JOHN WAIHEE
GOVERNOR OF HAWAII

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

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

DEPUTIES

KEITH W. AHUE
MANABU TAGOMORI
Dan T. Kochi

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

REF:OCEA:SKK

OCT 3 1991

FILE NO.: MA-9/18/91-2495
180-Day Exp. Date: 3/16/92
DOCUMENT NO.: 1719E

Mr. Rodney Y. Funakoshi
Planner
Wilson Okamoto and Associates
1150 South King Street, #800
Honolulu, Hawaii 96814

Dear Mr. Funakoshi:

NOTICE OF ACCEPTANCE AND ENVIRONMENTAL DETERMINATION
Conservation District Use Application

As the agent for the applicant, TSA Development Co., Ltd., this acknowledges the receipt and acceptance for commercial recreational use and the installation of one vessel mooring located 1,300 feet offshore at Wailea Beach, Maui (Seaward of 2-1-8: 109).

According to your information, you propose to conduct commercial ocean recreational activities for the resorts at Wailea Beach, one offshore mooring buoy is proposed for temporary day and early evening use.

The proposed mooring would be in coastal waters approximately 1,300 feet offshore of Wailea Beach, anchored on a sandy bottom at a water depth of approximaely 40 feet. The mooring will be the single-point, free-swinging type, capable of safely anchoring a catamaran vessel. A riser-type mooring will be used, consisting of a subsurface buoy, riser chains, a sinker block and an anchor block.

183

A 60-foot catamaran would use the moorings during the day and early evening, and be docked at Maalaea Harbor overnight. Proposed activities include ocean recreation and resort-oriented activities such as snorkeling, diving tours, sunset cruises, and sightseeing cruises. Approximately 6 tours per day are anticipated.

A shuttle service using a zodiac-type vessel will transport passengers from Wailea Beach to the catamaran moored offshore. The ocean recreational activities will require passengers and resort guests to transit the sandy beach which is approximately 200 feet wide.

No construction activity is proposed and no signs or other structures will be placed in the Conservation District.

After reviewing the application, we find that:

1. The proposed use is a conditional use within the resource subzone of the Conservation District according to Administrative Rules, Title 13, Chapter 2, as amended;

2. A public hearing pursuant to Section 183-41, Hawaii Revised Statutes (HRS), as amended, will be required in that the proposed use is of a commercial nature; and

3. In conformance with Title 11, Chapter 200, of the Administrative Rules, a negative declaration was determined for the proposed action.

As the applicant, please be advised that it will be your responsibility to comply with the provisions of Section 205A-29(b), Hawaii Revised Statutes, relating to Interim Coastal Zone Management (Special Management Area) requirements.

Negative action as required by law, on your application by the Board of Land and Natural Resources can be expected should you fail to obtain from the County thirty (30) days prior to the 180-day expiration date, as noted on the first page of this notice, one of the following:

1. A determination that the proposed development is outside the Special Management Area (SMA);

2. A determination that the proposed development is exempt from the provisions of the county ordinance and/or regulation specific to Section 205A-29(b), HRS; or

3. A Special Management Area (SMA) permit for the proposed development.

Pending action on your application by the Land Board in the near future, your cooperation and early response to the matters presented herein will be appreciated. Should you have any questions, please contact Cathy Tilton of our Office of Conservation and Environmental Affairs staff at 548-7837.

Very truly yours,

WILLIAM W. PATY

cc: Maui Board Member
Maui Land Agent
Maui Dept. of Planning
Maui Dept. of Public Works
DOH/OHA/OSP/DOT
Army Corps
U.S. Coast Guard

1991+10-23-MA-FEA Waiea Offshore Vessel Mooring &
Boat Transiting

FILE COPY

Environmental Assessment

OFFSHORE VESSEL MOORING & BEACH TRANSITING

Prepared for :

TSA DEVELOPMENT CO., LTD

Prepared by :

WILSON OKAMOTO & ASSOCIATES, INC.

June 1991

ENVIRONMENTAL ASSESSMENT
OFFSHORE VESSEL MOORING
& BEACH TRANSITING

WAILEA BEACH, MAUI, HAWAII

Prepared for:
TSA Development Co., Ltd.

Prepared by:
Wilson Okamoto & Associates, Inc.

June 1991

Table of Contents

List of Figures

1. INTRODUCTION

This application and assessment is in support of a proposal to operate a catamaran service for resort guests of the Grand Hyatt Wailea and Four Seasons Wailea Hotels at Wailea, Maui to enjoy ocean recreational activities such as snorkel tours and sunset cruises. To safely conduct these boating activities, an offshore mooring buoy is proposed for day-use only temporary mooring, mainly to facilitate the loading and unloading of passengers. The mooring buoy would be situated approximately 1,300 feet offshore of Wailea Bay. Passengers would be shuttled between the beach and the catamaran with a zodiac-type vessel. This activity would also require that the public beach fronting the Grand Hyatt Wailea be transited by passengers. The mooring is not needed for overnight use, as the catamaran vessel is presently berthed at Maalaea Harbor.

This application represents a resubmittal of a previous proposal which requested four permanent moorings. The present resubmission proposes only one mooring for temporary day-time use only, which should result in minimal impacts on the surrounding areas while enhancing the potential for the resorts in Wailea Bay to conduct ocean recreational activities.

This Environmental Assessment (EA) is submitted in conjunction with a Conservation District Use Application (CDUA) to establish one offshore mooring buoy in Wailea Bay and for transiting of Wailea Beach. No structures or development are proposed in the Conservation District on Wailea Beach.

To safely conduct the proposed activities, approval is also being sought from the Department of Transportation for the designation of a commercial vessel ingress-egress ocean corridor extending from the beach out in the direction of the mooring buoy. This requires an amendment to the Shore Water Rules of the Department of Transportation, Harbors Division to establish such a corridor. The corridor will

establish a route for use by the catamaran and a shuttle vessel, such as a zodiac, to pick up and drop off passengers. This would serve to reduce potential ocean recreational conflicts such as those between swimmers and the boating operation. A designated beach pick up and drop off area will also ensure the activity is limited to one location.

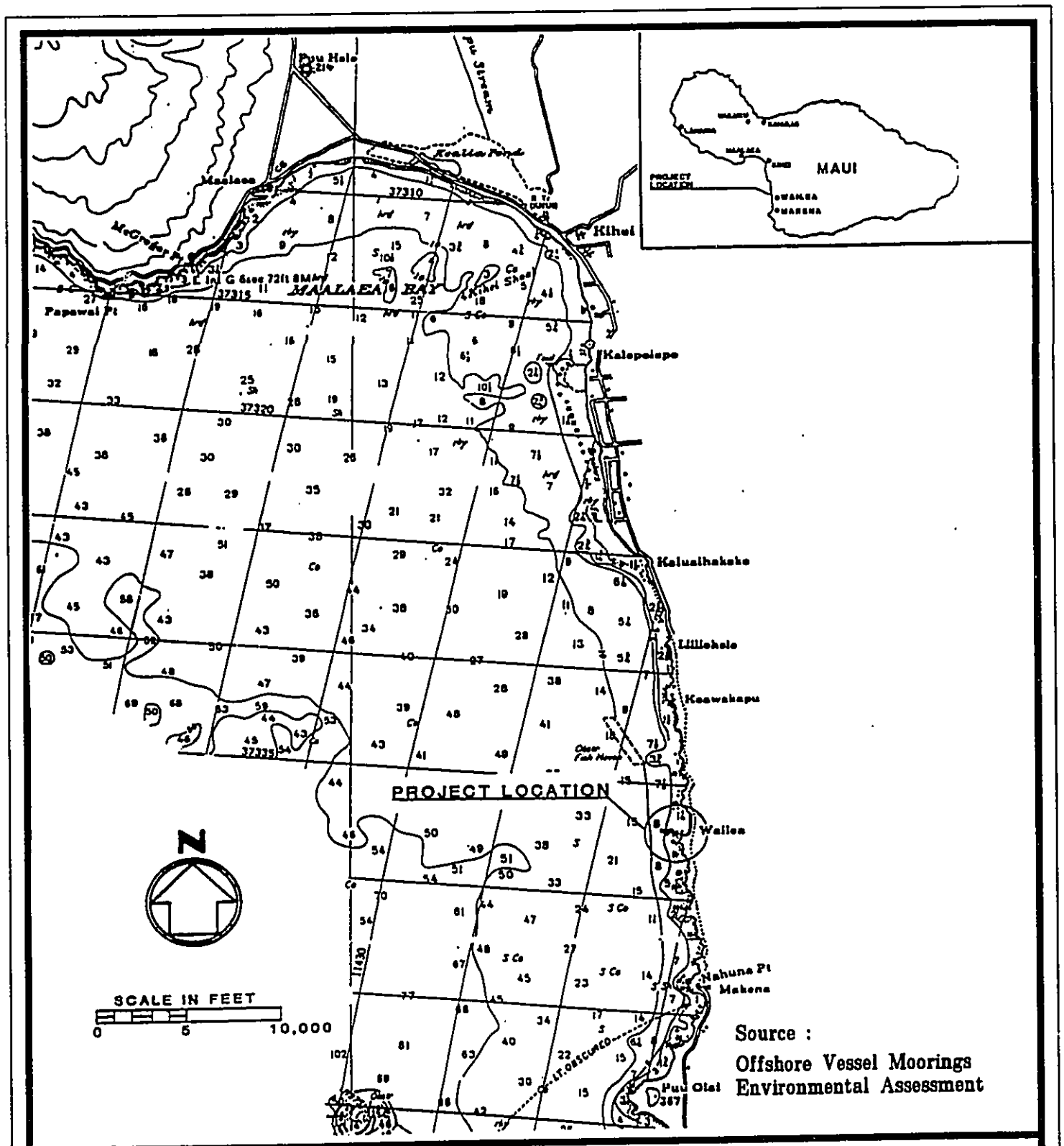
1.1 Project Location

The proposed activities will occur in Wailea Bay and Wailea Beach located on the southwest shore of Maui, south of Maalaea Bay between Kihei and Makena. (See Figure 1). In recent years this coast has been extensively developed as a resort destination for Maui's visitor industry.

Wailea Beach is approximately 1,200 feet long, bounded by Wailea Point on the north and a rocky headland to the south. The Intercontinental Hotel is located on Wailea Point and the Wailea Point Condominiums are located on the rocky headland south of the beach. The Four Seasons Hotel (TMK: 2-1-23:7) is located along Wailea Beach along with the new Grand Hyatt Wailea Hotel (TMK: 2-1-8:109). Construction for La'i Honua Villas (TMK: 2-1-8:91) is proposed between the Intercontinental and Grand Hyatt Wailea Hotels.

1.2 Project Need

The Grand Hyatt Wailea and Four Seasons Hotels desire to operate catamaran cruises for the enjoyment of their guests. The relatively sheltered waters bounded by Maui, Molokai, Lanai and Kahoolawe provide excellent boating and water-recreation opportunities.



Environmental Assessment
Offshore Vessel Mooring
& Beach Transiting

Fig. 1
Project Location

Prepared for :
TSA DEVELOPMENT

Prepared by :
Wilson Okamoto & Associates, Inc.

The catamaran is presently docked at Maalaea Harbor, the nearest existing safe harbor, located in Maalaea Bay about 9 miles from the project site. The vessel will use the proposed mooring facility during the day and early evening hours only. Passengers will be shuttled by zodiac-type vessel to and from Wailea Beach. The anchored buoy will provide safe mooring while loading and unloading passengers for the catamaran tours. Without the mooring facility, it may be expected that frequent daily anchorings offshore would cause damage to the coastal bottom ecosystems. An established mooring facility is thus required to provide safe daily anchorage for the catamaran as well as protect the associated marine ecosystems.

SUMMARY OF PROPOSED ACTION

Applicant:	TSA Development Co., Ltd.
Agent:	Wilson Okamoto & Associates, Inc.
Accepting Authority:	State Department of Land and Natural Resources
Approving Agency:	Board of Land and Natural Resources
Area of Use:	Mooring - An anchor block on submerged lands approx. 40 feet deep and 1,300 feet offshore of Wailea Beach Transiting - 200 lineal feet of sandy beach
Land Owner:	State of Hawaii
Project Location:	Wailea Beach, Maui, Hawaii
Land Use Designation:	Conservation, Resource Subzone
Proposed Use:	Mooring buoy and beach transiting

Consulted Agencies:

Operations Branch, Construction Division, S. Army Engineer District, Honolulu

Office of Conservation and Environmental Affairs, DLNR

Boating Branch, Harbors Division, Department of Transportation

2. DESCRIPTION OF THE PROPOSED PROJECT

2.1 Project Overview

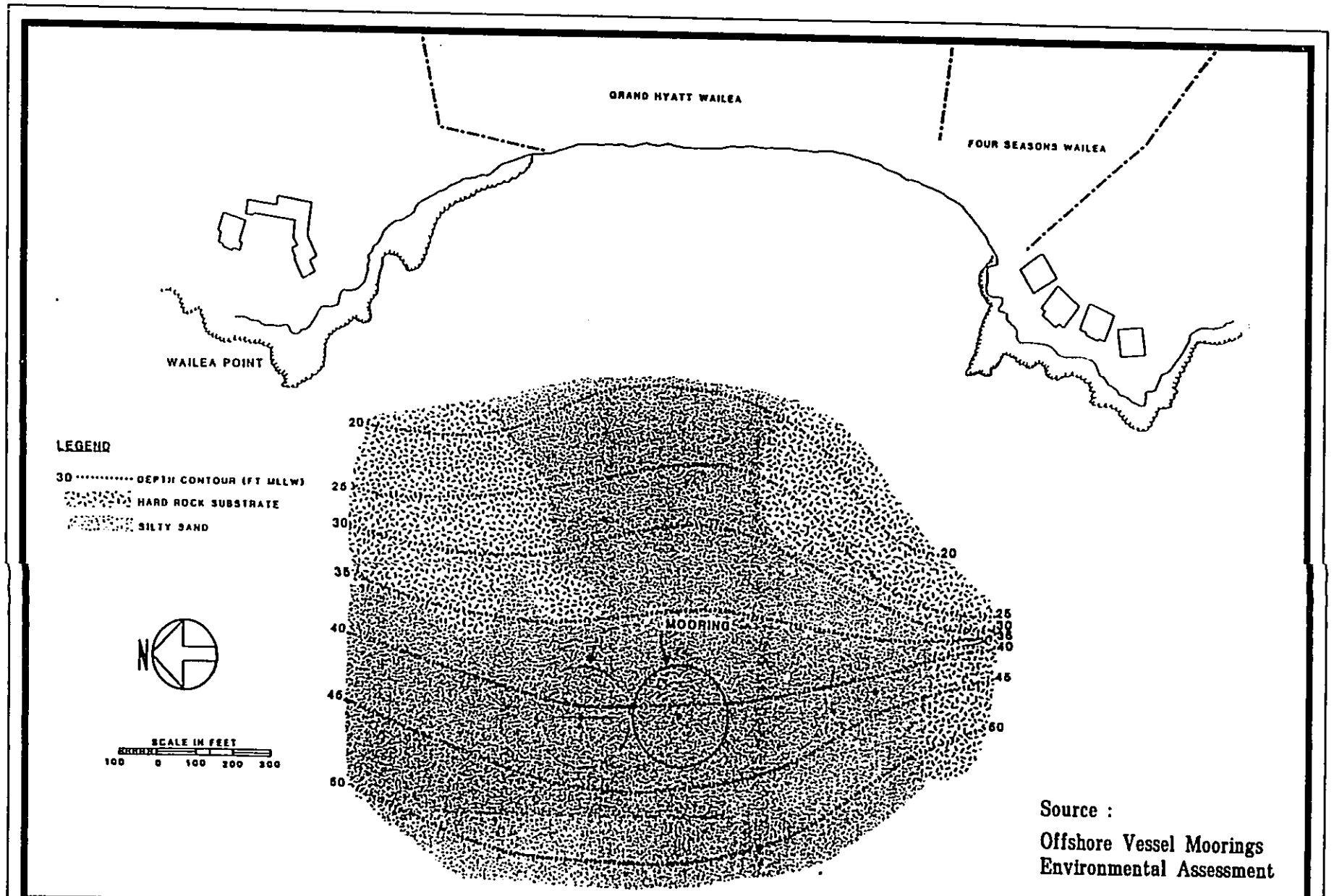
To facilitate conducting ocean recreational activities, an offshore mooring buoy is proposed for temporary daytime and early evening use. The proposed mooring would be in coastal waters approximately 1,300 feet offshore of Wailea Beach, in a water depth of approximately 40 feet. (See Figure 2). The mooring will be the single-point, free-swinging type (see Figure 3), capable of safely anchoring a vessel up to 60 to 70 feet long.

A catamaran would use the moorings in the day and early evening hours and will be docked at Maalaea Harbor at night. The catamaran proposed to be used is 60 feet in length and has a capacity of 49 passengers.

Proposed vessel activities include ocean recreation and tourist-oriented activities such as snorkeling, diving tours, sunset cruises, and sightseeing cruises. Anticipated frequency of tours are approximately 6 per day.

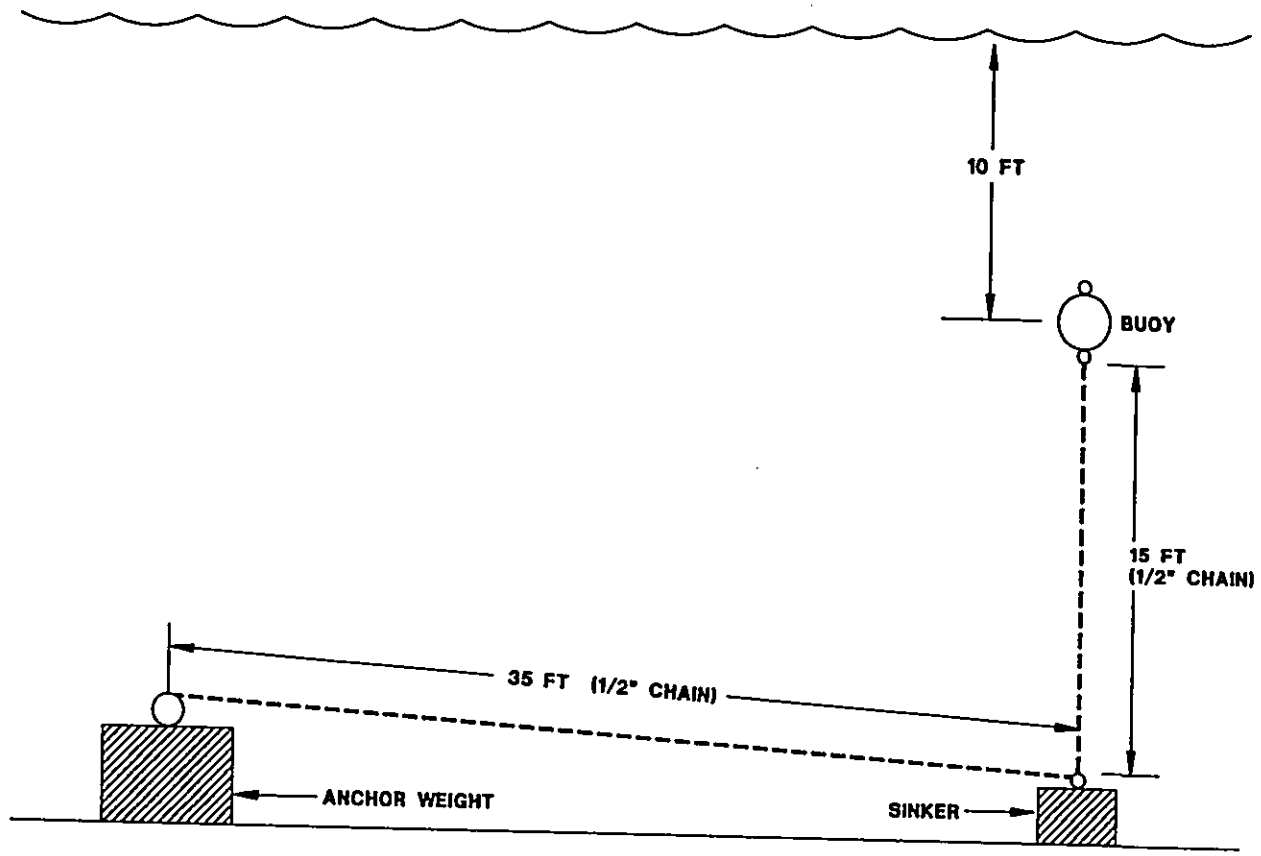
A shuttle service using a zodiac-type vessel will transport passengers from Wailea Beach to the catamaran moored offshore. Passengers embarking and disembarking from the shuttle will transit the beach which is approximately 200 feet wide.

No construction activity is proposed and no signs or other structures will be placed in the Conservation District.



Source :
Offshore Vessel Moorings
Environmental Assessment

Environmental Assessment Offshore Vessel Mooring & Beach Transiting	Fig. 2 Site Plan	Prepared for : TSA DEVELOPMENT Prepared by : Wilson Okamoto & Associates, Inc.



Source :
Sea Engineering, Inc.

Environmental Assessment Offshore Vessel Mooring & Beach Transiting	**Fig. 3** **Mooring System**	Prepared for : TSA DEVELOPMENT Prepared by : Wilson Okamoto & Associates, Inc.

2.2 Mooring Design

To reduce the strain on the vessel and mooring, a free-swinging single-point mooring with the vessel attached by a mooring line to its bow will be constructed to respond to wind and wave forces.

A riser-type mooring will be utilized, consisting of a subsurface buoy, riser chains, a sinker block and an anchor block.

The vessel characteristics and environmental conditions used in the design analysis and the required mooring component sizes are as follows:

Vessel Design

Water line length	-	58 feet
Waterline beam	-	28 feet
Draft	-	4 feet
Average hull height above waterline	-	5 feet
Average height of superstructure	-	10 feet

Environmental Conditions

Bottom substrate	-	2- to 4-foot sand over hard bottom
Design water depth	-	40 feet
Design wind speed	-	60 knots
Design current speed	-	2 knots
Design wave height	-	17 feet
Design wave period	-	9 seconds

The following mooring components are sized based on the above assumptions:

Subsurface buoy buoyancy	- 115 pounds
Total riser chain length	- 50 feet
Riser chain weight/foot	- 2 pounds
Sinker weight	- 120 pounds
Anchor block weight	- 4,000 pounds/leg

3. RELATIONSHIP TO PLANS, POLICIES AND CONTROLS

3.1 Hawaii State Plan

The Hawaii State Plan sets forth a guide for the future of Hawaii in terms of broad goals, objectives and policies to serve as guidelines for the growth and development of the State. The proposed mooring and related activities support and are consistent with the following State Plan objective and policies:

Section 226-6 Objectives and Policies for the Economy - In General

(a)(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people.

Employment opportunities in the ocean recreational industry will be available through the proposed catamaran activity.

Section 226-8 Objectives and Policies for the Economy - Visitor Industry.

(b)(1) Support and assist in the promotion of Hawaii's visitor attractions and facilities.

(b)(4) Encourage cooperation and coordination between the government and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.

(b)(5) Develop the industry in a manner that will provide new job opportunities and steady employment for Hawaii's people.

The proposed activity will support the promotion of Hawaii's visitor industry by improving the quality of the Wailea destination resort area. It will offer snorkeling and sailing activities along the coast for visitors and residents of the area.

Employment opportunities for residents in the neighboring communities will be available in the installation and operational phases of the project.

3.2 State Functional Plans

State Functional Plans delineate policies and objectives to guide near-term for resource allocation decision making and coordination of statewide functional area activities. The development of these plans for the State of Hawaii has been guided by Chapter 226 Hawaii State Plan, as amended. The following presents a review of the functional plan which is applicable to the proposed project.

State Tourism Functional Plan. The overall theme of the State Tourism Functional Plan is "the achievement of a visitor industry that constitutes a major component of steady growth of Hawaii's economy." The Plan addresses four sub-areas within the visitor industry, which include: tourism promotion; physical development; employment and career development; and community relations.

State Tourism Functional Plan Objective (B)(2)

Improve the quality of existing visitor destination areas.

The proposed activity will enhance the quality of Grand Hyatt Wailea and Four Seasons Hotels as well as other resorts at Wailea by providing an alternative recreational attraction for the hotels' visitors.

3.3 Statewide Ocean Recreation Management Plan

The Ocean Recreation Management Plan was formulated by the Department of Transportation (DOT) Harbors Division as recommendations primarily aimed at promoting safety within designated areas within the shores and shorewaters of the State of Hawaii. The project area is located within the South Maui Ocean Recreation Management Area encompassing all ocean waters and navigable streams from the eastern boundary of La Perouse Bay to McGregor Point, extending three thousand feet seaward of the territorial baseline. The proposed project would be compatible with the following objectives cited in the 1988 Plan supporting the establishment of a statewide system of day-use moorings within the area:

(1) *...reduce anchor damage at popular scuba diving and snorkeling sites;*

(2) *...provide for diver safety by maintaining minimum distances between boats at congested sites; and facilitate management of particular sites. A statewide system of day-use moorings would provide a convenient and safe alternative to dropping anchor on live coral, thereby conserving an important resource for fishing, diving, and snorkeling. In addition, at particularly congested dive sites, the day-use moorings would help to allocate space on the water's surface and reduce the risk of injury to divers and snorkelers who may be otherwise caught between boats.*

To ensure safe operations, the designation of an ingress/egress ocean corridor has been initiated to provide a safe route for use by the catamaran and shuttle vessel to pick up and drop off passengers. A designated beach pick up and drop off area will ensure the activity be limited to one location. The Shore Water Rules of the Department of Transportation, Harbors Division have been requested to be amended to establish such a corridor and to reduce ocean recreation conflicts.

3.4 Conservation District Rules

As established by State Law, all property located seaward of the certified shoreline is designated Conservation. The proposed project will be located entirely within the State Conservation District Resource (R) Subzone as set forth by Title 13, Section 13-2-13, Hawaii Revised Statutes (HRS). The proposed project would be consistent with the objectives of this subzone designation to develop, with proper management, areas to ensure sustained use of natural resources.

The proposed activity is subject to a Conservation District Use Permit for the mooring and beach transiting. Approval by the Board of Land and Natural Resources is also required for the use of State-owned submerged lands for the mooring.

3.5 Coastal Zone Management Program

The Hawaii Coastal Zone Management Program establishes State policies to guide the use, protection, and development of ocean resources within the coastal zone. The policies are defined in the Hawaii Coastal Zone Management (CZM) law, Chapter 205A, HRS. As part of the Federal permit action required for this project, a CZM consistency assessment will be filed with the Office of State Planning. The objectives and policies of the CZM Program cover seven areas, which relate to the proposed activities as follows:

Recreational Resources. Recreational activities reported in the area include fishing, spearfishing, gill netting, body surfing, and sport diving/snorkeling. In addition, small boats transit the area, however, no concentration of boating activity is known to occur. The proposed project will not significantly affect coastal recreational

resources. Passengers will embark and disembark from Wailea Beach on commercial vehicles servicing the catamaran operations. Passengers will board and depart the catamaran at the mooring buoy.

Historic Resources. There is no known record of significant archaeological sites within the project area.

Scenic and Open Space Resources. The proposed mooring would be approximately 1,300 feet offshore. The bouy will be located approximately 10 feet below the water surface. The moored catamaran will also be consistent with the visual coastal environment.

Coastal Ecosystems. Humpback whales can be found in the general vicinity of the proposed mooring from November through April. The mooring is located in water shallower than that generally frequented by whales. Any impact on whales would be indirect, resulting from vessels trafficking the area. The vessels utilizing the mooring would be operated in a manner designed to minimize adverse impacts to the whales, and in strict conformance with the rules, regulations and accepted practices for operating vessels in whale waters.

Green sea turtles likely inhabit the nearshore waters in the project vicinity. The sandy sediments on which the mooring would be positioned does not provide either a food resource or a resting habitat for the turtles. Thus no direct impact from the mooring is anticipated. Turtles have been noted to coexist with moored and moving boats.

The proposed mooring would be positioned over sandy bottom, and would have no significant impact on existing marine biota.

Economic Uses. In recent years the West Maui coast, including the vicinity of the proposed mooring, has been extensively developed to serve as a resort destination for Hawaii's tourist industry. Numerous hotels, condominiums, commercial areas and related infrastructure have been constructed to provide a resort ambiance with a distinct water-recreation orientation. The primary economic activity in West Maui and the project area vicinity is the visitor industry. The proposed activities would add to the recreational amenities available to visitors, and would thus be consistent with the economic base already developed.

Coastal Hazards. The proposed mooring would have no impact on coastal hazards. It will be used primarily for loading and unloading of passengers, providing a safe anchorage during both prevailing wind and sea conditions. To prevent adverse effects to the coastal ecosystem there will be no fueling or maintenance at the site.

Managing Development. The proposed activity will require Federal, State and County permits and approvals. The moorings will require a permit from the U.S. Army Corps of Engineers under the authority of Section 10 of the Rivers and Harbors Act of 1899. State of Hawaii permits and approvals include a CZM consistency certification and a Conservation District Use Permit from the Board of Land and Natural Resources. A public hearing for the proposed action will be held in conjunction with the review and processing of the Conservation District Use Permit. A County of Maui Special Management Area permit will not be required.

3.6 Department of the Army Permit

The U.S. Army Corps of Engineers is responsible for regulating activities in the nation's waters for both protection and utilization of water resources. The

proposed activity will require a permit from the Corps of Engineers under the authority of Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403), pertaining to work in navigable waters.

3.7 County Permits

All of the proposed activities will occur makai of the shoreline. In this area, County permits including the Special Management Area permit are not required. Nonetheless, consultation with the County of Maui Planning Department will be sought as necessary to ensure that all activity-related uses are properly permitted.

4.0 EXISTING ENVIRONMENT

4.1 General Site Characteristics

The proposed activity and mooring site is located on the southwest coast of Maui, south of Maalaea Bay between Kihei and Makena. The shoreline is characterized by crescent pocket beaches within coves between low and rugged basalt headlands. The topography offshore reflects the shoreline characteristics, with the sand beaches representing the head of a sandy bottom running offshore and the headlands continuing seaward as a submerged platform or outcrop of hard bottom.

This area has experienced extensive resort development over the past 20 years, and is now a major visitor destination area. The coastal lands in the vicinity of the project site are almost entirely developed with hotels, condominiums and their existing facilities and infrastructure. The Intercontinental Hotel, Wailea Point Condominiums, Four Seasons Hotel, and the new Grand Hyatt Wailea Hotel are situated on Wailea Beach.

The climate in the coastal belt is dry with a mean annual rainfall of 10 inches, less rainfall on an annual basis than any other part of Maui. The project site is sheltered from the prevailing northeasterly tradewinds by Mt. Haleakala. Nearshore the prevailing winds are generally diurnal onshore-offshore sea breezes caused by heating and cooling of the land. Offshore the tradewinds blow north to south after being funneled between Haleakala and the West Maui mountains. The project site is directly exposed to Kona winds blowing from the south-southwest to west, generated by low pressure systems or cold fronts moving through the islands. Periods of strong Kona winds are uncommon and generally of short duration.

4.2 Marine Environment

4.2.1 Bathymetry and Bottom Conditions

The rocky headlands at Wailea Point and on the south end of the beach extend seaward to about the 35 to 50-foot contour, bounding a bottom of silty sand extending seaward towards the middle of the bay. Sand probes showed the sand to be 2 to 4 feet thick, or less, over hard bottom. The bottom slope between the 20 and 50-foot contours is about 2.5 percent in the central area of the bay.

4.2.2 Oceanographic Conditions

Waves. The general Hawaiian wave climate can be described by four primary wave types: northeast tradewind waves, South Pacific swell, Kona storm waves and North Pacific swell. The project area is well protected from the tradewind waves and north swell by the islands of Maui and Molokai. The islands of Lanai and Kahoolawe also partially shelter the project area from south swell and Kona storm waves; however, a portion of their energy refracts and diffracts around the islands to reach the project site.

South swell is generated by southern hemisphere storms and is most prevalent during the months of April through October. These long, low waves approach from the southeast to southwest, generally with periods of 12 to 20 seconds and deepwater heights up to about 6 feet. Kona waves are generated by winds associated with local fronts or low pressure systems and typically have periods ranging from 6 to 10 seconds and heights up to and exceeding 10 feet. These waves generally approach from the southwest to west. Deepwater wave heights in the vicinity of the project site during a severe Kona storm in January 1980 were about

17 feet with a period of 9 seconds. Based on statistics compiled by the U.S. Naval Weather Service command, deepwater waves will approach the proposed mooring site from the southeast to northwest approximately 22 percent of the time.

The proposed mooring site is also exposed to wave attack from passing tropical storms and hurricanes. The U.S. Army Corps of Engineers determined wave heights generated by 17 severe storms during the period 1947 to 1965, and seven of these affected the south and/or west shores of the islands. Marine Advisors also determined deepwater wave conditions off the west coasts of Lanai and Molokai produced by the ten worst storms of the 15-year period from 1947 to 1961.

See Tables 1 and 2 of the Appendix for detailed wind and wave analysis; and historical storm wave characteristics.

Tide. The tides in Hawaiian waters are semi-diurnal, with pronounced diurnal inequalities (i.e., two tidal cycles per day with differing elevations). Tidal data from the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Survey, for the vicinity of the proposed mooring site is as follows:

mean higher high water	-	1.8 feet
mean high water	-	1.4 feet
mean tide level	-	0.8 feet
mean low water	-	0.2 feet
mean lower low water	-	0.0 feet

Currents. Data does not exist for the vicinity of the proposed mooring at this time. A northerly setting current from Makena to Maalaea has been reported. It is

presumed that the coastal currents along the southwest coast of Maui follow patterns similar to the currents further north in the vicinity of Lahaina, with the prevailing currents being semi-diurnal reversing tidal currents and a slow net transport to the north.

4.2.3 Water Quality

The offshore waters are designated Class A based on the State Department of Health classification system for water quality. Class A waters are to be protected and preserved for their recreational and aesthetic enjoyment.

A 1977 Environmental Consultants, Inc. (ECI) report concluded the "...nutrient regime in waters off Maalaea Bay can be characterized as relatively stable with respect to ammonia and phosphorus coupled with highly variable nitrate values that presumably correlate with ground water seepage into the marine environment." The study also concluded that the nutrient concentrations in nearshore waters were high and non-limiting to phytoplankton growth. Water quality characteristics for Kihei are included in Table 3 of the Appendix.

Marine water samples of nitrate plus nitrate, total Kjeldahl nitrogen, and total phosphorus were collected in 1978 just north of Keawakapu by M & E Pacific about 1.5 miles north of Wailea Beach. The report concluded that "the concentrations...appear to be high due to wind and storm runoff from adjacent shoreline area".

In a 1989 study conducted by AECOS, Inc. two water samples (see Table 4 of the Appendix) were collected off Kamaole I Beach Park. The report noted evidence

of brackish water seepage into the coastal water off headlands located both north and south of Kamaole I Beach.

Comparing the 1989 survey results with the State Water Quality Standards for Class A Open Coastal (Marine) Waters, Table 5 of the Appendix, reveals that most of the locations sampled would probably exceed the criteria for total N and nitrate plus nitrate.

The total nitrogen in a sample is a measure of all the forms of chemically bound nitrogen, including nitrite plus nitrate, ammonia, and organic nitrogen. Thus, the relatively high total N values measured reflect mostly the contribution of dissolved nitrate. This nitrate is attributable to ground water seepage along the coast. High nitrate in ground water is a natal phenomenon, but human activities (applications of fertilizers, seepage from cesspools, etc.) can augment these natural levels.

The other values obtained which possibly exceed the State's criteria are those for turbidity, total phosphorus, and chlorophyll.

4.2.4 Marine Biota

Many species of corals, mollusks, and other invertebrates most often found in deep water elsewhere are common in the project vicinity. Assemblages of algae, sponges and bryozoans are diverse and unique.

South of Kaluaehakoko Point at Kamaole, the offshore bottom alternates between hard substrata basalt with a thin veneer of limestone in most cases, basalt boulders in others; and sand or silty-sand. The marine biota are well developed and moderately diverse off of these headlands. Although the hard bottom may extend

some distance off the headlands, most of the relief occurs close to the shore: outcrops of rock rise only a meter or so above the sand bottom at depths exceeding 30 feet. There is evidence that sand movement regularly covers the hard bottom where the relief is slight. Coral development is poor as a result.

A series of studies were undertaken by Environmental Impact Study Corp. (1979) off the two headlands which frame Wailea Beach. (Table 6 in the Appendix). The studies revealed coral coverage around 40 percent of the bottom, dominated in all cases by Pocillopora meandrina and *Porites lobata*. Other macro-invertebrates conspicuous in this environment are sea urchins (*Tripneustes gratilla*, *Echinometra mathaei*, and *Diadema paucispinum* and sea stars (*Culcita novaeguineae* and *Linckia diplax*). Ten species accounted for 64 percent of the total number of fish recorded; and one specie, *Acanthurus nigrofuscus* (surgeonfish), was particularly abundant with 470 individuals recorded. A summary of coral characteristics in the project's general area can be found in Table 7 of the Appendix.

Between the months of November and May, humpback whale (*Magapera novaeangliae*) breeding, calving, and nursing activities can be observed in the area bounded by Maui, Molokai, Lanai and Kahoolawe.

Green sea turtles (*Chelonia mydas*) also are likely to inhabit the nearshore waters in the area.

4.3 Recreation

Activities such as body surfing, sport diving, spear fishing and gill netting occur along Wailea Beach on the rocky substrate seaward of the headlands which bound

the beach. Along the sandy portions of Wailea Beach and the nearshore, sunbathing and swimming are popular with residents and visitors in the area.

4.4 Scenic Resources

The seaward vista from the shoreline is presently scenic open space, with Molokini islet, Lanai and Kahoolawe islands visible in the distance.

4.5 Economic Activity

The primary economic activity in West Maui and the Kihei-Wailea vicinity is the visitor industry. Extensive visitor accommodations and the warm, dry climate contribute to making the area one of the more popular visitor destinations in the islands.

5.0 POTENTIAL IMPACTS AND MITIGATIVE MEASURES

5.1 Marine Environment

5.1.1 Water Quality

A 4,000 pound mooring block will be situated on sandy substrate to provide a permanent mooring for the catamaran. No construction is required for the installation of the proposed mooring.

The catamaran will have a adequate wastewater holding tank capacity for the number of passengers and the duration of the trips. No discharge would be made from the vessel either at the proposed mooring or while in coastal waters. The holding tanks would be pumped out at Maalaea Harbor pump-out facilities or offshore beyond the 3-mile limit.

Studies reveal excessive levels for total N and nitrate plus nitrate due to brackish water seepage into the coastal water off headlands in the area. Some risk might be posed by petrochemical spillage however, normal precautions to minimize spills should avoid toxic levels and accumulations.

The proposed activity will pose no additional impact on water quality through mooring installation or catamaran operations.

5.1.2 Marine Biota

The proposed project would only directly impact a sand bottom where the proposed mooring would be placed. Although placement of a sinker block or an anchor

block would cause only minor disruption of the benthic community, the repeated movement of riser chains or sinker block over time can cause substantial damage to attached biota, such as corals. Most of the damage is caused by movement of the sinker block portion of the mooring system. Thus, the proposed permanent mooring will be placed away from hard bottom environments.

Shifting sand appears to be the major environmental stress on the coral assemblages closest to the area. The movement of sand onshore and offshore has a periodicity greater than one year judging by the size of coral heads in the area that appear to be sometimes covered by sand. The proposed project should have no impacts on this sand movement.

5.1.3 Endangered Species

The endangered humpback whale and green sea turtle are both found in the waters off West Maui. The loading and unloading of passengers will originate from water too shallow to have a significant impact on the whales.

Any impact on whales would have to do with vessels trafficking the area. There is evidence which demonstrates that boating activity does have an impact on the behavior of whales. Whales regard vessels as a threat and may be stressful to them, with possible adverse effects on mating and reproductive success. The proposed activity will adhere to the National Marine Fisheries Services' regulations for approaching Humpback whales in Hawaiian waters. These regulations govern vessel/whale encounters, deliberate observations of whales at sea, and harassment of the whales.

While green sea turtles likely inhabit the nearshore waters in the area, the sandy sediments do not provide either a food resource or a resting habitat for the turtles. Thus no direct impact from the mooring is anticipated. Vessel operation is not known to have a significant impact on turtles, and in fact turtles have been noted to coexist with moving boats.

5.2 Recreation

There are no known pubiic park concerns. Public beach access is not impeded by the proposed activities. The proposed activity would provide additional water recreation opportunities for visitors, including snorkeling and sightseeing cruises. These recreational opportunities would be available for Maui residents as well.

The designation of an ingress-egress ocean corridor will ensure that ocean recreational use conflicts are avoided.

5.3 Noise

Current ambient noise levels in the area are low. No increases in noise levels are anticipated as a result of the proposed activity.

5.4 Air Quality

Air quality in the area is good. No degradation of existing air quality is anticipated as a result of the activity.

5.5 Access and Traffic

Approximately six catamaran tours per day are anticipated along the coast. Ingress and egress routes to Wailea Bay will be from these tour destinations as well as from the Maalaea Bay berthing facility. Service vehicles such as the zodiac will shuttle passengers from Wailea Beach to the catamaran. Passengers will transit Wailea Beach upon embarking and disembarking of the shuttle. (See Figure 4).

5.6 Cultural and Historic Resources

No known cultural or historic resources would be directly, or indirectly, impacted by the proposed mooring.

5.7 Scenic Resources

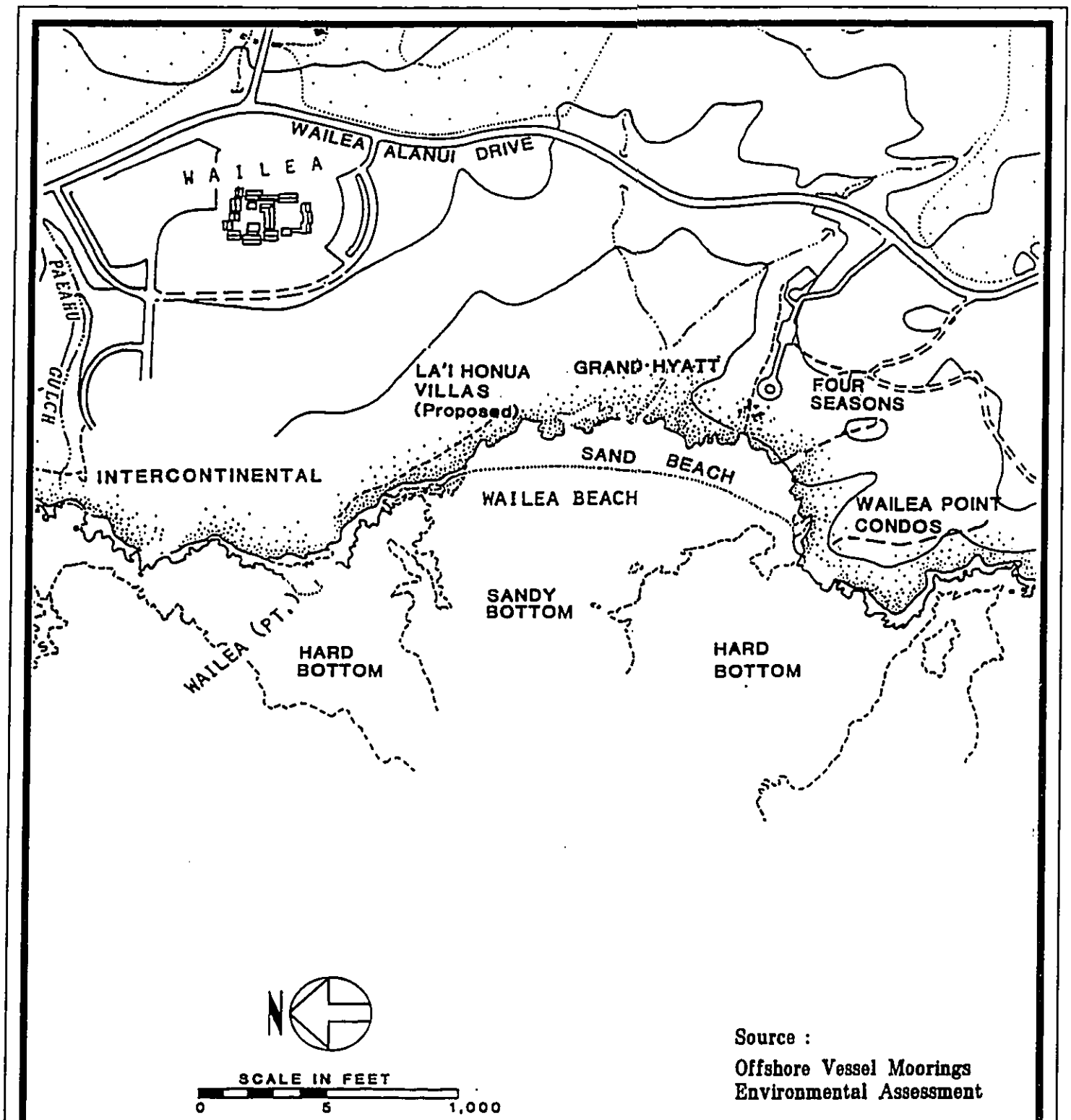
The additional catamaran activity would add another visual element to the scenic panorama, one that is consistent with coastal ocean waters.

5.8 Economic Activity

The proposed activity would add to the activities currently available to visitors, and would be consistent with the economic base already developed.

5.9 Public Facilities and Services

No public services or facilities in the project area would be affected by the proposed activity. The vessel will be temporarily moored during the loading and unloading of passengers and permanently docked at Maalaea Harbor.



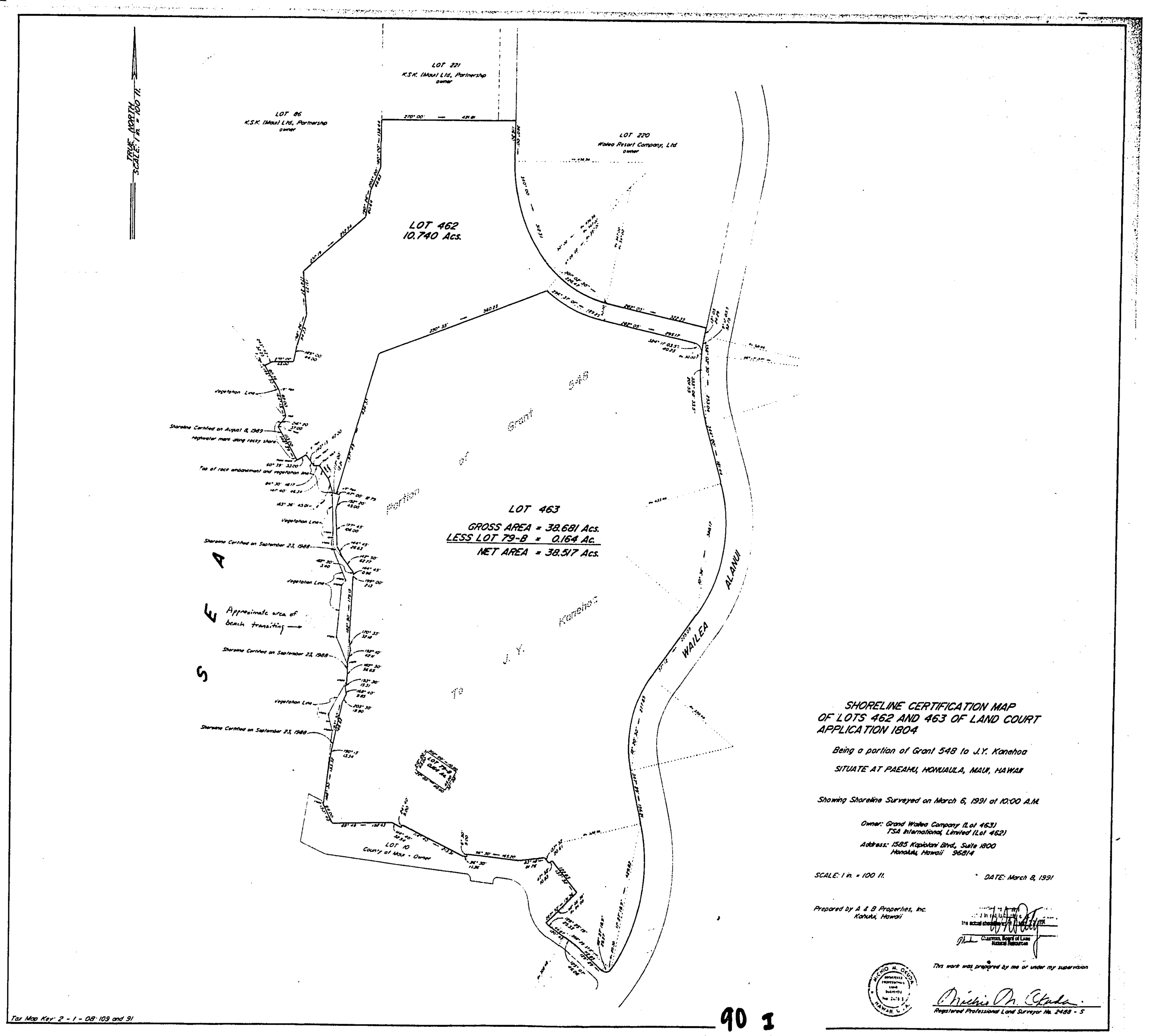
Environmental Assessment
Offshore Vessel Mooring
& Beach Transiting

Fig. 4
Catamaran Ingress/Egress Routes

Prepared for :
TSA DEVELOPMENT

Prepared by :
Wilson Okamoto & Associates, Inc.

90 I



TRUE NORTH
SCALE: 1 in. = 100 ft.
LOT 221
K.S.K. (Maui) Ltd. Partnership
owner
LOT 86
K.S.K. (Maui) Ltd. Partnership
owner
LOT 220
Wailea Resort Company, Ltd
owner
LOT 462
10.740 Acs.
Vegetation Line
Shoreline Certified on August 8, 1989
Highwater mark along rocky shore
Top of rock embankment and vegetation line
Shoreline Certified on September 23, 1988
LOT 463
GROSS AREA = 38.681 Acs.
LESS LOT 79-B = 0.164 Ac.
NET AREA = 38.517 Acs.
Portion of Grant 548 To J.Y. Kanehoa
SEA
Approximate area of beach transiting
WAILEA ALANUI
LOT 10
County of Maui - Owner
SHORELINE CERTIFICATION MAP
OF LOTS 462 AND 463 OF LAND COURT
APPLICATION 1804
Being a portion of Grant 548 to J.Y. Kanehoa
SITUATE AT PAEAHU, HONUAULA, MAUI, HAWAII
Showing Shoreline Surveyed on March 6, 1991 at 10:00 A.M.
Owner: Grand Wailea Company (Lot 463)
TSA International, Limited (Lot 462)
Address: 1585 Kapiolani Blvd., Suite 1800
Honolulu, Hawaii 96814
SCALE: 1 in. = 100 ft.
DATE: March 8, 1991
Prepared by A & B Properties, Inc.
Kahului, Hawaii
Chairman, Board of Land Natural Resources
This work was prepared by me or under my supervision
Registered Professional Land Surveyor No. 2488 - S
Tax Map Key: 2 - 1 - 08: 109 and 91

90 I

6.0 ALTERNATIVES CONSIDERED

No Action. A no action alternative will leave the project site environment in its present state. It may also eliminate the possibility of operating regularly scheduled daily tourist excursions from the new resort developments on Wailea Beach.

Mooring With Vessel Anchor. The catamaran's anchor system is not designed for bad weather conditions, with high winds and seas, which in Hawaiian waters can occur within a matter of hours with little or no warning. There is also an inherent risk involved in setting an anchor in a different spot each time. Repeatedly setting and retrieving the anchor will likely result in considerably more damage offshore to bottom dwelling organisms than will the one time installation of a stationary permanent mooring.

7.0 DETERMINATION

The proposed project will aid in providing additional water recreation opportunities for visitors and residents, including snorkeling as well as sightseeing and the experience of boating along the coast. Beach transiting by passengers will not impact the sandy beach or public recreation activities. The mooring will have no significant environmental impacts, and operation of the vessel using the mooring will be in strict accord with all applicable County, State and Federal rules, regulations and guidelines. The development of a safe mooring offshore of Wailea Beach for use by the Grand Hyatt Wailea and Four Seasons Hotels is an appropriate use of the State Conservation District and is consistent with the Resource Subzone objective of developing, with proper management, use of the natural resources of the subzone including outdoor recreational uses.

7.1 Findings and Reasons Supporting Determination

- The vessel is berthed at Maalaea Harbor and will utilize the proposed mooring facility during the daytime and early evening hours. A mooring is required to provide the vessel with a safe daily anchorage for the catamaran during embarking and disembarking procedures; while preserving the marine substrate.

- Installation of the mooring and its utilization would not result in significant environmental impacts. The mooring would be positioned on sandy bottom substrate to minimize impacts to marine biota. The vessel utilizing the mooring would be equipped with wastewater holding tanks and no discharge would occur in coastal waters.

- The coastal area in the vicinity of the proposed activity has been extensively developed to serve as a resort destination for Maui's visitor industry, with a distinct water-recreation orientation. The proposed activity will be consistent with the area's use, and will support the visitor industry while preserving the physical environment.

8.0 LIST OF PERMITS AND APPROVALS

The following Federal and State permits and approvals must be obtained for the proposed activities:

FEDERAL:

Department of the Army Permit -
Section 10, Rivers and Harbors Act of 1899

STATE:

Office of State Planning -
Hawaii Coastal Zone Management Federal Consistency Review

Department of Land and Natural Resources -
Conservation District Use Application

REFERENCES

Aotani & Associates, Inc. A Statewide Ocean Recreation Management Plan Final Report. Prepared for State of Hawaii, Department of Transportation - Harbors Division. January 1988.

County of Maui. The General Plan of the County of Maui Proposed 1990 Update. November 1990.

Sea Engineering, Inc. Environmental Assessment Offshore Vessel Moorings. October 1989.

State of Hawaii, Department of Land and Natural Resources. The Hawaii State Plan Revised. 1988.

State of Hawaii, Department of Planning and Economic Development. State Tourism Functional Plan. June, 1984.

APPENDIX

TABLE 1

DEEPWATER WAVE STATISTICS FOR LEEWARD HAWAII

A) Percent Frequency of Wind Direction vs. Wave Height

HEIGHT (FEET)	WIND DIRECTION N	NE	E	SE	S	SW	W	NW	TOTAL
below 1	0.9	1.4	1.8	0.7	0.7	0.4	0.5	0.4	6.8
1-2	2.7	6.4	10.9	2.9	1.9	1.1	1.2	1.2	28.3
3-4	2.8	9.2	15.9	2.8	1.5	0.6	0.8	0.6	34.2
5-6	1.6	4.5	8.8	1.2	0.5	0.1	0.3	0.3	17.3
7	0.8	2.5	4.0	0.4	0.3	0.1	0.1	0.1	8.3
8-9	0.3	1.1	1.6	0.1	•	•	0.1	0.1	3.3
10-11	0.1	0.4	1.5	0.1	•	•	•	•	1.1
12	0.1	0.1	0.1	•	0.0	0.0	•	0.0	0.3
13-16	•	0.1	0.1	•	•	0.0	0.0	0.0	0.2
17-19	0.0	0.0	•	0.0	0.0	0.0	0.0	0.0	•
above 20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	9.2	25.5	43.8	8.4	4.9	2.5	3.0	2.7	100.0

B) Percent Frequency of Wave Period vs. Wave Height

HEIGHT (FEET)	PERIOD (SECONDS) below 6	6-7	8-9	10-11	12-13	above 13	INDET	TOTAL
below 1	1.5	0.1	•	0.0	0.0	0.0	3.6	5.3
1-2	12.5	2.1	0.4	0.1	•	0.0	1.1	16.2
3-4	21.2	8.1	2.2	0.5	•	0.0	1.0	33.1
5-6	8.3	8.6	2.8	0.7	0.2	0.1	0.6	21.2
7	3.2	6.2	2.8	0.7	0.3	0.1	0.2	13.6
8-9	1.0	2.2	1.6	0.6	0.2	0.1	0.1	5.9
10-11	0.3	0.9	1.0	0.4	0.1	•	0.1	2.8
12	0.1	0.3	0.4	0.2	•	•	•	0.9
13-16	0.1	0.2	0.2	0.2	0.1	•	•	0.7
17-19	0.0	•	•	•	0.0	•	0.0	0.1
20-22	0.0	•	•	•	0.0	•	0.0	0.1
23-25	0.0	•	•	•	•	0.0	0.0	0.1
26-32	0.0	0.0	0.0	0.0	•	0.0	0.0	•
above 33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	48.5	28.6	11.5	3.3	1.0	0.4	6.7	100.0

• = No data available.

Source: U.S. Naval Weather Service Command, 1971

TABLE 2

HISTORICAL STORM WAVE CHARACTERISTICS

DATE		DEEPWATER WAVE HEIGHT (FEET)	DEEPWATER WAVE PERIOD (SECOND)	APPROACH DIRECTION
20 DEC 1955		14.8	11	WEST
5 SEP 1957	(DELLA)	18.9	21	WEST
2 DEC 1957	(NINA)	20.0	13	SOUTH & WEST
18 JAN 1959		14.0	10	SOUTH & WEST
6 AUG 1959		22.5	12	SOUTH & WEST
7 JAN 1962		13.6	11	SOUTH & WEST
17 JAN 1963		12.0	10	SOUTHWEST
11 JAN 1963		17.0	9	SOUTHWEST
23 NOV 1982	(IWA)	14.0	14	SOUTHWEST

Source: Offshore Vessel Moorings Environmental Assessment, 1989

TABLE 3

HISTORICAL WATER QUALITY CHARACTERISTICS
KIHEI, MAUI
August 20-21, 1977

SITE	NH3-N (mg N/L)	NO2+NO3-N (mg N/L)	PO4-P (mg P/L)	INORGANIC NITROGEN	N:P RATIO
KIHEI PIER	0.006	0.037	0.005	0.044	20.7
KALEPOLEPO	0.006	0.076	0.008	0.082	21.7
KALAMA PARK	0.006	0.007	0.003	0.013	8.4
KEAWAKAPU	0.005	0.005	0.005	0.011	5.1

Source: Offshore Vessel Moorings Environmental Assessment, 1989

TABLE 4

RESULTS OF SEA WATER ANALYSIS AT
KAMAOLE, MAALAEA BAY, MAUI
(Samples collected at low tide on February 9, 1989)

STATION	pH	TURBIDITY (ntu)	NFR (mg/L)	Chl. a (ug/L)
HEADLAND	8.24	0.82	21.2	0.81
BEACH	8.23	0.82	7.2	0.60

STATION	SALINITY (ppt)	NO2+NO3 -----mg	NH4 N/L	TOTAL N -------	PO4 --mg	TOTAL P P/L----
HEADLAND	32	0.213	0.004	0.51	0.016	0.016
BEACH	35	0.052	0.003	0.21	0.016	0.016

Source: Offshore Vessel Moorings Environmental Assessment, 1989

TABLE 5

STATE WATER QUALITY STANDARDS
(for Class A Open Coastal (Marine) Waters,
Chapter 54 as amended April 14, 1988)

PARAMETER	GEOMETRIC MEAN NTE		10% OF VALUES NTE		2% OF VALUES NTE	
TOTAL N	0.1500	*	0.2500	*	0.3500	*
(mg N/l)	0.1100	**	0.1800	**	0.2500	**
AMMONIA N	0.0035	*	0.0085	*	0.0150	*
(mg N/L)	0.0020	**	0.0050	**	0.0090	**
NO2+NO3 N	0.0050	*	0.0140	*	0.0250	*
(mg N/L)	0.0035	**	0.0100	**	0.0200	**
TOTAL P	0.0200	*	0.0400	*	0.0600	*
(mg P/L)	0.0160	**	0.0300	**	0.0450	**
CHLOROPHYLL a	0.3000	*	0.9000	*	1.7500	*
(ug/L)	0.1500	**	0.5000	**	1.0000	**
TURBIDITY	0.5000	*	1.2500	*	2.0000	*
(ntu)	0.2000	**	0.5000	**	1.0000	**

pH must be between 7.5 and 8.7
Salinity not to deviate more than 10% from "natural"
NTE "not to exceed"
* = "Wet" criteria to be applied where more than 3 mgd of fresh water are discharged per mile of coastline.
** = "Dry" criteria to be applied where shoreline fresh water discharge is less than 3 mgd per mile.
Source: Offshore Vessel Moorings Environmental Assessment, 1989

TABLE 6

CORAL COVER ALONG THREE TRANSECTS AT WAILEA, MAUI

SPECIES OF CORAL	STATION 2 SOUTH OF WAILEA BEACH	STATION 3	STATION 4 NORTH OF WAILEA BEACH
Montipora flabellata	P		
Montipora patula	3	2	7
Montipora verrucosa	1		4
Pavona varians	1	1	
Cyphastrea ocellina	P		
Leptastrea purpurea	P	P	
Fungia scutaria		P	
Pocillopora damicornis		P	
Pocillopora eydouxi		P	
Pocillopora meandrina	9	11	4
Porites brighami	P		P
Porites compressa	P	11	11
Porites lobata	26	32	38
TOTAL (percent)	40	57	64

P = present in area but not recorded in transect

Source: Offshore Vessel Moorings Environmental Assessment, 1989

TABLE 7

COMPARISON OF CORAL ABUNDANCE IN THE
GENERAL PROJECT VICINITY (KAMAOLE TO MAKENA)

	BOWERS (1973)		ECI (1974)		ECI (1977)
LIVE CORALS	KEAWAKAPU (1)*	ALL SITES (1)*	STA 1S (1)*	STA 1S (2)*	SITE 4 (2)*
Pocillopora meandrina	10.0	16.6	8.0	12.0	8.0
Pocillopora eydouxi	-	-	-	below 1	-
Porites lobata	17.2	16.6	12.0	17.0	18.9
Porites compressa	0.8	2.5	-	-	0.1
Porites brighami	-	-	-	below 1	-
Porites evermanni	-	-	-	-	below 0.1
Montipora patula	-	-	6.0	2.0	0.9
Montipora verrucosa	3.1	3.7	2.0	below 1	0.4
Montipora flabellata	-	-	-	1.0	0.3
Montipora verrilli	-	-	-	-	0.1
Leptastrea purpurea	-	-	4.0	1.0	0.9
Leptastrea bottae	5.5	2.2	-	-	-
Pavona varians	-	-	-	2.0	-
Cyphastrea ocellina	3.9	3.9	-	below 1	-
Fungia (Pleuractis) scutaria	-	0.2	-	-	-
Palythoa turberculosa**	-	-	2.0	below 1	0.7
TOTAL	40.5	45.7	34.0	40.0	30.4
SUBSTRATUM (other than live corals):					
HARD BOTTOM	28.9	37.9	66.0	59.0	63.5
SAND BOTTOM	30.0	16.3	0.0	1.0	6.1

* Methods: (1) Point-intercept method; Bowers, 128 points per site; ECI, 50 points per transect (station). (2) Quadrat method; ECI (1974), 10 one meter square quadrats; ECI (1977), 27 one meter-square quadrats.

** Soft zoanthid coral

Bowers (1973) four stations were located between Keawakapu Beach and Polo Beach (Wai
ECI (1974) Site 1S was approximately 1,500 feet north of Nahuna Point (Makena).
ECI (1977) Site 4 was approximately 600 feet south of Keawakapu Beach Park.

Source: Offshore Vessel Moorings Environmental Assessment, 1989