

**FEDERAL  
OCEAN AND COASTAL  
ACTIVITIES REPORT**

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## INTRODUCTION

Congress passed the Oceans Act of 2000, which established the 16-member Commission on Ocean Policy, and charged the Commission with developing a coherent, comprehensive, and long-range national policy for exploration, protection, and use of ocean and coastal resources. The Act seeks to achieve national goals and objectives in the areas of education and research, economic development, and public safety.

In addition to establishing a Commission, the Act states: "Beginning in September 2001, the President shall transmit to the Congress biennially a report that includes a detailed listing of all existing federal programs related to ocean and coastal activities, including a description of each program, the current funding for the program, linkages to other federal programs, and a projection of the funding level for the program for each of the next 5 fiscal years beginning after the report is submitted." Pub. L. No. 106-256, section 5. To provide this report, the Office of Management and Budget gathered data from all agencies involved in ocean issues for the biennial report. Two types of information were requested and are presented in this report: (1) a brief description of agency/subagency ocean programs; and (2) a budget forecast for each program including the actual budget for FY 2002, the enacted budget for FY 2003, the President's budget request for FY 2004, and budget projections for the next 4 fiscal years. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.

**Estimated Federal Funding for Coastal and Oceans-Related Activities**  
(millions of dollars)\*

Agency	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>United States Department of Agriculture</b>	340.6	566.6	661.1	661.1	661.1	661.1	661.1
<b>Department of Commerce</b>	1,582.9	1,821.0	1,594.2	1,644.8	1,653.3	1,643.5	1,606.5
<b>Department of Defense</b>	1,452.2	1,521.2	1,383.0	1,385.1	1,389.6	1,397.7	1,405.5
<b>Department of Energy</b>	13.9	21.3	12.8	12.8	12.8	12.8	12.8
<b>Environmental Protection Agency</b>	1,067.3	1,082.3	827.1	827.1	827.1	827.1	827.1
<b>Department of Health and Human Services</b>	3.4	3.4	6.4	6.4	6.4	6.4	6.4
<b>Department of Homeland Security</b>	1,940.0	2,417.5	2,620.5	2,683.5	2,743.5	2,809.5	2,873.5
<b>Department of the Interior</b>	404.1	422.9	428.8	428.7	428.7	428.7	428.7
<b>Marine Mammal Commission</b>	2.0	3.0	1.9	1.9	1.9	1.9	1.9
<b>National Aeronautic and Space Administration</b>	69.8	86.0	98.5	88.4	95.8	85.4	74.5
<b>National Science Foundation</b>	314.8	340.9	341.4	337.6	345.7	353.9	362.3
<b>Smithsonian Institution</b>	0.6	0.6	0.6	0.6	0.6	0.6	0.6
<b>Department of State</b>	86.5	108.7	89.6	84.1	81.8	72.9	61.3
<b>Department of Transportation</b>	257.6	259.3	235.0	235.0	235.0	235.0	235.0
<b>Department of Treasury</b>	15.1	22.0	27.8	27.8	27.8	27.8	27.8
<b>TOTAL</b>	<b>\$7,550.7</b>	<b>\$8,676.7</b>	<b>\$8,328.6</b>	<b>\$8,424.7</b>	<b>\$8,510.9</b>	<b>\$8,564.1</b>	<b>\$8,587.3</b>

\* Unless specified by the agencies, estimates for FY 2005 to FY 2008 were assumed equal to the President's 2004 Budget Request. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.

## DEPARTMENT OF AGRICULTURE

Through various programs, the U.S. Department of Agriculture (USDA) affects ocean and coastal programs. In particular, USDA programs support the Clean Water Action Plan, provide agricultural support to encourage conservation of wetlands, and work to improve water quality.

### Agricultural Research Service (ARS)

ARS, USDA's primary in-house science agency supports Coastal Waters research via the following:

- *Pfiesteria* Research: ARS research provides a better understanding of the effect of agricultural nutrients on Harmful Algal Blooms and toxic microbial outbreaks; develops methods for detection of *Pfiesteria* and other toxic microbial agents, the toxins they produce, and their mode of action on fish; determines the effects of toxic algal blooms on aquaculture; and determines whether fish or shellfish affected with *Pfiesteria* are safe for human consumption, rendering, or other processing for use in livestock and poultry feed. ARS research also develops agricultural practices and water treatment systems at the farm and watershed scale to reduce the potential occurrence of *Pfiesteria*-related problems in surface waters. Cooperating federal agencies in this research include the U.S. Geological Survey (USGS) and the Department of Commerce.
- Hypoxia and Other Harmful Algal Blooms Research: Integrated research and demonstration projects are conducted cooperatively between ARS and USDA-Cooperative State Research, Education, and Extension Service (CSREES) scientists with assistance from USDA's Natural Resources Conservation Service (NRCS), Economic Research Service (ERS), and National Agricultural Statistics Service (NASS) to develop: alternative options and strategies to reduce nutrient use and availability for transport to surface waters; techniques for estimating soil nutrient status; and agricultural production systems that are both economically sound and environmentally benign. ARS also contributes to the development of improved agricultural drainage systems and management practices for the Mississippi River Basin.
- Everglades Restoration Research (South Florida): ARS conducts research in cooperation with USDA's Natural Resources Conservation Service (NRCS), the South Florida Water Management District, the Army Corps of Engineers, the Environmental Protection Agency, and other state agencies on the restoration of the Everglades National Park and South Florida ecosystem. ARS researchers have recently found sugarcane varieties that can withstand higher water tables and are beginning to demonstrate water quality improvements. ARS researchers also investigate alternative control measures for melaleuca and other invasive species in South Florida. ARS receives foreign biological agents from Australia, where control agents are being found in natural habitats. ARS also evaluates and develops models to predict the effects of high water tables on crop response, soil-crop nutrient availability, environmental impacts, habitat management, and economic factors, all of which are key factors in the Everglades restoration efforts. Finally, ARS focuses on developing a comprehensive water management model to define water requirements and the risk of

flooding in agricultural areas based on proposed changes in the water delivery system in South Florida.

- Marine Aquaculture: ARS research programs directly related to marine aquaculture include: developing aquaculture and livestock feed supplements from marine fish processing byproducts; developing marine shrimp feeds and culture technologies; studying food safety of farm-raised marine shellfish; integrating management of fish diseases using multi-disciplinary approaches; developing culture systems for marine finfish; developing fish feeds containing less fish meal; genetic improvement of shellfish and cold water marine fish; and habitat restoration. Cooperative research programs exist with state and Land Grant universities (University of Alaska, Mississippi State University, and Delaware State University) and private research organizations (Oceanic Institute and Harbor Branch Oceanographic Institute).

### Cooperative State Research, Education, and Extension Service (CSREES)

In cooperation with its partners and customers, CSREES helps advance a global system of research, extension and higher education in the food and agricultural sciences and related environmental and human sciences to benefit people, communities, and the Nation.

The CSREES results-oriented vision is to improve economic, environmental, and social conditions in the United States and globally. These conditions include improved agricultural and other economic enterprises; safer, cleaner water, food, and air; enhanced stewardship and management of natural resources; healthier, more responsible, and more productive individuals, families, and communities; and a stable, secure, diverse, and affordable national food supply.

CSREES funds a diverse assortment of research and educational programs related to nutrient management from farm animal agriculture, including aquaculture. Key CSREES offices and programs that affect coastal and ocean resources are described below.

- Small Business Innovation Research (SBIR) Program: SBIR competitively awards grants to qualified small businesses. These grants support research proposals related to scientific problems and opportunities in agriculture that could lead to significant public benefit.

SBIR funds research which relates to controlling nutrient and chemical pollution. Previously funded projects include: development of floating permeable covers to control emissions from livestock waste lagoons; innovative non-chemical control of parasitic honey bee mites; precision land application of animal waste slurry; removal of ammonium and phosphate by struvite production associated with the treatment of animal wastewater; adsorbent process for restoration of agricultural wastewater; and treatment of septic tank effluent using a granulated peat biofilter.

- National Research Initiative (NRI): The National Research Initiative Competitive Grants Program is the office in CSREES charged with funding research on key problems of national and regional importance in biological, environmental, physical, and social sciences relevant

to agriculture, food, and the environment on a peer-reviewed, competitive basis.

- Initiative for Future Agriculture and Food Systems (IFAFS): IFAFS Administers a research, extension, and education competitive grants program working to address numerous emerging agricultural issues. Proposals that were multi-state, multi-institutional, or multi-disciplinary, or integrated agricultural research, extension, and/or education were given priority.

IFAFS awarded grants to the following pollution management projects: Optimization and Design Criteria of Vegetative Buffer Strips for Removal of Waterborne *Cryptosporidium parvum* from Animal Agricultural Runoff ; A Holistic Evaluation of Phosphorus Management Practices for Animal Agriculture; Manure Phosphorus Management for the Suwannee River Basin: A Model for Highly Leachable Soils; Enhanced Integrated Nutrient Management on Dairy Farms; Partnerships for Livestock Environmental Management Assessment Systems; Concurrent, Image-Based Precision Pest Control; Evaluation and Effectiveness of Nutrient Management Zone Determination Methods; and Remote Sensing and Precision Technologies to Optimize Nitrogen Management and Water Quality.

- Nutrient Science for Improved Watershed Management Program (NSWIM): CSREES and the National Center for Environmental Research, part of the U.S. Environmental Protection Agency, award grants for NSWIM. The agencies competitively award grants based on proposals outlining plans for integrated research and extension management of nutrients on the watershed level. NSWIM is particularly interested in research on nitrogen and phosphorus.
- Sustainable Agriculture Research and Education Program (SARE): SARE works to increase knowledge of, and help farmers and ranchers adopt, sustainable agricultural practices. To advance such knowledge nationwide, SARE administers competitive grants for research, education, and professional development, through four regional programs. These programs teach small farmers learn production techniques that reduce nutrient losses from their particular farm. These programs reduce nutrient inputs from applied fertilizers and animal operations, thereby reducing the nutrient loads reaching estuarine and marine ecosystems downstream.
- Integrated Pest Management (IPM): IPM promotes informed and judicious pesticide use, enhanced environmental stewardship, and sustainable systems. This is achieved by protection of commodities with environmentally and economically sound practices and results in abundant and diverse supplies of food and fiber products.

Pest Management Alternatives is one example of an IPM special research grant that supports projects to help farmers respond to the environmental and regulatory issues confronting agriculture. These grant funds support research into effective alternatives to pesticides that may be subject to regulatory action by the Environmental Protection Agency. New pest management tools are being developed to address critical pest problems identified by farmers and others in a crop production region and to identify new approaches to managing pests without some of the most widely used pesticides. Where effective alternative tactics have

been developed, they are widely and rapidly implemented by farmers. These research grant funds are distributed on a competitive basis to all eligible research institutions through the Pest Management Alternatives Program or PMAP.

### Natural Resources Conservation Service (NRCS)

NRCS's conservation programs are developed for many purposes, including conservation of soil, improvement of water quality and quantity, conservation of habitat, and enhancement of the health of natural resources, primarily on private lands. Programs, including Conservation Technical Assistance, are provided to landowners on a voluntary basis. Although improving ocean resource health is not the primary purpose for NRCS programs, benefits to ocean resources are often realized, including benefits to aquatic wildlife, habitat restoration and water quality enhancement.

- Conservation Operations -- Conservation Technical Assistance (CTA): NRCS, working in partnership with local conservation districts and others, is a major provider of technical assistance. CTA is based on effective, science-based technology. Assistance is provided to land users voluntarily applying conservation and to those who must comply with local or state laws and regulations. CTA helps landowners and land users make informed decisions about how to improve soil and water quality, improve and conserve wetlands, enhance fish and wildlife habitat, and reduce upstream flooding. Land-based conservation practices applied through the CTA program provide off-site benefits to near-shore ocean habitats, including coral reef ecosystems, by reducing sediment and nutrient loading into receiving water bodies.

A significant proportion of CTA funds are used to assist farmers in the development of comprehensive nutrient management plans. These plans are intended to reduce animal waste runoff to water bodies through the development and implementation of practices related to the handling and storing of animal manure and the application of the manure on land. The process of developing such management plans also encourages landowners to assess and address the condition of all natural resources on their property.

- Environmental Quality Incentives Program (EQIP): EQIP is a voluntary conservation program that promotes agricultural production and environmental quality as compatible national goals. Through EQIP, farmers and ranchers may receive assistance to install or implement structural and management conservation practices on eligible agricultural land. Producers engaged in livestock or crop production on eligible land may apply for the program. Eligible land includes cropland, rangeland, pasture, private non-industrial forestland, and other farm or ranch lands, as determined by the Secretary of Agriculture.

EQIP activities are carried out according to an EQIP plan of operations developed in conjunction with the producer. Practices are subject to NRCS technical standards adapted for local conditions. EQIP may pay up to 75 percent of the costs of certain conservation practices important to improving and maintaining natural resources in the area. Limited

resource farmers and beginning farmers may be eligible for up to 90 percent of the cost of conservation practices. The use of incentive payments encourage producers to adopt land management practices, such as nutrient management, manure management, integrated pest management, irrigation water management, and wildlife habitat management, or to develop a Comprehensive Nutrient Management Plan (CNMP) and components of a CNMP.

- Wetlands Reserve Program: The Wetlands Reserve Program is a voluntary program that provides assistance to eligible landowners to restore, enhance, and protect wetlands. Although this program is not an “oceans” program, restoring wetlands and associated upland buffer areas benefits the ocean waters. Once restored, wetlands filter nutrients and sediment from surface runoff that flows into ocean receiving waters.

Landowners enjoy the benefits that come from both new and improved wildlife habitat, better water quality, and biodiversity. Landowners may decide whether to use permanent or 30-year easements, or restoration cost-share agreements that generally last 10 years. In all instances landowners maintain fee title ownership and control of access to the land. Nearly 1,275,000 acres are enrolled in the program.

NRCS State Conservationists determine project selection priority within broad national guidelines.

## United States Department of Agriculture

Bureau, Account, Program	Ocean-Related Program Functions: (Percentage must sum to 100)*						Dollars in millions**							
	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>Agricultural Research Service (ARS)</b>														
Coastal Waters (Pfiesteria)	100%						1.1	1.3	1	1	1	1	1	1
Coastal Waters (Hypoxia/Other Harmful Algal Blooms)	100%						0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Everglades Restoration (South Florida)	50%	50%					4.8	5.5	5.1	5.1	5.1	5.1	5.1	7.6
Marine Aquaculture		100%					6.3	7.2	3.6	3.6	3.6	3.6	3.6	3.6
<b>CSREES</b>														
Non-Point Source (NS) Freshwater, Physical	80%		15%		5%		2	2	2	2	2	2	2	2
NS Freshwater, Chemical	60%		35%		5%		3	4	4	4	4	4	4	4
NS Estuarine Water, Physical	60%	10%	20%		10%		1	1	1	1	1	1	1	1
NS Estuarine Water, Chemical	60%		40%				1	1	1	1	1	1	1	1
NS Marine, Physical	10%		90%											
NS Marine, Chemical	60%		35%		5%									
Habitat Marine (HM), Freshwater	60%		30%		10%		2	2	2	2	2	2	2	2
HM, Estuarine	60%		30%		10%		1	1	1	1	1	1	1	1
HM, Marine	60%		30%		10%									
HM, Point	60%		40%											

*Continued from previous page*

Bureau, Account, Program	Other, not elsewhere classified	U.S. leadership and cooperative efforts with other nations	Marine science, research, technology, education	Maritime Commerce	Minerals and non-living marine resource management	Marine area and living marine resource management	Anthropogenic and natural hazards, including marine pollution	FY 2008 Budget Projection	FY 2007 Budget Projection	FY 2006 Budget Projection	FY 2005 Budget Projection	FY 2004 Budget Request	FY 2003 Enacted	FY 2002 Actual
<b>Natural Resources Conservation Service</b>														
Conservation Operations	100%							185.5	185.5	185.5	185.5	188.1	192	
Wetlands Reserve Program	100%							83.7	83.7	83.7	83.7	91.4	19	
Environmental Quality Incentives Program	100%							370.6	370.6	370.6	370.6	370.6	106.9	
<b>Department of Agriculture Totals</b>								<b>\$661.10</b>	<b>\$661.10</b>	<b>\$661.10</b>	<b>\$661.10</b>	<b>\$661.10</b>	<b>\$566.60</b>	<b>\$340.60</b>

\*The FY 2004 Budget request was used to allocate program funding across functional activities. Where programs are only partly related to oceans, only the estimated oceans-related portion of the funding should be reported here. (This portion of the funding would then be 100 percent oceans-related.)

\*\* Unless specified by the agency, estimates for FY 2005 to FY 2008 were assumed equal to the President's 2004 Budget Request. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.

## DEPARTMENT OF COMMERCE

The Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) forecasts weather and climate, manages fisheries and coastal areas, provides navigation services, and researches atmospheric and oceanic issues. NOAA's mission is to describe and predict changes in the earth's environment, and to conserve and wisely manage America's coastal and marine resources to ensure sustainable economic opportunities. NOAA's four major goals are:

- Protect, restore, and manage the use of coastal and ocean resources through ecosystem-based management.
- Understand climate variability and change to enhance society's ability to plan and respond.
- Serve society's needs for weather and water information.
- Support the Nation's commerce with information for safe, efficient, and environmentally sound transportation.

Ocean and coastal programs within NOAA include:

### National Ocean Service (NOS)

The National Ocean Service is the primary federal agency concerned with the study, preservation, and enhancement of America's coastal environment and resources. NOS acts on its mandates through the observation, measurement, assessment, and management of the Nation's coastal and ocean areas and conducts response and restoration activities to protect vital coastal resources. As a national leader for coastal stewardship, NOS promotes a wide range of research activities to create the strong science foundation required to advance the sustainable use of coastal systems. NOS provides improvements in the quality, quantity, geographic distribution, and timeliness of ocean and coastal observations. Mapping, charting, geodetic, and oceanographic activities produce marine and coastal data to increase efficiency and safety of marine commerce and support coastal resource management. NOS protects and restores coastal resources injured by releases of oil and other hazardous materials. NOS also manages marine sanctuaries and, in partnership with the coastal states, helps manage the Nation's valuable coastal zones and nationally significant estuarine reserves. The NOS mission is accomplished through three subactivities: Navigation Services; Ocean Resources Conservation and Assessment; and Ocean and Coastal Management.

### National Marine Fisheries Service (NOAA Fisheries)

Marine fisheries annually contribute billions of dollars and hundreds of thousands of jobs to the U.S. economy, yielding a valuable bounty of finfish and shellfish -- lobster, cod, shrimp, pollock, crab, scallop, tuna, and many others. Marine fisheries provide recreational opportunities for over 17 million Americans each year. NOAA Fisheries is responsible for sustaining the health and productivity of living marine resources and their habitats within 3.4 million square miles of

ocean and coastal waters, allowing U.S. citizens to reap the greatest economic and social benefits. These benefits include a continuing supply of high-quality seafood, recreational enjoyment, and a rich and diverse marine environment.

The agency manages both fisheries and federally-protected resources (e.g., whales, dolphins, sea turtles), conducts research that underpins decisions and protective regulations, and enforces fishery laws. It supports interstate and international fisheries management, fisheries and aquaculture development, seafood safety, protected species recovery, and habitat protection and restoration. The NOAA Fisheries mission encompasses three primary areas:

- Fisheries sustainability: The United States has a highly efficient fishing industry. NOAA Fisheries scientists develop new sampling methods, survey technologies, and sophisticated models to assess the status and utilization of hundreds of fish and shellfish stocks harvested in both domestic and international waters. In partnership with coastal states, territories, tribes, and regional Fishery Management Councils, NOAA Fisheries crafts management measures that rebuild stocks, prevent overfishing, reduce by-catch, support fishery-dependent local communities, and safeguard the long-term value of the Nation's seafood supply.
- Protected species recovery: Marine mammals, sea turtles, salmon stocks, sea birds, and other resources under federal protection are affected by fishing, coastal development, environmental change, and other factors. NOAA Fisheries monitors these activities, develops measures to reduce their impact, and works with other partners to conserve the habitat of protected species, both domestically and around the globe.
- Ecosystem health: Tidal marshes, coral reefs, mangroves, seagrass beds, kelp forests, and other marine habitats provide forage, shelter, and spawning sites for the Nation's fisheries and protected resources. NOAA Fisheries monitors threats to these fragile areas – sediment contamination, water diversion for industry and agriculture, sedimentation, dredging and filling – and recommends measures to offset their impact. Agency scientists are in the forefront of habitat restoration research and work closely with states and local communities to protect and restore fish habitat.

#### Office of Oceanic and Atmospheric Research (NOAA Research)

NOAA Research studies the earth system from the deep ocean to the surface of the sun, providing products and services that help to explain, and, in some cases, to predict environmental changes on local to global scales and at time scales from days to centuries. NOAA Research is integrated across the three central research themes of climate, weather and air quality, and ocean and coastal resources, reflecting the intimate connections between the land, ocean, and atmosphere.

The coupling of the oceans and atmosphere drives many natural cycles and events including weather systems, climate variability, and long-term environmental change. NOAA Research has world-class observational, modeling and technology-development capabilities used to understand ocean-atmosphere systems. These capabilities better characterize the role of the oceans in

weather and climate, and support modeling efforts to predict major coastal storms and hurricanes. The development and enhancement of sophisticated climate models is central to the work of NOAA's Climate Services. NOAA Research also provides sustained *in-situ* observations for understanding the role of the oceans in climate variability and potential change. NOAA Research is a world leader in monitoring and understanding the influence of natural and anthropogenic atmospheric constituents, including greenhouse gases and aerosols, that may affect climate or influence air quality.

NOAA Research scientists, in partnership with many of the Nation's top universities and other federal scientists, provide research-based information and predictive capabilities to assist management of U.S. territorial waters. The National Sea Grant College Program fosters scientific and economic advances in sustainable marine aquaculture, marine biotechnology, commercial and recreational fishing, aquatic nuisance species research and outreach, marine education, seafood technology, and harmful algal blooms. NOAA Research information has supported decisions regarding fisheries, coral reef, and water resource management; the biotechnological and geological potential of hydrothermal vent systems; depleted populations of exploited or protected species; and development and understanding of the physical, chemical, and biological aspects of the oceans and Great Lakes.

NOAA Research is an applied research organization that consists of 13 federal laboratories, their 11 Joint Institute research partners, the National Sea Grant College Program, the National Undersea Research Program, the Office of Global Programs, the Arctic Research Program and the Office of Ocean Exploration. These programs are enhanced by formal partnerships with academia, industry, and governmental agencies.

### National Weather Service

The National Weather Service's (NWS) mission is to provide weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters, and ocean areas for the protection of life and property and the enhancement of the national economy. It supports the infrastructure of critical ocean observations; telecommunication and data management functions; and the provision of a number of advisory, warning, and forecast services. Most NWS ocean program activities support the national observation infrastructure and related advisories, warnings and forecasts needed for the safety of life and the overall quality of the earth's environment.

Important ocean-related activities supported within the NWS are:

- Marine Observations: Continuous, real-time monitoring of ocean and atmospheric elements supports weather and climate-change prediction. The NWS operates the National Data Buoy Center, which maintains a marine observational network of 70 buoys and 55 coastal stations.
- Marine Weather Program: The NWS issues marine forecasts and warnings for the U.S. coastal, Great Lakes, offshore, and high seas waters.

- Tropical Cyclone Program: The NWS issues forecasts, watches, and warnings for tropical cyclones for the U.S. and its territories. It operates the National Hurricane Center in Miami, Florida and the Central Pacific Hurricane Center in Honolulu, Hawaii.
- Tsunami Warning Program: The NWS operates the West Coast/Alaska Tsunami Warning Center in Palmer, Alaska, and the Pacific Tsunami Warning Center in Ewa Beach, Hawaii.
- Storm Surge: The Sea, Lake, and Overland Surges from Hurricanes model provides an assessment of the storm surge expected from hurricanes hitting land along the U.S. East and Gulf coasts. The extratropical model provides expected storm surge for winter-type storms for the East, Gulf, and Northwest coasts, and Alaska's Bering Sea and Arctic coastlines.
- Numerical Modeling Activities for the Ocean and the Ocean-Atmosphere Coupled System: The NWS runs ocean data assimilation and numerical models that provide analysis and guidance forecasts to support weather and seasonal climate forecast and warning responsibilities.

#### National Environmental Satellite, Data, and Information Service

The National Environmental Satellite, Data, and Information Service (NESDIS) ensures continuous operational availability and access to environmental satellite data and information from both NOAA and non-NOAA satellites. While NESDIS's remote sensing activities have focused on short-term weather warnings and forecasts, ocean applications have grown in importance as satellite sensor technologies have improved. Looking toward the future, the National Polar Orbiting Environmental Satellite System will address an expanded suite of ocean, coastal, and terrestrial sensing needs. NESDIS also operates the Nation's oceanographic, climatic, and geophysical data centers, which provide for long-term stewardship, and access to critical environmental data and information.

NESDIS also supports research partnerships to enable the transition of remote sensing products into operational availability, and to provide guidance for the development of future spacecraft and sensors. These products and services range from worldwide operational sea ice analyses and forecasts; search and rescue of aviators, mariners, and land-based users in distress; and the detection and prediction of coral reef bleaching and harmful algal blooms. Data from multiple satellite sensors can be used to infer a variety of oceanic properties, ranging from surface wind speeds to small/large scale oceanic circulations.

NOAA's National Data Centers manage the world's largest collection of publicly available climatic, oceanographic, and geophysical data and information. They house and operate several World Data Centers for Oceanography, Marine Geology, and Geophysics, as well as the NOAA Library. These World Data Centers are components of a global network of discipline centers that facilitate the international exchange of data. The NOAA Central Library maintains an extensive, multi-disciplinary research collection of all subjects related to the NOAA mission.

## NOAA Marine and Aviation Operations

NOAA Marine and Aviation Operations' mission is to provide high-quality ship and aircraft operations and scientific support to NOAA. It operates and maintains 13 aircraft and the NOAA fleet of 16 research and survey vessels, provides guidance and assistance for outsourced ship and aircraft support, conducts the NOAA Diving Program, and administers the NOAA Commissioned Corps. The NOAA Commissioned Corps – the smallest of the Nation's seven uniformed services – operates ships and aircraft, leads mobile field parties, manages research projects, conducts diving operations, and serves in program positions throughout NOAA.

The NOAA fleet provides platforms for the collection of oceanographic and atmospheric data required to meet NOAA's environmental and scientific missions. The fleet conducts complex hydrographic surveys to support nautical charting; oceanographic and atmospheric research to study global climate change; fisheries-stock and marine-mammal assessments; and monitoring of coastal habitats and pollution trends. NOAA's aircraft collect environmental and geographic data for NOAA hurricane and other severe-weather and atmospheric research; provide aerial support for coastal and aeronautical-charting and remote-sensing projects; conduct aerial surveys to help predict flooding potential from snow melt; and provide support to NOAA's fishery-research and marine-mammal assessment programs.

## Department of Commerce

### Ocean and Coastal Activities

Agency, Bureau, Account, Program	Ocean-Related Program Functions: (Percentage must sum to 100)*						Dollars in millions**							
	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</b>														
<b>NATIONAL OCEAN SERVICE</b>														
<b>Operations, Research, and Facilities</b>														
Navigation Services														
Mapping and Charting	1%			99%			64.2	78.9	83.2	83.2	83.2	83.2	83.2	83.2
Geodesy (No significant ocean activities)							0	0	0	0	0	0	0	0
Tide and Current Data	6%			94%			20.8	19.6	19.5	19.5	19.5	19.5	19.5	19.5
Ocean Resources Conservation and Assessment														
Estuarine & Coastal Assessment														
Ocean Assessment Program	40%	42%		2%	12%	4%	90	94.3	74.5	74.5	74.5	74.5	74.5	74.5
Response and Restoration	100%						27.5	24.8	17.9	17.9	17.9	17.9	17.9	17.9
Oceanic & Coastal Research	55%	30%			15%		10.4	13.9	10.3	10.3	10.3	10.3	10.3	10.3
Coastal Ocean Science	40%	40%			15%	5%	20.4	19.8	18.6	18.6	18.6	18.6	18.6	18.6
Ocean and Coastal Management														
Coastal Management														
Coastal Zone Management Grants	40%	50%	5%		5%		68.9	68.5	68.9	68.9	68.9	68.9	68.9	68.9

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Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
Coastal Zone Management Administration	40%	50%	5%	5%				6	6.4	7.2	7.2	7.2	7.2	7.2
Great Lakes Community Grants	100%							1.2	0	0	0	0	0	0
Nonpoint Pollution Control Implementation Grants	100%							10	9.9	10	10	10	10	10
Nonpoint Pollution Control Plan Development Grants	100%							0	0	0	0	0	0	0
National Estuarine Research Reserve	20%	80%						16	16.2	16.4	16.4	16.4	16.4	16.4
Marine Protected Areas		75%			25%			2.8	3.9	3	3	3	3	3
Ocean Management														
Marine Sanctuary Program	5%	70%	5%		20%			33	33.5	35.8	35.8	35.8	35.8	35.8
<b>Procurement, Acquisition, and Facilities</b>														
NERRS Construction & Acquisition		100%						26.8	28.3	10	10	10	10	10
Marine Sanctuaries Facilities	5%	40%	5%		50%			7.2	9.9	10	10	10	10	10
Coastal and Estuarine Land Conservation Program		100%						0	37.4	0	0	0	0	0
<b>NATIONAL MARINE FISHERIES SERVICE</b>														
Fisheries Research and Management		100%						355.3	447.2	363.0	392.7	392.7	392.7	392.7
Protected Resources Research and Management		100%						142.4	144.7	160.7	172.1	172.1	172.1	172.1

Continued from previous page														
Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
Species Management and Estuarine Conservation								1	1	1	1	1	1	1
Habitat Conservation Research and Management Services	100%							54.5	61.9	46.5	48.3	48.3	48.3	48.3
Coral Reef	100%							11	11	11	11	11	11	11
Pinellas County Restoration	100%							1.5	1.5	0	0	0	0	0
Bronx River Recovery and Restoration	100%							1.5	0.9	0	0	0	0	0
Community Based Restoration	100%							8.5	8.5	8.5	8.5	8.5	8.5	8.5
Enforcement and Surveillance								41.7	22.5	50.7	53.6	53.6	53.6	53.6
Other Accounts														
Pacific Coastal Salmon Recovery and Pacific Salmon Treaty	100%							110	129.2	90	90	90	90	90
Marsh Restoration – NH	100%							1	1	0	0	0	0	0
Restoration – LA DNR	100%							1.4	1.4	0	0	0	0	0
<b>NOAA OCEANIC AND ATMOSPHERIC RESEARCH</b>														
<b>Laboratories and Joint Institutes</b>														
Aeronomy Laboratory	100%							1	1	1.1	1.1	1.1	1.1	1.1
Atlantic Oceanographic & Meteorological Laboratory	89%	11%						12.8	12.8	14.2	14.2	14.2	14.2	14.2

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Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
Air Resources Laboratory	100%							0.6	0.6	0.6	0.6	0.6	0.6	0.6
Climate Diagnostic Center	100%							0.4	0.4	0.4	0.4	0.4	0.4	0.4
Climate Monitoring and Diagnostic Laboratory	100%							1.2	1.2	1.2	1.2	1.4	1.4	1.4
Environmental Technology Laboratory		15%			85%			1.3	1.3	1.4	1.4	1.4	1.4	1.4
Forecast Systems Laboratory	100%							0.4	0.4	0.4	0.4	0.4	0.4	0.4
Geophysical Fluid Dynamics Laboratory	100%							6.7	6.7	7.3	7.3	7.3	7.3	7.3
Great Lakes Environmental Laboratory	88%	12%						8.2	8.4	8.9	8.9	8.9	8.9	8.9
Pacific Marine Environmental Laboratory	46%	23%			30%			16.2	16.2	17.5	17.5	17.5	17.5	17.5
<b>Climate &amp; Global Change Program</b>														
Climate & Global Change Program Base	100%							31.4	30.9	31.1	31.1	31.1	31.1	31.1
Variability beyond ENSO	100%							1	1	1	1	1	1	1
Climate Forcing Agents	100%							1	1	1	1	1	1	1
<b>Climate Observations &amp; Services</b>														
Climate Observations & Services	100%							5.8	7.8	13.1	13.1	13.1	13.1	13.1
Argo-Related Costs [part of ocean obs./systems]					100%			8.0	10.9	11.1	11.1	11.1	11.1	11.1

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Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>Other Climate Partnership Programs</b>														
Ice Physics Research (Thayer School of Engineering)	100%							0	0	0	0	0	0	0
International Pacific Research Center (U of HI)	100%							0.5	0.6	0	0	0	0	0
SEARCH						100%		0	2	2.1	2.1	2.1	2.1	2.1
<b>U.S. Weather Research Program</b>	100%							2	2	2.5	2.5	2.5	2.5	2.5
<b>National Sea Grant College Program</b>	17%	32%		1%	17%		33%	62.4	60	57.4	57.4	57.4	57.4	57.4
<b>National Undersea Research Program (NURP)</b>					100%			13.8	13.5	13.9	13.9	13.9	13.9	13.9
<b>Ocean Exploration</b>					100%			14	15.1	14.2	14.2	14.2	14.2	14.2
<b>Other Ocean, Coastal and Great Lakes Partnership Programs</b>														
Arctic Research Initiative	100%							1.7	2.3	1.7	1.7	1.7	1.7	1.7
Hypoxia Research	100%							0	0	0	0	0	0	0
Lake Champlain Canal Barrier Demonstration	100%							0	0	0	0	0	0	0
Lake Champlain Study	100%							0	0	0	0	0	0	0
National Center for Natural Products (U. of Miss.)					100%			2.5	2.5	0	0	0	0	0
NISA/Ballast Water Demonstrations				100%				2.3	0.3	0	0	0	0	0

Continued from previous page

Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
NISA/Prevent & Control Invasive Species	100%							0.8	0.8	1.8	1.8	1.8	1.8	1.8
NOAA Marine Aquaculture Program		100%						8.5	4.4	2.6	2.6	2.6	2.6	2.6
SE Atlantic Marine Monitoring & Prediction Center (UNC)	100%							1	0	0	0	0	0	0
Tsunami Hazard Mitigation Program	100%							3.3	4.3	to NWS				
Gulf of Maine Council	100%							0.5	0.2	0	0	0	0	0
HPCC/GFDL High Performance Computing	100%							4.1	3.9	4	4	4	4	4
UNH Marine Facilities (Coastal & Ocean Activities)		75%					25%	0	0	0	0	0	0	0
Ocean Health Initiative	100%							0	7.9	0	0	0	0	0
Carolina Ocean Observation & Prediction	100%							2.8	0	0	0	0	0	0
Institute of Science & Technology Policy					100%			0	1	0	0	0	0	0
NH Milfoil Education					100%			0.3	0	0	0	0	0	0
NISA Alaska				100%				0	1.5	0	0	0	0	0
Lake Champlain Research Consortium					100%			0.1	0.3	0	0	0	0	0
Acquisition of Data					100%			Moved to program support						
<b>NATIONAL WEATHER SERVICE</b>														
U.S. Marine Observations	100%							18.3	17.6	19.6	19.6	19.6	19.6	19.6

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Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
U.S. Marine Weather Program	100%							16.8	16.9	17.5	17.5	17.5	17.5	17.5
U.S. Tropical Cyclone Program	100%							4.5	4.7	4.9	4.9	4.9	4.9	4.9
U.S. Tsunami Warning Program	100%							2.1	2.3	2.3	2.3	2.3	2.3	2.3
Storm Surge Program	100%							0.2	0.2	0.2	0.2	0.2	0.2	0.2
Numerical Modeling Activities for the Ocean and Ocean-Atmosphere Coupled Systems	100%							1.5	1.5	1.6	1.6	1.6	1.6	1.6
<b>NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE</b>														
<b>Operations Research and Facilities</b>														
Environmental Satellite Observing Systems														
Product Development, Readiness and Application	45%	20%			35%			8.2	8.9	9.7	9.7	9.7	9.7	9.7
Ocean Remote Sensing	40%	25%			35%			4	4	4	4	4	4	4
Coral Reef Watch		100%						0.8	0.7	0.8	0.8	0.8	0.8	0.8
NOAA's Data Centers and Information Services														
Archive, Access, and Assessment					14%	86%		7	7	9.6	9.6	9.6	9.6	9.6
Coastal Data Development		100%						4.5	4.6	4.6	4.6	4.6	4.6	4.6

Continued from previous page

Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>Procurement Acquisition and Construction</b>														
Systems Acquisition														
GOES Series	100%							2.6	2.1	2.8	3.3	2.7	2.5	2.4
NOAA K-N	93%			7%				8.3	7.3	6.7	5.1	3.8	4	2.9
Polar Convergence	40%	20%		20%	20%			39.3	55.7	69.2	79.3	89.5	79.7	62.5
<b>NOAA MARINE AND AVIATION OPERATIONS</b>														
<b>Operations, Research, and Facilities</b>														
Marine Services	25%	50%		25%				63.6	63.8	77.4	77.4	77.4	77.4	77.4
Fleet Maintenance & Planning	25%	50%		25%				11.0	11.3	12.3	12.3	12.3	12.3	12.3
Aircraft Services	90%			10%				12.7	13.7	16.3	18.3	18.3	18.3	18.3
<b>Procurement, Acquisition, and Facilities</b>														
Fleet Replacement:														
ADVENTUROUS Conversion		100%						3.8	0	0	0	0	0	0
ALBATROSS IV Repairs		100%						0.5	0	0	0	0	0	0
FAIRWEATHER Refurbishment				100%				0.7	0	0	0	0	0	0
GORDON GUNTER Upgrade		100%						0.2	0	0	0	0	0	0
Navy Surplus Vessels (YTT)	100%							7.7	0	0	0	0	0	0
Fisheries Research Vessel Construction Ship #2	100%							0.2	50.5	0	0	0	0	0

Continued from previous page

Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
Small Waterplane Area Twin Hull Vessel Construction		100%						0.1	8.9	0	0	0	0	0
T-AGOS Vessel Conversion	100%							1.3	0	0	0	0	0	0
Hydrographic Equipment Upgrade		100%						6.1	6.2	0	0	0	0	0
G-IV Instrumentation Upgrade	100%							0	8.3	4.6	0	0	0	0
WP-3D Safety & Navigation Upgrade	100%							0	0	1.6	0	0	0	0
<b>National Institute of Standards and Technology (NIST)</b>														
Scientific and Technical Research and Services								4	3.2	0	0	0	0	0
Marine Analytical Quality Assurance and environmental Specimen Banking	100%							1.1	2.1	1.1	1.1	1.1	1.1	1.1
Earth Observation Remote Sensing	100%							0.1	0.1	0.1	0.1	0.1	0.1	0.1
Basic Radioactivity Standards/ World Monitoring	100%							0.1	0.1	0.1	0.1	0.1	0.1	0.1
<b>Department of Commerce Totals</b>								<b>1,582.90</b>	<b>1,821.00</b>	<b>1,594.20</b>	<b>1,644.80</b>	<b>1,653.30</b>	<b>1,643.50</b>	<b>1,606.50</b>

\*The FY 2004 Budget request was used to allocate program funding across functional activities. Where programs are only partly related to oceans, only the estimated oceans-related portion of the funding should be reported here. (This portion of the funding would then be 100 percent oceans-related.)

\*\* Unless specified by the agency, estimates for FY 2005 to FY 2008 were assumed equal to the President's 2004 Budget Request. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.

## DEPARTMENT OF DEFENSE

Within the Department of Defense, the Department of the Navy and the Army Corps of Engineers are actively engaged in ocean and coastal programs.

### The Department of the Navy

The mission of the Department of the Navy is to maintain, train and equip combat-ready Naval forces capable of winning wars, deterring aggression and maintaining freedom of the seas. Navy assets include 383,000 active duty personnel, over 157,000 ready reserve personnel, 186,000 civilian personnel, 308 ships and 4,100 aircraft. The U.S. Navy's ocean and coastal activities are performed by the Office of Naval Research and, for the Chief of Naval Operations, by the Oceanographer of the Navy.

### Office of Naval Research

The Office of Naval Research coordinates, executes, and promotes the science and technology programs of the United States Navy and Marine Corps through universities, government laboratories, and nonprofit and for-profit organizations. It provides technical advice to the Chief of Naval Operations and the Secretary of the Navy, works with industry to improve technology manufacturing processes while reducing fleet costs or extending fleet capabilities, and fosters continuing academic interest in naval-relevant science from the high school through post-doctoral levels. It has programs in a number of ocean-related activities, including:

- Naval Ocean Sciences: Basic research areas included in this program are: coastal dynamics, ocean engineering, remote sensing, ocean biology/chemistry, marine geosciences, high latitude sciences, environmental optics, theories and computational research for ocean prediction and modeling, physical oceanography, and ocean acoustics. The basic research conducted in these areas is competitively selected to have a potential for major impact on future naval operations and warfare. The focus is upon observing, modeling, and predicting mostly small scale processes in the air/ocean/shore environments as they might affect naval operations, as well as sensor and system performance in the world's oceans, primarily littoral regions around the globe. Principal investigators are primarily in the academic community but extensive ties exist with Navy labs, university/Navy labs, other federal labs and private industry. Much of the knowledge gained in this research is useful to other agency programs, plus state and local entities, both public and private.
- Applied Oceanographic Research: Applied oceanographic research is conducted in an integrated approach with the basic research program to allow new knowledge obtained in various oceanographic disciplines to be synthesized and exploited toward specific naval applications, such as nowcasts and forecasts of ocean variability or environmental effects on sensors, platforms, structures, and operations. Often the result is an environmental model, algorithm, or technique to be tested for operational use. The products are designed to increase the naval operator's knowledge of the battlespace environment with the goal of uncluttering the tactical picture, providing tools for tactical decisions, and providing a tactical

advantage through exploitation of environmental variability. In addition, significant investments are made in instrumental and observational methods such as drifters, floats and, most recently, autonomous underwater vehicles for adaptive sampling and data assimilation. Principal investigators are in the academic community, Navy and other federal labs, and private industry. A significant portion of these developments, especially the observational capabilities, have often proved very useful to agency programs, plus state and local entities, both public and private.

- National Oceanographic Partnership Program: This program was established in Fiscal Year 1997 through Public Law 104-201 with the aims: 1) to promote the national goals of assuring national security, advancing economic development, protecting quality of life, and strengthening science education and communication through improved knowledge of the ocean; (2) to coordinate and strengthen oceanographic efforts in support of those goals by identifying and carrying out partnerships among federal agencies, academia, and industry in the areas of data, resources, education, and communication. Strong linkage exists with fourteen federal agencies (Navy, National Oceanic and Atmospheric Administration, National Science Foundation, National Aeronautic and Space Administration, Department of Energy, Environmental Protection Agency, U.S. Coast Guard, U.S. Geological Survey, Defense Advanced Research Projects Agency (DARPA), Minerals Management Service, Office of Science and Technology Policy, Office of Management and Budget, Department of State, and U.S. Army Corps of Engineers). Efforts funded under this program involve partnerships between various components of the national oceanographic community focusing most recently on a U.S. ocean observing system.
- Marine Mammals: This program provides both basic and applied research in response to the need to conduct naval activities in ways that minimize disruption to marine mammals and other protected marine life. Program areas include investigations of environmental consequences of underwater sound, predictive modeling and quantitative risk assessment for manmade sounds in the marine environment, and development of resources to monitor and mitigate potentially adverse interactions between naval activities and the marine environment. Principal investigators include members of the academic community, government labs, and private industry. The Marine Mammal program works closely with federal, state, and non-U.S. agencies charged with conservation and management of the marine environment to better facilitate the dissemination of program results. Results from this program are not only presented in peer-reviewed professional literature and similar outlets for scientific information, but are summarized in annual reports provided to the U.S. Marine Mammal Commission and the National Academy of Sciences and made publicly available on the program website. Recognizing the high level of public interest in a relatively new, unfamiliar, and technical subject, the Marine Mammal program devotes a significant portion of its effort to outreach and education from grade school through postgraduate levels of instruction.

## Oceanographer of the Navy

The Chief of Naval Operations, through the Oceanographer of the Navy, sponsors operational Navy meteorology and oceanography services and related research and development. The Navy provides meteorological services for Navy and joint forces, meteorological products to the Marine Corps, and oceanographic support to all elements of the Department of Defense. The Oceanographer of the Navy sponsors programs in four closely related disciplines to provide worldwide, comprehensive, integrated weather and ocean support – meteorology, oceanography, geospatial information and services, and precise time and astrometry. All are used to protect ships, aircraft, fighting forces, and shore establishments from adverse ocean and weather conditions, and to provide a decisive tactical or strategic edge by exploiting the physical environment. Early in 2001, the Oceanographer of the Navy was also named the "Navigator of the Navy." He serves as the Chief of Naval Operations' focal point for the development of technical standards for navigation plans, data standards, training, and navigation system certification.

- **Oceanography Program:** This program provides a wide array of essential operational meteorological and oceanographic products and services to operating forces afloat and ashore. These services include collecting and processing environmental data using resources such as oceanographic ships, aircraft, satellites, and computing systems. These products and services enhance the performance of active and passive sensor and weapon systems; optimize the effectiveness of the sea control mission for mine counter-measures; and identify the environmental effects that influence the performance of fixed and mobile warfare systems and tactics. General and tailored oceanographic, acoustic, and meteorological forecasts are provided daily to fleet commanders and individual operating units from the Meteorology and Oceanography Command's numerical modeling and forecasting centers and from forecasting support activities located worldwide. Funding primarily supports national security interests and also benefits maritime commerce.
- **Geospatial Information and Services:** This program provides hydrographic data from nearshore areas to support the production of coastal, combat, approach, harbor, and special purpose nautical charts used to address littoral warfare requirements. Funding primarily supports national security interests and also benefits identification of natural hazards, cooperative efforts with other nations, maritime commerce, marine science, technology, and education.

## **The U.S. Army Corps of Engineers**

The Army Corps of Engineers (Corps) has five programs that include funding for projects that relate to oceans or coastal activities:

- **Construction:** The Corps builds navigation projects, which generally consist of dredging entrance and exit channels and harbors to a great depth and width to allow larger vessels to safely navigate in and out of the harbors and ports. The Corps also constructs shore

protection projects, which generally consist of dredging sand from the ocean and placing it on the shore. Often this is done in conjunction with constructing jetties and breakwaters to mitigate shore erosion.

- General Investigation: The Corps conducts studies, pre-construction engineering and design, data collection, interagency coordination and research activities to determine the need, engineering feasibility, economic justification, and the environmental and social suitability of projects relating to shore protection and reservation of aquatic coastal resources.
- Operation and Maintenance: This general area provides funding for the operation, maintenance, and care of existing harbors and related works, including maintenance of harbor channels provided by a state, municipality or other public agency, that serve navigation needs of general commerce where authorized by law; clearing and straightening channels; and removal of obstructions to navigation. Work to be accomplished consists of dredging, repair, and operation of structures and other facilities. Related activities include aquatic plant control, monitoring of completed coastal projects, removal of sunken vessels, and the collection of domestic waterborne commerce statistics.
- Louisiana Wetlands Restoration: In 1990, the Coastal Wetlands Planning, Protection and Restoration Act (Public Law 101-646) authorized transfer of 18 percent of annual appropriation from the Aquatic Resources Trust Fund, Sport Fish Restoration Account, and the Coastal Restoration Trust Fund, for coastal wetlands activities; 70 percent of this amount is allocated to the Corps of Engineers for use by the Louisiana Coastal Wetlands Conservation and Restoration Task Force, chaired by the Secretary of the Army, to provide for the long term conservation, protection, and restoration of coastal wetlands in the State of Louisiana.
- Flood Control, Mississippi River and Tributaries: Under this program, Congress has authorized two structures, with levees and channels, to divert freshwater from the Mississippi River into coastal bays and marshes for fish and wildlife restoration.

**Department of Defense**

**Ocean and Coastal Activities**

Agency, Bureau, Account, Program	Ocean-Related Program Functions: (Percentage must sum to 100)*							Dollars in millions**					
	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection
<b>OFFICE OF THE SECRETARY OF DEFENSE</b>													
Defense Advanced Research Projects Agency													
The Center of Excellence for Research in Ocean Science (CEROS)					100%		4.7	5.851	0	0	0	0	0
Strategic Environmental Research & Development Program (SERDP)													
Marine Mammal Monitoring			100%				0.72	0.72	0.69	0.35	0	0	0
Copper/Zinc Assessment					100%		0.64	0.01	0	0	0	0	0
Non-Indigenous Marine Species					100%		0.95	0.54	0.03	0	0	0	0
Anti-fouling Coatings					100%		0.2	0	0	0	0	0	0
Coral Reef Monitoring					100%		0	0.73	0.7	0.68	0.35	0	0
Assessment of Marine Benthos					100%		0	0.25	0.25	0.17	0	0	0
Environmental Security Technology Certification Program (ESTCP)													
Marine Sediments Contaminant Monitoring	100%						0.11	0	0	0	0	0	0

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Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
Shipboard Waste Treatment	100%							0.35	0.24	0.51	0.03	0	0	0
<b>DEPARTMENT OF THE NAVY</b>														
<b>Office of Naval Research (ONR)</b>														
Naval Ocean Sciences					100%			84.76	88.19	88.19	88.19	88.19	88.19	88.19
Applied Ocean Research					100%			36.49	31.23	31.23	31.23	31.23	31.23	31.23
National Oceanographic Partnership Program					100%			15.53	21.07	21.07	21.07	21.07	21.07	21.07
Marine Mammals					100%			9.74	9.19	9.19	9.19	9.19	9.19	9.19
<b>Oceanographer of the Navy</b>														
Oceanography – Program					100%			129	122	114	113	116	118	121
Oceanography - Research & Development Support to Operations					100%			21.6	21.3	15.5	17	17.5	21.1	21.5
Geospatial Information and Services					100%			75	78	77	78	78	79	81
<b>CNO (N45) Environmental Compliance</b>														
Marine Mammals					100%			2.5	2.5	3.77	3.77	3.77	3.77	3.77
<b>DEPARTMENT OF THE ARMY</b>														
<b>Corps of Engineers</b>														
Construction, General														
Environmental		100%						2.00	2.00	2.00	2.00	2.00	2.00	2.00
Shore Protection	100%							77.00	59.00	50.00	50.00	50.00	50.00	50.00
Navigation				100%				204.00	254.00	166.00	166.00	166.00	166.00	166.00

Continued from previous page														
Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
General Investigation														
Shore Protection	100%							6.48	7.61	4.10	4.10	4.10	4.10	4.10
Coastal Field Data						100%		2.67	4.48	2.50	2.50	2.50	2.50	2.50
Beach Erosion	100%							0.00	0.00	0.00	0.00	0.00	0.00	0.00
Research & Development					100%			3.79	2.13	2.75	2.75	2.75	2.75	2.75
Operation and Maintenance, General														
Channels and Harbors			100%					671.04	705.56	684.13	684.13	684.13	684.13	684.13
Protection of Navigation			60%	40%				34.47	40.52	43.22	43.22	43.22	43.22	43.22
Coastal Wetlands Restoration Trust Fund	100%							62.30	56.90	59.00	60.50	62.38	64.23	66.65
FC, Mississippi River & Tributaries	100%							3.00	4.00	4.00	4.00	4.00	4.00	4.00
Military Research and Development														
Rapidly Installed Breakwater				100%				3.20	3.20	3.20	3.20	3.20	3.20	3.20
<b>Department of Defense Totals</b>								<b>1452.24</b>	<b>1521.22</b>	<b>1383.03</b>	<b>1385.08</b>	<b>1389.58</b>	<b>1397.68</b>	<b>1405.50</b>
<p>*The FY 2004 Budget request was used to allocate program funding across functional activities. Where programs are only partly related to oceans, only the estimated oceans-related portion of the funding should be reported here. (This portion of the funding would then be 100 percent oceans-related.)</p> <p>** Unless specified by the agency, estimates for FY 2005 to FY 2008 were assumed equal to the President's 2004 Budget Request. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.</p>														

## DEPARTMENT OF ENERGY

Two Offices within the Department of Energy conduct ocean-related research: the Office of Science and the Office of Fossil Energy.

### Office of Science

Within the Office of Science, ocean-related research is supported in the Office of Biological and Environmental Research environmental program. This research focuses on understanding the physical, chemical, and biological processes affecting the Earth's atmosphere, land, and oceans and how these processes may be affected, either directly or indirectly, by energy production and use.

The Office of Biological and Environmental Research (BER) currently supports basic research in two areas of ocean sciences: 1) the use of biotechnological tools to determine linkages between carbon and nitrogen cycling in coastal environments, and 2) the role of the oceans in sequestration of atmospheric CO<sub>2</sub>. In addition, BER has made important contributions to the ocean sciences community by supporting the genomic sequencing of microorganisms that are responsible for most of the primary production in the world's oceans. The new Genomes to Life Program will provide a quantum leap in our understanding of the molecular basis for primary production and other fundamental biogeochemical processes.

- Biotechnological Investigations - Ocean Margins Program (BI-OMP): BI-OMP builds on BER strengths in molecular biology and environmental science. This program supports the use of new and innovative techniques in modern molecular biology, combined with biogeochemical process research, to determine the coupling between carbon and nitrogen cycles in coastal waters and sediments. The program also aims to increase the participation of under-represented groups in the scientific enterprise through partnering and collaboration.

Both primary production by phytoplankton and microbial transformations of carbon and nitrogen are being studied using tools such as gene probes for key enzymes, molecular fingerprinting, and biogeochemical rate measurements. This information is crucial to the response of ocean margin ecosystems to changes in global biogeochemical cycles. The program is also beginning to correlate satellite images of chlorophyll distribution and other attributes of plume dynamics with molecular biological data, thus providing an understanding of coastal plume that spans scales from the molecular to the regional in ocean margins. These data will ultimately be incorporated in numerical models of climate change. The BI-OMP program involves mutually collaborative partnerships between institutions with a strong tradition of research in marine sciences and those with developing research capabilities in marine science such as Historically Black Colleges and Universities and Minority Institutions.

- Ocean Carbon Sequestration Research Program: The Ocean Carbon Sequestration Research Program provides the fundamental science that will allow for an objective evaluation of the potential for carbon sequestration in the oceans. The ocean represents a large potential sink for sequestration of anthropogenic CO<sub>2</sub> emissions. Two strategies for enhancing carbon

sequestration are enhancement of the net oceanic uptake from the atmosphere by fertilization of phytoplankton with micro- or macronutrients, and direct injection of a relatively pure CO<sub>2</sub> stream to ocean depths great than 1000 meters. Sources of CO<sub>2</sub> for direct injection might include power plants, industries or other sources. The long term effectiveness and potential environmental consequences of ocean sequestration by either strategy are unknown.

Research areas relevant to DOE's mission in carbon sequestration include: 1) environmental consequences of long term ocean fertilization; 2) effectiveness of ocean fertilization on a large scale; 3) environmental consequences of direct injection of CO<sub>2</sub> into the ocean in midwater or deep sea habitats; and 4) effectiveness of direct injection of CO<sub>2</sub> for carbon sequestration.

- Sequencing Genomes of Microorganisms for Carbon Sequestration: The DOE human genome program has resulted in state of the art technologies for sequencing genomes at rates previously unattainable. Capitalizing on these investments, the genomes of microbes that mediate in carbon fixation and sequestration are being sequenced. Cyanobacteria such as *Prochlorococcus* and *Synechococcus* have now been sequenced and a diatom is near completion. Genomic information will enable the identification of the key genetic components of the organisms that regulate carbon fixation and sequestration. Related research is being initiated in the Genomes to Life Program to characterize key reaction pathways or regulatory networks following the determination of their DNA sequence. Understanding how carbon sequestration is regulated in the ocean will lead to powerful new strategies for carbon management.

#### Office of Fossil Energy

Ocean-related research is supported by the Office of Fossil Energy in the areas of: Methane Hydrates; Oil and Natural Gas Technology; and Sequestration.

- Methane Hydrates: As much as 200,000 trillion cubic feet (Tcf) of methane may exist in hydrate systems in the U.S. permafrost regions and surrounding waters. This is over a hundred times greater than the estimated conventional U.S. gas resource. The volume that may be economically produced is unknown. However, these enormous resources, if proven, have significant implications for U.S. energy security and global environmental issues, particularly global climate change and sea floor stability.

Hydrates are solid, ice-like materials containing molecules of gas bound in a lattice of water molecules. Methane hydrates are stable under conditions of low temperature and high pressure and thus, are found on ocean slopes at several hundred to several thousand feet deep, and under the permafrost in arctic regions. Developments in the last five years have both broadened and deepened interest in recovering natural gas hydrates as a source of methane gas.

Methane hydrates have been detected around most continental margins. Around the U.S., large deposits have been identified and studied in Alaska, the West Coast from California to

Washington, the East Coast, including the Blake Ridge offshore from the Carolinas, and in the Gulf of Mexico.

The Methane Hydrate Research and Development Act of 2000 (Public Law 106-193) directs the Department of Energy to conduct basic and applied research, in coordination with the Departments of Defense, Interior, and Commerce and the National Science Foundation to: 1) identify, explore, assess, and develop methane hydrates as a resource; 2) develop technologies for efficient and environmentally sound development of the resource; 3) provide safe means of transport and storage of methane produced from hydrates; 4) promote education and training in methane hydrate resource research and development; 5) assess and mitigate the environmental impacts of hydrate degassing; 6) reduce the risks of drilling through hydrates; and 7) conduct exploratory drilling in support of hydrate research and development.

The Department of Energy, Office of Fossil Energy initiated the National Methane Hydrate Program in FY 2000. The Program will: (1) establish an estimate of gas resources from methane hydrate deposits; (2) develop the technology necessary for the commercial production of methane from hydrates; (3) understand and quantify the dual roles of methane hydrates in the global carbon cycle and their relationship to global climate change; and (4) respond to industry concerns regarding the safety and sea floor stability issues and pipeline plugging concerns attributed to methane hydrates which are currently associated with the exploration, production, and transportation of conventional hydrocarbons. Data collection, laboratory experiments, modeling, and field validation are proceeding in parallel to promote synergy. Aggressive technology transfer activities, including an on-line information center and quarterly newsletter stimulate research and serve to monitor and sustain its quality while avoiding duplication of efforts.

The Methane Hydrate program has been successful in locating and studying arctic and oceanic hydrates. In the summer of 2002, the Ocean Drilling Program completed an expedition to Hydrate Ridge, off the shore of Oregon. Survey cruises to the Gulf of Mexico in 2002 and 2003 are collecting information about hydrate deposits in preparation for drilling hydrate test wells in the Gulf in 2004. These wells will help determine if producible volumes of hydrate occur in the Gulf of Mexico and will help mitigate safety concerns for conventional oil and gas operations in areas containing methane hydrates. The results of the first U.S. (arctic) hydrate production test, which will determine the feasibility of commercial production from hydrates, are expected in late 2003. The program is on target to complete development of the knowledge and technology necessary to allow commercial production of methane from hydrates by 2015.

- Oil and Natural Gas Research and Development projects dealing with the oceans: Several projects in this program are directly focused on the ocean or offshore environment and many other projects are applicable equally in both offshore and onshore environments. These projects include: 1) Secondary gas recovery – locating for future development, gas that has been bypassed by existing wells in the northern Gulf of Mexico; 2) Deep Trek, a group of projects to develop advanced technologies in high-temperature materials and sensors to allow deep drilling (greater than 15,000 feet below the land surface or seafloor); 3) joint industry-

National Lab efforts to adapt defense-related technology to oil and gas detection and recovery; 4) Texas Electronic Compliance and Approval Process (ECAP) the first step in developing on-line permitting for oil and gas wells in Texas; 5) laboratory research and field tests of technologies to improve recovery from mature oil fields, including those onshore and offshore in California.

- Sequestration Instrumentation Field Test: The proposed international field experiment off the coast of Hawaii is part of a long-term scientific effort to investigate the technical and environmental feasibility of carbon dioxide (CO<sub>2</sub>) ocean storage and to understand the role of CO<sub>2</sub> in climate change. The primary goals of this proposed experiment are to gather data in the vicinity of the CO<sub>2</sub> injection point to improve our basic understanding of the underlying physical phenomena and to improve the accuracy of predictive computer models that are needed to evaluate environmental impacts. Ocean sequestration of CO<sub>2</sub> is being explored as one possible approach to limit the accumulation of greenhouse gases in the atmosphere. This experiment comes from a 1997 multi-lateral agreement signed by the United States, Japan, and Norway under the auspices of the Climate Technology Initiative.

## Department of Energy

### Ocean and Coastal Activities

Agency, Bureau, Account, Program	Ocean-Related Program Functions: (Percentage must sum to 100)*						Dollars in millions**						
	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection
<b>Office of Fossil Energy Research and Development</b>													
Natural Gas Technology													
Methane Hydrates**	50%	50%					3	6.6	2.9	2.9	2.9	2.9	2.9
Oil & Natural Gas Technology													
Oil Technology**			100%				2.24	4.8	0.7	0.7	0.7	0.7	0.7
Natural Gas Technology**			100%				1.87	4.2	2.3	2.3	2.3	2.3	2.3
<b>Office of Science</b>													
Biological and Environmental Research													
Climate Change Research**					100%		6.8	5.7	6.9	6.9	6.9	6.9	6.9
<b>Department of Energy Totals</b>							<b>\$13.91</b>	<b>\$21.30</b>	<b>\$12.80</b>	<b>\$12.80</b>	<b>\$12.80</b>	<b>\$12.80</b>	<b>\$12.80</b>

\*The FY 2004 Budget request was used to allocate program funding across functional activities. Where programs are only partly related to oceans, only the estimated oceans-related portion of the funding was reported. (This portion of the funding would then be 100 percent oceans-related.)

\*\* Unless specified by the agency, estimates for FY 2005 to FY 2008 were assumed equal to the President's 2004 Budget Request. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.

## ENVIRONMENTAL PROTECTION AGENCY

The mission of the U.S. Environmental Protection Agency (EPA) is to protect human health and to safeguard the natural environment -- air, water, and land -- upon which all life depends. EPA is involved with important programs that affect the oceans. The programs listed below strive to ensure that all waters including coastal and marine resources are successfully managed, protected and restored to sustain healthy biological communities and to protect human health.

The EPA programs implement various statutes including: the Clean Water Act; Safe Drinking Water Act; Federal Insecticide, Fungicide, and Rodenticide Act; Toxic Substances Control Act; Clean Air Act; Oil Pollution Act of 1990; Marine Protection Research and Sanctuaries Act; the Pollution Prevention Act; and Comprehensive Environmental Response, Compensation, and Liability Act. These programs, working in concert with state programs and programs in other agencies have goals to eliminate, prevent, or reduce pollution at its source, which can prevent it from entering our waterways and traveling into our oceans.

### Office of Water

The Clean Water Act sets out the basic structure for restoring and maintaining the chemical, physical, and biological integrity of the Nation's waters. The Clean Water Act gives EPA the authority to set effluent standards on an industry basis and to set water quality standards for all discharges of pollutants in surface waters, including the oceans and Great Lakes. These standards are set to protect the designated use of the water body and include criteria, standards, and best management practices. Discharges addressed under the Clean Water Act include dredged or fill material discharged into inland and coastal waters, oil spills, and municipal and industrial discharges.

- Clean Water Act Section 106 Grants: These grants to states, tribes, and interstate agencies help fund key programs for the prevention, reduction, and elimination of surface and ground water pollution from point and nonpoint sources and for enhancing the ecological health of the Nation's waters. Activities include permitting, water quality planning and standard setting, pollution control studies, assessment and monitoring, and training and public information. State efforts funded by these grants include activities related to impaired watersheds, implementing integrated wet weather strategies in coordination with nonpoint source programs, and developing source water protection programs.
- Clean Water State Revolving Fund (SRF): This program is recognized as the most successful federal water quality funding program in the Nation's history. It provides funding for the construction of municipal wastewater facilities and implementation of nonpoint source pollution control and estuary protection projects by capitalizing on revolving loan fund programs. The SRF has been used for projects such as one in Erie, Pennsylvania, where \$6.95 million was used to separate the sanitary sewers from the storm sewers. This has improved the water quality of Lake Erie near the town. In fact, the area around Erie has gone from being an impaired water body to one now listed as "in recovery." The SRF has also

been used for placing some communities in the Lake Ponchartrain area on sewer systems, thus reducing the nutrient loads to the lake and improving water quality.

- Water Quality Standards and Criteria Program: Water quality criteria describe the quality of water that will support a given designated use. Under the Clean Water Act, EPA publishes, on an advisory basis, “criteria” on the maximum acceptable concentration levels of specific chemicals in water that will protect aquatic life or human health. These criteria may be used by states and tribes for developing enforceable water quality criteria and standards that protect the designated use as a part of their water quality standards. States and tribes review their water quality standards every three years and adopt any necessary changes. EPA reviews these changes and approves or disapproves them.
- Point Source Discharge Permits: The Clean Water Act prohibits the discharge of any pollutant from a point source into waters of the United States (which includes coastal wetlands) except in compliance with permits and other Clean Water Act requirements. Through permits, the National Pollutant Discharge Elimination System regulates the discharge of any pollutant from a point source into waters of the United States. Much of this program is administered by authorized states. For dredged and fill material disposed of in estuaries and rivers, EPA issues guidelines for the program administered by the U.S. Army Corps of Engineers and EPA. The guidelines ensure that environmental impacts of these discharges are avoided and minimized and any impacts are mitigated or offset through wetland restoration or other activities.
- Nonpoint Source Programs: While great strides have been made in reductions of point source pollution, challenges remain to address nonpoint sources. The National Nonpoint Source Program is administered by EPA as a technical assistance/grant program to address nonpoint sources. All states and territories and more than 50 tribes have established nonpoint source management programs to control polluted runoff to waters of the United States. Typically, states determine the programs and priorities of projects and EPA provides technical support and review of programs and projects for statutory eligibility.

Recognizing that the high concentration of human population in coastal areas places great stress on coastal water quality, Congress enacted the Coastal Zone Act Reauthorization Amendments of 1990 to focus special efforts on combating nonpoint source pollution in coastal waters. Congress mandated that EPA publish “management measures,” which describe the best available techniques to protect coastal waters from nonpoint source pollution, and that states develop programs in conformity with those measures. Currently eight states have fully approved coastal nonpoint source pollution control programs and 21 have conditionally approved programs.

- Coastal Wetlands: Estuaries and ocean waters benefit from coastal wetlands, which provide habitat for wildlife, spawning and nursery grounds for finfish and shellfish, detrital matter to sustain the food web, flood protection, pollution removal, and shoreline erosion control. Because they are located at the receiving end of watersheds, estuaries and oceans also reflect

biological, chemical, and hydrological processes of wetlands located upstream, often far above the tidal zone, including bottomland hardwoods, riparian forests, and emergent marshes. Over half of the U.S. wetlands that affect the coasts of the Atlantic, the Pacific, and the Gulf of Mexico have been destroyed. The U.S. is working to reverse historical patterns and achieve an annual net gain of wetlands by 2005 by reducing losses, offsetting impacts through mitigation, and providing incentives for voluntary restoration. To protect wetlands, EPA co-administers a wetlands program with the U.S Army Corps of Engineers; provides financial assistance for state, tribal and local programs; develops methods for wetlands decisions; and provides information for wetlands education and outreach programs.

- Total Maximum Daily Load Program (TMDL): The Clean Water Act requires states to establish TMDLs as planning tools to guide implementation of water quality-based controls when technology-based controls are inadequate to achieve state water quality standards. When information shows that water quality standards will not be maintained with required controls, states, territories, and eligible tribes must identify and develop TMDLs for the affected waters. A TMDL identifies the allowable loadings of pollutants from sources (both point and nonpoint) necessary to maintain water quality standards. The Mississippi River Basin is one example of a waterbody where the TMDL development and implementation will address local water quality problems and also support efforts downstream in a coastal area. EPA will evaluate and use the appropriate TMDL tools to assist with identification of appropriate loads for nutrients in water quality impaired areas in the Mississippi River Basin.
- Water Quality Monitoring and Reporting: This is a major effort undertaken by EPA, states and tribes. Biennially, EPA develops a water quality report under the Clean Water Act which summarizes information reported by the states and tribes on the quality of their navigable waters, including estuaries and coastal, Great Lakes, and ocean waters. EPA provides monitoring and assessment guidance to the states and is developing a new methodology to streamline and consolidate water quality reporting and listing of impaired waters. Much of this information and information on permits is stored in databases which the states and permit writers can access.
- Regulation of Transportation of Material for Dumping into the Ocean: Under the Marine Protection, Research, and Sanctuaries Act (MPRSA or Ocean Dumping Act), EPA regulates the transportation of material from the U.S. for the purpose of disposal into the ocean. EPA is charged with developing ocean dumping criteria for permit applications, designating recommended sites for ocean dumping, and issuing permits for ocean dumping (except for dredged material permits, on which EPA must concur with U.S. the Army Corps of Engineers). This Act serves to implement U.S. treaty obligations under the London Convention which covers the deliberate disposal at sea of wastes or other matter from vessels, aircraft, and platforms.
- Vessel Pollution: Under the Clean Water Act, the Act to Prevent Pollution from Ships, the International Convention for the Prevention of Pollution from Ships, and in legislation to address certain Alaskan cruise ship operations, EPA works with others to prevent pollution

from vessels. Under Section 312 of the Clean Water Act, EPA sets performance standards for marine sanitation devices, and designates no-discharge zones for vessel sewage. Working with states, EPA has designated 72 no-discharge zones nationwide. Also under Clean Water Act section 312, EPA is working with the Department of Defense to develop Uniform National Discharge Standards to regulate discharges incidental to the normal operation of vessels of the Armed Forces. In 1999, 25 types of discharges from these vessels were identified as requiring controls. Cruise ships have come under more scrutiny lately, and EPA is currently responding to a petition to identify and assess whether discharges from cruise ships are adequately addressed under current regulations. In addition, EPA and the State of Alaska will jointly develop gray and black water standards for cruise ships as set out in the legislation to address certain Alaskan cruise ship operation. EPA is an active member of U.S. delegations to the International Maritime Organization and has assisted in drafting annexes to the international convention addressing pollution from vessels including: oil, noxious liquid substances and hazardous wastes shipped in bulk or packaged form, sewage, garbage, emissions, and antifoulants.

- The National Estuary Program: This program was established in 1987 by amendments to the Clean Water Act to identify, restore, and protect nationally significant estuaries of the United States. The program focuses on improving water quality while maintaining the integrity of the whole ecosystem – its chemical, physical, and biological properties as well as its economic, recreational, and aesthetic values. Designed to encourage local communities to take responsibility for managing their own estuaries, each national estuary is made up of representatives from federal, state, and local government agencies responsible for managing the estuary's resources, as well as members of the community – citizens, business leaders, educators, and researchers. These stakeholders work together to identify problems in the estuary, develop specific actions to address those problems, and create and implement a formal management plan to restore and protect the estuary. There are currently twenty-eight National Estuary Programs.
- Large-Scale Ecosystem-Based Programs: Ecosystem-based programs are an important component of EPA's strategic plan to achieve environmental results. These programs include: The Chesapeake Bay Program, the Great Lakes Program, the Gulf of Mexico Program, the South Florida/Everglades Program, and the Long Island Sound Program. These efforts serve as a valuable complement to the Agency's national scale programs because of their size, the economic and ecological value of the regions they address, the environmental condition of these regions, and, in the case of the Great Lakes and Gulf of Mexico, their international scope. Agency resources that support these place-based efforts often leverage much larger investments made by outside organizations, states, other federal agencies, and local communities. Many of the environmental issues identified are similar, however the management steps taken are specific to the waterbody and surrounding communities.

Since 1996, EPA has provided leadership for a state, tribal, and interagency task force charged with developing an action plan to reduce hypoxia in the Gulf of Mexico. Released in 2000, the plan calls for the development of strategies by states and tribes, on a sub-basin

basis, to achieve a 30 percent reduction in discharges of nitrogen through the river system to the Gulf. The Great Lakes Program is leading efforts to address invasive species. The Chesapeake Bay Program has long recognized the impact of nutrients on the ecosystem and between 1987 and 2000 reduced nutrient loads to the Bay by 40 percent. These programs have proven effective in building strong public constituencies and Congressional support because of their emphasis on building partnerships across government and nongovernment organizations, engaging broad public involvement, sound science, and seeking innovative, regulatory and non-regulatory approaches to key environmental issues.

In addition to the programs listed above, EPA leads or participates in other programs designed to help protect waters that support aquatic resources such as shellfish, fish, and beaches in a comprehensive manner. They include:

- The National Fish and Wildlife Contamination Program: The National Fish and Wildlife Contamination Program was established in 1992 in response to a request by states and tribes that EPA assist in establishing national consistency in state and tribal advisory programs. This program helps assess the health risks associated with eating noncommercial fish and wildlife for at risk populations such as subsistence fishing communities, expectant and nursing mothers, and children. In 2000, 7 of the 10 northeast coast states had statewide consumption advisories for fish in coastal waters, placing 100% of their coastal and estuarine areas under advisory for one species or another.
- The BEACH Program: In 2002, about 25% of the beaches in the U.S. that reported information to EPA were either under advisory or were closed at least once; most of these beaches were adjacent to coastal or Great Lake waters. In October 2000, Congress amended the Clean Water Act with the Beaches Environmental & Coastal Health Act (BEACH Act) to strengthen the existing program and add a grant program for monitoring and notification programs for coastal and Great Lakes beaches.
- Ocean and Coastal Survey Work: The Ocean Survey Vessel (OSV) Peter W. Anderson has served EPA, between Maine and the Gulf of Mexico, for over 20 years acting as a platform from which EPA scientists gather data critical to guiding the Agency's coastal and ocean protection programs. EPA scientists aboard the Anderson perform a variety of functions including: surveillance in connection with the implementation of federal programs, evaluation of the effects of pollution, special pollution studies, oceanographic and biological studies, data collection and laboratory analysis, and training of professional personnel. The Lake Guardian is EPA's survey vessel on the Great Lakes, performing many of the same functions as the OSV Anderson.
- Environmental Management System Initiative: An Environmental Management System is a set of management processes and procedures that allows an organization to analyze and reduce the environmental impact of its activities. For example, in 1999, San Diego's Operations and Maintenance Division became the first U.S. public entity to develop an EMS based on the ISO 14001 International Standard. The O&M Division is responsible for all of

the wastewater treatment plants in the Metro San Diego area. Implementation of the EMS has had a significant impact on improvements to the marine environment – an overall reduction in chemical usage of 19 million pounds, or 9%, after only one year – and cost savings which kept user fees down. Due to the successes of the EMS for the O&M Division, San Diego is now developing an EMS for its Collection Division, which is responsible for maintaining all of the collector sewers in the area.

- The National Marine Debris Program: The National Marine Debris Program supports efforts to mitigate marine debris and educate people about the impact of their actions through the International Coastal Cleanup Campaign, funded by EPA grants. It supports the National Marine Debris Monitoring Program, which is a statistically based national monitoring program to assess trends and sources of marine debris. The program has assisted industry in reducing discharges of plastic pellets.
- Invasive Species Program: Invasive species are one of the greatest threats to U.S. waters and ecosystems. EPA is funding pilot prevention, control, management, research, and education projects and is studying and providing input to national and international programs to address this issue as part of the Invasive Species Council, the Aquatic Nuisance Species Task Force and international efforts to develop a treaty to address introductions through ballast water.

#### Office of International Activities

EPA's Office of International Activities helps shape U.S. Government positions on marine pollution issues. The staff of the Office of International Activities guide treaty negotiations and technical programs that protect both environmental and economic interests throughout the world's oceans.

#### Office of Air and Radiation

The Office of Air and Radiation and the Office of Water have joined together with the Department of Commerce's National Oceanic and Atmospheric Administration through the Great Waters program to address the impacts of air deposition to coastal waters. The Clean Air Act regulates air emissions from area, stationary, and mobile sources and authorizes EPA to establish National Ambient Air Quality Standards to protect public health and the environment. Through the use of advanced computer models the Chesapeake Bay program has identified air deposition as a major pollution source, contributing nearly one-third of the nitrogen load to the Bay. (<http://www.epa.gov/air/oaqps/gr8water/3rd rpt/report00.html>). In general, as detailed in the *Third Report to Congress on Deposition of Air Pollutants to the Great Waters*, roughly 10–40% of the nitrogen which reaches East and Gulf coast estuaries is transported and deposited via the atmosphere. Atmospheric deposition is also the principal source of mercury to several Great Waters, followed by riverine inputs. Over one third of the Great Waters have fish consumption advisories for mercury.

## Office of Research and Development

The Office of Research and Development (ORD) supports various EPA programs including those protecting oceans and coasts. EPA, National Oceanic and Atmospheric Administration, U.S. Geological Survey & Fish and Wildlife Service are jointly responsible for the National Coastal Condition Report that was produced using EPA's Environmental Monitoring and Assessment Program (EMAP). <http://www.epa.gov/owow/oceans/nccr> . Released in 2002, the report exemplifies cooperation between EPA, state, local, tribal and federal natural resource trustees. The National Coastal Condition Report demonstrates of the type of information generated by EMAP and being requested by the Administrator to construct National Report Cards. Full assessments were completed for Northeastern, Southeastern and Gulf of Mexico estuaries and partial assessments were completed for West Coast estuaries and the Great Lakes. ORD is continuing this effort by working to create an integrated comprehensive coastal monitoring program across all coastal states (including Alaska and Hawaii) and Puerto Rico to provide a probabilistic assessment of estuarine conditions. ORD also supports research addressing other significant coastal problems such as invasive species, harmful algal blooms, improving indicators of estuarine condition, the effects of nutrient loading, the effects of habitat alteration, and monitoring recreational waters.

## Environmental Protection Agency

### Ocean and Coastal Activities

Ocean-Related Program Functions: (Percentage must sum to 100)*		Dollars in millions**												
Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>Office of Water</b>														
Gulf of Mexico	38%	32%			30%			4.28	4.97	4.39	4.39	4.39	4.39	4.39
Great Lakes	24%	11%			48%	17%		18.53	18.26	33.1	33.1	33.1	33.1	33.1
Chesapeake Bay	40%	30%			30%			20.57	22.58	20.78	20.78	20.78	20.78	20.78
Water Quality standards	100%							12.2	12.2	14.85	14.85	14.85	14.85	14.85
Marine ecosystems	30%				55%	5%	10%	7.99	7.57	12.63	12.63	12.63	12.63	12.63
Coastal ecosystems	20%	35%			30%	5%	10%	29.67	29.32	22.26	22.26	22.26	22.26	22.26
BEACH program	100%							0.9	0.9	0.858	0.858	0.858	0.858	0.858
National Fish and Wildlife Contamination	100%							0.2	0.167	0.2	0.2	0.2	0.2	0.2
BEACH program grants	100%							2	9.93	10	10	10	10	10
Clean Water SRF	100%							742.9	750.52	476	476	476	476	476
Section 106 grants	100%							91	88.8	94.2	94.2	94.2	94.2	94.2
Nonpoint source management	100%							118.75	119.24	119.25	119.25	119.25	119.25	119.25
<b>Office of International Affairs</b>														
Marine Pollution and Arctic Programs						100%		0.85	0.44	0.39	0.39	0.39	0.39	0.39

Continued from previous page

Agency Bureau Account Activity Program		Other, not elsewhere classified	U.S. leadership and cooperative efforts with other nations	Marine science, research, technology, education	Maritime Commerce	Minerals and non-living marine resource management	Marine area and living marine resource management	Anthropogenic and natural hazards, including marine pollution	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>Office of Research and Development</b>															
Oceans and Coastal Research			100%						15.4	15.3	16.1	16.1	16.1	16.1	16.1
<b>Office of Air and Radiation</b>															
EPM Great Waters	100%								0.9	0.9	0.9	0.9	0.9	0.9	0.9
STAG Great Waters	100%								1.19	1.19	1.19	1.19	1.19	1.19	1.19
<b>Environment Protection Agency Total</b>									<b>\$1,067.33</b>	<b>\$1,082.29</b>	<b>\$827.10</b>	<b>\$827.10</b>	<b>\$827.10</b>	<b>\$827.10</b>	<b>\$827.10</b>

\*The FY 2004 Budget request was used to allocate program funding across functional activities. Where programs are only partly related to oceans, only the estimated oceans -related portion of the funding was reported. (This portion of the funding would then be 100 percent oceans -related.)  
 \*\* Unless specified by the agency, estimates for FY 2005 to FY 2008 were assumed equal to the President's 2004 Budget Request. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.

## DEPARTMENT OF HEALTH AND HUMAN SERVICES

### National Institutes of Health/The National Institute of Environmental Health Sciences (NIEHS)

Oceans and marine life intersect with human health in a number of ways, presenting both an opportunity and a challenge. Oceans have become conduits for a number of environmental threats to human health. At the same time, oceans harbor diverse organisms that show great promise for providing new drugs to combat cancer and fight infectious diseases. To guard against such health threats and to take advantage of the medicinal benefits that oceans might provide NIEHS is studying the impacts of the oceans on human health.

For the past two decades, NIEHS has supported a set of Core Centers devoted to Marine and Freshwater Biomedical Sciences. This unique resource within NIH has conducted innovative research focused on development and application of aquatic organisms as models of human health effects resulting from exposure to environmental toxicants, and on studying the mechanism of effects of toxins resulting from harmful algal blooms (HABs).

HABs represent the most notorious marine hazard to man and animal alike. It is estimated that over 60,000 individual cases and clusters of human intoxication occur annually in the U.S. alone. Worldwide, HABs cause a variety of acute, sub-acute, and chronic diseases in humans, as well as in other mammals, fish, and birds. Health effects in humans range from acute neurotoxic disorders (such as polyether seafood poisonings, e.g., neurotoxic shellfish poisoning and ciguatera fish poisoning) to chronic and persistent diseases (such as amnesic shellfish poisoning and chronic liver disease caused by the cyanobacterial toxins, the microcystins). Disease caused by exposure to environmental chemicals produced by HABs organisms initiates with consumption of contaminated seafood or the inhalation of toxins entrapped in sea spray. The oral route of intoxication is by far the better understood and more commonly recognized, and coastal states all have public health surveillance and monitoring systems in place to prevent human intoxications. However, exposure to aerosolized particles in Florida red tide (and putative *Pfiesteria* outbreaks) is not uncommon and is an intoxication route that is much more difficult to quantify or control.

In addition to the research efforts on HABs, several projects focus on the effects of environmental chemicals on marine life. One in particular addresses exposure to arsenic in marine waters from chromated copper arsenate (CCA)-treated wood used in building docks. There was also a workshop supported in FY2002 focusing on research priorities for understanding the effects of global atmospheric change on microbes.

## Department of Health and Human Services

### Ocean and Coastal Activities

	Ocean-Related Program Functions: (Percentage must sum to 100)*	Dollars in millions**						
Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution  Marine area and living marine resource management  Minerals and non-living marine resource management  Maritime Commerce  Marine science, research, technology, education  U.S. leadership and cooperative efforts with other nations  Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>HEALTH AND HUMAN SERVICES</b>								
National Institute of Health								
National Institute of Environmental Health Sciences								
Ocean-related Extramural Research and Training		100%	<b>\$3.40</b>	<b>\$3.40</b>	<b>\$6.40</b>	<b>\$6.40</b>	<b>\$6.40</b>	<b>\$6.40</b>

\*The FY 2004 Budget request was used to allocate program funding across functional activities. Where programs are only partly related to oceans, only the estimated oceans-related portion of the funding should be reported here. (This portion of the funding would then be 100 percent oceans-related.)

\*\* Unless specified by the agency, estimates for FY 2005 to FY 2008 were assumed equal to the President's 2004 Budget Request. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.

## **DEPARTMENT OF HOMELAND SECURITY**

The creation of the Department of Homeland Security (DHS) is the most significant transformation of the U.S. government since WWII, when Harry S. Truman merged the various branches of the U.S. Armed Forces into the Department of Defense to better coordinate the nation's defense against military threats.

DHS represents a similar consolidation, both in style and substance. In the aftermath of the terrorist attacks against America on September 11th, 2001, President George W. Bush united 22 previously disparate domestic agencies into one coordinated department to protect the Nation against threats to the homeland.

The new department's first priority is to protect the nation against further terrorist attacks. Component agencies will analyze threats and intelligence, guard our borders and airports, protect our critical infrastructure, and coordinate the response of our nation for future emergencies. Besides providing a better-coordinated defense of the homeland, DHS is also dedicated to protecting the rights of American citizens and enhancing public services, such as natural disaster assistance and citizenship services, by dedicating offices to these important missions.

The Commandant of the Coast Guard reports directly to the Secretary of Homeland Security. However, the U.S. Coast Guard (USCG) also works closely with the Under Secretary of Border and Transportation Security as well as maintains its existing independent identity as a military service. Upon declaration of war or when the President so directs, the Coast Guard would operate as an element of the Department of Defense, consistent with existing law.

### **United States Coast Guard**

The USCG, formerly part of the Department of Transportation, is now housed in the Department of Homeland Security. The USCG is one of the five Armed Services of the United States and the Nation's primary maritime law enforcement agency. In addition, the Coast Guard provides a wide range of safety, security, and environmental protection services. The USCG protects vital interests of the United States from internal and external threats, both natural and man-made, and serves in America's ports and inland waterways, along the coasts, on international waters, or in any other maritime region where U.S. interests are at risk.

The Coast Guard is a military, multi-mission, maritime service that possesses a unique blend of humanitarian, law enforcement, regulatory, diplomatic, and military capabilities. These characteristics undergird the Coast Guard's five fundamental roles: maritime security, maritime safety, protection of natural resources, maritime mobility, and national defense.

- **Maritime Safety**: A basic responsibility of the U.S. government is to protect the lives and safety of Americans. In the maritime realm, the lead responsibility falls to the Coast Guard. In partnership with other federal agencies, state and local governments, marine industries,

and individual mariners, the USCG preserves safety at sea through a focused program of prevention, response, and investigation.

Coast Guard prevention activities include developing commercial and recreational vessel standards, enforcing compliance with these standards, licensing commercial mariners, operating the International Ice Patrol to protect ships transiting the North Atlantic shipping lanes, and educating the public. The USCG develops operating and construction criteria for many types of vessels, from commercial ships to recreational boats and serves as America's voice in the International Maritime Organization, a specialized agency of the United Nations, which promulgates international standards to improve shipping safety, pollution prevention, mariner training, and certification processes. The agency also has primary responsibility for developing domestic shipping and navigation regulations. It ensures compliance with safety regulations in many ways, including inspection of U.S. flag vessels, mobile offshore drilling units, and marine facilities; examination of foreign-flag vessels based on the projected safety and pollution risk they pose; review and approval of plans for U. S. flag vessel construction, repair, and alteration; and documentation of U.S. flag vessels. The Port State Control program is a key element in the Coast Guard's safety enforcement program because approximately 95 percent of large passenger ships and over 90 percent of all international commercial freight arrives or departs on foreign-flagged vessels.

As National Recreational Boating Safety Coordinator, the Coast Guard works to minimize loss of life, personal injury, property damage, and environmental harm associated with recreational boating. The USCG boating safety program involves public education programs, regulation of boat design and construction, approval of boating safety equipment, and vessel safety checks of recreational boats for compliance with federal and state safety requirements. The all-volunteer Coast Guard Auxiliary plays a central role in executing this program.

As the lead agency for maritime search and rescue in U.S. waters, the Coast Guard coordinates the search and rescue efforts of its afloat and airborne units, as well as those of other federal, state, and local responders. It also leverages the world's merchant fleet to rescue mariners in distress around the globe through the Automated Mutual-assistance Vessel Rescue system. When natural disasters, such as hurricanes and floods, threaten America, the Coast Guard active duty and Reserve members work closely with state and local authorities to apply its rescue and other operational capabilities in protecting life, property, and the environment.

Finally, in addition to responding to a wide variety of time-critical maritime emergencies and accidents, the Coast Guard investigates their causes and determines whether laws have been violated that warrant civil or criminal enforcement action, or whether changes should be made to improve safety through prevention programs.

- Protection of Natural Resources: Today, with the U.S. EEZ supporting commercial and recreational fisheries worth more than \$30 billion annually, the Coast Guard serves as the

primary agency for at-sea fisheries enforcement. Additionally, it actively protects sensitive marine habitats and sanctuaries, marine mammals, and endangered marine species, and enforces laws protecting U.S. waters from the discharge of oil and other hazardous substances.

The Coast Guard conducts a wide range of activities — education and prevention, enforcement, contingency planning, and emergency response — in support of its primary environmental protection mission areas: maritime pollution law enforcement, offshore lightering zone enforcement, domestic fisheries enforcement, and commercial vessel inspection. It also provides mission-critical command and control support and typically is the first responding force to maritime environmental disasters.

At the same time, the USCG is typically the lead agency for any response effort. Under the National Oil and Hazardous Substances Pollution Contingency Plan, Coast Guard Captains of the Port are the pre-designated Federal On-Scene Coordinators for oil and hazardous substance incidents in all coastal and some inland areas. The Coordinator is the President's designated on-scene representative responsible for forging a well coordinated and effective response operation involving a diverse set of federal, state, and local government and commercial entities in potentially dangerous and emotionally charged emergency situations. This interagency leadership and coordination role is repeated countless times everyday under less extreme conditions and in essentially every Coast Guard mission. The Coast Guard's National Strike Force supports both Coast Guard and U.S. Environmental Protection Agency coordinators who respond to environmental incidents in both coastal and inland areas of the United States, as well as being available to advise foreign governments for incidents worldwide.

- Maritime Mobility: The U.S. marine transportation system facilitates America's global reach into foreign markets and the Nation's engagement in world affairs, including protection of U.S. national interests, through a national and international regulatory framework governing trade and commerce. This system includes the waterways and ports through which more than 2 billion tons of America's foreign and domestic freight and 3.3 billion barrels of oil move each year, plus the intermodal links that support U.S. economic and military security. It also includes international and domestic passenger services, commercial and recreational fisheries, and recreational boating. The Coast Guard works to increase the integration and coordination of public and private policies, activities, and infrastructure needed to create a seamless inter-modal transportation system.

The USCG carries out numerous port safety and security, waterways management, and commercial vessel safety missions and tasks. It provides a safe and efficient navigable waterway system to support domestic commerce, international trade, and the military sealift requirements for national defense. Coast Guard services include long- and short-range aids to navigation, access to a range of navigational information through Notices to Mariners, vessel traffic services, domestic and international icebreaking and patrol services, technical assistance and advice, vessel safety standards and inspection, and bridge administration

standards and inspection. The Coast Guard is also America's principal point of contact for international marine transportation issues in the IMO and other international regulatory and standards bodies. These critical services support an effective, efficient, and safe marine transportation system that is key to the economic well-being of the United States.

Coast Guard teams also train the maritime forces of other nations throughout the world in all Coast Guard mission areas. Through these efforts the USCG builds vital alliances with foreign nations and gains access to overseas operating areas while it promotes cooperation and compliance with international laws, encourages consistent standards throughout the world and advances internationally recognized human rights concepts.

Finally, the Coast Guard operates the Nation's only polar icebreakers, which enable the Service to project U.S. national presence and protect national interests in the Arctic and Antarctic regions. These polar vessels also re-supply America's polar facilities and support the research requirements of the National Science Foundation.

- **Coast Guard Assets and Capabilities:** To perform its missions, the Coast Guard maintains and operates a variety of facilities, aircraft, cutters, small craft and communications systems strategically located throughout the Nation. In addition, due to the international/global reach of its assigned duties, the Coast Guard has a small number of specialists located in embassies and at overseas military bases around the world. Because rapid response to emergency situations and efficiency in using its available resources have long been Coast Guard hallmarks, most operational assets are multi-mission in nature. Cutters on law enforcement patrols, for example, are always ready to shift immediately into Search and Rescue functions. Similarly, Coast Guard Marine Safety professionals, whose primary focus is prevention of commercial maritime casualties, are always prepared to rapidly shift into environmental response operations when prevention proves inadequate.

The Coast Guard's ability to fulfill its roles — saving lives and property at sea, protecting America's maritime borders and suppressing violations of the law; protecting the marine environment; providing a safe, efficient marine transportation system; and defending the Nation — makes it a unique instrument of national security. More than simply "guarding the coast," the Coast Guard safeguards the global commons and brings critical capabilities to the full-spectrum, multi-agency response needed to address America's national and maritime security needs.

### **Emergency Preparedness and Response Directorate**

The Emergency Preparedness and Response Directorate (EP&R), formerly the Federal Emergency Management Agency, has three major programs that address ocean and coastal issues: the Hazard Mitigation Grant Program, the Flood Mitigation Assistance Program, and the Pre-Disaster Mitigation Program. A summary of EP&R's remaining programs affecting oceans and coasts is provided at the end of this section.

- Hazard Mitigation Grant Program: The Hazard Mitigation Grant Program was created in November 1989, by section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. This program assists states and local communities to implement long-term hazard mitigation measures following a major disaster declaration. Available HMGP federal funding is based on 7.5% of the federal funds spent on the Public and Individual Assistance programs for each disaster. Under this program, EP&R can fund up to 75% of the eligible costs of mitigation projects.

The goals of the Hazard Mitigation Grant Program are: to contribute to the development of a long-term, comprehensive mitigation program by funding measures designed to achieve the goals of the State Hazard Mitigation Plan; and assist state and local governments in avoiding or lessening the impact of natural hazards through safer building practices and the improvement of existing structures and supporting infrastructure. The program involves natural hazard and multi-disaster programs. Examples of coastal project types include property acquisition, structural elevation, wind retrofits, shoreline stabilization, and coastal zone management plans.

All projects funded under the Hazard Mitigation Grant Program must conform to the State Hazard Mitigation Plan, provide a beneficial impact upon the designated disaster area, conform to environmental laws and regulations, solve a problem independently, and be cost-effective. In addition, projects should also contribute to a long-term solution. Duplication of programs must be avoided. For acquisition projects, the applicant must agree to all property acquisition requirements. Project applications are first reviewed at the state level and then submitted to EP&R for final approval.

- Flood Mitigation Assistance Program: In 1994, Congress enacted the National Flood Insurance Reform Act. This Act created the first significant pre-disaster opportunities for mitigation. The Act authorizes a Mitigation Assistance Program that EP&R has since designated the Flood Mitigation Assistance program. The Flood Mitigation Assistance program provides grants for planning, technical assistance and mitigation projects that reduce the risk of repetitive flood damages to structures.

The goals of the Flood Mitigation Assistance program are to reduce the number of repetitively or substantially-damaged structures and the associated claims on the National Flood Insurance Fund; to encourage long-term, comprehensive mitigation planning; and to respond to the needs of communities participating in the National Flood Insurance Plan. Up to \$20 million is available annually under the Flood Mitigation Assistance program. These funds are used for three types of grants: Planning, Technical Assistance, and Project. Project grants are used to fund both riverine and coastal projects. Examples of Flood Mitigation Assistance projects include structure elevation and property acquisition.

States have the lead role in administering Flood Mitigation Assistance program. States have the authority and responsibility for reviewing grant applications, setting mitigation funding priorities, and awarding planning and project grants to eligible applicants. States are also

responsible for ensuring that projects are completed and that all performance and financial reporting requirements are met. Local governments and communities are responsible for developing and maintaining flood mitigation plans before they can receive program grant funds.

- Pre-Disaster Mitigation Program: The Disaster Mitigation Act of 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by adding a new section 203, which established a Pre-Disaster Hazard Mitigation Program (PDM). Funding for the program is provided through the National Pre-Disaster Mitigation Fund to provide a consistent source of funding to state, tribal, and local governments for pre-disaster hazard mitigation planning and mitigation projects primarily addressing natural hazards. Funding these plans and projects reduces overall risks to lives and property, while also reducing reliance on funding from actual disaster declarations.

Local jurisdictions submitting applications for mitigation projects must have an EP&R approved mitigation plan in order to receive funding, and projects must be consistent with state mitigation priorities. All projects funded under the PDM program must be cost effective, consistent with environmental laws and regulations, and contribute to a long-term solution.

For Fiscal Year 2003, funds will be awarded on a competitive basis with a national priority on funding mitigation projects that address National Flood Insurance Program repetitive flood loss properties. The application period for 2003 PDM funding closed on October 6, 2003, and submitted applications were reviewed for completeness, benefit-cost analysis, and technical feasibility. In November 2003, a National Evaluation Panel is evaluating the applications on the basis of predetermined qualitative factors, and will make recommendations on funding to EP&R.

Hazard Mitigation Grant Program funds, Flood Mitigation Assistance Program grants, and Pre-Disaster Mitigation grants are used for projects in coastal areas. Coastal projects that have received such funds include: shoreline stabilization; coastal zone management plans; structure elevation; wind retrofits; property acquisition and relocation; flood proofing; public awareness, education, and outreach; saferooms (high wind shelters); vegetation management; and natural dune restoration.

#### Other EP&R Ocean and Coastal Programs

- Hazards Mapping: Since its inception in 1968, EP&R and the National Flood Insurance Program have been engaged in the massive and unprecedented task of assessing flood hazards nationwide. To date, over 100,000 map panels have been produced for nearly 19,000 communities, many of which are now out of date. In 1997, EP&R formulated the Map Modernization Plan to address this issue, including efforts to leverage funding and to digitize the maps for easier accessibility and subsequent updating. One of the areas of greatest success is the Cooperating Technical Partnership program. Under this program, EP&R

partners with a state or local community to leverage on-site mapping knowledge and capabilities to perform hydrologic and hydraulic modeling and to develop digital topographic data, digital base maps, and refinement of approximate Zone A floodplain boundaries. This allows more maps to be produced with EP&R's limited mapping budget and fosters community ownership of the flood hazard maps. These efforts include coastal flood hazard mapping, especially the Coastal Barrier Resources System, and storm surge modeling.

- Training and Educational Material: EP&R prepares educational and training materials related to coastal areas, including a new three-volume Coastal Construction Manual for design professionals, building officials, floodplain managers, and other local officials. These materials provide participants the opportunity to learn best practices in siting, design, construction, and maintenance for residential buildings in coastal areas.
- Hazards – United States (HAZUS): HAZUS is a risk assessment modeling tool designed for use by disaster managers and applicable to all phases of emergency management and planning. It is currently available for modeling the social and economic impacts from earthquakes. A multi-hazard risk assessment model is scheduled for release in December of 2002. The multi-hazard model will be capable of running loss estimations for earthquake, coastal and riverine flood and hurricane winds from a single, integrated software platform. Development of the hurricane model will continue after 2002 to add capability to model damage and loss from hurricane storm surge and to estimate indirect economic losses, casualties and impacts to lifelines and agriculture. The hurricane model is also being enhanced to provide a "near real-time" loss modeling capability that will rely on the National Oceanic and Atmospheric Administration's real-time meteorological and oceanographic data.
- Heinz Center Study: EP&R, in partnership with seven other federal agencies, five private corporations, and seven foundations, has provided \$200,000 in grants to fund a project being conducted by The H. John Heinz III Center for Science, Economics and the Environment, entitled "The State of the Nation's Ecosystems - Measuring the Lands, Waters, and Living Resources of the United States." The result of the project was a Report on the Nation's Ecosystems that included America's marine and coastal areas.

## Department of Homeland Security

<b>Ocean and Coastal Activities</b>														
	Ocean-Related Program Functions: (Percentage must sum to 100)*					Dollars in millions								
Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>U.S. COAST GUARD</b>														
Maritime Safety														
Search and Rescue	100%							406	488	526	538	551	563	577
Recreational Boat Safety	100%							99	137	145	149	152	156	159
Commercial Vessel Safety	50%		49%		1%			92	104	114	117	120	122	125
Port Safety- Water Ways Management	50%		49%		1%			63	69	75	77	79	81	83
Maritime Mobility														
Bridge Administration			100%					14	15	16	17	17	18	18
Radio Navigation Aids			100%					104	115	126	129	132	135	138
Short Range Aids to navigation			99%		1%			557	629	689	705	721	738	755
Ice Breaking - Domestic			100%					28	53	58	59	60	62	63
Ice Breaking - Polar					47%	53%		95	101	111	114	116	119	122
Protection of Natural Resources														
Marine Environment Protection			99.5%	0.5%				105	184	201	206	211	216	221

Continued from previous page

Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
Enforcement of Laws and Treaties (ELT) – Fish - Domestic	100%							347	494	540	553	565	579	592
ELT - Marine Sanctuaries/Protection of Living Marine Resources	100%							12	8	9	9	9	10	10
<b>U.S. Coast Guard Total</b>								1,922	2,397	2,610	2,673	2,733	2,799	2,863
<b>EMERGENCY PREPAREDNESS AND RESPONSE DIRECTORATE</b>														
Disaster Relief Fund														
Hazard Mitigation Grant Program (HMGP)**	100%							15.1	14.4	0	0	0	0	0
Hazards Mapping**	50%				50%			0	0	0	0	0	0	0
National Flood Insurance Fund														
Hazards Mapping**	50%				50%			2.0	2.0	7.5	7.5	7.5	7.5	7.5
Training and Educational Materials**	100%							0.02	0.02	0.02	0.02	0.02	0.02	0.02
Heinz Center Study**					100%			0	0	0	0	0	0	0
Emergency Management Planning & Assistance														
Hazards-United States (HAZUS)**	100%							0.8	1.6	1.9	1.9	1.9	1.9	1.9
Training and Educational Materials**	100%							0.1	0.1	0.1	0.1	0.1	0.1	0.1
Heinz Center Study**					100%			0	0	0	0	0	0	0

Continued from previous page

Agency, Bureau, Account, Program	Other, not elsewhere classified	U.S. leadership and cooperative efforts with other nations	Marine science, research, technology, education	Maritime Commerce	Minerals and non-living marine resource management	Marine area and living marine resource management	Anthropogenic and natural hazards, including marine pollution	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
National Flood Mitigation Fund														
Flood Mitigation Assistance Program (FMA)**	100%							5.3	2.4	1.0	1.0	1.0	1.0	1.0
<b>EP&amp;R Total</b>								18.02	20.52	10.52	10.52	10.52	10.52	10.52
<b>Department of Homeland Security Total</b>								<b>\$1,940</b>	<b>\$2,418</b>	<b>\$2,621</b>	<b>\$2,684</b>	<b>\$2,744</b>	<b>\$2,810</b>	<b>\$2,874</b>

\*The FY 2004 Budget request was used to allocate program funding across functional activities. Where programs are only partly related to oceans, only the estimated oceans-related portion of the funding was reported. (This portion of the funding would then be 100 percent oceans-related.)

\*\* Estimates for FY 2005 to FY 2008 were assumed equal to the President's 2004 Budget Request. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.

## **DEPARTMENT OF THE INTERIOR**

The Department of the Interior has five Bureaus and one office within the Office of the Secretary that participates in programs relating to the Oceans Act of 2000. The five bureaus with program activities under the Oceans Act of 2000 are the Bureau of Land Management (BLM), the Fish and Wildlife Service (FWS), the Mineral Management Service (MMS), the National Park Service (NPS) and the US Geological Survey (USGS). In addition the National Resource Damage Assessment and Restoration Office within the Office of the Secretary also addresses oceans and coastal areas. The following is a brief description of their activities:

### **The Bureau of Land Management**

The Bureau of Land Management is responsible for the resource management of various national monuments located next to coastal areas, engaging in the planning, public outreach, research and inventory assessments, and on the ground management functions. This includes the management of recreation areas, habitat restoration, predator control and restoration of dunes. Some of the specific projects BLM is working on include the M/V Carissa natural resources damage assessment, research on population monitoring of the snowy Plover and Marbled Murrelet, and inventory and assessment of Reading Island resources.

### **The Fish & Wildlife Service**

The Fish and Wildlife Service (FWS) manages directly or participates with other federal, state, and territorial agencies in conserving significant areas of the marine environment and provides technical assistance as requested by international agencies. Almost one-third of its National Wildlife Refuges either include submerged lands and waters or directly affect coastal resources. These areas, which include nearly a million acres of coral reefs, form a valuable network of some of the most diverse and biologically complex ecosystems on Earth. Through its environmental contaminants, marine mammal, fisheries, and invasive species programs, FWS helps the nation protect its coastal resources. It also participates in international conservation efforts for marine mammals, migratory birds, fish, coral reefs, and other species. FWS issues and administers grants for coastal wetland programs and for research to study the impacts of recreational boating in coastal states. Its scientists participate in numerous research programs to expand human knowledge of the marine environment and endeavor to increase public awareness of the value of these unique ecosystems.

### **The Mineral Management Service**

The Mineral Management Service is responsible for managing the Nation's Outer Continental Shelf (OCS) mineral resources in an environmentally safe and sound manner. In carrying out this function, MMS regularly works with federal, state, and local agencies and in consultation with the public. Relating to the Oceans Act, MMS is primarily engaged in oil spill research, prevention and response planning activities and in OCS environmental and technology

assessments ensuring that industry operations are using the best practices and the latest technologies available to them.

### **The National Park Service**

The National Park Service (NPS) responsibilities relating to the Oceans Act revolve around the management of Seashore and Lakeside parks. The National Park Service has 17 sites that manage oceans or one of the Great Lakes as a significant resource. These sites can be found within four of the seven regions of the NPS; all the Great Lakes resources are found within the Midwest Region. In this capacity, NPS looks at issues dealing with pollution, recreation impacts on visitor expectations and natural resources, habitat studies, and facilities maintenance. NPS also engages in interpretation, training, and educational programs that enhance the knowledge of the public of the parks natural resources. Finally, NPS is responsible for the law enforcement of these parklands.

### **U.S. Geological Survey**

The U.S. Geological Survey (USGS) has a diverse range of activities and programs associated with the Oceans Act and links with many other federal and state agencies when accomplishing this work. Coastal and marine geology investigations provide the understanding of geology and geologic processes required to address issues such as coastal erosion, storm, tsunami, and sea-level rise hazards; impacts of coastal contaminants; and decline of wetland, coral, and offshore marine habitats. Geologic investigations also support development of regional and national assessments of energy and non-energy mineral resources, particularly gas-hydrates and aggregate sand, and habitat structure and change.

Geography programs provide geospatial data and models of elevation, land cover, land use, and human geography across coastal regions. Topographic mapping, remote sensing, monitoring of the land surface, and research programs provide information essential to understanding and characterizing coastal systems and the dynamic interaction of ecological and human systems with the land surface.

Water monitoring and research programs address the availability of water resources, appropriate in both quality and quantity, essential to maintaining human and ecological communities in coastal settings. Monitoring and modeling of hydrologic systems across coastal watersheds address the timing and quantity of freshwater inputs; coastal flood hazards; and the delivery of nutrients, contaminants, and sediments to coastal systems. Data and information support assessment of human impacts and natural variability, including climate change, on freshwater and material fluxes to coastal systems through surface and groundwater transport.

Biological investigations quantify the status and trends of critical living resources including threatened and endangered species, migratory birds, and some marine mammals. Programs document declines in coral, wetland, and marine habitats and investigate the impact of

contaminants, invasive species, human development, and climate change on coastal ecosystems. USGS biological programs assess the factors affecting the reproduction, survival and health of fish and, in the Great Lakes, provide the data and research supporting fisheries management.

USGS discipline programs are coordinated to provide the comprehensive science and information needed to manage coastal ecosystems as coupled physical, biological, and human systems. The USGS has developed a comprehensive plan for a National Coastal Program that provides a framework for multi-disciplinary investigations of critical coastal systems, integrated monitoring to assess coastal change, and coordinated information management and delivery.

### **Natural Resource Damage Assessment and Restoration Office**

Additionally, within the Office of the Secretary, the Natural Resource Damage Assessment and Restoration Office has the Department's trust responsibilities for resources. These include biological, geological, surface water, ground water, and air resources. In carrying out these responsibilities, the primary duties are to assess damages that have occurred to these natural resources and then negotiate legal settlements that provide restoration of the natural resources on behalf of the citizens of the United States.

### **Bureau of Reclamation**

Finally, the Department of the Interior's Bureau of Reclamation may indirectly impact oceans and marine life. For instance, dam operations impact anadromous fish runs, flow of riverine water to the oceans, and sediment loading to estuaries and deltas. While these impacts are very real, they are indirect and tangential to Reclamation's core mission as a water management agency.

**Department of the Interior**

<b>Ocean and Coastal Activities</b>													
Ocean-Related Program Functions: (Percentage must sum to 100)*					Dollars in millions**								
Agency Bureau Account Activity Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>Bureau of Land Management (BLM)</b>													
<b>Management of Land Resources</b>													
Management	100%						0.055	0.054	0.053	0.053	0.053	0.053	0.053
Science/R&D/Technology	100%						0.011	0.011	0.011	0.011	0.011	0.011	0.011
Management		100%					0.092	0.117	0.141	0.141	0.141	0.141	0.141
Science/R&D/Technology		100%					0.075	0.08	0.08	0.08	0.08	0.08	0.08
Education		100%					0.01	0.01	0.01	0.01	0.01	0.01	0.01
Law Enforcement		100%					0	0	0	0	0	0	0
<b>O and C Grant Lands</b>													
Management		100%					0.3	0.3	0.3	0.3	0.3	0.3	0.3
Science/R&D/Technology		100%					0.2	0.2	0.2	0.2	0.2	0.2	0.2
Education		100%					0.63	0.63	0.63	0.63	0.63	0.63	0.63
Law Enforcement		100%					0.02	0.02	0.02	0.02	0.02	0.02	0.02
<b>BLM Totals</b>							1.393	1.422	1.445	1.445	1.445	1.445	1.445

Continued from previous page														
Agency Bureau Account Activity Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>U.S. FISH AND WILDLIFE SERVICE (FWS)</b>														
<b>Resource Management</b>														
Candidate Conservation	100%							0.177	0.15	0.15	0.15	0.15	0.15	0.15
Consultation	100%							1.536	1.554	1.61	1.603	1.603	1.603	1.603
Recovery	100%							3.219	3.525	2.859	2.859	2.859	2.859	2.859
Coastal Program	100%							11.299	11.021	9.639	9.639	9.639	9.639	9.639
National Conservation Training Center	100%							0.025	0.025	0.025	0.025	0.025	0.025	0.025
Refuge Operations And Maintenance	100%							76.62	85.49	91.268	91.268	91.268	91.268	91.268
Marine Mammals Program	100%							3.716	3.629	2.426	2.426	2.426	2.426	2.426
Anadromous Fisheries Management	65%				35%			10.266	10.158	10.169	10.169	10.169	10.169	10.169
ANS Control/Invasive Alien Species	100%				35%			1.1	1.261	1.361	1.361	1.361	1.361	1.361
Ballast Water Demonstration Project				100%				0.3	0.3	0.3	0.3	0.3	0.3	0.3
Anadromous Hatcheries	100%							22.18	21.54	20.54	20.54	20.54	20.54	20.54
Division of International Conservation						100%		0.4	0.4	0.4	0.4	0.4	0.4	0.4
Division of Management Authority						100%		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Division of Scientific Authority						100%		0.07	0.07	0.07	0.07	0.07	0.07	0.07

Continued from previous page														
Agency Bureau Account Activity Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>Sport Fish</b>														
Coastal Wetlands Grants	100%							13.04	12.201	12.403	12.84	12.84	12.84	12.84
Clean Vessel Act Program	100%							7	7	7	7	7	7	7
<b>North American Wetlands Conservation Fund</b>														
Coastal and Great lakes Grants	100%							13.04	12.201	12.403	12.403	12.403	12.403	12.403
<b>Cooperative Endangered Species Conservation Fund</b>														
Section 6 Grants to States	100%							0.411	0.645	0.645	0.645	0.645	0.645	0.645
<b>FWS Total</b>								164.599	171.37	173.468	173.898	173.898	173.898	173.898
<b>MINERALS MANAGEMENT SERVICE (MMS)</b>														
<b>ROMM/OCS Land</b>														
Leasing & Environmental Program		100%						35	38	37	37	37	37	37
Resource Evaluation Program		100%						25	27	26	26	26	26	26
Regulatory Program		100%						50	51	50	50	50	50	50
Information Management Program		100%						15	23	26	26	26	26	26
<b>Oil Spill Research Program</b>														
Oil Spill Research		100%						6	6	7	7	7	7	7
<b>MMS Totals</b>								131	145	146	146	146	146	146

Continued from previous page												
Agency Bureau Account Activity Program						FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
	Anthropogenic and natural hazards, including marine pollution											
	Marine area and living marine resource management											
	Minerals and non-living marine resource management											
	Maritime Commerce											
	Marine science, research, technology, education											
	U.S. leadership and cooperative efforts with other nations											
	Other, not elsewhere classified											
<b>NATIONAL PARK SERVICE (NPS)</b>												
<b>Operations of the National Park Service</b>												
Resource Management	100%					1.845	1.937	2.038	2.038	2.038	2.038	2.038
Interpretation, Education, and Training	100%					4.45	4.698	4.942	4.942	4.942	4.942	4.942
Law Enforcement	100%					4.457	4.68	4.923	4.923	4.923	4.923	4.923
<b>NPS Totals</b>						10.752	11.315	11.903	11.903	11.903	11.903	11.903
<b>U.S. GEOLOGICAL SURVEY (USGS)</b>												
<b>Surveys, Investigations, and Research</b>												
Geography/Geographic Analysis and Monitoring	100%					0.05	0.04	0.03	0.03	0.03	0.03	0.03
Geologic Hazard Assessments	100%					1.09	0.82	0.8	0.8	0.8	0.8	0.8
Geologic Landscape and Coastal Assessments	41%	29%	10%	1%	19%	38.02	39.51	38.32	37.82	37.82	37.82	37.82
Geologic Resource Assessments	20%		80%			0.70	0.61	0.61	0.61	0.61	0.61	0.61
Hydrologic Monitoring, Assessments, and Research	100%					1.71	1.71	1.71	1.71	1.71	1.71	1.71
Water Resources Cooperative Water Program	100%					1.24	1.24	1.24	1.24	1.24	1.24	1.24
Water Resources Research Act Program	100%					0.04	0.04	0	0	0	0	0

Continued from previous page														
Agency Bureau Account Activity Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
Biological Research and Monitoring	4%	78%	13%	5%				19.19	19.51	19.53	19.53	19.53	19.53	19.53
Cooperative Topographic Mapping		100%						2.55	2.43	2.31	2.31	2.31	2.31	2.31
Multiple disciplines - Chesapeake Bay		100%						2.5	2.43	2.43	2.43	2.43	2.43	2.43
Multiple disciplines - Everglades		100%						8.62	8.03	8.03	8.03	8.03	8.03	8.03
Multiple disciplines - Great Lakes		100%						0.983	0.983	0.983	0.983	0.983	0.983	0.983
Multiple disciplines - San Francisco Bay		100%						1.42	1.32	1.32	1.32	1.32	1.32	1.32
Water Resources Assessment and Research				100%				0.15	0.15	0.15	0.15	0.15	0.15	0.15
<b>USGS Totals</b>								<b>78.263</b>	<b>78.823</b>	<b>77.463</b>	<b>76.963</b>	<b>76.963</b>	<b>76.963</b>	<b>76.963</b>
<b>NATURAL RESOURCE DAMAGE ASSESSMENT &amp; RESTORATION (NRDAR)</b>														
Damage Assessments	100%							0.45	0.45	0.5	0.5	0.5	0.5	0.5
Restoration Implementation	100%							17.6	14.5	18	18	18	18	18
<b>NRDAR Totals</b>								<b>18.05</b>	<b>14.95</b>	<b>18.5</b>	<b>18.5</b>	<b>18.5</b>	<b>18.5</b>	<b>18.5</b>
<b>Department of the Interior Totals</b>								<b>\$404.06</b>	<b>\$422.88</b>	<b>\$428.78</b>	<b>\$428.71</b>	<b>\$428.71</b>	<b>\$428.71</b>	<b>\$428.71</b>
*The FY 2004 Budget request was used to allocate program funding across functional activities. Where programs are only partly related to oceans, only the estimated oceans-related portion of the funding was reported. (This portion of the funding would then be 100 percent oceans-related.)														
** Unless specified by the agency, estimates for FY 2005 to FY 2008 were assumed equal to the President's 2004 Budget Request. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.														

## MARINE MAMMAL COMMISSION

The Marine Mammal Protection Act was enacted in 1972 in response to growing concern that certain species and population stocks of marine mammals were in danger of extinction or depletion as a result of human activities. The Act established a national policy to prevent such depletion and directed federal agencies to take measures to replenish marine mammal species or population stocks that had declined below optimum sustainable population levels and to protect essential marine mammal habitats, including rookeries, mating grounds, and areas of similar significance, from adverse effects of human actions.

The Act was the first legislation to mandate an ecosystem approach to the conservation of marine living resources. In the Act, Congress directed that the primary objective of marine mammal management should be to maintain the health and stability of the marine ecosystem and, when consistent with that primary objective, to obtain and maintain optimum sustainable populations of marine mammals. Over the years, scientists, managers, and marine resource users have realized that to be effective, conservation regimes must consider possible impacts on both target and non-target species. Thus, the ecosystem approach embodied in the Marine Mammal Protection Act (MMPA) has been incorporated in other legislation, not only in this country, but in other countries and in international agreements, such as the Convention for the Conservation of Antarctic Marine Living Resources and the Food and Agricultural Organization's Code of Conduct for Responsible Fisheries.

The Marine Mammal Commission and its Committee of Scientific Advisors on Marine Mammals, created under Title II of the MMPA, are charged with overseeing domestic and international actions to further the policies and provisions of the Act and advising Congress and the regulatory agencies. Because of its independent status and the scientific expertise of its Committee of Scientific Advisors, the Commission is able to provide objective, science-based advice.

The small size and independent status of the Marine Mammal Commission (MMC) often enable it to evaluate and identify solutions to emergency situations and developing conservation problems more rapidly and more economically than can be done by larger responsible regulatory agencies. The Commission works with other agencies to support projects of mutual interest, such as the 2003 Future Directions of Marine Mammal Research Consultation, the 2002 Workshop on the Management of Hawaiian Monk Seals in the Main Hawaiian Islands, and the 2000 Workshop on Impacts of Changes in Sea Ice and Other Environmental Parameters in the Arctic. The research Consultation gathered scientists from around the world to discuss marine mammal research and develop priorities for filling information gaps. The MMC is currently preparing a summary report of the Consultation. The monk seal report calls for increased collaboration among federal, state, and local agencies as well as volunteer organizations to collect information on seals and effectively manage them when they haul out. The report of the sea ice workshop lists a number of recommendations including the recruitment and training of Alaska Natives to work collaboratively with scientists on the whole range of environment-related research projects, as well as better communication between Alaska Native communities and

scientists. The Commission has provided completed reports to government agencies, private organizations, and scientists in the United States and elsewhere to focus attention on the most critical research and regulatory problems.

The Commission continues to meet its statutory responsibilities by:

- working with representatives of state and federal agencies, affected fisheries, and public interest groups to reduce the numbers of marine mammals taken incidental to human activities from stocks where the level of human-caused mortality and serious injury are greater than can be sustained;
- encouraging the responsible regulatory agencies to develop, update, and implement recovery and conservation plans for endangered, threatened, and depleted species and populations of marine mammals;
- promoting the adoption of science-based, ecosystem-oriented approaches to the conservation of marine mammals and other marine organisms, both nationally and internationally;
- improving the planning and coordination of domestic and international marine mammal research and management programs;
- helping to plan, review, and coordinate federal, state, academic, and international research and monitoring programs bearing upon the conservation of marine mammals to focus on the most important issues and prevent wasteful, duplicative efforts;
- reviewing the efficacy of recovery programs for endangered, threatened, or depleted populations of marine mammals, and providing responsible federal agencies with recommendations and assistance for implementing priority research and management tasks;
- managing and publishing the results of its research and studies program to facilitate resolving problems affecting the conservation of marine mammals and their habitats;
- recommending to the Secretaries of Commerce and the Interior appropriate responses to requests for authorization to take marine mammals for scientific research, public display, enhancement of wild stocks, and incidental to other activities;
- working with the Administration and Congress to identify measures to improve the effectiveness of the MMPA;
- recommending to the Secretary of Agriculture actions needed to ensure the health and welfare of marine mammals being maintained in captivity for purposes of scientific research and public display;
- consulting with the Department of Commerce regarding research mandated by the International Dolphin Conservation Program Act concerning the effects of chase and capture on depleted dolphin stocks in the eastern tropical Pacific tuna fishery;
- assisting the Department of State and other federal agencies to facilitate operation of the Arctic Council and its subsidiary bodies; and
- working with the Alaska Natives and others to identify and minimize threats posed by possible environmental changes to Arctic marine mammals and the people who depend upon them for food and other subsistence needs.

The MMC is convening a series of international discussions regarding potential impacts on marine mammals caused by anthropogenic sound. The Commission efforts build on work by the National Research Council to develop research priorities to improve our understanding of the issue and develop ways to avoid and minimize impacts to marine mammals.

The MMC continues to pursue an active research and studies program that addresses fundamental issues of importance to the conservation of marine mammals and their habitat as espoused by the MMPA. These research projects complement the MMC's ongoing oversight of the complex issues involving the conservation, protection, and management of marine mammals and their habitats in the United States and abroad.

## Marine Mammal Commission

Ocean and Coastal Activities														
Agency, Bureau, Account, Program	Ocean-Related Program Functions: (Percentage must sum to 100)*					Dollars in millions**								
	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>MARINE MAMMAL COMMISSION</b>	100%					<b>\$1.96</b>	<b>\$3.03</b>	<b>\$1.86</b>	<b>\$1.86</b>	<b>\$1.86</b>	<b>\$1.86</b>	<b>\$1.86</b>	<b>\$1.86</b>	<b>\$1.86</b>
<p>*The FY 2004 Budget request was used to allocate program funding across functional activities. Where programs are only partly related to oceans, only the estimated oceans-related portion of the funding was reported. (This portion of the funding would then be 100 percent oceans-related.)</p> <p>** Unless specified by the agency, estimates for FY 2005 to FY 2008 were assumed equal to the President's 2004 Budget Request. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.</p>														

## NATIONAL AERONAUTIC AND SPACE ADMINISTRATION

The National Aeronautics and Space Administration's (NASA) ability to study the Earth's oceans from space has become essential to progress in oceanography, given the global reach of the Earth's oceans and their extensive interactions with the atmosphere in shaping the Earth's climate. NASA Oceanography has many highly successful and critical missions in orbit, several pilot or new measurement-missions planned, an extensive research program for analysis of this data, and modeling/data assimilation activities in place to provide useful products for a wide variety of science investigations and applications. NASA's participation in national program planning and implementation (such as the National Ocean Partnership Program, or NOPP) ensures that these contributions are shared with other agencies as appropriate.

The primary objectives of NASA's Oceanography program are to describe, understand, and predict the time-varying three-dimensional circulation of the ocean and the biological regimes of the upper ocean as determined from space. The Oceans and Coastal programs encompass core research within the sub-disciplines of Physical and Biological Oceanography. Aspects of oceanographic modeling are also supported within the Global Modeling and Analysis Program, and the high-latitude ice-covered oceans are supported by the Cryospheric Sciences Program. Oceanographic research is integrated with other aspects of the Earth system through NASA's interdisciplinary program.

### Observations

Satellite observations that are dedicated to oceanographic objectives provide the basic information upon which most of NASA's oceanographic research is based; however there is necessarily great synergy with the global *in situ* networks of observations deployed by other agencies (e.g., National Oceanographic and Atmospheric Administration (NOAA), National Science Foundation (NSF), and the U. S. Navy). Observations made by NASA's Earth Science Enterprise (ESE) space missions are categorized into two general areas: systematic measurements and exploratory measurements. In addition to the space missions, calibration and validation activities (*in situ* observations) are required to establish and maintain climate quality data records.

Systematic Measurements: Systematic measurements require long-term sustained support to obtain long time series for scientific studies and environmental monitoring. Areas of observation include:

- Ocean Surface Topography: Measurements of the dynamic height of the surface of the ocean reflecting the accumulated temperature, salinity, and mass anomalies of the underlying water column. These measurements are the key inputs to global circulation models, and have enabled significant developments in global oceanography over the last decade. These data are assimilated into operational models used to predict El Niño (TOPEX/Poseidon, Jason-1, and Ocean Surface Topography Mission (OSTM)).

- Ocean Surface Winds: Winds are the essential driving force of the upper ocean circulation. Observations of surface wind over the ocean are historically sparse because their source is a few ships and buoys. Measurement of vector winds at 25 km scale globally on a daily basis is now routine, thanks to satellite scatterometers. Weather services and oceanographers use these measurements in a broad array of science studies, and the measurements are routinely assimilated into operational forecast models (Quikscat, Seawinds on the Advanced Earth Observation Satellite (ADEOS)-2).
- Ocean Color: Ocean color measurements at particular wavelengths are combined using mathematical algorithms to estimate the chlorophyll content of ocean surface waters, allowing detection of characteristic signatures of different types of phytoplankton, and subsequent interpretations of ocean productivity. These measurements are key to evaluating the carbon cycle in the ocean (SeaWiFS, MODIS on Terra, and MODIS on Aqua).
- Sea Surface Temperature (SST): This quantity is routinely measured from operational meteorological satellites, using the Advanced Very High Resolution Radiometer (AVHRR). NASA's role is to provide new and better products in terms of absolute accuracy and stability for climate requirements (MODIS and ASTER on Terra, MODIS on Aqua, TMI on the Tropical Rainfall Measuring Mission (TRMM)).

Exploratory Measurements: NASA develops and implements satellite missions to explore new techniques or new geophysical variables. The Gravity Recovery and Climate Experiment (GRACE) mission, launched in March 2002, will contribute to oceanography by measuring the time varying gravity field. These measurements, combined with the ocean surface topography data, will enable the separation of the thermohaline sea level signal from the sea level signal due to mass changes. This will likely lead to improved simulations of the ocean, and subsequently, better ocean circulation predictions. The Ice Cloud and land Elevation Satellite (ICESat), which provides high-accuracy, high-resolution observations of surface topography, shows promise for estimating sea ice thickness by measuring the freeboard height of the floating ice cover. Sea ice thickness remains the most critical unknown in determining ocean-atmosphere energy exchanges in the climatically sensitive polar regions.

NASA is examining other exploratory techniques such as: a) measurement of ocean surface salinity from space (Aquarius), b) utilization of reflected signals from the Global Positioning System satellites for sea level and wind vector measurement; c) utilization of LIDAR to estimate surface mixed layer depth; and d) pulse and probe laser techniques to study phytoplankton photosynthetic efficiency. NASA conducts instrument development and airborne tests of these techniques.

Calibration and Validation: Calibration and validation activities are generally *in situ* observations, which are required to establish and maintain the quality and usefulness of the remotely sensed data.

The Sensor Intercomparison and Merger for Biological and Interdisciplinary Oceanic Studies (SIMBIOS) Project provides a long-term ocean color data set that encompasses the measurements from several satellite instruments from the U.S. and its international partners (SeaWiFS, MODIS on Terra and Aqua, OCTS on ADEOS-1, Medium Resolution Imaging Spectrometer (MERIS) aboard ENVISAT-1, and OCM on IRS-P4). It serves as a bridge between previous, current, and future ocean color missions. SIMBIOS has a calibration and product validation component as well as an *in situ* bio-optical database archive. The primary objectives are to; a) reduce measurement errors by identifying and characterizing true error sources, such as changes in the satellite sensor, polarization, etc.; b) evaluate the various bio-optical algorithms used by different ocean color missions; c) improve algorithms for data merging between various sensors; d) improve satellite data processing; and e) calibration and measurement protocols.

The Marine Optical BuoY (MOBY), is an ocean platform that measures visible and near-infrared radiation entering and emanating from the ocean. MOBY provides an exceptional set of water-leaving radiances for the intercomparison and merger of measurements from instruments on different satellite platforms. The state of the art ocean color calibration reference is traceable to the National Institute of Standards and Technology (NIST). MOBY, operated in partnership with NOAA, provides a time-series database for bio-optical algorithm development in its role of measuring ocean color. The buoy acquires data 3-5 times per day at the same site, allowing oceanographers to monitor the daily fluctuations in biomass concentrations at that site and fine-tune their algorithms accordingly. It is truly a national and international calibration facility for remotely sensed ocean color data.

### Modeling

A high NASA priority is combining biological and physical models to facilitate the co-interpretation of ocean color and ocean surface topography data. NASA generally uses ocean models with an extensive heritage and adapts them for the special requirements of satellite data assimilation. NASA's Oceanography modeling projects offer unique capabilities which include: developing efficient and technically advanced data assimilation techniques; optimizing estimates of the ocean circulation, a key link to seasonal-to-interannual climate forecasting; and estimating the exchange of heat and CO<sub>2</sub> between the ocean and atmosphere, a key link to global long-term climate prediction.

NASA's component of the National Oceanographic Partnership Program (NOPP) funded several significant activities tying the global modeling and state estimation programs to coastal high-resolution modeling applications. These include focused activities on Monterey Bay, Narragansett Bay, and the South Atlantic Bight. NASA also invested in NOPP's education and instrumentation projects, as well as the interagency funded Estimating the Circulation and Climate of the Ocean (ECCO) Project. Modeling and data assimilation activities have been catalytic in developing the successful NOPP interagency cooperation.

## NASA's Role

NASA's primary role in oceans and coastal activities is developing the next generation of techniques and capabilities to improve satellite-based coastal ocean data, demonstrate the techniques' utility, and pioneer the utilization of the acquired data. In addition to observation capabilities, NASA develops innovative systems for data management and funds research and modeling advances. NASA is partnering with other agencies to transfer its "systematic measurement" capabilities to operational agencies such as NOAA. NOAA, the Navy, and private sector institutions are just a few organizations using these measurements for practical purposes. NASA's strength in oceanography has traditionally been in providing the global "blue water" view of the planet from space. However, the coastal zone often presents societal and practical ocean challenges. NASA plans to aggressively address coastal issues, e.g., instrumented research to provide better resolution for coastal remote sensing; development of nested, high-resolution coastal models; and use of global model outputs as offshore boundary conditions. Additionally, understanding of the ice-covered polar regions, believed to be the most vulnerable to changes in climate, is a high priority within NASA's research activities. NASA has led the way in using satellite sensors to derive ice concentration, extent, temperature, and motion to understand high-latitude oceanographic processes, particularly in the context of significant climate changes in the Arctic and Antarctic.

In addition to dedicated ocean observations and research, NASA's programs provide critical observations and research in a "broader context", to understand and model the broader oceanic environment. For example the Tropical Rainfall Measuring Mission (TRMM) precipitation data continues to provide unique understanding of the ocean-atmosphere interaction in the tropics.

NASA investments in ocean science and technology during the past decades have established a solid foundation for ocean monitoring and ocean conditions prediction in the next decade.

## National Aeronautic and Space Administration

Ocean and Coastal Activities																									
Agency Bureau Account Activity Program	Ocean-Related Program Functions: (Percentage must sum to 100)*				Dollars in millions**																				
	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request**	FY 2005 Budget Projection**	FY 2006 Budget Projection**	FY 2007 Budget Projection**	FY 2008 Budget Projection**											
<b>OFFICE OF EARTH SCIENCE</b>																									
Oceans Activity																									
Research															100%				36	33.2	41.4	42.9	44.5	38.9	39.9
Observations															100%				33.8	52.8	57.1	45.5	51.3	46.5	34.6
<b>National Aeronautic and Space Administration</b>															<b>\$69.80</b>	<b>\$86.00</b>	<b>\$98.50</b>	<b>\$88.40</b>	<b>\$95.80</b>	<b>\$85.40</b>	<b>\$74.50</b>				
*The FY 2004 Budget request was used to allocate program funding across functional activities. Where programs are only partly related to oceans, only the estimated oceans-related portion of the funding was reported. (This portion of the funding would then be 100 percent oceans-related.)																									
** Data for FY 2004 to FY 2008 are estimates; figures may change due to a switch to full-cost accounting. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.																									

## NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) supports ocean science research and education, including disciplinary and interdisciplinary research efforts and the means, particularly ships and other equipment, necessary to access the oceans from the surface to deep in the sea floor. Through a peer-reviewed grant proposal system, NSF annually invests more than \$300 million in ocean science activities conducted by universities and other organizations, making it the largest federal supporter of academic basic research in the ocean sciences.

The NSF Directorates with the most direct interest in ocean sciences are described below. Since NSF is a resource agency that responds to unsolicited proposals across all fields of science and engineering, considerable investments are made in relevant research and education activities through programs not directly targeted toward ocean science. A searchable database of all NSF awards is available on the NSF web site at <http://www.nsf.gov>.

### Directorate for Geosciences, Division of Ocean Sciences

The Division of Ocean Sciences supports basic research and education to further understanding of all aspects of the global oceans and their interactions with the earth and the atmosphere. The Division also supports the operation, acquisition, construction, and conversion of major shared-use oceanographic facilities needed to carry out oceanographic-related research programs.

Since grant recipients are external to NSF, partnerships are fundamental to agency activities. However, the importance of partnerships extends far beyond grantees. The academic community is engaged in planning efforts for new ocean science programs and reviews of existing programs. The Division of Ocean Sciences collaborates with other federal agencies including the Office of Naval Research, the National Oceanic and Atmospheric Administration, and the National Aeronautics and Space Administration on a range of activities. Collaboration often involves joint funding of individual projects, special competitions or entire programs. The National Oceanographic Partnership Program (NOPP) provides a forum in which federal agencies can coordinate and collaborate on activities of mutual interest. Recent NOPP emphases have included the development of an integrated ocean observing system and data access and assimilation issues. Ocean Sciences also partners with other nations on large science programs such as the Ocean Drilling Program.

At any given time, certain research areas within the Division of Ocean Sciences may be selected for emphasis on the basis of special scientific opportunities. Programs aimed at improving understanding of global change include Global Ocean Ecosystem Dynamics, Climate Variability and Predictability, Marine Aspects of Earth System History, Ridge Inter-Disciplinary Global Experiments, and Long-Term Ecological Research sites in coastal areas. Other focused efforts include the Ecology of Harmful Algal Blooms, Continental Margins Research, Centers for Oceans and Human Health, and Coastal Ocean Processes programs. Further information on these programs is available on the Ocean Sciences Division home page at

<http://www.geo.nsf.gov/oce/>. The Division supports research and education activities through the Ocean Section, the Marine Geosciences Section, and the Integrative Programs Section.

Ocean Section: The Ocean Section of the Division of Ocean Sciences funds research on biological, chemical, and physical processes occurring within the water column from the air/sea interface to the ocean floor. The Ocean Section is composed of the following programs:

- Biological Oceanography: The Biological Oceanography program supports research on ocean productivity; the distribution, abundance, physiology, and life history of pelagic, coastal, and deep-sea marine organisms and their interactions with environments; structures of pelagic and benthic food chains; primary and secondary production; interactions between deep-sea biological processes and the ocean ecosystem; the specialization of deep-sea organisms; the ecology of the Great Lakes and factors regulating productivity; and marine biotechnology.
- Chemical Oceanography Program: The Chemical Oceanography program supports research on physical and chemical properties of seawater, including kinetic and thermodynamic equilibria of chemical species and compounds in seawater; fluxes between seafloor sediments, their interstitial waters, and overlying seawater; fates of materials deposited on the seafloor; alterations and interactions of material moving through the ocean; interactions and interdependencies between chemical processes and marine organisms; air-sea exchanges of manmade and naturally mobilized chemicals; and chemical properties of the ocean surface.
- Physical Oceanography Program: The Physical Oceanography program supports research on the description, analysis, and modeling of oceanic circulation and transport; the effects of circulation on energy and momentum transport; physical circulation processes, eddy generation, and turbulent mixing on continental shelves; mixing processes and circulation in estuaries; wind-generated tides and surface and internal waves; small-scale transport processes such as diffusion, conduction, convection, and three-dimensional turbulence; and physical properties of seawater and circulation and mixing processes in lakes.

Marine Geosciences Section: The Marine Geosciences Section supports research on processes that occur on and below the seafloor and at the interface with water, sediment, and rocks. The section is composed of the following programs:

- Marine Geology and Geophysics Program: The Marine Geology and Geophysics program supports research on the structure of continental margins, oceanic rise systems, and deep-sea sedimentary basins; the evolution of ocean basins; processes controlling exchanges of heat and chemical elements between seawater and oceanic rocks; tectonic and volcanic activity at mid-ocean ridges; chemical and mineralogic variations in marine sediments; the deposition, erosion, and distribution of marine sediments; geologic and oceanographic processes controlling sedimentary systems; past oceanic circulation patterns and climates;

paleoenvironmental controls on fossil groups and sediment types; and interactions of continental and oceanic geologic processes.

- Ocean Drilling Program: The Ocean Drilling program explores, on a global scale, the Earth's crust beneath the ocean in order to learn more about the composition, structure, and history of the submerged portion of the Earth's surface. The drilling process involves collecting and logging geologic samples from the floor of deep ocean basins through rotary coring and hydraulic piston coring. The logs and samples of the cores are available to qualified scientists throughout the world for research projects. NSF provides funding for the participation and drilling-related research performed by U.S. scientists.

NSF has been working with its international partners to develop the Integrated Ocean Drilling Program, the future phase of scientific drilling. The Integrated Ocean Drilling Program envisions an expansion of exploration beneath the oceans, made possible by increasing drilling capability, from the single-ship operation currently in use, to a multiple-drilling platform operation of the future.

Integrative Programs Section: The Integrative Programs Section supports activities, including facilities, necessary for NSF-funded research and training of oceanographers across disciplines. Examples of research and training support include technology development and dedicated educational activities. The section provides significant support to facilities and technologies that enable access to various regions of the ocean and ensure effective research and communication capabilities.

- Ship Operations, Oceanographic Instrumentation, Technical Services, and Shipboard Scientific Acquisitions and Upgrades Programs: These programs support facilities including ships, submersibles, large shipboard scientific equipment, and shared-use instruments to collect and analyze data. NSF is the primary supporter of the academic research fleet, which consists of 28 ships of various sizes, as well as a major supporter of human-occupied submersible activities. Support for major oceanographic facilities is concentrated at institutions that have substantial research programs in oceanography and also support the research projects of other institutions. The University-National Oceanographic Laboratory System schedules these facilities and expeditionary programs.
- Oceanographic Technology and Interdisciplinary Coordination: This program supports a wide range of multidisciplinary activities that broadly seek to develop, transfer, or apply instrumentation and technologies that will benefit research programs supported by NSF, and also enhance the conduct of basic ocean sciences research. The scope of projects varies from short-term feasibility studies, to the development, construction, and at-sea testing of prototypes. Recent investments have included the technological development and emplacement of seafloor observatories, remotely operated vehicles, autonomous underwater vehicles, and other instrumentation such as communications technology. In addition, the Interdisciplinary Coordination Program area supports a limited number of research

approaches that cross the four basic ocean science subdisciplines (physics, chemistry, biology, and geology and geophysics).

Educational Opportunities are funded both through direct support for students on research grants and through programs, many of them agency-wide, emphasizing education at all levels. OCE supports programs including Research Experiences for Undergraduates sites, Integrative Graduate Education and Research Training, and Faculty Early Career Development. A new program, Centers for Ocean Sciences Education Excellence (COSEE), is building a nationally coordinated effort in ocean science education designed to integrate ocean science research into delivery of high-quality education programs in the ocean sciences. The first awards were made in the fall of 2002.

#### Office of Polar Programs (Ocean-Related Research)

The Earth's polar regions offer compelling scientific opportunities, but their isolation and extreme climates challenge the achievement of these opportunities. The Foundation's programs for support of research in the Antarctic and the Arctic acknowledge the need to understand the relationships of these regions with global processes and the need to understand the regions as unique entities. NSF's polar programs, most of which are supported through the Office of Polar Programs, provide support for investigations in a range of scientific disciplines, including a number of areas of ocean-related research.

Arctic Research Programs: The goal of the NSF Arctic Research Programs is to gain a better understanding of the Earth's biological, geological, chemical, and social processes, and the interactions of ocean, land, atmosphere, biological, and human systems. The two Arctic programs with ocean-related research are Arctic System Science and Arctic Natural Sciences.

- Arctic System Science: The marine environment of the Arctic is an interactive system comprising the water, ice, air, biota, dissolved chemicals and sediments of the Arctic Ocean and its adjacent seas. Through the operation of feedback loops that are only partially understood, this system strongly affects the steady and time-varying climatic state of the earth, and responds sensitively to environmental perturbations that originate outside the Arctic. Ocean-related research funded in Arctic System Science seeks to enhance understanding of this system and its role in climate and global change.
- Arctic Natural Sciences: The goal of Arctic Natural Sciences-funded oceanographic research is to develop knowledge of the structure of the Arctic Ocean and adjacent seas, their physical and biological interactions with the global hydrosphere, and the formation and maintenance of the arctic sea-ice cover. Areas of interest are the distribution of life in high-latitude oceans; low-temperature life processes; the formation, movement, and mixing of arctic water masses; the growth and decay of sea ice; the exchange of salt and heat with the Atlantic Ocean and the Bering Sea; magnetic anomalies, heat flow and gravity variations; sedimentary history; and the role of the Arctic Ocean and adjacent seas in global climate.

The interdependencies of chemical and physical processes and marine organisms and productivity are considered.

U.S. Antarctic Program: NSF is charged with managing all U.S. activities in the Antarctic as a single, integrated program. Funding for the U.S. Antarctic Program includes research and the science support directly linked to specific research projects, as well as support for the broader operations and logistics infrastructure that make it possible to conduct science on the remote and uninhabited continent. Three Antarctic programs that fund ocean-related research are Antarctic Geology and Geophysics, Antarctic Biology and Medicine, and Antarctic Ocean and Climate Systems.

- Antarctic Geology and Geophysics: This program supports a broad range of marine geological and geophysical activities to elucidate the development of Antarctica and the surrounding ocean basins. Marine studies make up about 30% of the program. Within the marine activities, studies that focus on the long and short term history of the Antarctic ice sheets account for about 80% and plate tectonic studies account for about 20%.
- Antarctic Biology and Medicine: The goal of the Antarctic Biology and Medicine program is to understand the natural variability of marine ecosystems. An important direction is toward correlating the structure and function of the marginal ice-zone ecosystem with oceanic and atmospheric processes. Of particular interest are the influence of nutrient limitations on primary production and the role of marine phytoplankton in carbon dioxide cycling.
- Antarctic Oceans and Climate Systems: Antarctic oceanic and tropospheric studies, supported by Antarctic Oceans and Climate Systems, focus on the structure and processes of the ocean-atmosphere environment and their relationships with the global ocean, the atmosphere, and the marine biosphere. As part of the global heat engine, the Antarctic has a major role in the world's transfer of energy. Its ocean/atmosphere system is known to be both an indicator and a component of climate change.

#### Directorate for Biological Sciences (Ocean-Related Research)

The Directorate for Biological Sciences provides support for research to advance understanding of the underlying principles and mechanisms governing life. Research ranges from the study of the structure and dynamics of biological molecules, such as proteins and nucleic acids, through cells, organs and organisms, to studies of populations and ecosystems. It encompasses processes that are internal to the organism as well as those that are external, and includes temporal frameworks ranging from measurements in real time through individual life spans, to the full scope of evolutionary time.

The Directorate is organized into four divisions that fund research on marine organisms or related to marine ecosystems and support marine research infrastructure.

- Division of Environmental Biology: The Division of Environmental Biology supports fundamental research on the systematics, populations genetics, and diversity of marine organisms. In addition it supports research on the terrestrial components of coastal communities and ecosystems (e.g., salt marshes) and jointly supports one coastal Long-Term Ecological Research site with the Geosciences Directorate.
- Division of Integrative Biology and Neuroscience: The Division of Integrative Biology and Neuroscience supports research aimed at understanding the living organism – plant, animal, microbe – as a unit of biological organization. Specific ocean-related research includes studies on ecological and evolutionary physiology, behavior, and behavioral ecology of marine species. In addition, neurobiological and developmental research using model organisms, such as squid and sea urchins, is also supported.
- Division of Molecular and Cellular Biosciences: The Division of Molecular and Cellular Biosciences supports research and related activities that contribute to a fundamental understanding of life processes at the molecular, subcellular, and cellular levels. Marine organisms, especially marine microorganisms, are some of the experimental organisms used for this research. In addition, the division funds some microbial observatories that focus on marine and near shore ecosystems.
- Division of Biological Infrastructure: The Division of Biological Infrastructure generally supports varied activities that provide the infrastructure for contemporary research in biology. Specifically, the division supports the improvement of research facilities at marine laboratories and living stock collections of marine organisms used widely in basic biological research.

## National Science Foundation

Ocean and Coastal Activities														
Agency, Bureau, Account, Program	Ocean-Related Program Functions: (Percentage must sum to 100)*						Dollars in millions**							
	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
Account title : R&RA														
<b>Directorate: Geosciences</b>														
Ocean Section					100%		104.04	114.12	115.76	118.54	121.38	124.3	127.28	
Integrative Programs Section					100%		93.64	109	104.08	106.58	109.14	111.8	114.48	
Marine Geosciences Section					100%		83.44	90.19	93.9	96.15	98.46	100.8	103.22	
<b>Directorate: Office of Polar Programs</b>														
Arctic Natural Sciences	12.3%	0.4%	1.3%		85.1%	0.2%	0.7%	1.22	1.3	1.3	2.5	2.6	2.7	2.8
Antarctic Geology & Geophysics					80.0%	20.0%		2.1	1.47	2	1.7	1.7	1.7	1.7
Antarctic Biology & Medicine					100%			4	4	4.5	1.5	1.5	1.5	1.5
Antarctic Oceans & Climate Systems					100%			4.5	4.6	4.7	4.1	4.2	4.3	4.4
Arctic Systems Science	3.8%	10.0%			86.2%			11.49	7.2	6.19	3.1	3.2	3.3	3.4
<b>Directorate: Biological Sciences</b>														
Division of Environmental Biology														
Systematic Biology					100%			1.62	1.8	1.8	0.05	0.05	0.05	0.05
Population Biology					100%			0.59	0.63	0.6	0.5	0.5	0.5	0.5

Continued from previous page														
Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
Biotic Surveys			100%					0.43	0.54	0.49	0.4	0.4	0.4	0.4
Ecosystem Studies			100%					0.15	0.09	0.09	0.4	0.4	0.4	0.4
Ecology			100%					0.13	0.12	0.12	0.1	0.1	0.1	0.1
Integrative Biology & Neuroscience														
Developmental Mechanisms			100%					1.4	0.8	0.8	0.65	0.65	0.65	0.65
Physiology & Ethology			100%					0.64	0.68	0.68	0.01	0.01	0.01	0.01
Ecological & Evolutionary Physiology			100%					0.78	0.7	0.7	0.2	0.2	0.2	0.2
Integrative Animal Biology			100%					0.41	0.4	0.4	0.2	0.2	0.2	0.2
Sensory Systems			100%					0.58	0.55	0.55	0.3	0.3	0.3	0.3
Developmental Neuroscience			100%					0.11	0.18	0.18	0.1	0.1	0.1	0.1
Behavioral Neuroscience			100%					0.44	0.45	0.45	0.1	0.1	0.1	0.1
Neuroscience			100%					0.38	0.39	0.39	0.05	0.05	0.05	0.05
Molecular & Cellular Biosciences														
Microbial Genetics			100%					0.27	0.2	0.2	0.1	0.1	0.1	0.1
Microbial Observatories			100%					1.07	0.5	0.5	0.01	0.01	0.01	0.01
Metabolic Biochemistry			100%					0.91	0.65	0.65	0.05	0.05	0.05	0.05
Division of Biological Infrastructure														



## SMITHSONIAN INSTITUTION

### National Museum of Natural History (NMNH)

The NMNH manages a marine station on Carrie Bow Cay, located on the Meso-American Barrier Reef in central Belize. This laboratory is part of the Smithsonian Marine Science Network that supports the Institution's marine scientists' research projects on a year-round basis. The precursor to the Caribbean Coral Reef Ecosystems Program was established in 1972. The NMNH was first appropriated base federal funding for this program in 1985. Improved facilities now include dry and wet labs, housing, generator, compressor, small boats and scuba cylinders, and other essentials such as solar power, running-seawater system, and a weather station. The majority of recent Caribbean Coral Reef Ecosystems marine research can be described by the following four main areas of interest.

- Biodiversity, morphology and developmental biology;
- Species interactions and behavior;
- Ecophysiology and responses to environmental change; and,
- Processes linking species and environment.

### Smithsonian Environmental Research Center (SERC)

The SERC Marine Environmental Sciences Program measures long-term changes in water quality and nutrient loading, as well as species composition and population dynamics of fish, invertebrates, plankton and marshes in the Rhode River subestuary as a model system of Chesapeake Bay. The long-term data are used to assess human impacts and natural variation in the Nation's largest estuary.

### Smithsonian Tropical Research Institute (STRI)

The STRI Marine Environmental Sciences Program (MESP) monitors a variety of physical and biological parameters on the Atlantic and Pacific coasts of the Republic of Panama at Naos Island, Bocas del Toro, Galeta, San Blas and Golfo de Chiriqui. This monitoring is designed to reveal local long-term changes in the environment as well as to provide background data to support marine research. The physical monitoring data is available for general non-commercial use (<http://www.stri.org/mesp/MESP.htm>). MESP sub-projects include:

- Panama Reef Monitoring Network;
- Marine Environmental Assessment Study; and,
- Oil Spill Project.

## Smithsonian Institution

### Ocean and Coastal Activities

	Ocean-Related Program Functions: (Percentage must sum to 100)*	Dollars in millions**						
Agency, Bureau, Account, Program	Anthropogenic and natural hazards, including marine pollution  Marine area and living marine resource management  Minerals and non-living marine resource management  Maritime Commerce  Marine science, research, technology, education  U.S. leadership and cooperative efforts with other nations  Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>Smithsonian Institution</b>								
NMNH Caribbean Coral Reef Ecosystem Program	100%	0.09	0.09	0.09	0.09	0.09	0.09	0.09
SERC Marine Environmental Sciences Program	100%	0.27	0.27	0.27	0.27	0.27	0.27	0.27
STRI Marine Environmental Sciences Program	100%	0.2	0.2	0.2	0.2	0.2	0.2	0.2
<b>Total</b>		<b>\$0.56</b>	<b>\$0.56</b>	<b>\$0.56</b>	<b>\$0.56</b>	<b>\$0.56</b>	<b>\$0.56</b>	<b>\$0.56</b>

\*The FY 2004 Budget request was used to allocate program funding across functional activities. Where programs are only partly related to oceans, only the estimated oceans-related portion of the funding was reported. (This portion of the funding would then be 100 percent oceans-related.)

\*\* Unless specified by the agency, estimates for FY 2005 to FY 2008 were assumed equal to the President's 2004 Budget Request. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.

## DEPARTMENT OF STATE

The U.S. Department of State provides support for U.S. interests in the following oceans-related areas: Antarctica; the Arctic; aquaculture; biodiversity; coral reefs; deep seabed mining; fisheries; aquatic invasive species; Law of the Sea; marine mammals; marine science research authorizations; maritime boundaries and national maritime claims; navigation/transport; pollution; Regional Seas Programme; marine science; seabirds; sea turtles; Small Island Developing States; Underwater Cultural Heritage; and whales.

The Department works to: (1) promote better management of fresh water resources; (2) raise awareness of the environmental and economic costs caused by invasive species; (3) encourage regional cooperation on health issues; and (4) negotiate and implement agreements to conserve and manage fisheries stocks and protect the oceans from pollution. These processes include promoting the use of voluntary non-binding approaches to address international environmental issues such as transboundary freshwater, invasive species, protection of coral reefs, forest management, and Arctic protection, as well as binding agreements that include, but are not limited to fisheries and oceans.

Through several funding channels, the Department supports the following initiatives:

- South Pacific Islands Fisheries Funds: The 1987 South Pacific Multilateral Fisheries Treaty is the cornerstone of U.S. relations with the Pacific Island states, and its associated assistance agreement provides the only significant direct U.S. economic assistance to the region outside the Freely Associated States. The Treaty provides considerable economic benefit to the United States. The Agreement is a prime example of targeted aid that assists developing countries while also providing a tangible benefit to an important sector of the U.S. economy.
- Asia-Pacific Economic Cooperation Fisheries Leadership Initiative: Key priority areas of this program include fisheries management, conservation and management of sharks, efforts to end destructive fishing practices, particularly in coral reef ecosystems, and the development of Fisheries Working Group to strengthen this regional forum to promote sustainable fisheries.
- East Africa Fisheries Enforcement Workshop: This program took place in October 2001 and provided coastal States in east and southern Africa an opportunity to receive training from the U.S. Coast Guard and Department of State on international fisheries law. The meeting sought to maximize opportunities for countries in the region to deter and eliminate illegal fishing plaguing their waters and to derive more benefits and food security from their living marine resources.
- Project to support the Food and Agriculture Organization of the United Nations International Plan of Action to deter and eliminate illegal, unregulated and unreported fishing: This project provides funds for measures to assist developing countries with their responsibilities as flag states and with monitoring control and surveillance of fishing vessels.

- International Sea Turtle Agreements Support: Sea turtles are threatened with extinction throughout their range. This program supports two regional agreements designed to promote sea turtle conservation in the Western Hemisphere and Indo-Pacific regions respectively.
- International Whaling Commission: The Commission is the international body that protects whales and regulates whaling. It reviews and revises measures that govern the conduct of whaling throughout the world, including the complete protection of certain species, limits on the numbers and size of whales which may be taken, open and closed seasons and areas for whaling, and prohibitions on the capture of calves and female whales accompanied by calves. Currently, there is a moratorium on commercial whaling.
- International Council for the Exploration of the Sea: This is the international science organization studying and helping to safeguard North Atlantic marine ecosystems and the living resources they sustain. It has long recognized the mutual interdependence of the living marine resources and their physical and chemical environment.
- North Pacific Marine Science Organization: This is an intergovernmental scientific organization that promotes and coordinates marine research in the North Pacific; advances scientific knowledge about the ocean environment, global weather and climate change, living resources and their ecosystems; and promotes the collection and rapid exchange of scientific information on these issues.
- The Commission for the Conservation of Antarctic Marine Living Resources: This manages the marine living resources of the Southern Ocean. It takes an ecosystem approach to its management activities.
- Inter-American Tropical Tuna Commission: This Commission makes recommendations regarding catch levels for yellowfin and skipjack tuna, and tuna-like fishes in the eastern Pacific Ocean, which will permit maximum yields on a sustained basis. The Commission collects, compiles, and analyzes tuna catch statistics and logbook data obtained directly from fishing fleets and processing plants. It investigates the biology, life history, vital statistics, population structure, and behavior of tunas; oceanic circulation of tuna migrations; rate of intermingling of stocks; and mortality and growth.
- Great Lakes Fishery Commission: This Commission formulates and executes research programs designed to provide for sustained productivity of fish stocks in the Great Lakes that are of common concern to the United States and Canada. As outlined in its Strategic Vision document, the Commission has adopted and advocates an ecosystem approach to management and research of Great Lakes fish stocks. This approach recognizes the “interconnection of air, land, and water of the Great Lakes basin and its inhabitants, and the reality that all components of the ecosystem interact with each other and must be considered in terms of the system-level effects.”

- Pacific Salmon Commission: This Commission, established by a bilateral U.S.-Canadian Treaty in 1985, conducts activities concerned with conservation measures necessary to save, replenish, and share the salmon resource on northwest borders. The Commission's conservation and management activities implement recommendations from four joint U.S. and Canadian panels: the Northern Panel, Southern Panel, Fraser River, and Transboundary Panel. These panels receive information and recommendations from each country and from Joint Technical Committees, including a newly established scientific committee.
- North Atlantic Fisheries Organization: This organization promotes the conservation and optimum use of fishery resources in the Northwest Atlantic. It encourages international cooperation and consultation and is responsible for investigating the abundance, life history, and ecology of any species of aquatic life in the Convention Area, and collecting and analyzing statistical information relating to the fishery resources of the area.
- North Atlantic Salmon Conservation Organization: This organization promotes the conservation, restoration, enhancement, and rational management of salmon stocks in the North Atlantic Ocean through international cooperation, as well as the acquisition, analysis, and dissemination of scientific information pertaining to these salmon stocks.
- United Nations Environment Program: This program was established to provide leadership and to encourage partnerships in caring for the environment. It supports a variety of oceans-related programs, including the Regional Seas Program (sub-programs focus on coral reef protection activities). It also supports the Cartagena Convention on the Caribbean, the South Pacific Regional Environment Program and programs that focus on minimizing land-based sources of marine pollution.
- The Convention on International Trade in Endangered Species of Wild Fauna and Flora: This convention seeks to protect endangered and threatened species by providing a mechanism to manage international trade in those species. The Department of State has provided funds in support of this work to protect certain marine species.
- The World Conservation Union: Formerly the International Union for the Conservation of Nature and Natural Resources, this union seeks to promote the sustainable use of resources while protecting the environment. The Department of State has provided funds to promote work with local partners to protect coral reefs and to develop regulations to establish or administer marine protected areas.
- United Nations Food and Agriculture Organization, Department of Fisheries: This organization has the membership, mandate, and expertise to address global fisheries problems in its role of assuring that the population of the world is fed. Fish are crucial to this, as over a billion people in Asia alone depend on fish as their primary source of protein. The U.S. contribution is critical to maintaining the level of expertise in the organization and ensuring that it remains an objective and technical body.

- Intergovernmental Oceanographic Commission: This commission promotes marine scientific investigations by: developing international oceanographic research programs to improve our understanding of critical global and regional ocean processes; ensuring effective planning and coordination of an operational global ocean observing system; providing international leadership for education and training programs and technical assistance; and ensuring that ocean data and information obtained through research, observation, and monitoring are efficiently handled and made widely available.
- International Maritime Organization: This organization facilitates cooperation among governments on technical matters affecting international shipping in order to achieve the highest practicable standards of maritime safety and navigational efficiency. It also works to protect the marine environment from pollution of the sea by ships and other craft.

### **U.S. Agency for International Development**

Healthy marine ecosystems are critical to U.S. diplomatic and development strategies to promote economic and food security, social stability and conflict prevention, democratic governance, improved human health, disaster and climate change mitigation, and biodiversity conservation in many countries. Coastal ecosystems have economic, social, and cultural importance to many nations and entire regions; these extremely valuable ecosystems constitute the economic base and future hope for sustained development in many countries, particularly small island nations.

USAID is committed to assisting developing nations in protecting and managing their coastal areas. Recognizing that the conservation and sustainable use of coastal resources are critical to sustainable economic development, USAID works in over 25 countries on projects that directly promote the protection and improved resource management of coastal and coral reef ecosystems. Agency programs build human and institutional capacity for resource management, with strong linkages to governance processes.

Integrated Coastal Management: During the past three decades, integrated coastal management (ICM) has gained considerable momentum across the globe as the preferred approach to deal with issues of sustainable development and coral reef protection in coastal areas. As the field has matured, ICM has provided leadership and developed successful resource management approaches for addressing key development and natural resources management challenges in coastal zones. In addition, a large-scale ecoregional or landscape approach, which includes addressing regional economic and ecological issues, has emerged as critical for biodiversity and habitat conservation.

USAID is a world leader in promoting the practice of integrated coastal management and effective site-based management. USAID's coastal management projects promote the essential elements of sustainable development – protecting the world's environment, fostering balanced economic development, promoting democratic participation in governance, and improving the health and well-being of people in the world's developing nations.

Successful integrated coastal management and site-based management work to create stakeholder voice, ownership, and political will through an open, participatory governance process, at the same time that they strive to place certain areas and resources under protected status or improved management. The best programs incorporate both regulatory and non-regulatory controls and incentives, and establish a central role for science in the identification and assessment of priority needs, and in the formulation of strategy. Success requires forging the right balance between competing human uses of water and natural resources. Successful integrated coastal management is best tackled at the ecosystem scale, with the best management unit being the entire watershed adjacent to a coastal area. For example, Jamaica's "ridge to reef" program integrates watershed management with activities in wastewater and sanitation management, and community-based water quality monitoring.

In addition to Jamaica, significant USAID projects in ICM are being carried out in the Philippines, Indonesia, Egypt, Tanzania, and Mexico. Major watershed management projects are supported in the Central American and Caribbean regions, and in the Central Asian Republics (Aral and Caspian Seas). USAID supports two ecoregions of global significance, the Sulu-Sulawesi Sea and the Bering Sea, in partnership with the World Wildlife Fund.

Within this conceptual framework, USAID coastal activities and programs incorporate a wide range of objectives and approaches, including: capacity building in integrated coastal management; improved environmental management by both public and private sector entities; strengthened management of parks and protected areas; habitat and biodiversity preservation; improved coastal watershed management; alternative livelihoods, diversification and income generation; promotion of "greener" businesses, green certification schemes and ISO 14000 certification; reduction of negative impacts from international trade and destructive fishing practices; sustainable, integrated urban development and improved municipal wastewater management; sustainable tourism and fisheries, and sustainable mariculture; reduction of land-based sources of coastal pollution (urban, industrial, deforestation and agriculture/rural).

USAID accomplishes a wide range of results from its relatively small investment in coastal management, linking results across programmatic areas including integrated water resource management, pollution control, urban management, and coral reef conservation activities. Groundwater issues also have the potential to benefit from future USAID projects in coastal zones.

Protection of Coral Reef and Mangrove Ecosystems: USAID's activities directly support coral reef and mangrove forest conservation in over 20 tropical countries throughout the world. Activities range from field programs in best management practices and monitoring, to the establishment of marine parks and reserves, to ICM and ecoregional approaches. In the East Asian and Caribbean regions USAID supports the World Resources Institute's *Regional Reefs at Risk* program, a map-based indicator of the regional threats and risks to coral reefs.

Successful management of coral reef ecosystems requires long-term commitment to integrated coastal management, effective site-based management, and the process of establishing effective governance by coastal residents and nations over their coastal resources.

Improved Management of Marine Protected Areas: USAID places high priority on the establishment and support of marine sanctuaries and reserves, many of which are community-managed. These projects strengthen park management for biodiversity conservation and ecotourism; promote sustainable fisheries and appropriate mariculture; reduce destructive fishing practices; promote seaweed mariculture; and reduce the negative impacts of trade in coral reef animals. Many of these projects are implemented by non-governmental organizations such as The Nature Conservancy and the World Wildlife Fund.

USAID is supporting marine protected areas, fishery reserves, and national parks of regional and international significance in Indonesia, the Philippines, Papua New Guinea, Egypt, Kenya, Brazil, Ecuador, Peru, Costa Rica, Honduras, Mexico, and the Dominican Republic, as well as several transboundary sites. Many of these parks are included in the *Parks-in-Peril Program*, a regional protected area management program in Latin America and the Caribbean that is implemented in partnership with The Nature Conservancy.

Transboundary Marine Protected Areas: Some of the reserves, and the management issues they entail, extend across country boundaries and require transboundary resources planning and management, as well as the development of regional initiatives or programs. Through the Middle East Regional Cooperation (MERC) program, USAID is promoting cooperation between Israel and Jordan on research and management of shared resources in the Red Sea Marine Peace Park. This project is managed in partnership with the National Oceanic and Atmospheric Administration. Through the Regional Environment Program for Central America – Coastal Component (PROARCA/COSTAS) USAID is strengthening regional and transboundary management of coastal resources along the Guatemala/Belize, Honduras/Nicaragua, and Honduras/Nicaragua/El Salvador borders. The first two sites contribute to the protection of portions of the regionally important Meso-American Reef.

Sustainable Mariculture: Globally, aquaculture production is growing at more than 10% per year, making it the world's fastest growing food production sector, with most of the growth in tropical developing countries. The great diversity of mariculture from very small to large-scale enterprise suggests that it can contribute to a wide range of development needs, if the appropriate species and practices are used. However, the increasing trend toward farming carnivorous fish and invertebrates for the high-end markets may not be ecologically sustainable or appropriate, and may be undermining food security and long-term development. There are still many challenges to mariculture development, but there is increasing recognition that many of the greatest challenges are neither technical nor related to production, but are environmental and institutional and related to planning, coordination, and policy implementation. Environmental and socio-economic issues can only be addressed through better planning and management by government in partnership with the private sector and other interested parties.

USAID was an early leader in providing technical assistance to small-holders in developing nations to promote best practices in aquaculture and to reduce environmental and socioeconomic impacts. Examples include tilapia and shrimp in Honduras, mullet in Egypt, and milkfish in the Philippines and Indonesia. Emphasis was placed on development of non-traditional productive activities as a means of poverty alleviation, rural development, and food security. More recently, USAID has been involved in promoting environmental best practices for commercial-scale shrimp production in several Latin American and Asian countries. USAID supports the International Center for Living Aquatic Resources Management (ICLARM) for research and management on sustainable fisheries and mariculture.

Caribbean Regional Program: Caribbean islands are essentially coastal States, highly dependent upon coastal resources for their economic development. Two of the three major objectives of USAID's Caribbean Regional Program have implications for coastal resources – to increase employment and diversification, thus reducing pressures on natural resources, and to improve environmental management by public and private entities, with a focus on coastal tourism and reduced coastal pollution. The emphasis of the program is on Eastern Caribbean countries and working with the Organization of Eastern Caribbean States. Small projects to fulfill these objectives are being implemented in select countries, including – Antigua and Barbuda, Barbados, Dominica, Grenada, St. Kitts, St. Lucia, and St. Vincent.

East Asia and Pacific Environmental Initiative: Key regional environmental problems are addressed through this initiative, which is a joint Department of State - USAID program. Programs address destructive fishing practices associated with the international trade in live reef fish for the food and aquarium trades, and support the establishment of certification programs for marine ornamental aquarium species, marine protected areas, and community monitoring and awareness.

International Leadership and Cooperation: USAID, in partnership with other federal agencies, was instrumental in establishing the International Coral Reef Initiative (ICRI) and in developing ICRI's Call to Action and Framework for Action, which are based upon integrated coastal management principles promoted in Agency projects worldwide. The Agency continues to support ICRI and its activities, and contributes technical and logistic support to the ICRI Secretariat, presently based in the Philippines.

USAID also contributes technically and programmatically to the Global Program of Action (GPA) for the control of Land-Based Sources of Marine Pollution, the Meso-American Reef Initiative, the East Asia and Pacific Environmental Initiative, the Middle East Regional Cooperation (MERC) project of the Middle East Peace Process, the Convention on International Trade of Endangered Species of Fauna and Flora (CITES), the Asia Pacific Environmental Cooperation forum, and other regional and global efforts contributing to the conservation and sustainable use of coastal and coral reef resources.

Support for the Executive Order for the Protection of Coral Reefs: As co-chair of the International Working Group with the Department of State, USAID is an active participant and

leader on the U.S. Coral Reef Task Force. USAID's activities support the international charge of the Executive Order to (1) assess the U.S. role in the international trade of coral reef species; (2) develop an appropriate, broad-based strategy for mitigating the negative impacts of trade; (3) develop and implement strategies and activities for the protection and sustainable use of coral reef resources worldwide; and (4) implement the International Coral Reef Initiative's Framework for Action through expanded cooperation with ICRI partners.

## Department of State

Ocean and Coastal Activities														
Agency Bureau Account Activity Program	Ocean-Related Program Functions: (Percentage must sum to 100)*					Dollars in Millions**								
	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>Bureau of Oceans and International Environmental and Scientific Affairs (OES)</b>														
D&CP														
Oceans Affairs					100%		0.6	0.8	0.14	0.16	0.18	0.18	0.18	0.18
Marine Conservation					100%		0.5	0.6	0.1	0.1	0.1	0.1	0.1	0.1
Pacific Salmon Commission					100%									
Economic Support Fund														
South Pacific Islands fisheries funds					100%		14	18	18	18	18	18	18	18
Promote & Protect Sustainable Fisheries and Marine Biodiversity					100%		0.2	0.3	0.4					
APEC Fisheries Leadership Initiative					100%			0.1						
11th Meeting of APEC Fisheries Working Group					100%									
East Africa Fisheries Enforcement Workshop			75%		25%		0.5							
APEC Oceans-Related Ministerial Meeting	10%	20%	10%		10%	50%		0.7						

Continued from previous page

Agency Bureau Account Activity Program	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	Other, not elsewhere classified	U.S. leadership and cooperative efforts with other nations	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
Project to Support FAO International Plan of action to deter IUU fishing	50%				50%		50%			0.7				
International Sea Turtle Agreements support	25%				75%				0.2	0.4				
Sustainable Development through Collaborative Networks	50%				50%				0.1					
Reducing Bycatch in Marine Fisheries	50%				50%									
Queen Conch Meeting in US Virgin Island	50%				50%									
Toward Sustainable Coastal Fisheries in the Caribbean	50%				50%									
Oceans, Environmental and Science Initiative	50%				50%			4	20	2	2	2	2	2
International Fisheries Commission														
Inter-American Tropical Tuna Commission – IATTC							100%	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Great Lakes Fishery Commission - GLFC - note: land-locked lakes							100%	13.1	12.2	12.2	12.2	12.2	12.2	12.2
Pacific Salmon Commission – PSC							100%	2.2	0.6	2.2	2.2	2.2	2.2	2.2
IO&P														
United Nations Environment Program – UNEP							100%	10.4	10.5	10.025	10.025	10.025	10.025	10.025

Continued from previous page

Agency Bureau Account Activity Program	Other, not elsewhere classified	U.S. leadership and cooperative efforts with other nations	Marine science, research, technology, education	Maritime Commerce	Minerals and non-living marine resource management	Marine area and living marine resource management	Anthropogenic and natural hazards, including marine pollution	FY 2008 Budget Projection	FY 2007 Budget Projection	FY 2006 Budget Projection	FY 2005 Budget Projection	FY 2004 Budget Request	FY 2003 Enacted	FY 2002 Actual
Regional seas/land-based sources of marine pollution activities***		100%						[0.2]	[0.2]	[0.2]	[0.2]	[0.2]	[0.2]	[0.2]
Cartegena Convention***		100%						[0.3]	[0.3]	[0.3]	[0.3]	[0.3]	[0.3]	[0.3]
South Pacific Regional Environmental Program (SPREP)***		100%						[0.2]	[0.2]	[0.3]	[0.3]	[0.3]	[0.3]	[0.3]
Convention on International Trade in Endangered Species of Wild Fauna and Flora – CITES		100%						1.3	1	1	1	1	1	1
Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat		100%						1.3	0.7	0.7	0.7	0.7	0.7	0.7
World Conservation Union - IUCN Coral Activities		100%						1.4	1	1	1	1	1	1
Intergovernmental Oceanographic Commission – IOC		100%						0.5	0.5	0.5	0.5	0.5	0.5	0.5
CIO														
International Maritime Organization – IMO		100%						1.1	1.2	1.2	1.2	1.2	1.2	1.2

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Agency Bureau Account Activity Program	Anthropogenic and natural hazards, including marine pollution		Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
UN Food and Agriculture Organization - FAO Department of Fisheries							100%		3	3	3	3	3	3	3
<b>U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT</b>															
<b>Bureau: Latin America and Caribbean (LAC)</b>															
Development Assistance															
Jamaica/ Special Objective (SO) 2	40%	60%							2.136	2.312	2.153	0	0	0	0
Mexico/SO6		100%							0.4	0.769	0.702	0	0	0	0
Panama/SO2****	80%	20%							4.181	7	5.75	5.750	5.750	0	0
Ecuador/SO1****		100%							3	3.667	3.099	3.099	3.099	0	0
Central America Regional/SO6****	20%	80%							0	1.9	1.126	1.126	1.126	1.126	0
LAC Regional	100%								0.046	0	0	0	0	0	0
LAC Regional		100%							3.55	0	0	0	0	0	0
LAC Regional****		100%							2.412	0.7	0.703	0.703	0.703	0.703	0
Economic Support Fund															
Haiti/SO2	100%								0	0	0	0	0	0	0
Caribbean Regional/SO	50%	50%							1.033	0.833	0.694	0	0	0	0

Continued from previous page									
Agency Bureau Account Activity Program	Anthropogenic and natural hazards, including marine pollution		Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2008 Budget Projection
									FY 2007 Budget Projection
									FY 2006 Budget Projection
									FY 2005 Budget Projection
									FY 2004 Budget Request
									FY 2003 Enacted
									FY 2002 Actual
<b>Bureau: Asia and Near East</b>									
Development Assistance									
Bangladesh		100%							0
Indonesia****	30%	70%							2.1
Philippines****	30%	70%							2.733
Economic Support Fund									
Bangladesh		100%							0
Egypt***	30%	70%							8.08
Indonesia****	30%	70%							0.3
ANE Regional		100%							0.2
West Bank/Gaza/SO2****	80%	20%							0
Lebanon****	80%	20%							0
<b>Bureau: Europe and Eurasia</b>									
Freedom Support Act									
Eurasia Regional/Caspian Sea Initiative	100%								0
Central Asian Republics	70%	30%							0

Continued from previous page															
Agency Bureau Account Activity Program	Anthropogenic and natural hazards, including marine pollution		Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>Bureau: Africa</b>															
Development Assistance															
Tanzania	20%	80%							0.4	0.85	0.531	0	0	0	0
Kenya****		100%							0.425	0.425	0.396	0.396	0	0	0
<b>Bureau: Central Programs</b>															
Development Assistance															
Bureau for Economic Growth, Agriculture, and Trade – Pond Dynamics/Aquaculture – Collaborative Research Support Program		100%							0	0	0	0	0	0	0
Environment Strategic Objective (ENV/SO) 1.4****	30%	70%							2.279	1.5	2.107	2.107	2.107	2.107	2.107
ENV/SO1.1		100%							0	0	0	0	0	0	0
Bureau for Economic Growth and Agriculture Development – Middle East Regional Cooperation Program		50%			50%				0	0	0	0	0	0	0
<b>Department of State Total</b>									<b>\$86.5</b>	<b>\$108.7</b>	<b>\$89.6</b>	<b>\$84.1</b>	<b>\$81.8</b>	<b>\$72.9</b>	<b>\$61.3</b>
<p>*The FY 2004 Budget request was used to allocate program funding across functional activities. Where programs are only partly related to oceans, only the estimated oceans-related portion of the funding was reported. (This portion of the funding would then be 100 percent oceans-related.)</p> <p>** Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.</p> <p>*** Non-additive. These activities were included above with UNEP</p> <p>**** Indicates that the project projection beyond FY2004 is straight-lined from the FY2004 figure, until the estimated end of project.</p>															

## DEPARTMENT OF TRANSPORTATION

The Department of Transportation (DOT) is involved in U.S. ocean and coastal policy through two of its agencies - the Maritime Administration and the Saint Lawrence Seaway Development Corporation, both of which support DOT's strategic goals of safety, mobility, global connectivity, environmental stewardship and security.

### The Maritime Administration

America's economic and military capabilities have long been dependent on waterborne transportation. Water transport has historically been the most cost-effective means of moving large volumes of cargo over long distances, both domestically and internationally, and continues to fulfill that role today. Maritime commerce is the most dominant component of our international trade infrastructure, carrying over 95 percent of the volume of U.S. overseas foreign trade.

The Maritime Administration (MARAD) builds on our maritime heritage, promoting a U.S. maritime industry for the continued security and prosperity of the Nation. The Agency's programs seek to assure that the United States has efficient ports and terminals with modern intermodal connections; sufficient commercial shipping capacity to meet the needs of the Nation's growing economy and of the Department of Defense in times of national emergency; adequate shipbuilding and repair service and facilities; and an available professional workforce for employment in the marine transportation system. These focus areas support many of the ocean policy objectives, including the enhancement of marine-related commerce and transportation; the protection of the marine environment; advancement of education and training; intergovernmental and private sector cooperation; and preservation of the role of the United States as a leader in ocean and coastal activities.

- Marine Commerce and Transportation: The importance of the U.S. merchant fleet in meeting the dual role of commerce and national defense has been the basis of federal maritime policy for over 200 years. Although U.S.-flag vessels provide premium quality shipping services their operating costs reflect America's high standard of living and its operating environment (as opposed to competitors who often have the benefit of tax haven domicile). Rather than discard U.S. pro-competitive shipping objectives, the federal Government, through MARAD's Maritime Security Program (MSP), minimally assists U.S.-flag liner operators to maintain a presence in commercial trade and enhance our sealift capability to meet the unique responsibility of the merchant fleet for national security. The 47 U.S. vessels in the MSP fleet provide the major U.S.-flag presence in U.S. international trade. MSP ensures that an active U.S.-flag merchant fleet of militarily useful general cargo vessels continues to operate in international trade, and the trained personnel needed to operate both active commercial and Government-owned reserve vessels, are available to meet U.S. economic and national security requirements.

The Voluntary Intermodal Sealift Agreement program is the sealift emergency preparedness program for the U.S. Approximately 125 vessels participate in this program, including the MSP vessels. It provides contractual arrangements with private U.S.-flag ship operators to

make intermodal transportation services available in times of national emergency at no direct cost to the federal Government.

The continued presence of U.S.-flag vessels in foreign trade provides legal standing for the U.S. Government to protect the interests of American businesses and consumers. As a result, the U.S. Government may directly intervene in disputes with foreign countries that regulate or otherwise restrict the operation of U.S.-flag ships, carriers, ports, and connecting intermodal operations abroad to assure that U.S. interests are protected.

The Maritime Guaranteed Loan Program (Title XI) authorizes MARAD to guarantee up to 87.5 percent of the obligations on private sector debt financing for ships constructed, reconstructed, or reconditioned in the United States including vessels for export; to guarantee shipyard obligations of indebtedness for eligible domestic and exports vessels; and for U.S. shipyard modernization and improvement. Guarantees in force and commitments to guarantee include a large portion of the U.S.-flag fleet, including vessels on the coastal and inland waterways.

Because of its unique mission and expertise, MARAD is at the forefront of the DOT Marine Transportation System Initiative. The Initiative is an ongoing multi-agency/industry effort to address the infrastructure, economic, security, environmental, and safety challenges facing the marine and intermodal links of the Nation's transportation system. Among the challenges is accommodating the explosive growth in trade while at the same time protecting and enhancing the ocean and coastal environment. MARAD co-chairs the effort with the United States Coast Guard.

MARAD is responsible for the support, organization, and management of the Marine Transportation System National Advisory Council, which provides non-federal advice to the Secretary of Transportation on Marine Transportation System issues. Under MARAD's leadership, this group provides valuable insights into the Marine Transportation System and intermodal challenges, needs, and solutions from the state, private, and public interest sectors. In addition, MARAD provides valuable leadership in the overall Initiative because of its experience in blending commercial and national security interests to ensure a viable multi-use marine transportation system.

MARAD programs also focus on enhancing marine-related commerce, particularly with regard to economic and security issues. Port economic activities include the excess federal property conveyance program and port impact analyses. Port security activities include the National Port Readiness Network, port security training and other activities seeking to improve commercial and cargo security.

- Environmental Protection: MARAD programs also provide support to the commercial and public sector in addressing environmental challenges related to maritime commerce and engage the private sector in innovative approaches for sustainable use of marine resources. These activities cover a broad range of marine related environmental issues, including port and vessel discharges and the establishment of environmental management tools and practices. One initiative is directed at air pollution from and energy efficiency of maritime

vessels and port facilities and operations. The program seeks to foster the development and deployment of advanced air emissions technologies for the maritime industry through public/private partnerships. Our public partners include the Environmental Protection Agency, Department of Energy, Department of Defense, and the Coast Guard. Another seeks to reduce the introduction of aquatic nuisance species through ballast water discharges. This is a cooperative effort with the Coast Guard, the Environmental Protection Agency, and National Oceanic and Atmospheric Administration. MARAD has provided and will continue to provide where possible, vessel platforms for use in testing and demonstrating ballast water treatment systems. MARAD supports the development of international marine environmental standards through membership in and participation on the U.S. delegations to the International Maritime Organization, Marine Environmental Protection Committee and the Conference of the Parties to the Basel Convention, and as the U.S. delegate to the International Organization for Standards, subcommittee on Marine Environmental Protection. MARAD also works with these organizations to ensure worker safety and sound natural environmental practices with respect to its Ship Disposal Program.

- Intergovernmental and Private Sector Cooperation: Because the Marine Transportation System is one part of a larger transportation system, intermodal connections and facilities are vital to maritime commerce. MARAD provides expertise to DOT and to the maritime community to improve land and waterside access and intermodal connections to our Nation's ports. One element of the program is to encourage improvements that will enable ports to increase cargo and passenger throughput in a smaller land area limiting the need for expanded coastal development and relieving congestion and pollution near ocean terminals. MARAD also works with intermodal transportation companies to address ways to move cargo more efficiently from source to destination. It also provides maritime data and advises DOT on intermodal freight issues such as port capacity.

MARAD provides maritime expertise to DOT's Center for Global Climate Change, which supports DOT's efforts to address transportation-related (including maritime) climate change issues, and to DOT's Sustainable America initiative, which includes the consideration of sustainable freight and port practices.

- Advancement of Education: Both the U.S. Merchant Marine Academy and the State Maritime Schools support marine-related commerce by educating young men and women to become officers in the American merchant marine. Graduates receive Bachelor of Science degrees and U.S. Coast Guard licenses as deck or engineering officers. The Maritime Academies produce merchant marine officers to meet domestic and international U.S.-flag crewing needs. The U.S. Merchant Marine Academy is a federally operated institution. MARAD provides funding and other assistance to the State Maritime Schools.

### Saint Lawrence Seaway Development Corporation

The Saint Lawrence Seaway Development Corporation (SLSDC), a wholly owned government corporation within the U.S. Department of Transportation, is responsible for the operations and maintenance of the U.S. portion of the St. Lawrence Seaway. The Great Lakes St. Lawrence

Seaway System, also known as "America's Fourth Seacoast", is an active North American transportation corridor for the movement of commercial goods into a robust economic region.

The region is home to almost one-half of both the U.S. and Canadian population and has the five largest steel producing states in the U.S., accounting for approximately 70 percent of the total U.S. production. Further, almost one half of the Fortune 500 Industrial Companies are headquartered in the region. Agricultural products, primarily grain for export, comprise nearly 40 percent of the Great Lakes Seaway trade. Another 40 percent of this trade consists of mining products including iron ore, coal, coke, salt, and stone. Iron and steel products equate to the highest value goods traded due to their labor-intensive handling requirements. A 2001 study found that maritime commerce on the Great Lakes Seaway System generates more than 150,000 U.S. jobs, \$4.3 billion in personal income, \$3.4 billion in business revenues, and \$1.3 billion in federal, state, and local taxes.

The SLSDC not only provides international customers with a safe, efficient, and reliable U.S. transportation system, it also coordinates all of its activities with its Canadian counterpart, The St. Lawrence Seaway Management Corporation (SLSMC). Coordination occurs with respect to rules and regulations, the Tariff of Tolls, overall day-to-day operations, traffic management, navigation aids, safety, environmental programs, operating dates, and trade development programs. During the navigation season, the unique binational nature of the Seaway System requires 24-hour coordination between the U.S. and Canadian entities.

Several recent SLSDC accomplishments include:

- Automatic Identification System/Global Positioning System Navigation Technology: In June 2002, the Seaway's Automatic Identification System (AIS) network, covering the St. Lawrence River and the Welland Canal, became operational. The AIS system now allows Seaway vessel traffic controllers to tie AIS communications into the current Seaway Traffic Management System to track any vessel with an AIS transponder on board. In addition, AIS is broadcasting water levels, flows, and wind data along the St. Lawrence River from all five AIS shore base stations to all vessels with an AIS transponder.

The AIS/GPS project represents a major step forward in marine navigation technology. The St. Lawrence Seaway became the first inland waterway in the western hemisphere to implement an operational AIS vessel traffic services system, and establishes the waterway as the world leader in developing shore-side applications for AIS/GPS. The technology's ship-to-ship, ship-to-shore, and shore-to-ship communication capabilities will enhance the safety of vessel transits in the Seaway and Seaway traffic management operations. During the 2003 season, the SLSDC and SLSMC worked cooperatively with the U.S. and Canadian Coast Guards in their efforts to implement AIS coverage throughout the Great Lakes.

- Critical Infrastructure and Navigation Security Measures: Following the September 11, 2001 terrorist attacks, the SLSDC began developing new security protocols to enhance security measures for SLSDC critical infrastructure and other navigation and workplace assets. A major initiative was the SLSDC involvement in performing risk assessment inspections of targeted foreign-flag vessels in Montreal, Quebec, prior to entering U.S. waters. This

protocol was developed in consultation with both U.S. and Canadian civilian and law enforcement agencies to ensure that vessel crews or cargo do not pose a security risk. SLSDC inspectors performed 209 risk assessment inspections in 2001. For the 2002 navigation season, the SLSDC and U.S. Coast Guard developed a new protocol of incorporating those items reviewed during the risk assessment inspection into the SLSDC's traditional Enhanced Seaway Inspection program of foreign-flag vessels in Montreal. By combining the two inspections into one single process, foreign-flag vessels will not be delayed for security screenings, unless the initial risk assessment compels additional scrutiny.

- U.S. Seaway Capital/Lock Improvements: The SLSDC annually performs necessary capital improvements to the locks and other agency facilities. These improvements are critical to ensuring the short and long-term reliability of the Seaway System and its lock infrastructure. By the end of 2003, the SLSDC will have completed some of the U.S. Army Corps of Engineers-recommended projects, which were included in the U.S. Army Corps of Engineer's 1999 comprehensive study of the two U.S. Seaway locks.
- Trade Development Initiatives: Since 1985, when the SLSDC began its marketing program, the agency has performed trade development and promotional activities geared at generating trade to and from North America via the Great Lakes Seaway System. Program-wide activities include hosting overseas trade missions that promote the entire Seaway System at maritime and trade-related exhibitions, developing commodity-specific marketing plans, and working directly with ports, carriers, terminal operators, labor, and importers/exporters in the development of promotional materials and initiatives. Overseas trade missions, which include U.S. and Canadian maritime, government, industry, and labor delegates, have led to the development of new international cargo movements into the System. The SLSDC has sponsored 25 trade missions to 58 cities in 37 countries since 1985.

In addition to overseas trade missions, the SLSDC works with various Great Lakes Seaway System port authorities, the Great Lakes Cruising Coalition, the Great Lakes Waterways Management Forum, state and local governments, and tourism associations to attract cruise vessels into the Great Lakes. Since 1997, the number of cruise passengers on the Great Lakes has increased from 1,700 to 7,500 during the 2002 season.

- Binational Internet Web Site: The binational Great Lakes St. Lawrence Seaway System Internet website ([www.greatlakes-seaway.com](http://www.greatlakes-seaway.com)) has been well received domestically and internationally from the maritime and trade communities since its launch in February of 2001. The site is a unique public-private partnership between the SLSDC and the Canadian St. Lawrence Seaway Management Corporation and is the result of feedback from Seaway customers who requested a "one-stop" Internet site for locating U.S. and Canadian information related to transiting the Seaway System. It is intended to promote the binational system in an effort to generate new business. In 2002, average site page hits have grown from 48,000 in 2001 to more than 65,000 hits per month from viewers in more than 110 countries. In April 2003, the site recorded its busiest month ever with more than 120,000 page hits.

## Department of Transportation

Ocean and Coastal Activities														
Ocean-Related Program Functions: (Percentage must sum to 100)*							Dollars in millions**							
Agency Bureau Account Activity	Anthropogenic and Natural Hazards, Incl. Marine Pollution	Marine Area and Living Marine Resource Management	Minerals and Non-Living Marine Resource Management	Maritime Commerce	Marine science, Research, Technology	U.S. Leadership & Cooperative Efforts With Other Nations	Other Activities Nor Elsewhere Classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request <sup>4</sup>	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
<b>MARITIME ADMINISTRATION</b>														
<b>Operations and Training</b>														
Cargo Preference				100%				1.62	1.66	1.88	1.88	1.88	1.88	1.88
Ports, Intermodal and Environmental Activities	30%			70%				3.9	4.04	4.5	4.5	4.5	4.5	4.5
Maritime Academies				100%				55.28	56.64	62.38	62.38	62.38	62.38	62.38
<b>Ship Disposal</b>	100%							0	11.09	11.42	11.42	11.42	11.42	11.42
<b>Maritime Guaranteed Loan Program</b>														
Shipyard Revitalization				100%				36.97	29.1	4.5	4.5	4.5	4.5	4.5
<b>Ocean Freight Differential</b>				100%				48.11	44.7	37.57	37.57	37.57	37.57	37.57
<b>Maritime Security Program</b>				100%				98.7	98.06	98.7	98.7	98.7	98.7	98.7
<b>TOTAL, MARITIME ADMINISTRATION</b>								244.58	245.29	220.95	220.95	220.95	220.95	220.95
<b>SAINT LAWRENCE SEAWAY DEVELOPMENT CORPORATION</b>														
Operations and Maintenance				100%				13	14	14	14	14	14	14
<b>U.S. Department of Transportation Total</b>								<b>\$257.58</b>	<b>\$259.29</b>	<b>\$234.95</b>	<b>\$234.95</b>	<b>\$234.95</b>	<b>\$234.95</b>	<b>\$234.95</b>
<p>*The FY 2004 Budget request was used to allocate program funding across functional activities. Where programs are only partly related to oceans, only the estimated oceans-related portion of the funding was reported. (This portion of the funding would then be 100 percent oceans-related.)</p> <p>** Unless specified by the agency, estimates for FY 2005 to FY 2008 were assumed equal to the President's 2004 Budget Request. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.</p>														

## DEPARTMENT OF THE TREASURY

The Department of the Treasury is responsible for oversight of U.S. participation in the Global Environment Facility (GEF) which, among other things, funds projects to address international water pollution and over fishing. Other portions of the GEF portfolio may also benefit indirectly international water and coastal areas, e.g., biological diversity projects.

### Global Environment Facility (GEF)

The GEF was created in 1991 to specialize in trans-border environment problems, including those related to international waters. In addition to international water pollution and over fishing, GEF funding is also focused on climate change; better forestry, wildlife management, and biological diversity conservation; and the phase out of use of ozone-depleting chemicals (in Eastern Europe, to complement Montreal Protocol Fund work in developing countries).

Under a new international agreement, the GEF will play a key role in addressing the impact of persistent organic pollutants (POPs) on human life and the environment and sustainable land management. POPs is an issue of particular concern in the northern United States, and President Bush signed the international agreement on POPs in May 2001.

GEF Operations: The GEF focuses on innovative, cost-effective and generally small projects that can be duplicated elsewhere with financing from non-GEF sources. Since beginning regular operations in 1994, the GEF has designed and initiated over 1,218 investment and capacity building projects in over 161 countries that are now being implemented by developing countries through three implementing agencies – the World Bank, the UN Development Program, and the UN Environment Program. (More executing agencies are expected to implement projects in the future.) GEF has committed about \$4.1 billion to date, leveraging over \$13 billion from other sources. Cofinanciers include the developing countries themselves, bilateral aid agencies, the GEF's three implementing agencies and other multilateral financial institutions, and in some cases, private sector investors and non-governmental organizations. GEF operations take two forms: (1) technical assistance to help developing countries frame more environmentally sound policies in such key sectors as energy production and land management; and (2) direct investments to demonstrate innovative technology projects, such as rural solar power, that may be copied on a larger scale.

GEF operations to reverse the degradation of international waters are grouped into three categories: 1) water bodies; 2) integrated land and water projects; and 3) contaminants. Its land and water resource management projects help countries put together plans to reduce pollution, address water scarcity, and prevent conflicts over water in key river basins around the world (e.g., the Aral Sea Basin of Central Asia; the Black Sea and the Danube River in Europe; the Bemejo River Basin of South America; and the Nile, Okavango and Niger River basins in Africa). Projects have also included efforts to improve water quality in international ports by reducing the release of harmful organisms from ship ballast water, and, more recently, a pilot electronic tracking system to help improve the safety of shipping traffic in Asia.

## Department of the Treasury

Ocean and Coastal Activities														
Agency Bureau Account Activity Program	Ocean-Related Program Functions: (Percentage must sum to 100)*					Dollars in millions**								
	Anthropogenic and natural hazards, including marine pollution	Marine area and living marine resource management	Minerals and non-living marine resource management	Maritime Commerce	Marine science, research, technology, education	U.S. leadership and cooperative efforts with other nations	Other, not elsewhere classified	FY 2002 Actual	FY 2003 Enacted	FY 2004 Budget Request	FY 2005 Budget Projection	FY 2006 Budget Projection	FY 2007 Budget Projection	FY 2008 Budget Projection
Agency Bureau Account Activity Program														
<b>International assistance programs</b>														
<b>Bureau: Multilateral Assistance</b>														
Contributions to the International Bank for Reconstruction and Development (IBRD)														
Global Environment Facility (GEF)							15.08	22.03	27.75	27.75	27.75	27.75	27.75	27.75
<p>* Approximately 15% of total GEF funding from all sources supports ocean-related projects. The GEF, which also provides funding for other global environmental concerns, does not allocate funds by project type.</p> <p>** Unless specified by the agency, estimates for FY 2005 to FY 2008 were assumed equal to the President's 2004 Budget Request. Presidential budget requests for these programs are evaluated annually; as such, the budget projections herein for 2005 and beyond are subject to reassessment and change, and should not be construed as equivalent to budget requests.</p>														