineering services
A subsidiary of Oceanit Laboratories, Inc.

July 8, 1998

Mr. William Devick, Acting Administrator
State of Hawaii
Department of Land and Natural Resources
Division of Aquatic Resources
P.O. Box 621
Honolulu, HI 96809

Subject: Conservation District Use Application for Sand Nourishment at Kikiaola Beach, Kekaha, Kauai

Dear Mr. Devick:

Thank you for your comments on the subject Conservation District Use Application (CDUA). Your staff expressed concern about the long term effects of the recommended periodic additions of sand due to continuing beach erosion. Your comments state that:

> *The applicant's monitoring program should also include the impacts to the nearby aquatic resources.*

As a condition of the CDUA, the applicant is required to evaluate the presence and distribution of marine organisms at one of the beach profile measurement locations during his monitoring program. The evaluation will be done prior to and after the nourishment project.

Your letter also states:

> *Furthermore, if the endangered Hawaiian Monk Seal and the threatened Green Sea Turtle are using the beach fronting the subject properties, the project must be stopped until these animals relocate themselves and our Kauai Aquatic Biologist, Donald Heacock (Phone No.: 274-3344) will need to be contacted on this matter.*

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Oceanit has not received any reports of or observed either the Hawaiian Monk Seal or the Green Sea Turtle at the project site. If they are encountered on the beach, sand placement will be stopped and your biologist notified.

Please let us know if we can provide further information.

Sincerely,

Warren E. Bucher

Warren E. Bucher, Ph.D.
Vice President

wpfcsw wpd

Oceanit Coastal Corporation

APPENDIX D
ENVIRONMENTAL ASSESSMENT FOR SHORE PROTECTION AT CROFT RESIDENCE, 4470 MAMO ROAD KEKAHA, KAUAI, TMK 1-2-13:25

Oceanit Coastal Corporation
coastal engineering services

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coastal engineering services
A subsidiary of Oceanit Laboratories, Inc.

ENVIRONMENTAL ASSESSMENT FOR SHORE PROTECTION AT CROFT RESIDENCE, 4470 MAMO ROAD KEKAHA, KAUAI, TMK 1-2-13:35

submitted to:

PLANNING DEPARTMENT
COUNTY OF KAUAI

February 1995

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I. GENERAL INFORMATION

A. APPLICANT: Mr. Chuck Croft
P.O. Box 1058
Waimea, HI 96796

B. RECORDED FEE OWNER: 585273 Alberta, Ltd.
RR3 Churchill 1 C-9
117 Madrona Road
Salt Spring Island, B.C.
Canada VOS1EO

C. CONTACT PERSON: Dr. Warren E. Bucher, Senior Ocean Engineer
Oceanit Coastal Corporation
1100 Alakea Street, Suite 3100
Honolulu, HI 96813
Telephone: (808) 531-3017
FAX: (808) 531-3177

D. TAX MAP KEY: 1-2-13:35

E. LOT AREA: 1.368 acres

F. AGENCIES CONSULTED IN MAKING ASSESSMENT

Planning Department, County of Kauai

II. DESCRIPTION OF PROPOSED ACTION

A. GENERAL DESCRIPTION

On September 9, 1994, a Special Management Area Permit Assessment Application was submitted to the County of Kauai Department of Planning by the property owner for construction of a seawall to protect his residence and other improvements from severe coastal erosion (Exhibit 1). On December 7, 1994, the property owner was granted a Special Management Area (SMA) Emergency Permit and Shoreline Setback Variance (SV) to construct a sloping stone revetment mauka of the certified shoreline in the middle and the east sections (Exhibit 2). As a condition of the emergency permit, the property owner was required to prepare an Environmental Assessment. The revetment was constructed along approximately 200 feet of the shoreline. Because erosion is still occurring on the unprotected portion of the shoreline, the owner proposes to extend the revetment to his western property line.

Based on the emergency permit and after consultation with the Planning Department, a rock revetment was designed and constructed (see design drawings in Figures B-1 and B-3). A description and assessment of conditions prior to and subsequent to the construction, and recommendations based on the assessment are contained herein.

The residential property is located at 4470 Mamo Road in Kekaha as shown in Figure 1. The property is fronted the ocean side by Kikiaola Beach, which extends from the Kikiaola Boat Harbor to Oomano Point. This beach suffers from severe long-term erosion. The erosion rate was dramatically aggravated after the construction of the Kikiaola Boat Harbor, which is located at approximately 1400 ft east of the Croft property and intercepts the predominant westward littoral drift.

Oceanit Coastal Corporation (OCC) was contracted by Mr. Chuck Croft to assess the nature and extent of the coastal erosion, to provide preliminary recommendations on alternatives for remedial action, and to design proper erosion control structures. OCC evaluated the erosion problem and concluded that the long-term erosion of the shoreline at Kekaha together with accelerated erosion during 1994 resulted in recession that finally reached the property of coastal landowners, including Mr. Croft (Figure 2). Based on beach profile measurements and the fact that the property was not protected by a beach to the top elevation of the property, large amounts of erosion would have continued before an equilibrium beach profile was established. This loss would have endangered structures including a swimming pool and house on the property. In addition, several large coconut trees were also threatened. The erosion of large amounts of topsoil created an offshore sediment plume that was detrimental to marine life, especially coral or other benthic organisms (Figure 9d).

OCC recommended that the construction of a rubble revetment was the best option available to Mr. Croft for the protection of his property. No other solution was identified that met both technical and regulatory requirements.

The proposed revetment was constructed in the Shoreline Setback area and requires an SMA Use Permit and an SV to satisfy the County SMA Rules and Regulations and Section 205A-46 of the Hawaii Revised Statutes.

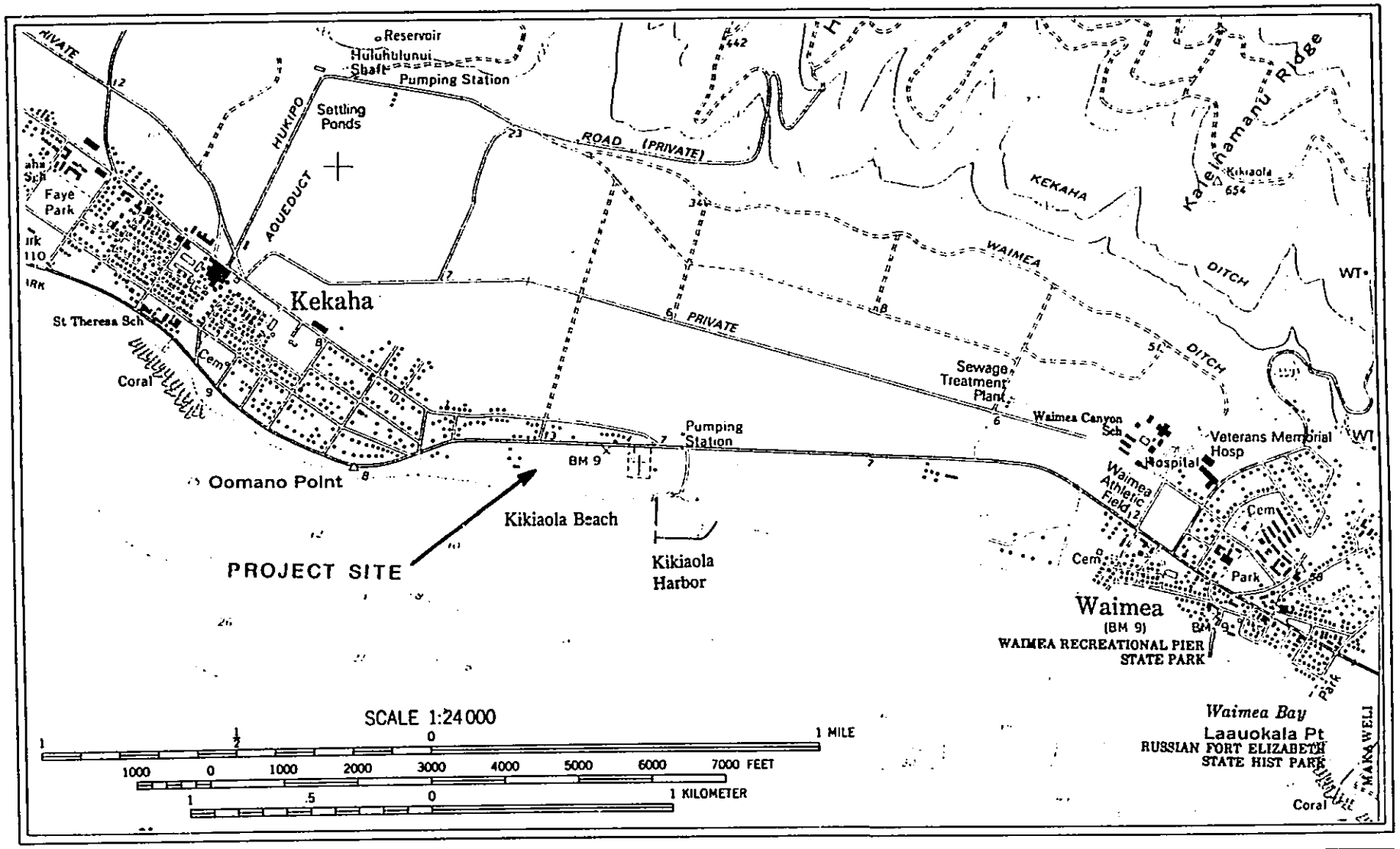

FIGURE 1 VICINITY MAP

4470 MAMO ROAD, KEKAHA, KAUAI

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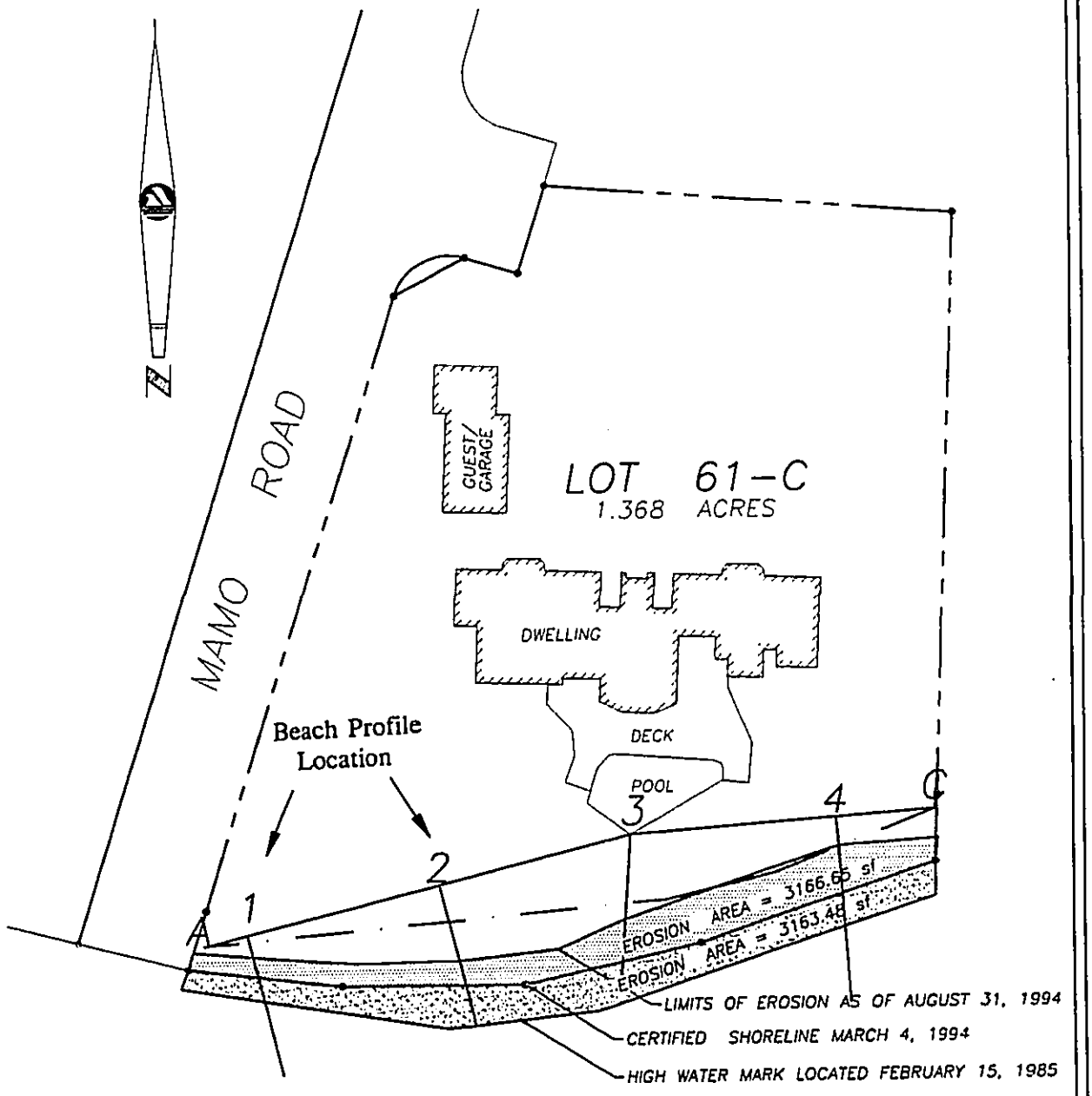

FIGURE 2 SHORELINE POSITION

4470 MAMO ROAD, KEKAHA, KAUAI
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CORRECTION

THE PRECEDING DOCUMENT(S) HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

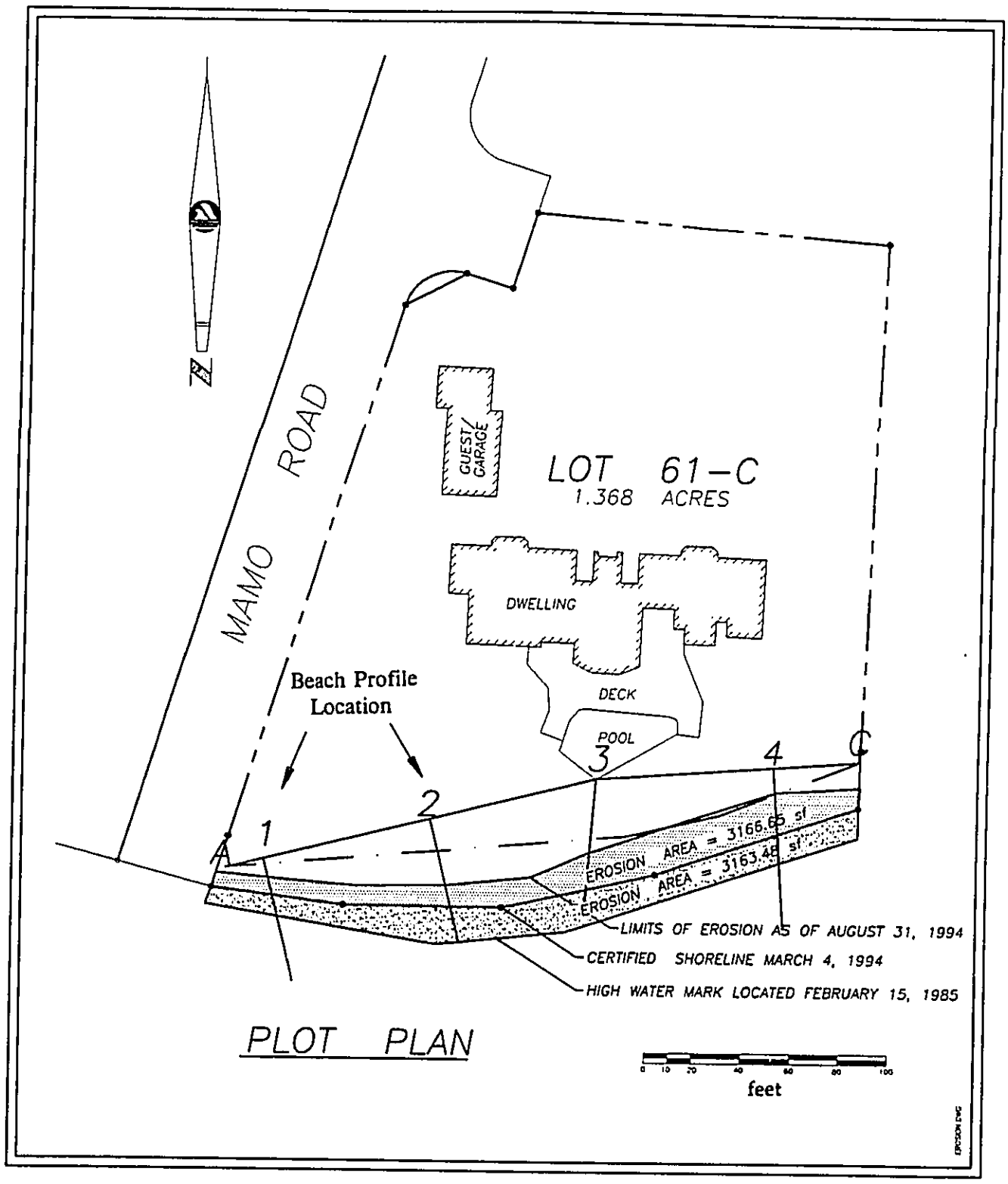

FIGURE 2 SHORELINE POSITION

4470 MAMO ROAD, KEKAHA, KAUAI
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B. TECHNICAL CHARACTERISTICS

1. Use Characteristics

The rubble revetment will protect the property from severe erosion induced by combined wave and current action.

2. Physical Characteristics

Property Layout

A certified shoreline survey map is included in Appendix A. The site plan is shown in Figure 2.

Shoreline Conditions

The shoreline at Kikiaola Beach consists of a narrow sand beach, composed primarily of volcanic sand mixed with white calcareous sand. The volcanic sand is denser than the white sand and is probably eroded from inland deposits and washed into the sea by rivers. The Waimea River located east of the project site is probably the primary source of volcanic sand found along the Kekaha shoreline. Median sand size in front of the Croft property is in the range of 400 - 500 μm and the percentage of calcareous sand is about 11 - 15% as shown in Figure 3.

The Kekaha shoreline of Kauai is subject to deepwater waves that are predominantly from the south (S) and southwest (SE) with the most probable wave height of 3 feet and period of 12 to 14 seconds (Figures 4 and 5). In addition to direct exposure to south swell and Kona storm waves, the shoreline is indirectly exposed to refracted tradewind waves from the east and North Pacific swell from the west. As these waves approach the shoreline they are transformed by refraction, friction, and shoaling until they strike the beach. The site is fronted by a reef that is slightly shallower than surrounding areas. Many waves break when they hit the reef; however, the water becomes deeper inside the reef so that waves can reform before reaching the beach.

Although the wave climate varies seasonally, the predominant littoral drift is to the west, as indicated by typical wave refraction/diffraction patterns taken from aerial photographs (Figures 6 and 7). The angle that the wave front makes with respect to the shoreline will generate a westward longshore current and thus cause westward sediment transport. According to the U.S. Army Corps of Engineer Division (Hawaii Regional Inventory of the National Shoreline Study, 1971) and Campbell (Erosion and Accretion of Selected Hawaiian Beaches, 1962-1972), the shoreline immediately west of the Waimea River has eroded steadily since the early 1900's. The construction of the Kikiaola Boat Harbor in 1959 divided the shoreline into two sections. One of them is Waimea Beach from Waimea River to the Boat Harbor, and the other is Kikiaola Beach

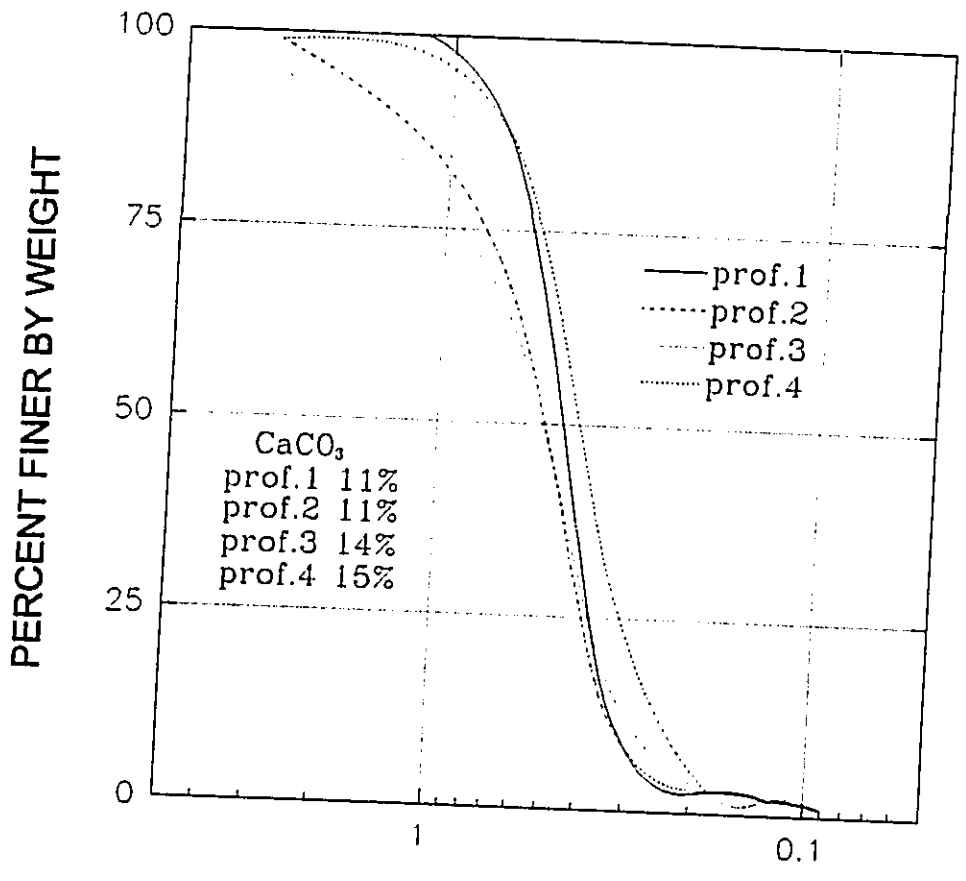
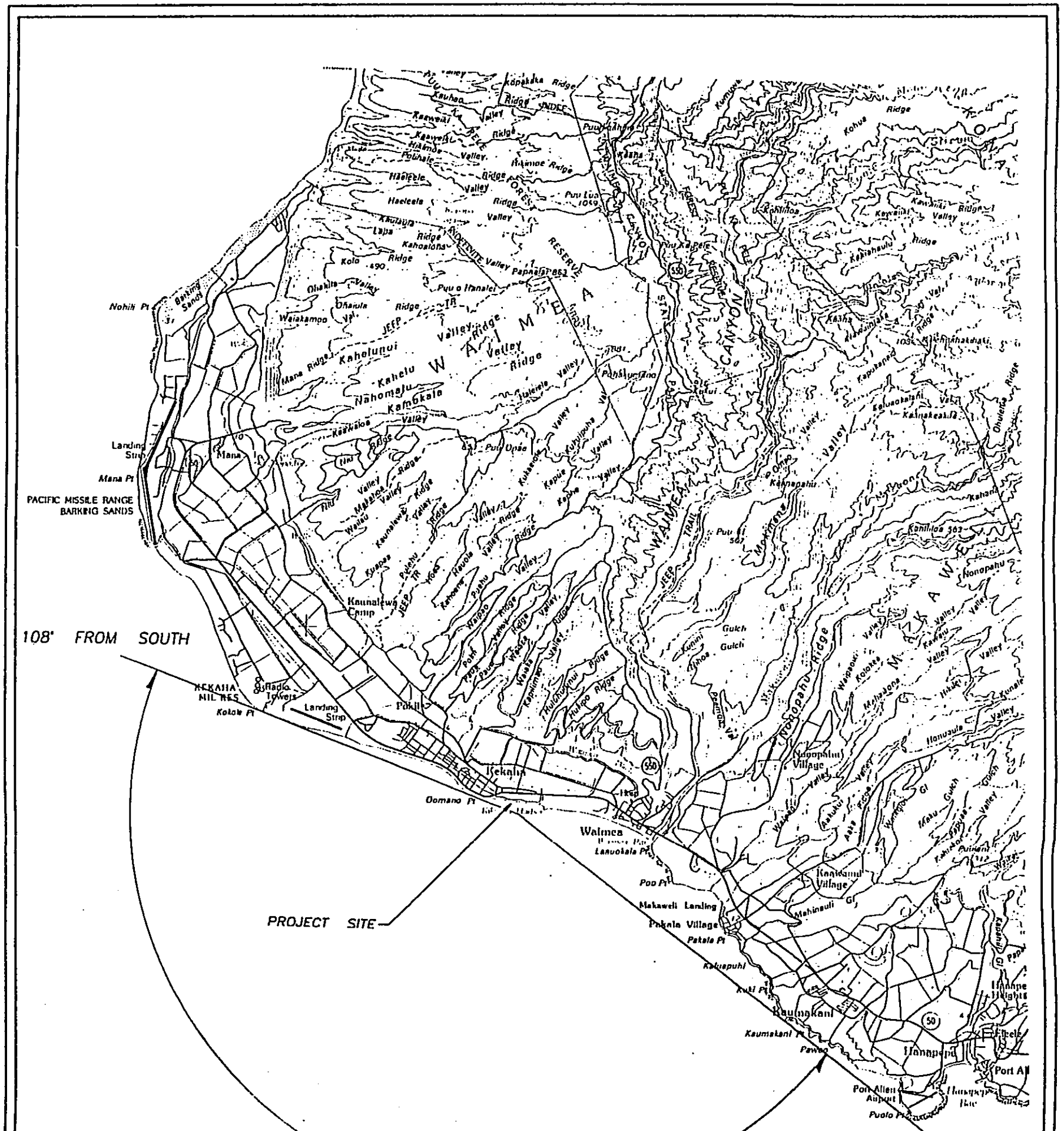


FIGURE 3 SAND SIEVE CURVES


PROJECT SITE
108° FROM SOUTH
PACIFIC MISSILE RANGE BARKING SANDS
KEKAHA MIL RES
WAIMEA CANYON
PUU KA PELE FOREST RESERVE
WAIMEA CANYON STATE PARK
JEEP TRAIL
Waimea
Kekaha
Mana
Pakala Village
Makaweli Landing
Kaumakani
Hanapepe
Port Allen
Nohili Pt
Kokole Pt
Oomano Pt
Lauoukola Pt
Poo Pt
Kaumakani Pt
Landing Strip
Radio Towers
Kaunalewa Camp
Pokii
Kapahi
Nonopahu Ridge
Makaweli Valley
Olokele Valley
Hanapepe Valley
Niu Ridge
Kolo
Haeleele Ridge
Kaawaloa
Papaalai Valley
Polihale
Kaaweiki Ridge
Kauhao Ridge
Waimea River
50
550

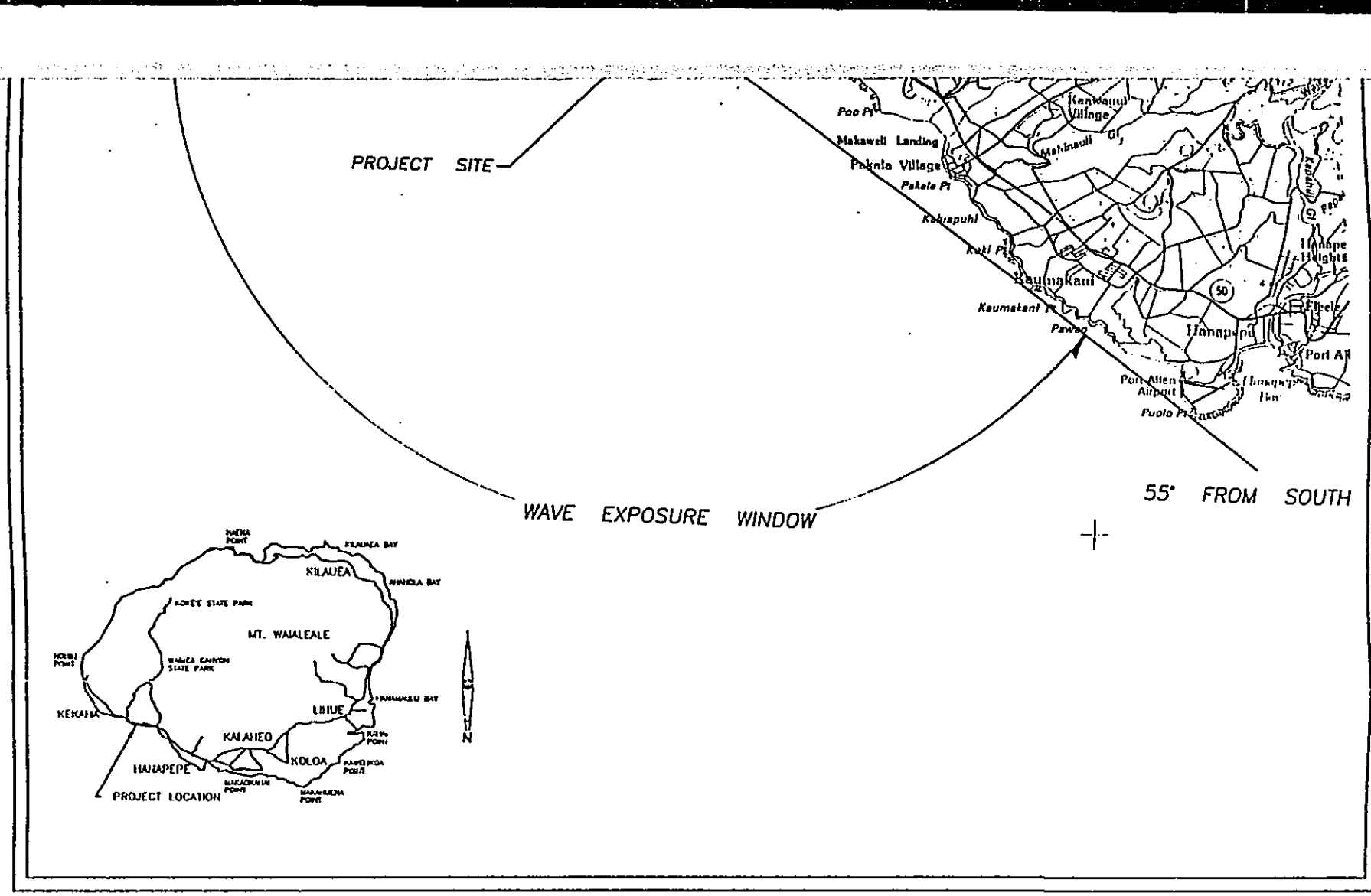


FIGURE 4 MAP OF WAVE EXPOSURE

4470 MAMO ROAD, KEKAHA, KAUAI
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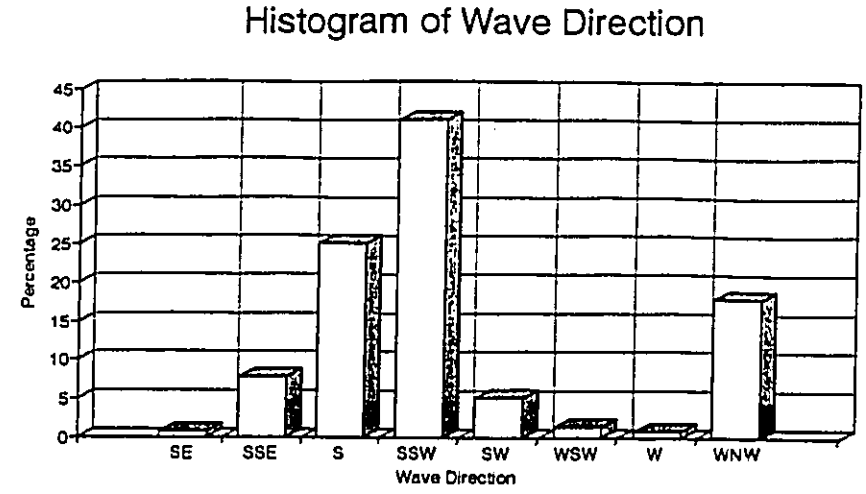

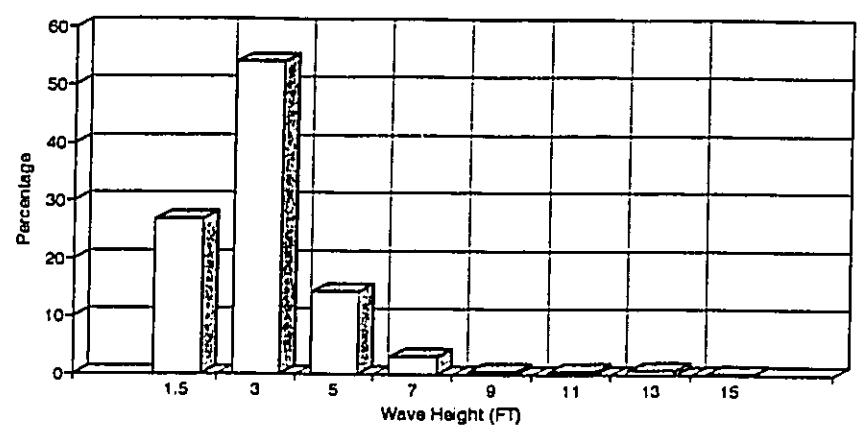

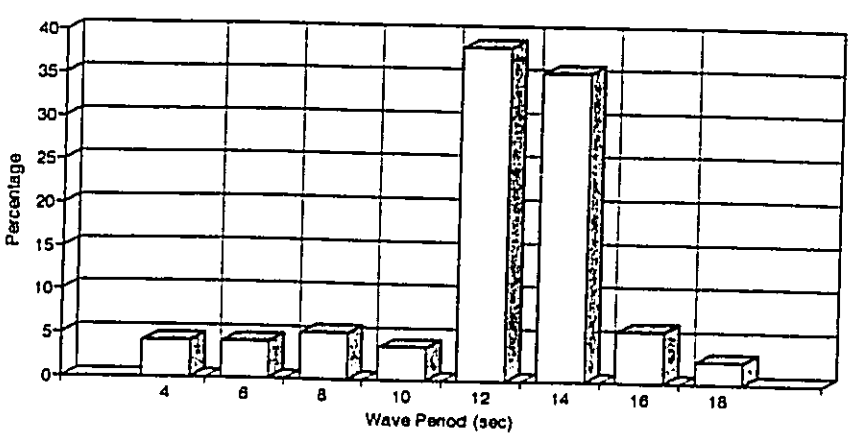

FIGURE 5 WAVE STATISTICS

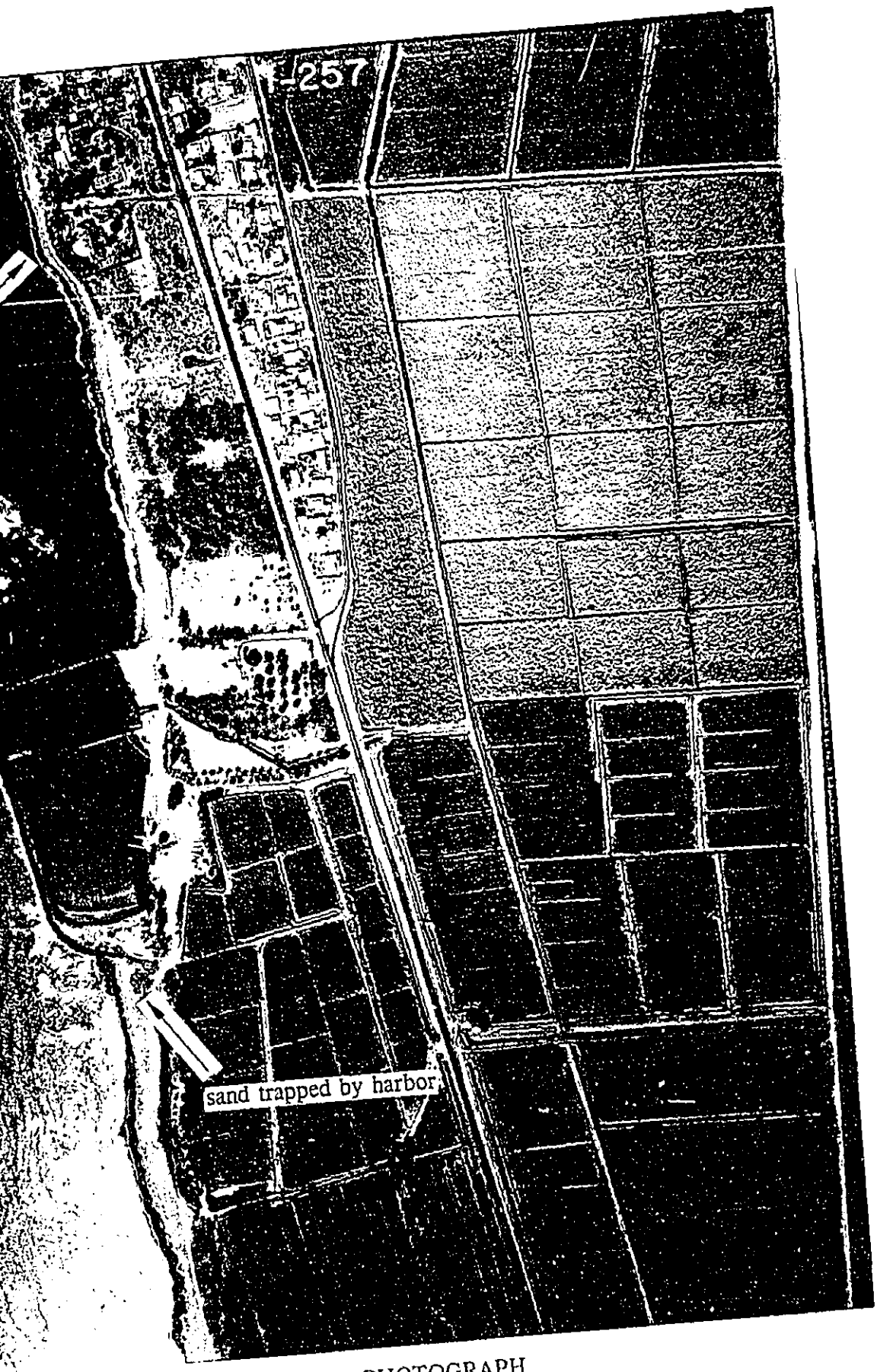

FIGURE 6 AERIAL PHOTOGRAPH

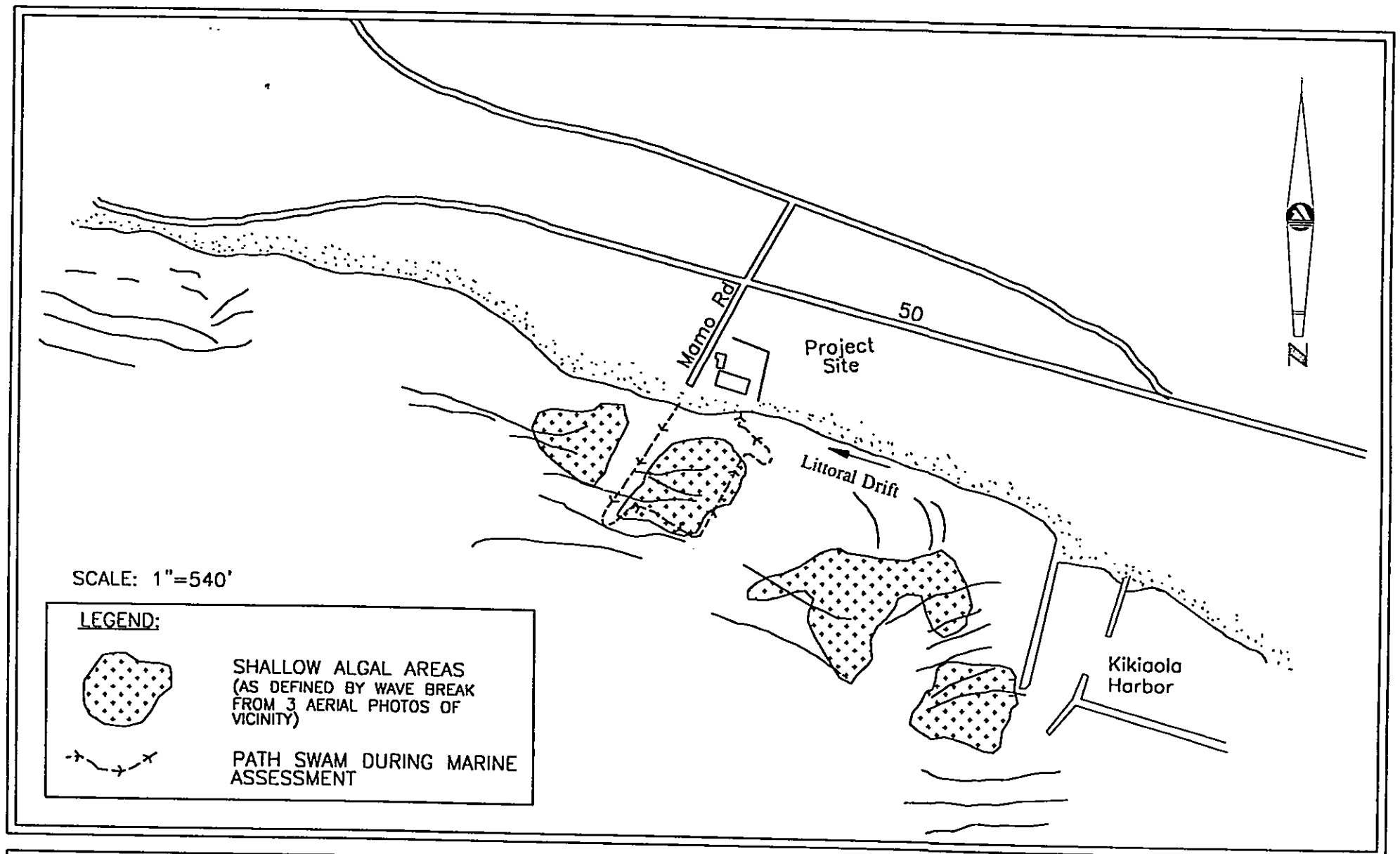

FIGURE 7 WAVE REFRACTION/DIFFRACTION PATTERN

4470 MAMO ROAD, KEKAHA, KAUAI

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from the harbor to Oomano Point. The former section has accreted and the latter section has had intensified erosion since the construction of the harbor (Makai Ocean Engineering Inc. and Sea Engineering Inc., Aerial Photograph Analysis of Coastal erosion on the Islands of Kauai, Molokai, Lanai, Maui and Hawaii, 1991). The erosion patterns can also be seen in aerial photographs (Figure 6).

A passing hurricane can generate large deepwater waves on the order of 25 feet high. Hurricane surge can cause the nearshore water level to rise as much as 3 to 5 feet. This rise in water level permits larger waves than normal to reach the beach, and sediment transport becomes correspondingly greater than usual. During July and August of 1994, hurricane Emilia (July 20), Gilma (July 25), and John (August 23) passed the south of Hawaiian Islands. Waves generated by these hurricanes increased the erosion rate at the project site.

The eroded shoreline as measured on August 31, 1994 is shown on a copy of the certified shoreline map in Figure 2. Also shown is the high water mark of 1985. The recession of the shoreline indicates long-term erosion at 1.4 feet per year. However, between March 1994 and August 1994, the shoreline has receded at an average of 2.1 feet per month, a much greater rate. Erosion at the Croft property has been aggravated at the east end by a neighboring rock wall that caused flanking erosion over 24 feet from the certified shoreline. Much of this erosion is reportedly recent. Table 1 gives the estimated areas and quantities of material lost. Figure 8 shows the beach profiles measured on August 31, 1994. Instead of a smooth sloping beach between the property and the waterline, there was an abrupt escarpment 4-5 feet high where topsoil and vegetation fell into the water. The escarpment is shown in the photographs of Figure 9a-b-c.

TABLE 1 EROSION ESTIMATES

Items	1985-1994	Mar-Aug 1994
Back beach area lost (sq ft)	3,164	3,167
Back beach volume lost (cu yd)	516	516
Beach material lost (cu yd)	1,600	1,600
Total material lost (cu yd)	2,116	2,116
Property line recession rate (ft/6 months)	0.7	12.6
Property material lost rate (cu yd/6 months)	118	2118

Also shown in Figure 8 are the profiles measured on January 12, 1995 after the completion of the revetment construction. The increase in beach width and sand accretion in front of the revetment is apparent in post construction photographs (Figures 11a-b and 12a-b). The condition of the beach after construction indicates that the revetment is performing well, dissipating wave energy and encouraging beach growth.

The unprotected shoreline at the western end of the property exhibits continuous erosion and trees in the shoreline are in danger of being lost (Figures 11c-d and 12d). By comparing Figures 11d and 12d, it may be concluded that some erosion occurred between November 29, 1995 and January 12, 1995 along the unprotected section, at least around the endangered trees. Either rainfall runoff or wave runup could have caused this erosion. In case of bad weather and high surf conditions in the foreseeable future, this section of the shoreline will be a potential problem and merits immediate attention. Although the whole unprotected shoreline shows slight recession, there is no sign of flank erosion at the western end of the revetment (Figures 11c and 12c). The same is true for the eastern flank protection. This indicates that the flank protection is properly designed and it is unlikely to cause flank erosion to neighboring property.

A chain-link fence was also erected along the newly built revetment approximately 5 feet seaward from the top of the revetment (Figure 12c). Construction of the fence is necessary to avoid liability that may be occasioned by unauthorized use of the swimming pool or damage to landscaping. The fence does not block public beach access.

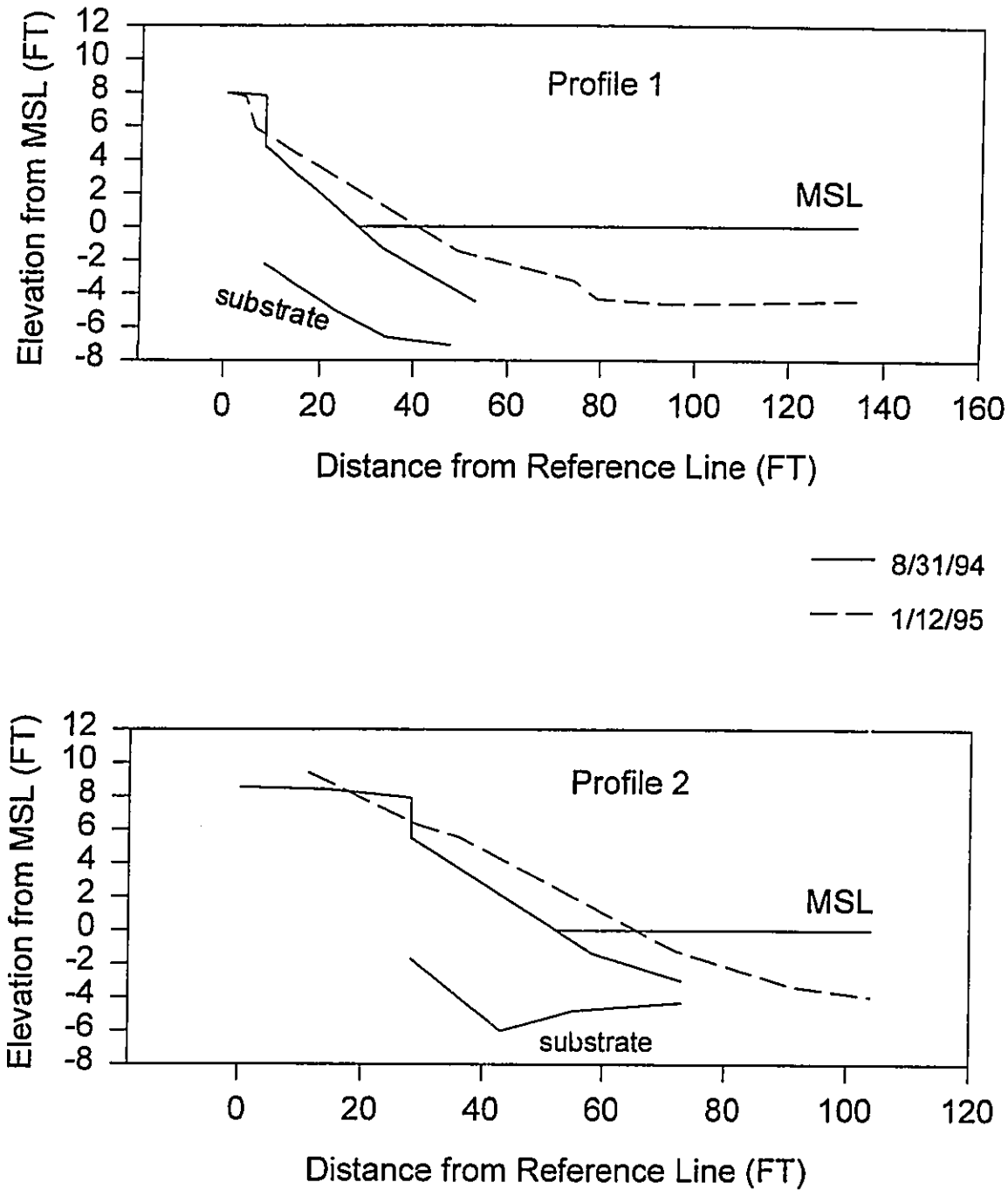
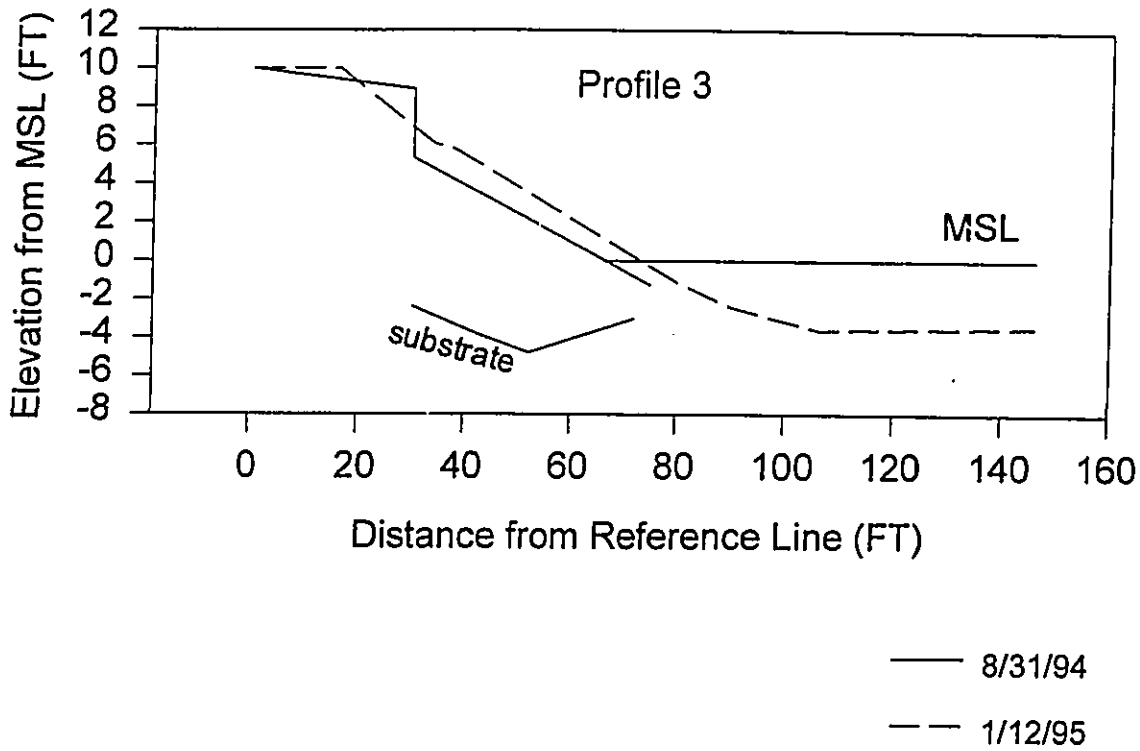


FIGURE 8 BEACH PROFILES



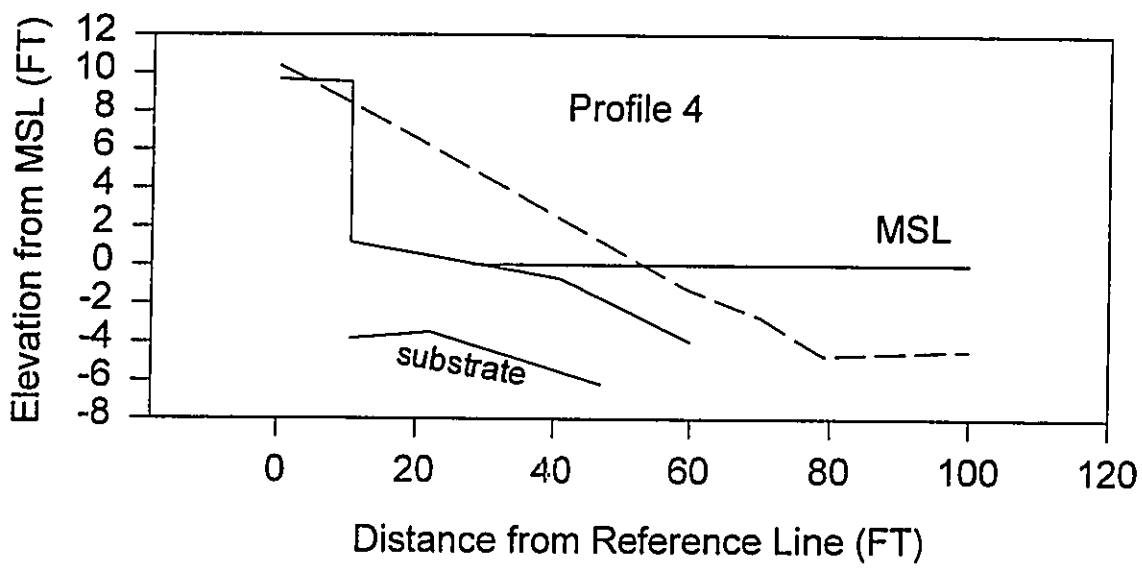


FIGURE 8 (CONTINUED) BEACH PROFILES

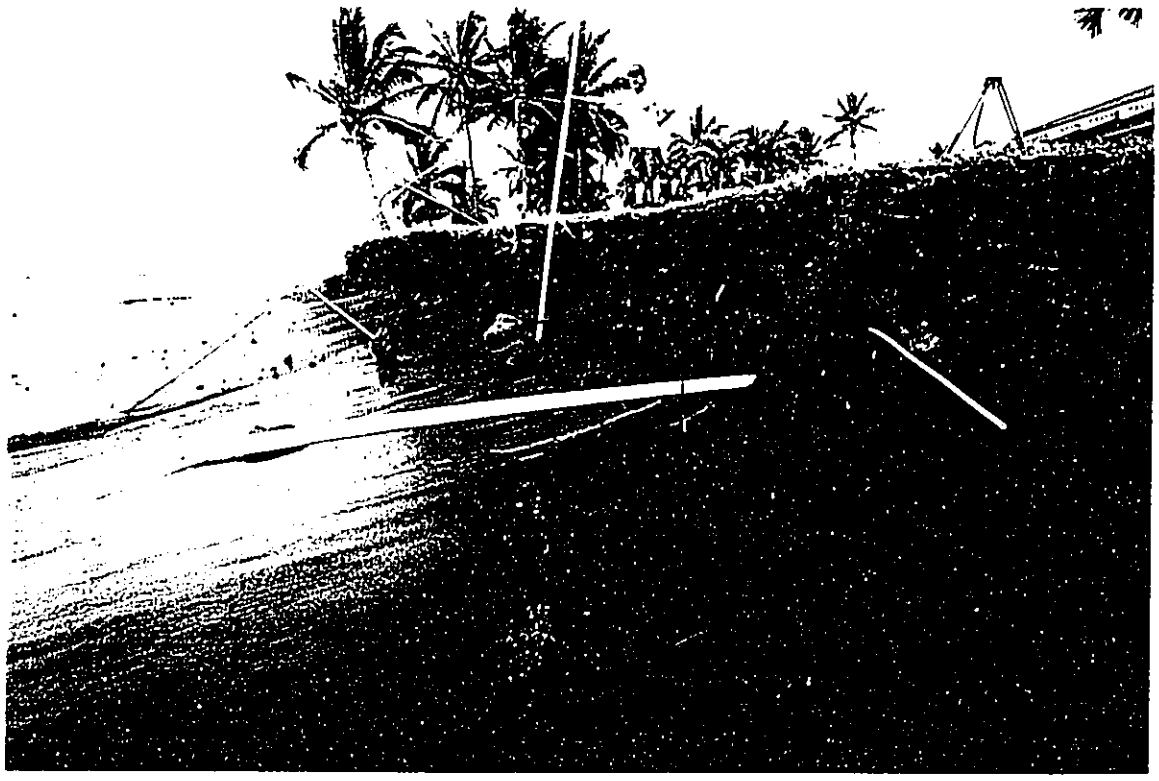


FIGURE 9 PHOTOGRAPHS BEFORE CONSTRUCTION
a. EAST EDGE OF PROPERTY
b. MIDDLE SECTION OF PROPERTY

FIGURE 9 (CONTINUED) PHOTOGRAPHS BEFORE CONSTRUCTION
c. WEST EDGE OF PROPERTY AND NEIGHBORING PROPERTY
d. SEDIMENT PLUME AND KIKIAOLA HARBOR TO EAST

FIGURE 10 PHOTOGRAPHS DURING CONSTRUCTION
a. FILTER FABRIC PLACEMENT
b. TOE STONE PLACEMENT

FIGURE 11 PHOTOGRAPHS AFTER CONSTRUCTION (11/29/94)
a. FRONT YARD AND REVETMENT
b. BEACH AND REVETMENT

FIGURE 11 (CONTINUED) PHOTOGRAPHS AFTER CONSTRUCTION
c. WEST END OF REVETMENT AND UNPROTECTED SHORELINE
d. ENDANGERED TREES AT THE WEST SECTION OF PROPERTY

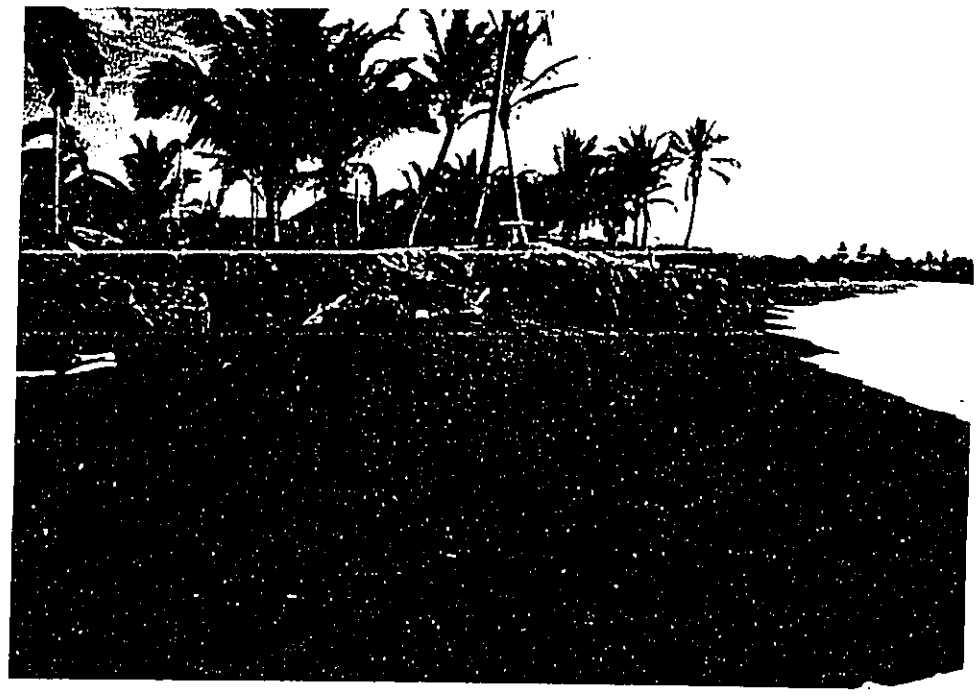


FIGURE 12 PHOTOGRAPHS AFTER CONSTRUCTION (1/12/95)
a. EAST EDGE OF PROPERTY
b. BEACH AND NEIGHBORING SEAWALL

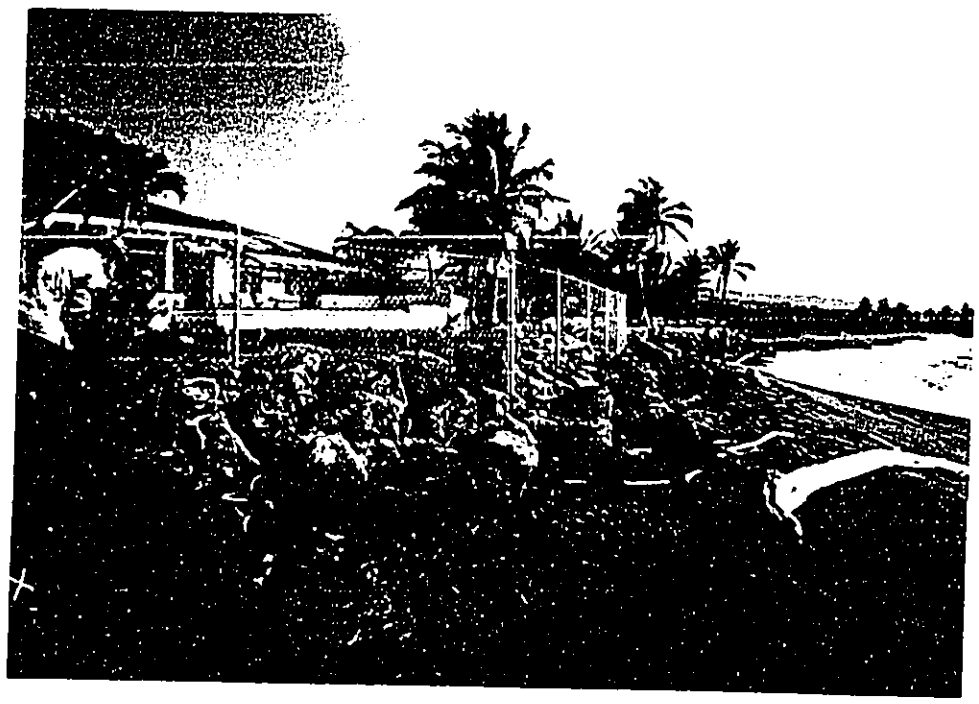


FIGURE 12 (CONTINUED) PHOTOGRAPHS AFTER CONSTRUCTION (1/12/95)
c. WEST FLANK OF REVETMENT AND FENCE
d. SCARP AND ENDANGERED TREES AT WEST EDGE

Shore Protection Structure Description

The shore protection structure is a rubble revetment with a slope of 1:2 (vertical: horizontal). Design drawings are included in Appendix B. The revetment was designed according to accepted coastal engineering practices and Corps of Engineers' guidelines. The top of the revetment is at an elevation of 8 feet MSL. The toe of the revetment follows the certified shoreline. The toe stones were placed on hard substrate where found or buried up to 7 ft below sea level. Armor stones ranged from approximately 700 to 1200 pounds with some larger stones used in the toe. These are quarry stone or field stone with specific gravity approximately 2.65 and nominal size ranges from 1.9 to 2.2 feet diameter. Two layers of armor stones were placed on a bedding layer of 1/10 size stone. The bedding layer is two stones thick with a minimum thickness dimension of 1.6 feet. Filter fabric was placed between the bedding layer and existing soil to prevent sand piping (see Figure 10 for the placement of filter fabric and other construction scenes). Amoco 4553, 4551, or equivalent fabric was used. The filter fabric is puncture resistant with mesh size small enough to retain soil particles. The fabric was placed loosely, not in a stretched condition, but free of wrinkles, creases, or folds. The revetment is flanked on both the east and the west ends by extending the revetment 20 to 30 feet inland (see design drawings in Appendix B).

With a design wave of 3.5 feet, runup on the revetment will be approximately 6 to 8 feet. Therefore, some overtopping may occur during high wave conditions. The revetment has been designed to allow overtopping water or rain runoff to drain back into the sea.

Since the revetment has a gentle slope of 1:2 and is constructed of rubble and properly flank protected, it will have minimal effect on sand transport along the beach. Rubble revetments with gentle slope dissipate wave energy and minimize scour and reflection effects associated with vertical seawalls.

III. AFFECTED ENVIRONMENT

The property is located near the east end of Kikiaola Beach (Figure 1). The area is designated residential and is located in a coastal flood zone (Figure 13). The map shows an inundation elevation of 10 feet for a 100 year flood. This is comparable to the tsunami inundation elevation of 8.2 feet at 200 feet inland calculated by using the Manual for Determining Tsunami Runup Profiles on coastal Areas of Hawaii prepared by M&E Pacific, Inc. The revetment will greatly reduce soil erosion in case of flooding. The revetment is below the existing grade of the lot and does not block coastal views. The project site can be accessed from Mamo Road via Route 50. The shoreline from Kekaha to Waimea is relatively straight and featureless. There are only two small public beach parks: one is located just west of the Waimea River mouth and the other

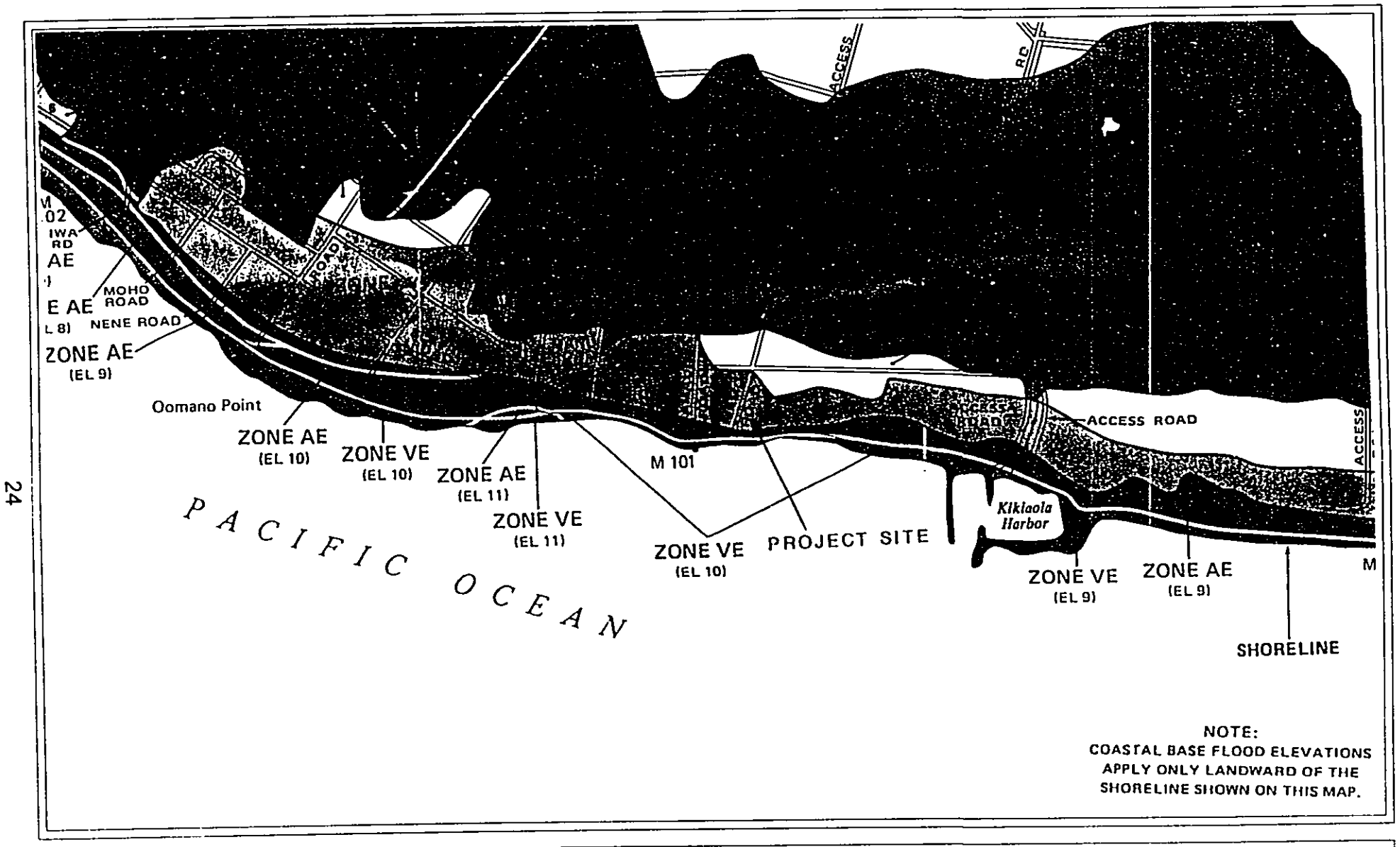


FIGURE 12 FEMA FLOOD INSURANCE RATE MAP

4470 MAMO ROAD, KEKAHA, KAUAI

Oceanit Laboratories, Inc.

is located at the Kikiaola Boat Harbor. The project site will not affect public beach access. The rest of the coast is either in residential use, agricultural use, or vacant. The town of Kekaha and the Kekaha Beach Park are further to the west of the project site.

A biological assessment was made subsequent to the revetment construction. The assessment consisted of snorkel observations made during a 30 minute swim off the beach fronting the property. In Figure 7 a line is traced from aerial photographs showing the approximate path of the observation route. Observations were made up to a distance of approximately 650 feet off shore in line with the western property boundary to a point just outside the small (1.5 feet) breakers, back into the breaker zone to the east and then back to shore roughly parallel to the eastern property boundary. A brief detour was taken into the calm "channel" area to the east of the property. Shaded portions of the drawing are the maximum extent of breaking waves as seen from three separate aerial photographs, and most likely represent shallow reef areas.

Water clarity was about 3 feet near shore and decreased to about 1.5 feet beyond the breaker zone. Observations were somewhat hindered by the poor visibility and constant surge action over the shallow reef. There was a weak current near the shoreline flowing east towards the harbor, which is contrary to the general westward longshore current. The beach consists of a fine olivine sand that terminates near shore. At the western property boundary the sand bottom extends about 15 to 30 feet into the ocean, whereas at the eastern boundary the sand terminates within 3 feet of the water's edge.

The offshore substrate consists of an algal ridge reef community. This type of reef is built up almost exclusively through algae growth. Although the surface of the reef is fairly fragile, due to the nature of the calcified *Porolithion* algae, the reef structure is fairly uniform and solid without caves, undercuts or channels. The reef apparently has well defined edges. To the right side of the swim path going out, the reef edge dropped about 1.5 feet to a sand channel. The width of the channel was not determined. Similarly the reef came to an abrupt end and a 3-foot drop just outside the breaker zone with a similar but less well defined edge on the west side near the swim path.

Two principal calcareous algae, *Porolithon gardineri* and *Porolithon onkodes,* account for much of the calcium structure and cementing action of these reefs. However other algae also tend to trap and hold sand and fine sediments which eventually become cemented to the reef top. A dense algal mat covered almost all available substrate. Principal algae species observed include *Grateloupia sp., Dictyota sandvicensis, Codium arabicum, Codium edule,* and *Porolithon gardineri.* A diatom film covered much of the algae and contributed to the poor water clarity.

Only two live corals (no dead corals were seen) were noted, one small (15 sq. in.) encrusting lobe coral (*Porites lobata)*, and one small cauliflower or rose coral (*Pocillopora meandrina*). In calmer conditions with better water quality, it is quite likely that other corals (probably including *P. damicornis*) would have been found on the reef. No fish were observed along the entire transit route. Only one macro invertebrate, a sea cucumber (*Holothuria nobilis*), was noted on the surface of the reef. It is probable that under calmer conditions many other invertebrate animals would be seen inhabiting the fine scale structure of the reef.

The beach fronting the Croft property is somewhat sheltered from surf by the nearshore reef. The reef mass appears to be constructed primarily of calcified algae although the surface of the reef displays many algae species, some of which are edible (*Codium sp.*). The reef does not support a large population of fish, probably due in part to the absence of large holes or caves within the reef structure. Water clarity at the site was poor and, according to local residents and fishermen, this is a typical condition. Effluent from the Kikiaola small boat harbor and the Waimea River to the west contribute to the silt load and probably also add nutrients which promote algae growth. The heavy silt load and probable high nutrient content of the water may be a primary factor in the formation of the expansive algal ridge reefs with little or no coral growth of significance.

There do not appear to be any caves or overhangs that could be used by green sea turtles for resting areas. However the density of fleshy algae on the reef top suggests that during calm weather, turtles could utilize this area for foraging during high tide.

No turtles, seals, or other endangered or unique species were noted.

It does not appear that the construction or existence of the seawall fronting the Croft property will have any adverse impact on the nearshore marine communities.

IV. IMPACTS AND ALTERNATIVES

A. IMPACT OF PROPOSED REVETMENT

The revetment has been designed to have minimal impact on beach processes. The random placement of armor stones on a 1:2 slope will dissipate wave energy and will not significantly increase sediment transport. The revetment toe will not protrude from the shoreline and will not impede longshore transport.

A field trip was made on January 12, 1995 to assess the impact of the revetment. Sand has accreted and a nice beach was observed in front of the property (Figure 12a-b). The waterline moved approximately 10 feet offshore as a result the revetment

construction except at Profile 3, which is in the middle of the property (Figures 3 and 8). This result clearly shows the effectiveness of the proposed design for protection of both the property and the beach.

B. ALTERNATIVES

Three alternatives other than the selected revetment were considered. These are discussed in the following paragraphs.

No Action

Without any action the property will continue to be washed away since equilibrium conditions cannot be reached without altering the wave climate or the sand balance. The topsoil particles are much smaller than sand and are easily put in suspension. The erosion of large amounts of topsoil will create offshore sediment plumes that are detrimental to marine life, especially coral and other benthic organisms. This alternative is not acceptable for either the property owner or the environment.

Retaining Wall with Rubble Toe

A vertical retaining wall with rubble toe would provide shore protection; however, sloping rubble revetments dissipate wave energy and encourage beach growth better than vertical walls.

Beach Nourishment

Beach nourishment is possible but would require state intervention to bypass sand around Kikiaola Boat Harbor (see aerial photograph in Figure 6 for the sand trapped updrift of the harbor). Sand bypassing is not legally permissible or economically viable for private home owners.

C. RECOMMENDED ALTERNATIVE

Since the house and other facilities are threatened, and the property suffers from severe loss, some type of protection is required. A 1:2 rubble revetment, properly designed and constructed, will provide the greatest protection with minimal impact on beach processes. Our assessment shows that the constructed revetment has improved the surrounding marine environment, whereas the unprotected section at the west edge of the property has shown continuous erosion. Therefore, we recommend that the revetment be extended to the property boundary along the certified shoreline. The extended revetment should follow the same design and construction method. The extended design drawings are shown in Figure B-2. The addition of a chain-link fence is recommended to avoid liability from unauthorized use of the swimming pool and damage to shore protection vegetation on the revetment.

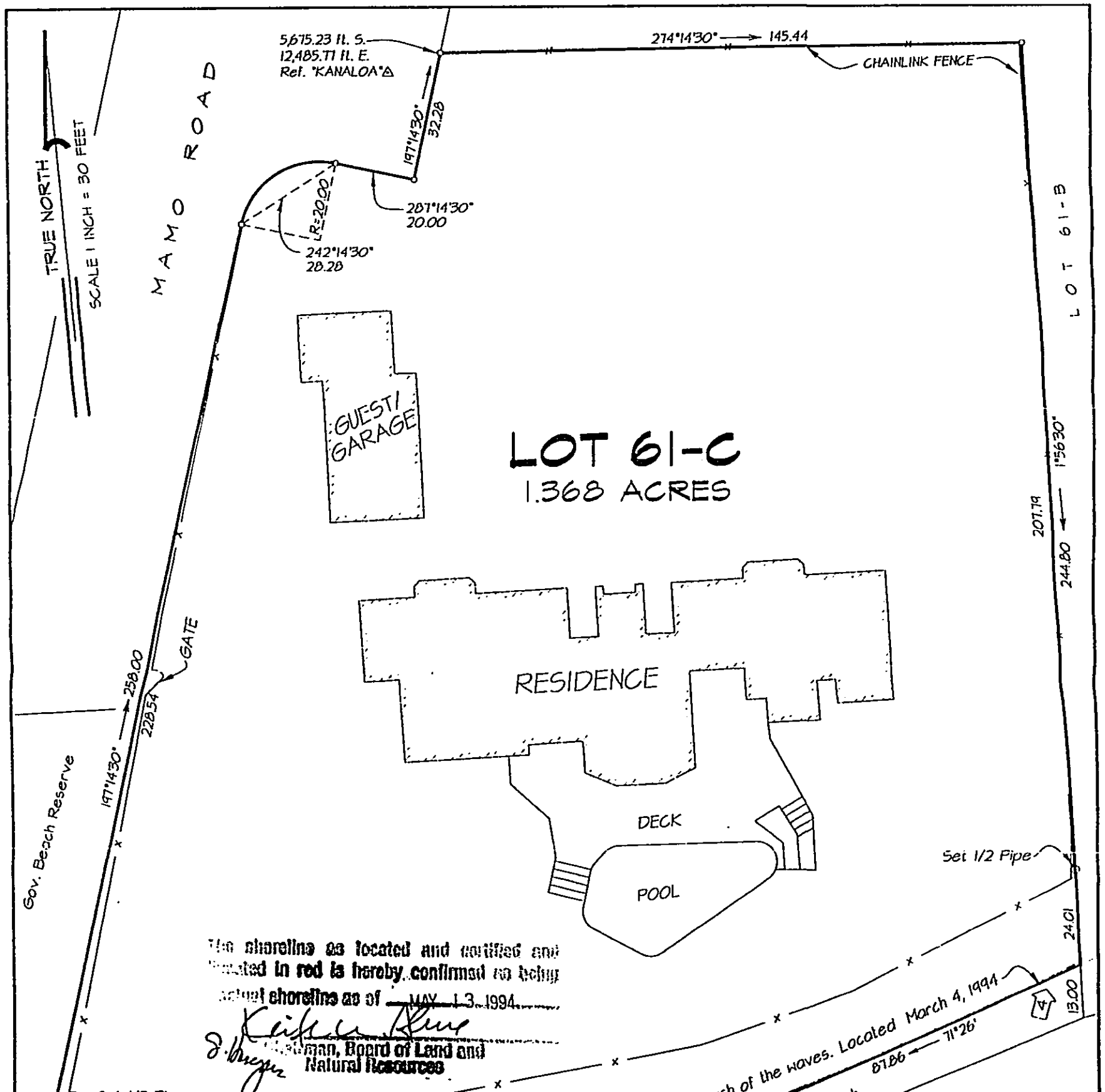
V. *MITIGATION MEASURES*

Because of the negligible impact of the revetment on the environment, no mitigation measures are considered necessary.

APPENDIX A
SHORELINE SURVEY

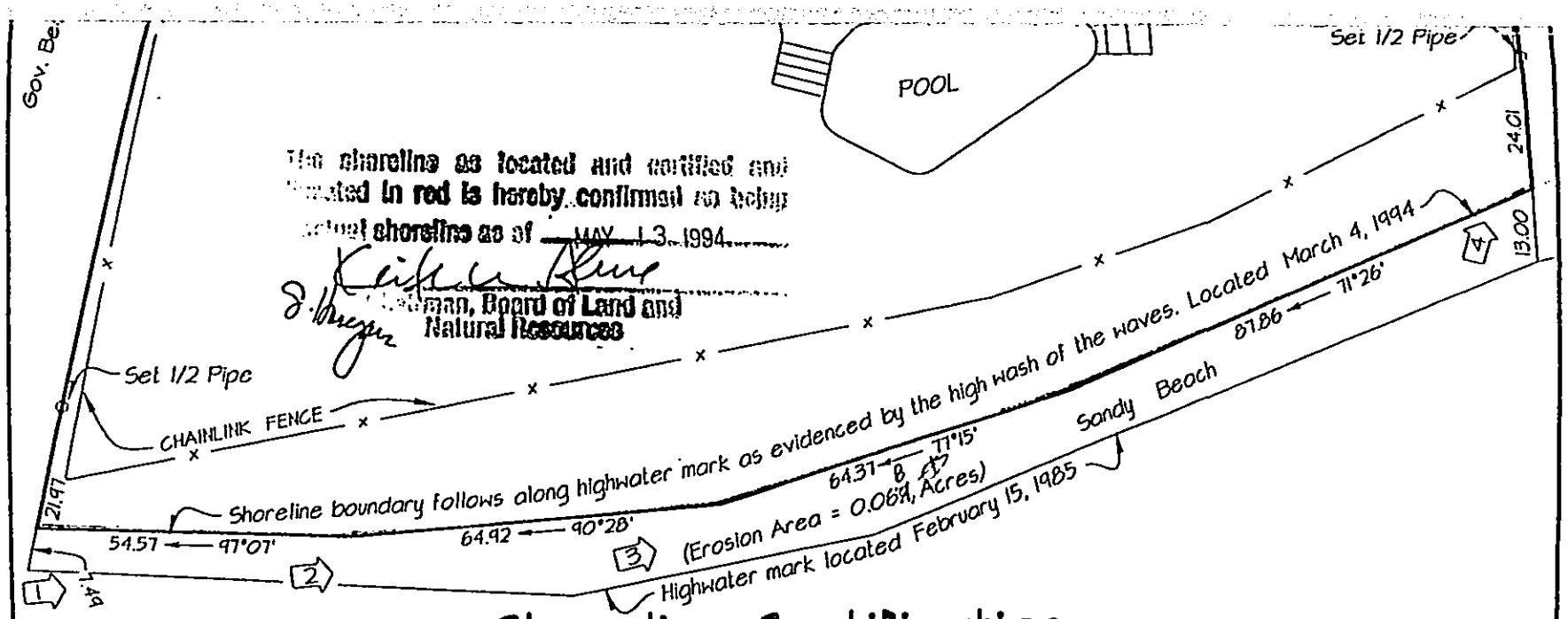
Oceanit Coastal Corporation

coastal engineering services



The shoreline as located and certified and plotted in red is hereby confirmed as being the actual shoreline as of MAY 13 1994

Chairman, Board of Land and Natural Resources



Shoreline Certification

Map of

LOT 61-C

Being a portion of

Ld. Ct. App. 1076

(Map 32)

at

Kikiaola, Waimea, Kauai, Hawaii

Note:

3 Denotes position and number of shoreline picture taken.

Prepared for:
585273 Alberta Ltd.
c/o Chuck Croft
P.O. Box 1058
Waimea, HI 96796

March 8, 1994
Revised May 9, 1994

RONALD J. WAGNER
REGISTERED PROFESSIONAL LAND SURVEYOR
No. 5074
HAWAII, U.S.A.

0 15 30 60 90
Graphic Scale In Feet

Wagner Engineering Services, Inc.
P.O. Box 851 Honalei, HI 96714 (808) 826-7256

THIS MAP WAS PREPARED BY ME OR UNDER MY SUPERVISION

Ronald J. Wagner

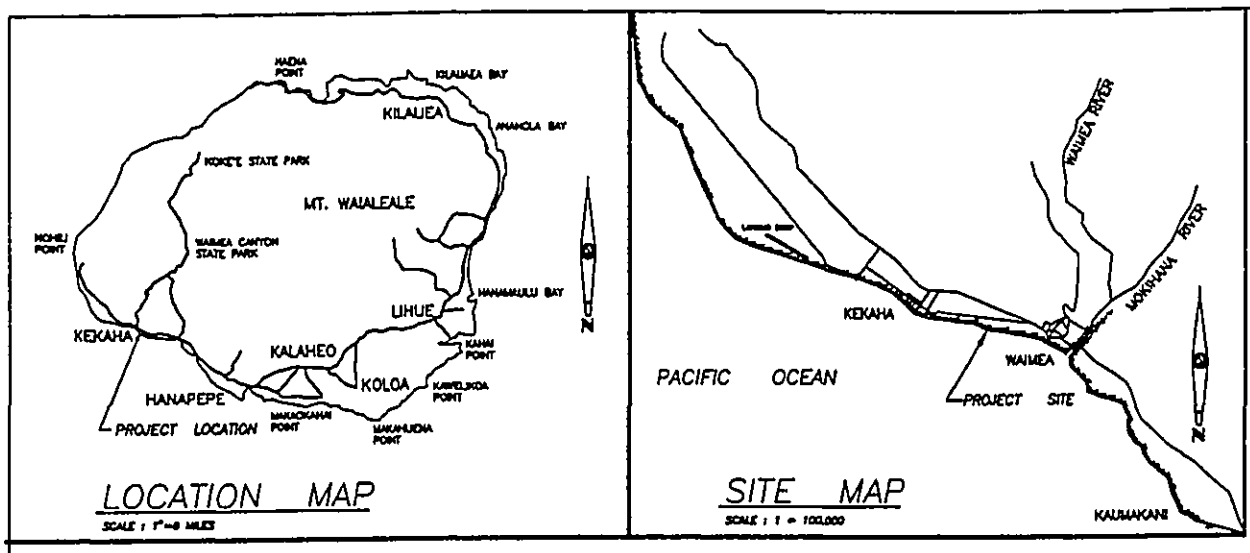
RONALD J. WAGNER
Registered Professional Land Surveyor
Certificate No. 5074

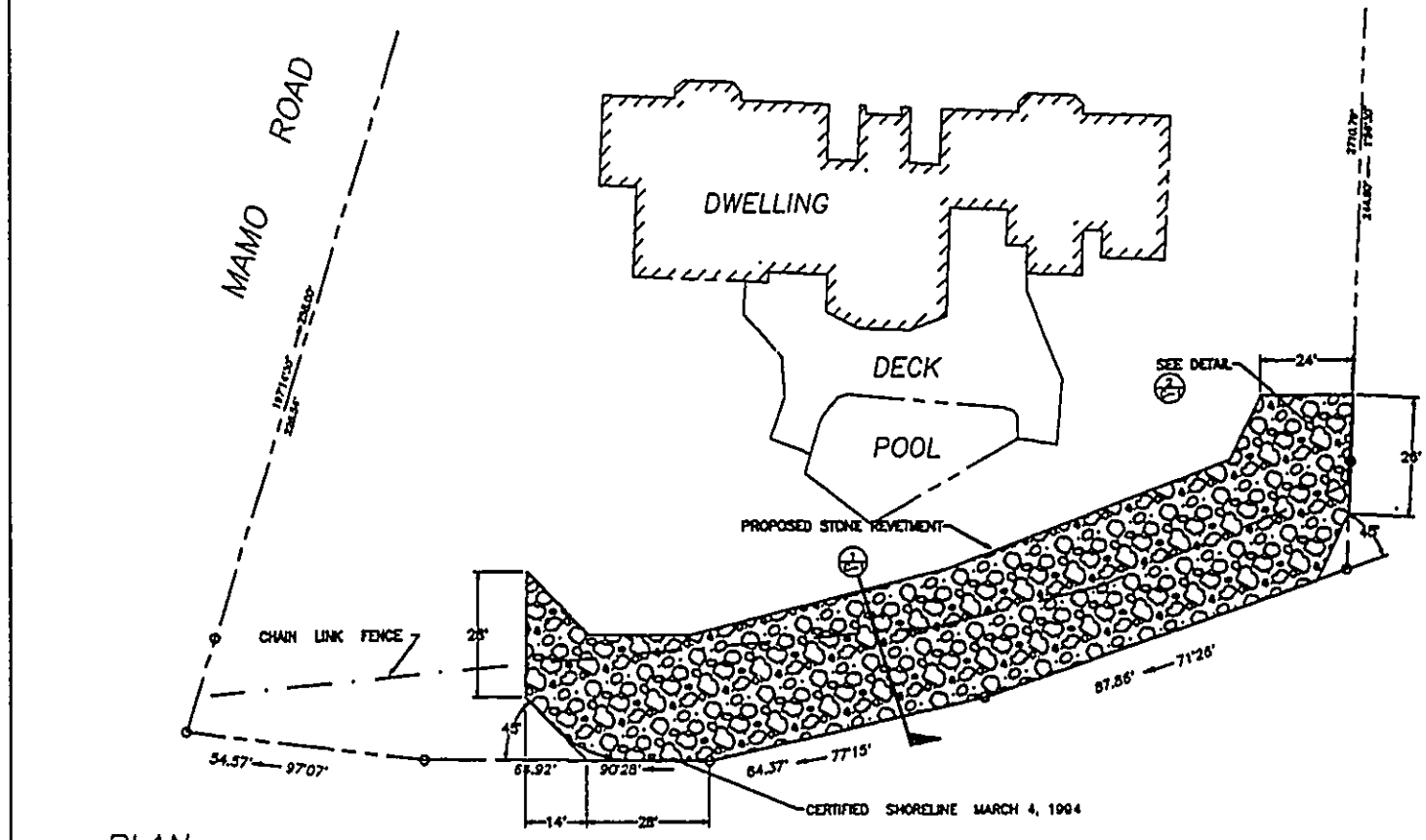
TMK 1-2-13:35 (4 th Div.)

Project No. 0775

APPENDIX B
REVETMENT DESIGN DRAWINGS

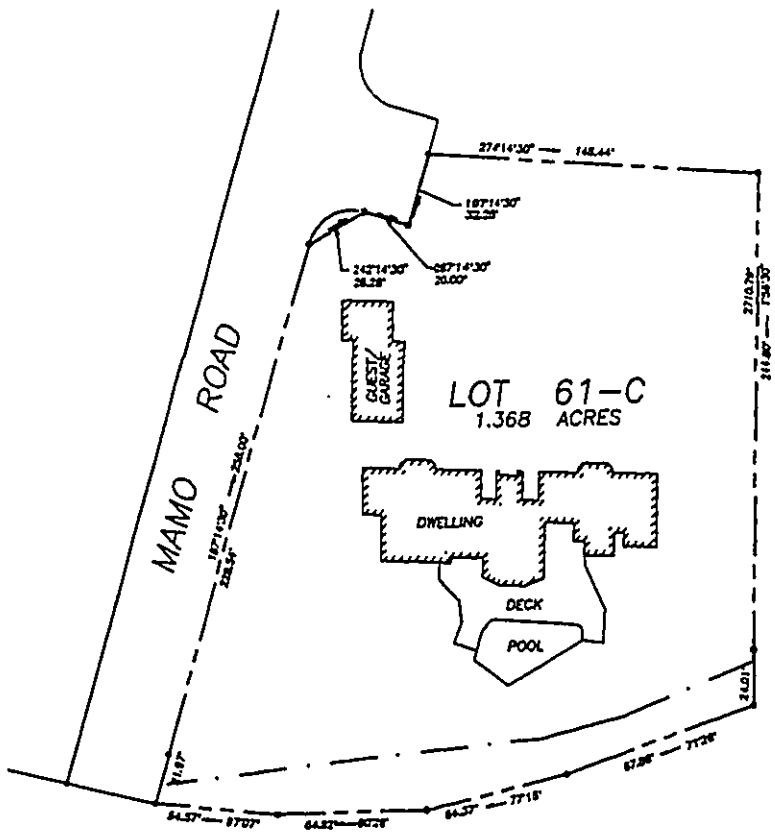
Oceanit Coastal Corporation
coastal engineering services





As-Built D
Existing R

NOTE : THIS DESIGN IS PRELIMINAR
TO REVISION AFTER INVESTI
CONDITIONS.



PLOT PLAN
SCALE : 1" = 40'

As-Built Drawing of
Existing Revetment

NOTE : THIS DESIGN IS PRELIMINARY AND SUBJECT TO REVISION AFTER INVESTIGATION OF SHORELINE CONDITIONS.

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Honolulu, Hawai'i 96813
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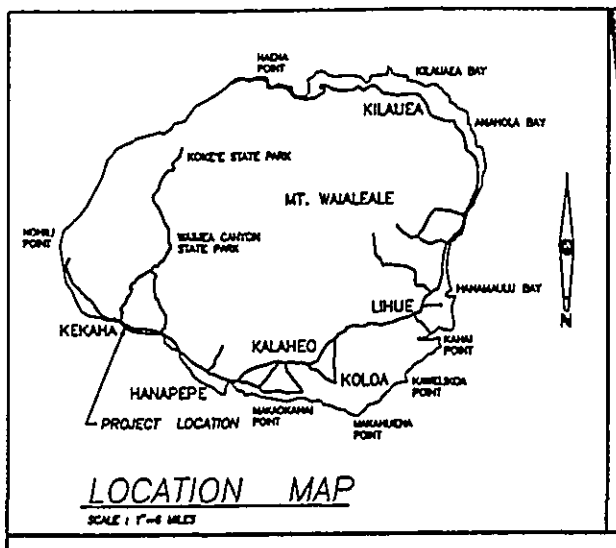
FAX: (808) 531-3177
MCI: OCEANIT

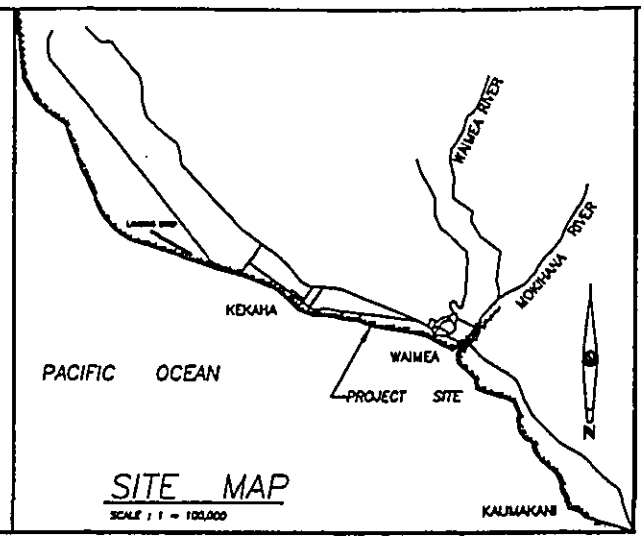
REVETMENT DESIGN
4470 MAMO ROAD, KEKAHA, KAUAI
TMK: 1-2-13:35

SCALE AS NOTED	APPROVED BY	DESIGNED WEB
DATE: 9/94		DRAWN BY WEB
		JOB NO. 8408
		ACAD FILE: DRGT1-8
FIGURE B-1		DRAWING NUMBER T-1



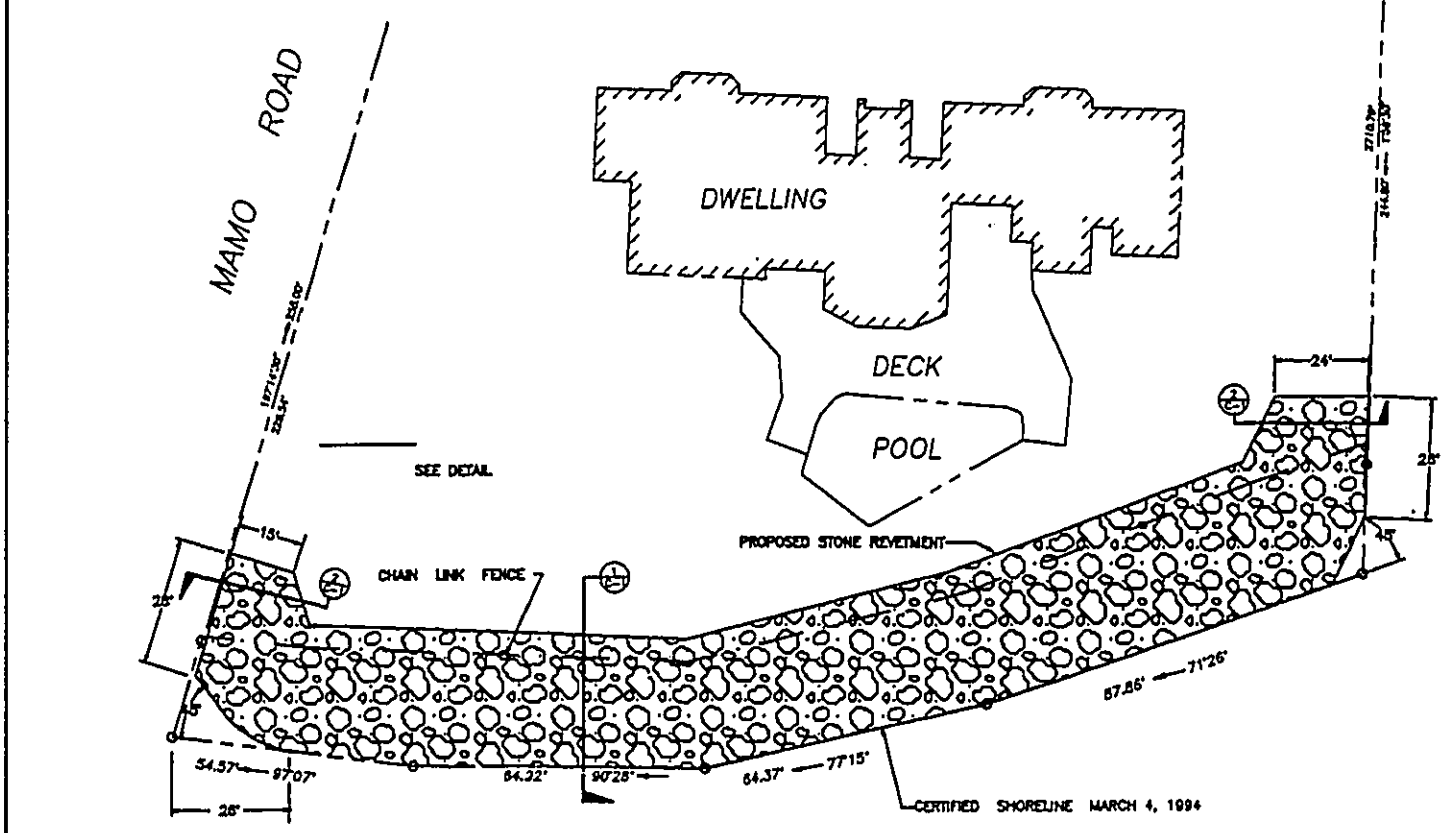
LOCATION MAP

SCALE : 1"=6 MILES



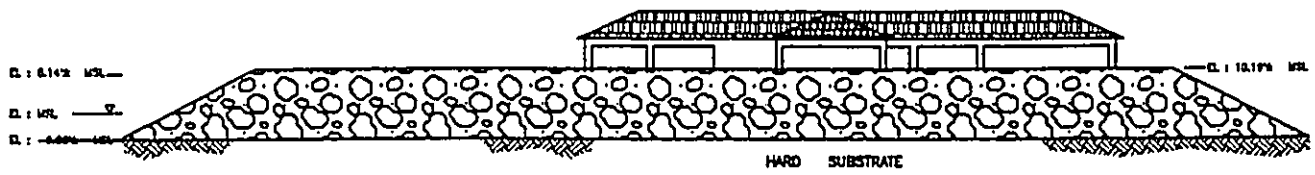
SITE MAP

SCALE : 1 = 100,000



PLAN

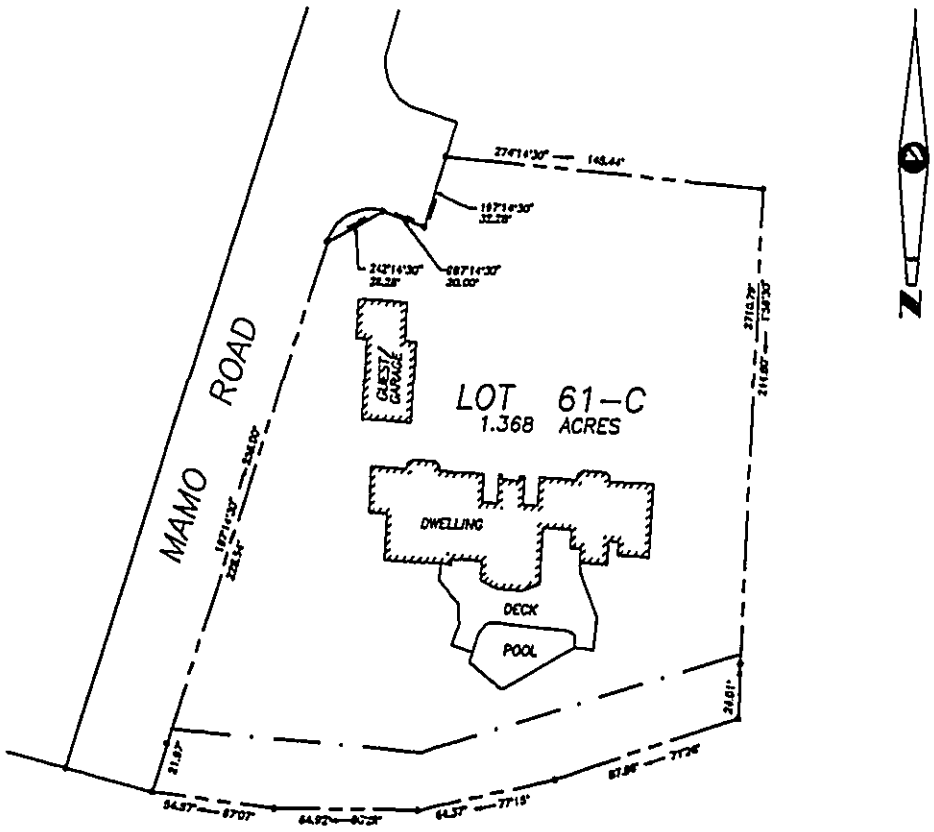
SCALE : 1" = 20'



FRONT ELEVATION

SCALE : 1" = 20'

NOTE : THIS DESIGN IS PRELIMINA
TO REVISION AFTER INVEST
CONDITIONS.



PLOT PLAN

SCALE : 1" = 40'

NOTE : THIS DESIGN IS PRELIMINARY AND SUBJECT TO REVISION AFTER INVESTIGATION OF SHORELINE CONDITIONS.

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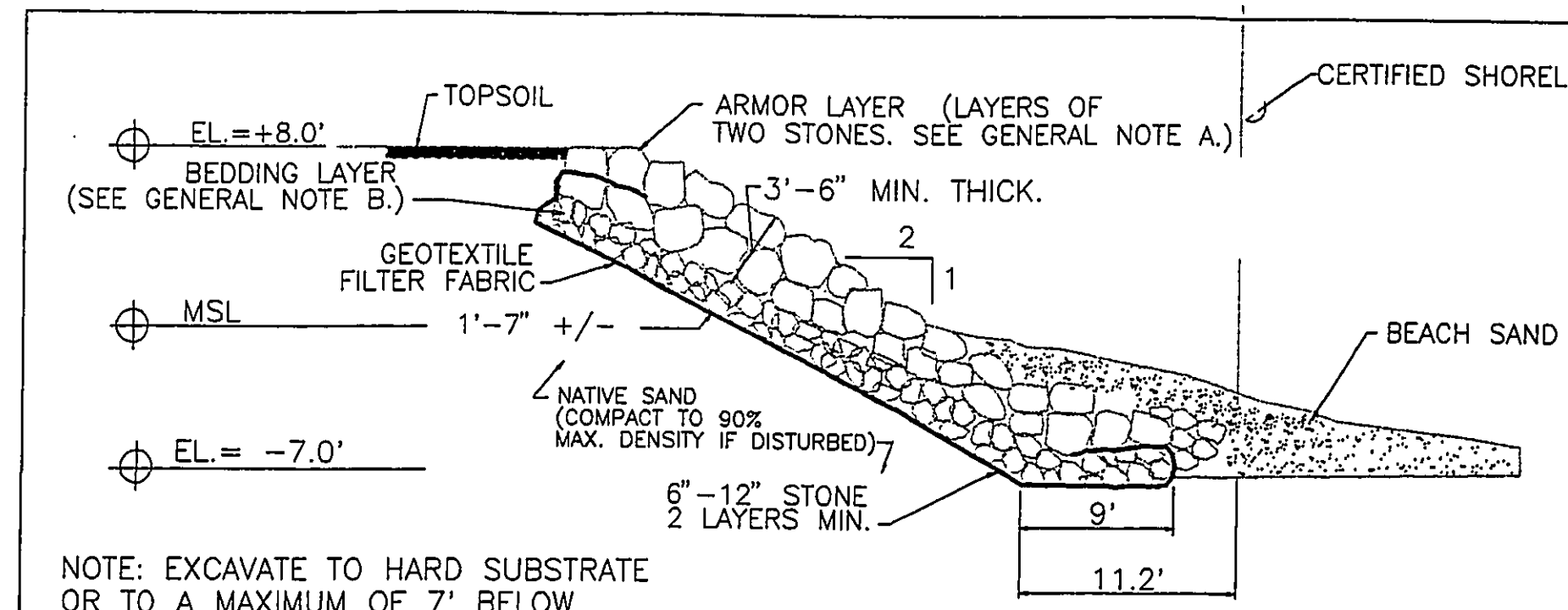
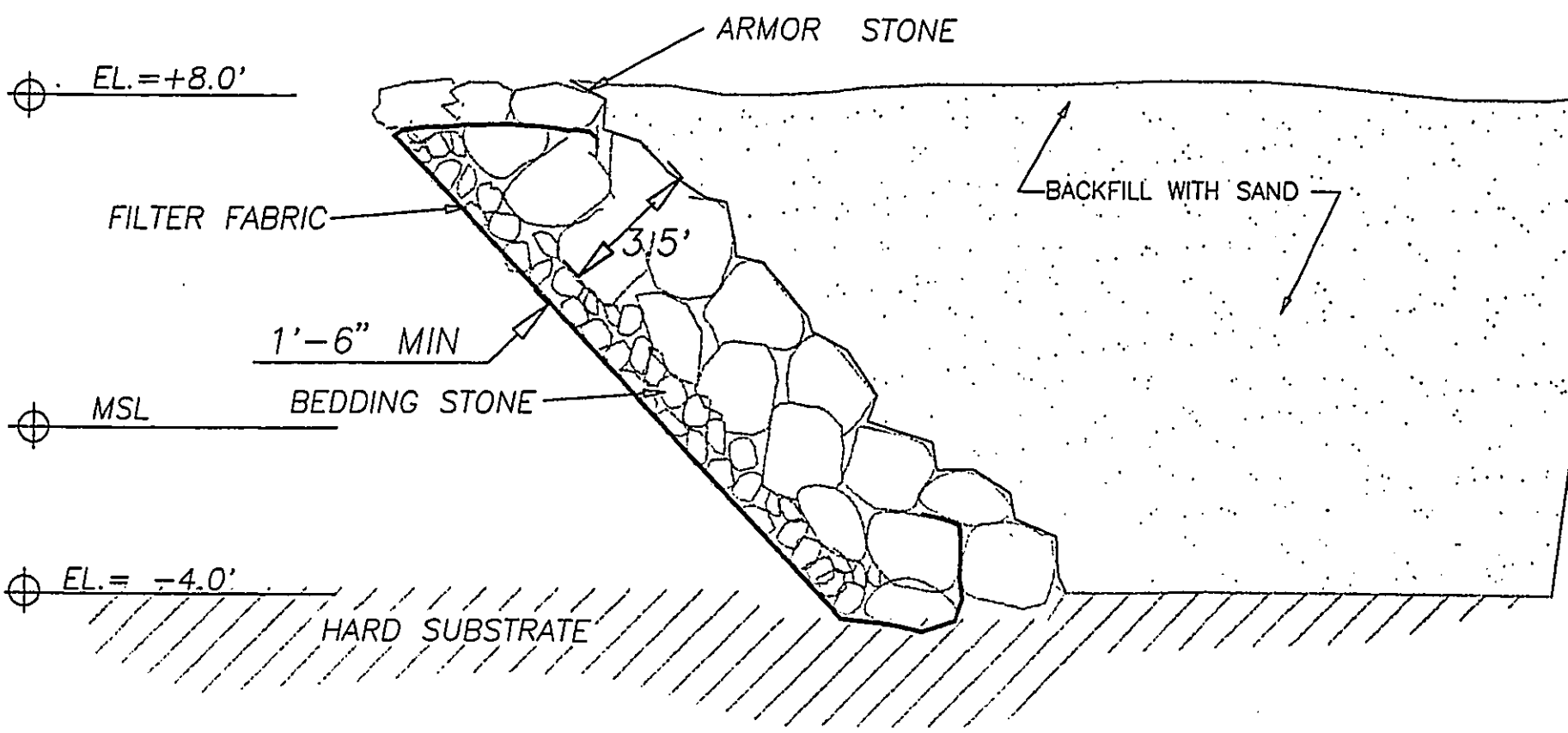
REVETMENT DESIGN
4470 MAMO ROAD, KEKAHA, KAUAI
TMK: 1-2-13:35

SCALE AS NOTED	APPROVED BY	DESIGNED WEB
DATE: 2/93		DRAWN BY VEB
		JOB NO. 9408
		ACAD FILE: C:\9408\T2-3.DW
FIGURE B-2		DRAWING NUMBER T-1

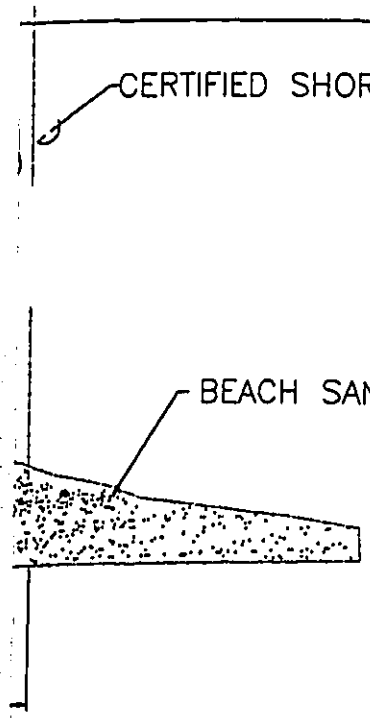


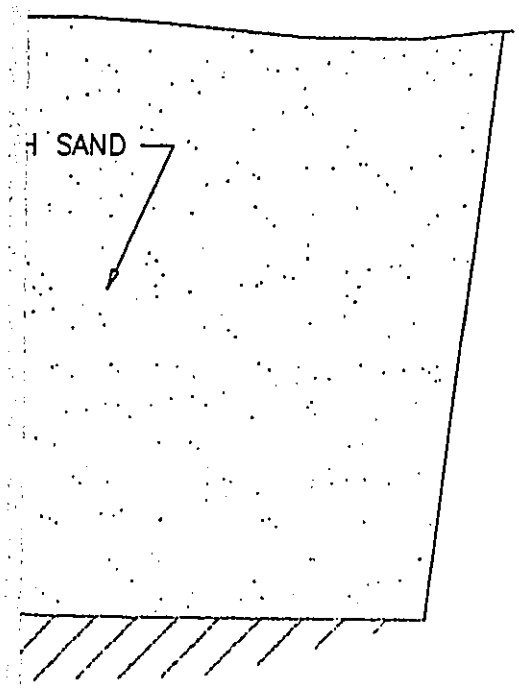
NOTE: EXCAVATE TO HARD SUBSTRATE OR TO A MAXIMUM OF 7' BELOW M.S.L.

1/C-1 CROSS SECTION (TYPICAL)
SCALE: 1"=8'



2/C-1 CROSS SECTION (TYPICAL)
SCALE: 1"=8'





GENERAL NOTES

A. ARMOR LAYER:

1. Armor stones shall range from 700 pounds to 1200 pounds with 50 percent greater than 900 pounds.
2. Armor stone shall be quarry stone or field stone with specific gravity greater than 2.65.
3. The armor layer shall be two stones thick with minimum thickness dimension of 3.5 feet.

B. BEDDING LAYER:

1. Bedding stones shall range from 70 to 120 pounds with 50 percent greater than 90 pounds.
2. The bedding layer shall be two stones thick with a minimum thickness dimension of 1.6 feet.

C. GEOTEXTILE FILTER FABRIC:

1. A geotextile filter fabric shall be placed between the bedding layer and the soil. The filter fabric shall be puncture resistant and shall retain soil particles. The fabric shall be Supac 8NP by Phillips Fiber Corp. or approved equal.
2. The fabric must be placed loosely, not in a stretched condition, but free of wrinkles, creases, or folds.

D. CONSTRUCTION:

1. Sand and rubble shall be excavated to hard substrate. If hard substrate is not found, the project engineer must be notified immediately for possible design changes.
2. The largest armor stones will be used as toe stones. Toe stones must be placed on hard substrate. No stones shall be placed seaward of the certified shoreline.
3. After revetment construction, the beach shall be cleaned of construction debris and returned to the original slope.
4. The contractor shall remove all unused material from the site.
5. The contructor shall backfill the revetment wall with sand and compact.

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MCI: OCEANIT

REVETMENT DESIGN
4470 MAMO ROAD, KEKAHA, KAUAI
TMK: 1-2-13:35

SCALE AS NOTED	APPROVED BY	DESIGNED WEB
DATE: 2/95		DRAWN BY WTY
		JOB NO. 9408
		ACAD FILE: crfbo1.dwg
FIGURE B-3		DRAWING NUMBER C-1

APPENDIX C
EA COMMENTS AND RESPONSES

Oceanit Coastal Corporation
coastal engineering services

OFFICE OF STATE PLANNING

Office of the Governor

MAILING ADDRESS: P.O. BOX 3540, HONOLULU, HAWAII 96811-3540
STREET ADDRESS: 250 SOUTH HOTEL STREET, 4TH FLOOR
TELEPHONE: (808)587-2846, 587-2800

Benjamin J. Cayetano, Governor
FAX: Director's Office 587-2848
Planning Division 587-2824

Ref. No. C-1171

May 2, 1995

The Honorable Dee Crowell
County of Kauai
Planning Department
4444 Rice Street
Lihue, Hawaii 96766

Attention: Mr. George Kalisik

Dear Mr. Crowell:

These comments are submitted in response to the draft environmental assessment for shore protection at the Croft residence on Mamo Road. Please consider these comments both in assessing the adequacy of the EA and in considering the Special Management Area Permit and Shoreline Setback Variance.

Hardened shorelines tend to contribute to beach loss. *See e.g.* Hwang & Fletcher, Beach Management Plan with Beach Management Districts (June 1992). The environmental assessment itself notes that erosion at the Croft property has been aggravated at the east end by a neighboring rock wall (p. 12). How will the Croft wall and the proposed extension to the western property line affect erosion along the coast?

It is our contention that by armoring the shoreline, the long-term retreat and erosion of the land may be halted. But the beach itself will narrow and disappear -- an unnatural process (rendering structures even more prone to hurricane damage).

The environmental assessment asserts that the revetment is encouraging beach growth. More likely, natural processes are at work. Generally, beaches erode and accrete in cycles. This beach likely stabilized after summer storms as it normally would -- not because of the revetment.

Before making a final determination on this permit application, the county should develop a long-term plan for the area. Will the county allow for the gradual hardening of the entire shoreline and the subsequent loss of public beach resources? Or will it plan for a retreat from the shoreline? Will the county work with the Army Corps of Engineers and the state DOT on a beach by-pass operation that will allow the sand presently accumulating at Kikiaola Harbor to reach the shoreline West of the harbor?

In addressing the need for this revetment, the county should balance the potential negative impact of this project with its benefits. It appears that erosion does not, at this time threaten a residence. Rather, it threatens only a swimming pool.

Finally, the county should not allow the chain-link fence to remain at its present location (approximately five feet seaward from the top of the revetment). One of the policies of HRS 205A is to provide and manage "adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value." Furthermore, all development in the special management area shall ensure adequate access to publicly owned beaches. HRS 205A-26(A). If the county allows the revetment to remain, the beach in front of the residence will probably disappear . The fence itself will make access along the coast even more difficult since it will force the public to walk on the uneven rocky revetment. Construction of the revetment, together with the fence, threaten to hinder lateral access by the public. At a minimum, the fence should be set back mauka of the revetment and a condition added to assure safe public access along the crest of the revetment.

If there are any questions concerning our comments, please call Thomas Eisen at 587-2880 or David Kimo Frankel at 587-2839.

Sincerely,

Gregory G.Y. Pai, Ph.D.
Director

cc: Chuck Croft
Dr. Warren Bucher
Gary Gill

Oceanit Coastal Corporation
coastal engineering services
A subsidiary of Oceanit Laboratories, Inc.

June 7, 1995

Gregory G.Y. Pai, Ph.D.
Director
Office of State Planning
P.O. Box 3540
Honolulu, HI 96811-3540

Subject: Draft Environmental Assessment for Shore Protection at Croft Residence, 4470 Mamo Road, Kekaha, Kauai, TMK 1-2-13:35

Dear Dr. Pai:

Thank you for your comments sent to the County of Kauai Planning Department on the subject Environmental Assessment (Ref. No. C-1171, May 2, 1995). We are providing the following responses to your questions and concerns on behalf Mr. Chuck Croft, the permit applicant.

COMMENT:

> How will the Croft wall and the proposed extension to the western property line affect erosion along the coast?

RESPONSE:

The shore protection structure is a rock revetment designed and constructed at a slope of 1:2 according to Corps of Engineers standards. A revetment of this type has minimal effect on the remaining shoreline as evidenced by the beach that has rebuilt in front of the revetment since its construction. We have designed a flanking section for the west end of the revetment to ease the transition to the unprotected shoreline. This flanking section is similar to what was constructed initially. There is presently no flanking erosion evident at the western end; therefore, we do not believe the revetment will accelerate downdrift erosion patterns.

COMMENT:

> It is our contention that by armoring the shoreline, the long-term retreat and erosion of the land may be halted. But the beach itself will narrow and disappear -- an unnatural process (rendering structures even more prone to hurricane damage).

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RESPONSE:

According to the landowner, the beach in front of the constructed revetment is wider after construction than at any time since he bought the property. Photographs we have taken show that the beach is substantially wider that it is at neighboring properties. Long-term erosion caused by the state-owned Kikiaola Boat Harbor could make the shoreline recede farther. The harbor is by far the primary cause of erosion along this beach, not the revetment.

COMMENT:

> The environmental assessment asserts that the revetment is encouraging beach growth. More likely, natural processes are at work. Generally, beaches erode and accrete in cycles. This beach likely stabilized after summer storms as it normally would -- not because of the revetment.

RESPONSE:

The important fact to note is that the beach did stabilize after the summer storms. If the revetment was going to aggravate erosion and result in a narrow or no beach, the beach would probably not have stabilized and grown as is has. During our site visit in March 1995, the revetment was nearly buried in sand, and this was after a period of high Kona waves.

COMMENT:

> Before making a final determination on this permit application, the county should develop a long-term plan for the area.

RESPONSE:

There should be a long-term plan for the area that includes addressing the erosion caused by Kikiaola Boat Harbor. However, structures may be irreversibly damaged or lost while such a plan is formulated and implemented. The harbor has been in existence since 1959, and there is no state, county, or federal erosion control plan yet. Until the erosion is stopped by sand by-passing or nourishment, the property owner will have to use shore protection structures.

COMMENT:

It appears that erosion does not, at this time threaten a residence. Rather, it threatens only a swimming pool.

RESPONSE:

During the summer of 1994, the shoreline eroded inland over 20 feet at some locations in approximately two months. If erosion continued at this rate, the swimming pool would be threatened. The pool is a legal structure that was originally constructed more than 40 feet from the shoreline and is connected to the house by a patio. Loss of the pool would not only be a large financial burden, the resulting broken structure would make much of the yard unusable and unsafe. Moreover, the residence is located only 15 feet from the pool, and following the loss of the pool structure, the threat of erosion to the residence would be immediate.

COMMENT:

Finally, the county should not allow the chain-link fence to remain at its present location (approximately five feet seaward from the top of the revetment). One of the policies of HRS 205A is to provide and manage "adequate public access, consistent with conservation of natural resources, to and along the shoreline with recreational value." Furthermore, all development in the special management area shall ensure adequate access to publicly owned beaches. HRS 205A-26(A). If the county allows the revetment to remain, the beach in front of the residence will probably disappear. The fence itself will make access along the coast even more difficult since it will force the public to walk on the uneven rocky revetment. Construction of the revetment, together with the fence, threaten to hinder lateral access by the public. At a minimum, the fence should be set back mauka of the revetment and a condition added to assure safe public access along the crest of the revetment.

RESPONSE:

A fence existed at approximately the same location prior to the erosion and subsequent revetment construction. The fence is necessary to avoid liability that may be occasioned by unauthorized use of the swimming pool or damage to landscaping. There are many locations for public access to the beach along this coastline. One is immediately west of the property at the end of Mamo Road. Others are located farther east along the beach and at Kikiaola Boat Harbor. The beach has not disappeared in front of the revetment, and we have no reason to believe that it will disappear. At the present time the beach is over 25 feet wide, thereby allowing unlimited lateral access

fronting the Croft parcel. It is not necessary to walk along the crest of the revetment to access the beach.

We have tried our best to provide a design that not only protects the property but minimizes any adverse effect to the beach. The revetment has been designed and constructed according to Corps of Engineers guidelines and standard coastal engineering practices. We would support any state or county long-term plans that would reduce the erosion at Kikiaola Beach as long as our client's property is not threatened. We would be happy to discuss your concerns further at your convenience.

Sincerely,

Warren E. Bucher

Warren E. Bucher, Ph.D.
Senior Ocean Engineer

cc: Mr. Chuck Croft
County of Kauai Planning Department

WEB/l06075gp.osp

Oceanit Coastal Corporation
coastal engineering services

BENJAMIN J. CAYETANO
GOVERNOR

GARY GILL
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
220 SOUTH KING STREET
FOURTH FLOOR
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-2452

April 4, 1995

Dr. Warren E. Bucher
Oceanit Coastal Corporation
1100 Alakea Street, #3100
Honolulu, Hawaii 96813

Dear Dr. Bucher:

SUBJECT: Draft Environmental Assessment for Croft Residence Rock Revetment, Kekaha, Kauai, TMK 1-2-13:35

Please consult the Army Corps of Engineers and the Coastal Zone Management program of the Office of State Planning and include their responses in your final environmental assessment.

Sincerely,

Gary Gill
Director

GG/NH:kk

c: George Kalisik, County of Kauai Planning Department

Oceanit Coastal Corporation
coastal engineering services
A subsidiary of Oceanit Laboratories, Inc.

June 6, 1995

Mr. Gary Gill, Director
State of Hawaii
Office of Environmental Quality Control
220 South King Street
Fourth Floor
Honolulu, HI 96813

Subject: Draft Environmental Assessment for Shore Protection at Croft Residence, 4470 Mamo Road, Kekaha, Kauai, TMK 1-2-13:35

Dear Mr. Gill:

Thank you for your comments (April 4, 1995) on the subject Environmental Assessment (EA). The Army Corps of Engineers has not, to date, provided a response to the EA even though they have been contacted several times by phone. The shore protection structure presented in the EA was designed according to Corps of Engineers guidelines.

The Office of State Planning has also provided comments, and we are responding to them. The response will be included in the final EA.

Sincerely,

Warren E. Bucher

Warren E. Bucher, Ph.D.
Senior Ocean Engineer

cc: Mr. Chuck Croft
County of Kauai Planning Department

WEB/l06065oe.qc

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EXHIBIT 1
SPECIAL MANAGEMENT AREA
PERMIT ASSESSMENT APPLICATION

Oceanit Coastal Corporation
coastal engineering services

SPECIAL MANAGEMENT AREA PERMIT ASSESSMENT APPLICATION
COUNTY OF KAUAI
DEPARTMENT OF PLANNING

PART A:

OWNER: Mr. Chuck Croft

APPLICANT: Michael J. Belles

APPLICANT'S STATUS IF NOT OWNER: Attorney for Owner

ADDRESS: 4334 Rice Street, Suite 202

Lihue, Kauai, HI 96766 PHONE: 245-4705

FAX NO.: 245-3277

TMK: (4)1-2-13:35 ZONING: Open SLUD: Urban

GENERAL PLAN: Open CURRENT LAND USE: Residential/Open

NATURE OF DEVELOPMENT: Construction of seawall to protect residence and other improvements located on the parcel from severe erosion caused by unprecedented oceanographic conditions that have resulted in dramatic loss of land along shoreline and thereby threatens to severely damage structures on the property.

*NOTE: An Environmental Assessment in accordance with HRS Chapter 343 is required for actions requiring a Shoreline Setback Variance. Please contact the Planning Department for further information.

VALUATION OF DEVELOPMENT: $67,708.55
(attached contractor's estimate)

DATE OF APPLICATION: September 9, 1994

PART B:

THE PETITIONER SHALL BE RESPONSIBLE FOR FILING THE FOLLOWING WITH THE DEPARTMENT BEFORE AN APPLICATION IS CONSIDERED COMPLETE:

1. A written description of the proposed project, location and a statement of reasons/justification for project.

2. If property abuts the shoreline, a certified shoreline survey conducted by a registered land surveyor within 6 months of an application shall be submitted, except as may be waived by the Planning Director.

3. A plot plan of the property, drawn to scale, with all proposed and existing structures and other pertinent information. Also, preliminary building sketch plans are be submitted.

4. Any other plans or information required by the Director.

Note: An Environmental Assessment or Environmental Impact Statement that has been declared adequate under the National Environmental Policy Act (NEPA) or under Chapter 343, HRS, may constitute a valid filing under this section.

5. Project assessment:

a. Description of the area and environment involved including flora and fauna, and other features;

Residential parcel of land containing one residence and guest/garage abutting shoreline as shown on Shoreline Certification attached to application.

b. Description of the existing land uses of the project site and surrounding areas;

Project site contains residential uses with adjacent residential uses to the North and East, Mamo Road and the State Beach Reserve to the West, and the ocean to the South.

c. Description of how the proposed project will affect the area involved and surrounding areas. Specifically the assessment should evaluate if the proposal:

	Yes	No
1. involves an irrevocable commitment to loss or destruction of any natural or cultural resources, including but not limited to, historic sites, Special Treatment Districts as established by the County of Kauai Comprehensive Zoning Ordinance, viewplanes or scenic corridors as outlined in the Development Plans, and recreation areas and resources;	___	x
Discussion:		
2. curtails the range of beneficial uses of the environment;	___	x
Discussion:		
3. conflicts with the County's or the State's long-term environmental policies or goals;	___	x
Discussion:		
4. substantially affects the economic or social welfare and activities or the community, County or State;	___	x
Discussion:		
5. involves substantial secondary impacts, such as population changes and effects on public facilities,	___	x
Discussion:		

6. in itself has no significant adverse effect but cumulatively has considerable effect upon the environment or involves a commitment for larger actions; ___ X

Discussion:

7. substantially affect a rare, threatened, or endangered species of animal or plant, or its habitat; ___ X

Discussion:

8. detrimentally affects air or water quality or ambient noise levels; or ___ X

Discussion:

9. affects an environmentally sensitive area, such as flood plain, shoreline, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water or coastal water; X ___

Discussion: As described in the attached report prepared by Oceanit Laboratories, construction of the seawall will not have an adverse effect on shoreline.

10. may have a major effect on the quality of the environment or affect the economic or social welfare of the area; and ___ X

Discussion:

11. would possibly be contrary to the policies and guidelines of the Rules and Regulations, the County's General Plan, Development Plans, and Zoning and Subdivision Ordinances. ___ X

Discussion:

d. Evaluation of the proposed development relative to the objectives and policies as contained in Chapter 205-A, HRS, and Section 3.0 of the Special Management Area (SMA) Rules and Regulations: (Please complete attached questionnaire)

RECREATIONAL RESOURCES:

Objective: Provide coastal recreational opportunities accessible to the public.

Check either "Yes" or "No" for each of the following questions. If your answer is "Yes" please elaborate or provide comments in "Discussion" section below.

	Yes	No
1. Will the proposed development adversely affect coastal resources uniquely suited for recreational activities that cannot be provided in other areas?	___	x
Discussion:		
2. Will the project require replacement of coastal resources having significant recreational value, including but not limited to surfing sites, sandy beaches and fishing areas, when such resources will be unavoidably damaged by the proposed development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable?	___	x
Discussion:		
3. Is the project site near a State or County Park?	x	___
Discussion: To the West of the Project Site is situated Mamo Road and the State Beach Reserve.		
4. Will the proposed development affect an existing public access to or along the shoreline?	___	x
Discussion:		
5. Will the proposed development provide public access to and/or along the shoreline?	___	x
Discussion:		
6. Will the proposed development encourage expanded recreational use of County, State, or Federally owned or controlled shoreline lands and waters having recreational value?	___	x
Discussion:		
7. Will the development generate point or non-point sources of pollution that will affect recreational value of coastal area?	___	x
Discussion:		

HISTORICAL RESOURCES:

Objective: Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the Special Management Area that are significant in Hawaiian and American history and culture.

Check either "Yes" or "No" for each of the following questions. If your answer is "Yes", please elaborate or provide comments in the "Discussion" section below.

	Yes	No
1. Is the project site within a Federal, State, and/or County designated historic/cultural district?	___	x
Discussion:		
2. Is the project site listed on or nominated to the Hawaii or National Register of Historic Places?	___	x
Discussion:		
3. Does the project site include land(s) which has not been previously surveyed by an archaeologist?	___	x
Discussion:		
4. If a archaeological survey has been conducted for the project site, has the survey been submitted to the State Historic Preservation Office for review and recommendations?	___ N/A ___	
Discussion:		
5. Has any site survey revealed any information on historic or archaeological resources? (Please provide copy or reference of survey)	___	x
Discussion:		
6. Is the project site within or near a Hawaiian fishpond?	___	x
Discusssion:		
7. Is the project located within or near a historic settlement area? (cemeteries, burials, heiaus, etc.)	___	x
Discussion:		

SCENIC AND OPEN SPACE RESOURCES:

Objective: Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Check either "Yes" or "No" for each of the following questions. If your answer is "Yes", please elaborate or provide comments in the "Discussion" section below.

	Yes	No
1. Does the project site abut or affect a valued scenic resources or landmark within the SMA?	___	X
Discussion:		
2. Does the proposed development affect existing shoreline open space and scenic resources?	___	X
Discussion:		
3. Does the proposed development involve alteration natural landforms and existing public views to and along the shoreline?	X	___
Discussion: Although the proposed construction of a seawall will alter natural land forms, such construction will not adversely affect shoreline as indicated on Oceanit Laboratories report, and such construction is necessary to prevent further erosion of parcel and potential damage to structures located on the project site.		
4. Is the project compatible with the visual environment?	X	___
Discussion: No adverse visual impact is anticipated from construction of the seawall and such construction is preferable to srosion currently occuring on parcel, coupled with existing pollution to ocean.		
5. Does the proposed action involve the construction of structures visible between the nearest coastal roadway and the shoreline?	___	X
Discussion:		
6. Is the project site within the Shoreline Setback Area (20 or 40 feet inland from the shoreline)?	X	___
Discussion: See attached Shoreline Certification.		

COASTAL ECOSYSTEMS:

Objective: Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.

Check either "Yes" or "No" for each of the following questions. If your answer is "Yes", please elaborate or provide comments in the "Discussion" section below.

	Yes	No
1. Is the project site a habitat for endangered species of flora and fauna?	___	x
Discussion:		
2. Will the proposed development adversely affect valuable coastal ecosystems of significant biological or economic importance?	___	x
Discussion:		
3. Will the proposed involve disruption or degradation of coastal water ecosystems through stream diversions, channelization, and similar land and water uses?	___	x
Discussion:		
4. Will the proposed development include the construction of special waste treatment facilities, such as injection wells, discharge pipes, septic tank systems or cesspools?	___	x
Discussion:		
5. Is there a wetland on the project site?	___	x
Discussion:		
6. Is the project site situated in or abutting a Natural Area Reserve or Wildlife Refuge or Sanctuary?	___	x
Discussion:		

ECONOMIC USES:

Objectives: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Check either "Yes" or "No" for each of the following questions. If your answer is "Yes", please elaborate or provide comments within the "Discussion" section below.

	Yes	No
1. Does the project involve a harbor or port?	___	x
2. Is the proposed development related to or near to an existing major hotel, multi-family, or condominium project?	___	x
3. Does the project site include agricultural lands designated for such use?	___	x
4. Does the proposed development relate to commercial fishing or seafood production?	___	x
5. Does the proposed development relate to energy production?	___	x

Discussion:

COASTAL HAZARDS:

Objectives: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence.

Check either "Yes" or "No" for each of the following questions. If your answer is "Yes", please elaborate or provide comments within the "Discussion" section below.

	Yes	No
1. Is the project site within a potential tsunami inundation area as depicted on the National Flood Insurance Rate maps (FIRM)?	X	

Discussion:

2. Is the project site within a potential flood inundation area according to a FIRM?	X	

Discussion:

3. Does the project comply with the requirements of the Federal Flood Insurance Program?	N/A	

Discussion:

4. Has the project site or nearby shoreline areas experienced shoreline erosion?	X	

Discussion: See attached report prepared by Oceanit Laboratories.

5. Have any seawalls/revetments/etc. been constructed or exist in the immediate vicinity?	X	

Discussion: Seawall constructed on parcel located to the East.

PROJECT ASSESSMENT cont'd:

e. Evaluation of impacts which cannot be avoided and mitigating measures proposed to minimize that impact;

Discussion: Construction of the seawall purusant to attached preliminary construction drawings will not generate adverse impacts, and the seawall offers the best alternative to avoid further erosion and potential damage to structures currently located on the property.

f. Evaluation of the proposed development relative to Section 4.0 of the SMA Rules and Regulations in accordance with the following aspects:

1. Substantial adverse environmental or ecological effects;

Discussion: NONE

2. Consistency or compliance of the proposed development relative to the goals and objectives of Chapter 205A, HRS and Section 3.0 of the SMA Rules and Regulations;

Discussion: Proposed construction of the seawall is in full compliance with Chapter 205A, Hawaii Revised Statutes, and Section 3.0 of the SMA Rules and Regulations.

3. Consistency or compliance of the proposed development relative to the County General Plan, Development Plan, and zoning ordinances.

Discussion: The proposed construction of the seawall is consistent with and in compliance with applicable provisions of the County General Plan, Development Plan and Zoning Ordinances.

SIGNATURE OF APPLICANT/REPRESENTATIVE
(Print name of applicant/representative)

9/9/94
DATE

EXHIBIT 2
SPECIAL MANAGEMENT AREA EMERGENCY PERMIT AND SHORELINE SETBACK VARIANCE

Oceanit Coastal Corporation
coastal engineering services

MARYANNE W. KUSAKA
MAYOR

COUNTY OF KAUAI
PLANNING DEPARTMENT
4444 RICE STREET, SUITE 473
LIHUE, KAUAI, HAWAII 96766

DEE M. CROWELL
PLANNING DIRECTOR

NEIL L. AALAND
DEPUTY PLANNING DIRECTOR

TELEPHONE (808) 241-6677
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December 7, 1994

Mr. Charles Croft
RR3 Churchill IC-9
Salt Spring Island, British Columbia
Canada V0S 1E0

RE: Special Management Area Emergency Permit SMA(E)-95-7
and Shoreline Setback Variance
Shoreline Protection Structure
TMK: 1-2-13:35, Mamo Road, Kekaha, Kauai

REQUEST:

Pursuant to Section 11 of the County of Kauai Special Management Area Rules and Regulations "Emergency Permits" which was adopted by the County of Kauai on June 1, 1993, and Hawaii Revised Statutes Sections 205A-43.5(2) and 205A-46, the subject application is being submitted for review.

The applicant is requesting an SMA Emergency Permit pursuant to Section 11 of the SMA Rules and Regulations, and a Shoreline Setback Variance pursuant to HRS Section 205A, for a shoreline protection structure in a case of emergency requiring immediate action to prevent substantial physical harm to a residence and pool costing more than $20,000.

EVALUATION:

According to Section 11 of the SMA Rules and Regulations, an emergency permit may be issued for a development as defined in Section 1.4.H, in cases of emergency requiring immediate action to prevent substantial physical harm to property. The proposed shoreline protection structure is a development as defined in Section 1.4.H, and the applicant has demonstrated that the rate of shoreline erosion at the subject property is such that immediate action is required to prevent substantial physical harm to the applicant's pool and residence.

According to HRS Section 205A-43.5, action may be taken on an application for a Shoreline Setback Variance without a public hearing prior to action on the application, for protection of structures costing more than $20,000, provided the structure is at risk of immediate damage from shoreline erosion. It appears

that the applicant's pool and residence have a value in excess of $20,000, and are at risk of immediate damage from shoreline erosion.

HRS Section 205A-46 states that a variance may be granted for private improvements that may artificially fix the shoreline provided that shoreline erosion is likely to cause hardship if the improvements are not allowed, and provided that structures seaward of the existing shoreline are prohibited. The damage to the applicant's pool and residence which would result from continued shoreline erosion may be considered a hardship, and the proposed structure will not be located seaward of the shoreline.

DETERMINATION:

Based on the information submitted and the above evaluation, it has been determined that the subject request is in conformance with Section 11 of the SMA Rules and Regulations, and HRS Section 205A-43.5 and 205A-46. Therefore, a Special Management Area Emergency Permit and Shoreline Setback Variance is hereby issued authorizing construction of a sloping stone revetment mauka of the certified shoreline at TMK:1-2-13:35, Mamo Road, Kekaha, to prevent an immediate threat from shoreline erosion to the applicant's pool and residence.

Approval of the application is subject to the following conditions:

1. The emergency shoreline protection structure shall be the minimum length and width necessary to protect the applicant's pool and residence.

2. The emergency shoreline protection structure shall be located as far mauka as possible, but in no case shall the structure extend beyond the current certified shoreline.

3. This Emergency Permit only authorizes construction of the sloping stone revetment. No other development, including fencing, shall be permitted within the Shoreline Setback Area which is defined as 40 feet mauka of the certified shoreline.

4. As agreed to by the applicant, within 180 days from issuance of this Emergency Permit the applicant shall submit an application for an SMA Use Permit and Shoreline Setback Variance. An Environmental Assessment shall be prepared and submitted pursuant to HRS Chapter 343 with the application.

5. The applicant is advised that the application for the SMA Use Permit and Shoreline Setback Variance may be denied by

the Planning Commission, or the structure may be required to be modified. Should the application for an SMA Use Permit and Shoreline Setback Variance be denied, or should the structure require modification, the applicant shall remove or modify the structure, as required by the Planning Commission, within 90 days of the Commission's action on the application.

6. As agreed to by the applicant, the applicant shall obtain an irrevocable letter of credit in an amount sufficient to pay for removal or modification of the shoreline protection structure. The letter of credit shall be used to remove or modify the structure should the Planning Commission determine that removal or modification shall be required, and the applicant does not voluntarily remove or modify the structure. The letter of credit shall identify the County of Kauai as beneficiary, and shall have an expiration date of September 8, 1995.

7. This Emergency Permit shall be subject to periodic review by the Planning Department, but in no event shall such review be conducted less than one year from the date of issuance of this permit.

8. The applicant shall work with the State Department of Transportation-Harbors Division and other appropriate agencies to develop and implement measures to mitigate the adverse impacts of Kikiaola Harbor on natural beach processes.

Also be informed that other permits or conditions from other agencies may be required prior to construction. The applicant is responsible for revolving these conditions with the other respective agency(ies).

Neil J. Ahuna for

Dee M. Crowell,
Planning Director

c: Michael J. Belles, Case & Lynch