The Environmental Protection Agency
and the
Massachusetts Executive Office of
Environmental Affairs

Designate

BUZZARDS BAY

to the

National Estuary Program

January 29, 1988

Designation of Buzzards Bay to the National Estuary Program

The Buzzards Bay Project's recent designation to the National Estuary Program (NEP) represents a renewed commitment to improve and protect the environmental quality of Buzzards Bay. Although the Buzzards Bay Project began in 1985, changes in the NEP with passage of the Water Quality Act of 1987 impelled the Buzzards Bay Project to review its progress and plans. The resulting agreements reflect a formal partnership among the state, the Environmental Protection Agency (EPA), and the Buzzards Bay Project. Designation is the partnership's contract to meet the requirements of the Act, to provide funding, and to take action on a well-defined schedule.

The National Estuary Program began in 1985 when Congress and the Environmental Protection Agency acted on the need for focused attention to estuaries. Four estuaries -- Buzzards Bay, Narragansett Bay, Long Island Sound, and Puget Sound -- received appropriations to initiate comprehensive management programs. Albemarle-Pamlico Sounds and San Francisco Bay were added to the NEP in 1986.

The Water Quality Act of 1987 provides new authority for the NEP. The Act officially recognizes the Program, authorizes the EPA Administrator to convene Management Conferences in estuaries of national significance, and defines seven purposes of a Management Conference. Each of the existing estuary programs, including Buzzards Bay, worked with EPA to review its program and ensure consistency with the new Act. They negotiated goals, schedules and commitments to meet the requirements of the Act. Based on these commitments EPA Administrator Lee Thomas officially designated each program to continue as part of the National Estuary Program.

But schedules and goals are only the beginning. The Bay and its resources need you -- who live on the Bay, who live upstream away from the Bay, and who visit -- to help protect the Bay from pollution.

Research Progress In Buzzards Bay

The beginning of 1988 marks a midway point for the Buzzards Bay Project (BBP). Our first funded research projects were initiated in the summer and fall of 1985. By early 1990, the BBP will develop a Comprehensive Conservation and Management Plan (CCMP). The research projects are designed to provide a better understanding of the water quality problems in the Bay. The CCMP's recommendations for protection and improvement of the Bay's water and resources are being built from the technical information generated by the ongoing research.

Early in the life of the Buzzards Bay Project, the managers, citizens and scientists who are represented on Project committees agreed to focus on three priority problems in the Bay: (1) closure of shellfish beds, (2) contamination of fish and shellfish by toxic metals and organic compounds, and (3) high nutrient inputs and their potential pollutant effects.

Closure of Shellfish Beds

Recent increases in the acreage of shellfish beds closed to fishing are due to high coliform counts. Some swimming beaches have also been closed in the last two years. These closures are dramatic indications of the decline in water quality in Buzzards Bay.

As part of the goal to protect the shellfishing waters, researchers from Barnstable County Health and Environmental Department and Boston University have been using Buttermilk Bay as a model study to gain understanding of the sources, distribution and significance of coliforms and nutrients.

Barnstable County's studies of coliform inputs to Buttermilk Bay showed that stormwater runoff, carried through storm drain systems to the shores of the Bay, is a major source of coliform inputs. Waterfowl and marinas were less important sources of coliforms. The marshes, incoming streams, and the debris in the line of beach wrack also contribute to the coliform problem in Buttermilk Bay. Coliform inputs from septic systems and groundwater are still under study. EPA has provided $300,000 to support an "action plan" for cleaning up Buttermilk Bay. Two demonstration stormwater treatment projects will allow the storm water to infiltrate into the ground instead of discharging directly to the Bay. Other "action plan" activities will include public education programs, beach wrack clean-up, and technical assistance to local boards in Bourne and Wareham.

Research findings and management recommendations from Buttermilk Bay will be described and evaluated in summary reports so that they can be adopted for other areas of Buzzards Bay that face similar problems.

Toxic Contamination of Fish and Shellfish

The location of an EPA Superfund Site in the Acushnet River Estuary has raised concerns among citizens about polychlorinated biphenyl (PCB) and metal contamination in fish and shellfish caught in Buzzards Bay.

Battelle Ocean Sciences studied PCB concentrations in edible tissues and whole bodies of flounder and lobster taken from the New Bedford area where over 18,000 acres are closed to fishing. PCB concentrations in edible muscles of flounder ranged from 0.5 to 1.7 parts per million (ppm) inside fishery closure areas and averaged only 0.3 ppm from other parts of Buzzards Bay outside the closure area. The FDA Action Level for PCBs is 2.0 ppm. For lobsters, all edible muscle samples were below 2.0 ppm PCBs, but PCB concentrations in the hepatopancreas (tomale) exceeded the FDA Action Level, even in 5 of the 6 lobsters taken outside the fishery closure area.

The Massachusetts Division of Marine Fisheries surveyed PCB levels in lobster, flounder, and hard clams collected from areas of Buzzards Bay outside of New Bedford to see how widespread PCB contamination was. For lobsters, PCB levels ranged from 0.1 to 2.8 ppm with a mean of 0.96 ppm. Hard clams averaged 0.03 ppm with a maximum of 0.08 ppm PCBs and flounder averaged 0.45 ppm with a maximum of 1.18 ppm PCB. These studies show that flounder, lobster, and hard clams taken from Buzzards Bay generally have PCB levels in edible tissues that are below the 2.0 ppm FDA Action Level. However, the high concentrations of PCBs in lobster hepatopancreas indicate a need for further evaluation of the potential health risk related to consumption of this part of the lobster.

High Nutrient Inputs

Nutrients enter the Bay from a variety of sources, including discharge from sewage treatment plants, runoff from residential and agricultural land, and groundwater flow that carries nutrients from septic tanks to the Bay. High nutrient inputs cause decline in water quality as reflected by high turbidity, algal blooms, low dissolved oxygen, and decline in eelgrass beds.

The Massachusetts Division of Water Pollution Control (DWPC) completed a water quality survey at 140 locations in fresh water streams and coastal embayments around Buzzards Bay in 1985 and 1986. These data on nitrogen, phosphorus, dissolved oxygen, coliforms, and other parameters have been published in a two volume report. Battelle Ocean Sciences is in the process of synthesizing these DWPC data with reports from previous water quality studies of the Bay to identify areas where high nutrients are a potential concern.

Nutrient loading has not yet caused serious problems in the deeper offshore areas of Buzzards Bay. Water samples taken by DWPC show that the highest nutrient levels occur nearshore. A study by Science Applications International Co. examined the condition of the bottom sediments, associated organisms, and dissolved oxygen along a transect from New Bedford Harbor to the center of Buzzards Bay. Some early signs of degradation due to nutrient enrichment were evident in the biological communities and sediment profiles at shallower stations and in a depression offshore from New Bedford. Near the center of the Bay, the community of bottom organisms appears to be unchanged from conditions 30 years ago.

Buzzards Bay provides us with invaluable recreational and commercial resources, but like so many parts of the Massachusetts coastline, there has been a decline in water quality due to the heavy demands on these resources. The Dukakis administration is commited to doing more to protect theCommonwealth's fragile coastline, and we are pleased to continue working with the U. S. Environmental Protection Agency in this area. We hope to develop an action plan to quickly assess the problem and produce a remedy.

James S. Hoyte

Secretary
Massachusetts Executive Office of Environmental Affairs

A poet of old once described New England as '...the land that is loved by the sea...' As New Englanders, our long love affair with the ocean continues. It is no coincidence that of all the nation's bays, harbors and sounds, three in New England are among the first to be designated to the National Estuary Program. Moreover, as an unparalleled environmental and economic resource, as well as a place of rare beauty, it is no surprise that Buzzards Bay is among them. Working in concert with the Commonwealth, this designation will ensure the long term improvement and protection of this precious resource.

Michael R. Deland
Regional Administrator
U.S. Environmental Protection Agency
Region I

Investigators from Boston University constructed a nutrient budget for Buttermilk Bay. Over two-thirds of the nitrogen entering Buttermilk Bay comes from groundwater flow. Septic systems of the homes near the shore contribute to the high nitrogen concentrations of groundwater. The high nutrient concentrations near the shoreline promote algal growth and increased turbidity.

Changes in biological resources of the Bay can be related to high nutrient inputs. Another study by a Boston University investigator used aerial photographs to document that eelgrass beds, a critical habitat for scallops, fish and other marine life, are declining in some enclosed, poorly-flushed embayments where nutrient inputs are high.

Some of the recommendations to emerge from the Buzzards Bay Project will address the need to reduce or control nutrient inputs to sensitive coastal embayments.

Management Recommendations

The ultimate goal of the Buzzards Bay Project is the development of management recommendations and plans for their implementation -- the Comprehensive Conservation and Managment Plan. This Plan will provide for systematic, technically sound, region-wide protection of the water quality and marine resources of Buzzards Bay. The Plan will include recommendations for control of point and nonpoint pollution sources, better resource management, and long-term monitoring to assess the success of actions taken.

In addition to program commitments at the State and Federal levels, much of the implementation activity in Buzzards Bay will involve local action. An inter-municipal advisory board is being organized to assist the Buzzards Bay Project in developing and implementing recommendations at the local level.

Some local implementation activities are already underway. A new staff member at Massachusetts Coastal Zone Management (MA-CZM) provides technical assistance to local boards of municipalities surrounding Buzzards Bay. Model town by-laws that provide increased protection to coastal waters by regulating stormwater discharges, septic-system placement, nutrient loading, etc., are being developed. Workshops are scheduled this winter for local board members to learn about regulatory authority of their boards and model by-laws.

There is much to be done to develop a Comprehensive Conservation and Management Plan by March of 1990 and the Buzzards Bay Project is well on its way!

Water Quality Act of 1987
Section 320 -- National Estuary Program

Section 320 of The Water Quality Act of 1987 establishes the National Estuary Program and authorizes the Administrator of the Environmental Protection Agency to convene Management Conferences to develop Comprehensive Conservation and Management Plans (CCMP) for estuaries of national significance that are threatened by pollution, development or overuse. Management Conferences may be convened for up to five years. The Act identifies seven major purposes of a Management Conference convened under the National Estuary Program:

- Assess trends in water quality, natural resources and uses;
- Identify the cause of environmental problems through data collection and analyses;
- Develop point and nonpoint loadings and relate them to observed changes;
- Develop a CCMP that includes recommendations for priority actions;
- Design plans to coordinate these activities with Federal, State and local agencies;
- Provide monitoring to assess the effectiveness of the implementation actions; and
- Review Federal financial assistance programs for consistency.

The Act also identifies required members of a Management Conference to ensure representation by a broad range of interests. Membership must include at a minimum representatives of Federal, State, regional and local agencies, affected industries, academia, and the public.


SIGILLUM REIPUBLICÆ MASSACHUSETTENSIS


BUZZARDS
BAY PROJECT


EPA