

150 large vessels and fewer than 500 are for full-time, small boat (under 5 net tons) fishers. The rest are part-time fishers, and the number of recreational fishers is several times larger.

ii. Recreational Fishing

Surveys indicate that 19-35 percent of Hawaiian residents fish, and 74 percent of the estimated 12,690 "personal boats" were engaged in fishing as their primary activity. A 1980 survey estimated that there were 2.1 million fishing trips taken by 235,200 residents and 82,200 visitors: 620,000 trips were in private boats, 88,000 in charter boats, and the remainder, 1,392,000, were shoreside fishing trips. A 1984 study estimated that in 1982 73,780 passenger-trips were made by the charter boat industry, capturing 2.2 million pounds of fish and \$8.1 million in total revenue.

Fishing takes place from boats that target a variety of bottomfish and pelagic fish. Along various points of the shoreline of Maui, Molokai, and Lanai, people fish primarily for recreational and possibly subsistence purposes. Because there is no licensing program or any requirements to report catch from recreational fishing, data are limited to a small number of creel surveys of shore fishers. Surveys of this type were conducted on Oahu, Kauai, and Hawaii and may provide the basis in the future for estimates of recreational fish catch (Smith in press). Traditional fishing techniques, such as throw net for reef fish and lift net for opelu, are used in some areas of the Sanctuary.

iii. Charterboat Fishing

Charterboat fishing is one of the oldest sectors of the ocean recreation industry. Before the Second World War, Kona was known as one of the world's premier sport fishing destinations. After the war, charter fishing out of Kewalo Basin became a popular attraction for tourists in Waikiki. Kona remains the primary charterboat locale. In 1990, 150 active charter vessels generated an estimated gross revenue of \$16.9 million from 77,297 customers (See Table II-18).

	<i>Oahu</i>	<i>Maui</i>	<i>Hawaii</i>	<i>Kauai</i>	<i>Total</i>
Vessels	28	17	97	8	150
Revenues	\$1.7 million	\$1.2 million	\$13.3 million	\$0.7 million	\$16.9 million
Passengers	23.9	13.5	32.8	7.1	77.3 thousand

Source: Markrich, M., March 1993.

iv. Aquarium Fish Industry

Hawaii also has an active Aquarium fish industry. The number of aquarium fish collection permits has increased 2.5 times over the last decade. The precise number of permittees who are full-time collectors is not known. The 1989-1990 catch report summary indicated a Statewide gross revenue of \$642,000 from the sale of collected fish and invertebrates (DLNR-DAR, 1993).

v. Fishponds and Traditional Uses

The invention of fishponds in Hawaii during the thirteenth or fourteenth century was a unique achievement in Polynesia. It allowed the Hawaiians to move beyond the mere harvesting of fish into fish production and husbandry. Fishponds were found on all the major islands, but the most suitable locations were Kaneohe Bay and Pearl Harbor on Oahu and the southern coastline of Molokai. Estimates indicate that the fishponds may have produced as much as two million pounds of fish. The primary species of fish raised in the fishponds were awa or milkfish, and 'ama'ama

or mullet. A 1987 report stated that there were seven ponds in use for commercial and subsistence purposes. (see discussion at II.D.2., above for additional information.)

b. Commercial Shipping

i. Economic Contribution

Given its island geography, sea and air transportation have special importance in Hawaii's economy. Approximately 80 percent of the goods consumed in Hawaii are imported from overseas and nearly 98 percent of these enter the State via container ships through commercial harbors. The only alternative to ocean transport is to ship by air. Air transport is so cost prohibitive only a few wealthy people could afford to live in Hawaii if all goods are brought in by air transport.

Ocean transport is forecast to grow 4.5 percent per year, generating an annual revenue of \$2 billion in 1998 and employing 5,894. (MacDonald, Deese, Corbin, and Clark, State department of Business, Economic Development and Tourism, "New Projections for Hawaii's Ocean Industries: A Strategic Orientation").

ii. Vessel Traffic

In 1992, 2,104 overseas vessels and 3,207 inter-island vessels arrived at Honolulu Harbor. (Approximately six overseas vessels and nine interstate vessels per day). Table II-19 gives the level of traffic in and out of Honolulu Harbor and to and from the neighbor islands.

TABLE II-19: Overseas and Inter-island Shipping, 1989, Freight and Passenger Traffic for Specified Harbors, 1989 [mst = million short tons]

Overseas Cargo	IN:	10.4 mst
	OUT:	1.7 mst
Inter-island Cargo	IN:	5.7 mst
	OUT:	5.8 mst
	Freight	Passengers
Hilo	1.6 mst	9,082
Kawaihae	0.7 mst	
Kahului	2.3 mst	9,083
Honolulu	10.4 mst	626,671
Barber's Point	7.4 mst	
Nawiliwili	1.0 mst	9,082

Source: *Hawaii State Data Book*, 1992, Tables 554 and 555.

iii. Hawaii Ports and Harbors

The State's commercial harbor system consists of seven deep-draft and two medium-draft harbors located on five islands. Honolulu is the primary port, with over 28,000 linear feet of pier (about 70 percent of the system's pier space), and serves as the main entry point for imported goods, the main transshipment point for the neighbor islands, and the main exit point for Hawaii's exports. The other harbors are: Barbers Point and Kewalo, also on Oahu; Hilo and Kawaihae on the east and west shore of the island of Hawaii; Kahului on the north shore of Maui; Kaunakakai

on the south shore of Molokai; and Nawiliwili and Port Allen on the east and south shore of Kauai. In addition, there is a private harbor on the west shore of Lanai. Pearl Harbor Naval Base (closed to commercial traffic) is six nautical miles west of Honolulu Harbor. Two off-shore mooring berths, which serve the oil refineries in Campbell Industrial Park, are located off Barbers Point.

c. Tourism

The visitor industry dominates the Hawaiian economy. In 1991 Hawaii hosted 6.87 million visitors, down slightly from the 1990 peak of 6.97 million (Hawaii State Data Book, 1992). The numbers of visitors and expenditures can be seen in Table II-20. Accommodations for visitors is summarized in Table II-21. Visitor-related expenditures in 1991 were \$9,920,902, which generated: direct, indirect and induced sales of \$19,376 million; total household income of \$6,543 million; 250,900 jobs, and State and county tax revenues of \$1,219 million. By comparison, the overall estimated 1991 Gross State Product was \$28,616 million, State personal income was \$24,045 million, the total job count was 591,250, and total State and county revenues were \$3,334 million. Oahu is the primary tourist destination, followed by Maui County, Hawaii and Kauai.

	Average Visitor Count	Total Visitor Arrivals	Total Visitor Expenditure	Expenditures per Visitor per day
State	157,590	6,873,890	\$9,920,902	\$174
Honolulu	79,700	5,048,550	\$5,353,171	\$183
Maui	40,240	2,322,060	\$2,225,228	\$152
Hawaii	18,630	1,188,630	\$1,090,603	\$161
Kauai	19,020	1,267,620	\$1,104,894	\$158

Source: *Hawaii State Data Book*, 1992, Tables 193, 194 and 209.

	Total	Hotels	Condos
State	73,779	51,134	22,645
Honolulu	37,279	29,146	8,133
(Waikiki)	32,539	25,114	7,425
Maui	9,552	10,061	9,491
Hawaii	9,170	6,836	2,334
Kauai	7,778	5,091	2,687

Source: *Hawaii State Data Book*, 1992, Table 680.

d. Ocean Recreation

As was previously discussed, Hawaii's economy is heavily dependent on tourism. One important aspect of Hawaii's appeal to visitors is the wide range of ocean recreation opportunities. In 1990 the ocean recreation industry generated an estimated revenue of \$509 million and created 5,788 jobs. (See Table II-22) In 1992, the ocean recreation industry increased its estimated revenue to \$560 million while providing a slightly higher number of jobs, (5,846). (MacDonald and Deese, 1994). Overall, the growth of the ocean recreation industry during the last decade has been dramatic, providing a boom to Hawaii's economy but also resulting in numerous problems requiring directed management.

TABLE II-22: Ocean Recreation Revenues and Employment by Sub-sector, 1990

	Revenues	Jobs
Total	574.6	5,771
-----	-----	-----
Tour boats and Cruise Ships	225.3	3,204
Recreational fishing	99.0	na
Surf Shops and manufacture	93.3	692
Personal boating	62.4	779
Competitive events	36.7	80
Dive shop	27.5	617
Charter boat fishing	16.9	203
Billfish tournaments	3.9	na
Jet skiing	4.5	93
Parasailing	3.5	70
Kayaking	1.6	33

Source: MacDonald and Markrich, 1992, Markrich, 1993.

i. Recreational Activities

1) Boating

The State has 18 small boat harbors and 50 boat launching ramps which cater to recreational public and small commercial ocean recreation operators. As of December 31, 1991 there were 5,731 individual small craft mooring berths: 4,643 catwalks and piers; 510 other moorings; and 578 offshore moorings (See Table II-23). There is considerable excess demand for these facilities; 2,400 valid applications for moorage are on file at DLNR, as of 1994.

TABLE II-23: Small Craft Mooring Facilities; by Islands, 1991-92

	Catwalks and Piers	Other Moorings	Offshore Moorings	Total	Applications On File
Honolulu					
SBH	1,287	181	318	1,786	1,600
Other	2,948	0	82	3,030	NA
Maui	75	173	87	335	245
Hawaii	251	120	91	462	480
Kauai	82	36	0	118	75
-----	-----	-----	-----	-----	-----
State	4,643	510	578	5,731	2,400

NA = Not Available SBH = Small Boat Harbors

Source: *Small Craft Mooring Facilities Utilization Report, Quarter Ending: December 31, 1993*, DLNR-Division of Boating and Ocean Recreation (DOBOR)

The DLNR-Division of Boating and Ocean Recreation (DOBOR) maintains a register of all documented vessels in the State. As of December 31, 1993 there were 13,832 vessels registered, of which 12,175 were classified as pleasure boats. There are approximately 1,800 vessels documented by the USCG (see Table II-24). It has been estimated that 75 percent of the pleasure boats engage in fishing as their primary activity.

TABLE II-24: State-Registered Vessels, by County

	Moored on Water	%	Moored on Land	%	Total	%
Honolulu	1,918	13.9	6,883	49.8	8,801	63.6
Maui	175	1.3	1,389	10.0	1,564	11.3
Hawaii	161	1.2	1,833	13.3	1,994	14.4
Kauai	82	0.6	1,391	10.1	1,473	10.7
State	2,336	16.9	11,496	83.1	13,832	100.0

Source: *Report of Documented Vessel Registration, for Period from: January 1, 1993 to December 31, 1993*, DLNR-DOBOR

2) Surfing

Surfing played an important part in ancient Hawaiian culture and has become a very popular activity in Hawaii and around the world. There are several types of surfing done around Hawaii such as longboarding, shortboarding, bodyboarding, and windsurfing. Maui has developed a reputation for superb swell conditions with clean breaks and fast waves. These conditions favor those just starting to learn as well as the more experienced riders. Surfers can choose from a variety of locations and conditions. The more extreme sites are at the outer reef where waves can reach up to 40 feet. The meek at heart can choose locations where swells vary from 2-10 feet. Best of all, surfing season is all year round. There are 1,600 surfing locations in Hawaii located on the various islands. It is estimated that 23,000 people surf on a typical busy day (Hawaii Ocean and Marine Resources Council 1991).

As a result of surfing being a large recreational activity, a substantial amount of revenue is brought in through service to surfers. Surf shops in 1989 created \$15.8 million in revenues, which was a 12 percent growth from the last period, and employed 251 people (MacDonald and Deese 1989).

3) Swimming

The natural beauty of the beaches are considered one of the most important factors in attracting tourism. The Hawaiian Islands have about 310 miles of sandy beach available for swimming and other activity. On a typical busy day 170,000 people are using the beaches for swimming or sunbathing (Hawaii Ocean and Marine Resources Council 1991). In 1988 tourism was estimated to bring in \$9.2 billion, and much of that was due to ocean and beach recreation (Hawaii Ocean and Marine Resources Council).

ii. Commercial Activities

1) Tour Boats

The tour boat industry includes a large and diverse collection of activities, including dinner or lunch cruises, snorkel excursions, glass bottom boat trips, submarine trips and ferry boat trips. Whale watching is often combined with other activities during the season. In 1990 the combined estimated revenues for the almost 200 tour boats were \$91.5 million; the total estimated employment was 1,944 persons; and the estimated number of passengers was 2.6 million. (See Table II-25)

TABLE II-25: Estimated Tour Boat Revenues, by County, 1990

	Oahu	Maui	Hawaii	Kauai	Total
Companies	16	30	12	14	72
Vessels	37	63	19	79	198
Employees	974	427	203	340	1,944
Revenues	\$42.1	\$29.9	\$ 7.2	\$12.3	\$91.5 million
Passengers	1.45	0.61	0.16	0.40	2.61 million

Source: Markrich, 1993.

Each island's tour boat industry has different characteristics. On Oahu, dinner cruises are the dominant activity generating about 75 percent of total revenues. Activities are centered at the beach at Waikiki, Kewalo Basin, Honolulu Harbor, Kaneohe Bay, Keehi Lagoon, and Haleiwa Harbor. On Maui, the dominant activity is snorkeling, primarily at Molokini Crater, which generated 80 percent of revenues. Points of departure are Lahaina, Maalaea, Mala wharf, the beach in front of the hotels at Wailea and Kaanapali, and Keehi boat ramp. On Kauai, the main activities are the Na Pali Coast tours with 57 percent of the revenues and the Wailua River boat rides with 19 percent of the revenues and 72 percent of the passengers. Vessel moorings are at Hanalei, Wailua River, and Port Allen/Nawiliwili. On the Big Island, the dominant activities are dinner cruises and snorkeling trips to Kealahou, with 76 percent of the revenues. Points of departure are the moorings at Kailua-Kona, the beach in front of various resorts on the Kona-Kohala coast, and Honokahau/Kawaihae/Puako. One cruise ship company is currently operating in Hawaii.

Whale watching takes place Statewide with the major points of departure including the areas offshore of Lahaina, Kaanapali, Napili Bay/Honokowai, Molokini Island, Makena Bay/La Perouse Bay, Kihei, Kamaole Beach, and Maalaea Bay.

Commercial whale watching has been described as:

...a highly seasonal trade lasting only from mid-December through April. Approximately 80 percent of the business is conducted by four large companies, utilizing eight vessels. Most of the large vessels doing whale watch tours operate out of Lahaina. However, as many as 28 different vessels are involved in the whale watch trade during the season, and it is common for owners of smaller vessels, catering to snorkel tours, to offer whale watch excursions when times are slow (Markrich in prep.).

In general, the ocean recreation industry of Maui is undergoing significant changes as consumer preferences and available recreation technology changes. Tour boat operators out of Maalaea are generally using small vessels and taking passengers out for combined snorkel/whale watch excursions. Glass-bottom boat rides are on the decline; submarine and inflatable raft snorkel tours are popular and growing. The ferry boat business also grew steadily during the 1980s (Markrich in prep). The Maui to Molokai ferries, which are partially subsidized by the State, transport workers and others from Molokai to Maui hotels. The ferry service to Lanai is privately owned.

2) Thrill Craft (Personal Watercraft)

Thrill craft are defined by State regulations as vessels 13 feet or less in length capable of speeds in excess of 20 mph. The two main categories of thrill craft are jet skis (or waveriders) and parasailing.

There are at least twelve operating jet ski businesses Statewide, with total direct revenues in 1990 of \$4.5 million and a work force of 93 people. The operators reported carrying 129,000 people. Operators are required to have a permit and operate within designated thrill craft area, including: offshore Hawaii Kai, Kaneohe Bay, and Sand Island on Oahu; offshore of West Maui; and, offshore East and West Big Island. Certain restrictions apply during whale season.

Parasail rides have been available in Hawaii since the mid 1980s and State regulations limit them to Waikiki, Hawaii Kai, Lahaina and Kona. There is one parasail operation in Maui working out of Lahaina. Due to concerns by the State that jet skis and parasail boats harass whales, the State has established rules that no jet skis or parasail operations can take place during the winter season from December 15 through May 15, a period when many tourists are visiting Hawaii. The 1990 reported revenues were \$3.5 million, the work force consists of 70 employees, and 107,00 passengers were served.

3) Competitive Events

Competitive events include ocean sailing races, ocean swimming races and triathlons, surfing and boardsailing contests. These all have relatively short-term impacts on the marine environment.

Hawaii is the venue for several levels of yacht racing including long distance races, international racing in Hawaiian waters, and locally organized yacht club events. The three long-distance races are the Victoria-Maui International Yacht Race from British Columbia to Lahaina, the Pacific Cup Race from Berkeley, California to Kaneohe Bay, and the Transpacific Yacht Race from Los Angeles to Honolulu. The International Kenwood Cup is a large statewide race of ocean-going yachts held in Hawaiian waters. The Transpacific race is held in odd-numbered years and the rest in even-numbered ones. An estimated 132 local races are held each year near or around the main Hawaiian Islands from February to October and are organized by the Honolulu based Hawaii Yacht Racing Association. The ocean sailing races can have as many as 70 boats and the total expenditure for the 1990 season (1991 for the Transpacific) was \$13.8 million.

In 1990, sporting events that have an ocean swim component drew 2,100 out-of-state participants with a total of 12,200. They generated \$14 million in expenditures in 1990. Eighteen commercial and amateur events were held on Oahu, three on Maui, and 18, including three major triathlons, were held on the island of Hawaii. Popularity of the Big Island commercial events, such as the Ironman triathlon, has grown so much that the Kona Coast is now considered one of the premier ocean swimming centers in the world. In 1992, 1,379 people participated in the Kona Ironman Triathlon. (Hawaii Dept. Business, Economic Development, and Tourism, 1993).

Boardsurfing was an important sport in pre-contact Hawaii. Currently, four types of competitions make use of the nearshore surf: board surfing, board sailing, body surfing and body boarding. In 1990 four professional surfing contests were held at the north shore of Oahu and four professional boardsailing events were held, three on Maui and one on Oahu. The various competitions included almost 900 participants and generated about \$4 million in revenues. However, these events have been troubled by competition with other users for waves and public beach areas.

4) Canoe Racing and Kayaking

Hawaiian outrigger canoe racing is an important cultural tradition that dates back to pre-contact Hawaiian society and has attained international popularity. In 1990 six outrigger canoe

racine associations containing 62 clubs and 6,610 paddlers participated in 37 regattas and 32 long distance races.

Kayaking is becoming an increasingly popular sport in Hawaii. In 1990 approximately 20 amateur kayak events were held, nine on Oahu, six on Maui and five on the Big Island, and generated \$245,000. Sales of kayaks generated \$600,000, and kayak tours on Kauai, Maui and the Big Island generated \$846,000 in revenues. The largest share of the kayak tour revenue came from the Na Pali Coast tours on Kauai.

5) Diving

The estimated gross revenues from 47 dive shops interviewed in 1987 were \$19.8 million (DBEDT 1992). These dive shops conducted 54,000 introductory dives, 68,000 certified dives, and 128,000 snorkeling trips. The dive shops used 66 boats to take their clients to almost 200 dive sites around the State.

The recreational dive industry is dominated by tours from Maui, primarily trips to Molokini Crater, as is shown in Table II-26. Maui accounted for 51 percent of the introductory dives, 49 percent of the certified dives, 86 percent of the snorkel trips, and 57 percent of the gross revenues. The Kailua-Kona area of the Big Island is also growing in popularity as a dive/snorkel destination.

TABLE II-26: Characteristics of Recreational Dive Industry, by County, 1987

	Oahu	Maui	Hawaii	Kauai	Total
Companies	15	14	14	4	47
Vessels	21	27	17	4	66
Intro Dives	15,810	27,675	7,774	2,720	53,979
Certified	15,090	33,225	14,505	4,915	67,735
Snorkeling	9,000	110,450	7,358	1,260	28,068
Revenues	\$ 4.9	\$11.3	\$2.5	\$2.5	\$19.8 million
Dive sites	50	66	54	26	196
Most popular	23	19	21	6	69

Source: Tabata, 1992.

iii. Economic Contributions of Ocean Recreation

Ocean Recreation is a major source of revenue for Hawaii. Table II-27 summarizes the revenue and employment ocean recreation produced in 1989.

TABLE II-27: Revenues and Employment Produced by Ocean Recreation

Ocean Recreation	Revenues (in millions)	Revenue Growth (%)	Employment
Recreational fishing	\$78.4	11	NA
Cruise ships	58.7	24	1,050
Tour & Charterboats	49.2	12	1,070
Competitive events	26.2	20	NA
Personal boating	21.2	3	81
Dive Shops	19.8	31	518
Surf Shops	15.8	12	251

Source: MacDonald and Deese 1989.

e. Ocean Waste Disposal

i. Water Quality

Hawaii marine waters are affected by both point-source and non-point source discharges originating from industrial, agricultural, municipal and home operations, and from urban and industrial storm water runoff. The primary sources of point source pollution include: thermal discharges from electric generating plants, process wastewater from sugar mill facilities, and irrigation tailwater. Non-point sources of pollution originate primarily from rainfall events and subsequent drainage into streams during high rainfall periods. Poor water quality is common during those conditions, especially in bays and harbors where streams enter the bays and circulation is limited. These areas include: Nawiliwili, Waimea and Hanapepe Bays on Kauai; Kahului Bay on Maui; South Molokai; Hilo Bay and the Hamakua Coast on the Big Island; and Kaneohe, Kailua and Haleiwa Bays on Oahu.

In the latest 305(b) Water Quality Report produced in response to the Clean Water Act (CWA) (P.L. 92-500, as amended) requiring states to report the status of their surface and ground water quality, the overall quality of waters in the State was rated as "very good" (INALAB, INC., April 1992). High levels of toxicity have rarely been detected in most coastal waters with some exceptions (e.g. Ala Wai Canal). All ocean waters, bays and estuaries in the State fully support beneficial uses, with an exception being along the west Maui coast line (Lahaina and Kihei) where seasonal macroalgae blooms (*Cladophora* and *Hypnea*), which may be related to excess nutrients, interfere with aquatic recreational activities. The report notes: "...habitat destruction, introduction of alien species, intensive fishing, and surface runoff containing high concentrations of sediments, bacteria, nutrients and other chemicals have, over time, caused alterations in aquatic community structure and publicly-perceived decrease in the aesthetic qualities of surface waters."

Overall many areas of the state are concerned with sewage spills (often the result of heavy storm events). However, progress is being made to address water quality problems (i.e., in 1990, the State adopted the nation's most stringent standards for the protection of marine recreational waters from pathogenic contamination) and maintain water quality standards (i.e., DOH developed new standards for 97 toxic pollutants (HAR Chapter 11-55)). Clearly, concerns over the protection of the habitat of the humpback whale will relate to the need to ensure that any future degradation of water quality will not harm the whales.

ii. Point Source Discharges

Point-source discharges result from human activities that discharge water or wastes from a specific point -- such as factories or sewage pipes. Section 402 of the CWA regulates and establishes a National Pollutant Discharge Elimination System (NPDES) permit program for the discharge of any pollutant, or combination of pollutants, into waters of the U.S.. Permits are required for all point sources of pollution including wastewater treatment facilities, municipal storm sewers serving large (greater than 250,000) or medium sized (greater than 100,000) populations, storm water discharges associated with industrial facilities, electric generating facilities, industries, and agricultural facilities. EPA has delegated the responsibility for administering the NPDES permit program to the Hawaii Department of Health (DOH). DOH requires permit holders to monitor discharges and to submit reports on a periodic basis.

In 1991, there were 15 wastewater facilities with NPDES permits in the State and eleven of those were discharging a total of 143.32 million gallons per day into ocean waters. The remaining four permit holders used injection wells or reuse of effluent for irrigation or disposal (Tarnas and Stewart 1991:74). There are two ocean disposal sites off Oahu for which CWA 301(h) waivers have been granted to permit primary discharge instead of the normally

consent decree to determine the environmental consequences of releasing primary treated sewage effluent in the marine waters (Mamala Bay Study Commission, 1993). There are only a few harbors and marinas in the State where boaters can have their sewage removed from the boats, consequently, most sewage is released in the nearshore marine waters.

iii. Non-Point Source Discharges

In recent years, the nation's coastal waters have experienced serious water quality problems. Many of these problems are the result of what is commonly called non-point source pollution or polluted runoff. These terms both refer to pollution that enter a body of water as a result of water flowing over the surface of the land, such as rainfall, irrigation, or snowmelt. Common non-point source pollutants include soil, fertilizers, pesticides, animal wastes, oil, grease, litter, lawn clippings, and home lawn care chemicals. These and other pollutants end up in streams, rivers, lakes, estuaries and coastal waters all across the country.

The consequence of non-point source pollution are varied: increased risk of disease from water recreation, algae blooms, fish kills, contaminated fish for human consumption, destroyed aquatic habitats, and turbid waters (HCZMP, 1996). Though some polluted runoff results from natural causes, most results from people's activities on the land and water. Much non-point source pollution is preventable.

Non-point sources of pollution in Hawaii include sediments, nutrients, toxic chemicals, pathogens, acidity, and freshwater inflows. Sediments from eroded soils increase turbidity in coastal waters and can accumulate on critical habitats such as coral reefs. Researchers have estimated the sediments generated by each island to be 182,944 tons/year for Hawaii, 294,300 tons/year for Kauai, 138,320 tons/year for Lanai, 207,020 tons/year for Maui, 214,560 tons/year for Molokai, and 102,700 tons/year for Oahu, for a total of 1,139,844 tons per year (HCZMP 1996). Nutrients, including fertilizers, washed into coastal waters may lead to eutrophication -- the increased decomposition of organic materials in coastal waters leading to a depletion of oxygen. Toxic chemicals, including metals, petroleum-based products, and pesticides, can pose a significant risk to coastal water quality and marine organisms. Coastal water containing significant amounts of pathogens -- disease-causing organisms, such as bacteria, viruses, and parasites -- pose a threat to human and other aquatic animal health, such as humpback whales.

Land-based activities are the primary source of polluted runoff problems statewide. Agriculture, forestry, urban, marina, and hydromodification activities cause most of these problems. Storms and heavy rains generate runoff which picks up the non-point sources of pollution associated with these activities and carries them downstream to the coastal waters. In addition, when land-based activities degrade wetlands and riparian areas, they damage important natural areas that would otherwise absorb and filter polluted runoff before it reaches coastal waters.

Agriculture can produce nutrient runoff which may include some toxic chemicals as well as soil disturbances resulting in deposition of sediments. Heavy rains in agricultural areas antagonize non-point source discharges of pollution. Nutrient runoff is detrimental to coastal zones resulting in eutrophication and depleting oxygen levels. The runoff of toxic chemicals such as pesticides and herbicides can also be damaging to coastal waters and humans. Soil deposition results in soil erosion on land and increased turbidity in coastal waters. The increased turbidity can negatively effect growth on reefs which are critical habitats in the area.

Non-point source discharge from urban areas result from wastewater, stormwater runoff, and cesspool seepage. These sources contribute pathogens, inorganic solids, and sedimentation to coastal waters. Eutrophication, decreased oxygen levels, and increased turbidity can result from such sources. Non-point source discharges accumulate in urban areas through channelization of storm drains from roads and industrial areas to coastal waters.

Larger scale channelization, or hydromodifications, can be damaging to coastal waters because stream flow has been altered in some way. These alterations may bypass wetlands or other areas important for natural filtration. Channelization can also increase runoff flow into coastal waters. Examples of areas with increased flows are Hilo Bay and Kaneohe Bay.

Recreational boating and the wastes associated with such an activity contributes to non-point source discharges. Such wastes include petroleum products, organic and inorganic wastes, and paint shavings.

iv. Ocean Dumping and Dredge Material

The Honolulu Engineer District of the U.S. Army Corps of Engineers (Corps) operates three major programs which have a significant influence on the marine waters of Hawaii, including Regulatory, Civil Works Construction, and Civil Works Operation and Maintenance. The Corps regulates the transport of dredged materials to five EPA-designated deep water ocean disposal sites (see Table II-28 and Figure 11-18), and is also involved with twenty-six river and navigation projects, twelve flood control projects, and eight beach erosion control projects. All of the dredged material disposal sites are located outside the Sanctuary boundary. Additional projects are currently planned or under construction. The projects are often initiated at the request of State of Hawaii or local governments and approved by Congress.

TABLE II-28: EPA Approved Hawaii Ocean Disposal Sites

Site	Depth (m)	Area (n mi ²)	Distance From Shore (n mi)
Kauai/Nawiliwili	1,120	0.8	3.3
Kauai/Port Allen	1,160	0.8	3.2
South Oahu	475	1.5	3.3
Maui/Kahului	365	0.8	5.0
Hawaii/Hilo	340	0.8	4.0

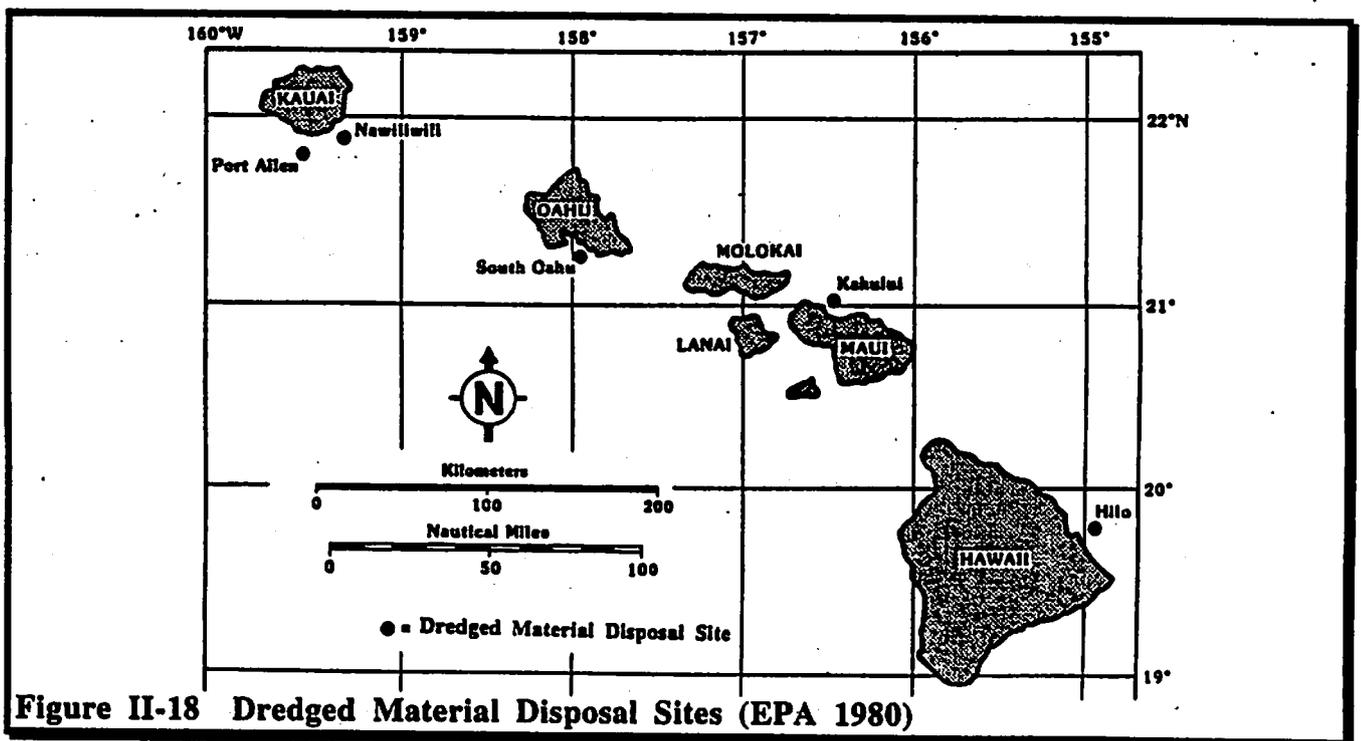


Figure II-18 Dredged Material Disposal Sites (EPA 1980)

f. Department of Defense Activities

i. Expenditures

The U.S. Department of Defense (DOD) has long played an important role in Hawaii's economy. The 1991 estimate of Federal Defense expenditures in Hawaii on goods and services was \$3.3 billion. This was a modest increase in real terms since 1981, shown in Table II-29. Most of this spending occurred on Oahu. The regional impact is shown in Table II-30.

	1981	1991
Defense Expenditures	\$2,041.2	\$3,300.0
GSP Price Deflator	93.3	146.2
Real Defense Expenditures	\$2,187.7	\$2,257.2

Source: *Hawaii State Data Book, 1992*, Tables 319 and 410.

	Military Personnel	Military Dependents	Total Acreage
State	52,965	56,994	238,937
Honolulu	52,729	56,709	81,459
Maui	17	23	6,327*
Hawaii	80	129	101,882
Kauai	139	133	20,492

* Does not include Kahoolawe.

Source: *Hawaii State Data Book, 1992*, (Tables 313 and 320)

ii. Activities/Operations in Hawaiian Waters

Hawaii is important for national defense purposes because of its strategic location and facility use for both operational and training purposes. Many of the defense facilities (e.g., Pearl Harbor, bases, test ranges) are located on or near the water where transit and training activities occur. The U.S. Army, Air Force, Navy and Marines all have extensive personnel and equipment based in the Hawaiian Islands. Even with the downsizing of the military establishment, activities in Hawaii are not expected to decrease in the long-term (e.g., some units will leave but will be replaced with other units from overseas stations) (DOD Briefing, March, 1994).

The Pacific Missile Range Facility (PMRF) located at Barking Sands off the west of Kauai also plays a significant role as a training facility and is used year-round for air, surface and subsurface training. There are existing limitations of public use both on the water and on the land during specific times of testing exercises. PMRF uses underwater instruments, airplanes and helicopters to ensure that humpback whales are not in the vicinity prior to initiating testing exercises.

The State of Hawaii Department of Defense/National Guard also conducts military training exercises in conjunction with other Federal armed services and non-military activities such as responding to emergencies (e.g. helicopter firefighting including water bucket pickups and training and search and rescue operations) in and near the Sanctuary. The Hawaii Air Guard operates aerial refuelers (tankers), tactical airlifters, and tactical fighters. The Army Guard operates tactical and

transport helicopters and fixed-wing aircraft. In addition, a large number of visiting (transit) aircraft from U.S. military forces fly similar missions in support of the Hawaii based units.

The following examples demonstrate some of the types of Department of Defense military operations which occur in or around the Sanctuary. Also see listing in Appendix F.

1. **Submarine Sea Trials.** Sea trials usage for submarines upon completion of major repairs such as post-overhaul and post depot-modernization period. This usually occurs in the vicinity of Penguin Bank in the Kaiwi Channel.
2. **Submarine Transit Usage** (submerged and surfaced throughout islands, Penguin Banks). Occasional port visits to Maui and the other islands.
3. **Anti-Submarine Warfare (ASW) Exercises.** Usually two per year, lasting several days with surface ships and submarines and including the use of expendable equipment such as smoke floats and bathythermograph probes. Shallow waters are a necessary element in meeting the training requirements. Other exercises including the launching of recoverable, inert (non-explosive) torpedoes are conducted regularly. In some cases, passive (non-noise emitting) hydrophones are placed in arrays on the ocean floor for tracking purposes, which can also be used for non-military uses such as marine mammal or underwater acoustic research. The Pacific Missile Range Facility has prepared a draft environmental assessment on such an operation (PMRF Draft Environmental Assessment For A Temporary Hawaiian Area Underwater Tracking System, April 1994).
4. **Special Operations.** Necessary to use shallow water areas to meet the littoral mission of the Navy. Usually conducted once a year and last about 24 hours involving submarines and small surface craft. Inert ordinance is used and retrieved.
5. **Helicopter and Fixed-Wing Aircraft Operations.** Search and rescue, passenger and cargo transfer and special training operations are conducted at low altitudes using night vision devices, etc.
6. **Surface Ship Operations.** These operations include submarine sea trial escort, dive rescue, and salvage operations. Transit throughout MHI's.
7. **U.S. Marine Corps Operations** involve practicing amphibious landings and raids from day/night helicopter operations from Oahu to other islands and bases.

iii. Other DoD Military Operations In The Hawaiian Islands

Surface Operations

- Search and Rescue Operations (Inside and outside 100-fathom Isobath)
- Firefighting operations, including water bucket pick-ups
- Pierside Training and Maintenance (Inside 100-Fathom Isobath)
- Dry Docking Operations at Pearl Harbor
- Harbor Movements by Ships, Submarines, Boats and Auxiliary Craft
- Anchoring
- Transit Operations Between Harbors and Operating Areas (Within the 100-Fathom Isobath)
- Special Operations Involving Swimmers and Small Boats (Within the 100-Fathom Isobath)
- Salvage Operations and Towing (Within the 100-fathom Isobath)
- Transit Operations Between Operations Area (Outside 100-Fathom Isobath)
- Towing Operations (Outside 100-Fathom Isobath)
- Engineering, Navigation, Seamanship, and General Warfare-Related Training Exercises (Outside 100-Fathom Isobath)
- Replenishment Operations Underway (Outside 100-Fathom Isobath)
- ASW Operations (Within and Outside 100-Fathom Isobath)
- Amphibious Warfare Operations
- Anti-Surface Warfare Operations (ASUW) (Within and Outside the 100-Fathom Isobath)
- Anti-Air Warfare (AAW) Operation (Outside the 100-Fathom Isobath)

- Explosive Ordnance Disposal (EOD) and Demolition Operations (Within 100-Fathom Isobath Mine Warfare and Mine Counter-Measure Operations by Surface Ships (MCM) (Within and Outside the 100-fathom Isobath)

Subsurface Operations

- Transit Operations (Surfaced and Submerged) to and from Ports and Operating Areas
- Post Maintenance Shallow Water Dives
- Deep Water Dives and Surfacing
- Special Warfare Operations with Swimmers and Small Craft
- ASW and Anti-Surface Warfare Operations
- Torpedo Exercises Using Retrievable Non-Explosive Torpedoes
- Mine Warfare (MIW) Training During Submarine Transit of a Field of Bottom-Practice Mines
- MIW Training for Submarines, Including the Launching of Recoverable Exercise (Inert) Mines

Air Operations

- Landing and Takeoff by Helicopters and Fixed-Wing Aircraft from Shore Bases
- Landing, Takeoffs, and Training Flights at Altitudes above 50 Feet by Helicopters from Ships
- Training Flights and Transfers of Personnel and Equipment by Helicopters and Fixed-Wing Aircraft at Altitudes above 50 Feet
- Low Flying Tactical Helicopter Flights Transiting Between Island Training Areas at Altitudes Between 200 and 500 Feet
- Launches of Target Drones and Missiles from Shore Bases
- Operations from Patrol (P-3) Aircraft and Helicopters against Actual Submarines or Mobile Targets
- Insertion/Extraction of Special Forces (SF)/USMC Reconnaissance (RECON) Troops from Helicopters and fixed-wing aircraft into the water
- Aircraft Carrier Operations
- Air Combat Maneuvering
- Live Missile Firings by Aircraft Versus Target Drone
- Bombing, Missile Firing, and Gun Exercises by Aircraft Using Surface Targets or Kaula Rock

g. Energy and Industrial Uses

Use of the ocean waters surrounding Hawaii as a potential source of energy is important given the State's relative isolation and its dependence on imports to meet energy demands. The State supports many forms of alternative energy research and development, most of which focus on the ocean. During the 1980's Hawaii became the world's leading site for Ocean Thermal Energy Conversion (OTEC) research and implementation. OTEC facilities are intended to replace traditional fossil fuel electrical generation capacity. Other potential energy resources from the ocean, though not currently a priority, include marine biomass plantations for the generation of methane gas, wave power generators, and tidal power generators. In addition, existing conventional energy facilities in Hawaii affect the ocean directly in a number of ways. Hawaii's most important energy source, crude oil, is transported to Hawaii via large oil tankers. The crude oil is unloaded at an offshore mooring site near Barbers Point, Oahu, where it is processed at two oil refineries. Oil-burning electrical generation plants are sited near the ocean and use ocean water for cooling systems.

i. Hydrocarbon (oil and gas) Resources

Hawaii has no natural reserves of conventional energy sources which include petroleum, natural gas, or coal. There are, therefore, no proposals for exploration, development, or production of hydrocarbon resources in the vicinity of the Sanctuary. Crude oil, all of which must be delivered by tanker, is Hawaii's primary energy source. Per capita oil consumption in 1988 equaled approximately 285 million Btu, or about 45 barrels of oil per person. Nearly 60 percent of

the annual Statewide demand for oil is related to transportation needs, such as aviation fuel. Electric utilities are the next largest consumers of oil. Due to the State's mild climate, however, there are virtually no consumer heating needs, and residential energy consumption is relatively low (Schultz 1991).

ii. Ocean Thermal Energy Conversion

Hawaii is the primary site for OTEC research and implementation. Research and development of OTEC methodology are focused on the conversion of renewable solar energy stored in the ocean into electrical energy. The OTEC system is generally comprised of two components. The first system is a system of warm and cold seawater intake and discharge pipes. The second is a plant facility consisting of pumps, turbine generators and heat exchangers. While the methodology and operating costs for OTEC are relatively inexpensive, the capital costs of constructing installations large enough to provide community power are high, especially when contrasted with the currently low price of oil. Nonetheless, OTEC research in Hawaii has grown since 1975, when the Natural Energy Laboratory of Hawaii Authority established the Kona Seacoast Test Facility located at Keahole Point on the Big Island as the primary OTEC research facility in the United States. Between 1979 and 1989, growing interest in OTEC projects supported expansion of the Seacoast Test Facility into the Hawaii Ocean Science and Technology (HOST) Park. An OTEC demonstration project that produced net electrical power for the first time with an open-cycle system has been operating here since 1993. A closed-cycle system OTEC pilot plan began in 1995.

A variety of State authorities have jurisdiction over all ocean energy development projects in Hawaii including: DLNR; Department of Transportation (DOT)-Harbors Division; DOH; Public Utilities Commission, and relevant County planning commissions. In addition, such projects may be subject to the jurisdiction of Hawaii's Coastal Zone Management (CZM) Program.

iii. Geothermal Energy Production/Underwater Electrical Transmission Cables

Hawaii has one geothermal energy facility located on the Big Island near Puna. The Puna Geothermal Venture (PGV) produces electric energy from a geothermal power plant and geothermal wellfield located approximately 21 miles south of Hilo in the Puna District. PGV is sited on about 500 acres of land in the Kapoho area of which approximately 25 acres houses the facility. The PGV facility is in the geologic region known as the East Rift Zone, found on the eastern flank of the Kilauea Volcano.

PGV supplies electric power to homes, businesses and a wide variety of consumers across the Big Island. PGV is the first commercial geothermal power plant in the State of Hawaii and is currently producing 25 megawatts of power -- enough electricity to meet the energy needs of over 25,000 Big Island residents and visitors. At this time, geothermal energy is the only large-scale commercially produced alternative to fossil fuels in Hawaii. Solar and wind energy production are still in experimental stages and do not produce enough power for large-scale commercial application.

The State of Hawaii is investigating the feasibility of placing a deep-water electrical transmission cable and support system to deliver electricity from geothermal energy resources on the Big Island to consumers on Oahu. The undersea cable could transmit up to 500 megawatts (MW) of electrical power, almost half of Oahu's current demand. This transmission system is also envisioned to provide back-up electrical power to other Islands during power emergencies (Schultz 1991).

The preferred route for the undersea transmission cable will begin at Puna on the Big Island, move north and west to Waimea over land, then crosses the Alenuihaha Channel to Maui at

a depth of 6,350 feet. On Maui, the cable comes onto land at Huakini, crossing the southern tip of the Island to submerge again at Ahini. From there, it runs northwest past Lanai and Molokai, through the Auau Channel at a depth of 410 feet, before heading across the Kaiwi Channel under 2,240 feet of water to Waimanalo on Oahu (Schultz 1991).

The cable project will be implemented in conjunction with the development of a 500-MW geothermal generation plant on the Big Island in a joint effort called the Hawaii Geothermal/Interisland Transmission Project. In 1989, Hawaiian Electric sent out a Request for Proposals (RFPs) to 33 organizations to finance, design, construct, install, operate and maintain a 500-MW geothermal/interisland transmission project. That same year the State of Hawaii awarded a major contract to Environmental and Energy Services Company (ERC) to prepare the project's master plan and environmental impact statement.

iv. Marine Hard Minerals

Manganese crusts and nodules containing iron, manganese, cobalt, copper, nickel, and platinum are found in deep waters outside the Sanctuary. Manganese nodules of commercial interest are located in international waters. The metal of primary interest (on which economic feasibility is largely based) in the nodules is nickel. Copper and cobalt are also important revenue products as are manganese and molybdenum. Manganese crusts are generally found on seamounts, many of which would be within the Exclusive Economic Zone (EEZ). The primary metal of interest in crusts is cobalt. Heavy metals, such as platinum, are also important. Manganese crusts have been located adjacent to Hawaii and Johnston Island, and are most typically found at depths between 800 and 2,400 meters or more, well outside the Sanctuary boundary. To date, more research and exploration have been directed toward the technology of seabed nodule development than has for manganese crust development. However, although present information about manganese crusts is preliminary, it is known that cobalt concentrations in crusts are approximately four times greater than those found in nodules, and the total value of additional metals found in crusts is also higher than that found in nodules. These factors will likely support additional efforts into learning more about development of manganese crusts, particularly because crusts tend to occur in shallower waters within the EEZ, whereas nodules are often located in deeper waters outside the EEZ, where jurisdiction is less clear.

In general, a marine minerals industry located in Hawaii would provide a domestic source of important strategic materials, and would significantly alleviate the current dependence upon imported cobalt, manganese, and nickel resources. The investment costs to establish a crust mining operation in the sea would be very high; given the investment costs and limited availability of sites, it is not likely that any other such operation would be established. Despite these difficulties, such an industry in Hawaii would diversify the State's economy into areas other than the traditional tourism, government (civilian and military), and construction industries.

The NOAA licenses are for areas off the South American coast international waters. DOI regulates ocean mining within 200 miles while NOAA regulates it outside of 200 miles per an agreement between DOI and NOAA. Only the area of DOI jurisdiction is relevant to the Hawaiian waters.

The Department of the Interior (DOI) has concluded that leases for ocean minerals can be issued under the Outer Continental Shelf Lands Act (OCSLA). The DOI, Minerals Management Service, Office of Strategic and International Minerals (OSIM) issues permits for exploration and commercial recovery. In addition, NMFS and WESPAC would play consultative roles in the development of any manganese development proposal. Necessary permits for harbor facilities to accommodate processing, transportation and other needs related to ocean minerals development would fall within the jurisdiction of the Corps of Engineers. Finally, EPA is responsible for water quality and protection of the benthic community beyond the State's territorial sea.

v. Sand Resources

Sand is the most valuable nearshore mineral in Hawaii (Shannon 1991). Sand resources are vitally important to coastal areas for shore protection and as a source material for construction materials (i.e., concrete). The worth of Hawaii's beaches as a recreational focus for residents and tourists goes beyond any dollar estimate. Some of the most popular beaches (e.g., Waikiki and Ala Moana) are maintained against erosion and sand loss by replenishing activities. Maintenance of public beaches, and the need to compensate beaches for rising sea levels provide an impetus to investigate the feasibility of mining nearshore sand resources to meet these needs.

Sand for beach replenishment is currently obtained from graded onshore, inland sand dunes located on Kauai, Maui, and Oahu. However, sand from these sources is in limited supply and, in fact, inland dune sand on Oahu is predicted to be depleted in less than ten years (Shannon, 1991). Also, the cost of transporting sand for beach replenishment from the Neighbor Islands to Oahu, combined with restrictive State regulations have further encouraged study of prospecting for sand deposits within nearshore waters (i.e., within State waters). Several potential sand deposit sites have been identified through these studies. Presently, there is no sand mining activity within the Sanctuary. There is, however, concern for future shortfalls of sand supplies. The prospect of mining offshore sand deposits will become greater as onshore sand deposits become depleted.

With certain exceptions, sand mining has been effectively banned in Hawaii since 1978. However, in the event that the State of Hawaii determines to pursue development of nearshore sand mining operations for beach replenishment, it will be required to comply with provisions of the Coastal Zone Management Act (CZMA), the Rivers and Harbors Act, Section 404 of the CWA, and possibly Title I of the Marine Protection, Research and Sanctuaries Act. Direct jurisdiction over sand mining activities would rest with DLNR, which would issue permits through a Conservation District Use Application (CDUA) process and through a Corps of Engineers CWA Section 404 permit.

h. Agriculture

As of 1991 there were an estimated 4,500 farms in Hawaii with over 1.7 million acres. Table II-31 gives the breakdown of farms and acreage by county.

	Number of Farms	Farm Acreage (1,000)	Sugar	Pineapple	Flowers	Other	Livestock
State Total	4,500	1,710	\$174.8	\$107.8	\$68.1	\$113.1	\$90.1
Honolulu	900	125	30.6	62.2	26.2	10.0	41.8
Maui	600	355	57.9	45.7	8.0	22.8	10.0
Hawaii	2,600	1,005	43.6	--	31.3	64.2	33.4
Kauai	400	225	42.8	--	2.5	6.1	5.0

Source: *Hawaii State Data Book, 1992*, Tables 564 & 567.

The value of crop sales in 1991 was \$464 million, or 16 percent greater than total sales in 1981. In real terms, however, there was a 28 percent decline, shown in Table II-32.

	1981	1991	% change
Nominal Value of Crop Sales	\$401.3	\$463.8	+15.6%
CPI-U	91.7	148.0	+61.4%
Real Value of Crop Sales	\$437.7	\$313.4	-28.4%

Source: *Hawaii State Data Book, 1992, Tables 563 and 411.*

Unprocessed sugar cane was the largest single crop with \$174.9 million in sales in 1991. Second was pineapples with \$107.8 million in sales, and third was flowers and nursery products with \$68.1 million. Table II-31 gives the breakdown by county. Sales of livestock registered \$90.1 million in sales.

Since 1981 total farm acreage statewide has declined from 1,965,000 acres to 1,700,000 acres in 1992, and the total acreage in crops has declined as well from 291,300 acres in 1981 to 212,200 acres in 1992. The decline in cultivated land (79,100 acres) was due primarily to a decline in sugar cane (70,400 acres), most of which was on the Big Island (43,200 acres). The decline in Pineapple (14,800 acres) occurred mostly in Maui County which lost 15,900 acres, while there was a 1,100 acre increase on Oahu. Other agricultural products saw a 6,100 acre increase.

j. Aviation

The State of Hawaii has seven commercial and seven general aviation airports. In addition, there are six military and two semi-private airports. The distribution of these facilities is shown in Table II-33. In 1992 there were 21 helicopter tour companies with 91 aircraft, using 3 semi-private heliports, eight of which are on the Big Island. Table II-34. shows the number of aircraft operations at the major State-owned airports in Hawaii.

	Airports				Heliports
	Commercial	General	Military	Private	
Hawaii	2	2	1	-	8
Maui	1	1	-	1	-
Kahoolawe	-	-	-	-	-
Lanai	1	-	-	-	-
Molokai	1	1	-	-	-
Oahu	1	2	3	-	1
Kauai	1	1	1	1	2
Niihau	-	-	-	-	2
Kure Atoll	-	-	1	-	-
TOTAL	7	7	6	2	13

SOURCE: *Hawaii State Data Book, 1992, Table 531.*

TABLE II-34: Aircraft Operations, by type of Aircraft, at Major State-Owned Airports, 1991

	All Movements	Carrier	Air Taxi	Air Aviation	General Military
Honolulu Int'l	403,566	196,037	65,390	113,799	28,340
Hilo Int'l	88,206	19,596	38,504	20,802	9,304
Kahului	180,857	51,668	74,410	49,717	5,062
Lihue	112,679	30,825	64,341	11,027	6,486
Keahole	56,140	26,478	11,069	15,265	3,328
Molokai	47,898	124	35,304	10,367	2,103

SOURCE: *Hawaii State Data Book*, 1992, Table 534.

k. Research

A significant amount of research is conducted on ocean and coastal resources in the Main Hawaiian Islands. Some examples of research on humpback whales includes: whale identification (fluke photographs and mark-recapture studies); audio mapping and tracking; and behavioral studies (social dynamics, effects of boats and other human water craft on whale behavior). Research institutions include the University of Hawaii, Kewalo Basin Marine Mammal Laboratory, Pacific Whale Foundation, Center for Whale Studies, Albright College, Moss Landing Marine Laboratories, Southern Illinois University, National Marine Mammal Laboratory, and the Hawaii Wildlife Fund (E. Nitta, NMFS, pers. comm. 1993). Some of this work is supported by NMFS; however, most is supported by private non-profit organizations through public contributions.

Evans (1992) compiled a list of research projects initiated and funded by NMFS, designed to address NMFS concerns. Much of this work was done in Alaska, although the results have direct relevance to the Sanctuary. These studies focused on a variety of topics including: (1) impacts of vessel traffic on humpback whale behavior; (2) resource assessments; (3) surveys of humpback whale populations; (4) surveys of humpback whale foraging; (5) effects of oil on the marine environment, including humpback whales; and, (6) periodic workshops and conferences to compile and compare information on humpback whales, marine mammal researchers, and the review and reevaluation of whale watching programs and management needs.

Research is also conducted on other cetaceans in the area. The most extensive marine mammal surveys performed to date in Hawaii was conducted from February to March 1993 and repeated from February to April in 1995 to evaluate the effect of the ATOC transmission on marine mammals. The ATOC project involves a low frequency acoustic transmission designed to measure oceanic thermal characteristics. The aerial surveys were conducted to determine baseline population dynamics and distributions throughout the State. This year the ATOC Marine Mammal Research Program will investigate the effects of ATOC sound sources on the distribution and behavior of marine mammals, particularly the humpback whale.

The Sanctuary area has also been the site of research on coral reefs. Other marine research is focused on the marine resources around Kahoolawe, which includes studies on sea turtles, water quality, fish, and corals (Jokiel et al. 1993). NOAA, EPA, and DOH have supported significant research and monitoring projects in west Maui which focus on determining the factors relating to the macroalgae blooms in the nearshore waters of west Maui. The different types of research focus on monitoring and determining the dynamics of potential impacts of different land uses on nearshore water quality. Special attention is placed on nutrient loading which may cause nuisance algal blooms (J. Harrigan, DOH, pers. comm. 1993).

1. Current Educational Efforts to Address Management Concerns

Various public and private groups are involved in educational efforts relating to humpback whales. A detailed list of such programs, based on the *Environmental Education Resource Guide* by the Hawaii Environmental Education Association (HEEA), and on further discussions with various environmental education organizations is given in Appendix I.

The Bishop Museum Education Program offers elementary schools guided tours through the Bishop Museum's whaling exhibits. The USFWS Kilauea Point National Wildlife Refuge on Kauai operates a public information center at the refuge and produces publications on conservation issues which are available to schools and the general public (HEEA, 1993). They are currently working with the Hawaii Sanctuary to include information on humpback whales.

Major Federal and State agencies that participate in humpback whale environmental education programs in Hawaii include: NMFS, the Sanctuary, the State of Hawaii, and the University of Hawaii Sea Grant College Program. NMFS educational efforts include public meetings and public hearings related to changes in the marine mammal regulations and informational brochures (Evans 1992). The Hawaii Sanctuary conducts education and outreach activities on- and off-site for school children and adults. The Sanctuary has also worked cooperatively with Federal and State agencies, and the private sector to produce information brochures about humpback whales, watching whales and summaries of Federal regulations pertaining to whales.

The State of Hawaii has designated the humpback whale as its State marine mammal. No educational campaign focusing specifically on humpback whales has been initiated by any State agency; however, administrative rules relating to management of human activities potentially affecting whales have been promulgated, as described below. DLNR-DAR has a network of educational specialists dispersed throughout the Main Hawaiian Island chain, as a means of generating and distributing information and literature relevant to the resources of the marine environment. These efforts are supported by the Sport Fishing Institute and thus have focused on marine resources other than whales.

The University of Hawaii Sea Grant (UHSG) has conducted several workshops, and has developed reports and brochures to educate the public about humpback whales. These include a guide for the amateur whale watcher (UHSG 1985), a catalog of individual identification photographs (Perry et al. 1988), and numerous articles in its newsletter, *Makai*.

There are numerous other private and non-profit groups conducting educational efforts that include humpback whales. These include the Pacific Whale Foundation, Ocean Mammal Institute, Whales Alive, Hawaii Wildlife Fund, Earthtrust, Hale Kohola (House of the Whale), Hawaii Maritime Museum, Moanalua Gardens Foundation, Sea Life Park, Waikiki Aquarium, West Coast Whale Research Foundation Center for Marine Conservation, and Greenpeace. In addition, several programs develop curriculum material for local elementary schools that include a focus on humpback whales in Hawaii, including work supported by the Malama Kai Foundation, Friends for the Future, and other Hawaii-based groups.

m. Existing Protected Areas, Cultural and Historical Resources

i. Protected Areas

Hawaii's marine and coastal environments are major contributors to its economy and an integral part of its history and culture. Certain marine and coastal areas are currently protected under Federal, State or county law and additional sites may be designated in the future. The Federal government uses a variety of different programs, including regulatory mechanisms and

special area or site specific management plans (national parks, wildlife refuges, critical habitat and species management) to protect unique or significant habitats, while the State has established and maintains natural area preserves, wildlife preserves, marine preserves and unique ecological preserves. For purposes of a comprehensive management plan, it is important to understand where all these existing protected areas are located, their purposes and regulations, and how the Sanctuary can most effectively work with and coordinate these units to ensure both Federal and State objectives are met. There are numerous opportunities to conduct joint research, education programs, interpretive displays, etc. within these units for humpback whales and their habitat, or potentially in the future for other resources if designated as Sanctuary resources.

ii. Federal Protected Areas

Existing Federal protected areas in marine waters include two main groups, both administered by DOI.

1) National Wildlife Refuges

The Hawaiian Islands National Wildlife Refuge was created in 1909 primarily to protect numerous sea and shore birds. The Refuge includes all the Northwestern Hawaiian islands and reefs from Nihoa Island to Pearl and Hermes Reef including some 1,800 acres of emergent land and over 250,000 acres of submerged land. These islands and offshore waters provide habitats for over five million seabirds of 18 different species, including albatross, boobies, frigate birds, petrels, shearwaters, storm-petrels, terns and tropic birds. There are also three endemic species of land birds, endangered Hawaiian Monk Seal and the threatened green turtle. Remnants of prehistoric occupation by early Polynesians are also protected on Nihoa and Necker Islands.

The Kilauea Point National Wildlife Refuge, established in 1985, consists of 187 acres, is located approximately .2 miles north of Kilauea on the northern-most point of Kauai. Public use of the refuge averages more than 300,000 visitors annually. The point itself is a remnant of the former Kilauea volcanic vent that erupted about 15,000 years ago. Today, only a small U-shaped portion remains, but it includes a spectacular 586 foot ocean bluff. On calmer days, visitors can see humpback whales from the spectacular overviews. Sanctuary purposes are consistent with Refuge purposes which, among others, include:

- endangered species management
- migratory bird management
- environmental education and interpretation
- cultural and historic resource protection
- contamination clean-up
- law enforcement
- research opportunities

Other important native wildlife refuges include Pearl Harbor and James Campbell NWRs on Oahu; Hanalei and Huleia NWRs on Kauai; Kakahai NWR on Molokai; Kealia Pond NWR on Maui; and Hakalau Forest NWR on Hawaii.

2) National Parks

In some marine areas adjacent to coastal national parks, the National Park Service (NPS) manages human activities that may impact park resources. Under the Hawaii National Parks Act, the NPS can extend its jurisdiction over the adjacent marine areas and develop rules regulating fishing and taking of other marine life. However, since these marine areas are located in State waters, management strategies would require a joint Federal-State plan. Areas managed by the National Park Service in Hawaii include: Haleakala and Volcanoes National Parks; Kalaupapa,

Kaloko-Honokohau, Pu'uhonua o Honaunau, and Puukohola Heiau National Historic Sites, and the USS *Arizona* Memorial.

iii. State Protected Areas

1) Marine Life Conservation Districts

Marine Life Conservation Districts (MLCD) protect unique areas of the Hawaiian marine environment. DLNR-DAR is responsible for establishing, managing and regulating human uses in the MLCDs. MLCDs have been designated at *Hanauma Bay*, *Waikiki* and *Pupukea* on Oahu; *Manele-Hulopoe* on Lanai; *Molokini Shoal* and *Honolua-Mokuleia* on Maui; and *Kealakekua Bay*, *Wailea Bay*, *Lapakahi* and the old Kona airport on the Big Island.

2) Fishery Management Areas

State regulations restrict fishing activities within Fishery Management Areas (FMA), established and managed by DLNR-DAR. Established FMAs include the *Northwestern Hawaiian Islands*; *Waikiki-Diamond Head Shoreline* on Oahu; *Hanamaulu Bay* and *Ahukini Recreational Pier*, and *Waimea Bay and Recreational Pier* on Kauai; *Manele Harbor* on Lanai; *Kahului Harbor* on Maui; and *Kailua Bay*, *Puako Bay and Reef*, and *Kawaihae Harbor* on Hawaii.

3) The Natural Area Reserves System

The Natural Area Reserves System (NARS) is administered by DLNR's Natural Area Reserve System Commission and has one site with a marine component, *Ahihi-Kinau* on Maui. The goal is to protect unique natural areas from loss due to population growth and technological advances.

4) Underwater Parks

Two MLCDs, *Hanauma Bay* and *Kealakekua Bay*, are also designated State Underwater Parks, managed by DLNR-DAR. DLNR-Division of Boating and Ocean Recreation (DOBOR) has been assigned responsibility for regulating all vessel traffic within Kealakekua Bay.

5) Conservation Land Use Districts Protective Subzone

Conservation Land Use Districts Protective Subzones (CLUDPS) help preserve natural ecosystems necessary to native fish species. All of the Northwestern Hawaiian Islands, excluding Midway, is a CLUDPS.

6) Other State Marine Protected Areas

Marine Laboratory Refuge on Coconut Island in Kaneohe Bay on Oahu; fishing restrictions in boat harbors & canals including Honolulu Harbor, Ala Wai Canal, Kapalama Canal, Heeia Kea Wharf, Pakai Bay and Waialua Bay, Oahu; Hilo Harbor, Hawaii; Alakai Wilderness Preserve, Kauai, Paiko Lagoon Wildlife Sanctuary, Oahu & Hawaii State Sea Bird Sanctuaries, managed by DLNR's Forestry & Wildlife Division.

7) Ocean Recreation Management Areas

In 1988, DOT-Harbors established ten Ocean Recreation Management Areas (ORMA) along heavily-used stretches of coastline on the Islands of Hawaii, Maui, Oahu, and Kauai to help alleviate marine user conflicts and ensure that humpback whale mothers and calves would continue to have nearshore areas to utilize. The responsibility for management of the ORMAs was

transferred with the recreational boating program from DOT to DLNR in 1992. ORMA regulations limit commercial operations to designated zones, and in some ORMAs on Maui and the Big Island, completely ban thrillcraft operations during the primary humpback breeding and calving months (December 15 to May 15 of each year): The boating program was transferred from DOT to DLNR on July 1, 1992; and ORMA rules are now managed by DLNR-DOBOR.

iv. Private Protected Areas

The Nature Conservancy manages two preserves with significant coastal resources: *Moomomi* and *Pelekunu Preserves* on Molokai.

v. Special Protected Areas

Anchialine pools are protected as unique ecosystems only in Cape Kinau Natural Area Reserve, Volcanoes National Park, and Kaloko-Honokohau National Historical Park.

3. Institutional Arrangements and Responsibilities

a. Federal Authorities

i. Marine Wildlife Protection and Conservation Authorities

1) The Fish and Wildlife Act (Fish and Wildlife Coordination Act)

The Fish and Wildlife Act of 1956 (16 U.S.C. 742a, et seq.), the Migratory Marine Game-Fish Act (16 U.S.C. 760c-760g), the Fish and Wildlife Coordination Act (16 U.S.C. 661-666c) and other acts express the will of Congress to protect the quality of the aquatic environment as it affects the conservation, improvement and enjoyment of fish and wildlife resources. Reorganization Plan No. 4 of 1970 transferred certain functions, including certain fish and wildlife-water resources coordination responsibilities, from the Secretary of the Interior to the Secretary of Commerce. Under the Fish and Wildlife Coordination Act (FWCA) and Reorganization Plan No. 4, any Federal agency that proposes to control or modify any body of water must first consult with the United States Fish and Wildlife Service or the National Marine Fisheries Service, as appropriate, and with the head of the appropriate state agency exercising administration over the wildlife resources of the affected state.

The FWCA authorizes the Secretary of the Interior to, among other things: (1) provide assistance to, and cooperate with, Federal, State, and public or private agencies and organizations in the development, protection, rearing, and stocking of all species of wildlife, resources thereof, and their habitat, in controlling losses of the same from disease or other causes, in minimizing damages from overabundant species, in providing public fishing areas, including easements across public lands for access thereto, and in carrying out other measures necessary to effectuate the purposes of the Act; (2) make surveys and investigations of the wildlife of the public domain, including lands and waters or interests therein acquired or controlled by any agency of the United States; and (3) accept donations of land and contributions of funds in furtherance of the purposes of this Act. Such areas made available to the Secretary of Interior pursuant to this Act are administered by the Secretary directly or in pursuant to cooperative agreements in accordance with such rules and regulations for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon.

2) The Marine Mammal Protection Act

The Marine Mammal Protection Act (16 U.S.C. §1361 et seq.), as amended, is designed to protect all species of marine mammals in U.S. waters. The MMPA established a moratorium, with

certain exceptions, on the "taking" of marine mammals in U.S. waters and by U.S. citizens on the high seas, and on the importing of marine mammals and marine mammal products into the United States. The term "take" is statutorily defined to mean "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture or kill any marine mammal." Under the MMPA, the Secretary of Commerce is responsible for the conservation and management of pinnipeds (other than walrus) and cetaceans. The Secretary of Interior is responsible for walrus; sea otters, polar bears, manatees and dugongs. The Secretary of Commerce has delegated MMPA authority to NMFS. The MMPA established the Marine Mammal Commission, which advises USFWS and NMFS on marine mammal issues and sponsors relevant scientific research. Part of the responsibility NMFS has under the act involves monitoring populations of marine mammals to make sure that they stay at optimum levels. Optimum sustainable population is defined as, "with respect to any population stock, the number of animals which will result in the maximum productivity of the population or the species keeping in mind the carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element" [16 U.S.C. §1362(8)]. If a population falls below its optimum level, it is designated as "depleted," and a conservation plan is developed to guide research and management actions to restore the population to healthy levels.

The MMPA provides that the moratorium on taking can be waived for specific purposes (primarily for research, education, public display and incidental to commercial fisheries) if the taking will not disadvantage the affected species or stock. It also indicates that permits may be issued to take or import any marine mammal species, including depleted species, to conduct scientific research or to enhance the survival or recovery of the species or stock. Permits may also be issued to take or import non-depleted species for public display. These permits are very specific in designating numbers and species of animal that can be taken, as well as times, dates, places and methods of taking. The MMPA sets maximum civil penalties at \$10,000 and maximum criminal penalties at \$25,000.

In 1994, Congress amended the MMPA, establishing a new regime to govern the taking of marine mammals incidental to commercial fishing. This new regime included the preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction, development and implementation of take reduction plans for stocks that may be reduced or are being maintained below their optimum sustainable population levels due to interactions with commercial fisheries, and studies of pinniped-fishery interactions. The amendments require NMFS and USFWS to establish regional scientific review groups to prepare the stock assessment reports for all marine mammal stocks in U.S. waters.

For scientific research, enhancement and public display, the 1994 Amendments of the MMPA established new authority to issue permits and authorizations while eliminating other responsibilities. The term "harassment" was statutorily defined to mean any act of pursuit, torment, or annoyance which --

1. (Level A Harassment) has the potential to injure a marine mammal or marine mammal stock in the wild; or
2. (Level B Harassment) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption or behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

New provisions establish General Authorizations for low impact scientific research projects involving Level B harassment of non-endangered marine mammals, and allow NMFS to issue permits for educational and commercial photography purposes. Lastly, the 1994 amendments eliminated much of NMFS jurisdiction over marine mammals held for public display and changed documentation requirements involving their transport and import, as well as inventory record keeping.

3) The Endangered Species Act

The Endangered Species Act of 1973 (16 U.S.C. §1531 *et seq.*) provides protection for listed endangered or threatened species in U.S. territorial waters and upon the high seas. The ESA provides for the conservation of species which are in danger of extinction throughout all or a significant portion of their range. The most significant protection provided by the ESA is the prohibition, with exceptions, on "taking". The term "take" is defined broadly to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct" [16 U.S.C. §1532(19)]. The regulations in 50 C.F.R. §17.3 also define the term "harass" to mean "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. "Species" is defined by the Act to mean either a species, a subspecies, or, for vertebrates only, a distinct population.

An individual or organization may petition to have a species considered for listing under the act as endangered or threatened. The listing of species qualifies it for increased protective measures. Generally, the USFWS coordinates ESA activities for terrestrial and freshwater species, while NMFS is responsible for marine and anadromous species. Within 90-days of a listing a petition's filing, an agency decision must be made on whether to reject the petition, or accept it and to conduct a status review of the species. NMFS or USFWS can also initiate a status review of a species without a petition for listing. If a status review is conducted, it is initiated with a public solicitation of information and data relevant to the population size and life history of the species. A one-year time limit is placed on making the decision to propose a species for listing. Concurrent with the final listing decision, critical habitat necessary for the continued survival of the species may be designated. For this decision, economic impacts must be considered.

Once a species is listed recovery plans are prepared which identify conservation measures to be initiated to improve the species' status. In addition, Section 7 of the ESA requires all Federal agencies to use their authorities to conduct conservation programs and to consult with NMFS (or USFWS) concerning the potential effects of their actions on any species listed under the ESA. Consultations occur on an on-going basis under Section 7 with Federal action agencies to avoid, minimize or mitigate the impacts of their activities on listed species. Each Federal agency must, in consultation and with the assistance of the Secretary of Commerce (or Interior), insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species. NMFS also reviews non-Federal activities which may affect species listed under the ESA and issues section 10 permits for the incidental "take" of those species. Finally, Section 6(f) of the ESA provides that states may regulate endangered species if the state protection measure is more restrictive than the ESA.

ii. NMFS, Southwest Region

NOAA's NMFS has a variety of missions which are directly involved with marine resources in the Sanctuary. In general, these include implementation of the provisions of the Magnuson Fisheries Conservation and Management Act, the MMPA, the ESA, and the Fish and Wildlife Coordination Act (further discussion of NMFS' roles is presented in Part Three of the Final EIS, Section I: Status Quo Alternative). The NMFS Southwest Regional Office is located in Long Beach, California. This regional office oversees NMFS activities operating out of the Pacific Area Office in Honolulu, and the NMFS-Office of Enforcement (OE) in Honolulu. NMFS also operates the National Marine Mammal Laboratory in Seattle, and a Research Center in La Jolla, CA. Under the provisions of the MMPA and ESA, NMFS has Federal regulatory authority over the management of the Federally-protected humpback whale (also the Hawaiian monk seal and sea turtles) in the waters around Hawaii.

The humpback whale was listed as an endangered species under the ESA in June 1970. Section 4(f) of the ESA requires preparation of a recovery plan for the conservation and protection of each listed endangered and threatened species, unless it is determined that such a plan will not promote the conservation of the species. In July 1987, NMFS created a Humpback Whale Recovery Team to assist in the development of a recovery plan. In November 1991 a final Humpback Whale National Recovery Plan (Plan) was completed. NMFS and other state and Federal agencies are coordinating their efforts in the implementation of the Humpback Whale Recovery Plan. The Sanctuary could facilitate full implementation by providing a forum for encouraging other agencies to fulfill their obligations under the plan and by providing additional resources to ensure continuation of important studies, enforcement, and education efforts.

One of the principal objectives of the Plan is to identify the need to designate critical habitat for humpback whales. Critical habitat is defined, in part, as "the specific areas within the geographical area occupied by the species, at the time it is listed . . . on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection" [16 U.S.C. §1532(5)(A)]. Among the factors that should be considered for such designation include, but are not limited to: physical space, food or physiological requirements, cover/shelter, sites for breeding/rearing of offspring, and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of listed species (see 50 C.F.R. §424.12).

There are no immediate restrictions on human activities in an area designated as critical habitat. Critical habitat designation primarily affects those actions authorized, funded, or carried out by Federal agencies. The designation notifies Federal agencies that a listed species is dependent on a particular habitat and that any Federal action which may affect that habitat is subject to the consultation requirements of section 7 of the ESA. State and private activities that are conducted without any Federal involvement (e.g., fisheries not regulated by the Federal government, boating), are not subjected to the section 7 consultation process. However, it is possible that critical habitat designation could indirectly affect other user interests and coastal development, such as the Corps of Engineers' harbor and channel improvement projects. The ESA section 7 consultation process ensures that NMFS has the ability to review and recommend changes, if necessary, to activities that may directly or indirectly impact humpback whales or their habitat.

The Plan also identifies numerous management and data collection activities that would assist humpback whale recovery efforts. These activities include:

- monitor human-related environmental factors affecting population recovery;
- develop Federal-State and public-private partnerships for protecting whale populations;
- encourage protection of whale habitats;
- measure changes in whale population sizes;
- perform new field studies on population dynamics and model whale populations;
- identify and reduce direct human-related injury and mortality;
- promote education to achieve recovery goal; and
- review permittees/permit procedures and adjust process accordingly.

In response to a growing concern for reducing human-induced interactions with humpback whales, NMFS promulgated interim regulations for approaching humpback whales in Hawaii. 50 C.F.R. §222.31. NMFS also designated specific cow/calf waters around the north and east coast of Lanai and in the Maalaea Bay area of Maui which were removed by the 1994 reauthorization of the MMPA. As provided in 50 C.F.R. §222, Subpart C, the regulations state that it is unlawful to:

- operate any aircraft within 1,000 feet of any humpback whale;

- approach by any means, within 100 yards of any humpback whale;
- cause a vessel or other object to approach within 100 yards of a humpback whale; or
- disrupt the normal behavior or prior activity of a humpback whale by any other act or omission.

These are the current regulations on which enforcement actions are based. NMFS-OE operates an enforcement program to enforce these regulations during the whale season. NMFS has a Memorandum of Understanding (MOU) with the USCG, and the Department of Land and Natural Resources to enforce Magnuson Federal Fishery Regulations, MMPA, and ESA regulations. The Hawaii DLNR enforcement officers have been deputized to enforce the above Federal regulations. NMFS-OE acts as a coordinating body and investigates reported violations of these laws. Each season, NMFS places enforcement agents on Maui to observe compliance with the approach regulations. The officer also travels to other islands as needed.

The goal of enforcement is to achieve voluntary compliance with the applicable laws. NOAA's policy for enforcement within national marine sanctuaries is to prevent, *through education*, violations of the National Marine Sanctuaries Act, individual Sanctuary regulations, and other related conservation laws. NOAA strives to maintain a sufficient enforcement presence within the sanctuaries to respond immediately to violations, and to also have investigative expertise available to respond to complex cases.

NOAA uses three principal enforcement methods to achieve this goal within the sanctuaries:

- **Education** -- Emphasis on education as a primary tool to ensure that the public utilizes National Marine Sanctuaries in a manner consistent with long-term resource conservation and protection. Education includes an effort to inform sanctuary visitors of the requirements of the regulations *plus* the management/conservation rationale on which the regulations are based. The expectation is that those users of the sanctuaries who understand the rules and the rationale behind them will comply voluntarily. An additional anticipated benefit is that off-island, as well as local Sanctuary visitors, will become advocates of responsible use of the Sanctuary resources. Education by enforcement officers is most frequently done during the conduct of patrols and inspections, but also involves programs that target local citizen, civic, business and government organizations.
- **Patrols/inspections** -- Every effort is made to provide sufficient levels of patrols and inspections in the sanctuaries by enforcement personnel of the States, NOAA, USCG, and other Federal agencies to protect sanctuary resources. This presence is intended to ensure that users of sanctuary resources are familiar with the regulatory requirements, deter violations of the law, and provide for quick response to violations that do occur.
- **Investigations** -- An investigative capability is maintained to ensure proper documentation of and response to unlawful acts that are complex enough to require specialized in-depth investigation. Investigations will be used to determine culpability for unlawful acts, or when personnel conducting routine patrols and inspections do not have sufficient time or expertise to fully document a case.

iii. U.S. Fish and Wildlife Service

The role of USFWS in Hawaii is predominantly land-based; however, the agency does have some limited management responsibilities in certain State waters (e.g. endangered species protection). USFWS is responsible for implementing provisions of the MMPA, ESA, Fish and Wildlife Coordination Act, and the Migratory Bird Treaty Act. USFWS also maintains

management and enforcement jurisdiction over the following National Wildlife Refugees in the Hawaiian Islands:

Oahu:	Pearl Harbor and James Campbell NWRs
Kauai:	Hanalei, Huleia and Kilauea Point NWRs
Molokai:	Kakahai NWR
Maui:	Kealia Pond NWR
Hawaii:	Hakalau Forest NWR
Northwest Hawaiian Islands:	Hawaiian Islands NWR

None of these National Wildlife Refuge boundaries extend below the shoreline, however, many are located in waters adjacent to the Sanctuary.

In the Northwest Hawaiian Islands, USFWS protect the lagoons at French Frigate Shoals and Pearl and Hermes Reef. However, other islands in the HINWR such as Nihoa, Necker, Gardner Pinnacles, Lisianski, Laysan, and Midway Islands have little or no special Federal protection (Harrison, 1985) other than for the Hawaiian monk seal. Critical habitat for the Hawaiian monk seal has been designated by NMFS out to 20 fathoms around these islands and atolls and the atolls of Kure and Midway. There is increasing support for extending the role of the Federal government into the waters adjacent to the HINWR and to the Kilauea Point National Wildlife Refuge in Kauai in order to better coordinate the protection of many endangered refuge habitants (monk seals, sea turtles, and seabirds) which depend on both the land and sea environments.

iv. Marine Mammal Commission

In carrying out the functions of the MMPA, the Secretaries of the Interior and Commerce are required to consult with the Marine Mammal Commission (MMC), a special independent advisory body created by the MMPA. The role of the MMC is very broad. Among other things, it must conduct a continuing review and study of all stocks of marine mammals and of all activities of the United States relating to them; it must conduct further studies as it deems necessary; and it must make formal recommendations for the protection and conservation of marine mammals. With this authority, the MMC can directly and indirectly affect many Federal, State and local marine resource management decisions.

v. Marine/Coastal Zone Protection

1) The Coastal Zone Management Act of 1972

As amended, the CZMA, 16 U.S.C. §1451 et seq., declares that it is the national policy to:

- preserve, protect, develop, and where possible, to restore or enhance, the resources of the national coastal zone for this and succeeding generations;
- encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and aesthetic values as well as to needs for compatible economic development;
- encourage the preparation of special area management plans;
- encourage the participation and cooperation of the public, State and local governments, and interstate and other regional agencies, as well as the Federal government in carrying out the purposes of the CZMA;
- encourage coordination and cooperation with and among the appropriate Federal, State, and local agencies in collection, analysis, synthesis, and

- dissemination of coastal management information, research, and technical assistance; and
- respond to changing circumstances affecting coastal environments and coastal resource management.

Coastal states voluntarily address and carry out this national policy through their Federally-approved coastal zone management programs. Section 315 of the CZMA establishes the National Estuarine Research Reserve System (NERRs). This program allows the Secretary of Commerce to designate representative national estuarine ecosystems that are suitable for long-term research and which contribute to the biogeographical and typological balance of the System. On Nov. 5, 1990, the CZMA was reauthorized and amended to include, in part, provisions on non-point source pollution. Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA) required states to develop and submit to the Secretary of Commerce a Coastal Non-point Pollution Control Program for approval. The purpose of the program is to develop and implement management measures for non-point source pollution to restore and protect coastal waters, working in close conjunction with the other State and local authorities. Hawaii's Office of Planning is currently developing this program in cooperation with DOH, EPA, and NOAA.

vi. NOAA/Office of Ocean and Coastal Resource Management

NOAA's Office of Ocean and Coastal Resources Management (OCRM) oversees management of the Sanctuaries and Reserves Division (SRD) and the Coastal Programs Division (CPD). CPD has primary responsibility over the administration of the Federal CZMA and provides technical and financial assistance to the states to implement provisions of the CZMA. SRD oversees the designation and management of national marine sanctuaries and national estuarine research reserves. In 1976, at the request of the State, OCRM designated the joint Federal-State Waimanu Valley National Estuarine Research Reserve on the Big Island (Hawaii). This area is managed through the efforts of DLNR with NOAA providing matching funds for administration, education, and research within the reserve. In 1996, NOAA and the State of Hawaii, agreed to de-designate Waimanu as a NERR, and leave the site as a State Natural Area Reserve. OCRM continues to work with the State of Hawaii in their implementation of a federally-approved coastal management plan.

vii. National Park Service

The National Park Service (NPS) is responsible for managing Haleakala and Volcanoes National Parks, and Kalaupapa, Kaloko-Honokohau, Pu'uuhonua o Honaunau, and Puukohola Heiau National Historic Sites, and the USS *Arizona* Memorial. Most of these parks are in upland or coastal areas though several of these parks have underwater components that are adjacent to the sanctuary or overlap with sanctuary boundaries. If determined necessary to fulfill the purposes and objectives of a national park, the NPS could manage living marine resources in nearshore waters provided that a joint Federal-State management plan is developed. Such an arrangement is currently under consideration for the waters adjacent to the Kaloko-Honokohau National Historic Park in Kona (Tarnas and Stewart, 1991).

viii. Fisheries Management

The Magnuson Fishery Conservation and Management Act (Magnuson Act) 16 U.S.C. §1801 *et seq.*, provides for the conservation and management of all fishery resources in the zone between three and 200 nautical miles offshore (EEZ), anadromous species and continental shelf resources of the United States. NMFS is charged with establishing guidelines for and approving fishery management plans (FMPs) prepared by the appropriate Regional Fishery Management Council for selected fisheries within Federal Waters. These plans determine levels of commercial

and recreational fishing that are consistent with the goal of achieving and maintaining an optimum yield for each fishery.

WESPAC prepares the FMPs for the fisheries around American Samoa, Guam, Hawaii, the Northern Mariana Islands, and other United States possessions in the Pacific. NMFS approves the fishery plans and works with WESPAC and the industry on implementation. NMFS also enforces provisions of the plans.

WESPAC also works in conjunction with DLNR-DAR to jointly manage fisheries. For example, to prevent conflict between different gear types, an emergency rule prohibiting longline fishing within 50 nautical miles of Maui County, including Kahoolawe, was promulgated by WESPAC 56 FR 28116, June 19, 1991; 56 FR 31689, July 11, 1991; and, 56 FR 47701, September 20, 1991. The emergency rule was effective from June 14, 1991 through December 16, 1991. WESPAC has formally recommended that this closure be made permanent. The State adopted WESPAC's area closure and has prohibited longlining in State Waters (DNLR-DAR, 1992).

ix. Marine/Coastal Development

1) Federal Water Pollution Control Act (Clean Water Act)

In addition to covering the clean-up and maintenance of America's water supply, the CWA also governs classification criteria and conservation of the nation's wetlands, under its Section 404 permit program. This program states requires a permit from the from the U.S. Army Corps of Engineers for the discharge of dredged or fill material into the navigable waters of the U.S.. Navigable waters also include wetlands areas. The Corps of Engineers administers this program, based on EPA-developed guidelines. (Also see discussion of CWA as it pertains to water quality in section x.-Water Quality).

2) Rivers and Harbors Act

The Corps of Engineers administers Section 10 of the Rivers and Harbors Act of 1899, which requires a permit for construction "in, under, across, or on the banks" in any coastal or tidal waters below the mean high water mark that involves placing a structure or altering navigable waters. The construction of any structure, any excavation, or any fill activity in the territorial sea or on the outer continental shelf is prohibited without a Corps permit. While major projects require a regular permit, the Corps of Engineers also administers a "nationwide" permit program and a regional permit program for projects of limited scope to reduce delays and paperwork for small projects. All Corps of Engineers' permits apply throughout the Sanctuary boundary.

3) The Outer Continental Shelf Lands Act

The Outer Continental Shelf Lands Act (OCSLA) 43 U.S.C. §1331 *et seq.*, establishes Federal jurisdiction over the mineral resources of the Outer Continental Shelf (OCS) beyond 3 nautical miles, and gives the Secretary of the Interior primary responsibility for managing OCS mineral exploration and development. The Secretary's responsibility has been delegated to the Minerals Management Service (MMS) within DOI. The MMS has overall responsibility for leasing OCS lands hydrocarbon activities and hard minerals mining. In unique or special areas, MMS may impose special lease stipulations designed to protect specific geological and biological resources. These stipulations may vary among lease tracts and sales.

The MMS is also charged with supervising OCS operations, including the approval of plans for exploratory drilling and applications for pipeline rights-of-way on the OCS. Several types of regulatory authority are used in carrying out the MMS supervisory role. Such authority

includes the enforcement of regulations issued pursuant to the OCSLA (30 C.F.R. §§250 and 256) and the enforcement of stipulations applicable to particular leases.

x. Water Quality

1) Point and Non-point Source Discharges

The Federal Water Pollution Control Act (Clean Water Act (CWA)), 33 U.S.C. §1251 *et seq.*, was established in 1977 as a major amendment to the Federal Water Pollution Control Act of 1972 and was substantially modified by the Water Quality Act of 1987. This act is the Nation's principal water pollution prevention statute. The CWA provides for the restoration and maintenance of water quality in all waters throughout the country, with the ultimate goal of "fishable and swimmable" water quality. The act established the National Pollutant Discharge Elimination System (NPDES) permitting system, which is the regulatory mechanism designed to achieve this goal. The authority to implement the NPDES program has been delegated to those states, including Hawaii, that have developed a program substantially the same or as least as stringent as the Federal NPDES program. The NPDES permit program covers all point source discharges including stormwater discharges. By definition, point-source discharges these are pollutants that flow from specific points such as factories or sewage plants. The 1987 amendments to the CWA modified the thrust of NPDES program activities. Greater emphasis was placed on monitoring and control of toxic constituents in wastewater, the permitting of outfalls composed entirely of stormwater, and sewage sludge disposal. These changes in the NPDES program resulted in more closely controlled discharge limits and expanded the number of chemical constituents monitored in the effluent.

Throughout the last two decades, a major emphasis of the CWA has been on cleaning up "point sources" of pollution. Due progress has been made in controlling the emission of these pollutants and attention has shifted toward the other pollutants, know as "non-point" sources. These pollutants result from land use and practices in a watershed which get are carried by precipitation runoff to streams, rivers, lakes, estuaries and coastal waters. The 1987 amendments to the CWA also placed a new emphasis on controlling polluted runoff. Section 319, CWA, requires states to develop non-point source pollution control programs and submit assessment and management plans to the EPA. Section 303(d), CWA, required each state to identify waterbodies not achieving water quality standards, categories and subcategories of non-point source pollutants, and state water pollution control programs. Section 305(b), CWA, requires states to monitor water quality.

The EPA Region IX office in San Francisco, has regulatory responsibilities related to sewage outfalls, ocean disposal activities, and non-point pollution under the CWA. EPA has delegated these responsibilities to the Hawaii Department of Health. EPA provides oversight for the State administration of water quality programs.

2) Dredging and Ocean Dumping

Title I of the Marine Protection, Research, and Sanctuaries Act (MPRSA), 33 U.S.C. §1401 *et seq.*, also known as the Ocean Dumping Act, prohibits: 1) any person from transporting, without a permit, from the United States any material for the purpose of dumping it into ocean waters (defined to mean those waters of the open seas lying seaward of the baseline from which the territorial sea is measured); and 2) in the case of a vessel or aircraft registered in the United States or flying the United States flag or in the case of a United States agency, any person from transporting, without a permit, from any location any material for the purpose of dumping it into the ocean waters.

Title I of the MPRSA also prohibits any person from dumping, without a permit, into the territorial sea, or the 12-nautical-mile contiguous zone to the extent that it may affect the territorial sea or the territory of the United States, any material transported from a location outside the United States. EPA regulates, through the issuance of permits, the transportation for the purpose of dumping, and the dumping of all materials except dredged material. The COE oversees the transportation, for the purpose of dumping, of dredged material.

Dredging activities and their impacts on navigation and the environment are regulated by the COE under Section 10 of the Rivers and Harbors Act of 1899 (dredging), by EPA and the COE under Section 404 (discharge of dredge or fill materials within 3-nautical miles of the shoreline) of the CWA (33 U.S.C. §1251 *et seq.*), and Section 103 (ocean disposal of dredge materials) of Title I of the MPRSA (33 U.S.C. §1401 *et seq.*). Permit applicants are required to comply with CZMA Federal consistency requirements, and obtain CWA, Section 401, Water Quality Certifications prior to being issued a permit by the COE. Under Section 103 of the MPRSA, EPA designated five dredge material ocean disposal sites in Hawaii, and in cooperation with the COE, established test procedures to determine the acceptability of dredge materials for ocean dumping. All five sites are located outside the proposed Sanctuary boundary in waters deeper than 100-fathoms.

3) Vessel Sewage

The CWA requires vessels to comply with marine sanitation regulations issued by EPA and enforced by the USCG (33 U.S.C. § 1322). All vessels equipped with installed toilet facilities must contain operable and certified marine sanitation devices. USCG regularly inspects vessels to ensure these devices are properly working.

xi. Oil Pollution

1) The Clean Water Act

The Clean Water Act (CWA) prohibits the discharge of oil or other hazardous substances in quantities that may be harmful to the public health or welfare or the environment, including but not limited to fish, shellfish, wildlife, and public and private property, shorelines and beaches. The CWA's jurisdiction includes discharges: (1) in navigable waters of the U.S., adjoining shorelines, or into the waters of the contiguous zone, and (2) in connection with activities under the OCLSA or the Deep Water Port Act of 1974, or which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the U.S., except, in the case of such discharges into the waters of the contiguous zone or which may affect the above-mentioned natural resources, where permitted under the Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships.

2) Oil Pollution Act of 1990

The Oil Pollution Act of 1990 (OPA), Public Law 101-380, addresses a wide range of problems associated with preventing, responding to, and paying for oil spills. It does so by creating a comprehensive regime for dealing with vessel and facility-caused oil pollution. The OPA provides for environmental safeguards in oil transportation greater than those existing before its passage by: setting new standards for vessel construction, crew licensing, and manning; providing for better contingency planning; enhancing Federal response capability; broadening enforcement authority; increasing penalties; and authorizing multi-agency research and development. A one billion dollar trust fund is available to cover clean-up costs and damages not compensated by the spiller.

Section 4202 of the Oil Pollution Act of 1990 (OPA 90), 33 U.S.C. § 2701 *et seq.*, amended Subsection (j) of Section 311 of the CWA [33 U.S.C. 1321 (j)] to address the

development of a National Planning and Response System. The OPA called for the creation of planning teams to develop contingency plans to address oil and hazardous waste spills and responses. The National Response Team (NRT) is primarily a planning, policy, and coordination body and does not respond directly to incidents. EPA coordinated this team and USCG is the Chair. They are responsible for developing a National Contingency Plan (NCP). A Regional Response Teams (RRT) is comprised of Federal and State (or Territory) representation and are responsible for developing a Regional Contingency Plan (RCP). EPA and USCG co-chair this team. Like the NRT, the RRT is mainly a planning, policy and coordinating body, and does not respond directly to incidents. The RRT has Federal and State representation. The RRT provides guidance and technical assistance to Area Committees.

As part of the National Planning and Response system, Area Committees are to be established for each area designated by the President. These Area Committees are to be comprised of qualified personnel from Federal, State and local agencies. Each Area Committee, under the direction of the Federal On-Scene Coordinator (OSC) for the area, is responsible for developing an Area Contingency Plan (ACP) which, when implemented in conjunction with the NCP and the RCP, shall be adequate to remove a worst case discharge of oil or a hazardous substance, and to mitigate or prevent a substantial threat of such a discharge, from a vessel, offshore facility, or onshore facility operating in or near the geographic area. Each Area Committee is also responsible for working with State and local officials to pre-plan for joint response efforts, including appropriate procedures for mechanical recovery, dispersal, shoreline cleanup, protection of sensitive environmental areas, and protection, rescue, and rehabilitation of fisheries and wildlife. The Area Committee is also required to work with State and local officials to expedite decisions for the use of dispersants and other mitigating substances and devices.

Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) is entitled the Emergency Planning and Community Right-to-Know Act (Right-to-Know Act). This Federal statute requires emergency response planning at the State and local level. The State of Hawaii established the Hawaii State Emergency Response Commission (HSERC) to comply with this requirement and designated DOH as the lead agency to implement the Right-to-Know Act. The HSERC was required to delineate emergency planning districts and appoint local emergency response committees to facilitate the preparation and implementation of local emergency plans. Hawaii's four counties (Hawaii, Honolulu, Maui and Kauai) represent the emergency planning districts for the State. The HSERC established a technical subcommittee to draft a State plan to provide statewide guidance on oil and hazardous substances emergency response. This plan is the Hawaii Oil and Hazardous Substances Emergency Response Plan and is incorporated in the ACP.

Of particular note is that Title I of the OPA establishes liability and limits to liability. Any party responsible for the discharge, or the substantial threat of discharge, of oil into navigable waters or adjoining shorelines or the EEZ is liable for removal costs and damages [OPA §1002(a)]. Recoverable damages include damages for injury to natural resources, real or personal property, subsistence use, revenues, profits and earning capacity, public services, and the cost of assessing those damages [OPA §§1002(b), 1001(5)].

The measure of penalties for damaging natural resources includes the cost of restoring, rehabilitating, replacing, or acquiring the equivalent of such resources; the diminution in value pending restoration; plus the reasonable cost of assessing damages [OPA §1006(d)(1)]. NOAA has the responsibility of promulgating damage assessment regulations and compliance with the regulations will create a rebuttable presumption in favor of a given assessment [OPA §1006(e)].

Sums recovered by a trustee for natural resource damages are retained in a revolving trust account to reimburse or pay costs incurred by the trustee with respect to damaged resources.

Title IV, subpart A, (Prevention) gives added responsibility to USCG regarding merchant marine personnel. It also imposes new requirements on the operation of oil tankers (double hulls on new vessels, and eventually on older vessels).

Title IV, subpart B, (Removal), substantially amends subsection 311(c) of the CWA, requiring the Federal government to effectively ensure immediate removal from navigable waters or adjoining shorelines or the EEZ of harmful quantities of oil or hazardous substances. [OPA §4201(a)]. It also requires a revision and republication of the National Contingency Plan within one year, OPA §4201(c), that will include, among other things, a fish and wildlife response plan developed in consultation with NOAA and USFWS [OPA §4201(b)]. The USCG and EPA will coordinate operations for the control or removal of oil and hazardous substances resulting from offshore spills.

3) International Convention for the Prevention of Pollution of the Sea by Oil/Oil Pollution Act of 1961/International Convention for the Prevention of Pollution from Ships, 1973

The International Convention for the Prevention of Pollution of the Sea by Oil, 1954 and the Oil Pollution Act of 1961 have been superseded by the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the related 1978 Protocol (MARPOL 73/78), and implemented in the United States by the Act to Prevent Pollution from Ships, 1980, as amended in 1982 and 1987 (APPS). The APPS, in implementing Annex I of MARPOL 73/78, regulates the discharge of oil and oily mixtures from seagoing ships, including oil tankers. The APPS, in implementing Annex II of MARPOL 73/78, regulates the discharge of noxious liquid substances from seagoing ships. Enforcement of the APPS is the responsibility of USCG.

When more than 12 nautical miles from the nearest land, any discharge of oil or oily mixtures into the sea from a ship subject to the APPS, other than an oil tanker or from machinery space bilges of an oil tanker subject to the APPS, is prohibited except when: 1) the oil or oily mixture does not originate from cargo pump room bilges; 2) the oil or oily mixture is not mixed with oil cargo residues; 3) the ship is not within a Special Area; 4) the ship is proceeding en route; 5) the oil content of the effluent without dilution is less than 100 parts per million; and, 6) the ship has in operation oil-water separating equipment, a bilge monitor, bilge alarm or combination thereof [33 C.F.R. §151.10(a)]. The restrictions on discharges 12 nautical miles or less from the nearest land are more stringent [33 C.F.R. §151.10(b)].

A tank vessel subject to the APPS may not discharge an oily mixture into the sea from a cargo tank, slop tank or cargo pump bilge unless the vessel: 1) is more than 50 nautical miles from the nearest land; 2) is proceeding en route; 3) is discharging at an instantaneous rate of oil content not exceeding 60 liters per nautical mile; 4) is an existing vessel and the total quantity of oil discharged into the sea does not exceed 1/15000 of the total quantity of the cargo that the discharge formed a part (1/30000 for new vessels); 5) discharges, with certain exceptions, through the above waterline discharge point; 6) has in operation a cargo monitor and control system that is designed for use with the oily mixture being discharged; and 7) is outside the Special Areas (33 C.F.R. §157.37).

The APPS is amended by the Marine Plastic Pollution Research and Control Act of 1987 (MPPRCA), which implements Annex V of MARPOL 73/78 in the United States. The MPPRCA and implementing regulations at 33 C.F.R. §§151.51 to 151.77 apply to U.S. ships (except warships and ships owned or operated by the U.S.) everywhere, including recreational vessels, and to other ships subject to MARPOL 73/78 while in the navigable waters or the EEZ. They prohibit the discharge of plastic or garbage mixed with plastic into any waters and the discharge of dunnage, lining, and packing materials that float within 25 nautical miles of the nearest land. Other unground garbage may be discharged beyond 12 nautical miles from the nearest land. Other

garbage ground to less than one inch may be discharged beyond three nautical miles from the nearest land. Fixed and floating platforms and associated vessels are subject to more stringent restrictions. "Garbage" is defined as all kinds of victual, domestic and operational waste, excluding fresh fish and parts thereof, generated during the normal operations of the ship and liable to be disposed of continuously or periodically, except dishwater, gray water, and certain substances (33 C.F.R. §151.05). USCG regularly enforces the provisions of these this law throughout the EEZ.

xii. Marine Transportation Safety

1) The Ports and Waterways Safety Act

The Port and Tanker Safety Act (PWSA) of 1978, 33 U.S.C. §1231 *et seq.*, as amended, is designed to promote navigation and vessel safety and the protection of the marine environment. The PWSA applies out to 200 nautical miles and authorizes USCG to establish vessel traffic services for ports; harbors, and other waters subject to congested vessel traffic, or which are otherwise hazardous. Two such services are the Vessel Traffic Separation Scheme and designation of necessary fairways.

In addition to vessel traffic control, the USCG regulates other navigational and shipping activities and has promulgated numerous regulations relating to vessel design, construction, and operation designed to minimize the likelihood of accidents and to reduce vessel source pollution. The 1978 amendments to the PWSA establish a comprehensive program for regulating the design, construction, operation, equipping, and banning of all tankers using U.S. ports to transfer oil and hazardous materials. These requirements are, for the most part, in agreement with protocols (passed in 1978) to the International Convention for the Prevention of Pollution from Ships, 1973; and the International Convention on Safety of Life at Sea, 1974.

In addition to enforcing fishing and vessel discharge regulations, the USCG is also responsible for regulating vessel traffic, maintaining boater safety, and coordinating search and rescue operations. The 14th Coast Guard District Office is located in Honolulu; USCG stations are located at Honolulu Harbor; Coast Guard Air Station at Barbers Point Naval Air Station; Nawiliwili Harbor, Kauai; Maalaea Harbor, Maui; and Hilo Harbor, Big Island.

b. State and County Regulatory Authorities

1) Environmental Impact Statement Law

The State's environmental impact statement law (HRS, §343) is modeled on the National Environmental Policy Act. It requires that Environmental Assessments (EA) be prepared for actions undertaken by, or requiring the approval of, State and county governments that may have negative environmental impacts. If it is determined that such an action will have no negative environmental impact a "negative declaration" is made. If the State agency preparing the EA determines there may significant environmental impacts, an EIS must be prepared and made available for public comment. In the marine environment, the Governor has the authority to accept or reject the EIS (Tarnas and Stewart 1991:52).

2) Hawaii Coastal Zone Management Act

Chapter 205A, HRS, provides the legal foundation for the State's CZM Program. The law requires that any action within the Coastal Zone, which includes all land and water within the State's jurisdiction except Federal lands, must be consistent with the policies and objectives stipulated in HRS 205A. However, under authority provided through the Federal CZMA, Federal

actions, whether in or outside the coastal zone, that are reasonably likely to affect the coastal zone must comply with the CZMA's Federal consistency requirement. Under HRS 205A, Special Management Areas (SMAs) provide for special protection of resources directly on the coast within the jurisdiction of each of the four Counties.

3) Coastal Zone Management Areas

Through HRS Chapter 205A, the state legislature created "Special Management Areas" (SMAs) along the coasts of the State and gave the counties authority to issue permits for development activities in these areas (Office of State Planning, 1990). SMAs extend inland a minimum of 100 yards and, in undeveloped areas surrounding bodies of surface water subject to salinity intrusion or tidal influence, often extend further inland. The counties are to "seek to minimize, where reasonable": dredging, filling, or other alteration of bays, estuaries, salt marshes, river mouths, sloughs and lagoons; the reduction in size of beaches or other public recreation areas; developments that would restrict access to coastal areas; developments that would "substantially interfere with or detract from the line of sight toward the sea from State highway nearest the coast"; and, "any development which would adversely affect water quality, existing areas of open water free of visible structures, existing and potential fisheries and fishing grounds, wildlife habitats, or potential of existing agricultural uses of land." Permits are issued by counties after environmental analyses and public hearings are conducted.

A second type of coastal zone management area designation under Hawaii CZM statutes establishes shoreline setbacks of not less than 20 feet and not more than 40 feet inland from the shoreline (HRS, Chapter 205A, as amended). With some minor exceptions, the law prohibits the mining and taking of sand, dead coral or coral rubble, rocks, soil, or other beach or marine deposits from the shoreline area, or within 1000 feet seaward from the shoreline, or in water of 30 feet or less in depth in the territorial sea. In addition, structures (or portions of structures) including but not limited to seawalls, groins and revetments, are not permitted within the shoreline area without a variance by the particular county authority (Hawaii Office of State Planning, 1990).

4) Areas of Particular Concern and Priorities of Use

The CZMA requires that states include in their management programs an inventory and designation of areas of particular concern (APCs) or interest within the coastal zone as well as a priority of uses in these areas, including those of lowest priority. Criteria for designating APCs includes areas of unique habitats, historic or cultural value, high natural productivity, substantial recreational value, and areas where development and facilities are dependent upon the utilization of, or access to, coastal waters [see 15 C.F.R. §923.21(b)]. Hawaii has several programs which meet the requirements of the APC concept noted above that are managed under different agencies within the State.

5) Hawaii Ocean and Submerged Lands Leasing Act

The Hawaii State Constitution gives the State the power to manage and control the marine, seabed, and other resources located within the boundaries of the State including its archipelagic waters, and reserves to the State all such rights outside State boundaries not specifically limited by Federal and international law (HRS, Chapter 190D). Under the Hawaii Ocean and Submerged Lands Leasing Act, the DLNR, in agreement with DOT, may lease State marine waters and submerged lands for marine activities. DLNR has jurisdiction over conservation district lands, under which fall all lands seaward of the shoreline to the limit of the State's jurisdiction (three nautical miles). The DLNR reviews CDUAs to allow construction or activities in conservation lands (e.g., seawalls, revetments, installation of moorings), although the DLNR can deny permit applications or attach conditions to them. Under State law, sand mining is currently prohibited except for: permitted replenishment or protection of public lands (Chapter 171-58.5, HRS) or

where the mining or taking is authorized by a variance (Chapter 205A-44, HRS). However, the DLNR may not lease any areas when existing programs of DLNR (i.e., MLCDS, Shoreline Fisheries Management Areas, or NARS) will suffer adverse impact as a result of the proposed activities (HRS, Chapter 205).

DOT issues permits for ocean dredging, filling, construction, and dumping materials below the mean high water mark. The DOT permit is similar to those permits issued by the Corps of Engineers, however, DOT reviews the proposed activity from a State perspective and may object to a project the Corps of Engineers has allowed (or vice versa). A DLNR CDUA permit may also be required for activities conducted in submerged lands.

6) Protection of Marine and Coastal Species

It is the State's policy to protect endangered species of indigenous plants and animals and introduce new plants and animals only after ensuring that such introductions will pose negligible ecological hazard (HRS, Chapter 344). DLNR accords those species designated "endangered" or "threatened" under the Federal ESA the same status under State law. DLNR may also designate other species under administrative rule. The regulations are variable according to the species designated but include complete prohibitions, seasonal taking, minimum size measurements, bag limits, and for certain crustaceans such as lobsters and crabs no spearing or taking with eggs. Some methods of baitfish capture are also restricted by net type and net size regulations and a special license requirement.

Hawaii prohibits the removal of any live covered rock, or live stony coral from the waters of the state, including any live reef or mushroom coral. It is also unlawful to take, destroy, possess, or sell any pink or gold corals taken from waters of the state except from the Makapuu Beds of Oahu which are regulated by permit and weight limits. Marine algae collection is permitted except for removal of the holdfast or taking when reproductive nodes are present. Algae collection is limited to one pound per person per day for home consumption. Licensed commercial operators can collect up to ten pounds per day per license with the exception of Maui where no commercial taking is allowed. Clams, oysters, and other shellfish, excluding opihi, are prohibited from any taking (DLNR-DAR, 1991).

7) Water Quality Standards

DOH has established water quality standards for Hawaii in Chapter 11, HAR, based on Federal CWA standards: Marine waters are classified as either Class AA or Class A. Class AA waters include "pristine" areas along Hawaii's coastline and "...all embayments in preserves, reserves, sanctuaries, and refuges" [HAR, §11-54-006(a)(2); Stewart and Tarnas 1991]. No effluent discharge is allowed in Class AA waters at depths less than 10 fathoms. Allowable uses in these waters include "oceanographic research, the support and propagation of shellfish and other marine life, conservation of coral reefs and wilderness areas, compatible recreation and aesthetic enjoyment" [HAR, §11-54-03(c)(1)]. Class A waters are protected for recreational purposes, aesthetic enjoyment, and for activities compatible with the protection and propagation of fish, shellfish, and wildlife [HAR, §11-54-03(e)(2)]. In addition, there are basic State water quality rules that apply to both Class AA and Class A waters that control ocean dumping, thermal pollution, turbidity, and nearly 100 toxic substances (HAR, Chapter 11-54; Tarnas and Stewart 1991). These criteria are among the most stringent in the Nation (DOH 1990, Water Quality Management Plan for the City and County of Honolulu). DOH is responsible for monitoring and enforcing these regulations.

Marine bottom ecosystems are designated as Class I and Class II. Class I bottom areas are protected to keep them "...as nearly as possible in their natural pristine state with an absolute minimum of pollution from any human source. Allowable uses of marine bottom ecosystems in

this class are passive human uses without intervention or alteration, allowing the perpetuation and preservation of the marine bottom in a most natural state, such as for non-consumptive scientific research, non-consumptive education, aesthetic enjoyment and passive activities and preservation" [§11-54-03(d)(1)]. In Class II bottom areas, any action that would permanently modify the bottom environment is allowed only with the approval of the Director of Health who must consider the environmental impact and public interest of such action [§11-54-04(d)(2)]. Detailed regulations for both Class I and Class II bottom environments are contained within the HAR [§11-54-03(d)(1)].

8) Point Sources of Pollution

NPDES permits are required for all point sources of pollution including wastewater treatment facilities, electric generating facilities, industries, and agricultural facilities. EPA has delegated this permit authority to DOH. NPDES permits require permit holders to monitor outfall areas and submit reports on a periodic basis. Once a year, DOH conducts site inspections to assure sampling techniques and obtains "split samples" to determine analytical accuracy. DOH also performs pollutant source and ambient water quality monitoring at over 76 fixed monitoring stations statewide. In 1991, there were 15 wastewater facilities with NPDES permits in the State and eleven of those were discharging a total of 143.32 million gallons per day into ocean waters. The remaining four permit holders used injection wells or reuse of effluent for irrigation or disposal (Tarnas and Stewart 1991:74).

9) Non-Point Sources of Pollution

In 1987, the U.S. Congress amended the Clean Water Act (CWA) to place new emphasis on controlling polluted runoff. Section 319 of the CWA, for example, requires states to develop non-point source pollution control programs and submit assessment and management plans. Section 303(d) of the CWA requires each state to identify waterbodies not achieving water quality standards (water quality limited segments) by categories and subcategories of non-point source pollutants. Section 305(b) of the CWA requires states to monitor and produce reports on the State's overall water quality. Various State and county agencies have mechanisms in place to control non-point source pollution. The DOH reactivated its Non-point Source Pollution Program in response to the 1987 CWA amendments and assisted the county governments in complying with CWA §208. DOH also developed a non-point source pollution Assessment Report and Management Plan that was completed in 1990 under the CWA §319 (b) requirements. The Management Plan identified best management practices and measures to be undertaken which reduce pollutant loading from non-point sources, programs and funding assistance to support their implementation, and a schedule for implementation. The best management measures included in the 1990 plan were to be implemented largely through existing programs and regulations with technical support from the U.S. Soil Conservation Service and the Hawaii Association of Conservation District, the Cooperative Extension Service, DLNR, DOT, and other State and Federal Agencies as well as private groups. In 1993, the State Legislature enacted a statute establishing the statutory framework for a regulatory non-point source pollution program

In 1990, Congress enacted the Coastal Zone Act Reauthorization Amendments (CZARA), modifying the Coastal Zone Management Act (CZM) Act of 1972. CZARA, section 6217, entitled "Protecting Coastal Waters," requires states with CZM programs to develop and implement coastal non-point pollution control programs to be approved by NOAA and EPA. Federal funding for approved programs will come from EPA, under section 319 of the CWA, and from NOAA under section 306 of the CZMA. States must provide matching funds for their programs. State programs are to be developed jointly by the coastal zone management agency and the water quality agency, and must be based on guidelines developed by the EPA and NOAA.

Hawaii responded to these requirements by coordinating the existing efforts of the Hawaii Coastal Zone Management Program (CZMP) and the Hawaii Department of Health (DOH).

Hawaii has had an approved Coastal Zone Management Program since 1978. Hawaii has also had an EPA-approved voluntary non-point pollution control program since 1987. The development of Hawaii's coastal non-point source pollution control program brings together the CZM Program's experience in coordination, and land and water use control, and DOH's expertise in water pollution management. The plan was developed to (1) be realistic and implementable, given Hawaii's environmental, political, and cultural realities, (2) create an appropriate mix of regulatory and non-regulatory mechanisms to implement the program, and (3) involve affected parties in the program development process. The plan will be implemented through both regulatory and non-regulatory mechanisms. The CZM Program convened an informal working group and five focus groups which met on a regular basis, to assist with program development. The CZM Program and DOH also had extensive consultations with groups that will be affected by the coastal non-point pollution control program. The CZM Program submitted the draft non-point pollution management plan to NOAA and EPA in July 1996. The program should be fully developed by the end of 1997.

The intent of the Hawaii coastal non-point pollution control program is to build upon, rather than duplicate, existing programs. The array of existing programs will be loosely bound together in a "network" under the rubric of the coastal non-point pollution control program. Ultimately, there will be one statewide program for the management and control of polluted runoff, elements of which will be implemented by a number of existing agencies.

Coordination will be a central theme of the developing phases of the Hawaii coastal non-point pollution program. While the CZM Program has the lead in coordinating the development of the overall program, the development of the separate program elements themselves has been a shared responsibility. The CZM Program and DOH, with significant assistance from other State, Federal, and county agencies, non-governmental organizations, and individuals, have jointly developed Hawaii's Coastal Non-Point Pollution Control Program management plan. The Coastal Non-Point Pollution Control Program will continue to rely on the resources, expertise, program, and authorities of other agencies and organizations during its continuing development and implementation. In addition, opportunities for public participation will continue to be part of Hawaii's coastal non-point pollution control program.

In addition, the individual counties issue grading permits for construction activities that specify erosion control measures that must be implemented for activities that involve earth moving or grading.

10) Oil Pollution

DOH monitors State waters for oil and chemical spills in cooperation with USCG. Chapter 342D-51, HRS, requires that all discharges of oil, petroleum products, and other hazardous substances into State waters be reported to DOH within 24 hours of a spill. Failure to report a discharge or take corrective action can result in fines of up to \$10,000 per day (J. Harrigan, 1994, pers. communication). Since 1991, DOH has been working closely with USCG and other Oceania Regional Response Teams to develop response plans and other requirements of the OPA.

DOT-Harbors is authorized to regulate and control polluting discharges in State waters. HRS 266-3 specifically authorizes DOT to promulgate and administer regulations that "...prevent the escape of fuel or other oils onto the harbors, ocean waters, and streams, either from any vessel or from pipes or storage tanks upon the land" (Tarnas and Stewart 1991:75).

11) Ocean Recreation and Coastal Areas Rules

DLNR-DOBOR has responsibility for promulgating and administering rules governing boating and ocean recreation (Act 272, SLH 1991). Title 13, Subtitle 11, HAR, contains rules governing boating and ocean recreation in coastal areas of the State. Many of the provisions

contained in Title 13, Subtitle 11 deal with small boat harbors, vessel numbering requirements, accident reports, fines, enforcement and records, and vessel equipment requirements. However, there are specific provisions restricting activities that could prove detrimental to the humpback whale and its habitat (see 12) "Ocean Recreation" below for examples).

12) Humpback Whale Approach Regulations

Title 13, Subtitle 11, HAR, §244-40 (a) states that, "(n)o person shall approach by any means, or operate a vessel or other type of watercraft, or cause a vessel or other type of water craft to approach within one hundred yards of any humpback whale within the waters of the State. Chapter 244-40 (b) further states that "(n)o person shall approach by any means, or operate a vessel or other type of watercraft, or cause a vessel or other type of water craft to approach within one hundred yards of any humpback whale." This chapter also incorporates Federal regulations (50 CFR, Part 222, subpart D, §222.31) governing the approach of humpback whales in Hawaiian waters.

13) Ocean Recreation

HAR Title 13, Chapter 244 also details restrictions on specific ocean near-shore recreation activities within: Waikiki ocean waters, Makapuu ocean waters, two sub-zones in Kealahou Bay ocean waters, Kailua Beach Park ocean waters, Ahihiau ocean waters, Pokai Bay ocean waters, Ala Moana Beach Park ocean waters, Manele-Hulopoe marine life conservation district, Kaanapali ocean waters, and in Maunaloa Bay ocean waters. These nearshore areas are defined in detail in the DNL-DOBOR regulations and prohibited activities for each area are listed. A separate set of rules governing activities in local [shore] ocean waters and shores are contained in Chapter 254. Specific rules are included for Kailua Bay [shore] Ocean Waters [and shores], Brenneke Beach [shore] Ocean Waters, and Point Panic [shore] Ocean Waters. Chapter 255 contains another set of rules for Waikiki Beach. Most of the rules in chapters 254 and 255 deal with nearshore activities that have little relevance to the protection of humpback whales and their habitat, but they may be relevant to the protection of other resources in the future.

HAR Title 13, Chapter 256 contains rules governing activities in the ten ORMA's designated by the State. These include the North Shore Kauai ORMA (Sub-chapter 2), the South Shore Kauai ORMA (Sub-chapter 3), the North Shore Oahu ORMA (Sub-chapter 4), the Windward Oahu ORMA (Sub-chapter 5), the South Shore Oahu ORMA (Sub-chapter 6), the West Maui ORMA (Sub-chapter 7), the South Maui ORMA (Sub-chapter 8), the North Maui ORMA (Sub-chapter 9), the East Hawaii Island ORMA (Sub-chapter 10), and the West Hawaii ORMA (Sub-chapter 11). The primary purpose of the ORMA's and the rules governing activities in them is "to reduce conflicts among ocean water users, especially in areas of high activity" (§13-256-1). There are, however, specific provisions intended to protect humpback whales.

HAR Title 13, Chapter 256 states that thrill craft operations, "shall be curtailed in certain designated areas..., (within the ORMA's)...as necessary,...to avoid possible adverse impacts on humpback whales or other protected marine life..." Thrill craft, which are defined in the rules to include (but not be limited to) jet skis, wet bikes, surf jets, miniature speed boats, and hovercraft, are also prohibited in marine life conservation districts or marine natural area reserves. Recreational thrill craft can operate in non-designated ocean recreation management areas between five hundred feet from the shoreline or the outer edge of the fringing reef, whichever is greater, and two miles off the islands of Kauai, Oahu, Maui and Hawaii (§13-256-17). However, no commercial thrill craft, high speed boating or water sledding activities may be conducted in State waters unless the owner has a commercial operating area use permit and commercial operations are limited to designated areas within the ORMA's (§13-256-18).

Parasailing operations are also limited to designated areas within the ORMA's, with the explicit intention of avoiding, "...possible adverse impact on humpback whales and other protected marine life." During the period from December 15 to May 15, the maximum speed for parasailing is limited to eighteen (18) knots with a lower speed designated for shuttling passengers to and from the parasailing areas (§13-256-19).

HAR Title 13, Chapter 256 (2)-(11) define the geographical boundaries of the ten ORMA's in considerable detail. They delineate areas within the ten zones for which specific rules apply. Prohibited and permitted activities for each of the specific areas are listed. Some areas are limited to recreational use and commercial activities are prohibited. In some areas within ORMA's, activity zones are further delineated and prohibited activities (e.g. operating or mooring a vessel or sailboard) are specified. In some cases, the number of "operators" is also specified.

Recreational thrill craft zones have also been designated for the North Shore Oahu, South Shore Oahu, Windward Oahu, East Hawaii, and West Hawaii ORMA's. Commercial thrill craft zones have been designated within the North Shore Oahu, South Shore Oahu, Windward Oahu, West Maui, and East Hawaii ORMA's. Commercial and recreational thrill craft operations in most designated areas within the ORMA rules are explicitly prohibited from December 15 to May 15 of the following year, although there are some exceptions [e.g., Zone D, Haleiwa Restricted Zones, North Shore Oahu ORMP--HAR, Title 13, Chapter 256-61(d); Zone A, Kualoa Ocean Water Restricted Zone]. These exceptions are reportedly in areas that are shallow and which, according to DOBOR officials, have been determined by NMFS to be areas not frequented by humpback whales.

14) Humpback Whale Protected Waters

HAR Title 13, Chapter 256-112 delineates the Maui Humpback Whale Protected Waters, which overlap portions of the West Maui and the South Shore Maui ORMA's. Within the Humpback Whale Protected Waters, "...no person shall operate a thrill craft, or engage in parasailing, water sledding or commercial high speed boating or operate a motor vessel towing a person engaged in water sledding or parasailing..." between December 15 and May 15 of the following year.

Many of the ocean recreation and coastal area rules contained in Title 13 are clearly aimed at providing protection to the humpback whale and its habitat. However, the Legislative Auditor (1993) reports that boaters complain that the sheer volume of the regulations makes them seem excessive and virtually impossible to understand. Marine Patrol officers have also complained that the complexity of the rules makes them extremely difficult to enforce. The Legislative Auditor's December 1993 report states that "(t)hey do not reflect a comprehensive approach to a boating program" (The Auditor 1993).

15) Fisheries Regulations

DLNR-DAR is responsible for the development and administration of fishery regulations within State waters. State regulations impose minimum size, gear type, bag limits, and/or seasonal restriction on over 20 species of reef, lagoon, and bottomfish species as well as several varieties of crabs and lobsters. Gill nets used in State waters must be inspected every two hours; undersized, illegal, or unwanted catch must be released. Gill nets may not be left in the water for more than four hours in any twenty-four hour period. Under DAR regulations, the taking of live stony corals, clams, oysters, and other shellfish, sea turtles, and monk seals is prohibited. The State prohibits the use of drift gill nets, and fishing with explosives, electro-fishing devices, poisons, intoxicants, and chemicals (Hamnett 1991:40; DLNR-DAR 1993). State law also prohibits long-line fishing in State waters, and Federal regulations prohibit long-line fishing within 75 nautical

miles of Oahu and 50 nautical miles of the islands in Kauai, Maui, and Hawaii Counties (Univ. of Hawaii Sea Grant, 1994).

16) Other State Marine Protected Areas

The State has established Marine Life Conservation Districts (MLCDs) to protect unique areas in the marine environment (HRS §190). MLCDs have been designated at Hanauma Bay (Oahu), Kealahou Bay (Hawaii), Manele-Hulopoe (Lanai), Molokini Shoals (Maui), Lapakahi (Hawaii), Pupukea (Oahu), Wailea Bay (Hawaii), and Waikiki (Oahu). DLNR-DAR is responsible for promulgating and administering regulations in the MLCDs. Generally, regulations prohibit the taking of marine life except by permit for scientific, educational, and other purposes that would cause minimal environmental impact (HRS 190-4; Tarnas and Stewart 1991:53). Two MLCDs have also been designated State Underwater Parks; Hanauma Bay and Kealahou Bay (HRS §184).

Fishery Management Areas (FMAs) have already been established in: the Northwest Hawaiian Islands, Waikiki-Diamond Head Shores; Hanamaulu Bay, and Ahukini Recreation Pier (Kauai); Waimea Bay, and Waimea Recreation Pier (Kauai); Kahului Harbor (Maui); Kailua Bay (Hawaii); Manele Harbor (Lanai); Puako Bay, and Puako Reef (Hawaii); and Kawaihae Harbor (Hawaii). DLNR-DAR is responsible for designating and developing regulations to restrict fishing activities in FMAs (HAR, Title 13, Chapter 47-54; Tarnas and Stewart 1991:53).

The State has established the Natural Area Reserve System (NARS) to protect unique natural areas from loss due to population growth and technological advances (HRS §195; Tarnas and Stewart 1991:53-54). The NARS Commission is responsible for recommending criteria and evaluating potential sites for inclusion. DLNR is responsible for administering the NARS which includes a reserve at Ahihi-Kinau on Maui that has a marine component.

Other marine and coastal areas have been designated to restrict consumptive uses of the marine environment. Waters surrounding Coconut Island in Kaneohe Bay on Oahu have been designated a Marine Laboratory Refuge. Fishing and gathering have been restricted within the Alakai Wilderness Preserve on Kauai, Paiko Lagoon Wildlife Sanctuary on Oahu, and sea bird sanctuaries at several sites throughout the State (Tarnas and Stewart 1991:54).

17) Enforcement of State Regulations

There are several Federal and State agencies involved in the enforcement of State and Federal regulations that contribute to the protection of the humpback whale and its habitat. DLNR-Division of Conservation and Resources Enforcement (DOCARE) enforces state regulations concerning fisheries, protected species, hunting and wildlife, MLCD's, MFAs, NARs and underwater parks, in cooperation with other Federal, State, and county agencies. On July 1, 1996, all functions, duties, equipment and personnel were transferred from the Department of Public Safety's Marine Patrol to DLNR-DOCARE. DOCARE was given the added responsibility to enforce boating regulations, to inspect boats for safety requirements, and to conduct search and rescue operations.

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PART III -- ALTERNATIVES AND THEIR POTENTIAL CONSEQUENCES

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TABLE III-1
Summary of Alternatives and Potential Consequences

ALTERNATIVES		Environmental Impacts	Socio-Economic Impacts	Institutional Impacts
Boundaries				
1.	Status Quo - boundary as designated by Congress (100-fathom isobath around Maui County, excluding Kahoolawe waters, and a small portion off Kauai)	(+)	0	(+)
2.	Include only those areas of highest reported concentrations of humpback whales	(+)	0	(+)
3.	Expand Congressional boundary to include 100-fathom isobath around Big Island, parts of Oahu, and eastern Kauai	(+)	0	(+)
4.	Expand Congressional boundary to include 100-fathom isobath around the Main Hawaiian Islands and Kaula Rock	(+)	0	(+)
5.	Expand Congressional boundary to include 1000-fathom isobath around the Main Hawaiian Islands	(+)	0	(-)
Regulations				
1.	Neither incorporate existing regulations nor promulgate new Sanctuary regulations	0	0	0
2.	Adopt existing humpback whale approach regulations; promulgate no independent Sanctuary regulatory prohibitions	(+)	0	(+)
3.	Adopt existing humpback whale approach regulations and additional habitat protection measures; allow all authorized/ permitted activities by other authorities; promulgate no independent Sanctuary regulatory prohibitions	(+)	0	(+)
4.	Adopt existing humpback whale approach regulations; promulgate independent Sanctuary regulations to prohibit certain activities.	(+)	0	(+)
5.	Promulgate strict Sanctuary humpback whale and habitat protection regulations	(++)	(--)	(--)
6.	Promulgate Sanctuary regulations to protect all resources of national significance	(++)	0	(+)

The symbols indicate the net sum of all negative and positive impacts for each category

Legend:

- (+) Beneficial impacts could result
- (++) Significant positive impacts could result
- 0 No impacts anticipated
- (-) Possible negative impacts could result
- (--) Significant negative impacts could result

TABLE III-1 (continued)
Summary of Alternatives and Potential Consequences

ALTERNATIVES		Environmental Impacts	Socio-Economic Impacts	Institutional Impacts
Management				
1.	Scope of resource coverage:			
	Humpback whale and its habitat	(+)	0	(+)
	Multiple species	(++)	(-)	(+)
2.	Management responsibility:			
	NOAA/SRD	(+)	0	+
	Other Federal agencies	(+)	0	+
	State oversight	(+)	0	+
	Combination of options	(+)	(-)	(-)
3.	Management implementation period			
	Seasonal	(+)	0	+
	Permanent (year-round)	(++)	0	+
4.	Enhance enforcement of existing regulations and laws relating to the protection of Sanctuary resources	(++)	0	(++)

The symbols indicate the net sum of all negative and positive impacts for each category

*Institutional consequences are those impacts on other government agencies that could result from the Sanctuary conducting its operations. Such operations could include reviewing permits or assisting in enforcement activities.

Legend:

- (+) Beneficial impacts could result
- (++) Significant positive impacts could result
- 0 No impacts anticipated
- (-) Possible negative impacts could result
- (--) Significant negative impacts could result

Part III provides a list of alternatives for consideration for the Final Management Plan. Alternatives are considered with regard to various provisions of a comprehensive management plan which contains strategies and goals to protect, increase scientific knowledge, and promote public understanding of Sanctuary resources, while considering the manageability of the Sanctuary, and facilitating compatible human uses of the area. Alternatives include the "No Sanctuary" option (rejected), and the Sanctuary option which assesses various boundary, regulatory, and management (or administration) alternatives for the Sanctuary. NOAA's preferred alternatives are summarized as follows:

NOAA's Preferred Alternatives:

- **Boundary:** All the main Hawaiian Islands (MHI), from the shoreline to the 100-fathom isobath, not including selected areas such as ports, harbors, and small boat basins and significant military use areas on W. Kauai and E. and W. Oahu.
- **Regulations:** Essentially adopt existing Federal and State regulations that provide protection for humpback whales and their habitat.
- **Resources:** Management focus on humpback whales and their habitat, with other resources of national significance to be considered for possible inclusion at a later date.
- **Management:** A year-round Sanctuary presence with a headquarters office on Maui, a Sanctuary manager, education and research coordinators, and a Sanctuary Advisory Council consisting of broad public representation.

The preferred alternatives seek to fulfill the purposes of the Hawaiian Islands National Marine Sanctuary Act and of the Hawaii Ocean Resources Management Plan (ORMP) (Technical Supplement, January 1991, pp. 55-57); that while there are numerous agencies and regulations addressing the management of humpback whales and their habitat, there is little coordination of these mechanisms, a lack of public involvement in the regulatory process, and inadequate enforcement of the regulations. Moreover, through the SAC, the Sanctuary will provide a unique forum to address these issues in Hawaii's marine environment.

A. NO SANCTUARY ALTERNATIVE

1. Background

Even though the Sanctuary was designated by law through Congressional and Presidential action, many people voiced objections to the Sanctuary and the manner in which it was established with no significant public input or concern for potential economic impacts. Comments received at scoping meetings, public comments on the DEIS/MP, as well as petitions signed by many individuals, identified the following objections to the Sanctuary as designated:

- a sanctuary is not needed because humpback whales are already protected by existing laws and their populations appear to be increasing because of these laws ;
- additional Federal government intrusion is not required or desired;
- fear of the imposition of mandatory user fees;
- Congressional boundary promotes inequitable economic impacts to the County of Maui over other island counties; and
- unknown regulations associated with "sanctuary" status raises concerns regarding potential restrictions on marine uses and industries.

Because of uncertainty as to how the Sanctuary would impact ocean and coastal users, many people opposed the Sanctuary out of concern that it would invoke measures such as prohibiting all boating or fishing in Maui County (or statewide) waters, raising the possibility of

loss of livelihoods or restrictions on Native Hawaiian rights of access, and entail serious economic consequences. Several hundred commercial and recreational boaters signed the following petition: "We oppose any further regulation and/or prohibition of fishing activities and Native Hawaiian uses of the ocean that the 'Hawaiian Islands Humpback Whale National Marine Sanctuary' might impose." In response to these concerns, sufficient provisions are incorporated into the Final EIS/MP to ensure that boating and fishing activities are taken into account to allow for a mutual accommodation of user group needs and protection of humpback whales and their habitat. Furthermore, this FEIS/MP provides information as to what the impacts of the Sanctuary will be, thus addressing any misperceptions regarding the Sanctuary.

2. Feasibility of a "No Sanctuary" Alternative

Because the Sanctuary was Congressionally-designated, the "No Sanctuary" option is not within NOAA's authority to initiate. Implementation of the "No Sanctuary" alternative can only occur at this point in Hawaii by:

- Congressional Action: Congress can repeal the HINMSA; or
- State of Hawaii Action: The Governor of Hawaii has had two previous opportunities to object to the Sanctuary designation within the seaward boundary of the State of Hawaii; namely, while Congress was considering the HINMSA prior to its enactment (State testimony was supportive of the Act); and 45 days after the date of enactment of the HINMSA (Governor John Waihee sent a letter to NOAA Administrator John Knauss supporting a continuation of the process). There is an additional provision in the Act which permits the Governor to certify to the Secretary of Commerce within 45 days after issuance of the Final Management Plan and regulations that the Final Management Plan, Implementing Regulations, or any terms thereof, are unacceptable. If such a certification is made, such terms **will not take effect in the area of the Sanctuary lying within the seaward boundary of the State.** Under the Act, the Secretary of Commerce could then terminate the entire Sanctuary designation if the Secretary determined that the objections by the Governor would affect the Sanctuary in such a manner that the "goals and objectives" of the HINMSA could not be fulfilled.

3. Consequences of Terminating the Existing Sanctuary

The consequences of terminating the Sanctuary would include:

- existing Federal and State authorities that may protect humpback whales and their habitat would continue to be enforced by the appropriate agencies and would continue to follow the guidance of the Humpback Whale Recovery Plan and any other implementation plans developed by the NMFS or other authority;
- existing coordination mechanisms would remain in place; the general public would not have their concerns addressed via a coordinating forum such as the SAC and thus may have less ability to influence research, education, enforcement, and management as it relates to the humpback whale and their habitat; and

- withdrawal of any potential funding for the conduct of Federally-funded research, education, and information dissemination, and additional enforcement assistance under the NMSA related to Sanctuary resources (i.e., any positive benefits which may accrue as a result of Sanctuary Program implementation). All contracts and contractors that provide services to the Hawaii Sanctuary would be terminated.
- use of the Kihei, Maui and Honolulu, Oahu offices as a public education and outreach facility would be discontinued
- Termination of volunteer water quality monitoring project on Maui

4. Federal Sanctuary without State Waters

Should the State territorial waters could be withdrawn from the Sanctuary by the Governor, a Sanctuary could still be implemented in the remaining Federal waters outside of Hawaii's territorial sea (primarily within the 100-fathom isobath waters of Penguin Bank) (Figure III-1). The Secretary of Commerce would need to determine if the goals and objectives of the HINMSA could still be met within this limited area. This action would have obvious implications for the boundary, regulations, and management options (i.e., education, research, monitoring, and enforcement programs).

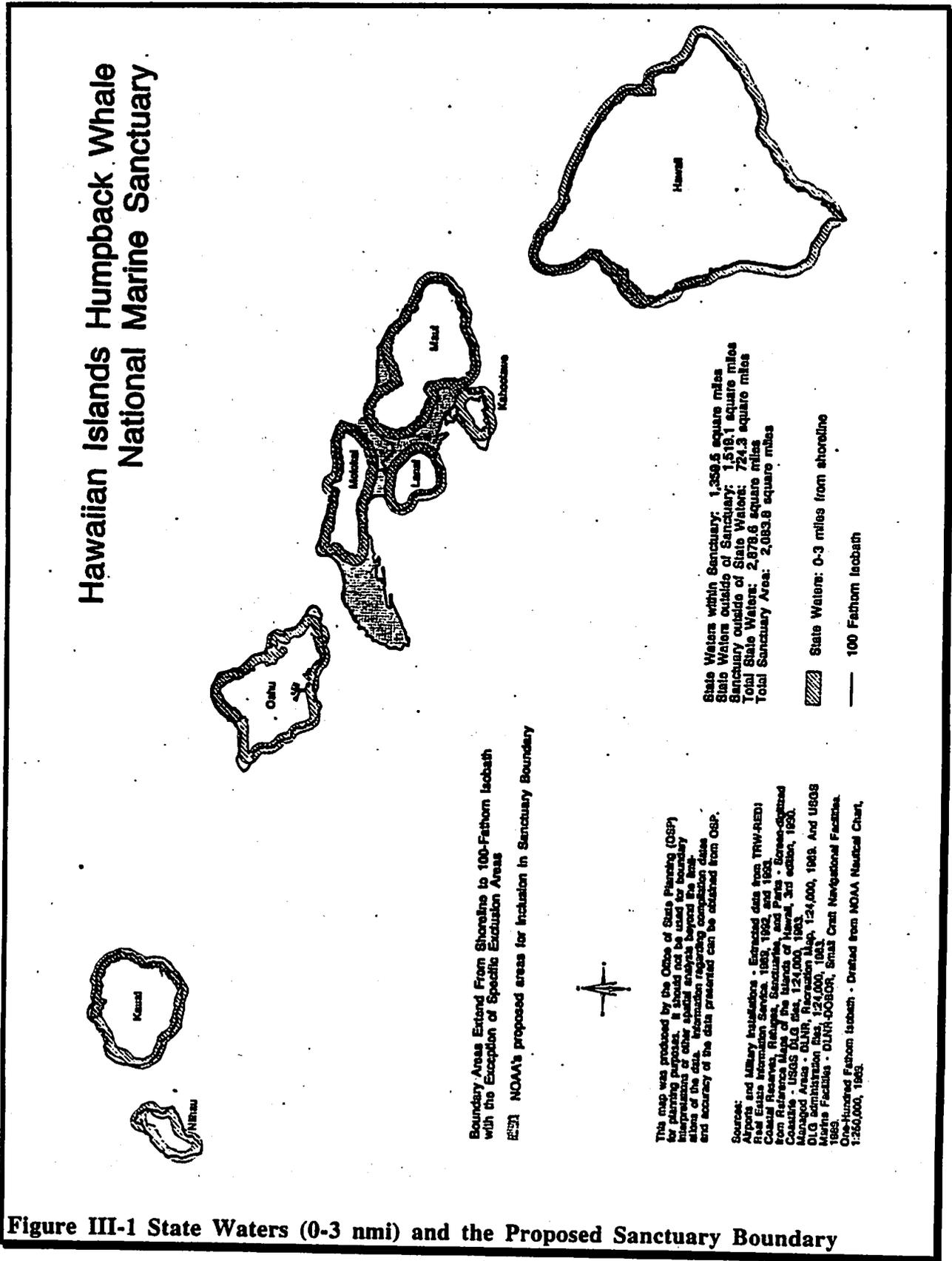


Figure III-1 State Waters (0-3 nmi) and the Proposed Sanctuary Boundary

B. SANCTUARY ALTERNATIVES

1. Boundary Alternatives

a. Background

The boundary defines the primary geographic extent of Sanctuary management and resource expenditure. Although a Sanctuary boundary was initially established by the HINMSA, the Act allows for consideration of boundary modifications.

Section 2305(d) BOUNDARY MODIFICATIONS -- No later than the date of issuance of the draft environmental impact statement for the Sanctuary under section 304(a)(1)(C)(vii) of the Marine Protection, Research, and Sanctuaries Act of 1972 [16 U.S.C. 1434(a)(1)(C)(vii)], the Secretary in consultation with the Governor of Hawaii, if appropriate, may make modifications to the boundaries of the Sanctuary as necessary to fulfill the purposes of this subtitle.

This section examines several boundary alternatives, in addition to the Congressionally-designated boundary, which NOAA considered while preparing the Draft EIS/MP. Each alternative discusses the benefits to the Sanctuary's resources, and the environmental, socio-economic, and institutional¹ consequences. The following two areas are not included in any Sanctuary boundary alternative identified later in this section.

i. Kahoolawe Island Marine Waters

The marine waters around Kahoolawe are depicted in Figure III-2. The HINMSA states that the marine environment within 3-nautical miles of the upper reaches of the wash of the waves on the shore of Kahoolawe was to be automatically included in the Sanctuary on January 1, 1996, unless the Secretary of Commerce certified in writing to Congress that the area was not suitable for inclusion in the Sanctuary. The Secretary made such a certification of unsuitability in December 1995, due to the presence of unexploded ordnance in the waters around Kahoolawe and to await the development of the Kahoolawe Island Reserve Commission's (KIRC) Ocean Management Plan.

The HINMSA was amended in 1996 to eliminate the annual finding of suitability by the Secretary, and instead provided a process by which the KIRC could request for the inclusion of the marine waters within three miles of Kahoolawe in the Sanctuary. Should NOAA determine that Kahoolawe waters may be suitable for inclusion in the Sanctuary, NOAA will prepare a supplemental environmental impact statement, management plan, and implementing regulations for that inclusion. This process will include the opportunity for public comment. Further, the Governor would have the opportunity to certify his or her objection to the inclusion, or any term of that inclusion, and if this occurs, the inclusion or term will not take effect (See HINMSA, Appendix C).

Kahoolawe Island marine waters represent a special case for consideration. After 40 years of being used for military training purposes, in May 1994, Kahoolawe was conveyed back to the State of Hawaii (Title X of P.L. 103-139, 107 STAT 1418, 1479-1484, signed into law on November 11, 1993). Title X provides a mechanism and funding for the U.S. Department of Defense (DOD) to remove a certain amount of unexploded ordnance and for the environmental remediation of the Island so that it may once again be used for cultural, historical, archaeological,

¹ Institutional consequences are those impacts on other government agencies that could result from the Sanctuary conducting its operations. Such operations could include reviewing permits or assisting in enforcement activities.

and educational purposes. While the clearance of unexploded ordnance on the land will require a 10-year program of remediation and restoration, there are unanswered questions regarding when and how the marine waters also will be made safe. At best, only those areas of the water where access to land is necessary will probably be cleared, and even then there are problems associated with removing unexploded ordnance in coral reef waters.

An aerial survey of humpback whales near Kahoolawe Island conducted in 1992 indicated that the whales seem to prefer the north shore of Kahoolawe; that the waters may be frequented primarily by reproductively active adults; and that the number of whales observed was substantially less than was found throughout the remainder of the four-island area (Forestell & Brown, 1992). The study noted that it was unknown whether whales avoided these waters due to the military's former use of the Island as a target range, but postulated that increased humpback whale use of these waters in the future *could* be a possibility since bombing had ceased. Conversely, because of limited human access to the area, it is unknown if the whales use Kahoolawe's nearshore waters as a haven from boating activities, notwithstanding military use. Thus, the overall significance of Kahoolawe's waters to the humpback whales is undetermined at this time. However, as boat density is less around Kahoolawe than around other parts of the four-island area, and may remain so into the future if access to Kahoolawe remains limited, the site could increase in significance if the whales seek more sheltered areas.

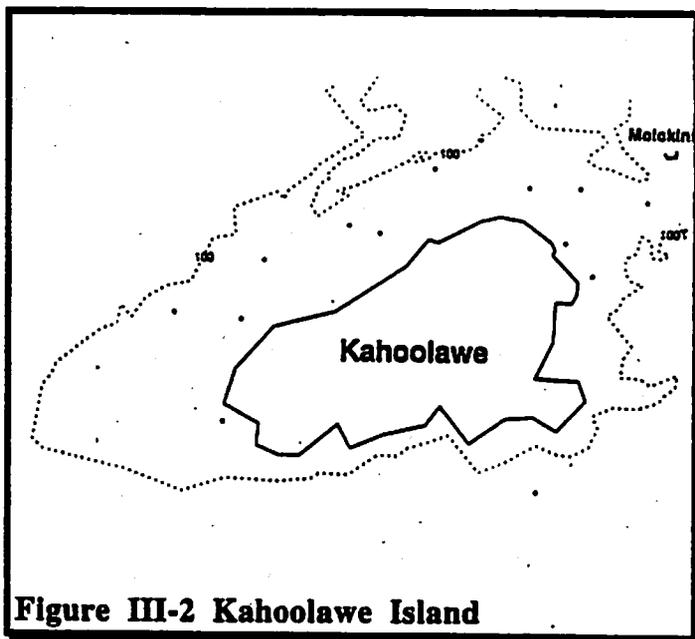


Figure III-2 Kahoolawe Island

In addition to humpback whales, the waters around Kahoolawe harbor an abundance of other natural, cultural, historical, and archeological resources (see Part II for a more detailed description). Natural resources include other species of marine mammals (whales, dolphins, and monk seals), sea turtles, fish, algae, and coral reef ecosystems. Since Kahoolawe has been closed to public access for over 50 years, it offers a unique opportunity for researchers to compare impacts of land-use practices and human use on coral reef environments around Hawaii (Jokiel, et al. 1993). Some of the archeological resources include fishing shrines (*ko'os*), sacred temples (*heiaus*), stone altars used to attract fish (*ku'ula*), and shipwrecks. Native Hawaiians use

Kahoolawe as a center for cultural activities and religious practices. The Island and its surrounding waters are important for linking past traditions with contemporary practices. Potential benefits of Sanctuary status include cooperation in educational/interpretative programs on traditional cultural uses (i.e., *ahupua'a* "mountain top to reef" resource use and management), protection of religious and archeological sites (from mean highwater mark seaward to 3-nautical miles), enforcement, and technical assistance for management and research programs.

The Kahoolawe Island Reserve Commission (KIRC) has management authority over the Island and the water out to the 2-nautical mile limit. Until such time as the KIRC has determined its long-term management program for Kahoolawe Island and its surrounding waters, and that all potential issues associated with unexploded ordnance have been resolved, the waters within 3-nautical miles of Kahoolawe will not be included in the Sanctuary.

ii. Northwest Hawaiian Islands

Because this area is not currently considered an important humpback whale winter breeding area, and to date few humpback whales have been reported around the atolls, islands, banks, and reefs of the Northwest Hawaiian Islands (NWHI) (Nitta & Naughton, 1989), NOAA is not considering the NWHI in the boundary alternatives for the Sanctuary.

This area is managed as a National Wildlife Refuge (NWR) in order to protect the many important species both on the NWHI and in their surrounding waters, and there is very limited access permitted (even for research purposes). The U.S. Fish and Wildlife Service and NMFS have some responsibilities in certain State waters around the NWHI, generally limited to protecting selected nearshore waters, such as the lagoons of the French Frigate Shoals and Pearl and Hermes Reefs, for seabirds, sea turtles, and Hawaiian monk seals. Other islands in the NWR, however, such as Nihoa, Necker, Gardner Pinnacles, Lisianski, Laysan, and Midway, have little or no special Federal protection (Harrison, 1985). Beyond the nearshore water areas, marine uses (such as long-line fishing) are regulated by NMFS to protect endangered species of sea turtles, Hawaiian monk seals, and other marine mammal and endangered species.

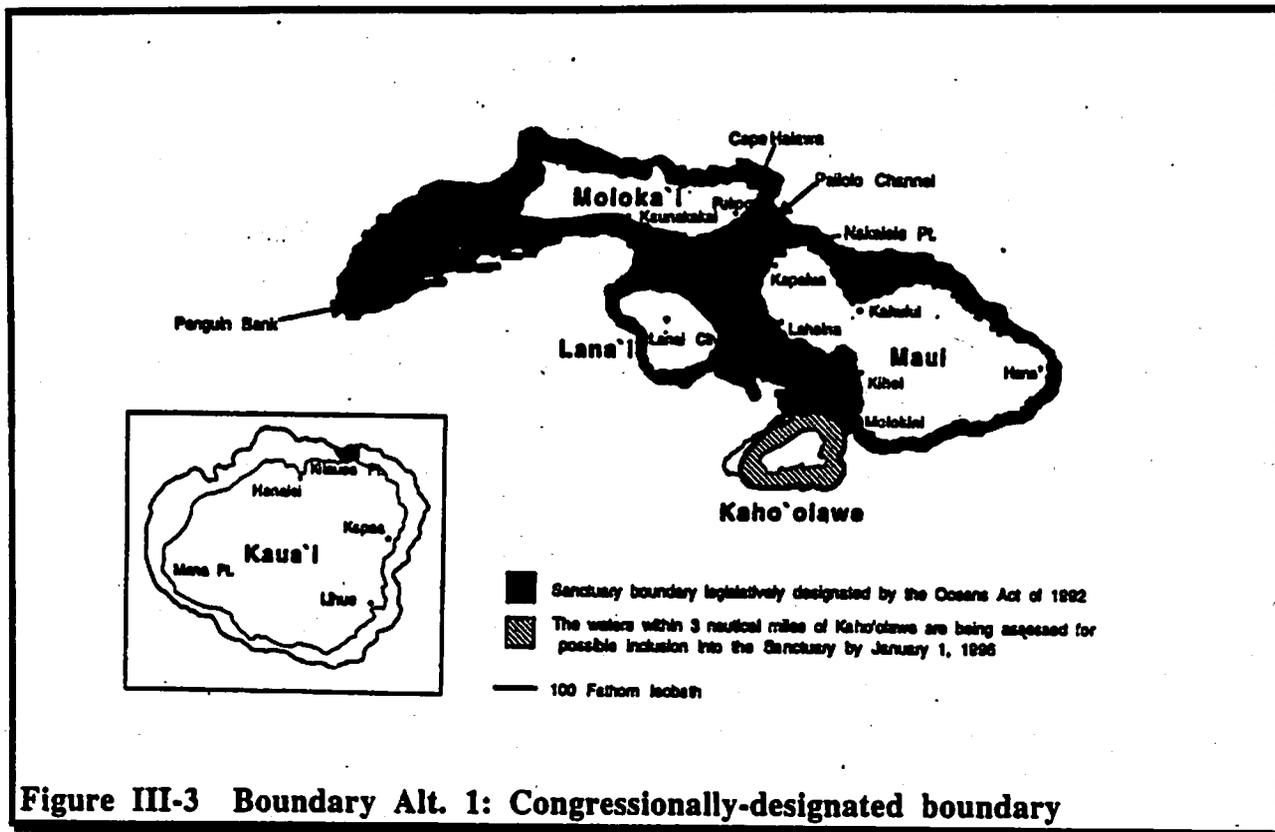
The NWHI are rich in important endangered species and seabird colonies other than the humpback whale. In the future, should any of these other species be considered for inclusion in the Sanctuary through the selection process identified in Part V(C) of the Management Plan, this area could be considered for inclusion in the Sanctuary if sanctuary status is determined to be beneficial to the protection and comprehensive management of the species considered.

b. BOUNDARY ALTERNATIVE 1 (FIGURE III-3)

**Status Quo (Congressionally-designated boundary)
Waters within Maui County and off Kilauea Point, Kauai**

This boundary, as currently designated by law, includes the submerged lands and waters off the coast of the Hawaiian Islands seaward of the upper reaches of the wash of the waves on shore:

- a. to the 100-fathom (183-meter) isobath adjoining the islands of Lanai, Maui, and Molokai, including Penguin Bank, but excluding the area within 3-nautical miles of the upper reaches of the waves on the shore of Kahoolawe Island;
- b. to the deep water area of Pailolo Channel from Cape Halawa, Molokai, to Nakalele Point, Maui, and southward; and
- c. to the 100-fathom isobath adjoining the Kilauea National Wildlife Refuge on the Island of Kauai.



This boundary's coastal mileage is approximately 255 statute miles, with a total ocean area of approximately 1400 square miles. This boundary includes the waters from the shoreline to the 100-fathom isobath and acknowledges the overall importance of the four-island area of Maui County, including Penguin Bank and the Pailolo Channel, to the humpback whale. Research conducted in this area over the past twenty years has shown that humpback whales continually return to these waters in higher densities than to other parts of the State (Nitta and Naughton, 1989; Mobley et al. 1993), and that this area encompasses one of the most important humpback whale cow-calf nursing areas in the State. The area adjoining the Kilauea National Wildlife Refuge on the Island of Kauai, while not as frequented by humpback whales as the waters in Maui County, adds breadth to the Sanctuary with a beautiful vantage point and a visitor center frequented by thousands of visitors annually. The potential compatibility of the Sanctuary with the Refuge is excellent (see Part II.D.1.a). Under this boundary alternative, Maui County and Kilauea Point, Kauai would continue to serve as a focal point of management interests.

The existing boundary has been criticized by some Maui County residents and marine users because it singles out Maui County for potential management and enforcement measures which they believe could have negative impacts to their economy. Some residents have also indicated at public meetings that any sanctuary in Hawaiian waters should include the entire state since whales are found throughout the Hawaiian Islands. Scientific evidence also shows that humpback whales are distributed and utilize habitat throughout the MHI and not just in the Maui County area (Mobley et al., 1993). While it is true that enforcement of existing laws has focused on the four-island area, and/or particular designated cow/calf areas in the past, enforcement has also been applied Statewide. As evidenced by the "deputization" program where the NMFS Office of Enforcement deputized State authorities to assist in the enforcement of the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA), relative to protection of humpback whales,

enforcement should be reflected on a Statewide basis in the future as long as resource needs can be met.

It is not anticipated that implementation of this boundary alternative will result in numerous adverse impacts to Maui County's economy. Rather, the fact that Maui County can claim its waters as a National Marine Sanctuary may provide some economic advantages over other islands. For example, the Maui Visitors Bureau recently developed a poster/activity brochure highlighting a Maui marinescape picture featuring a humpback whale and text that mentions the Sanctuary. Nationally, marine sanctuaries attract tourists, researchers, the media, schools, and educators. In most cases, visitor information/research centers are built and Federal funds are provided for conducting research, education, and interpretive outreach. With the exception of the Kilauea Point National Wildlife Refuge on the Island of Kauai, Maui County would be the greatest beneficiary of the Sanctuary designation under this alternative and of any future funding. Indeed, some Maui residents support a narrow Sanctuary boundary limited only to Maui County as a way of "monopolizing" Sanctuary benefits.

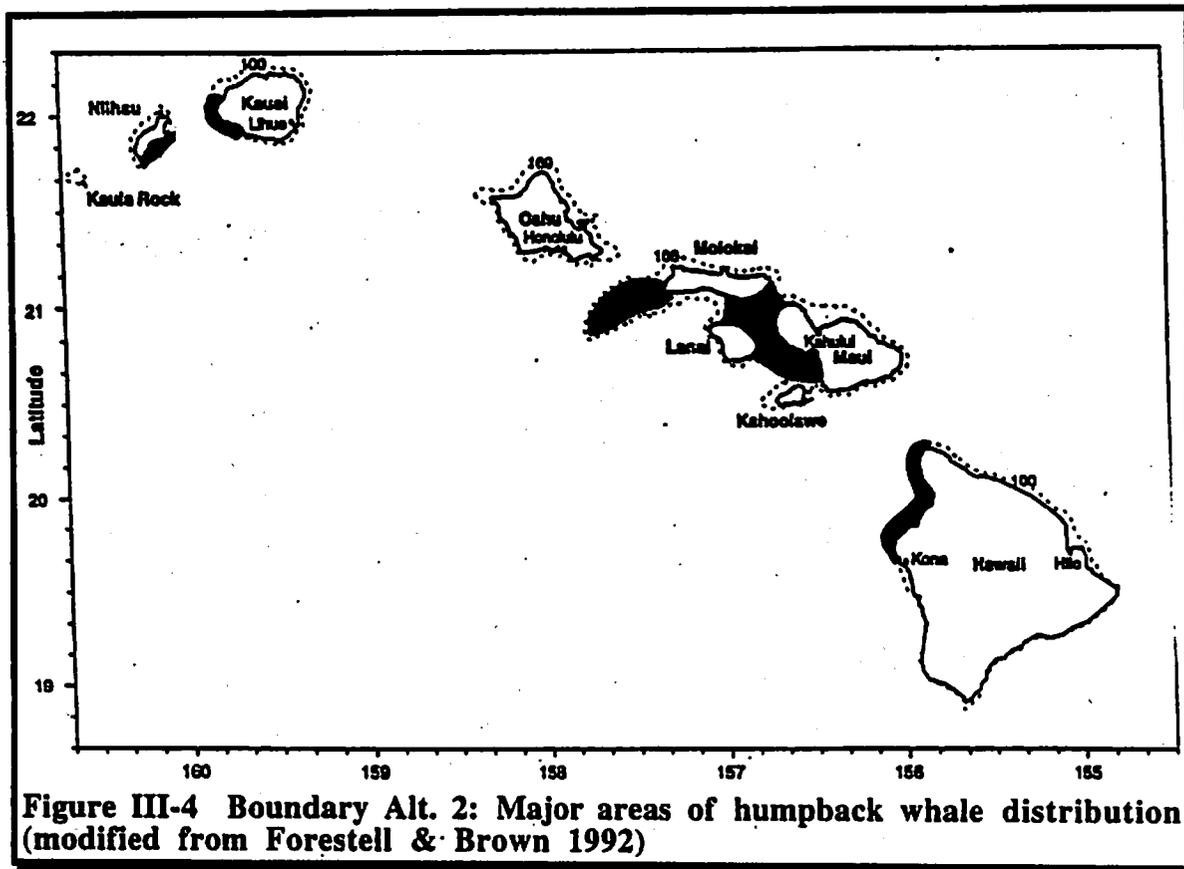
Both NOAA and the State of Hawaii find that this boundary has major limitations with respect to humpback whale distribution which would minimize the potential effectiveness of a comprehensive management plan. NOAA and the State see the need and desirability of having a modified Statewide boundary to which all aspects of the program could be applied (i.e., enforcement, research, monitoring, education, information dissemination, regulatory review, and evaluation of effectiveness).

In conclusion, although this boundary alternative encompasses areas known to be heavily used by humpback whales, it fails to include other areas of the MHI, such as waters around the Big Island, Kauai and Oahu, that humpback whales utilize for transit, courting/mating, breeding, calving, and resting activities. While implementation of this boundary alternative is not anticipated to have adverse impacts, any potential positive or negative socio-economic impacts will be focused in Maui County and the small portion off Kilauea Point, Kauai.

c. BOUNDARY ALTERNATIVE 2 (FIGURE III-4)

Inclusion of Areas of Highest Humpback Whale Concentrations

Although whales may be found throughout the MHI during their winter residency, research indicates there are a number of distinct aggregation areas where the majority of humpback whales frequent. These areas include, in order of relative siting rates: Penguin Bank; the Auau Channel and the area between Maui, Kahoolawe, and Lanai; West Hawaii (between Kailua-Kona and Upolu Point); and near the Islands of Niihau and western Kauai (Figure III-4) (Forestell and Brown, 1992; Nitta and Naughton, 1989; Mobley, et al. 1993; Cerchio 1993). These areas tend to be in waters less than 100-fathoms, on the leeward sides of the MHI, and in areas not heavily influenced by human activities. Whale movement among the major aggregation areas has been documented by photo-identification of individual whales (Darling & Juarez, 1983; Cerchio et al., 1991); it remains unclear, however, to what extent these separate areas may be favored by individual whales (Forestell and Brown, 1991). This boundary alternative would consist of a multi-component boundary based upon these high whale concentration areas. This alternative does not include the areas identified under section B.1.a. of this section: Kahoolawe Island Marine Waters and the NWHI.



This boundary alternative would establish the Sanctuary in discrete areas in and outside the Maui County area; provide Sanctuary management focus to less than the entire State area; and ensure protection and priority focus on what appear to be the humpback whale's most frequented habitat areas. This boundary alternative, however, is based upon limited whale sighting data and neglects the fact that humpback whales utilize nearly all the waters around the MHI, for transit, courting/mating, breeding, calving, and resting. More recent aerial surveys indicate that other Island waters, such as portions of Kauai, Niihau, and Oahu, also support high humpback whale concentrations (Mobley, et al., 1993; Cerchio, 1994). These same surveys have also found significant numbers of humpback whales utilizing waters deeper than 100-fathoms (Mobley et al. 1993). As whale population densities increase, other areas of the State that are not currently used may become more heavily utilized. Furthermore, this boundary alternative does not take into consideration specific environmental or behavioral factors that can modify humpback whale distributions, including increasing human use and development in some of the high whale density areas which may cause whales to shift their distribution to less disturbed habitat. Implementation of this boundary alternative is not anticipated to have adverse impacts.

In conclusion, although this boundary alternative encompasses a series of discrete areas known to be extensively used by humpback whales, it fails to include other areas of the MHI that humpback whales utilize for transit, courting/mating, breeding, calving, and resting activities. This multi-component boundary does not allow for adequate protection of humpback whales and their habitat throughout their Hawaiian range or address management needs (research, education, and enforcement, among others) uniformly throughout the State. In addition, NOAA, in consultation with the State, determined that this boundary fails to recognize the importance of DOD military use areas and activities that are essential to national security and defense.

d. BOUNDARY ALTERNATIVE 3 (FIGURE III-5)

**** PREFERRED ALTERNATIVE ****

Expansion of Congressionally-designated boundary to include 100-fathom isobath around Big Island, parts of Oahu, and eastern Kauai

Figure III-5 depicts NOAA's preferred Sanctuary boundary based on the best available humpback whale distribution data, management needs, and recognition of human uses. Figures III-6 to III-10 depict enlarged views of each of the islands. This alternative best achieves the primary goals and objectives of the HINMSA, while facilitating compatible human uses of the area. The preferred boundary includes the submerged lands and waters off the coast of the MHI seaward from the shorelineⁱⁱ, cutting across the mouths of all rivers and streams--

- a. to the 100-fathom (183 meter) isobath adjoining the islands of Maui, Molokai, and Lanai, including Penguin Bank, but excluding the area within 3-nautical miles of the upper reaches of the wash of the waves on the shore of Kahoolawe Island;
- b. to the deep water area of the Pailolo Channel from Cape Halawa, Molokai, to Nakalele Point, Maui, and southward;
- c. to the 100-fathom isobath around the island of Hawaii;
- d. to the 100-fathom isobath from Kailiu Point eastward to Makahuena Point, Kauai; and,
- e. to the 100-fathom isobath from Puaena Point eastward to Mahie Point, and from the Ala Wai Canal eastward to Makapuu Point, Oahu.

The term "shoreline" is the inshore Sanctuary boundary. This was changed from the "mean highwater mark," which was used in the Draft EIS/MP, to be consistent with Hawaii Coastal Zone Management Program and Department of Land and Natural Resources definition. The Sanctuary's inshore boundary cuts straight across the mouths of rivers and streams.

This alternative would add approximately 544 statute miles to the Congressionally designated boundary's coastal mileage of 255 statute miles. The total area included in this boundary alternative is approximately 2100 square miles.

ⁱⁱ As defined in the Hawaii Administrative Rules, Title 13, Chapter 222, shoreline means, "the upper reaches of the wash of the waves, other than storm and seismic waves, at high tide during the season of the year in which the highest wash of the waves occurs, usually evidenced by the edge of vegetation growth, or the upper limit of debris left by the wash of the waves."

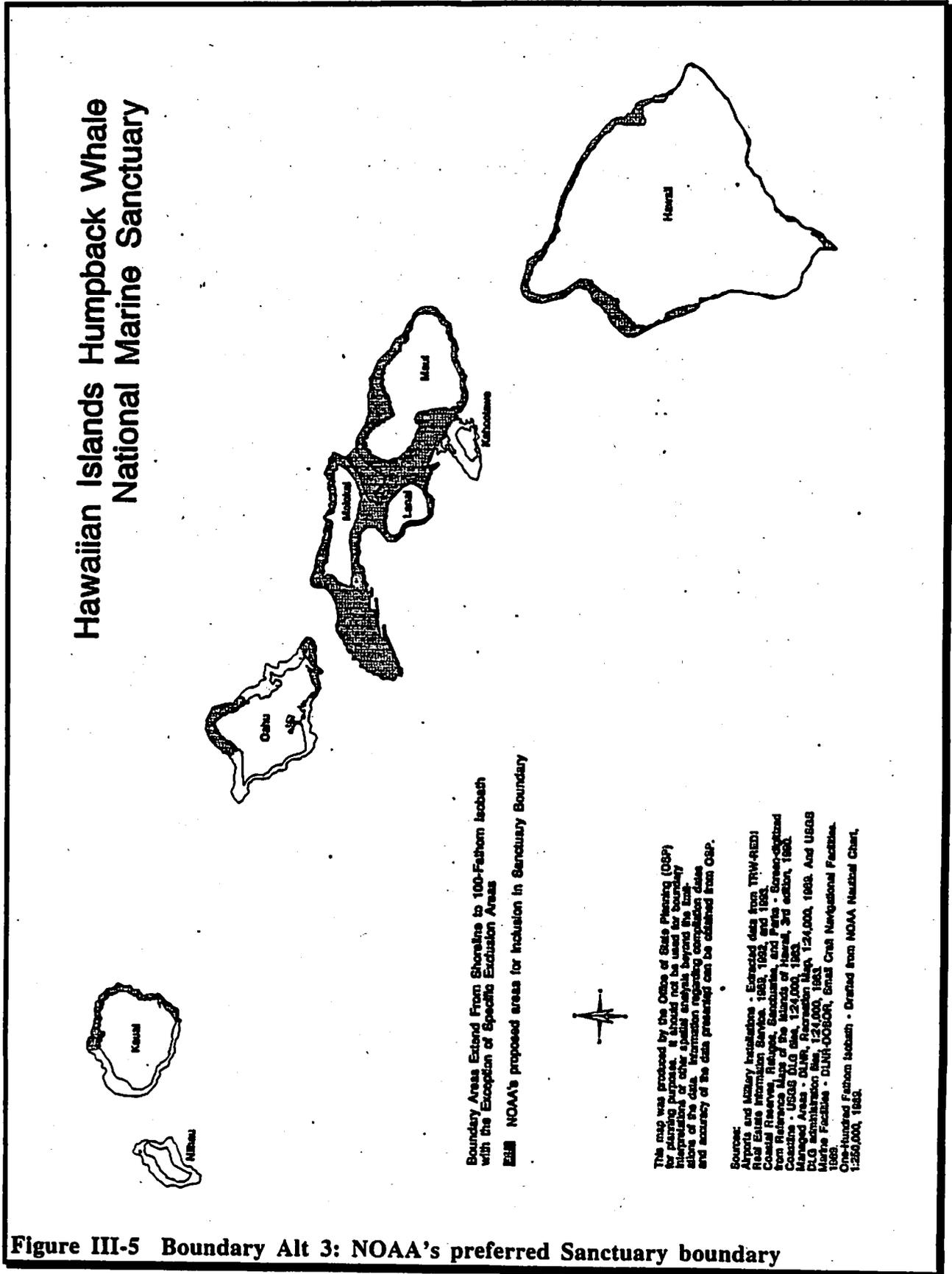


Figure III-5 Boundary Alt 3: NOAA's preferred Sanctuary boundary

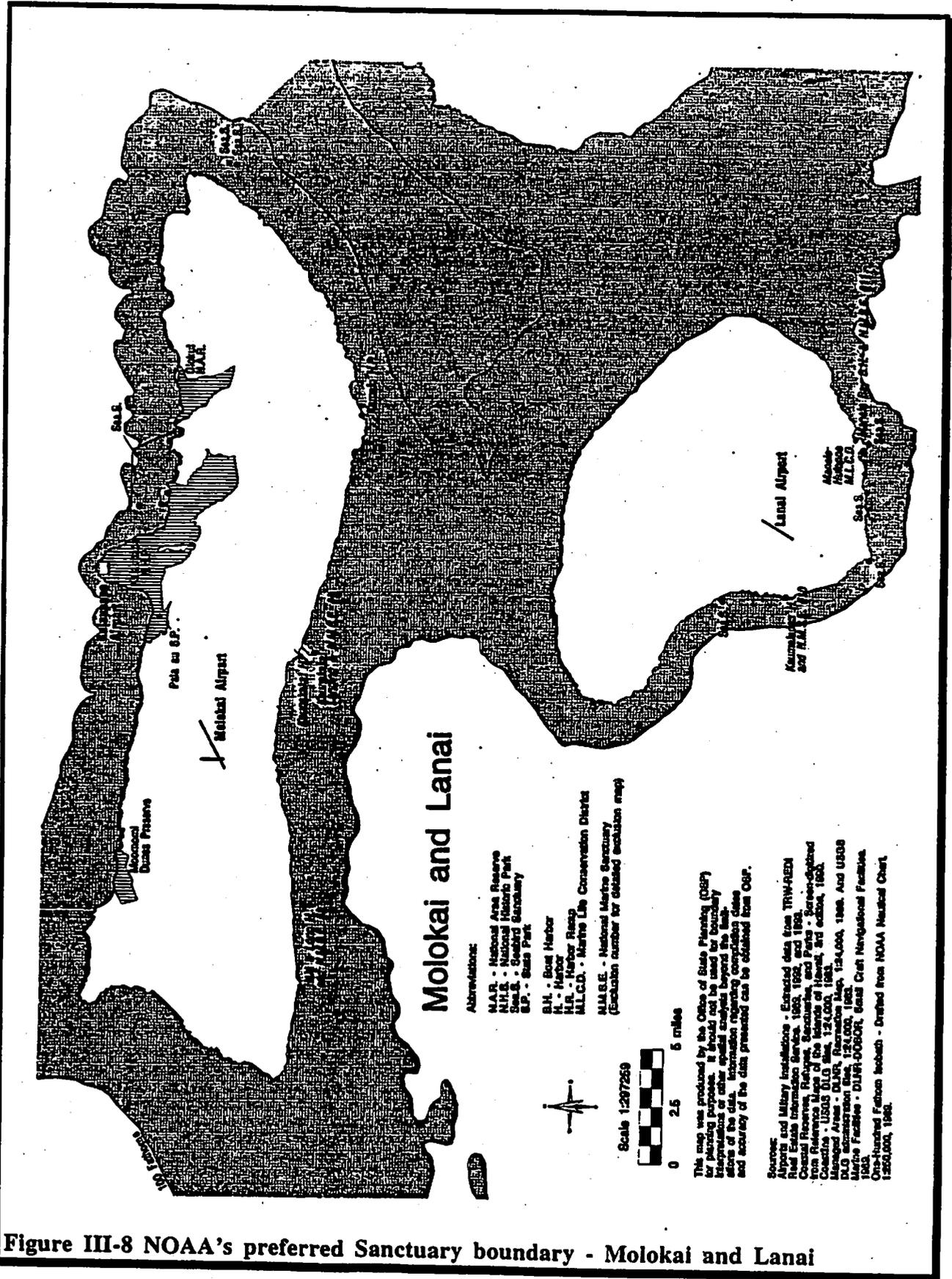


Figure III-8 NOAA's preferred Sanctuary boundary - Molokai and Lanai

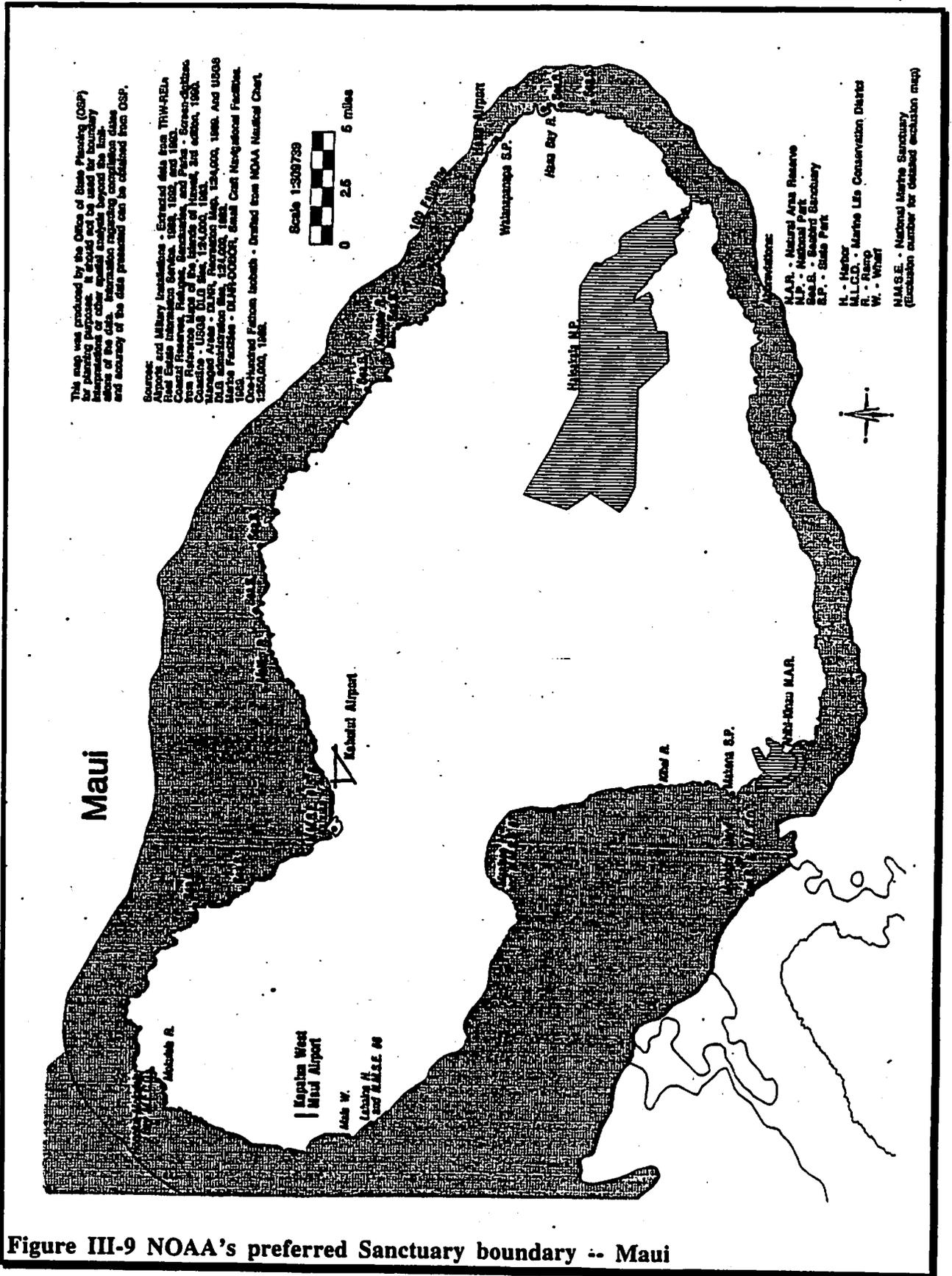


Figure III-9 NOAA's preferred Sanctuary boundary -- Maui

Humpback whale distribution studies indicate that whales do not extensively use harbors or small boat basins as preferred habitat. Although whales may occasionally venture into harbors and boat basins, high levels of human activity and constrained space precludes them from carrying out normal behaviors and activities. In this regard, NOAA did not include major ports, harbors, and small boat basins in this boundary alternative because evidence indicates such areas do not constitute whale habitat and because of activities that occur within harbors (both in and out of the water) that are incompatible with a National Marine Sanctuary. Such activities include, but are not limited to, vessel painting, shore-based boat cleaning, toxic paint releases from moored vessels, and sewage disposal. This exclusion also recognizes the importance of these areas to Hawaii's economy; the numerous necessary operation and maintenance activities which must occur on a routine basis; that such activities are regulated by existing State and Federal processes.

Approaches to ports and harbors and offshore anchorages are not being excluded from the Sanctuary boundary because these areas are considered humpback whale habitat. Humpback whales, especially mothers and calves, regularly use these inshore waters for nursing and resting areas. Vessels traffic in and out of ports and mooring areas will continue to be subject to the existing 100-yard humpback whale approach regulations.

The ports, harbors, and small boat basins which are excluded from the preferred Sanctuary boundary are identified below, and can be seen in Figure III-11.

Maui

Kahului Harbor
Lahaina Boat Harbor
Maalaea Boat Harbor

Kauai

Hanamaulu Bay
Nawiliwili Harbor

Oahu

Ala Wai Small Boat Basin

Hawaii (Big Island)

Hilo Bay Harbor
Honokohau Boat Harbor
Keauhou Bay
Kawaihae Boat Harbor/Small Boat Basin

Lanai

Kaunalapau Harbor
Manele Harbor

Molokai

Hale o Lono Harbor
Kaunakakai Harbor

Under this alternative, the boundary would extend from point to point across the mouths of these harbors, as shown in Figure III-10, and as noted by the geographic coordinates presented in Appendix K. Activities within these selected ports, harbors, and small boat basins would not be subject to Sanctuary regulations, but spillover impacts and new construction seaward of the existing harbors could be subject to Sanctuary review, regulations, and consultation. The Hawaii Department of Health classifies the above ports, harbors, and boat basins as "class A" waters (Hawaii Administrative Rules §11-504-06), which have lower water quality standards to allow for discharge activities associated with port and harbor operations.

Although Sanctuary regulations would not apply in these areas except for discharges outside the boundary that enter and injure a Sanctuary resource, all other Federal, State, and county regulations relating to harbor construction, maintenance, discharges, and humpback whale approach would continue to apply. While the Sanctuary regulations do not prohibit the construction of new harbors or the expansion of existing harbors conducted in compliance with a valid Federal or State permit, plans for such development within the Sanctuary will be reviewed through NOAA's consolidated ESA Section 7 and the NMSA Section 304(d) consultation processes in order to offer recommendations and comments to ensure that Sanctuary resources are adequately considered. At that time, NOAA will determine whether to revise the Sanctuary boundary to exclude the new or expanded port, harbor or boat basin.

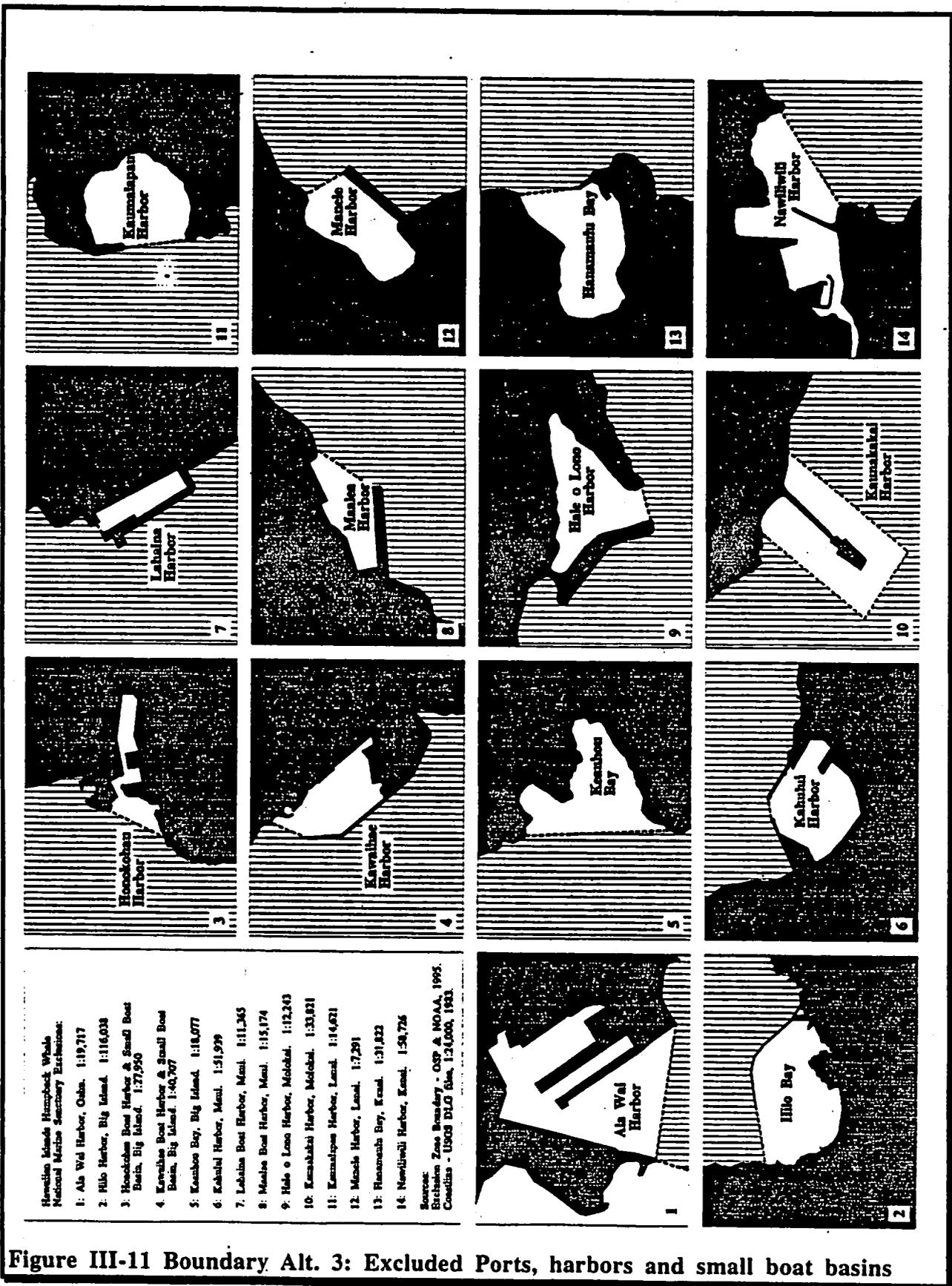


Figure III-11 Boundary Alt. 3: Excluded Ports, harbors and small boat basins

In addition to the above areas, this proposed boundary alternative also does not include certain significant specified military use areas.

i. Description of Military Use Areas

Part of the Sanctuary's mandate is to facilitate human uses of the Sanctuary consistent with the primary purpose of protecting the humpback whale and its habitat. DOD is one of the largest users of Hawaii's marine environment. Specific areas off Kauai, Niihau, Kaula Rock, and Oahu have been identified by DOD as military use areas where the United States and its allies conduct numerous activities that are crucial to the readiness and proficiency of the armed forces. NOAA, in consultation with DOD and the State has determined that not including these selected military use areas in the Sanctuary boundary facilitates the conduct of essential military activities while still achieving an appropriate level of resource protection. While not including such areas may be inappropriate for an ecosystem based sanctuary, it is appropriate here where the only Sanctuary resources are the humpback whale and its habitat, and where DOD remains subject to the ESA, the MMPA, and other relevant Federal environmental laws. In addition, DOD operating procedures include special precautions to ensure the protection of humpback whales prior to any training exercises or testing which may occur during whale season (see list of military activities in Appendix F). NOAA has consulted with DOD on these activities and has determined that the precautions DOD takes (some of which include: visual and instrumental search of range sites for whales, delay testing or use of explosives in presence of whales, avoidance of whales, minimal use of live ammunition, training of personnel to adhere to environmental regulations, and operation orders) are sufficient to adequately protect humpback whales and their habitat.

Selected military use areas not included in this Sanctuary boundary alternative are the Pacific Missile Range Facility (PMRF), located in west Kauai; Niihau; Kaula Rock; and on Oahu Mahie Point (just north of Kaneohe Bay) to Makapuu Point (just south of Bellows Air Force Base) and from the Ala Wai Canal (east of Pearl Harbor) northward along the Waianae Coast to Puaena Point (just east of Dillingham Air Field).

1) Kauai [Barking Sands (PMRF)] and Niihau

Figure III-6 shows the area around the western half of Kauai not included in this boundary alternative (dark area is included in the Sanctuary boundary). DOD conducts many operations at and near PMRF considered essential to national security and defense. Test ranges extend far beyond the 100-fathom isobath, with a great deal of test activities occurring well outside the 100-fathom isobath boundary along the western side of Kauai and the Niihau area. However, the west Kauai and Niihau areas still lie within designated PMRF use zones.

Since this area is also recognized as important to humpback whales [aerial surveys and fluke-photo identification have found apparent increases in humpback whale populations in this area over the last few years (Forestell and Mobley, 1991; Cerchio, et al., 1993; Cerchio, 1994)], the Sanctuary will continue to coordinate closely with DOD and NMFS to ensure that PMRF Command procedures remain adequate for the protection of humpback whales.

2) Kaula Rock

Kaula Rock is a small island and associated coral reef located about 30 miles south of Niihau. Research indicates that humpback whales use the shallow waters around Kaula Rock for reproductive activities (Mobley et al. 1993). The degree of relative distribution of these whales is virtually unknown. Most humpback whale research has not focused on this area and is the result of "spillover" research from Niihau or from other projects around Kaula Rock. In the past, DOD has used Kaula Rock as a bombing range. Though the island is no longer used in this way, some military training activities still occur in the vicinity and the island remains in a designated military

use zone. Also, Kaula Rock is extremely isolated, and effective management of the island would be difficult given current fiscal and human resource constraints.

3) Oahu

Figure III-6 depicts the areas around Oahu which are not included in the Sanctuary's preferred boundary (dark areas are included in the Sanctuary boundary). DOD and its allies conduct numerous operations in the Pearl Harbor area and along the Waianae Coast (west to northwest Oahu) considered vital to national security and defense. The Marine Corps also conducts numerous training activities in the Kaneohe Bay/Bellows Air Force Base area on eastern Oahu vital to national security and defense. DOD takes special precautions to ensure the protection of the whales prior to any training exercises or testing which may occur during whale season. The Sanctuary will continue to coordinate closely with DOD and NMFS to ensure that Naval and Marine Command and operational procedures remain adequate for the protection of humpback whales.

ii. Conclusion

Figures from Part II (II-9 through II-15) also indicate that humpback whales are found throughout the MHI (see Part II.B. for a more thorough discussion of humpback whale distribution). These data represent static observations of humpback whales and the movement of individual whales over time. Researchers are gaining evidence that humpbacks are able to swim the length of the MHI in less than a week, though the frequency or relative amount of interisland migration is unknown. Cerchio (et al. 1991, and 1993) photo-identified a whale off Kauai and a colleague of Cerchio found the same whale seven days later off the Big Island. These studies also showed that humpback whales migrate between the Islands in either direction, though the degree and social structure of humpback inter-island movement is not fully understood. However, it is accurate to say that humpbacks are distributed throughout the MHI and move throughout the Islands during the whale season.

Some areas of the state tend to show higher concentrations of humpback whales than others (i.e., the Kohala Coast of Big Island versus the Hilo side). While the degree of habitat preference is not completely understood, humpback whales are known to distribute themselves in warm, shallow waters (generally less than 100-fathoms) often on the leeward sides of the Islands. Distributions vary according to an individual whale's gender and age and the time of year. For example, mother-calf pairs have been found in waters less than 30-fathoms (360 feet) while the calf is very young (Glockner-Ferrari and Ferrari, 1987). As the calf matures and gains strength and the ability to swim more efficiently, the pair will gradually shift habitats to deeper waters. In contrast, male humpback whales and unaccompanied females (no calf or escort) utilize nearshore waters much less frequently than mother-calf pairs, tending to be found in deeper waters, out to the 1000-fathom isobath and beyond.

Human presence and disturbances may also affect humpback whale distribution and habitat use. It has been hypothesized that whales may move from previously "preferred" habitats to less disturbed sites because of increased boater use, coastal development, and other human disturbances (Darling & Juarez, 1985; Cerchio, et al. 1991). Clearly, there are many complex social, environmental, and human factors that contribute to the overall humpback whale distribution patterns and habitat use. Any comprehensive and coordinated management program must take all of these factors into consideration to be successful.

Numerous complaints were heard throughout the public scoping meetings that whale harassment occurs off Kauai, Oahu, and western Hawaii (Big Island), and that there is little enforcement presence. Apparently, many individuals have the perception that the NMFS whale approach regulations apply only in Maui County. While it is true that in the past some of the rules

(e.g., NMFS's 300-yard approach regulations) applied only to designated cow/calf areas off of Maui and Lanai, current approach regulations (i.e., NMFS 100-yard approach regulations) apply everywhere within Hawaii's 200-mile exclusive economic zone. On islands other than Maui, many individuals claimed they were not aware of the separation rules and therefore, in the absence of information, would approach whales closer than 100 yards. In order to achieve greater compliance with existing humpback whale approach regulations, better dissemination of information and educational efforts are required on a Statewide basis. Both whales and humans use the waters within the MHI. As both the human and the whale populations in Hawaii continue to increase and expand to other parts of the State, there will be a need to consider marine areas other than Maui County for potential management purposes.

In conclusion, this boundary alternative proposes to expand the Congressionally-designated boundary to include waters around parts of all of the MHI (excluding Kahoolawe). NOAA selected this boundary as the preferred alternative because it more accurately reflects the current understanding of humpback whale distribution and habitat use in Hawaii, responds to statewide management needs (including research and long-term monitoring, education and outreach, coordination with statewide agencies, and enforcement of regulations) and recognizes the human uses of the Sanctuary, including those activities DOD considers essential to national security and defense. Implementation of this boundary alternative is not anticipated to have adverse impacts and any potential positive or negative socio-economic impacts will be dispersed throughout the areas included in this boundary.

e. BOUNDARY ALTERNATIVE 4 (FIGURE III-12)

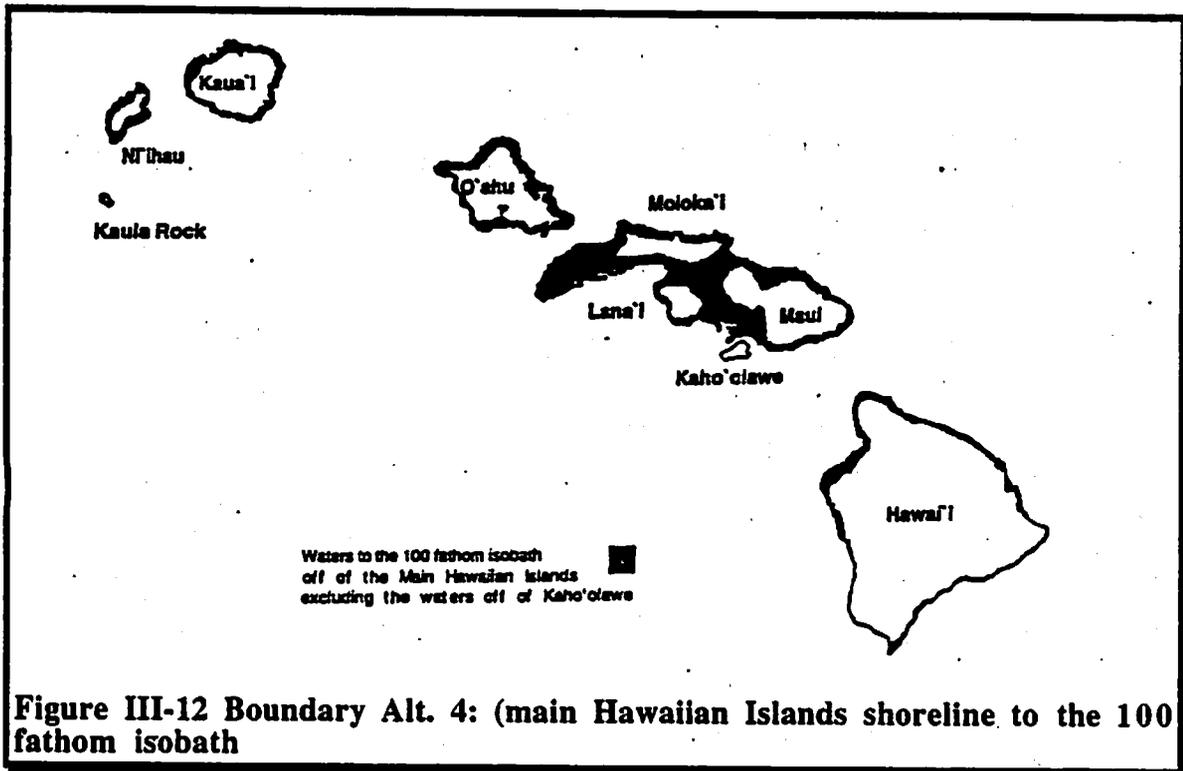
**Expansion of Congressionally-designated boundary to include
100-fathom isobath around all MHI and Kaula Rock**

As depicted in Figure III-12, this boundary alternative is based on the most recent available data and management needs for the humpback whale. This alternative includes more area to fulfill the HINMSA's primary goal to protect humpback whales and their habitat. The boundary includes Kaula Rock, Niihau, Kauai, Oahu, the existing four-Island area, and the Big Island of Hawaii. This alternative does not include the areas identified under section B.1.a. of this section: Kahoolawe Island Marine Waters and the NWHI. While this alternative is similar to the preferred alternative in having a statewide focus, it includes the waters within 100-fathoms of Niihau and Kaula Rock, as well as those military use areas around Kauai and Oahu. The boundary would extend seaward from the shoreline:

- a. to the 100-fathom (183 meter) isobath adjoining the islands of Niihau, Kauai, Oahu, Maui, Molokai, Lanai, and the Big Island (Hawaii), but excluding the area within 3-nautical miles of the upper reaches of the waves on the shore of Kahoolawe Island;
- b. to the 100-fathom isobath around Kaula Rock; and
- c. to the deep water area of the Pailolo Channel from Cape Halawa, Molokai, to Nakalele Point, Maui, and southward.

The total area included in this boundary alternative is approximately 2600 square miles. This boundary recognizes recent humpback whale distribution data which show that humpback whales are distributed throughout the MHI and around Kaula Rock (Mobley et al. 1993). Humpback whale use of the Kaula Rock area has been noted in other reports (Nitta and Naughton, 1989; Townsend, 1991; Mobley et al. 1993). This boundary also recognizes that Kaula Rock, Niihau, and western Kauai areas are frequented by humpback whales. Aerial surveys and fluke-photo identification have found apparent increases in the number of humpback whales in this area over the last few years (Forestell and Mobley, 1991; Cerchio, et al., 1993; Cerchio, 1994). This

boundary would provide a more uniform boundary that would take into consideration all areas of humpback whale use.



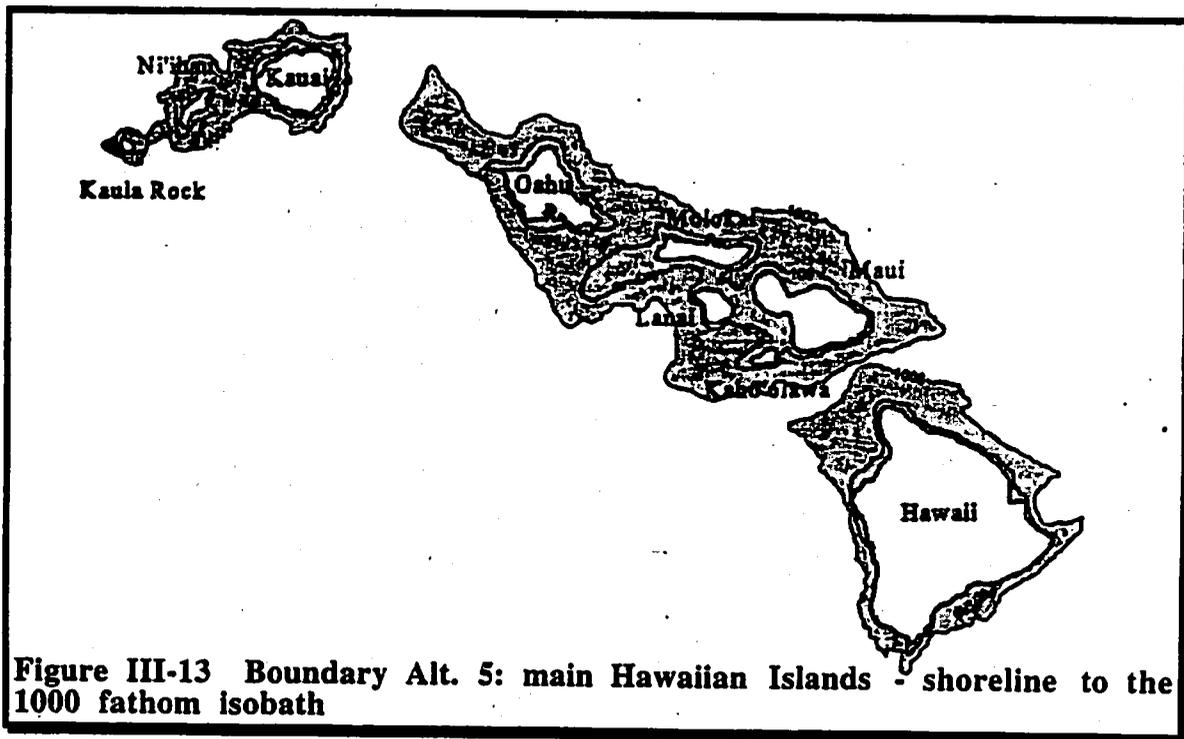
Utilizing the same humpback whale distribution data noted in the final four paragraphs of the alternative "3" section, this Sanctuary boundary alternative allows for protection of humpback whales and their habitat now and in the future uniformly throughout the MHI. As both the human and the whale populations in Hawaii continue to increase, there will be a need to consider all marine areas for potential management purposes. The expanded area recognizes that humpback whale distribution and habitat use is not static and is responsive to numerous social, environmental, and human influences. This boundary would also provide more consistency for marine users of the State than would a piecemeal boundary. A uniform statewide boundary would also best achieve the mandate to promote comprehensive and coordinated management for whales in their Hawaiian habitat.

Although this boundary alternative more accurately reflects the current understanding of humpback whale distribution and habitat use than does boundary alternative "3" -- the preferred alternative -- NOAA, in consultation with the State, determined that from a management perspective, this boundary fails to recognize the importance of DOD military use areas and activities that are essential to national security and defense. Moreover, this boundary alternative is slightly larger in scope than boundary alternative "3", and includes the marine waters around the islands of Niihau and Kaula Rock. The inclusion of these extra marine areas, which are remote and difficult to access, could hinder effective resource management efforts in these areas and detract management efforts from other parts of the MHI. Consequently, this boundary alternative is not the preferred alternative. Implementation of this boundary alternative is not anticipated to have adverse impacts. Any potential positive or negative socio-economic impacts will be dispersed throughout the areas included in this boundary.

f. BOUNDARY ALTERNATIVE 5 (FIGURE III-13)**Expand Congressionally-designated boundary to include
1,000-fathom isobath around the MHI**

It is generally agreed among researchers that humpback whales are primarily distributed in waters less than 100-fathoms (Nitta and Naughton, 1989; Mobley et al. 1993). In recent years, however, it has become evident that a significant number of humpback whales can be found in deeper waters outside the 100-fathom isobath, which may reflect greater efforts and new methodologies used to survey beyond the 100-fathom isobath. While the majority of humpback whale sightings remain in waters less than 100-fathoms, approximately 27 percent of recent survey sightings indicate the presence of whales in waters between the 100-fathom and the 1,000-fathom isobath (Mobley et al. 1993).

This boundary alternative proposes to extend the boundary from the shoreline to the 1,000-fathom isobath surrounding the MHI of Niihau, Kauai, Oahu, Maui, Molokai, Lanai, the Big Island (Hawaii) and Kaula Rock in order to provide a Sanctuary boundary inclusive of the entire humpback whale Hawaiian habitat. This alternative does not include the areas identified under section B.1.a of this section: the waters around Kahoolawe Island and the NWHI. As depicted in Figure III-13, this alternative includes waters which are or may be important humpback whale use areas, particularly as the whale and human populations increase and there is a potential need for "buffer space" outside the 100-fathom isobath. The boundary includes mostly, but not entirely, Federal waters, and would require the same Federal/State partnership existing under the Congressionally-designated Sanctuary.



This boundary extension would not alter the overall focus of Sanctuary management, as currently identified. The boundary would include more marine waters frequented by fishers (commercial, traditional/subsistence, and recreational), but not necessarily change the management regime. This boundary also includes military use areas since this boundary alternative is based

upon a contiguous concept that incorporates most of the known humpback whale habitat in the MHI.

In conclusion, this boundary alternative includes the most comprehensive area reflecting recent data showing that humpback whales are found in waters both within and outside the 100-fathom isobath. Despite the advantage of including nearly all of the humpback whale's Hawaiian habitat in the Sanctuary boundary (management and protection), however, this boundary was not selected as the preferred alternative because it would likely exceed the resources (financial and staffing) of the Sanctuary program needed to effectively manage the site. Most of the proposed area included in this boundary are located significantly offshore (e.g. up to 40 miles in some places). Research and enforcement activities would be dispersed throughout this area and may strain the program's ability to effectively manage nearshore areas of the State. Since most human and whale activities (as well as interactions) occur in relatively shallow waters (generally less than 100-fathoms), Sanctuary management efforts should focus in these areas. In addition, this boundary alternative fails to recognize the importance of DOD military use areas and activities that are essential to national security and defense. Implementation of this boundary alternative is not anticipated to have numerous adverse impacts. Any potential positive or negative socio-economic impacts will be dispersed throughout the areas included in this boundary.

2. Regulatory Alternatives

a. Background

One purpose of the Sanctuary is to manage human uses of the Sanctuary consistent with the HINMSA and the National Marine Sanctuaries Act (NMSA). Section 2306 of the HINMSA requires NOAA to issue a comprehensive management plan and implementing regulations to achieve the policies and purposes for which the Sanctuary was designated. The management plan must also facilitate all public and private uses of the Sanctuary (including uses of Native Hawaiians) consistent with the primary purpose of protecting humpback whales and their habitat. Additionally, section 304(a)(1)(A) of the NMSA authorizes NOAA to issue proposed regulations that may be necessary and reasonable to implement the designation of a National Marine Sanctuary. Therefore, any regulations issued to implement the Sanctuary designation should be necessary and reasonable to achieve the purposes and policies of the HINMSA; primarily to protect the humpback whale and its habitat, while allowing for human uses compatible with this primary purpose of the Sanctuary. Further, Section 304(c) of the NMSA [16 U.S.C. §1434(c)] states that:

- (1) *Nothing in this title shall be construed as terminating or granting to the Secretary the right to terminate any valid lease, permit, license, or right of subsistence use or of access that is in existence on the date of designation of any national marine sanctuary.*
- (2) *The exercise of a lease, permit, license; or right is subject to regulation by the Secretary consistent with the purposes for which the sanctuary is designated.*

Unlike most other National Marine Sanctuaries, which are ecosystem-based, the HIHWNMS is unique in that Congress designated it primarily to protect the humpback whale and its habitat. However, the HINMSA also provides for the Sanctuary to identify other marine resources of national significance for possible inclusion in the Sanctuary. The scope of the management plan and the regulatory alternatives reflect these provisions.

Regulatory alternatives are available under the NMSA and the HINMSA to assist in the management and protection of Sanctuary resources. Sanctuary regulations strive to complement existing Federal, State, or county authorities where those authorities and regulations do not adequately protect Sanctuary resources or where they need to be supplemented to ensure

coordinated and comprehensive protection for humpback whales and their habitat. Generally, NOAA uses the minimal amount of authorities to regulate a narrow range of activities that presently or potentially threaten Sanctuary resources or uses while encouraging compatible uses of the marine environment. At this time, the following human activities have been identified as having possible impacts to humpback whales or their habitat (cause-effect relationships have not been determined in many cases): direct collision by marine vessels; human approaches and/or harassment of humpback whales; whale disturbance or displacement caused by sound; introduction and/or persistence of pollutants and pathogens from waste disposal; point and non-point source pollution; and habitat degradation or loss associated with coastal development (Nitta and Naughton, 1989; NMFS 1991; Townsend 1991).

For activities in the State waters of the Sanctuary, there are a number of existing State administrative mechanisms by which the Sanctuary may participate to make recommendations on issues relevant to the protection and management of Sanctuary resources. The Sanctuary may (1) participate in the development of State regulations by providing public comments and technical assistance when requested, addressing Sanctuary concerns during the public comment period; (2) request the opportunity to review and comment on any permit application for the conduct of an activity that may impact the Sanctuary or its resources at the earliest stages of consideration; (3) request consultation with the State staff reviewing agency to discuss in detail a permit under consideration and NOAA's interest and recommendations in the matter; (4) participate in a hearing to examine an applicant, present evidence, and if requested by the permit granting authority, to prepare draft findings of fact and conclusions of law; (5) seek reconsideration of a State permit and request the Governor to review the particular problem. These mechanisms may be utilized in conjunction with any of the regulatory alternatives listed below.

Six regulatory alternatives are discussed below. The alternatives are presented in "bundles" of regulations proposed to protect Sanctuary resources and ensure comprehensive and coordinated conservation and management of the Sanctuary. The alternatives range from "no additional Sanctuary regulations" to a full-scale regulatory regime to protect and manage an ecosystem-based Sanctuary. In each case, the regulatory alternative also discusses a management philosophy or strategy to which the regulations would be applied, and briefly compares the impacts to resources and uses.

b. REGULATORY ALTERNATIVE 1

Status quo -- no Sanctuary regulations. Neither incorporate existing regulations nor promulgate new Sanctuary prohibitions

i. Description of Proposed Regulatory Action

Under this alternative, the Sanctuary would play a low-key role, relying entirely on existing State, Federal, and county programs to serve as the regulatory and enforcement authorities protecting humpback whales and their habitat. Primarily, this includes the authorities of the NMFS which has responsibilities under the ESA and the MMPA. In addition to regulating the taking and harassment of humpback whales and other marine mammals, NMFS consults under Section 7 of the ESA to comment and make recommendations on the potential impacts of Federal or Federally-funded or authorized projects and activities on humpback whales and their habitat. Further, under Section 304(d) of the NMSA [16 U.S.C. §1434(d)], the Sanctuary also consults and makes recommendations on Federal activities likely to destroy, cause of the loss of, or injure Sanctuary resources.

State and county agencies also have a number of ongoing programs which recognize the importance of the humpback whales and their habitat. For example, in 1976, the humpback whale was designated by the Hawaii State Legislature as the Official State Marine Mammal. In 1990, the Hawaii Department of Transportation passed a law regulating the use of thrill craft in certain cow-calf areas while the whales are present in Hawaiian waters. The State Department of Land and Natural Resources (DLNR) issues permits for NMFS-approved research activities in State waters. There are also several programs that address water quality issues in Hawaii waters. The State Department of Health (DOH) administers the National Pollutant Discharge Elimination System under the Clean Water Act in State waters. In addition, DOH and the Hawaii Coastal Zone Management Program are jointly developing non-point source pollution programs. (See discussion on existing authorities in Part II.E).

Many individuals have expressed concern that there is sufficient existing authority to protect humpback whales and their habitat and that no new authorities or regulations are required at this time. They are concerned about overlapping administrative authorities, financially wasteful duplication of effort, and perhaps more confusion in an already highly-regulated environment. The argument is made that the Sanctuary can best focus its initial efforts on assisting the overall goals of providing better and more focused research, education, and information about the resources and applicable regulations which in turn would greatly assist the overall enforcement program.

Under this alternative, therefore, the Sanctuary would not promulgate new regulations or incorporate existing authorities as Sanctuary regulations. NOAA/SRD would consult with NMFS, State agencies, and others to monitor the status of humpback whales and their habitat. The Sanctuary would principally rely on section 304(d) of the NMSA, in which Federal agency actions internal or external to the Sanctuary, including private activities authorized by licenses, leases, or permits, that are likely to destroy, cause the loss of, or injure any sanctuary resource are subject to consultation with the Secretary of Commerce. The Sanctuary could make recommendations on such activities, including requesting the activity be conducted outside of the Sanctuary. The Sanctuary would have no direct regulatory or enforcement authority over such activities, and could generally not prevent an activity from occurring, or condition an activity to be conducted in a manner that protects Sanctuary resources. Also, non-Federal activities that may harm Sanctuary resources that do not require a Federal license, lease, or permit are not subject to section 304(d), and the Sanctuary would not have consultation authority under the NMSA to review such activities and make recommendations to ensure the protection of Sanctuary resources. The Sanctuary would also rely on section 312 of the NMSA which makes any person who destroys, causes the loss of, or injures any Sanctuary resource liable for response costs and damages.

While there are non-regulatory mechanisms under State law by which the Sanctuary may seek to make recommendations to protect Sanctuary resources, they would not, by themselves, enable the Sanctuary to comprehensively and uniformly manage and protect the humpback whale and its habitat throughout the boundaries of the Sanctuary. Rather, the Sanctuary would have to pursue problems on a case-by-case basis, relying on existing State processes and remedies that may not be timely or adequate, and do not guarantee that the Sanctuary's concerns are addressed. Further, some of these State processes may not be available to the Sanctuary because of legal restrictions on the Federal government. Also, the existing non-regulatory mechanisms under State law do not apply to activities in Federal waters and the Sanctuary would have to use other mechanisms to address such activities. Finally, even if full reliance on State mechanisms is viable, the Sanctuary's role with respect to activities in State waters that impact the humpback whale and its habitat would be solely that of a commentator on State permits and legislation. This limited role may fail to fulfill the responsibilities Congress, in the HINMSA, imposed upon NOAA as the Federal trustee of nationally significant resources -- the humpback whale and its habitat, to comprehensively manage and protect these resources.

ii. Impact to Resources

Management, coordination, and recovery efforts would continue to be carried out by NMFS under the ESA and MMPA, and by other relevant State and Federal agencies for the protection of the humpback whales habitat. No additional impacts to the resources would be expected. The additional efforts of the Sanctuary Program to focus on the non-regulatory aspects associated with coordination, education, interpretation, research, and long-term monitoring would provide some additional benefits in the way of the lessening the likelihood of taking or harassment undertaken by individuals due to a misunderstanding or ignorance of the laws.

iii. Impact to Users

The status quo would have no additional impact on users, who would remain under current standards and authorities.

iv. Conclusions

Under this alternative the Sanctuary would have no direct regulatory or enforcement authority and limited ability to influence decision making, other than commenting or making recommendations on Federal, State, or county actions, permits or State legislation, or ensure that comprehensive management considerations are taken into account. This alternative has the benefit of not adding an additional regulatory regime and would satisfy the concerns of many who have commented throughout the public participation process. It does not, however, provide the Sanctuary with the authority to comprehensively, uniformly, and directly protect humpback whales and their habitat. Also, relying solely on existing authorities may conflict with Congress' express findings in the HINMSA that existing regulatory and management programs are inadequate and that authority is needed for comprehensive and coordinated conservation and management of humpback whales and their habitat that will complement existing regulatory authorities.

c. REGULATORY ALTERNATIVE 2

Adopt existing NMFS humpback whale approach regulations to provide additional authority to enforce provisions of law under the NMSA; provide Sanctuary support to the full implementation of those laws; promulgate no new, substantive regulatory prohibitions.

i. Description of Proposed Regulatory Action

This alternative would incorporate as Sanctuary regulations, the following humpback whale approach regulations that exist under the auspices of the MMPA and the ESA:

- Approaching, or causing a vessel or other object to approach, within the Sanctuary, by any means, within 100 yards of any humpback whale except as authorized under the Marine Mammal Protection Act, as amended (MMPA), and the Endangered Species Act, as amended (ESA);
- Operating any aircraft above the Sanctuary within 1,000 feet of any humpback whale except when in any designated flight corridor for takeoff or landing from an airport or runway or as authorized under the MMPA and the ESA;
- Taking any humpback whale in the Sanctuary, except as authorized under the MMPA and/or the ESA;
- Possessing within the Sanctuary (regardless of where taken, moved, or removed from) a humpback whale (living or dead) taken in violation of the MMPA or the ESA.

As Sanctuary regulations, NOAA may enforce violations of these approach restrictions under the authority of the NMSA, thus providing the Sanctuary with a management tool to directly protect the humpback whale, and to monitor and assess the number and type of violations within the boundaries of the Sanctuary. Also, the incorporation of these regulations under the NMSA authority allows for increased civil penalties which could be imposed on violators and serve as a greater deterrent to non-compliance, and therefore increased protection for the humpback whale. Further, penalties recovered under the NMSA would be directed back into the Sanctuary to support Sanctuary activities and programs. Although this enforcement capability is provided by the Sanctuary, the primary focus of the enforcement program is on voluntary compliance through education and outreach efforts. See section III(b) or V(d)(4) on enforcement.

The Sanctuary regulations proposed in this alternative focus on activities that directly affect the humpback whale. By incorporating those regulations routinely enforced by the NMFS, the Sanctuary can provide a more effective enforcement capability for protecting and managing the humpback whale in the Sanctuary. Another advantage of the regulations proposed in this alternative is that they do not add a duplicative layer of permitting or approvals necessary to conduct activities that directly affect humpback whales. As the regulations are incorporated, those activities conducted in compliance with a valid permit or authorization under the MMPA or the ESA would not require a separate Sanctuary permit because they would be in compliance with the Sanctuary regulations. The Sanctuary has developed a Memorandum of Understanding (MOU) with NMFS (see Appendix E) to coordinate and consult on permits and authorizations issued under the MMPA or the ESA by which Sanctuary concerns and conditions will be incorporated directly into the NMFS permit. Thus, the Sanctuary regulations proposed in this alternative complement the existing NMFS authorities.

This alternative proposes to supplement NMFS humpback whale approach regulations that protect only the humpback whale. Amendments made to the MMPA in 1994 provide NMFS with greater authority to protect marine mammal habitat (MMPA Amendments of 1994, Public Law 103-238, April 30, 1994). These amendments mandate the creation of Regional Scientific Review Groups to look at impacts of human and environmental factors on marine mammals, and allows the agency to develop and implement conservation plans to alleviate such identified impacts. The Sanctuary would work with NMFS and other agencies and researchers in Hawaii to gain a better understanding of the potential impacts and threats to humpback whales in Hawaii. The Sanctuary would also work closely with existing Federal, State, and county authorities to protect the habitat of the humpback whale, as required by the HINMSA. In an effort to support a comprehensive regulatory/enforcement program to achieve voluntary compliance with regulations that protect the humpback whale and its habitat, the Sanctuary would develop outreach programs to ensure that marine resource users are better informed and educated about the regulations; work on the development of an acceptable monitoring program with respect to compliance with all pertinent authorities; and assist and cooperate in any efforts to make improvements to laws and regulations as appropriate through supporting better research and information on which to base management decisions.

This alternative builds on the status quo alternative, by which the Sanctuary will rely on existing authorities for the protection of the humpback whales' habitat, but would add direct regulatory authority under the NMSA to protect humpback whales.

ii. Impact to Resources

This alternative would offer more protection to the humpback whales because the Sanctuary would have direct regulatory and enforcement authority and a greater ability to influence decision making. Enhanced resource protection also results from the increased deterrence value associated with the potential for increased penalties under the NMSA. Essentially, incorporating the NMFS humpback whale approach and taking regulations provides the Sanctuary with the authority to

ensure greater compliance with these regulations. In addition, enhanced coordination and utilization of the expertise of other State and Federal authorities would continue to provide beneficial impacts to the humpback whale population. The additional efforts of the Sanctuary Program to focus on the non-regulatory aspects associated with coordination, education, interpretation, research, and long-term monitoring would provide additional benefits in the way of lessening the likelihood of taking or harassment by individuals due to a misunderstanding or ignorance of the laws.

iii. Impact to Users

No new additional substantive obligations are imposed under this alternative since marine users are currently subject to the NMFS humpback whale approach regulations. Consequently, there will generally be no negative socio-economic impacts to users of the Sanctuary. There may be greater socio-economic impacts on persons in violation of the approach regulations because the maximum Sanctuary civil penalty could be higher than civil penalties under the MMPA and ESA. An incidental benefit to the Sanctuary and its users could result because monies recovered as penalties for unlawful activities would be used for Sanctuary management and improvement.

iv. Conclusions

This regulatory alternative is not the preferred alternative for many of the same reasons regulatory alternative "1." While the Sanctuary will have regulations that enhance protection for the humpback whale, the Sanctuary would have no direct regulatory or enforcement authority to comprehensively and uniformly protect the humpback whales' *habitat* throughout the Sanctuary boundary.

d. REGULATORY ALTERNATIVE 3

**** PREFERRED ALTERNATIVE ****

Adopt a) existing NMFS humpback whale approach regulations and b) additional State and Federal prohibitions governing the discharge of materials into the Sanctuary and alteration of the seabed of the Sanctuary; allow such activities if authorized/permitted by appropriate Federal or State authorities; promulgate no new substantive Sanctuary prohibitions.

i. Description of Proposed Regulatory Action

This alternative would incorporate as Sanctuary regulations, the following humpback whale approach regulations that exist under the auspices of the MMPA and the ESA:

- Approaching, or causing a vessel or other object to approach, within the Sanctuary, by any means, within 100 yards of any humpback whale except as authorized under the Marine Mammal Protection Act, as amended (MMPA), and the Endangered Species Act, as amended (ESA);
- Operating any aircraft above the Sanctuary within 1,000 feet of any humpback whale except when in any designated flight corridor for takeoff or landing from an airport or runway or as authorized under the MMPA and the ESA;
- Taking any humpback whale in the Sanctuary, except as authorized under the MMPA and/or the ESA;
- Possessing within the Sanctuary (regardless of where taken, moved, or removed from) a humpback whale (living or dead) taken in violation of the MMPA or the ESA.

In addition to the humpback whale approach and "take" regulations listed above, the following regulation would be issued to ensure adequate protection for humpback whale *habitat*:

- The following activities are prohibited and thus unlawful for any person to conduct or cause to be conducted:
 - (i) Discharging or depositing any material or other matter in the Sanctuary;
 - (ii) altering the seabed of the Sanctuary; or
 - (iii) discharging or depositing any material or other matter outside the Sanctuary if the discharge or deposit subsequently enters and injures a humpback whale or humpback whale habitat, provided that:

such activity requires a Federal or State permit, license, lease, or other authorization, and

- (1) is conducted **without such permit, license, lease, or other authorization**; or
- (2) is conducted **not in compliance** with the terms or conditions of such permit, license, lease, or other authorization.

Finally, the Sanctuary would also add the following prohibition to ensure the facilitation of Sanctuary enforcement activities, which enhance resource protection:

- Interfering with, obstructing, delaying or preventing an investigation, search, seizure or disposition of seized property in connection with enforcement of either of the Acts or any regulations issued under either of the Acts.

In designating the Sanctuary, Congress found that *"the existing State and Federal regulatory and management programs applicable to the waters of the MHI are inadequate to provide the kind of comprehensive and coordinated conservation and management of humpback whales and their habitat that is available under the [NMSA]."* Further Congress found that *"[authority] is needed for comprehensive and coordinated conservation and management of humpback whales and their habitat that will complement existing Federal and State regulatory authorities"* [HINMSA, sections 2302(11) and 2302(12)]. Thus, while there are an abundance of existing Federal, State, and county authorities with overlapping regulatory jurisdiction within the Sanctuary (see Part II.E.3), they are not coordinated or focused specifically on the protection and management of the humpback whale and its habitat. The SAC will provide the forum for coordinating regulatory agencies, interest groups, Native Hawaiians, and others in the framework of protecting humpback whales and their habitat. Such will also contribute to decision-making regarding permitted activities within the Sanctuary, by providing advice and recommendations to the Sanctuary Manager.

In addition to the benefits described in regulatory alternative "2," the regulations proposed in this alternative seek to complement existing protection for habitat from the adverse impacts that could result from degradation of water quality or physical alteration of the seabed. Greater resource protection will ensue from this alternative because this habitat regulation provides the Sanctuary with direct regulatory and enforcement authority over illegal discharge or deposit, or alteration of the seabed activities that could adversely impact the humpback whale's habitat. Enhanced resource protection would also result from the increased deterrence value associated with the potential for increased penalties under the NMSA.

As discussed in the Introduction to this section, the HIHWNMS is unlike any other National Marine Sanctuary in that its primary purpose is to protect the humpback whale and its habitat. In light of the limited scope of the Sanctuary, the narrow proposed definition of what constitutes the humpback whale's Hawaiian habitat, and in the absence of better scientific information on the specific effects of the impacts of various human activities on this habitat, NOAA finds that at this time it is not necessary to add independent Sanctuary regulatory and administrative

review and approval processes to protect the humpback whale habitat. This is particularly the case since the MMPA was recently modified to expanded the role of NMFS in managing and protecting marine mammal habitat. Section 117 of the MMPA establishes "Scientific Review Groups" (one of which is specific to the Pacific, including Hawaii) which are required to advise the Secretary of Commerce on, among other things, "the actual, expected, or potential impacts of habitat destruction, including marine pollution and natural environmental change, on specific marine mammal species or stocks, and for strategic stocks (e.g., endangered stocks), appropriate conservation or management measures to alleviate any such impacts." Also, Section 112 of the MMPA was revised to include, "If the Secretary determines...that impacts on rookeries, mating grounds, or other areas of similar ecological significance to marine mammals may be causing the decline or impeding the recovery of a strategic stock (e.g., endangered stocks), the Secretary may develop and implement conservation or management measures to alleviate those impacts..." The Sanctuary will work closely with NMFS to ensure that humpback whale habitat management is accomplished in a coordinated and complementary manner.

This alternative recognizes that there are a number of different Federal and State authorities that regulate activities in or near the Sanctuary that may adversely impact water quality or the seabed (the humpback whale's habitat). Existing authorities applicable to water quality and the seabed generally require applicants to meet certain standards and take mitigative actions which in the absence of additional data, are consistent with the purposes of the HINMSA to protect this habitat (e.g., water quality standards, reduced noise from construction). These authorities include: (1) The Fish and Wildlife Coordination Act (FWCA); (2) the Clean Water Act (CWA); (3) the Rivers and Harbors Act; (4) Title I of the Marine Protection, Research, and Sanctuaries Act; (5) the Act to Prevent Pollution from Ships; (6) the Oil Pollution Act (OPA); (7) the Outer Continental Shelf Lands Act; (8) Hawaii Revised Statute (HRS) Chapters 342D-51, 343, 205, 205A, 266-3, and 190D; and (9) Hawaii Administrative Rules, Title 13. (See Part II.E and Part V.G. of the Draft EIS/MP).

During scoping meetings, inter-island meetings, and technical consultations, Federal and State agencies and others identified that problems exist with respect to sufficient resources and capabilities to coordinate, implement, and enforce violations of the various existing laws. Further, these laws have broader or different mandates than that of the Sanctuary. This regulatory alternative, therefore, balances the goal of adding necessary authority which complements existing Federal and State regulatory programs with jurisdiction in the Sanctuary with the need to comprehensively and uniformly manage and protect the humpback whale and its habitat. The regulations proposed in this alternative will complement existing authorities by avoiding a duplicative Sanctuary permitting or approval process for discharge or deposit, or alteration of the seabed activities in the Sanctuary. Further, the regulations enable the Sanctuary to supplement existing authorities by adding an independent enforcement mechanism under the authority of the NMSA for unlawful or, unpermitted discharge or alteration of the seabed activities in the Sanctuary. Regulations proposed in this alternative will also provide the authority for penalties under the NMSA, and therefore greater deterrence, for activities conducted in violation of a State or Federal permit, or for an unpermitted activity. Further, penalties recovered under the NMSA may be used for the benefit of the Sanctuary and its users.

Disadvantages of the regulations proposed in this alternative are that by providing the Sanctuary with only a mechanism to enforce discharge or deposit, or alteration of the seabed activities conducted without or not in compliance with a required Federal or State permits, the Sanctuary has limited independent authority to prevent or stop these types of activity from being conducted in the Sanctuary. Further, there will be no requirement in the proposed regulations for persons conducting activities to obtain a Sanctuary permit, certification, or authorization by which the Sanctuary can impose additional conditions to protect the humpback whale's habitat, if necessary. Similarly, the Sanctuary will be unable to require other agencies to impose any such

conditions to a Federal or State permit for discharge, deposit, or alteration of the seabed activities in order to further protect the humpback whale and its habitat.

However, the Sanctuary may use existing State mechanisms, described in the Introduction, to review and make recommendations on activities at the early stages of a proposal. Combining this management approach with the ability to enforce non-compliance of valid Federal or State permits, or unlawful discharge or alteration of the seabed activities will provide a comprehensive approach to protecting the humpback whale's habitat without duplicating existing authorities. Further, at this time evidence indicates that there are no known unregulated discharge or deposit, or alteration of the seabed activities identified as occurring in the Sanctuary that adversely impact the humpback whale's habitat. Finally, as previously stated, in the absence of additional scientific information to the contrary, it appears at this time that the existing regulatory authorities in place adequately protect water quality and the submerged seabed as they relate to the humpback whale's habitat. The research program proposed in the Management Plan will add to the base of scientific information on the humpback whale's habitat.

To adequately implement this alternative, and provide more comprehensive, coordinated management and protection of the humpback whale and its habitat, the Sanctuary will enter into formal agreements (e.g. Memoranda of Understanding) with Federal and State agencies to allow the Sanctuary to review and propose recommendations on the activity early on in the permitting process. This is consistent with the type of agreement that the Sanctuary and NMFS has prepared for permits and authorizations issued under the MMPA and ESA. Thus, while not having veto authority over activities that are conducted in compliance with valid Federal or State permits, a process will be in place to ensure Sanctuary concerns are addressed. Again, this is based on the determination that existing authorities are in place to generally protect water quality and the physical submerged lands in the Sanctuary. The MOUs also provide a reporting provision whereby the Sanctuary may keep track of and monitor the types of activities that are being conducted in its boundaries, with the perspective of how such activities impact humpback whales and their habitat.

ii. Impact to Resources

Increased protection shall be afforded the humpback whale and its habitat because supplemental education and enforcement capabilities will be available under the NMSA and a greater deterrence value associated with the potential for NMSA penalties which may be used to manage and improve the Sanctuary. Sanctuary regulations to protect the humpback whale and its habitat provide the Sanctuary with a tool to ensure greater overall compliance with existing authorities. In addition, greater comprehensive coordination with and utilization of the expertise of other State and Federal authorities would provide beneficial impacts to the humpback whale population. The additional efforts of the Sanctuary Program to focus on the non-regulatory aspects associated with coordination, education, interpretation, research, and long-term monitoring would provide additional benefits in the way of lessening the likelihood of taking or harassment undertaken by individuals due to misunderstandings or ignorance of the law. Other resources may incidentally benefit from decreases in non-compliance with existing permits designed to safeguard against marine pollution and habitat destruction.

iii. Impact to Users

Human uses in the Sanctuary will not be adversely affected because there will be no new, substantive regulatory restrictions or prohibitions instituted by the Sanctuary under this alternative. The NMFS humpback whale approach and taking regulations continue to apply, and discharge, deposit and alteration of the seabed activities must be conducted in compliance with the terms conditions of the applicable Federal or State permits or authorizations to avoid violating Sanctuary regulations. Thus, no negative socio-economic impacts are expected to result from this alternative. This alternative also does not impose independent Sanctuary permit requirements. However,

through coordination with Federal and State agencies and the public, the Sanctuary may make recommendations to ensure that certain activities are conducted in a manner that does not injure Sanctuary resources. Individual agencies administering the permits or other approvals may or may not choose to accept Sanctuary recommendations. There may be some socio-economic impact from Sanctuary recommendation is adopted by a State or Federal permitting agency, but these are expected to be small in comparison to the benefits to the Sanctuary. Further, there may be greater socio-economic impact on persons in violation of approach, discharge or alteration of the seabed restrictions because Sanctuary maximum civil penalties could be higher than other Federal and State civil penalties, however these would be less severe than criminal penalties imposed under such other laws.

iv. Conclusions

Unlike most other National Marine Sanctuaries, the HIHWNMS is unique in that Congress designated it to protect primarily the humpback whale and its habitat. Notwithstanding the Congressional finding in the HINMSA that existing regulatory and management programs are inadequate to provide comprehensive and coordinated conservation and management of humpback whales and their habitat, it has been argued by Federal and State agencies and the general public that there are in fact sufficient authorities existing to protect water quality and the submerged seabed in the Sanctuary (humpback whale's habitat). Therefore, as there are a number of existing authorities that directly protect the humpback whale (i.e., ESA and MMPA), and also directly or indirectly protect the humpback whales' habitat (i.e., MMPA, CWA, OPA, HRS Chapter 342D 51), and in the absence of additional scientific information regarding the impact of human uses on humpback whale habitat, the Sanctuary will rely on these authorities as much as possible and seek only to supplement enforcement of non-compliance of valid permits from other Federal or State authorities. By essentially incorporating other authorities as Sanctuary regulations, the Sanctuary seeks to address Congress' findings, achieve and fulfill its trustee and management responsibilities, and avoid adding unnecessary, duplicative administrative procedures, while still ensuring protection of humpback whales and their habitat.

e. Regulatory Alternative 4

Adopt existing NMFS humpback whale approach regulations; and promulgate new Sanctuary regulations governing the discharge of materials into the Sanctuary and alteration of the seabed of the Sanctuary

i. Description of Proposed Regulatory Action

This alternative would incorporate as Sanctuary regulations, the following humpback whale approach regulations that exist under the auspices of the MMPA and the ESA:

- Approaching, or causing a vessel or other object to approach, within the Sanctuary, by any means, within 100 yards of any humpback whale except as authorized under the Marine Mammal Protection Act, as amended (MMPA), and the Endangered Species Act, as amended (ESA);
- Operating any aircraft above the Sanctuary within 1,000 feet of any humpback whale except when in any designated flight corridor for takeoff or landing from an airport or runway or as authorized under the MMPA and the ESA;
- Taking any humpback whale in the Sanctuary, except as authorized under the MMPA and/or the ESA;
- Possessing within the Sanctuary (regardless of where taken, moved, or removed from) a humpback whale (living or dead) taken in violation of the MMPA or the ESA.

In addition, this regulatory alternative would add the following independent Sanctuary regulations to protect the humpback whale's habitat:

The following activities are prohibited and thus unlawful for any person to conduct or cause to be conducted:

- Discharging or depositing, from within the boundary of the Sanctuary, any material or other matter except:
 - (i) fish, fish parts and chumming materials (bait) produced and discarded during traditional fishing operations conducted in the sanctuary;
 - (ii) biodegradable effluent incidental to routine vessel operations (e.g., cooling water, deck wash down and graywater as defined in section 312 of the Federal Water Pollution Control Act), excluding oily wastes from bilge pumping;
 - (iii) engine exhaust.
- Discharging or depositing, from beyond the boundary of the Sanctuary, any material or other matter except those listed in (i)-(iii) above, that subsequently enters and injures a Sanctuary resource or quality.
- Drilling into, dredging, or otherwise altering the seabed of the Sanctuary; or constructing, placing, or abandoning any structure, material, or other matter on the seabed of the Sanctuary, except:
 - (i) anchoring vessels;
 - (ii) traditional fishing operations;
 - (iii) installation of navigation aids by the U.S. Coast Guard or Corps of Engineers.

Under this alternative, discharge and alteration of the seabed activities would be prohibited and would require a Sanctuary permit, certification, or authorization in order to be conducted. The Sanctuary would not wholly rely on existing authorities but rather would have direct, independent regulatory authority to influence activities that may impact humpback whales or their habitat.

With regard to protection of the humpback whale's habitat, existing discharge, deposit, or alteration of the seabed activities being conducted pursuant to valid permits, leases, licenses, etc., executed prior to the effective date of Sanctuary designation (November 4, 1992) could not be terminated by the Sanctuary. Such discharges or deposits, and alteration of the seabed activities would be allowed, subject to all prohibitions, restrictions, or conditions imposed by applicable regulations, permits, licenses, or other authorizations and consistency reviews issued or conducted by the appropriate authority. However, pursuant to the provisions of the NMSA, the Sanctuary may regulate the exercise of these existing permits consistent with the purposes for which the Sanctuary is designated.

The Sanctuary could authorize permits issued by other authorities after the date of Sanctuary designation for activities which are otherwise prohibited by the Sanctuary regulations, such as discharges occurring outside Sanctuary boundaries which could enter and injure a Sanctuary resource or quality. The Sanctuary could deny authorization or require additional conditions necessary to protect the humpback whale and its habitat. In all cases, the Sanctuary would consult with the relevant permitting authority and provide scientific information concerning the humpback whale and its habitat to other regulatory authorities. The Sanctuary would cooperate with other authorities to formalize the consultative and management roles of the Sanctuary. To facilitate such coordination, memoranda of understanding and/or protocol agreements may be

The disadvantage of this alternative is that there is limited scientific evidence on the impacts of human uses on whale habitat and there are existing State and Federal regulatory authorities in place that generally protect humpback whale habitat (water quality as physical alteration of the seabed). Consequently, a Sanctuary permit and approval requirement would add another review layer to the already burdened permit review processes in Hawaii without adding significant additional protection to humpback whale habitat. An independent, comprehensive regulatory review process is warranted when protecting an ecosystem environment where existing authorities are inadequate to do so or need to be supplemented, or if scientific evidence indicates that habitat could be afforded greater protection by such a process. However, the Sanctuary's resources are only the humpback whale and its habitat, and presently there is limited scientific information on human impacts to habitat. Regulatory mechanisms that protect, directly and indirectly, humpback whales and their habitat are already in place, and placing additional regulatory requirements may not translate into greater protection for the resources.

This alternative would provide additional authority necessary to achieve Sanctuary policies and purposes consistent with the HINMSA's finding that "regulatory and management regimes are inadequate" to protect the humpback whale and its habitat as well as the recommendation for improved coordination among managing agencies and the public in resource management issues identified in the Hawaii Ocean Resources Management Plan.

ii. Impact to Resources

Increased protection could be afforded to the humpback whale and its habitat because the Sanctuary will have independent regulatory prohibitions in place, and will more closely review proposed activities that may potentially affect the humpback whale and its habitat. Activities under valid pre-existing permits cannot be terminated by the Sanctuary, but could be conditioned to protect Sanctuary resources. Prohibited activities would require a Sanctuary permit or authorization before they may be conducted. The Sanctuary would also have greater ability to modify or deny activities that could harm Sanctuary resources.

Enforcement capabilities, allowed under the NMSA would also add a greater deterrence value, associated with the potential for Sanctuary civil penalties which could be used for the benefit of the Sanctuary. Sanctuary coordination with and utilization of the expertise of other State and Federal authorities would continue. The additional efforts of the Sanctuary Program to focus on the non-regulatory aspects associated with coordination, education, interpretation, research, and long-term monitoring would provide additional benefits to Sanctuary resources. Other resources may incidentally benefit from compliance with Sanctuary regulations.

iii. Impact to Users

The Sanctuary may not terminate any activity authorized by any valid lease, permit, license, approval, or other authorization in existence on the effective date of Sanctuary designation issued by any Federal, State, or county authority, or by any valid right of subsistence use of access in existence on the effective date of Sanctuary designation, although the Sanctuary could impose terms and conditions to protect Sanctuary resources. After the effective date in which the regulations take effect, the Sanctuary would review, and if necessary, condition certain existing activities permitted by other authorities (point source discharges, alteration of the seabed activities). NOAA may impose some conditions (i.e., conduct the activity during the non-whale season, or limit a use away from a particularly sensitive area) which may in-turn lead to additional economic burdens on the applicant. However, such impact would be warranted to protect Sanctuary resources.

Any activity authorized by a valid lease, permit, license, approval, or other authority issued after the date of Sanctuary designation (including permit renewals) must be

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from, and be in compliance with any terms or conditions imposed by the Sanctuary. For activities that involve approaching humpback whales within 100 yards (or overflight within 1000 feet), the Sanctuary would use the existing NMFS MMPA/ESA permit procedures to address its concerns. With independent Sanctuary regulations to protect habitat, the Sanctuary could deny or add conditions on activities that could lead to restrictions in uses or add economic burdens on the applicant. For example, the Sanctuary, upon receiving a permit application for discharging primary sewage, could deny approval or condition approval of the permit (given sufficient information linking primary sewage to negatively affecting the whales or their habitat) on upgrading to secondary treatment. Such a scenario could impose additional costs on an applicant. The Sanctuary will work closely with existing Federal, State, and county authorities to determine which activities may negatively affect Sanctuary resources and thus be more closely scrutinized. This alternative does not necessarily require more stringent standards, however, the Sanctuary may require that certain activities be modified to protect Sanctuary resources. There may also be greater socio-economic impact on persons unlawfully conducting prohibited activities because the Sanctuary civil penalties could be higher than other Federal and State penalties.

iv. Conclusions

Some members of the general public believe that the Sanctuary should provide more comprehensive and direct protection for the humpback whale's habitat which would provide greater protection to the humpback whale. The regulations in this alternative relating to discharges and alteration of the seabed would provide the Sanctuary with additional authority to more independently and directly protect humpback whales and their habitat in Hawaii, and provide greater comprehensive oversight of activities which take place in or out of the Sanctuary which might not otherwise take into account the protection of the humpback whale or its habitat. However, the Sanctuary would be adding an additional review and permitting process for activities that may affect the humpback whale that are already regulated in the Sanctuary with little additional benefit in light of the existing data regarding habitat. Unlike other Sanctuaries where such an overarching review and permitting scheme is necessary to manage and protect an ecosystem environment, the resources of the Hawaii Sanctuary are, at this time, limited to the humpback whale and its habitat. With little scientific information on humpback whale habitat, the effects of human activities on water quality and the physical seabed as they relate to the humpback whale and its habitat appear, at the present time, to be more appropriately regulated using and in coordination with existing authorities.

f. Regulatory Alternative 5

Promulgate strict regulations on all marine uses and activities having the potential to adversely affect the humpback whale and its habitat; provide the greatest protection for the humpback whale and its habitat; maximum regulation for humpback whales and their habitat.

i. Description of Proposed Regulatory Action

Under this alternative, the Sanctuary would not incorporate the NMFS regulations described in regulatory alternatives "2" and "4"; nor would it rely on existing Federal, State, or county authorities. Rather, the Sanctuary would independently regulate activities in and around the Sanctuary that could adversely affect the humpback whale and its habitat.

Many facets of information regarding the humpback whales are missing and perhaps may never be fully known, yet many human use activities have been identified in the Humpback Whale Recovery Plan, and other sources as "possibly" affecting humpback whales.

The range of activities potentially affecting humpback whales is large. Almost anything that humans do in or near the water could affect the whales. Certain activities, however, appear more likely to have possible adverse effects due to the noises they produce or their proximity to whales. They include the following (from Townsend, R., July 1991):

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|--------------------------|--------------------------------|-----------------------|
| • Marine transport | • Warship operations | • Surfing |
| • Commercial fishing | • Commercial submarine rides | • Water-skiing |
| • Recreational fishing | • Marine construction | • Kayaking |
| • Diving and snorkeling | • Near-shore construction | • Aircraft operations |
| • Thrillcraft operations | • Near-shore resort operations | • Sewage dumping |
| • Parasail operations | • Agricultural operations | • Commercial cruising |
| • Whale watching | • Recreational boating | • Scientific research |

In addition, there is the potential for such activities as Ocean Thermal Energy Conversion, Acoustic Thermometry of Ocean Climate, laying of ocean cables, commercial and military rocket launches from near-shore based facilities, hydrofoils or hovercraft, sand mining, and other projects, activities, and uses which have potential impacts but for which there is little information on their actual effects.

The HINMSA defines "adverse impact" as an "impact that independently or cumulatively damages, diminishes, degrades, impairs, destroys, or otherwise harms" [Sec. 2303(1)]. Long-term cumulative adverse impacts on the humpback whale and its habitat from activities in the Sanctuary may not be detectable for years. Therefore, this alternative would impose a variety of regulations to prohibit, restrict, or limit uses, either seasonally or permanently, in an effort to protect the humpback whale, and generally improve the waters around the Hawaiian Islands to provide optimum humpback whale habitat.

This regulatory alternative would place restrictions on marine resource users, where the potential exists for those uses to have adverse impacts on humpback whales, their behavior, health, reproductivity, or habitat. This alternative would represent a "precautionary" approach to regulation partly in recognition of the humpback whale's status as an endangered species. Regulations affecting vessel traffic (vessel separation lanes, vessel speeds, vessel density in specifically identified areas), noise standards for vessels and aircraft, seasonal restrictions on recreational marine activities, regulation of commercial and recreational fishing, more stringent water quality measures, as examples, would be developed as needed. This regulatory approach could use special use zoning much like the State's Marine Life Conservation District authority but be potentially utilized on an extensive scale to ensure safe zones for humpback whale use during the winter months when the whales are present in Hawaiian waters, or to prevent or condition projects or activities occurring throughout the year which might degrade the whale's habitat.

Under this alternative, the Sanctuary would play a greater role in reviewing activities subject to Sanctuary regulations. Activities being conducted pursuant to valid permits executed prior to the effective date of Sanctuary designation (November 4, 1992) could not be terminated by the Sanctuary, although pursuant to the provisions of the NMSA, NOAA may regulate the exercise of activities under such existing permits consistent with the purposes for which the Sanctuary is designated.

ii. Impact to Resources

This regulatory alternative provides the greatest protection for the humpback whale and its Hawaiian habitat. The Sanctuary would prohibit or restrict, and require review and approval for, activities that may potentially impact Sanctuary resources. This option provides greater habitat protection than the previous alternative because it requires that a number of activities be renewed and approved by the Sanctuary, and would impose a variety of use restrictions to limit the amount

of human interaction with the whales. Enforcement of Sanctuary regulations would be one of the priorities of the Sanctuary. The possibility of higher maximum civil penalties under the NMSA will also add a greater deterrence value. Coordination with, and utilization of expertise from other State and Federal agencies would continue. The additional efforts of the Sanctuary Program to focus on the non-regulatory aspects associated with coordination, education, interpretation, research, and long-term monitoring would also provide additional benefits to Sanctuary resources. Other resources will likely benefit from higher water quality standards, restricted human uses of the marine environment, and a greater compliance with Sanctuary regulations.

iii. Impact to Users

The Sanctuary will have the authority to regulate (but not terminate) activities authorized by permits, licenses, leases, etc., in existence on the date of Sanctuary designation. Further, Sanctuary approval would be required for any new activity prohibited by the regulations. The Sanctuary may impose some minor restrictions (e.g., conduct the activity during the non-whale season, or relocate an activity away from a particularly sensitive area) or more major restrictions (uniform 300-yard vessel approach limits, restrict vessels from certain areas when whales are present, establish vessel speed limits, limit the number of whalewatching vessels or the number of vessels viewing each whale, prohibit thrill craft during whale season, limit certain types of discharges within or outside the Sanctuary, develop more stringent water quality standards, limit types of in-water or nearshore construction activities) which will likely add significant socio-economic burdens on marine resource users and the marine recreation industry. Certain activities that are found to, or have the potential to adversely impact, Sanctuary resources would be regulated by the Sanctuary. Aggressive enforcement of Sanctuary regulations could significantly impact commercial and recreational users if fines were repeatedly levied upon these groups. The Sanctuary would work closely with existing Federal, State, and county authorities to determine which activities may negatively affect Sanctuary resources and thus require closer scrutiny and possible Sanctuary regulation.

iv. Conclusions

This alternative would afford the greatest protection to humpback whales in the absence of adequate scientific evidence on the impacts on the humpback whale and its habitat resulting from many of the activities listed above. However, this alternative would likely result in the most severe socio-economic impacts to marine users. NOAA believes that in this instance, where the only resources under the jurisdiction of the Sanctuary is the humpback whale and its habitat, where there is little scientific evidence on human use impacts to humpback whales and their habitat, and where there are other authorities in place to protect, directly and indirectly, humpback whales, this alternative would be overly restrictive. If NOAA/SRD determined that greater restrictions are necessary to protect humpback whales and their habitat, NOAA would work with the SAC and the State as it develops such restrictions, as well as provide notice and comment under the Administrative Procedure Act, and, if necessary, issue a Supplemental EIS/MP.

g. REGULATORY ALTERNATIVE 6

Promulgate regulations to include management concerns related to other resources of national significance (multi-species) and manage the Sanctuary on an ecosystem basis.

i. Description of Proposed Regulatory Action

Under this alternative, the Sanctuary would designate other marine resources and ecosystems of national significance as Sanctuary resources and issue regulations to

comprehensively protect, conserve, and manage these resources. While this regulatory alternative proposes to include more resources than the other alternatives, the level of regulation would not likely be as stringent as those of regulatory alternative "5."

In designating the Sanctuary, Congress recognized the significant and unique marine resources and ecosystems within the Hawaiian Islands, in addition to humpback whales and their habitat [HINMSA section 2302(1) and 2302(4)]. Furthermore, one of the purposes of the Sanctuary is "to manage such human uses of the Sanctuary consistent with (the HINMSA and the NMSA)." [HINMSA, Section 2304(b)(3)]. The NMSA provides for comprehensive ecosystem-based protection and management of national marine sanctuaries. Another purpose of the Sanctuary is "to provide for the identification of marine resources and ecosystems of national significance for possible inclusion in the Sanctuary..." [HINMSA, section 2304(b)(4)]. Other marine resources have been identified in both the scoping meetings and inter-island meetings on the Sanctuary, including: coral and benthic communities, fringe reefs, bottlenose and spinner dolphins, hawksbill turtles, green sea turtles, seabirds, the Hawaiian Monk Seal, and Native Hawaiian cultural and historical resources. Under this alternative, NOAA would include these resources and other marine resources and ecosystems as Sanctuary resources. As a result, certain additional regulations would be required to achieve the more comprehensive management and protection of these resources and qualities. The Sanctuary's review of activities would be broadened to include the potential for adverse impacts to such other resources and qualities (e.g., the impact of water quality on the marine ecosystem or an oil spill impact on a colony of seabirds) in addition to the humpback whale and its habitat.

Consistent with other national marine sanctuaries, which protect and manage ecosystem marine environments, the following activities may be regulated (including prohibition) by the Sanctuary under this alternative:

- Taking of sea turtles, marine mammals and seabirds;
- Removal, taking or injuring of historical and cultural resources;
- Removal, taking or injuring of any live coral;
- Discharge of primary treated wastewater or other harmful discharges into Sanctuary;
- Operation of marine vessels (or activities) that could adversely impact Sanctuary resources;
- Alteration and/or construction of the seabed;
- Mineral mining development; or
- Certain fishing techniques that could damage Sanctuary resources.

As listed in regulatory alternative "4," the ORMP notes that additional measures may be necessary to protect the marine environment in Hawaii. The ORMP indicates that there is inadequate coordination, public input, and enforcement in the management of Hawaii's marine resources. NOAA would initiate a more detailed analyses of existing resource management agencies and programs before it could clearly determine what regulations are necessary to manage and protect an ecosystem environment.

While authorities exist to protect the humpback whale and its habitat (water quality and physical alteration of the seabed), the Sanctuary would supplement such authorities under this alternative to provide enhanced protection for the entire marine ecosystem, as well as for cultural, historical, recreational, and aesthetic resources. The Sanctuary would provide comprehensive review and management of activities in the Sanctuary to ensure that the policies and objectives of the ORMP, the HINMSA, and the NMSA can be achieved for all Sanctuary resources, based on an ecosystem approach.

ii. Impact to Resources

This regulatory alternative is based upon an expanded definition of Sanctuary resources that includes other natural marine resources (sea turtles, seabirds, other marine mammals, coral reef assemblages, fish), Native Hawaiian cultural and historical sites, shipwrecks, and other historical resources. Increased protection will ensue to, not only the humpback whale and its habitat, but all other living and non-living resources of the Sanctuary. Regulations would be those necessary and reasonable to protect and manage all resources and qualities of the Sanctuary. The Sanctuary will have the ability to closely review, condition, and if necessary prohibit activities that may potentially affect any Sanctuary resources. Since the scope of Sanctuary resources is expanded, the Sanctuary would look at activities that may affect resources other than the humpback whale. The Sanctuary would work with existing Federal, State, and county agencies, if possible, to coordinate and seek to use existing permit review procedures and not duplicate ongoing efforts. However, the Sanctuary would have greater authority to modify or stop activities that harm any Sanctuary resource or quality. Enforcement capabilities, authorized under the NMSA, will also add a greater deterrence value associated with the potential for increased penalties. The additional efforts of the Sanctuary Program to focus on the non-regulatory aspects associated with coordination, education, interpretation, research, and long-term monitoring would be expanded to address all Sanctuary resources.

iii. Impact to Users

Regulations protecting and managing an ecosystem-based Sanctuary could result in some adverse impacts to users. In general, however, ecosystem-based sanctuaries regulate only a narrow range of activities with minimal impact to users. Under this regulatory alternative, the Sanctuary would regulate activities from an ecosystem perspective. The Sanctuary may require changes to proposed activities (e.g., conduct the activity to minimize impacts to coral reefs or relocate the activity away from a particularly sensitive resource area) that may lead to additional economic burdens on the applicant. If a proposed activity is determined to adversely impact Sanctuary resources, it may not be allowed to occur in the Sanctuary. Since the scope of Sanctuary resource in this alternative would have been expanded to include other living and non-living marine resources (cultural, historical, other natural resources), the Sanctuary would more closely scrutinize activities that hold the potential to impact these other resources. For example, with regard to discharge activities, the Sanctuary would be looking at potential impacts on coral reefs, algae, plankton, and other components of the ecosystem. Thus, there is a greater likelihood that a particular activity may affect a Sanctuary resource. NOAA will work closely with Federal, State, and county agencies to identify specific activities known to affect various components of the marine environment so that the permit review and approval procedure can be streamlined and occur to the extent practicable within existing permit review processes. This alternative does not necessarily require more stringent standards or independent Sanctuary permits, however, the Sanctuary may recommend that certain activities be modified to protect a broader range of Sanctuary resources. There may be a greater socio-economic impact on persons unlawfully conducting prohibited activities because Sanctuary civil penalties could be higher than other Federal and State penalties.

iv. Conclusions

It is premature to determine at this time what other marine resources should be included in the Sanctuary, or what regulatory authorities might be required to protect and manage those resources. The Sanctuary has not fully assessed or determined whether other marine resources and ecosystems in Hawaii are nationally significant and should be included as Sanctuary resources. Rather, the Sanctuary has developed a process for the consideration of other resources to be included at a future date (see discussion on alternative D.1.a below), with adequate study, review, and public participation. If NOAA/SRD determines that the Sanctuary should be expanded to

include other resources, it may issue a supplemental EIS/MP and proposed regulations specifically identifying the resources proposed to be included as Sanctuary resources and activities of concern to provide for comprehensive management and protection for all Sanctuary resources.

3. Management Alternatives

This section examines different elements of a management program as identified by the Draft Management Plan, including the scope of the resources addressed by the Sanctuary, and the Sanctuary management and administrative framework. To a large degree, the alternatives described below are dependent on which Sanctuary boundary is finally selected (i.e., both the administration and management of the Sanctuary will differ if the Sanctuary includes only the Maui County area, or waters surrounding all four counties and Kahoolawe.).

a. Scope of Resource Coverage

Although the HINMSA identifies humpback whales and their habitat as the Sanctuary's resources, it allows for the identification of other marine resources of national significance for possible inclusion in the Sanctuary's management regime, opening the consideration of a multi-species or ecosystem Sanctuary.

i. (Status quo) Humpback Whale and Its Habitat, With Other Resources Identified at a Later Date for Possible Inclusion

**** PREFERRED ALTERNATIVE ****

This alternative would implement the primary purpose of the HINMSA to focus attention on the humpback whale and its habitat as Sanctuary resources. Habitat increases the scope of management concern, but it does so in a way which links the concerns of the habitat to the needs of humpback whales. For example, sediment plumes from non-point sources of pollution may be smothering coral reefs in a bay, but if there is no linkage to the protection of humpback whales, it would at this point in time not be a priority Sanctuary issue of concern. If that same sediment plume were found to be resulting in the degradation of habitat and contaminants were being absorbed by the whales or causing whale avoidance of the area, then sedimentation would be an issue of concern requiring some remedial action. To focus the Sanctuary Management Program on these resources satisfies the primary purpose of the Sanctuary as well as the concerns of many Hawaii resource users to minimize the amount of management authority the Federal Government would exercise in State waters. It could take many years before all humpback whale management activities are enhanced to the degree that people feel that real progress has been made in furthering the goals of humpback whale protection.

The Act finds that:

"The marine sanctuary designated for the conservation and management of humpback whales could be expanded to include other marine resources of national significance which are determined to exist within the sanctuary" [Section 2302(16)];

and requires NOAA:

"to provide for the identification of marine resources and ecosystems of national significance for possible inclusion in the sanctuary designated by (the HINMSA)" [Sec. 2304(b)(4)].

In order to fulfill this requirement of the HINMSA and to meet the concerns of the State of Hawaii and many marine resource users, a special process which resembles the current site

selection process for the designation of National Marine Sanctuaries has been included in the Final Management Plan. This process permits the full consideration of all species put forward through the identification process, allows public and special interest input and deliberation in addition to the advice provided by the SAC. It also provides the State with the opportunity for full review to determine if the inclusion of additional resources in State waters is in the State's interest.

The task of keeping marine ecosystems healthy is costly. Better science and information gathering is necessary. Above all, the cooperation among all levels of government, the necessary input and support from a broad constituency, and the additional financial and technical assistance that can be brought to bear on comprehensive management may be the only way to solve our future problems in the coastal and marine environment. This alternative then provides the time and the process to accomplish this goal of looking at the marine environment as an integrated whole, and not simply as a collection of individual resources and issues.

ii. Identify and Designate Other Resources of National Significance for Inclusion in the Sanctuary Now

Throughout the EIS/MP scoping and public participation process, a number of individuals expressed the desire to see the Sanctuary include multiple resources and that it become comprehensive in scope and work jointly with State authorities to address some of the water quality problems affecting other marine resources. The Sanctuary solicited comments on this issue because of the HINMSA's requirement to investigate other marine resources for possible inclusion in the Sanctuary, but also to assess public expectations of the Sanctuary. In the management of the other marine sanctuaries, SRD believes that managing a sanctuary on a comprehensive, ecosystem basis provides the best type of long-term protection for special marine areas. However, expanding the list of Sanctuary resources also expands the potential management effects on users. The process of Sanctuary selection and designation usually takes a considerable amount of time and resources to conduct studies and ensure full public participation in the selection and designation process.

There is authority to identify and designate other resources of national significance and propose those resources to the public for inclusion prior to issuance of the Final Management Plan and Implementing Regulations. Through public input, many (if not all) resources within the Hawaiian Islands which could be located within the current or expanded Sanctuary boundary were mentioned. Marine turtles, endangered species, (e.g., Hawaiian monk seal), seabirds, coral reefs, and other cetaceans were some of the most frequently resources cited. Moreover, Congress found that this region has many resources of national significance and importance, and that the marine ecosystem is diverse and unique [HINMSA, Section 2302(1) and 2302(4)].

Including these other resources would potentially require different and additional types of management strategies and regulations to ensure the comprehensive protection and management of the resources and to enable the consideration of those resource's requirements (see Regulatory alternative "6" above). Additional research and information gathering is necessary; including an analysis of whether the resources meet "national significance" criteria before final decisions are made.

b. Sanctuary Administration**i. Management Responsibility****1) NOAA/SRD****** PREFERRED ALTERNATIVE ****

The preferred management alternative is to identify a Sanctuary Manager, who would be a NOAA employee of SRD, as soon as possible following issuance of the Final EIS/MP. The Sanctuary has had an on-site Program Specialist to handle day-to-day activities and outreach since 1991. The SRD Chief and the Pacific Regional Manager (Silver Spring, MD) have been handling policy and administrative matters thus far. The initial proposed staffing of the SRD Field Office would consist (in addition to the Manager) of an administrative assistant and a research or an education/interpretation coordinator. Hiring a Sanctuary Manager immediately upon completion the Final EIS/MP would assist in establishing Sanctuary visibility at an early phase and continue efforts previously performed by the On-site Program Specialist.

Under this alternative, an independent management and administrative system for the Sanctuary would be established and housed in the NOAA-owned headquarters facility located in Kihei, Maui. A satellite office is located in Honolulu. Depending in part on the size and configuration of the final Sanctuary boundary, seasonal satellite offices (or the headquarters) could be opened on other islands. Due to numerous points of access to the Sanctuary, a centralized Sanctuary headquarters/information center may not provide optimum access to the variety of commercial and recreational Sanctuary users. The need for and timing of "satellite" information centers would be determined as development of the Sanctuary programs increased.

A variety of Sanctuary program activities would be phased in, with the initial focus on research and education/interpretation. The Sanctuary headquarters would coordinate directly and actively with other Federal and State agencies in the implementation of the management plan. The Sanctuary Manager and staff, with the advice of the already established SAC would begin the process of informing the public and regional officials of the Sanctuary's mandate, regulations, and research and education programs.

2) Other Federal Agencies

A Federal agency with delegated responsibility for managing Sanctuary resources which is headquartered in the vicinity of the site would be given the role and responsibility of administering the HIHWNMS. NMFS's Pacific Area Office in Honolulu is the most likely candidate to manage the Sanctuary under this option since they already have primary responsibility for managing humpback whales under the MMPA and the ESA, and have ongoing research, education, and management programs for humpback whales in Hawaii. This would also serve to place the responsibility for Sanctuary administration as well as regulatory enforcement all under one agency. Other candidates could be the U.S. Fish and Wildlife Service or the National Park Service of the Department of the Interior which have facilities and infrastructure available on all the MHI.

3) State Oversight

A State agency, such as DLNR, which establishes, manages and regulates Marine Life Conservation Districts and other State facilities, could serve as the on-site manager and enforcement in cases where State waters are involved. In this instance, the State may handle all responsibilities of on-site management and enforcement with the exception of duties assigned by Federal law to Federal agencies, or (through agreement with Federal agencies) handle certain or all of the related Federal responsibilities. This is the option SRD used in the past for management of two Florida Keys sites and for Fagatele Bay, American Samoa. Over the years, however, SRD

began employing Sanctuary managers as Federal employees. Recent full term employee limitations in the Federal workforce may make this a viable option.

4) Combination of Options

This option would rely on the expertise of existing agencies, organizations, and programs to implement the Sanctuary management agenda. Education, research, and/or enforcement would be contracted out or delegated to other agencies. This alternative may prove to be appropriate as the priorities developed in the yearly action plan dictate. Therefore, consideration of this option will be considered on a yearly basis with input from the SAC.

ii. Management Implementation Period

Humpback whales are seasonal and migratory visitors to Hawaii. Many people inquired if the Sanctuary would be in place only six months of the year (December - May) when the whales are present (e.g., the current NMFS enforcement program is a seasonal activity). Concerns were expressed over efficiency and cost of year-round program as well as the need. Consequently two alternatives are under consideration.

1) "Seasonal" (December - May)

This alternative would coincide with the presence of the whales in Hawaii. All aspects of resource protection and management (research, education, monitoring, enforcement) would take place only during this time frame. Programs for education and some aspects of research and monitoring would be limited in their potential during this period as not all such activities are directly related to the physical presence of the whales. This management period would favor the Sanctuary being run by the headquarters office with members of the SRD present for six months of the year, or through contractual arrangements made with other institutions or agencies. This approach would likely limit any efforts for a Sanctuary-sponsored visitor's center, but linkages with existing facilities could be established.

2) "Year-round"

**** PREFERRED ALTERNATIVE ****

Notwithstanding the half-year presence of the humpback whales in Hawaiian waters, there are many activities envisioned by the Sanctuary Program which require year-round effort and presence. Even though the whales are not continually present, efforts to manage and protect their habitat must continue on year-around basis. There are many types of human activities that could affect the whale's habitat (i.e., near-shore or in-water construction projects, water quality and oil spills) that may impact whether or not the whales will return to previously used areas. Continual monitoring of projects is necessary to ensure that humpback whale habitat is maintained and preserved, despite the whales' physical absence. Also, efforts to sponsor and coordinate research, long-term monitoring, and education programs, and to perform administration tasks such as administering the SAC and its working groups and coordinating with other agencies, institutions, and interest groups, are just some of the many reasons for having a year-round presence. The HIHWNMS currently employs a full-time on-site program specialist in Maui and has contracted staff on Oahu and Kauai. These staff are continually busy responding to public information needs, planning activities and events, and developing research and education programs for upcoming whale seasons. During the formative years of program development, there is going to be a significant amount of work on a year-round basis including the need to manage the process for considering other resources of national significance.

iii. Enforcement**1) Status quo**

An internal Memorandum of Agreement exists between NMFS and the National Ocean Service, which oversees the National Marine Sanctuary Program, concerning the enforcement of laws within National Marine Sanctuaries (January 1992; and supplement drafted in March 1993). NMFS's Office of Enforcement (NMFS-OE) has the responsibility for enforcement within designated sanctuaries. This measure was developed to achieve greater economy by eliminating duplication of effort in the oversight and administration of NOAA enforcement efforts. While the mechanisms are in place to streamline operation and minimize costs by avoiding duplicate enforcement systems, the most important element is that the decision to prosecute any alleged violation of regulations promulgated under the NMSA rests the Sanctuary, the NMFS-OE, and NOAA's Office of the Assistant General Counsel for Enforcement and Litigation.

2) Enhanced Enforcement**** PREFERRED ALTERNATIVE ****

The preferred enforcement alternative enhances and complements the existing enforcement arrangement that SRD has with NMFS-OE, and would seek to re-establish the agreement that NMFS-OE had with the State of Hawaii (Marine Patrol and DLNR-Division of Conservation and Resource Enforcement) and Coast Guard for Federally-protected species and fisheries regulations. The Sanctuary would provide assistance and support for NMFS-OE to enforce Sanctuary regulations and to support the enforcement efforts by those State agencies that are deputized to enforce pertinent regulations. The Sanctuary would seek to expand the deputized enforcement agreement between NMFS-OE and the State to include the NMSA and Sanctuary regulations. Enhanced efforts could include:

- **Increased interpretive enforcement presence:** interpretive enforcement would place a greater emphasis on education and outreach as a tool to reduce harassment and approach violations instead of simply issuing citations. Additional funding through the NMSA would be provided to ensure NMFS and State agencies had sufficient resources (adequate patrol vessels; camera and radio equipment) to accomplish surveillance and interpretive enforcement.
- **NMSA resources for increased monitoring and enforcement by State agencies (DOH and DLNR)** to increase compliance with relevant permits and other authorizations which protect humpback whale habitat.
- **Support for enhanced training in law and procedures for enforcement personnel by supporting attendance at the NMFS Training Center in Georgia and local on-site training.**
- **Use of a voluntary citizen monitoring program, as exemplified by DLNR's Volunteer Conservation and Resources Enforcement Officer Program, in cooperation with NMFS and State enrichment officials.**

The philosophy of enforcement has been described earlier in Part I. The impacts of enforcement are described in Part IV and the conduct of enforcement is described in Part V.

**PART IV: POTENTIAL ENVIRONMENTAL AND SOCIOECONOMIC
CONSEQUENCES ASSOCIATED WITH ALTERNATIVE COURSES OF
ACTION**

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A. INTRODUCTION

In selecting the appropriate boundary, regulatory and management alternatives for the Hawaiian Islands Humpback Whale National Marine Sanctuary, NOAA evaluated the potential environmental and socioeconomic consequences of each alternative on Sanctuary users and resources. This section discusses the consequences of the status quo as well as the Sanctuary preferred alternatives. A summary of the environmental impacts are described in Table IV-1 and the socioeconomic impacts are described in Table IV-2.

B. BOUNDARY ALTERNATIVES

1. Introduction

All the boundary alternatives presented in this document would allow some level of coordinated and comprehensive conservation and management and provide protection for humpback whales and their Hawaiian habitat. The positive and negative socioeconomic effects of any boundary decision will depend in large part on which regulatory option is selected for the Sanctuary. Clearly, more restrictive regulatory regimes can be expected to have greater impacts than less restrictive regimes, and such effects will increase with a larger Sanctuary boundary. The main socioeconomic consideration in comparing a Sanctuary boundary around Maui County and a boundary including the waters around all or portions of the main Hawaiian Islands is that in the expanded options, any socioeconomic effects will spread out throughout the expanded area.

With the Congressionally-designated Maui County option, benefits will only accrue largely to Maui County: Maui will become the destination for viewing humpback whales within a "Sanctuary"; research and education programs and Sanctuary funds will be directed to Maui County to address Sanctuary needs; monies for harbor signage, coral reef monitoring and water quality monitoring programs; press articles dealing with national marine sanctuaries will focus on Maui County. Likewise, any costs associated with the Sanctuary will be borne primarily by the Maui County residents: individuals or companies may receive violation notices for harassment of whales; greater attention and scrutiny may be required of proposed projects which could degrade whale habitat. From the perspective of the Statewide boundary option, all the counties will presumably be affected in relation to the area of the Sanctuary around each island, population, visitor use, whale use, and other relevant factors.

TABLE IV-1: Summary of Potential Environmental Impacts Associated with Alternatives

Alternatives →	Reg. Alt. 1: Status Quo-Use Existing Regs	Reg. Alt. 2: Incorporate Existing NMFS Whale Approach Regs	Reg. Alt. 3: (Preferred Alternative) Incorporate Regs to Protect Whales and Habitat	Reg. Alt. 4: Comprehensive Regs to Protect Whales and Habitat	Reg. Alt. 5: Proactive Humpback Whale Protection Philosophy	Reg. Alt. 6: Regulation to Protect Added Resources	Boundary Alt. 1: Status Quo-Maui County and Part of Kauai	Boundary Alt. 2: Highest Reported Concentrations	Boundary Alt. 3: (Preferred Alternative) Expand Congressional Boundary to Include Big Island, Eastern Kauai, and Parts of Oahu	Boundary Alt. 4: 100-Fathom Isobath Statewide	Boundary Alt. 5: 1000-Fathom Isobath Statewide
Resources ↓											
Humpback Whales	○	+	+	+	+	+	<p>Potential environmental impacts associated with individual boundary alternatives will depend upon which regulatory alternative is applied. More restrictive regulations (i.e., regulatory alternative 5) may have greater environmental impacts applied over larger areas (boundaries 3-4) as compared to the Congressionally-designated area (boundary 1). All potential environmental impacts associated with any of the regulatory alternatives are expected to be positive.</p>				
Humpback Whale Habitat	○	○	+	+	+	+					
Water Quality	○	○	⊙	+	+	+					
Seafloor/Benthos	○	○	⊙	+	+	+					
Marine Mammals	○	○	○	○	⊙	+					
Historical/Cultural	○	○	○	○	○	+					
Seabirds	○	○	○	○	⊙	+					
Sea Turtles	○	○	○	○	⊙	+					
Fish	○	○	○	⊙	⊙	+					
Coral Reefs	○	○	○	⊙	⊙	+					

Key of Symbols:
 + = Significant beneficial environmental impacts
 ⊙ = Moderate beneficial environmental impacts
 ○ = Status quo or minimal environmental impacts

TABLE IV-2: Summary of Potential Negative Socio-Economic Impacts Associated with Alternatives

Alternatives →	Reg. Alt. 1: Status Quo- Use Existing Regs	Reg. Alt. 2: Incorporate Existing NMFS Whale Approach Regs	Reg. Alt. 3: (Preferred Alternative) Incorporate Regs to Protect Whales and Habitat	Reg. Alt. 4: Comprehensive Regs to Protect Whales and Habitat	Reg. Alt. 5: Proactive Humpback Whale Protection Philosophy	Reg. Alt. 6: Regulation to Protect Added Resources	Boundary Alt. 1: Status Quo- Maui County and Part of Kauai	Boundary Alt. 2: Highest Reported Concentrations	Boundary Alt. 3: (Preferred Alternative) Expand Congressional Boundary to Include Big Island, Eastern Kauai, and Parts of Oahu	Boundary Alt. 4: 100- Fathom Isobath Statewide	Boundary Alt. 5: 1000- Fathom Isobath Statewide
Sanctuary Users ↓											
Commercial Transport	○	○	○	○	+	○	Potential socio-economic impacts associated with individual boundary alternatives will depend upon which regulatory alternative is applied. More restrictive regulations (i.e., regulatory alternative 5) may have greater socio-economic impacts applied over larger areas (boundaries 3-4) as compared to the Congressionally-designated area (boundary 1). There are few anticipated socio-economic impacts associated with regulatory alternatives 1, 2, and 3 regardless of the boundary since there are no new regulatory prohibitions proposed by the Sanctuary.				
Recreational Boating	○	○	○	○	+	○					
Tour Boats	○	○	○	○	+	○					
Diving	○	○	○	○	⊙	○					
Thrill Craft	○	○	○	○	+	⊙					
Fishponds	○	○	○	○	⊙	○					
Military	○	○	○	○	+	○					
Tourism	○	○	○	○	⊙	○					
Research	○	○	○	○	⊙	○					
Education	○	○	○	○	○	○					
Commercial Fishing	○	○	○	○	⊙	○					
Recreational Fishing	○	○	○	○	⊙	○					
Charter Fishing	○	○	○	○	⊙	○					
Aquarium Industry	○	○	○	○	+	⊙					
Surfing/ Swimming	○	○	○	○	○	○					
Native Hawaiian	○	○	○	○	⊙	○					
Whale Watching	○	○	○	○	+	○					
Agriculture	○	○	○	○	⊙	+	⊙				
Shoreline Development	○	○	○	○	⊙	+	⊙				
Industrial/ Municipal/ Discharges	○	○	○	○	⊙	+	⊙				

Key of Symbols:
 + = Significant potential for negative socio-economic impacts
 ⊙ = Moderate potential for negative socio-economic impacts
 ○ = Minimal or no negative potential for socio-economic impacts

2. Boundary Alternatives

- a. Boundary Alternative (1): Status Quo - boundary as designated by Congress (100-fathom isobath around Maui County, excluding Kahoolawe waters, and a small portion off Kauai)

The Congressionally-designated boundary is fully discussed in Part III(B)(1)(b), and is shown in Figure III-2. This is the smallest boundary alternative which was considered, and encompasses waters within the 100-fathom isobath around Maui, Lanai and Molokai, including Penguin Bank, and the deepwater Pailolo Channel. A small portion adjacent to the Kilauea National Wildlife Refuge, on Kauai. The waters around Kahoolawe were not included in this boundary alternative in the Draft or Final EIS/MP; the HINMSA mandated their inclusion as of January 1, 1996, unless the Secretary of Commerce certified these waters as unsuitable for inclusion in the Sanctuary. Such a certification was made in December 1995.

The area included in this boundary alternative is heavily used by humpback whales for breeding, calving and nursing and comprises Hawaii's largest area of water less than 100-fathoms deep. The waters off Kilauea Point add an excellent opportunity for humpback whale education and interpretation at the U.S. Fish and Wildlife Service Center, Kilauea Point National Wildlife Refuge, on Kauai Island.

This boundary alternative provides additional protection to humpback whales and their habitat in the specified area through supplemental resource protection, research and long-term monitoring, education, outreach, coordination and enforcement activities. All Sanctuary management efforts would concentrate on the Maui County and Kilauea Point areas, thus benefiting the whales and this specific component of their Hawaiian habitat. Other marine resources in this area may incidentally experience benefits associated with the additional protection and public awareness programs for the humpback whales and their habitat. However, this boundary alternative does not effectively provide for comprehensive or coordinated management throughout the humpback whale's main Hawaiian Island range. Humpback whales inhabit and transit areas throughout all the main Hawaiian Islands, and this alternative will not effectively protect them while they are in waters around Kauai, Niihau, Oahu and the Big Island. Moreover, this boundary alternative will limit the Sanctuary's ability to provide supplemental research, education and enforcement in these other whale habitats around the State.

This boundary alternative, taken in conjunction with the preferred regulatory alternative (3), would focus Sanctuary regulations and corresponding enforcement mechanisms on Maui County and the small area off Kilauea Point. Since regulatory alternative (3) does not add any new substantive regulatory prohibitions, permit requirements or approvals than those already required, implementation of this boundary alternative is not anticipated to result in significant adverse impacts to Maui County's economy or to marine user groups in this area. Any research, education, coordination or enforcement initiated as a result of the Sanctuary will ultimately lead to a better understood marine environment and will benefit both human and non-human users of the area. Any impacts resulting from establishing the Sanctuary, positive (e.g., education, research, monitoring, public participation, enforcement and coordination) or negative (e.g., civil penalties), would be borne exclusively by the residents of Maui County and the small area off Kilauea Point, Kauai.

b. Boundary Alternative (2): Areas of highest reported concentrations of humpback whales.

This boundary alternative is based on a variation of boundary alternatives (1) and (3). It is fully described in Part III(B)(2)(c), and shown in Figure III-3. It was developed partially in response to public comments at scoping meetings and comments received on the DEIS/MP calling for expansion of the Sanctuary to include areas of high whale concentration, and particularly cow-calf areas, near islands other than those in Maui County. The boundaries were drawn based on humpback whale distribution data (Nitta and Naughton, 1989; Forestell and Brown 1992; Mobley et al. 1993).

This boundary alternative would focus Sanctuary management on those discrete areas within the 100-fathom isobath throughout the Hawaiian Islands documented to have higher humpback whale concentrations than other parts of the state. However, this alternative does not take into account the possibility of changes in whale distribution and habitat preference over time because of social, environmental or human influences. Moreover, this alternative does not consider the movement of whales between these areas of higher whale concentration. Overall, this boundary alternative does not provide uniform and comprehensive protection of humpback whales throughout their habitat in the Hawaiian Islands. Resource protection, research, long-term monitoring, education, outreach and management programs would be conducted on a piecemeal basis in the areas included in the boundary.

In general, the environmental impacts of this boundary alternative would be positive for a larger portion of the humpback whale's Hawaiian habitat, as Sanctuary programs would be targeted at areas with a high concentration of humpback whales. Because of this larger focus area for Sanctuary programs, the importance of coordination and cooperation between the Sanctuary management and various state and county agencies, as well as academic and private organizations, would increase. The importance of these cooperative efforts would be heightened, as areas of high humpback whale utilization are subject to potential shifts in or abandonment of habitat, due to human use pressures. This boundary alternative does not allow for future expansion or changes in humpback whale distribution.

This boundary alternative, taken in conjunction with the preferred regulatory alternative (3), would focus Sanctuary regulations and corresponding enforcement mechanisms on discrete areas on Niihau, Kauai, Molokai, Lanai, Maui and Hawaii. Since regulatory alternative (3) does not add any new regulatory prohibitions, permit requirements or approvals than those already required, implementation of this boundary alternative is not anticipated to result in significant adverse impacts to the local economy or to marine user groups in this area. Any research, education, coordination or enforcement as a result of the Sanctuary will ultimately lead to a better understood marine environment and will benefit both human and non-human users of the area. All impacts, positive or negative, will be borne exclusively by the residents adjacent to or who use these waters.

This alternative expands the boundary scope beyond alternative (1) to include specific areas of the main Hawaiian Islands outside Maui County known to have high concentrations of humpback whales. Taken in conjunction with the preferred regulatory alternative (3) which does not add any new substantive regulatory prohibitions, permit requirements or approvals beyond those already required, implementation of this boundary alternative is not anticipated to result in adverse socioeconomic impacts to the economy or to marine users within this boundary. Any research, education, coordination or enforcement initiated as a result of the Sanctuary will ultimately lead to a better understood marine environment and will benefit both human and non-human users of the area. Any impacts resulting from establishing the Sanctuary, positive (e.g., education, research, monitoring, public participation, enforcement and coordination) or negative (e.g., civil penalties), would affect this broader area.