

**MASSACHUSETTS BAYS
1991 COMPREHENSIVE CONSERVATION
AND MANAGEMENT PLAN**

An Evolving Plan for Action

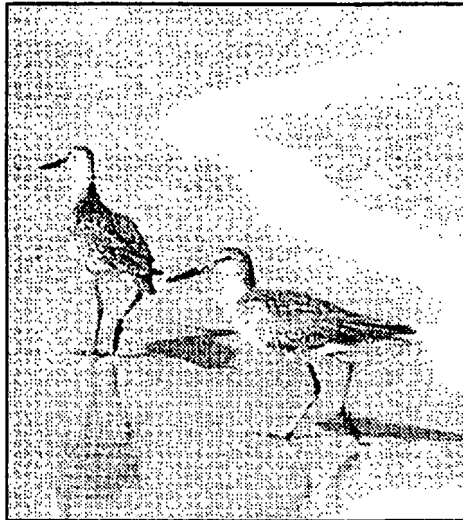
EXECUTIVE SUMMARY

MASSACHUSETTS BAYS PROGRAM

U.S. Environmental Protection Agency

Massachusetts Executive Office of Environmental Affairs

Public Draft 12/91



The Massachusetts Bays Program (MBP) was established to restore and protect water quality and enhance the living marine resources of Massachusetts and Cape Cod Bays (the Massachusetts Bays).

This 1991 Comprehensive Conservation and Management Plan (CCMP) is the first version of an evolving plan to achieve that goal and articulate a vision for the future of Massachusetts Bays. It contains an overview of the problems facing the Bays and prescribes a series of actions that local, regional, state, and federal governmental agencies can take to improve the quality of the Bays and provide lasting protection to the Bays' diverse natural resources. A complete list of these actions can be found at the end of this Executive Summary.

The 1991 edition of the Comprehensive Conservation and Management Plan will be revised and updated as more information about the Bays is developed through the program's research and demonstration projects. A second, more expansive, plan will be produced in 1993, followed by the full Comprehensive Conservation and Management Plan in 1995.

The 1991 Comprehensive Conservation and Management Plan is organized into five chapters. Chapter I introduces the Massachusetts Bays Program and describes its evolving management plan. Chapter II provides background information on a variety of physical, biological, and socioeconomic features of the Bays, as well as on several large-scale projects, such as the Boston Harbor Cleanup, that are expected to have significant impacts on water and sediment quality and living resources in the Bays. Chapter III examines six priority problems identified by the Massachusetts Bays Program. Chapter IV, the centerpiece of the Management Plan, contains a series of recommended actions that the Massachusetts Bays Program, various governmental agencies, and the general public can initiate to reduce pollution in Massachusetts Bays. Chapter V discusses ongoing and proposed scientific research on the Bays, together with strategies on public outreach and education, data management, and financing.

STRUCTURE AND GOALS OF THE MASSACHUSETTS BAYS PROGRAM

In 1988, the Commonwealth of Massachusetts through its Executive Office of Environmental Affairs, Coastal Zone Management Office, and the US Environmental Protection Agency Region I convened a Management Conference to oversee the activities of the Massachusetts Bays Program. In 1990, the Massachusetts Bays were designated an "Estuary of National Significance" and became one of 17 estuaries nationwide in EPA's National Estuary Program.

The Management Conference of the Massachusetts Bays Program consists of representatives from appropriate federal, state, and local government agencies, regional planning agencies, various user groups, public and private education institutions, and the general public. It is organized into four distinct committees: Policy Committee, Management Committee, Technical Advisory Committee, and Citizens Advisory Committee. The Policy Committee is comprised of the EPA Regional Administrator and the Massachusetts Secretary of Environmental Affairs. This committee sets program policy and approves the decisions of the Management Committee, the major decision-making committee in the Conference. The Management Committee receives input and advice from the Technical Advisory Committee (TAC) and the Citizens Advisory Committee (CAC).

The ultimate goal of the Massachusetts Bays Program is to institutionalize the planning process so that there are rolling five-year research and action agendas to protect, maintain, and, where necessary, restore or improve the Massachusetts Bay and Cape Cod Bay ecosystem. Work under the program will be geared to:

- Improve the habitats of living resources in Massachusetts and Cape Cod Bays.
- Protect public health by minimizing risk from environmental contaminants.
- Protect and improve water and sediment quality.
- Enhance the aesthetic quality of Massachusetts' coast and coastal waters.
- Encourage pollution prevention and environmentally and fiscally sound methods of treatment, cleanup, and restoration.
- Improve access, educational, and recreational opportunities in and around the waters of Massachusetts and Cape Cod Bays.

GEOGRAPHIC SETTING

The Massachusetts Bays region is a large, complex estuarine ecosystem located on the southwestern edge of the Gulf of Maine. The region extends from Cape Ann on the North Shore to Race Point on the tip of Cape Cod, and encompasses both Massachusetts Bay and its southeast extension, Cape Cod Bay.

The Bays cover an expanse of ocean 84 miles long and 24 miles wide and comprise 63,000 acres of coastal habitat. Seaward, the region extends to, and includes, Stellwagen Bank, a shallow, fertile fishing ground under active consideration for designation as a National Marine Sanctuary. Landward, the region extends to the edge of the watersheds which drain to the Bays.

Altogether, 168 Massachusetts communities are in the Massachusetts Bays Program (Figure 1). Of these, 49 are coastal communities. Although not physically part of the Massachusetts Bays estuary, six coastal communities and their watersheds on the Upper North Shore (Essex to the New Hampshire border) are also included in the Massachusetts Bays Program. These communities are included because research has indicated that the Merrimack River may be a major determinant of water quality in the Massachusetts Bays region.

The land area in Massachusetts draining to Massachusetts and Cape Cod Bays covers over 2,500 square miles and consists of thirteen separate river basins and coastal drainage areas. A significant amount of land outside Massachusetts also drains into the Massachusetts Bays region via the Merrimack River. The mainstem of the Merrimack River forms in central New Hampshire and flows 78 miles before entering Massachusetts. The Merrimack Basin covers 5,010 square miles, and is the fourth largest river basin in New England. However, less than 25 percent of the watershed, or 1201 square miles, is located in Massachusetts.

POPULATION AND LAND USE

The estimated population within the Massachusetts Bays Drainage Basin (excluding the New Hampshire portion of the Merrimack River) for 1990 is 3.8 million residents. Since 1970, this area has experienced only a 2.7 percent increase in population. While the population of the basin as a whole has remained relatively stable, several subregions and a number of individual communities have

experienced rapid population growth over the past twenty years. For example, Cape Cod and the South Shore have experienced tremendous growth, while the Lower North Shore and Boston Harbor Regions have experienced slight population losses. The population of the Upper North Shore grew modestly.

Land use varies widely in the Massachusetts portion of the Massachusetts Bays region, ranging from high-density urban centers around Metropolitan Boston to low density, rural residential communities on the North and South Shores. General trends indicate that significant urban development occurred throughout much of the Massachusetts Bays region between 1970 and the mid-1980's. A number of communities in the region experienced unprecedented growth that resulted in dramatic and irretrievable losses of land formerly classified as forest, farm or wetland.

Of the five towns in the Commonwealth that are estimated to have the highest rates of land consumption during the first half of the 1980's, four are communities on Cape Cod, including three in the Massachusetts Bays region. Nine other Massachusetts Bays communities are among the highest land-consuming areas in the state.



VALUES AND BENEFITS OF MASSACHUSETTS BAYS

The Massachusetts Bays are a resource of inestimable value to the residents and living resources of the region. A rich and varied range of marine organisms, composing an ecosystem, thrive in the Bays' waters. Area residents enjoy a way of life centered around the Bays, featuring outstanding recreational opportunities, first-rate port facilities, bountiful harvests of seafood, economically-important industries and tourism, and priceless aesthetic values, all of which depend on a clean and healthy marine environment.

Beaches and Recreational Resources

The coastal communities of the Massachusetts Bays region contain over 100 municipal, state and federal public beaches. These rank among the region's most important economic and recreational resources, and are frequented by tens of thousands of bathers, boaters and fishermen annually.

Many municipal parks are found in the Bays communities. These offer a broad range of active and passive recreational opportunities, including swimming, boating, fishing, team sports, picnic sites, and children's play areas. For marine boating enthusiasts, 18 state-sponsored public boat ramps serve the coastal zone.

Whale watching has become a favorite pastime in the Bays. Whale watching cruise ships now leave from many of the Bays ports, including Newburyport, Gloucester, Boston, Plymouth and Provincetown. In 1986, almost a million people participated in whale watching cruises, generating over \$16 million in revenue for the region's economy.

Habitat

Variations in coastal geography, ocean currents, tidal energy, and sediment type combine to produce a rich composite of marine and estuarine habitats in the Massachusetts Bays ecosystem. These habitats range from sandy beaches and shallow tidal creeks to rocky headlands and deep ocean waters. Altogether, nine major habitats are identified and described in the CCMP:

- Salt marshes
- Eelgrass beds
- Rocky headlands and intertidal shores
- Offshore feeding grounds
- Anadromous fish runs
- Tidal flats
- Barrier beaches
- Inshore/nearshore waters
- Coastal islands

Together, these habitats provide essential food, cover, migratory corridors, and breeding and nursery areas for a broad assortment of coastal and marine organisms, including finfish and shellfish, numerous waterbirds (including seabirds, shorebirds, and wading birds), and several endangered species of mammals, including the northern right whale.

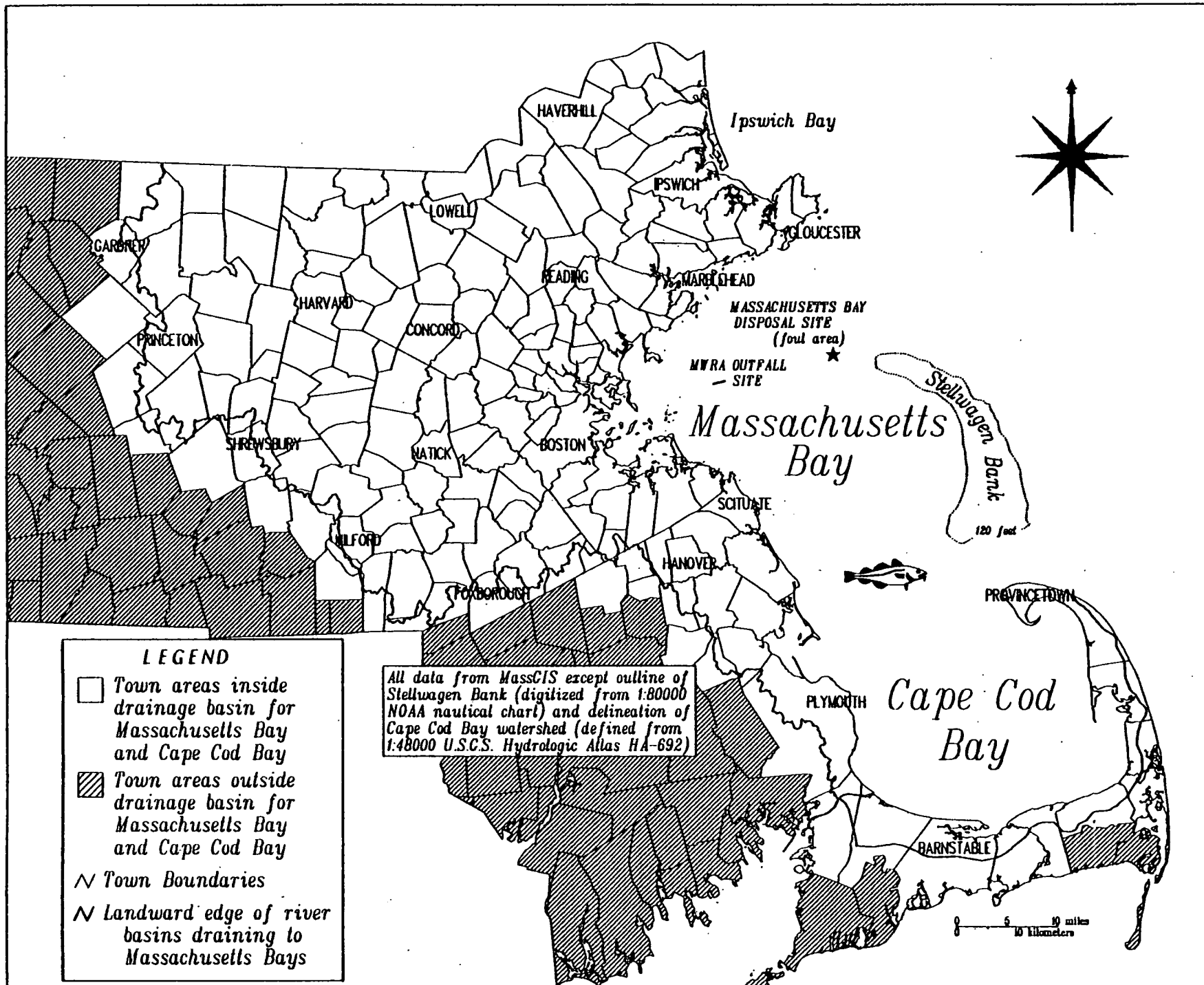


FIGURE 1.

Fisheries Resources

The fisheries resources of Massachusetts Bays are major staples of the region's long-standing maritime tradition. In 1989, the region produced over 313,000 bushels of shellfish — including soft shell clams, quahogs, oysters, bay scallops, and blue mussels — valued at over \$14 million. In 1990, the Massachusetts finfish industry ranked 14th nationally in total volume of landings with a value of \$147.7 million. The region's lobster industry, the largest single-species component of the Bays fisheries resource, produced landings of more than \$40 million.

MAJOR ACTIVITIES WITHIN MASSACHUSETTS BAYS

Several large, ongoing or proposed projects in Massachusetts Bays will have a significant impact on the water quality and living resources of the Bays. These projects include: the Massachusetts Water Resources Authority Boston Harbor Project, the South Essex Sewage District project, the Central Artery/Third Harbor Tunnel project, the Army Corps of Engineers Boston Harbor Navigation Improvement Project, the Army Corps Saugus River Floodgate project, and the Massachusetts Bay Disposal Site.

These projects are discussed in the CCMP because their large scale and potentially significant impact on the Massachusetts Bays system illustrate the interconnected nature of the Massachusetts Bays system and highlight the importance of addressing pollution problems in the Bays from an ecosystem-wide perspective. The Bays are a marine ecosystem comprised of currents, tides, nutrient cycles, energy flows and food webs. These natural processes link the ecological health of one part of the Bays to the health of the ecosystem as a whole. Consequently, the effects of any one of these megaprojects may be felt in another part of the Bays system. The Massachusetts Bays Program recognizes that the future health of the Bays and continued human use of its resources will require an ecosystem-based management approach. This approach must include an effort to analyze and better understand the greater-than-local impact of large projects in the region.

PRIORITY PROBLEMS

The consequences of human activities in the coastal zone and careless management of marine resources have been dramatically illustrated in the Massachusetts Bays region. Evidence is accumulating that the Bays waters are at risk. Human population growth and its attendant development impacts have resulted in a wide range of insults to the Bays environment. Millions of gallons of partially treated sewage, industrial wastes, and urban runoff reach the Bays each day, carrying toxic contaminants, excess nutrients, and bacteria into estuarine and marine waters. Increased fishing effort has depleted commercial fish stocks to record low levels. Housing construction and other forms of development have encroached on coastal wetlands and saltmarshes. Accidental and chronic

discharges of oil and other toxic materials are placing additional stress on the marine environment. Shorefront development, mounting traffic and parking problems, and loss of historic rights-of-way combine to limit opportunities for public access to the coast. Ports and working waterfronts are being squeezed out by competing (non-maritime) land uses.

Evidence of these stresses can be found throughout the Bays. The CCMP identifies a series of warning signs of degradation, including:

- Water and sediment quality in some urbanized harbors such as Boston and Salem Harbors is seriously degraded. Concentrations of polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) in Boston Harbor sediments are comparable to those of larger urbanized harbors such as New York and Baltimore Harbors.
- Certain species of fish and shellfish are exhibiting signs of environmental stress, including fin rot, liver lesions, and black gill disease.
- Relatively undeveloped harbors such as Wellfleet Harbor on Cape Cod are showing increasing signs of stress, including shellfish bed closures, loss of habitat, and growth of nuisance algae.
- 75% of Massachusetts' coastal waters assessed by the state in 1990 failed to support their designated uses.
- Thousands of acres of productive shellfish habitat are closed to harvesting due to bacterial contamination, resulting in loss of livelihood and economic hardship.
- Health advisories have been issued in selected coastal communities to protect the public from the hazards associated with eating contaminated seafood and swimming in contaminated water.
- In 1989 and 1990, most major beaches in Boston Harbor were posted as polluted at least once during the summer months. High bacteria levels have also forced the closure of some beaches on the South Shore.

In order to address the Bays' major environmental concerns, the Massachusetts Bays Program has defined six priority problem areas. These were identified in consultation with local, state, and federal government officials, the scientific and academic community, environmental groups, commercial and recreational users of the Bays, and concerned citizens. The priority problem areas are:

- Chemical contamination of water and sediments
- Bioaccumulation and effects of chemical contamination
- Pathogen contamination
- Water quality
- Habitat Loss and modification
- Sea level rise

A brief description of these priority problems follows.

Chemical Contamination of Water and Sediments

Chemical contaminants of concern in the marine environment of Massachusetts Bays include the **toxic metals** — lead, copper, cadmium, chromium and zinc; and two groups of **organic chemicals** — PAHs and PCBs. In general, the presence of these contaminants is the result of waste disposal activities, runoff, and atmospheric deposition. They contribute to a variety of adverse impacts on water and sediment quality, marine organisms, and human health.

Contamination of water and sediments by organic chemicals and toxic metals diminishes the ability to use the resources of Massachusetts and Cape Cod Bays in a variety of ways. Public health is threatened through the increased risk of disease associated with eating contaminated seafood. Fish and shellfish are stressed by toxic chemicals in the water and sediment and may develop cancerous tumors or other diseases. Environmental stress may also lead to declines in population levels. The fragile ecology of coastal habitats is threatened by shifts in the types of plants and animals to a less diverse community of pollution-tolerant organisms.

Bioaccumulation and Effects of Chemical Contamination

Marine organisms are exposed to chemical contaminants through direct contact with polluted water and sediments and through feeding. Bioaccumulation is a process whereby a substance enters an aquatic organism and is stored within the tissues of the organism.

The marine resources of Massachusetts and Cape Cod Bays have been impaired by the presence of chemical contaminants in the marine environment. This contamination is largely concentrated in the vicinity of urban centers and localized “hot spots.” However, continued long-term discharges of chemical contaminants into the marine environment will spread the contamination into more remote locations.

Use impairments associated with the presence of chemical contaminants include the degradation and/or alteration of habitat, and possible human health impacts related to the accumulation of contaminants in the marine food chain. Health advisories have been issued by the Massachusetts Department of Public Health to warn against the consumption of lobster tomalley and consumption of fish harvested in Boston Harbor for certain high-risk segments of the population. In general, seafood harvested in nearshore waters is the most highly contaminated and thus poses the greatest public health risk.

Pathogen Contamination

Pathogens are disease-causing bacteria and viruses. Pathogen contamination can close productive shellfish beds and recreational swimming beaches. People who come in contact with pathogens either by eating contaminated shellfish or by swimming in contaminated waters face health risks ranging from skin rash to gastrointestinal illness to more serious illnesses such as hepatitis. Public health officials utilize indicator organisms, such as fecal coliform bacteria, to determine the possible presence of pathogens in the environment.

Shellfish beds are important commercial, recreational, and ecological resources in the Massachusetts Bays system. Over the past twenty years, there has been a dramatic increase in acreage closed to shellfish harvesting. In general, these closures may be the result of increased pathogen contamination, but also appear to be the result of increased water quality monitoring and reporting of the incidence of illness. Most of this increase has taken place on Cape Cod and on the South Shore. Major closures have occurred in areas considered relatively contaminant-free, such as the North and South Rivers.

The presence of pathogens in coastal waters also affects recreational opportunities in Massachusetts Bays. In 1989 and 1990, most of the major beaches in Boston Harbor were posted as polluted at least once during the summer months. High bacterial levels have also forced the closure of beaches on the South Shore. In and around the older cities of the Bays, the highest frequency of beach closures occurs after rainstorms, when large amounts of untreated or partially-treated sewage and runoff are discharged to coastal waters.

Water Quality

In addition to the chemical contaminants and pathogens that affect the quality of the marine environment, other parameters — nutrients, dissolved oxygen, and suspended solids — affect the quality of water and sediments within Massachusetts Bays. Aquatic organisms require good water and sediment quality for survival, growth, and reproduction. Under inadequate conditions, individual organisms may reproduce poorly, die, or move from the area. If the impacts upon individual organisms are too stressful, entire populations or communities may be affected.

Contaminants enter the Bays from a variety of sources: municipal wastewater treatment plants, industrial discharges, stormwater runoff, atmospheric deposition, septic systems, and boat wastes. Point source pollution, emanating from discrete locations such as treatment plants and industrial discharges, is regulated by federal and state environmental agencies. Permits are issued to control and monitor discharges of contaminants. Recently, nonpoint source pollution (from diffuse sources such as stormwater and septic systems) has been recognized as a significant contributor to degraded water quality along the coast.

High levels of nutrients, primarily nitrogen, can cause water quality problems in the marine environment. Excessive amounts of nitrogen may trigger a condition called eutrophication, characterized by excessive algal growth with resultant depletion of dissolved oxygen and possible fish kills. Increased abundance of algae can limit the transmission of light reaching eelgrass leaves, resulting in loss of eelgrass beds that provide habitat for shellfish and other animals. Algal blooms also impair recreational and aesthetic enjoyment of coastal waters. A recent study completed for the Massachusetts Bays Program indicates that point source discharges are the most significant sources of nutrients entering the Bays waters. Other important nutrient sources include river discharges, atmospheric deposition, and surface runoff.

Minimum levels of oxygen in the water (dissolved oxygen) are essential for the survival of aquatic organisms. Wastewater and naturally-occurring organic matter contain oxygen-demanding substances that consume dissolved oxygen. If the amount of dissolved oxygen in the water is too low, then organisms may die.

Concentrations of dissolved oxygen in the waters of Massachusetts Bays are generally within a range to support marine organisms. However, occasionally low dissolved oxygen levels do occur within certain areas of Boston Harbor.

Suspended solids consist of organic or inorganic particles suspended in and carried by water. The term includes sand, mud, and clay particles, as well as solids found in wastewater. Suspended solids introduced into coastal waters can increase turbidity, thereby decreasing the amount of light that penetrates the water column. High turbidity is frequently harmful to marine plants and benthic animals, particularly their planktonic larval stages. Solid materials in coastal waters can originate from both natural and man-made sources. The largest source of suspended solids in the Boston Harbor area is the MWRA sewage treatment facility.

Habitat Loss/Degradation and Resource Depletion

Massachusetts is estimated to have lost approximately 30% of the total wetland acreage and 20% of coastal wetland acreage existing at the time of the colonists; another 1,000 acres, or nearly 0.2% of the state's remaining coastal and inland wetlands are lost annually. Although Massachusetts has enacted wetlands protection regulations, incremental losses continue to occur as a result of direct development, both public and private, and secondary alterations from pollution. The combined effects of habitat encroachment and degraded water and sediment quality stress all marine organisms, including important commercial species, marine mammals, endangered species, and the food chain upon which they depend.

Direct depletion of marine resources through overharvesting is also of concern in the region. Landings of many commercially important species, such as haddock, cod, and flounder, have plummeted to record low levels.

Sea Level Rise

Over the past 3 million years, sea level has fluctuated in response to changes in global temperature. Currently in a warming period, sea level has been rising since the retreat of the last continental glaciers over 15,000 years ago. Tidal data collected over the past century indicate that sea level is rising at an average rate of one foot per century, worldwide. Recent studies, however, indicate that the present rate of sea level rise may accelerate dramatically within the next 10-100 years due to global warming caused by the "greenhouse effect." Predictions vary widely, but the accelerated sea level rise caused by global warming could raise water levels 2 to 12 feet by the year 2100.

Rising sea level will impact our ability to use and enjoy the resources of the Bays in a number of ways. Six major impacts include:

- Loss of uplands or land area
- Increased flooding
- Loss of wetlands
- Accelerated shoreline erosion
- Saltwater intrusion into drinking water supply wells
- Elevated groundwater levels

A PLAN OF ACTION

Utilization of Massachusetts Bays' resources carries with it an obligation of preservation and stewardship of those resources. To respond to this obligation, the Massachusetts Bays Program was launched to address mounting threats to the natural resources of Massachusetts and Cape Cod Bays. At the heart of the program is the CCMP Action Plan. This action plan prescribes immediate and long-term actions that can and should be taken by the Massachusetts Bays Program, various governmental agencies, and the general public to restore and preserve the Bays' ecological integrity. The management recommendations contained in this action plan are organized into four topics:

- Public Health Risks
- Living Resources and Habitat Protection
- Aesthetic Quality
- Waterfront Access: Public Access and the Working Waterfront

Following is a brief overview of the issues raised in the CCMP under each of these topic areas. At the end of this Executive Summary is a presentation of all of the recommended management actions contained in the CCMP.

Public Health Risks

The Massachusetts Bays Program recognizes the benefits of seafood consumption, the economic importance of the state's commercial and recreational fishing industries, and the value of improving recreational opportunities in Massachusetts Bays. As a result, an important objective of the Program is to reduce public health risks from environmental contaminants, specifically, pathogens, naturally-occurring biotoxins, and chemicals. Additionally, there is a need to better educate the public about seafood safety. In many cases, public perceptions may not be linked to actual conditions. Following is an overview of the conclusions reached in the CCMP regarding public health risks and marine waters.

In terms of pathogens, eating raw shellfish poses the greatest public health threat. Thorough cooking of shellfish eliminates microbial pathogens. The current standard used to classify shellfish areas provides adequate public health protection from most bacterial pathogens associated with sewage, but research is needed to develop valid indicators of human enteric viruses. While steps can be taken to reduce or minimize risks to public health from eating shellfish, ultimately there must be proper treatment and disposal of sewage to avoid pathogen contamination in coastal waters, particularly those used for shellfish harvesting and recreation.

One naturally-occurring biotoxin of concern in the Massachusetts Bays region is Paralytic Shellfish Poisoning (PSP). Despite the annual occurrence of the dinoflagellate blooms responsible for PSP, current monitoring efforts in coastal waters by the Division of Marine Fisheries (DMF) appear to provide adequate public health protection. However, other than the two-year effort underway to monitor offshore waters, there is no effective longer-term monitoring strategy for

the shellfisheries of Georges Bank and Nantucket Shoals. Similarly, selected monitoring for domoic acid, a naturally-occurring biotoxin of potential concern responsible for amnesic shellfish poisoning, is underway as part of the same two-year program. This program is scheduled to end in May 1992.

Massachusetts coastal waters, sediments, and fishery resources are contaminated by a variety of chemicals for which there are no federal limits. Limited data are available that document the levels of these chemical contaminants in the edible portions of fishery resources. Information is also insufficient regarding the relationship between exposure and illness. There is adequate data for PCBs and mercury, two contaminants for which federal standards have been determined.

Living Resources and Habitat Protection

The marine and estuarine habitats of Massachusetts Bays are of immeasurable value to the Commonwealth's citizens and to its native wildlife. These habitats are used by living marine resources for food, spawning, rearing, and protection from predators. They also provide erosion and flood protection, water quality control, aesthetic enjoyment, and wildlife and waterfowl utilization. The people who live along the coastline have long appreciated the Bays' natural wealth and have wrested a livelihood from its bounty. The "coastalwealth" of Massachusetts has provided the basis for the region's longstanding maritime tradition. However, the habitats and living resources on both the landward and seaward sides of the shore are showing signs of stress. Despite past gains in the regulatory framework designed to protect these resources, polluted coastal waters, loss of essential wetlands, declining fish stocks, increasing shellfish bed closures, and declining wildlife populations and diversity all testify to the failure of present regulatory, management, and planning programs to keep pace with increasingly complex environmental problems. The future health and productivity of the Bays' resources will require new attention to their management needs.

Improved management of the Bays' living resources will require improved cooperation and coordination among environmental management agencies at all levels of government. Central to this is the need for ongoing technical assistance to local governments to help them work collectively to address the various land and water-based stresses to the Bays' ecosystem. This assistance should include, among other things: improved transfer of information (such as habitat maps) that is directly applicable to local and regional needs; increased technical assistance on pollution prevention, best management practices, and other resource protection techniques; and public education on the critical relationships between human activities, water quality, and the health of the Bays living resources.

Aesthetic Quality

Beach debris, marine floatables, and oil discharges detract significantly from the aesthetic quality of the Massachusetts Bays coastline and can adversely affect the economy of the region's coastal communities. Despite recent positive trends in beach cleanup statistics shown in Coastsweep 1990, beach litter, marine debris,

and oil in the marine environment continue to be persistent problems that impair public use and enjoyment of the Bays and can have far-reaching and long-term negative impacts on the region's living resources.

The extent of these problems and the apparent inability of current policies and regulations to effectively address them, requires changes to the region's approach towards minimizing the amount of debris and oil entering the Bays waters. New management options must utilize an aggressive combination of regulatory tools and public education that promotes pollution prevention as well as improved contingency planning for pollution cleanup. Central to this approach should be incentives that promote recycling, reuse and proper disposal of wastes before they can enter the Bays. The approach also should establish a framework for cooperation among levels of government and provide incentives for developing regional solutions.

Waterfront Access: Public Access and the Working Waterfront

Burgeoning population in the coastal zone has led to increased demand for public access to and use of coastal areas in Massachusetts Bays. However, as demand for shoreline recreation (swimming, fishing, boating, windsurfing, etc.) has grown, the supply of accessible shoreline has dwindled. Shorefront development, transportation and parking problems, and loss of historic rights of way combine to limit opportunities for public access. In addition, the region's working waterfronts — the legacy of the Bay State's proud and longstanding maritime tradition and a major component of the region's economy — are being squeezed out by competing land uses in the region's harbors. New initiatives are needed to enhance public access and preserve traditional maritime uses in the coastal communities of the Massachusetts Bays region.

THE UNFINISHED AGENDA

Between now and 1995, the Massachusetts Bays Program will identify near-term solutions to known pollution problems and explore the means to carry out those solutions. One challenge facing the Program is to insure the continuation of the Management Conference or its analog beyond 1995 in order to carry out the implementation of near-term management recommendations, develop longer-term goals and activities, and provide continuity and coordination among the myriad of government agencies, academic institutions, and user groups that are working to restore and protect the Massachusetts Bays ecosystem. An equally complex challenge before the Massachusetts Bays Program is to establish a "coastal ethic" that can serve as the basis for the public's support of actions taken by the Program as well as others to restore and protect the Bays.

Research and Monitoring

The CCMP describes the Massachusetts Bays Program's existing and proposed research and monitoring activities. A long-range research plan was formulated in 1988 by the Program's Technical Advisory Committee (TAC). The goal of this plan is to provide data needed to fill the gaps in our knowledge of the physical, chemical, and biological mechanisms which both drive and affect the Massachusetts Bays ecosystem. The plan's focus is bays-wide, and addresses five categories of research needs:

- Physical oceanography
- Contaminant sources
- Transport and retention of contaminants
- Bioaccumulation and biotransformation
- Social benefits assessment

Physical oceanographic and chemical assessment studies received the bulk of the initial funding, in order to lay the necessary groundwork for the biological studies that will follow in subsequent years. Now that many of these initial studies are being completed, the Program is placing emphasis on research into the biological processes of the Bays, especially in areas that couple living resources concerns with our recently-gained knowledge of the bays' physical oceanography and contaminant sources.

The Massachusetts Bays Program also recognizes that a long-term *monitoring* program is needed. While monitoring activities are separate from research activities per se, both initiatives are designed to provide policy makers with the necessary environmental data to wisely manage and conserve the complex habitats of Massachusetts and Cape Cod Bays. The monitoring program will assess the ecological impacts of contaminants and determine the effectiveness of specific mitigation activities. This will support the broader goals of the Massachusetts Bays Program — i.e., protection of the habitats of living resources, protection of public health, and protection of water and sediment quality.

Public Outreach and Education

The CCMP contains a Public Outreach and Education Strategy that is an integral part of the Massachusetts Bays Program. This strategy supports and reflects all other facets of the program, including research, management, planning, and implementation activities. In addition, it links the CCMP Action Plan to a program that will build awareness, support, involvement, and leadership among program participants. Successful implementation of the CCMP Action Plan will require public support that is best achieved through active local government and citizen participation. The public outreach and education strategy will maintain this driving force of public involvement through a soundly-designed structure of citizen advisors and local governance representatives. The strategy will identify targeted audiences and develop aggressive public participation and education campaigns that span the Massachusetts Bays region.

Creation of a Local Governance Committee will be a major focus of the public outreach and education strategy during the spring of 1992. This committee will provide cities and towns with an opportunity to participate in the development and implementation of the CCMP Action Plan, and to advise the Management Committee about local issues and needs. It will serve as a forum for communication between the management conference and municipalities; facilitate communication across municipal boundaries; and expedite the implementation of sound actions to protect and enhance Massachusetts Bays.

Financing

The CCMP identifies a number of actions that will or should be taken between now and 1993 by the various levels of government concerned with preserving and protecting the water quality and living resources of the Massachusetts Bays ecosystem. Some of these actions are underway; others can be achieved without further financial resources. However, some will require additional funding at either the local or state level.

The identification and evaluation of funding alternatives for the Massachusetts Bays Program is set against a background of increasing costs for environmental protection and diminishing financial capacity at the federal, state, and local levels. Nationwide, government spending for environmental protection is projected to increase by 37% between 1987 and the year 2000 just to maintain current levels of environmental quality. An additional 38% increase will be needed to meet the requirements of new regulations and standards.

The burden of funding environmental programs is also shifting. In 1981, local governments were already paying 76 percent of the cost of environmental protection (including air, water, and solid and hazardous waste programs). By the year 2000, local governments will bear 87 percent of the public costs of environmental protection.

In Massachusetts, the current (and foreseeable) economic situation suggests that raising additional funds to pay for state and local initiatives recommended as part of the Massachusetts Bays Program will be extremely difficult. Nevertheless, between now and 1993, the Massachusetts Bays Program will be working to establish the foundations for sound financial planning to implement the CCMP Action Plan recommendations.

Data Management

The CCMP contains a Data Management Strategy that is designed to integrate and effectively communicate program findings about the effect of man's activities on the health of Massachusetts Bays. The links between natural resources and the pollution sources that surround them will be conveyed to decision makers and the public through summaries of research data and maps showing spatial relationships.

Provision of pertinent data to managers, scientists, and the public will help them make informed decisions on pollution abatement and improved resources management around the Bays. Data will be represented in the context of watersheds and embayments in order to foster a resource-focused approach to

problem solving. These representations will support the CCMP, public outreach and education efforts, and the Characterization ("State of the Bays") Report by synthesizing research findings and illustrating the status and physical setting of Massachusetts Bays resources in easily-understandable forms.

Embayment Management

The Management Conference Agreement of November 1990 identified two levels at which the Massachusetts Bays Program will function: "bays-wide and on an embayment level." The activities of the Program on the embayment level will involve working with local government and citizens groups to "develop and implement strategies for effective embayment management."

Land use management will be a major issue at the embayment level, with the Massachusetts Bays Program working to provide local managers with the tools to predict and minimize resource impacts related to land use. Shellfish bed protection and restoration, an issue of environmental, economic, and political concern, is intimately related to land use and will be one of the priority local management issues.

Over the next several years, the Massachusetts Bays Program will employ a variety of tools to facilitate implementation of water quality management strategies at the embayment level. These tools will include:

- Technical assistance and other staff support
- Research and monitoring
- Data management
- Funding action/demonstration projects
- Coordinating public outreach activities

In 1991, three embayments within the Massachusetts Bays study area were selected to participate in the Mini-bays Program. These embayments - Plum Island Sound, Fore River and Wellfleet Harbor - will receive five years of funding from the Massachusetts Bays Program to carry out research, planning, implementation, monitoring and public outreach. The lessons learned from these embayments are intended to be replicable in other embayments within the Massachusetts Bays region.

RECOMMENDED ACTIONS

The following matrices present the 123 recommended actions contained in the CCMP that federal, state and local governments, regional planning agencies and industry should take to protect and restore Massachusetts Bays. The matrices are arranged according to responsible agency and action plan topic or sub-topic. Some recommendations require action by more than one agency, so therefore, these recommendations appear wherever appropriate in the matrix. This action agenda is intended as a starting point from which priority actions will be identified and initiated in accordance with available resources.

PUBLIC HEALTH ACTION PLAN

RESPONSIBLE AGENCY	TOPIC			
		PATHOGENS	BIOTOXINS	CHEMICAL CONTAMINANTS
MASSACHUSETTS BAYS PROGRAM (MBP)	<p>Produce a risk assessment study in 1992 to determine the relative importance of the various contaminants and pathogens entering Massachusetts Bays in terms of public health risks.</p> <p>Produce a Characterization Report in 1992 which will incorporate information on sources, transport, fate, and effects of contaminants from historical sources as well as incorporate the results of MBP sponsored and coordinated research.</p>	<p>Review and comment to the Department of Environmental protection (DEP) on proposed revisions to Title 5 for applicability to coastal areas (e.g., viral transport and nutrient loading).</p> <p>Educate consumers about the health benefits of seafood and how to reduce risks from microbial contamination.</p> <p>Develop, in cooperation with the EOE Marine Sanitation Device Task Force, protocols for enforcing MSD standards by the Coast Guard; MBP and CZM will explore the possibility of state and local enforcement.</p> <p>Remain informed about, and support the development of, better viral indicators.</p> <p>Fund a series of demonstration projects relating to the reduction of pathogens levels affecting shellfish beds.</p>		<p>Synthesize existing information and identify toxic chemical "hot spots" throughout the Massachusetts Bays area.</p> <p>Review and evaluate NPDES discharges to the Massachusetts Bays study area; DEP should verify discharges through a selected sampling program.</p> <p>Educate consumers about the health benefits of seafood and how to reduce risks from chemical contamination.</p> <p>Fund research on the sources, transport, and fate of organic contaminants (including PCB and PAH) entering Massachusetts Bays via wastewater, industrial discharges, runoff, and atmospheric deposition.</p>
FEDERAL				
FOOD AND DRUG ADMINISTRATION (FDA) AND NATIONAL MARINE FISHERIES SERVICE (NMFS)			Develop and implement a long-term monitoring and management strategy for offshore waters for Paralytic Shellfish Poisoning (PSP).	
FEDERAL & STATE				
FOOD AND DRUG ADMINISTRATION, DIVISION OF MARINE FISHERIES (DMF), AND DEPARTMENT OF PUBLIC HEALTH (DPH)			Review the data collected between 1990 and 1992 as part of the Massachusetts Marine Biotoxin Monitoring Project to determine if a regulatory limit for domoic acid should be established and if continued monitoring for domoic acid is necessary.	
STATE				
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS (EOEA)		<p>Fund the DMF Shellfish Sanitation Program as originally intended (currently this program is staffed at a 50% level).</p> <p>Establish more publicly-funded, state-certified water testing laboratories in order to respond more quickly to rainfall events and increase sampling efforts.</p>		Develop sediment criteria for selected contaminants to protect both the ecosystem and human health.
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS AND THE DEPARTMENT OF PUBLIC HEALTH				Increase monitoring efforts to document the presence of chemical contaminants in the edible portion of fishery products in order to better assess public health risks and develop control strategies.
LOCAL				
MUNICIPALITIES		Collaborate with DMF to identify and fix contamination sources. This collaboration should be formalized and institutionalized, with monthly updates of activities given at board of health and/or board of selectmen meetings.		Explore innovative ways to fund and establish programs to collect and properly dispose of household hazardous wastes on a regular basis.

PUBLIC HEALTH ACTION PLAN (continued)

RESPONSIBLE AGENCY	TOPIC			
		PATHOGENS	BIOTOXINS	CHEMICAL CONTAMINANTS
MUNICIPALITIES (continued)		<p>For coastal areas served by septic systems, review and update regulations governing these systems and maintain a strict adherence to setback and distance-to-groundwater requirements in sensitive coastal settings. Municipalities should also review their policies on granting variances to ensure that they are consistent with environmental and public health objectives.</p> <p>Utilize 1989 sanitary survey information (as well as other more recent information), priority rank shellfish areas in need of remediation, and take the necessary action to correct known sources of pollution (i.e., failing septic systems).</p> <p>Collect and analyze available data on swimming beach closures to identify pollution sources and then undertake action to remediate the source.</p> <p>Obtain appropriate training for all volunteer review boards such as boards of health, conservation commissions, etc., as well as water quality task force groups.</p> <p>Adopt strict regulations prohibiting additional stormwater discharges and/or volume additions to present discharges.</p> <p>Investigate dry-weather flow conditions on all stormwater discharge pipes to eliminate the possibility of sewage connections.</p> <p>Explore obtaining conditionally-approved classification for appropriate resource areas impacted by stormwater runoff.</p> <p>Consider the formation of task forces to address water quality issues. Representation should include selectmen, resource management personnel, and citizen groups.</p> <p>Institute regulations for random testing of Marine Sanitation Devices to ensure that sanitary wastes are properly disinfected.</p> <p>Assure effective and reliable sewage treatment and disinfection at wastewater treatment plants, and reduce or eliminate the discharge of CSOs.</p>		
INDUSTRIAL				
INDUSTRIES				Continue to reduce toxic wastes with assistance from the Office of Technical Assistance within EOE.

LIVING RESOURCES AND HABITAT PROTECTION ACTION PLAN

RESPONSIBLE AGENCY	TOPIC				TOPIC				
	NUTRIENT LOADING	COASTAL HABITATS	LIVING RESOURCES	STORMWATER MANAGEMENT	TOXIC WASTE MANAGEMENT	BOAT WASTE MANAGEMENT	DREDGING AND DREDGED MATERIALS DISPOSAL	SEA LEVEL RISE	COMPREHENSIVE PLANNING AND GROWTH MANAGEMENT
MASSACHUSETTS BAYS PROGRAM	<p>Fund research relating to nutrient loading and nutrient-phytoplankton interactions.</p> <p>Develop a Bays-wide monitoring plan that will assess the impacts of nutrients and contaminants to the Massachusetts Bays ecosystem and will develop a strategy for implementation.</p>	<p>Work with the Division of Water Pollution Control to strengthen Massachusetts' Water Quality Standards to benefit coastal habitats.</p> <p>Work with EOEa to pass No Net Loss wetlands legislation, Watershed Protection legislation, and River Protection legislation.</p> <p>Support the adoption of strong regulations to implement the recently-passed Massachusetts Endangered Species Act.</p> <p>Support the Wetlands Conservancy Program's efforts to map and protect (via deed restriction) critical coastal wetlands in Massachusetts Bays communities.</p> <p>Through its Data Management staff, design and sponsor a coastal habitat mapping demonstration project. This project will collect and synthesize available habitat information for a selected geographic setting (e.g., embayment) and present it in GIS format at a scale suitable for local use.</p> <p>Continue to support and publicize ongoing habitat restoration projects, such as the Massachusetts Environmental Trust's Belle Isle Marsh Study and Habitat Restoration Project (near Winthrop) and Post Island Marsh Restoration Project (Quincy), and the Corps of Engineers/MDC anadromous fisheries restoration initiatives in the Charles River.</p> <p>Continue to inventory degraded coastal habitat areas and identify appropriate programs to restore them.</p> <p>Work with the US Fish and Wildlife Service (USFWS) and the Massachusetts Department of Fisheries, Wildlife, and Environmental Law Enforcement (DFWELE) to restore anadromous fish runs in the Massachusetts Bays region.</p> <p>Develop a demonstration project to restore a degraded coastal habitat (e.g., salt marsh, sand dune, eelgrass bed, anadromous fish run).</p>	<p>Work with DMF to sponsor sanitary survey training sessions for local officials. These training sessions would educate shellfish constables and health agents on the proper techniques for identifying and evaluating pathogen inputs into critical shellfish areas.</p> <p>Seek the designation of Massachusetts Bays shellfish areas and other estuarine habitats as "Outstanding Resource Waters" (under the Antidegradation provisions of the Massachusetts Surface Water Quality Standards).</p> <p>Work to secure additional state funds for shellfish management programs to be carried out at the local level, overseen and guided by DMF.</p> <p>Continue to fund research on the sources, transport, and fate of organic contaminants.</p> <p>Fund a risk assessment study to determine the relative importance of the various contaminants entering the Massachusetts Bays in terms of their impact on living resources and habitats.</p> <p>Produce a characterization report in 1992 which will incorporate information on living resources and habitats, as well as information on the sources, transport, and fate of contaminants and their effects on living resources in the Bays. This information will be collected from historical sources and will also incorporate the results of MBP-sponsored and coordinated research.</p> <p>Fund a living resources assessment to serve as a baseline for evaluating the effects of changes in water quality.</p> <p>Support fisheries conservation and management actions to provide for the recovery of depleted groundfish and pelagic stocks in the Massachusetts Bays region. Specifically, the Massachusetts Bays Program and the aforementioned agencies should assist the New England Fishery Management Council in developing and implementing fisheries management plans to rebuild stocks.</p>	<p>Develop and publicize a demonstration project to inventory, map, and remediate polluted stormwater discharges in a community that is sustaining significant economic losses due to rainfall closures of shellfish beds.</p> <p>Work with DEP to help disseminate its "Nonpoint Source Mega-Manual" and sponsor public workshops to educate local officials about Best Management Practices and financing options for controlling stormwater runoff.</p>		<p>Continue to support the development and dissemination of boater education materials, such as the "Environmental Guide for New England Mariners," to inform the Massachusetts Bays boating public of the location of pumpout facilities and of the boater's responsibilities in boat waste management.</p> <p>Evaluate the option of establishing a "No-Discharge Zone" in Massachusetts Bay, based on the work of the Buzzards Bay Project.</p>		<p>Work with CZM and area educational institutions to determine the local impact of sea level rise.</p> <p>Incorporate sea level rise data into the Massachusetts Bays Program data base.</p> <p>Develop a public outreach program to promote public understanding of the impacts of sea level rise.</p>	
FEDERAL									
ARMY CORPS OF ENGINEERS (COE)							Conduct the proposed comprehensive study of the problems associated with dredged material disposal along the Massachusetts Bays coastline.		

LIVING RESOURCES AND HABITAT PROTECTION ACTION PLAN (continued)									
RESPONSIBLE AGENCY	TOPIC				TOPIC				
	NUTRIENT LOADING	COASTAL HABITATS	LIVING RESOURCES	STORMWATER MANAGEMENT	TOXIC WASTE MANAGEMENT	BOAT WASTE MANAGEMENT	DREDGING AND DREDGED MATERIALS DISPOSAL	SEA LEVEL RISE	COMPREHENSIVE PLANNING AND GROWTH MANAGEMENT
ARMY CORPS OF ENGINEERS (continued)							Through the Dredging and Dredged Material Disposal Task Force, explore alternatives to ocean disposal of contaminated materials, including containment on site and nearshore and shoreline disposal, both for large federally funded dredging projects and smaller municipal and private dredging projects.		
ENVIRONMENTAL PROTECTION AGENCY (EPA)							<p>Establish sediment quality criteria for contaminants in dredged material.</p> <p>Through the Dredging and Dredged Material Disposal Task Force, explore alternatives to ocean disposal of contaminated materials, including containment on site and nearshore and shoreline disposal, both for large federally funded dredging projects and smaller municipal and private dredging projects.</p>		
FISH & WILDLIFE SERVICE (FWS)			<p>Identify important habitats for endangered species, anadromous fish, and migratory, wintering, and breeding birds in the Massachusetts Bays region.</p> <p>Disseminate habitat information to regional planning agencies and municipalities for incorporation into regional and local habitat protection plans.</p> <p>Develop management practices that will protect these important wildlife habitats.</p> <p>Sponsor public workshops to educate local officials about management practices and options for protecting important wildlife habitats in the Massachusetts Bays region.</p>						
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION / NATIONAL MARINE FISHERIES SERVICE			Support fisheries conservation and management actions to provide for the recovery of depleted groundfish and pelagic stocks in the Massachusetts Bays region. Specifically, the Massachusetts Bays Program and the aforementioned agencies should assist the New England Fishery Management Council in developing and implementing fisheries management plans to rebuild stocks.				Through the Dredging and Dredged Material Disposal Task Force, explore alternatives to ocean disposal of contaminated materials, including containment on site and nearshore and shoreline disposal, both for large federally funded dredging projects and smaller municipal and private dredging projects.		
SOIL CONSERVATION SERVICE (SCS)				Continue to provide technical assistance to municipalities on the use of Best Management Practices to control stormwater runoff.					
STATE									
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS		Support the development and dissemination of criteria to provide Conservation Commissions and shellfish constables with guidance on reviewing pier and dock construction for impacts on wetlands, shellfish beds, and other coastal resources.	Work with the Massachusetts Bays Program to encourage the development of markets for under-utilized fish species to alleviate pressure on depleted groundfish stocks (cod, haddock, yellowtail flounder, etc.)				Through the Dredging and Dredged Material Disposal Task Force, explore alternatives to ocean disposal of contaminated materials, including containment on site and nearshore and shoreline disposal, both for large federally funded dredging projects and smaller municipal and private dredging projects.		

LIVING RESOURCES AND HABITAT PROTECTION ACTION PLAN (continued)

RESPONSIBLE AGENCY	TOPIC				TOPIC				
	NUTRIENT LOADING	COASTAL HABITATS	LIVING RESOURCES	STORMWATER MANAGEMENT	TOXIC WASTE MANAGEMENT	BOAT WASTE MANAGEMENT	DREDGING AND DREDGED MATERIALS DISPOSAL	SEA LEVEL RISE	COMPREHENSIVE PLANNING AND GROWTH MANAGEMENT
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS (continued)		<p>Approve and fund the long-range habitat research and monitoring agenda recommended by the EOEa Technical Advisory Group for Marine Issues.</p> <p>Fund the implementation of the Wetlands Conservancy Program, including identification and deed restriction of sensitive wetlands, and protection of restricted wetlands at a level higher than that afforded by the Wetlands Protection Act, as provided for in the Wetlands Restriction Act.</p>	<p>Create a task force to address the technical, regulatory, and economic aspects of aquaculture development in Massachusetts Bays.</p> <p>Support fisheries conservation and management actions to provide for the recovery of depleted groundfish and pelagic stocks in the Massachusetts Bays region. Specifically, the Massachusetts Bays Program and the aforementioned agencies should assist the New England Fishery Management Council in developing and implementing fisheries management plans to rebuild stocks.</p>						
COASTAL ZONE MANAGEMENT (CZM)						Develop criteria to determine the adequacy of pumpout facilities in all harbor areas.			
DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP)				<p>Continue to provide technical assistance to municipalities on the use of Best Management Practices to control stormwater runoff.</p> <p>Develop a stormwater management policy under the Wetlands Protection Act and Regulations.</p> <p>Develop a program for permitting stormwater discharges in critical habitat areas.</p>		<p>Develop criteria to determine the adequacy of pumpout facilities in all harbor areas.</p> <p>Through its Chapter 91 permitting authority, ensure that new marinas or expansions of existing marinas (greater than 10 additional slips) have adequate pumpout facilities, waste oil receptacles (for recycling of waste oil), and trash disposal/recycling containers.</p>			
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (DEM)					Continue to provide technical assistance to municipalities on the establishment of household hazardous waste collection programs.				
DEPARTMENT OF FISHERIES, WILDLIFE & ENVIRONMENTAL LAW ENFORCEMENT (DFWELE)			<p>Expedite the designation of habitats for state-listed endangered and threatened species.</p> <p>Support fisheries conservation and management actions to provide for the recovery of depleted groundfish and pelagic stocks in the Massachusetts Bays region. Specifically, the Massachusetts Bays Program and the aforementioned agencies should assist the New England Fishery Management Council in developing and implementing fisheries management plans to rebuild stocks.</p>						
REGIONAL									
REGIONAL PLANNING AGENCIES (RPAs)	Assist municipalities in identifying nutrient-stressed embayments, developing critical loading rates, and performing watershed build-out analyses to estimate potential future loadings.			Continue to provide technical assistance to municipalities on the use of Best Management Practices to control stormwater runoff.	Continue to provide technical assistance to municipalities on the establishment of household hazardous waste collection programs.				Provide technical assistance to help communities plan for and manage growth in a manner consistent with critical habitat protection.
LOCAL									
MUNICIPALITIES	Work cooperatively with neighboring communities to adopt strong and consistent water quality bylaws and health regulations.			Adopt subdivision regulations that require that Best Management Practices for stormwater runoff be incorporated in any new development project.	Explore innovative ways to fund and establish programs to collect and properly dispose of household hazardous wastes on a regular basis.			Plan for the preservation of upland areas that saltmarsh and other coastal wetland habitats can reclaim as sea level rises.	

LIVING RESOURCES AND HABITAT PROTECTION ACTION PLAN (continued)									
RESPONSIBLE AGENCY	TOPIC				TOPIC				
	NUTRIENT LOADING	COASTAL HABITATS	LIVING RESOURCES	STORMWATER MANAGEMENT	TOXIC WASTE MANAGEMENT	BOAT WASTE MANAGEMENT	DREDGING AND DREDGED MATERIALS DISPOSAL	SEA LEVEL RISE	COMPREHENSIVE PLANNING AND GROWTH MANAGEMENT
MUNICIPALITIES (continued)				<p>Rank, according to priority, storm drains based on known or potential impacts on critical habitat areas (shellfish beds, spawning areas, etc.) and implement Best Management Practices to reduce stormwater pollution.</p> <p>With the Massachusetts Department of Public Works, work cooperatively to ensure that untreated stormwater is no longer diverted directly into coastal wetlands or waterways when existing roads are re-paved and/or upgraded.</p>					<p>Review and upgrade their full complement of regulatory, non-regulatory, and planning tools — comprehensive plans, zoning bylaws, watershed bylaws, subdivision regulations, health regulations, wetlands and floodplain bylaws, open space plans, etc. — to prevent further habitat loss and degradation.</p>
INDUSTRIAL									
INDUSTRIES THAT DISCHARGE DIRECTLY INTO RECEIVING WATERS OR SEWAGE TREATMENT FACILITIES					Continue to reduce toxic wastes with assistance from EOEa.				

AESTHETIC QUALITY ACTION PLAN

RESPONSIBLE AGENCY	TOPIC		
	BEACH DEBRIS AND MARINE FLOATABLES	OIL SPILLS, SLICKS, AND DISCHARGES	ALGAL FOULING
MASSACHUSETTS BAYS PROGRAM	<p>Promote public education on beach and marine debris problems, focusing attention on special user groups and their roles in keeping our coastal areas debris-free.</p> <p>Support state legislation that would ban the sale of <u>plastic</u> tampon applicators.</p>	<p>Support the efforts of CZM, DEP, and Coast Guard to develop a mutual aid protocol that will govern the purchase and deployment of oil spill equipment by communities and businesses at the <i>embayment</i> level.</p> <p>Support the development of model regulations that will require boatyards and marinas to maintain oil containment and cleanup equipment on site.</p> <p>Support the examination of a deposit/refund system to encourage oil recycling and reduce the incentive to dispose of oil improperly on land or at sea.</p>	<p>Define and coordinate the next steps to addressing the <i>Pilayella</i> problem in Nahant Bay and Broad Sound. This may include sponsorship of an appropriate pilot project on alternative <i>Pilayella</i> management and disposal options.</p> <p>Support a program to measure the biomass and map the areal extent of <i>Pilayella</i>.</p> <p>Support a program to assess the ecological impacts of proposed <i>Pilayella</i> management options.</p>
FEDERAL			
COAST GUARD		<p>Conduct training sessions for local response personnel on the proper use of oil spill containment and cleanup equipment.</p> <p>In its role as chair of Port Area Committees (PACs), ensure that the PACs review each embayment area's oil spill contingency plan for approval and inclusion into the Area Contingency Plan (ACP) and use those plans, as appropriate, in the event of an oil spill.</p>	
FISH AND WILDLIFE SERVICE		In cooperation with the Massachusetts Bays Program, National Marine Fisheries Service, and Department of Fisheries, Wildlife, and Environmental Law Enforcement, disseminate fish and wildlife habitat information for incorporation into embayment-wide oil spill response plans.	
STATE			
COASTAL ZONE MANAGEMENT		<p>Provide technical assistance to Massachusetts Bays coastal communities in the development and update of embayment-wide oil spill contingency plans.</p> <p>Encourage the satisfactory completion of embayment-wide oil spill contingency plans.</p>	
DEPARTMENT OF ENVIRONMENTAL PROTECTION		<p>Conduct training sessions for local response personnel on <i>inland</i> spills to ensure local preparedness and coordinated interfacing between DEP and local officials.</p> <p>Enforce existing regulations requiring large retail facilities to provide used oil collection containers accessible to the public.</p>	

AESTHETIC QUALITY ACTION PLAN (continued)

RESPONSIBLE AGENCY	TOPIC		
	BEACH DEBRIS AND MARINE FLOATABLES	OIL SPILLS, SLICKS, AND DISCHARGES	ALGAL FOULING
LOCAL			
MUNICIPALITIES	<p>Install and maintain conveniently-located trash receptacles (with covers that cannot be easily removed by vandals and animals) at all public beaches, boardwalks, coastal parks, and other populated coastal locations.</p> <p>Provide educational panels or signs at these locations to inform the public about the problems of marine debris and the benefits of keeping our coast clean.</p> <p>Require the installation of collection/storage bins for glass, paper, plastics, and used oil at all marinas and yacht clubs to handle wastes from boats.</p> <p>Develop and adopt a "carry in-carry out" policy for public beaches.</p> <p>Ban the use of plastic food service materials at beach concession stands.</p> <p>Adopt bylaws that encourage re-use, source reduction, and recycling, while discouraging the use of "disposable" plastic products and packaging.</p>	<p>Develop embayment-wide oil spill contingency plans</p> <p>Establish embayment-wide or other regional cooperatives for the purchase of oil spill containment and cleanup equipment.</p> <p>Adopt regulations requiring boatyards and marinas to maintain oil containment and cleanup equipment on site.</p> <p>Adopt design or performance standards for catch basins to remove oil, gas, and grease from stormwater.</p> <p>Establish convenient waste oil collection facilities to encourage oil recycling and reuse.</p>	
MUNICIPALITIES WITH COMBINED SEWER OVERFLOWS	<p>Develop and implement strategies for removing floatables from wastewater.</p>		

WATERFRONT ACCESS ACTION PLAN

RESPONSIBLE AGENCY	TOPIC
	WATERFRONT ACCESS
MASSACHUSETTS BAYS PROGRAM	<p>Sponsor the development of, and publish, a comprehensive guide of coastal public access sites in the Massachusetts Bays region.</p> <p>Sponsor a review of the adequacy of boat landings along the Massachusetts Bays coast.</p> <p>Support the efforts of DEM to implement the Coastal Access Bill.</p> <p>Sponsor a "how-to" public workshop(s) for local officials on reclaiming and maintaining historic rights-of-way.</p> <p>Co-sponsor, with CZM, a public workshop(s) for local officials on the development of embayment or harbor management plans and use of Chapter 91 regulations to increase public access.</p>
STATE	
COASTAL ZONE MANAGEMENT	<p>Continue to provide technical assistance to communities on the development of harbor management plans and designation of "working waterfront" overlay zones.</p> <p>Continue to review and, where appropriate, reconfirm the Designated Port Areas.</p>
LOCAL	
MUNICIPALITIES	<p>Re-establish and maintain historic public rights-of-way to the shore through appropriate legal means.</p> <p>Identify and protect sensitive coastal areas where public access and development should be restricted in order to maintain the integrity of sensitive natural resources.</p> <p>Develop embayment or harbor management plans that limit non-maritime-dependent development and promote public access to, and enjoyment of, the shoreline.</p> <p>Designate "working waterfront" overlay zones to preserve and enhance traditional maritime uses. Within these zones, boatyard preservation programs should be implemented. All new buildings or accessory uses constructed within these zones should directly benefit maritime-related uses.</p>