Massachusetts Bays Comprehensive Conservation & Management Plan

AN EVOLVING PLAN FOR ACTION

MASSACHUSETTS BAYS PROGRAM
U.S. ENVIRONMENTAL PROTECTION AGENCY
MASSACHUSETTS EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS

1996 FINAL CCMP

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 6 1996

THE ADMINISTRATOR

Honorable William F. Weld
Governor
The Commonwealth of Massachusetts
Boston, Massachusetts 02133

Dear Governor Weld:

It is my great pleasure to receive your concurrence and to approve the Comprehensive Conservation and Management Plan (CCMP) submitted for the Massachusetts and Cape Cod Bays. The Massachusetts Bays Program that developed this CCMP is truly a model for the intergovernmental relationships that I believe are fundamental to successful environmental protection. The steady support from the Massachusetts programs and staff during development of the CCMP has been crucial to its timely completion.

The enthusiasm and high quality work of staff at the Massachusetts Bays Program, Massachusetts Coastal Zone Office, and Urban Harbors Institute have been outstanding. This program is an exciting model for innovative collaboration with local communities and regional partners as they direct the protection of their resources. I am confident that we have strengthened and enhanced our relationships not only with each other, but also with citizens and local elected officials. I look forward to a continuing partnership with you and the Massachusetts Bays Program as we move ahead in implementation.

If you have any questions, please do not hesitate to contact me, or call Robert Perciasepe, Assistant Administrator for Water, at 202/260-5700.

Sincerely,

Carol M. Browner

Carol M. Browner

Recycled/Recyclable
Printed with Soy/Canola Ink on paper that contains at least 50% recycled fiber

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE DEPARTMENT
STATE HOUSE • BOSTON 02133

WILLIAM F. WELD
GOVERNOR

ARGEO PAUL CELLUCCI
LIEUTENANT-GOVERNOR

HAND DELIVERED

April 3, 1996

Carol M. Browner
Administrator
U.S. Environmental Protection Agency
Washington, D.C. 20460

Dear Administrator Browner: Carol,

On behalf of the Massachusetts Bays Program Management Conference, the Commonwealth proudly presents this ambitious Final Comprehensive Conservation and Management Plan (CCMP) for your consideration.

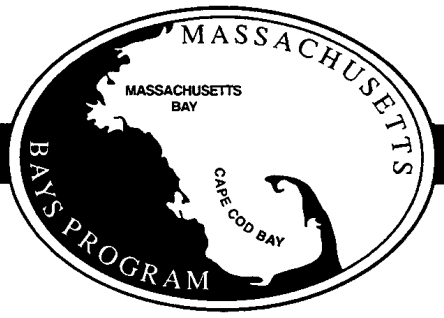
I have examined this Management Plan, and as Governor, approve it. The public and officials from all levels of government have had an opportunity to review and comment on the document. The Plan has also been reviewed by the Massachusetts Coastal Zone Management Office (MCZM). As a result of a formal request from Jane Downing (Manager, Massachusetts State Unit, EPA-New England) on January 16, 1996, MCZM commenced Federal Consistency Review of the Draft Final CCMP. While this Final CCMP reflects MCZM's initial review and input to ensure consistency between the CCMP and the Massachusetts Coastal Zone Management Plan, completion of this process will remain open until EPA-Headquarters is prepared to issue its approval of the Final CCMP. This proposed Federal Action will ultimately be the subject of MCZM's Federal Consistency determination.

You may be assured that my Office, with the support and assent of the Legislature, will aggressively identify and appropriate resources to implement the CCMP actions and recommendations contained herein. The Commonwealth is well aware of its partnership status with the Federal Government regarding the implementation of this Plan. As with other Federal programs, the Commonwealth is prepared to prioritize implementation based on the level of support from our Federal partners. Such prioritization will also be tempered by the myriad of commitments and limited fiscal resources available at the state level. As contributing partners, we can work together to provide meaningful environmental conservation initiatives as specified in this CCMP.

Sincerely,

Bill Weld

William F. Weld
Governor



MASSACHUSETTS BAYS

1996 COMPREHENSIVE CONSERVATION

AND MANAGEMENT

An Evolving Plan for Action

MASSACHUSETTS BAYS PROGRAM

U.S. Environmental Protection Agency

Massachusetts Executive Office of Environmental Affairs

1996 FINAL COMP

THE BAYS PROGRAM

The Massachusetts Bays Program is a joint effort of local, state, and federal governments, as well as citizens, scientists, educators, and businesses, to develop regional solutions to pollution problems in the Bays and their adjacent watersheds. The Program is funded under the Clean Water Act through the U.S. Environmental Protection Agency, and is administered by the Massachusetts Executive Office of Environmental Affairs' Coastal Zone Management Office. In addition to developing a long-term plan to improve water quality management, the Program offers information and technical assistance on innovative, locally-based pollution prevention and remediation projects, and sponsors a multi-faceted public outreach and education effort to heighten awareness of pollution problems and to enlist support for and participation in Bays protection.

For more information, call 1-800-447-BAYS or write Massachusetts Bays Program, 100 Cambridge Street, Room 2006, Boston, MA 02202.

ACKNOWLEDGEMENTS

The Massachusetts Bays Program **Comprehensive Conservation and Management Plan (CCMP)** is the work of many dedicated people. Many thanks to Secretary Trudy Coxe, Massachusetts Executive Office of Environmental Affairs (EOEA), and Regional Administrator John DeVillars, United States Environmental Protection Agency (EPA), for their ongoing involvement and support. The preparation of the CCMP was the result of an innovative contractual agreement with the Merrimack Valley Planning Commission and we would especially like to acknowledge Alan Macintosh, Environmental Program Manager for MVPC, who served with unflagging commitment and enthusiasm as CCMP planner and principal author, and Celine Bernier (MVPC), whose typing and formatting skills contributed to the preparation of this and previous iterations of the document. State staff from the Massachusetts Bays Program (MBP) who participated in the development of the document include Diane Gould, Betsy McEvoy, Dillon Scott, Marie Studer, Ruth Kuykendall, and Susan Schneider. Regional Planning Agency MBP staff participants included Lisa Nicol, MVPC; Nancy Goodman and Bill Clark, Metropolitan Area Planning Council (MAPC); and Patricia Hughes, Cape Cod Commission (CCC). Faith Burbank, U. Mass Extension, also assisted. The Environmental Protection Agency contributors included Tara Tracy, Matthew Liebman, and Carol Kilbride. Members of the Massachusetts Bays Program Steering Committee, including Peg Brady, Director, Massachusetts Coastal Zone Management (MCZM); Jane Downing, EPA; Russ Isaac and Larry Gil, DEP; Gaylord Burke, MVPC; Armando Carbonell, CCC; Martin Pillsbury, MAPC; Joan Foster, South Shore LGC; Peter LaPolla, Metro Boston LGC; Ted Tarr, 8 Towns and the Bay; Jim Povey, Salem Sound 2000; Jim Watson, Old Colony Planning Council; Judy Pederson, MIT Sea Grant; and William Robinson, U. Mass/Boston, helped to guide the development of the CCMP.

Many others made invaluable contributions throughout the five years of planning that led to this document. A list of current Massachusetts Bays Program Committee members is found as follows. We would like to thank each of these individuals for their assistance and ongoing commitment. We would especially like to thank our tireless committee chairs for their dedication. In addition to the current chairs, whose names are noted in the list, we would like to thank old friends who served in the past as chairs of Massachusetts Bays Program committees, including Alan Hankin, Gwen Ruta, Jack Pitman, Mark Norton, John Farrington, Gordon Wallace, Jay Kaufman, Dan Curll, Jack Clarke, and Jeff Benoit.

And finally, many thanks to all the local, regional, state, and federal officials, planners, scientists, and interested citizens who generously gave of their time and who have made the Massachusetts Bays Program and this CCMP a success.

ACKNOWLEDGEMENTS

Massachusetts Bays Program Committee Members and Staff

POLICY COMMITTEE

Trudy Coxe, Secretary, Commonwealth of Massachusetts Executive Office of Environmental Affairs, Co-Chair

John DeVillars, Regional Administrator, US Environmental Protection Agency - New England, Co-Chair

MANAGEMENT COMMITTEE

Diane Gould, Massachusetts Bays Program, Chair

Peg Brady, Massachusetts Coastal Zone Management Office
Leigh Bridges, Massachusetts Division of Marine Fisheries
Faith Burbank, Education Alliance Steering Committee
Gaylord Burke, Merrimack Valley Planning Commission
Michael Connor, Massachusetts Water Resources Authority
Ralph Cox, Massachusetts Port Authority
Richard Delaney, Urban Harbors Institute
Cathy Demos, US Army Corps of Engineers - New England Division
Jane Downing, US Environmental Protection Agency - New England
*Pat Eldridge, c/o Senator Henri Rauschenbach/Coastal Caucus Stewart Fefer, US Fish and Wildlife Service/Gulf of Maine Project
Joan Foster, South Shore Local Governance Committee (LGC)
*Peter Gagnon, Massachusetts Department of Public Health
Stephen Greene, Business and Resource Users Group
*Janeen Hansen, Massachusetts Port Authority
*Carol Hanson, US Natural Resources Conservation Service
Pat Hughes, Cape Cod Commission
Russell Isaac, Massachusetts Department of Environmental Protection
Elaine Krueger, Massachusetts Department of Public Health
Peter LaPolla, Metro Boston LGC
*Wendy Leo, Massachusetts Water Resources Authority
Leslie Luchonok, Massachusetts Department of Environmental Management
Marc MacQueen, US Natural Resources Conservation Service
Sharon McGregor, Massachusetts Executive Office of Environmental Affairs
Judy Pederson, Technical Advisory Committee
Martin Pillsbury, Metropolitan Area Planning Council
James Povey, Salem Sound 2000 LGC
Henri Rauschenbach, Massachusetts Senate
William Robinson, University of Massachusetts-Boston
Jodi Sugerman, Coastal Advocacy Network (CAN) Co-Chair
Frederick (Ted) Tarr, 8 Towns and the Bay LGC
Patricia Trombly, Massachusetts Highway Department
Maria Van Dusen, Massachusetts Division of Fisheries, Wildlife and Environmental Law Enforcement
James Watson, Old Colony Planning Council
Mason Weinrich, CAN Co-Chair
Mark Zivan, Cape Cod Coastal Resources Committee LGC

TECHNICAL ADVISORY COMMITTEE

Judy Pederson, MIT Sea Grant Program, Co-Chair
Bill Robinson, University of Massachusetts-Boston, Co-Chair

Eric Adams, MIT-Civil Engineering Department
Andrea Arenovski, Marine Studies Consortium
Arnold Banner, US Fish and Wildlife Service, Gulf of Maine Project
Leigh Bridges, Massachusetts Division of Marine Fisheries
Robert Buchsbaum, Massachusetts Audubon Society: North Shore
Brad Butman, US Geological Survey-Woods Hole
Mark Chandler, New England Aquarium
Michael Connor, Massachusetts Water Resources Authority
Martin Dowgert, US Food and Drug Administration
Kenneth Finkelstein, National Oceanic and Atmospheric Administration/US Environmental Protection Agency - New England

Mike Gildesgame, Massachusetts Department of Environmental Management
*Debbie Graham, Massachusetts Department of Environmental Management
Paula Kullberg, US Army Corps Engineers
Robert Lent, US Geological Survey
*Wendy Leo, Massachusetts Water Resources Authority
Matt Liebman, US Environmental Protection Agency - New England
*Mike Mikelson, Massachusetts Water Resources Authority
Julianne Nassif, Massachusetts Department of Public Health
Jerry Pesch, US Environmental Protection Agency/Environmental Research Lab
Dave Ryan, University of Massachusetts-Lowell
Dale Saad, Barnstable Health Department
Mike Shiaris, University of Massachusetts-Boston
David Terkla, University of Massachusetts-Boston
Tracy Villareal, University of Massachusetts-Boston

BUSINESS AND RESOURCE USERS GROUP

Business Participants

Stephen Greene, Polaroid Corporation, Chair

Scott Cassel, Massachusetts Executive Office of Environmental Affairs
Joy Conway, Greater Boston Real Estate Board
Roy Crystal, Goldman Environmental
Diane Davis, Schneider and Associates
Betty Diener, Environmental Business Council of New England
Peggy Fantozzi, R.H. Cole Associates
Larry Goldman, Goldman Environmental/Small Business Association of New England
Bob Ingram, Daylor Consulting Group
Vivien Li, The Boston Harbor Association
Renato Miele, Environmental Business Council/University of Massachusetts
Dan Moon, Longwood Environmental Management
Joseph Newman, Greater Boston Chamber of Commerce
Bob Ruddock, Associated Industries of Massachusetts
Claudia Smith-Reid, Massachusetts Water Resources Authority

Resource Users Participants

Bill Adler, Massachusetts Lobstermen's Association
Andy Ayer, Quincy Shellfish Department/Massachusetts Shellfish Officer's Association
Al Frizelle, Boston Shipping Association/Charlestown Navy Yard
Tom Gloria, New England Aquarium Divers Club
John Grabski, Massachusetts Bay Yacht Club Association
John Hicks-Courant, Divers' Environmental Survey
John Sheehy, Massachusetts Harbormasters Association

COASTAL ADVOCACY NETWORK

Jodi Sugerman, Save the Harbor/Save the Bay, Co-Chair
Mason Weinrich, Cetacean Research Unit, Co-Chair

Steve Aubrey, Association for the Preservation of Cape Cod
Gaye and Tom Berube, Massachusetts Sportsmen's Council
Polly Bradley, S.W.I.M. (Safer Waters in Massachusetts)
Robert Buchsbaum, Massachusetts Audubon: North Shore
Paul Burns, MassPIRG (Public Interest Research Group)
Priscilla Chapman, Fall River Conservation Commission
Russell DeConti, Center for Coastal Studies
Richard Delaney, Urban Harbors Institute
Gay Gillespie, Westport River Watershed Association
Tom Gloria, New England Aquarium Divers Club
Eileen Gunn, Coalition for Buzzards Bay
Nancy Ho, Association for the Preservation of Cape Cod
Joan LeBlanc, The Boston Harbor Association
Vivien Li, The Boston Harbor Association
Mary Loebig, S.T.O.P (Stop the Outfall Pipe)

Bob Loring, Clean Water Action
Jay McCaffrey, New England Sierra Club
Valerie Nelson, Coalition for Alternative Wastewater Treatment
Susan Nickerson, Association for the Preservation of Cape Cod
Stephan Nofield, Bays Legal Fund
Susan Redlich, Massachusetts Water Resources Authority/Wastewater Advisory Committee
Peter Shelley, Conservation Law Foundation
Caroline Simmons, New England Environmental Network
Roger Stern, Marine Studies Consortium
Alison Walsh, Save the Bay
Metti Whipple, Plymouth First
Jack Wiggin, Coastal Resources Advisory Board/Urban Harbors Institute
John Williams, Massachusetts Toxics Campaign
Paul Wingle, Environmental League of Massachusetts
Julie Wormser, New England Environmental Network

EDUCATION ALLIANCE STEERING COMMITTEE

Reed Stewart, Bridgewater State College, Chair
Faith Burbank, University of Massachusetts Cooperative Extension Service, Facilitator

Janis Burton, Manomet Bird Observatory
Ellie Calhoun, New England Aquarium
Susan Carver
Jack Crowley, Hingham High School
Cindy Delpapa, Saugus River Watershed Council
Barbara Egon, Massachusetts Audubon Society/Ipswich River Wildlife Sanctuary
Laura Kursman, Massachusetts Department of Environmental Protection
Stafford Madison, US Environmental Protection Agency - New England
Jay Moore, Salem State College (retired)
Alan Morich, Cape Cod Museum of Natural History
Rhoda Peck, University of Massachusetts Cooperative Extension Service
Jean Pena, Marine Education Center of Cape Ann
Bobbie Robinson, Commonwealth Museum
Ann Rodney, US Environmental Protection Agency - New England
Agnes Smith, University of Massachusetts Cooperative Extension Service
Anne Smrcina, Stellwagen Bank National Marine Sanctuary
Maria Van Dusen, Massachusetts Riverways Program
Barbara Waters, University of Massachusetts Cooperative Extension Service
Janey Winchell, Peabody-Essex Museum
David Woolley, Cetacean Research Unit

LOCAL GOVERNANCE COMMITTEES

Eight Towns and The Bay (Upper North Shore LGC)

Steve Barrett, Massachusetts Coastal Zone Management
Derek Brown, Town of Essex
Curtis Bryant, Town of Rowley
Gaylord Burke, Merrimack Valley Planning Commission
Wayne Castonguay, Town of Ipswich
Robert Cram, Town of Ipswich
Wayne David, Town of Salisbury
Stephan Gersh, Town of Essex
Jill Haley-Murphy, City of Newburyport
Alan Macintosh, Merrimack Valley Planning Commission
Ruth Perrault, Town of Rockport
Dave Sargent, City of Gloucester
Frederick (Ted) Tarr, Town of Rockport

Salem Sound 2000 LGC

Russell Vickers, Hawthorne Cove Marina, Chair

Curt Bellavance, City of Peabody
Helen Bethell, Town of Manchester
Joan Cannon, New England Power Company
Brad Chase, Massachusetts Division of Marine Fisheries - Cat Cove Marine Laboratory
Sam Cleaves, Salem Sound 2000 Program Coordinator
Fara Courtney, The Industrial Services Program
Rebecca Curran, Town of Marblehead
Steve De Crosta, Town of Danvers
Steve Dibble, City of Salem
Lisa Evans, Town of Marblehead
Peter Gilmore, City of Beverly
Debra Hurlburt, City of Beverly
Christy Jones, Peabody-Essex Museum
Martine Kellett, New England Biolabs Foundation
Joan LeBlanc, City of Salem
John Marino, City of Peabody
Jay Moore, Town of Marblehead
Peter Ness, Stahl, USA
Faith Ortins, Northeast Scuba
James Povey, City of Beverly
Juli Riemenschneider, City of Salem
David Rimmer, The Trustees of Reservations
Tracey Roberts, Town of Danvers
David Roy, Eastman Gelatine Corporation
Thomas Schley, Salem Maritime National Historic Site
Ruth Taylor, South Essex Sewerage District
Janey Winchell, Peabody-Essex Museum
Dr. Alan Young, Salem State College

Metro Boston LGC

Peter LaPolla, Town of Braintree, Co-Chair
Mark Reich, Esq., City of Everett, Co-Chair

David Colton, City of Quincy
Mary Corcoran, Town of Winthrop
John DePriest, City of Chelsea
Lorraine Downey, City of Boston
Geralyn Falco, Town of Swampscott
Jean Fasano, Town of Saugus
Ken Fields, City of Boston
Jim Greene, Town of Milton
Betsy Russell Hickey, Town of Nahant
Amy Keith, Boston Water and Sewer Commission
Richard Mertens, Boston Redevelopment Authority
Martin Pillsbury, Metropolitan Area Planning Council
Steven Smith, City of Lynn
Frank Stringi, City of Revere
*Mike Wheelwright, City of Quincy
Jack Wiggin, Urban Harbors Institute

South Shore LGC

Joan Foster, Town of Scituate, Chair

Sara Altherr, Jones River Watershed Association/Town of Kingston
Linda Beres, Town of Hull
Faith Burbank, University of Massachusetts Cooperative Extension Service/Education Alliance Steering Committee
*Jean Christensen, Metropolitan Area Planning Council
*Clifford DeBaun, Town of Plymouth
Peter Dillon, Town of Norwell
Joe Grady, Town of Duxbury
John Hartshorne, Gulf Association
Bruce Hughes, Old Colony Planning Council
Bill Johnson, Back River Committee/Town of Weymouth

Jack Lennox, Town of Plymouth
Marc MacQueen, US Natural Resources Conservation Service
Deborah McKie, Jones River Watershed Association/Town of Hanover
*Brian Murphy, Town of Cohasset
Joanne Owen, Town of Pembroke
Peter Rosen, Town of Hingham
Jim Watson, Old Colony Planning Council

Cape Cod Coastal Resources Committee LGC

*Mark Zivan, Town of Orleans, Chair

*Neil Allen, Town of Eastham
*Robert Bainton, Town of Yarmouth
Brenda Boleyn, Town of Truro
Thomas Broidrick, Town of Yarmouth
*David Carlson, Town of Brewster
Bill Burt, University of Massachusetts Cooperative Extension Service
Russell Cookingham, Town of Bourne
*Tanya Dagneault, Town of Dennis
David DeConto, Town of Sandwich
David Ditacchio, Town of Provincetown
Bob Duncanson, Town of Chatham
Alice Fischer, Cape Cod Sierra Club
George Hampson, Town of Falmouth
James Hanks, Town of Mashpee
George Heufelder, Barnstable County Health and Environment Department
*Thomas Leach, Town of Harwich
Muriel Lightfoot, Town of Eastham
Donald Liptack, US Natural Resources Conservation Service
Bob Mant, Town of Brewster
Alan Marcy, Town of Dennis
*Richard Prince, Town of Bourne
Roger Putnam, Town of Wellfleet
Michael Reynolds, Cape Cod National Seashore
Jack Rosenquest, Town of Orleans
Dale Saad, Town of Barnstable
*Margaret Swanson, Town of Chatham
R. Gregory Taylor, Assembly of Delegates
*Bruce Tripp, Woods Hole Oceanographic Institute
*Steven Tucker, Town of Sandwich
*Mardee Verdina, Town of Truro

* Alternate Member

MASSACHUSETTS BAYS PROGRAM STAFF

Diane Gould, Ph.D, Executive Director

Bill Clark, Technical Assistant, Metro Boston and South Shore LGCs, Metropolitan Area Planning Council
Nancy Goodman, Technical Assistant, Metro Boston and Salem Sound 2000 LGCs, Metropolitan Area Planning Council
Pat Hughes, Technical Assistant, Cape Cod Coastal Resources Committee LGC, Cape Cod Commission
Deirdre Kimball, Manager, Interagency Shellfish Bed Restoration Program
Ruth Kuykendall, Assistant to the Executive Director
Alan Macintosh, Environmental Program Manager, Merrimack Valley Planning Commission
Betsy McEvoy, Director of Public Policy and Outreach
Lisa Nicol, Technical Assistant, 8 Towns and the Bay LGC, Merrimack Valley Planning Commission
Ann Riley, Grants Administrator, Urban Harbors Institute
Susan Schneider, Public Information Specialist
Dillon Scott, Data Manager
Marie Studer, Ph.D, Staff Scientist
Tara Tracy, Program Manager, US Environmental Protection Agency -New England

NOTE: All committee members and staff are current as of March, 1996.

TABLE OF CONTENTS

PAGE

CHAPTER I. INTRODUCTION
- History of the Massachusetts Bays Program (MBP) ..... I - 1
- Structure and Goals of the MBP ..... I - 1
- Overview of the Comprehensive Conservation and Management Plan (CCMP) ..... I - 2

CHAPTER II. THE STATE OF THE BAYS
- Introduction ..... II - 1
- Major Natural Features of the Bays ..... II - 1
- Living Resources Habitats of the Bays ..... II - 3
- The Human Habitat ..... II - 5
- Toxic Contamination of the Bays' Habitats and Resources ..... II - 6
- Pathogen Contamination of Sustainable Resources ..... II - 8

CHAPTER III. OVERVIEW OF COASTAL SUBREGIONS
- Introduction ..... III - 1
- Upper North Shore Region ..... III - 3
- Salem Sound Region ..... III - 19
- Metro Boston Region ..... III - 33
- South Shore Region ..... III - 47
- Cape Cod Region ..... III - 61

CHAPTER IV. PROJECTS OF REGIONAL SCOPE AND IMPACT
- Introduction ..... IV - 1
- Boston Harbor Project:Upgrading Sewage Treatment in the Metro Boston Area ..... IV - 3
- Central Artery/Tunnel Project ..... IV - 11
- Boston Harbor Navigation Improvement Project ..... IV - 15
- Massachusetts Bay Disposal Site (MBDS) ..... IV - 19
- South Essex Sewerage District Project ..... IV - 23
- Saugus River Flood Control Project ..... IV - 25
- Plymouth Sewage Treatment Project ..... IV - 29

CHAPTER V. ACTION PLANS
- Introduction ..... V - 1
- Summary of Recommended Actions ..... V - 3
- Action Plan #1. Protecting Public Health ..... V - 11
- Action Plan #2. Protecting and Enhancing Shellfish Resources ..... V - 15
- Action Plan #3. Protecting and Enhancing Coastal Habitat ..... V - 23
- Action Plan #4. Reducing and Preventing Stormwater Pollution ..... V - 55
- Action Plan #5. Reducing and Preventing Toxic Pollution ..... V - 75
- Action Plan #6. Reducing and Preventing Oil Pollution ..... V - 89
- Action Plan #7 - Managing Municipal Wastewater Treatment Facilities ..... V - 97
  - 7.A. Managing Centralized Wastewater Treatment Facilities ..... V - 99
  - 7.B. Managing On-Site Sewage Disposal Systems ..... V - 107
  - 7.C. Decentralized Wastewater Management and Treatment ..... V - 121
- Action Plan #8. Managing Boat Wastes and Marina Pollution ..... V - 125
- Action Plan #9. Managing Dredging and Dredged Materials Disposal ..... V - 131

CHAPTER V. ACTION PLANS (continued)
Action Plan #10. Reducing Beach Debris and Marine Floatables ..... V - 137
Action Plan #11. Protecting Nitrogen-Sensitive Embayments ..... V - 141
Action Plan #12. Enhancing Public Access and the Working Waterfront ..... V - 149
Action Plan #13. Planning for a Shifting Shoreline ..... V - 165
Action Plan #14. Managing Local Land Use and Growth ..... V - 171
Action Plan #15. Enhancing Public Education and Participation ..... V - 175
15.A. Educating Teachers, Students, and the Public About the Bays ..... V - 175
15.B. Developing a State Nonpoint Source Education and Outreach Strategy ..... V - 195

CHAPTER VI. IMPLEMENTING THE CCMP THROUGHOUT THE BAYS WATERSHED
Introduction ..... VI - 1
Models for A Regional Approach to CCMP Implementation: Current Efforts ..... VI - 2
A Regional Approach to CCMP Implementation: Future Efforts ..... VI - 3
Taking Legislative Action ..... VI - 5

CHAPTER VII. FINANCING THE CCMP
Introduction ..... VII - 1
Financing Report Contents ..... VII - 1

CHAPTER VIII. MONITORING CCMP IMPLEMENTATION
Introduction ..... VIII - 1
Scientific Monitoring ..... VIII - 1
Management Monitoring ..... VIII - 4
Data Management ..... VIII - 5

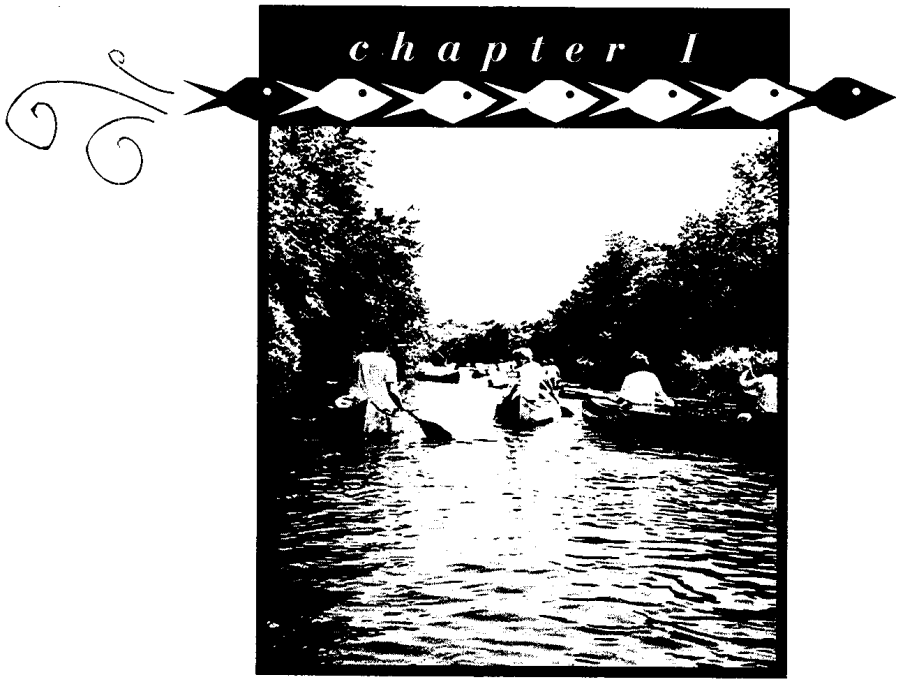
CHAPTER IX. MANAGEMENT CHARACTERIZATION (BASE PROGRAMS ANALYSIS) ..... IX - 1

CHAPTER X. FEDERAL CONSISTENCY ANALYSIS ..... X - 1

CHAPTER XI. PUBLIC PARTICIPATION/PUBLIC RESPONSIVENESS SUMMARY ..... XI - 1

APPENDICES
Appendix A. The Management Framework in Massachusetts Bays
Appendix B. Acronyms
Appendix C. Glossary
Appendix D. Bibliography
Appendix E. Management Characterization/Base Programs Analysis (available under separate cover)
Appendix F. Federal Consistency Analysis (available under separate cover)
Appendix G. Public Comments and MBP Responses
Appendix H. MBP - Funded Research Reports (1990 - 1996)
Appendix I. MBP Demonstration Projects (1990 - 1996)
Appendix J. Endangered Species Act
Appendix K. National Historic Preservation Act
Appendix L. Agency and Community Letters/Resolutions of Commitment

Introduction



CHAPTER I. INTRODUCTION

History of the Massachusetts Bays Program

The Massachusetts Bays Program (MBP) was launched in 1988 to actively address the mounting environmental threats to the health of Massachusetts and Cape Cod Bays (the Massachusetts Bays). Initial funding of $1.6 million from the Massachusetts Environmental Trust was the result of settlement fines from a suit filed by the U.S. Environmental Protection Agency (EPA) and the City of Quincy against the Commonwealth for violations of the Clean Water Act in Boston Harbor. The same year, Congressman Gerry Studds, acting on behalf of the Massachusetts Congressional Delegation, drafted an amendment to the Clean Water Act, giving priority consideration to Massachusetts and Cape Cod Bays to become part of the National Estuary Program (NEP). The NEP was established to identify nationally-significant estuaries threatened by pollution, development, or overuse, and to promote the preparation of comprehensive management plans to ensure their ecological integrity. In June 1989, Governor Michael Dukakis formally submitted the nomination package for Massachusetts Bays.

In April 1990, EPA Administrator William Reilly accepted the Massachusetts Bays into the National Estuary Program. On November 13, 1990, EPA and the Commonwealth of Massachusetts signed a Management Conference Agreement which set forth work to be accomplished over the next five years.

Today, the program is a federal, state, and local partnership funded by EPA, the Massachusetts Executive Office of Environmental Affairs (EOEA), and other sources. The MBP is administered by the Massachusetts Coastal Zone Management Office (CZM) - an agency within EOEA - with technical assistance and planning services provided by the Regional Planning Agencies through grants from the MBP. Grants administration is provided through the Urban Harbors Institute at the University of Massachusetts/ Boston.

Structure and Goals of the MBP

The first step in carrying out the estuary program was to establish a forum for open discussion and collaborative decision-making. This forum is called the Management Conference. The Management Conference oversees the activities of the estuary program and consists of over 300 dedicated individuals representing appropriate federal, state, and local government agencies, regional planning agencies, various user groups, public and private education institutions, and the general public.

The Massachusetts Bays Management Conference is organized into a network of committees: Policy Committee, Management Committee (MC), Technical Advisory Committee (TAC), Local Governance Committees (LGCs), and Public Participation Program Committees. The Policy Committee is comprised of the EPA Regional Administrator and the Massachusetts Secretary of Environmental Affairs. This committee approves the decisions of the Management Committee, the major decision-making committee in the Conference. The Management Committee is made up of representatives of state and federal government, the Technical Advisory Committee, the five regional Local Governance Committees, and the three Public Participation Program Committees (the Coastal Advocacy Network, Education Alliance, and Business and Resource Users Group). A list of current Massachusetts Bays Program Committee participants is provided in the **Acknowledgements** section at the front of this document.

The ultimate objective of the Massachusetts Bays Program is to institutionalize the water quality management planning process. This will ensure that a dynamic action agenda is implemented to meet our principal goal - ***the preservation and management of a healthy ecosystem of living resources, useable by the public.*** Work under the program has been geared to:

- Improving the habitats of living resources in Massachusetts and Cape Cod Bays;
- Protecting public health by minimizing risk from environmental contaminants;
- Protecting and improving water and sediment quality;
- Enhancing the aesthetic quality of Massachusetts' coast and coastal waters;
- Encouraging pollution prevention and other environmentally and fiscally sound methods of treatment, cleanup, and restoration; and
- Improving access as well as educational and recreational opportunities in and around the waters of Massachusetts and Cape Cod Bays.

To accomplish these, the Massachusetts Bays Program Management Conference participants and their constituencies have worked together for the last five years to develop a **Comprehensive Conservation and Management Plan**

(CCMP) for Massachusetts and Cape Cod Bays. This plan will serve as a blueprint for coordinated action aimed at restoring and protecting water quality and the diverse natural resources of the Massachusetts Bays estuary.

Overview of the Comprehensive Conservation and Management Plan (CCMP)

Charting a New Course

The Massachusetts Bays Program charted an innovative course among the nation's 28 National Estuary Programs by producing an early version of the Comprehensive Conservation and Management Plan during the first year of the program's federal funding. Other similar national programs had typically completed several years of scientific research before recommending a course of action. The Management Conference believed that, while much remains to be learned about Massachusetts Bays even now, enough was known already to begin to take action to prevent further degradation and restore the integrity of the Bays' ecosystem.

Developing the 1991 Draft Management Plan

To help galvanize support and elicit ideas for developing this initial plan, the Massachusetts Bays Program hosted a "CCMP Development Workshop" in March 1991. This all-day meeting brought together environmental advocates, business leaders, citizens, and state, local, and federal officials to focus their diverse viewpoints and expertise on designing a challenging plan development process. Participants included members of the MBP committees and representatives from numerous coastal and inland communities.

A series of key recommendations emerged from the workshop:

- The 1991 Plan should be addressed to all members of the Management Conference and their constituencies (the research community, state/federal managers, local governments, and the public) through a public outreach strategy;
- The Priority Problems currently identified by the Massachusetts Bays Program should be redefined in terms of "uses" of the Bays and organized in a readable, "user-friendly" format;
- The Plan should summarize what is known about the Bays and what is being done from both a scientific and management perspective;
- The Plan should contain a list or menu of options that should or could be undertaken by local governments;
- The Plan should recommend a set of **ACTIONS** to be undertaken by the constituent groups and should serve as a guide to the activities of the Management Conference (Management Committee, Technical Advisory Committee, and Citizens Advisory Committee) between 1991 and 1993; and
- The Plan should contain appendices with the supporting technical information, a glossary of terms, and a bibliography.

Responding to these recommendations, a Working Group was formed to oversee the development of the 1991 draft CCMP. The resulting draft document was widely distributed for comment and served to guide the activities of the MBP as the Plan was refined and revised over the following four years.

Developing the 1996 Final CCMP

Peer Review

Several events helped to shape the CCMP during the period from 1991 through the present. In the fall of 1992, a peer review was undertaken to strengthen and focus the program. The recommendations of six outside advisors included holding a Visioning Workshop to clarify our priorities, setting measurable goals, defining a long-term regional implementation strategy, and exploring potential mechanisms and sources to fund our action agenda. Public comments on the draft 1991 CCMP emphasized the need for an expanded section on **projects of regional significance** (so-called "megaprojects"), and development of specific action recommendations for these megaprojects.

Visioning Workshop - Setting Priorities and Measurable Goals

The Visioning Workshop, held in June 1993, helped to set program priorities. These priorities include reduction of pathogen pollution of shellfish beds and beaches, improved habitat quality, and reduction of toxics and nutrients entering the ecosystem through point and nonpoint sources. Subsequent meetings of an Ad Hoc Committee resulted in the establishment of four measurable goals for the MBP, which will be incorporated into a Monitoring Plan that will track the progress of CCMP implementation. The following are the measurable goals for the MBP:

1. Set target percentages for increased acreage of open shellfish beds over time. Initially, the goal is to reopen the 12 beds identified under the interagency Shellfish Bed Restoration Program;
2. Identify embayments at risk of eutrophication;

3. Quantify reduction in loadings from targeted toxicant sources contributing to a specific habitat location and monitor improvement in selected biological indicators; and

4. Restore 12 coastal wetlands where restricted tidal flow has led to habitat degradation. Monitor and report the number of acres of coastal wetlands every five years to ensure no net loss.

Please refer to Chapter VIII for a full discussion on monitoring progress towards achieving these goals.

Focus Groups

To ensure that the CCMP provided accurate, informed discussions of the megaprojects in the Bays (see Chapter IV), a series of focus group discussions were held throughout 1994. Agency representatives and interested members of the advocacy community exchanged ideas and reached agreement on basic steps needed for protection of the Bays' environment. Project information was periodically updated to reflect new developments.

Regional Implementation Strategy

To ensure that the CCMP survives beyond the end of major National Estuary Program funding, a series of workshops beginning in January 1994 explored models for a regional approach to ensure future revision and implementation of the Plan. The resulting recommendation focused on institutionalizing the existing partnership between the MBP and the Regional Planning Agencies to provide technical and financial planning assistance and to promote watershed-based water quality planning. A retreat held in January, 1996, focused on the future role of the Local Governance Committees and reaffirmed their commitment to work towards local implementation of the CCMP. Massachusetts Bays Program staff will continue to provide guidance and technical assistance throughout the implementation phase, and will work closely with the Management Conference participants to monitor CCMP implementation progress. Chapter VI describes the implementation strategy and the future role of the Massachusetts Bays Program in more detail.

Financing the CCMP

In 1994, MBP produced a companion document to the CCMP (*Financing the Massachusetts Bays CCMP: Federal, State, and Local Funding Sources and Mechanisms*) which provides guidance on state and federal sources of funding for CCMP implementation, as well as potential local and private sources. Approximate costs related to implementation are included. A matrix cross references funding sources and CCMP action recommendations. Chapter VII provides a summary of this document.

Public Review Process

Throughout the four years since the release of the 1991 Draft, MBP committee members and their constituents have devoted many hundreds of hours to CCMP issues and to development and revision of the document. In addition, in December, 1995, the draft final CCMP was released to the general public for review and comment. (See Chapter XI for a discussion of this process.) The Final CCMP incorporates responses to comments received as part of the public review process, as well as comments on the draft final CCMP from numerous state and federal agencies. All comment letters and MBP responses are provided in Appendix G.

Agency and Community Commitment

The action recommendations in the CCMP represent five years of coordinated planning within and among the participating agencies and communities.

During the winter of 1995-96, participating state and federal agencies were asked to sign letters citing their willingness to implement the actions in the CCMP. These letters, presented in Appendix L, affirm their commitments as developed through meetings and discussions with the MBP staff and committees. In addition, all four coastal Regional Planning Agencies have signed a resolution of support for, and commitment to, implementation of the CCMP. These resolutions are included in Appendix L as well. During the same period, LGC community representatives and MBP/RPA/LGC technical assistance staff began a series of ongoing meetings with the chief elected officials of the Massachusetts Bays' coastal communities. As a result of these meetings, many of the coastal communities have signed a formal resolution of support for the CCMP, which includes a voluntary commitment to implement the municipal actions appropriate to each community. These community resolutions also are included in Appendix L.

These many written commitments attest to the broad agency and community support for the CCMP, and will help ensure that the CCMP will be implemented and will serve to guide the conservation and management of the Bays' resources into the next millennium.

State and Federal Approval

Following approval from the Governor in early spring, 1996, the CCMP was submitted to the EPA for a 3-month review and approval period. A celebration of "graduation" to the official CCMP implementation phase is planned for early fall, 1996.

Plan Organization

This 1996 final plan is organized in 11 chapters. Chapter I introduces the Massachusetts Bays Program and describes its evolving management plan. Chapter II includes a summary of the Characterization Report, a companion document to the CCMP which describes the major features of the Bays - physical, biological, and socioeconomic - and explores the impacts of toxic pollutants, pathogens, and nutrients on the Bays' resources. Chapter III presents specific information on the Bays' five coastal subregions, including important resource management issues. Chapter IV describes a number of the major construction projects ("megaprojects") in the Bays region. It offers an overview of the history of the projects, summarizes key environmental issues, and provides action recommendations for the major agencies and authorities involved. Chapter V, the centerpiece of the management plan, presents 15 major Action Plans for preserving and protecting the Bays' resources. Implementation of these plans is presented as a series of targeted steps to be taken by responsible federal, state, regional, and local agencies, with proposed costs and timelines for both immediate and long-term action. Chapter VI presents an overall strategy for implementing the CCMP on a regional (i.e., watershed / embayment) basis. Chapter VII provides information on CCMP financing sources and mechanisms. Chapter VIII describes the development of "scientific" and "management" monitoring programs that will be instituted to gauge progress on achieving MBP goals. Chapter IX describes an approach for developing a Management Characterization. Chapter X describes an approach for developing an effective and streamlined Federal Consistency analysis. Chapter XI describes the MBP's public participation program and the role the public, environmental advocates, and the business community have played in shaping the CCMP.

The CCMP concludes with a series of informative Appendices, as follows:

A. The Management Framework in Massachusetts Bays
B. Acronyms
C. Glossary
D. Bibliography
E. Management Characterization/Base Programs Analysis (available under separate cover)
F. Federal Consistency Analysis (available under separate cover)
G. Public Comments and MBP Responses
H. MBP - Funded Research Reports (1990 - 1996)
I. MBP Demonstration Projects (1990 - 1996)
J. Endangered Species Act
K. National Historic Preservation Act
L. Agency and Community Letters/Resolutions of Commitment

The loose-leaf format of this document, as provided to each of the 49 coastal communities in the Massachsuetts Bays region, underscores its development and purpose as a "living" document, subject to future review and revision. Additional copies, as well as companion documents such as the Financial Plan and the Characterization Report, will be made available through the MBP, CZM, and Regional Planning Agencies.