

Massachusetts Bays National Estuary Program

Comprehensive Conservation and Management Plan

Public Review Draft

April 15, 2015



Preface: How to comment on the MassBays CCMP

Thank you!

We appreciate your willingness to provide input to our Comprehensive Conservation and Management Plan. This document includes background on the Bays, a history of MassBays, and past and proposed plans for our work in Massachusetts Bay and Cape Cod Bay.

Our goals, in essence, are threefold:

1. Improving general understanding of the Bays through information and data-gathering,
2. Assisting decisionmakers with information about the importance of estuarine systems and how to protect them.
3. Developing a program to prompt local action toward targeted environmental improvements – that is, standards for environmental restoration developed at the local level.

We are especially interested in contributions relative to the following:

- Are there additional data gaps that should be addressed to meet our goals (Action 1.a.i)?
- Is there specific training or capacity-building we can provide that will help you utilize data about the Bays (Action 2.b.i)?
- Do you have suggestions for methodologies that will help us compare conditions across embayments (Action 3.a.i)?

Please send your comments to Pam DiBona, MassBays' Executive Director, at pamela.dibona@state.ma.us by May 29, 2015

With a new CCMP in place, we will again ask you for your input – to let us know what you're interested in working on, add your own research to our knowledge base, and tell us how our information and programs can help you meet your own goals.

Contents

Preface: How to comment on the MassBays CCMP	2
<i>Executive Summary to the Public Review Draft</i>	4
I. Partnering for Coastal Habitats.....	7
The Massachusetts Bays National Estuary Program.....	7
II. MassBays Planning Area.....	7
Massachusetts Bay and Cape Cod Bay Geography and Hydrology.....	7
Condition of the Bays.....	10
Estuary Delineation and Assessment.....	10
Resource Inventory.....	11
III. Looking to the Future: Comprehensive Planning	11
Purpose	11
Guiding Principles	11
Revision Process.....	12
V. Comprehensive Conservation and Management Plan.....	13
Vision and Mission	13
Goals, Strategies, Outcomes, Action Plans, and Measures	14
Resources.....	14
<i>Goal 1: MassBays will be the primary source for information about conditions and trends in Massachusetts Bay and Cape Cod Bay.....</i>	15
<i>Goal 2: MassBays will be an important influence on local decisionmaking that recognizes the roles, functions, and values of healthy estuaries in the Bays</i>	17
<i>Goal 3: MassBays will be a model program for management and planning that addresses diversity among estuaries.....</i>	19
VI. Conclusion	20
Implementing the CCMP.....	20
Appendix A. Management Committee Membership, 2013 to 2015	21
Appendix B. MassBays Accomplishments, 2003 through 2014	22
Appendix C. CCMP Revised Action Matrix, 2003.....	23
Appendix D. Results of Regional Meetings	24
Appendix E. Results of Stakeholder Interviews.....	26
Appendix F. Results of Interagency Information-sharing Sessions.....	27



Comprehensive Conservation and Management Plan *Executive Summary to the Public Review Draft*

Background

All National Estuary Programs (NEPs) are required under Clean Water Act (CWA) §320 to prepare a Comprehensive Conservation and Management Plan (CCMP) to guide protection and restoration efforts. MassBays' first CCMP, published in 1996, featured 15 action plans containing 72 specific recommended actions for preventing pollution, preserving habitat, and restoring the Bays' degraded resources. An update process in 2003 generated two more action plans and 16 additional action items, for a total of 88 individual action items in 17 categories.

With the current revision, MassBays' Management Committee proposes an updated approach to improving and protecting the Bays' resources, one that includes indicators and measurable outcomes, and which takes its cue from complementary efforts underway at the local, state, and federal level – many of which were not in existence when the NEP was formed. The goals, strategies, actions, and implementation timelines articulated in this 2015 CCMP represent MassBays' contribution to and support of a region-wide, multi-jurisdictional effort to improve conditions and monitoring in Massachusetts Bay and Cape Cod Bay.

Guiding Principles

MassBays' CCMP documents our approach to improving natural conditions in the Bays. Therefore, principles that guide our day-to-day work also guided the development of the CCMP:

Collaboration and Cooperation: The complex and multidimensional issues before us cannot be handled by any single entity. We will work with partners in all sectors, and where there is not already an effort underway, and an issue is identified as a priority through our CCMP, we will build capacity locally – providing technical support, grant writing, and regional connections – that get projects done.

Ecosystem-based Management: MassBays seeks fundamental improvement in our estuaries. This requires a holistic approach to problem-solving and decisionmaking. Cross-cutting impacts and implications of any action will be considered before we make significant investments.

Climate Change Resiliency: We know that our estuarine systems will be impacted over the coming decades by the multiple manifestations of climate change. MassBays will draw on the most current understanding of those impacts to evaluate proposed actions.

Long-term Sustainability: As long as the National Estuary Program exists, MassBays will play a role in meeting the goals of CWA §320. Our ability to do this work will require both Management Committee and staff commitment to realizing our goals – and our success in doing so will set the stage for claiming even more success in the future.

Revision Process

This revised CCMP was more than two years in the making. With an Estuarine Delineation and Assessment (Geosyntec, 2012) and Resource Inventory (Urban Harbors Institute, 2013) as scaffolding, the process began with input from the Management Committee and Regional Coordinators. Moving out from that core group to gain insight from organizations and individuals with all types of relationships to MassBays.

The result is a set of goals connected to MassBays' vision and mission with input from existing and potential partners, to be met by means of strategies and action plans that will help us reach specific outcomes, with interim measures of progress. A final, public review period begins with the 2015 State of the Bays Symposium, itself an opportunity for us to connect past trends and existing conditions to future actions in Massachusetts Bay and Cape Cod Bay.

MassBays' Vision

We envision a network of healthy and resilient estuaries, sustainable ecosystems that support the life and communities dependent upon them.

MassBays' Mission

The Massachusetts Bays National Estuary Program is dedicated to protecting, restoring, and enhancing the estuarine ecosystems of Massachusetts Bay and Cape Cod Bay. We facilitate partnerships to prompt local, state, and federal action and stewardship, by convening stakeholders on the local and regional level, providing scientific basis for management decisions, and informing decisionmakers about problems and solutions.

Goal 1: MassBays will be the primary source for information about conditions and trends in Massachusetts Bay and Cape Cod Bay

Strategy 1.a. Make data available

Action 1.a.i. Consider specific data gaps

Action 1.a.ii. Analyze and present existing data in multiple formats to document baselines and trends

Action 1.a.iii. Support valid (QA/QC) data collection and application

Goal 1 Outcome

MassBays provides new resources for research and management in the Bays.

Goal 2: MassBays will be an important influence on local decisionmaking that recognizes the roles, functions, and values of healthy estuaries in the Bays

Strategy 2.a. Conduct outreach and training regarding the value of estuaries

Action 2.a.i. Revise and disseminate existing and new education and outreach materials, providing context and integrating multiple sources as needed

Strategy 2.b. Prompt local decisionmaking based on research findings and trends data

Action 2.b.i. Provide education, training, and technical support; share case studies (successful and not); and support collaboration and cooperation on specific topics

Goal 2 Outcome

MassBays reaches all planning-area municipalities with actionable information about estuaries.

Goal 3: MassBays will be a model program for management and planning that addresses diversity among estuaries

Strategy 3.a. Define estuary types within and among subregions

Action 3.a.i. Develop methodology for comparison across embayments

Action 3.a.ii. Establish target (improved) conditions for each embayment type

Action 3.a.iii. Develop type-specific action plans

Goal 3 Outcome

MassBays provides regular and locally informed State of the Bays reporting that reflects the unique characteristics and progress toward targets for planning area embayments.

Implementing the CCMP

Over the next several years, MassBays will work hard to make progress toward our vision, collaborating with a spectrum of partners, informed by existing and new research and monitoring. This CCMP will define the boundaries of our work, and prompt a new effort to define success for the region's embayments. With the help and engagement of local partners, our targets for improvement will be specific to local conditions. Our efforts will be based on realistic fiscal planning that assumes level funding under CWA §320, and supplemental match and leveraging provided by grantees.

I. Partnering for Coastal Habitats

The Massachusetts Bays National Estuary Program

In 1990, Congress established the National Estuary Program as Section 320 of the Clean Water Act, and included nationally significant estuaries threatened by pollution, development, or overuse in the designation. Formed in 1988, the Massachusetts Bays Program was already well-positioned to serve the role of National Estuary Program (NEP) for Massachusetts Bay and Cape Cod Bay, and became the Massachusetts Bays National Estuary Program (MassBays). MassBays' planning area includes 50 coastal communities and more than 1000 miles with 47 distinct embayments from Salisbury to Provincetown¹, making ours one of the more complex NEP regions. To address this complexity, , MassBays identified five subregions (Figure 1). Then, light of the Clean Water Act mandate for stakeholder-driven management planning, MassBays established Regional Coordinators for each geographic area, who in turn work with Local Governance Committees to set sub-regional priorities. Figure 2 is an organizational chart for MassBays, highlighting mechanisms for local input to priority-setting (Local Governance Committees, or LGCs), and oversight provided by a Management Committee. Appendix A lists the Management Committee members in place during the CCMP revision process; according to our Structure and Operating Procedures (available at <http://www.mass.gov/eea/docs/mbp/publications/2013-massbays-sops.pdf>), they represent:

- federal and state agencies,
- State-wide nonprofit environmental organizations
- Sub-regional nonprofit environmental organizations
- Business community
- Research and/or academic institutions
- Local government

Since the previous CCMP update in 2003, MassBays has documented numerous accomplishments and succeeded in making significant contributions to our general understanding of the Bays and best management practices. Appendix B provides a summary of accomplishments from 2004 to 2014.

II. MassBays Planning Area

Massachusetts Bay and Cape Cod Bay Geography and Hydrology

The MassBays planning area encompasses Massachusetts and Cape Cod Bays, a stretch of coast extending more than 1000 miles from the New Hampshire border to the tip of Cape Cod. Massachusetts Bay and Cape Cod Bay form the southern end of the Gulf of Maine, within the Acadian Province. The area is characterized by cold water flowing southward in the Gulf of Maine. In general, this current, whose strength and direction varies with season, flows from Massachusetts Bay south to Cape Cod Bay and exits the Bays region around Provincetown (Geyer et al. 1992).

The southerly flow is influenced by riverine inputs, especially during spring. Rivers carry freshwater, nutrients and pollutants from the upland parts of the watershed to coastal wetlands and the Bays. More than 7,000 square miles of land drain into the MassBays planning area. More than half of the drainage

¹ Massachusetts also has a second NEP, the Buzzards Bay National Estuary Program (buzzardsbay.org).

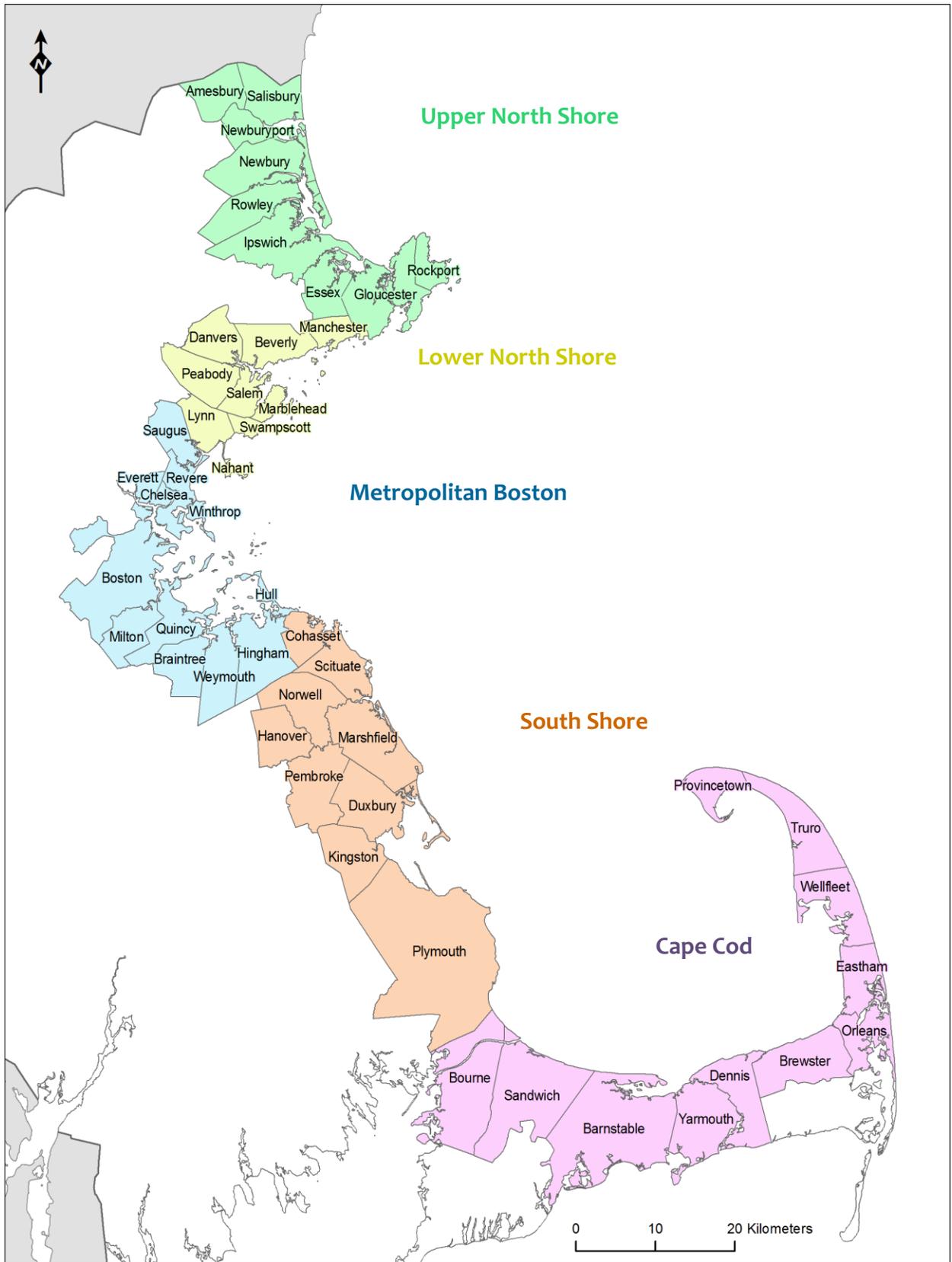


Figure 1. MassBays Planning Regions

area to Massachusetts Bay is in Massachusetts (including the Parker, Ipswich, Mystic, Charles, and North and South Rivers), the rest originates in the Merrimack River watershed in New Hampshire. By contrast, Cape Cod Bay receives most freshwater input from groundwater inflow. Nutrient input conveyed by groundwater discharge often exceeds that from riverine inputs (Slomp and Van Cappellen 2004).

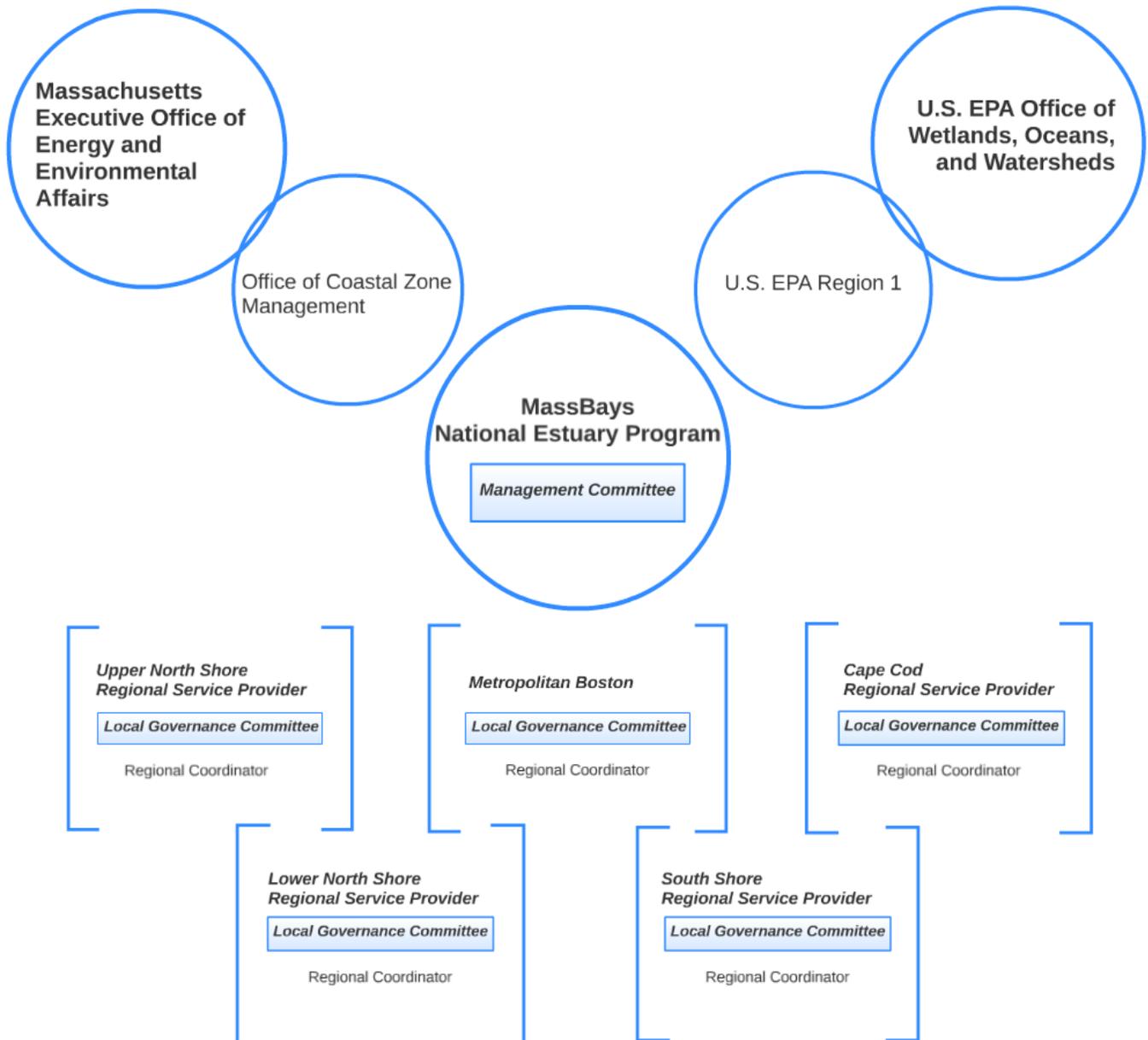


Figure 2. MassBays Organizational Chart. Stakeholder/end-user Committees provide guidance to staff effort and activities.

Condition of the Bays

State of Bays reports, printed in 2004 (<http://www.mass.gov/eea/docs/mbp/publications/sob2004.pdf>) and 2010 (<http://www.mass.gov/eea/docs/mbp/publications/2010sob.pdf>), provide snapshots of conditions in Massachusetts Bay and Cape Cod Bay. The 2015 State of the Bays Symposium is the most recent effort to pull together current understanding of trends and conditions, and convened more than 20 experts to share cross-region information with attendees. Proceedings from the 2015 Symposium will serve as a State of the Bays Report, due Summer 2015.

A common theme among all of these reports is a concern that we don't have comprehensive understanding of the conditions of the Bays. Through the CCMP, MassBays can provide a structure for sharing what we do and don't know about the Bays, and highlight specific areas of need for researchers and agencies working in the region.

Estuary Delineation and Assessment

A first step toward the revised CCMP was a project to define the MassBays planning area, and compile what we know about stressors and resources in that area. As an alternative to a coastal delineation that uses municipal boundaries, in 2012 MassBays commissioned an estuary delineation to define ecosystem-based landward and seaward boundaries of the planning area.² In addition, a cross-region estuary assessment provided a first look at the relative ecological condition of estuaries within Massachusetts and Cape Cod Bays.

The Estuary Delineation and Assessment Report (EDA) identifies 47 embayments within Massachusetts Bay and Cape Cod Bay. With support from the Office of Coastal Zone Management, the EDA's results are on MassBays' website (<http://www.mass.gov/eea/agencies/mass-bays-program/estuaries/>) as a set of interactive maps that characterize resources and stressors in each of the embayments (Table 2). As MassBays moves forward, and with additional parameters and analyses, the EDA will serve as a tool for tracking changes in estuarine conditions over time.

Table 2. Estuary assessment metrics, selected to focus on water quality conditions, estuarine habitat protection and restoration, and improvement of habitat continuity.

Resources	Stressors
tidal flats	shellfish habitat
shorebird habitat	shorebird nesting sites
anadromous fish runs	impervious area
salt marsh	stormwater discharge
eelgrass beds	land use change
	population density
	303(d) impairments
	fish barriers (impoundments)
	wastewater discharge
	designated shellfish growing area classification
	stream crossings

² MassBays has elected to focus on the near-shore, strictly estuarine systems of the region, in light of the strong leadership of Massachusetts' watershed associations, and the significant and effective investment the Commonwealth has made in ocean planning.

Resource Inventory

The EDA served as a useful framework for the next assessment of MassBays resources, in this case intellectual resources. MassBays commissioned an inventory of planning and assessment documents focused on MassBays' 47 embayments. The purpose of this inventory was two-fold. First, to gain a strong understanding of what has already been developed with regard to goal-setting and action planning in the region. Second, to make the results of past work (often available only in hard copy) more accessible. More than 500 completed or in-process reports, plans, and studies since 1996 were compiled, and more than half of those summarized to inform the CCMP revision. All documents are now available on MassBays' website (<http://www.mass.gov/eea/agencies/mass-bays-program/publications/>), linked to a map of embayments, and categorized by five topic areas (Water Quality, Estuarine Habitat Protection, Continuity of Estuarine Habitat, Invasive Species, and Climate Change/Vulnerability). MassBays will continue to incorporate relevant documents, studies, plans and assessments into this compendium as they are produced.

III. Looking to the Future: Comprehensive Planning

Purpose

All National Estuary Programs are required under Clean Water Act (CWA) §320 to prepare a CCMP to guide protection and restoration efforts. MassBays' first CCMP was the result of six years of effort, and more than 300 contributors and reviewers representing multiple sectors and interests came together to lay out a vision for collective action. That CCMP, published in 1996, featured 15 action plans containing 72 specific recommended actions for preventing pollution, preserving habitat, and restoring the Bays' degraded resources. An update process in 2003 generated two more action plans and 16 additional action items, for a total of 88 individual action items in 17 categories (Appendix C).

With the current revision, MassBays' Management Committee proposes an updated approach to improving and protecting the Bays' resources, one that includes indicators and measurable outcomes, and which takes its cue from complementary efforts underway at the local, state, and federal level – many of which were not in existence when the NEP was formed. The goals, strategies, actions, and implementation timelines articulated in this 2015 CCMP represent MassBays' contribution to and support of a region-wide, multi-jurisdictional effort to improve conditions and monitoring in Massachusetts Bay and Cape Cod Bay.

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Ecosystem-based Management: MassBays seeks fundamental improvement in our estuaries. This requires a holistic approach to problem-solving and decisionmaking. Cross-cutting impacts and implications of any action will be considered before we make significant investments.

Climate Change Resiliency: We know that our estuarine systems will be impacted over the coming decades by the multiple manifestations of climate change. MassBays will draw on the most current understanding of those impacts to evaluate proposed actions.

Long-term Sustainability: As long as the National Estuary Program exists, MassBays will play a role in meeting the goals of CWA §320. Our ability to do this work will require both Management Committee and staff commitment to realizing our goals – and our success in doing so will set the stage for claiming even more success in the future.

Revision Process

This revised CCMP was more than two years in the making (Figure 3). With the Estuarine Delineation and Assessment and Resource Inventory as scaffolding, the process began with input from the Management Committee and Regional Coordinators. Moving out from that core group to gain insight from organizations and individuals with all types of relationships to MassBays. The process has taken many forms:

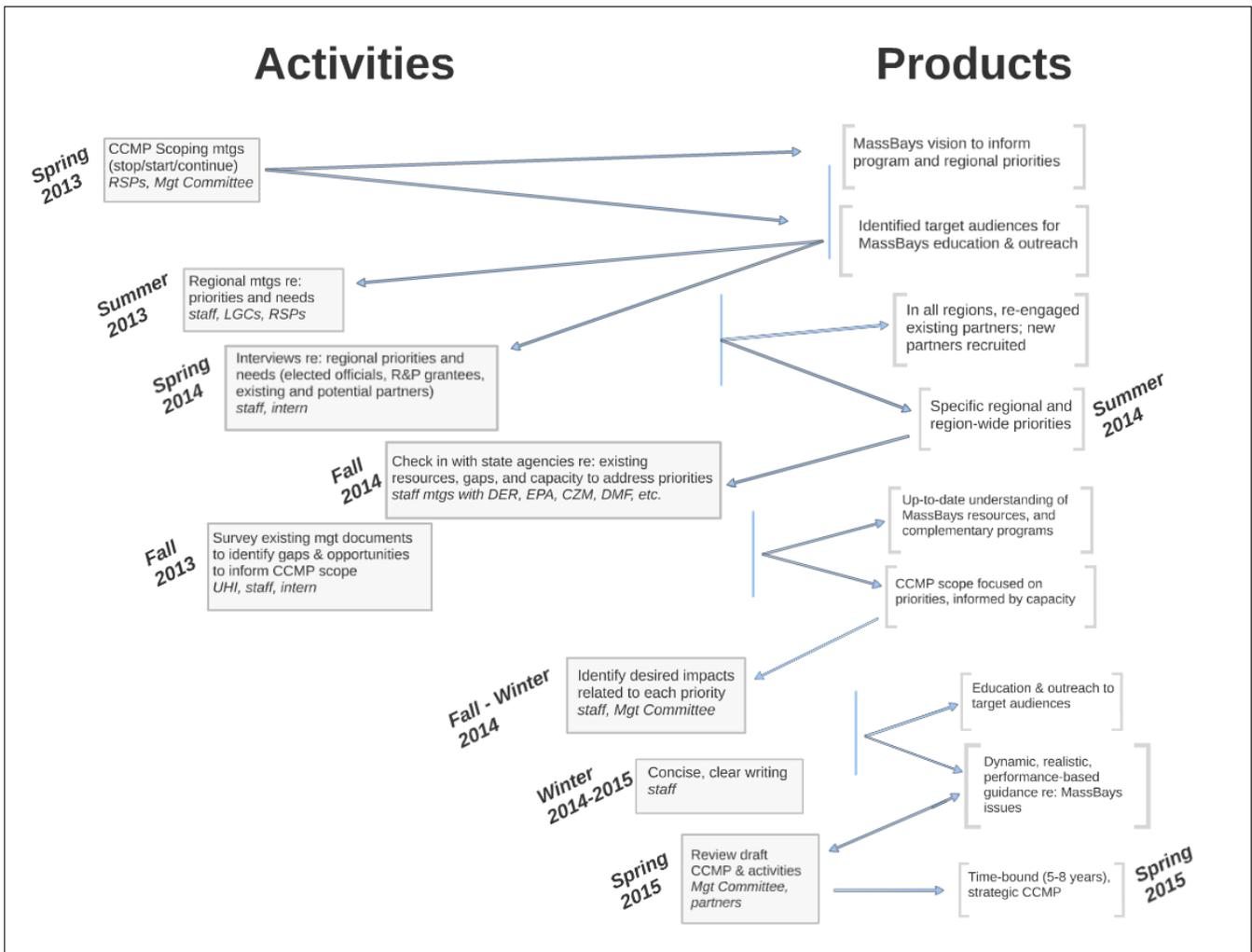


Figure 3. Timeline for activities undertaken and products resulting from the two-year process to develop this CCMP.

- MassBays’ Management Committee adopted a mission and vision, then developed overarching goals and strategies for the organization that would guide fact-finding among those interested in our work.

- MassBays Regional Coordinators provided practical insights and connections to communities to ensure that our plan would be practical and valuable to resource managers and decisionmakers.
- Citizen-scientist volunteers, municipal officials, local and regional nonprofits, and federal and state government agencies were polled through a series of regional workshops and an online survey. Outcomes from these meetings are included in Appendix D.
- A social anthropologist conducted one-on-one interviews with individuals who may not have realized that they have a stake in the health of the Bays. His findings are in Appendix E.
- State, federal, and regional planning agency partners joined the MassBays Executive Director for information exchange sessions to identify efforts already underway, and areas where MassBays can augment existing work or fill in gaps. Their contributions are compiled in Appendix F.

The result is a set of goals connected to MassBays' vision and mission with input from existing and potential partners, to be met by means of strategies and action plans that will help us reach specific outcomes, with interim measures of progress. A final, public review period begins with the 2015 State of the Bays Symposium, itself an opportunity for us to connect past trends and existing conditions to future actions in Massachusetts Bay and Cape Cod Bay.

V. Comprehensive Conservation and Management Plan

A CCMP must be both aspirational and reality-based. Building on a newly articulated Vision and Mission, our Management Committee has taken the lead in setting out goals and identifying the strategies we will employ to meet those goals during the next 6 to 8 years. At the end of that time, the Committee will reaffirm our goals, and reassess the strategies based on our progress and influencing conditions (environmental, political, and financial).

Vision and Mission

From its beginnings in 1988, MassBays has been dedicated to protecting, restoring, and enhancing the estuarine resources of Massachusetts and Cape Cod Bays. In Spring 2013 the Management Committee endorsed a Vision and Mission for MassBays that would drive subsequent work to develop goals, strategies, and actions.

MassBays' Vision

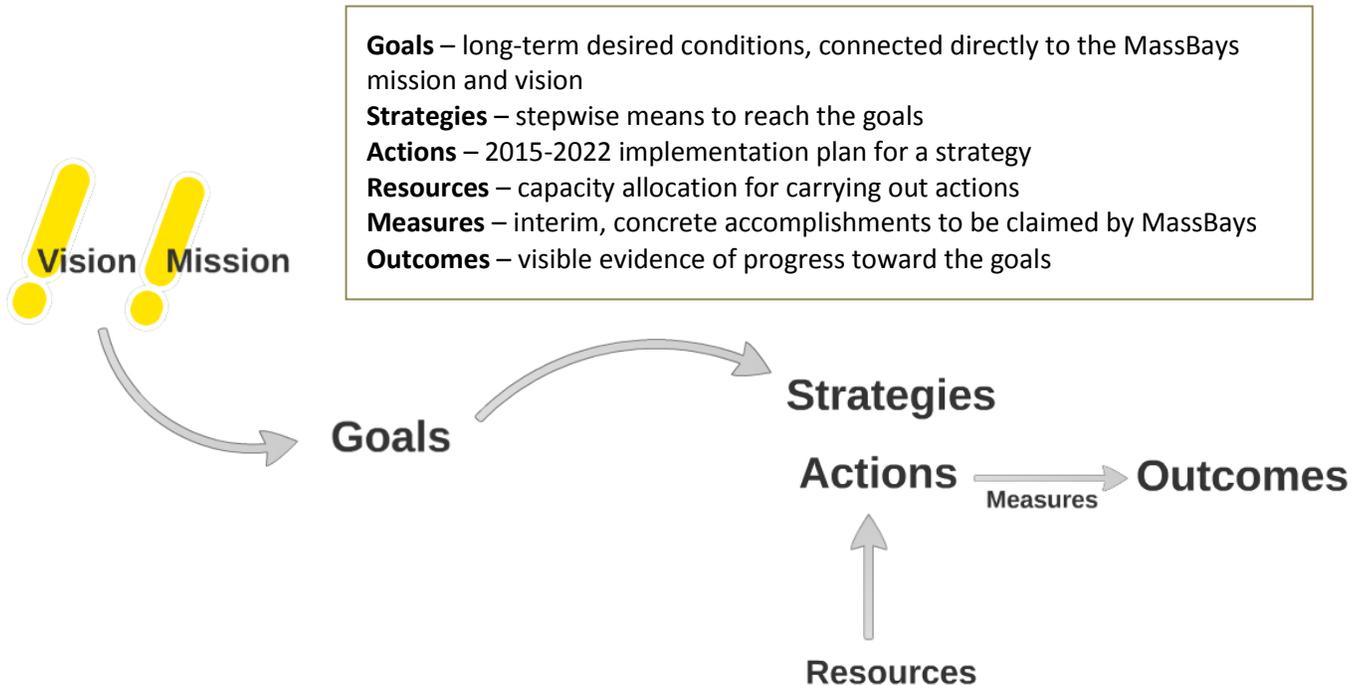
We envision a network of healthy and resilient estuaries, sustainable ecosystems that support the life and communities dependent upon them.

MassBays' Mission

The Massachusetts Bays National Estuary Program is dedicated to protecting, restoring, and enhancing the estuarine ecosystems of Massachusetts Bay and Cape Cod Bay. We facilitate partnerships to prompt local, state, and federal action and stewardship, by convening stakeholders on the local and regional level, providing scientific basis for management decisions, and informing decisionmakers about problems and solutions.

Goals, Strategies, Outcomes, Action Plans, and Measures

The following sections detail MassBays' goals, and their related strategies. The actions identified for implementation over the next 6 to 8 years are included, along with the estimated level of effort required to carry out those actions. We anticipate that we will meet the measures listed in each section, and that the outcomes indicated will be measurable and result directly from our work.



Resources

In general, the level of effort described below will be funded via EPA CWA §320 funds (approximately \$600K/y); state and federal grant programs; and partnerships with researchers, municipalities, and educators. In many cases, MassBays will likely not receive funding directly, but will encourage and support efforts by others that will meet the goals of the CCMP. Four resource categories are included:

- Staff – Central (Boston-based) staff
- Regional Coordinators – Regional Service Provider staff based in the five MassBays regions
- Subcontractor/grantees – assistance gained through competitive grants or contracts
- Partners – assistance via in-kind contributions and complementary investments

Shorter-term fiscal plans will detail income and expenses anticipated for a given workplan, submitted yearly to EPA.

Goal 1: MassBays will be the primary source for information about conditions and trends in Massachusetts Bay and Cape Cod Bay

Massachusetts Bay and Cape Cod Bay and their watersheds are well-studied systems (Urban Harbors Institute, 2013). The Massachusetts Ocean Plan, updated in 2015, compiles a plethora of information about the offshore resources of the Bays. Inland, numerous watershed associations have spearheaded consistent monitoring and resource protection in the rivers that flow to the Bays. At the interface between rivers and the ocean are estuaries, where MassBays focuses its work. Goal 1 commits MassBays to providing easily understood and relevant information about estuarine resources in the Bays. We do not seek to supplant existing data portals (like the Ecosystem Indicator Partnership or the Northeast Ocean Data Portal) or data sources and mapping tools (like NERACOOS and MORIS). Instead, we will focus on what those data mean for protection and restoration efforts in the Bays, and for the decisionmakers charged with local resource protection.

Strategy 1.a. Make data available

Numerous parties are conducting monitoring and collecting data of all types in the Bays. MassBays has a role in directing researchers and decisionmakers to resources documenting the results of multiple monitoring efforts that describe MassBays, as well as supporting efforts to make more data available.

Relative level of effort 2015-2022

Staff: 30% (coordinating, maintaining website, synthesizing information)

Regional Coordinators: 35% (coordinating, helping with synthesis)

Subcontract/Grantees: 25% (augmenting in-house capacity via fee-for-service or a targeted grant program)

Partners: 10% (providing data)

Action 1.a.i. Consider specific data gaps

Partners have identified several existing data gaps that will benefit from MassBays' attention, including:

- salt marsh monitoring and mapping to ground-truth migration modeling
- accuracy of older habitat maps
- climate change influence on estuary restoration and management approaches
- eelgrass, oyster, and kelp habitat delineation and mapping
- rainfall data correlated to beach and shellfish bed closures
- in situ evaluation of green infrastructure for stormwater treatment and control

Measures

By 2017: Address at least two data gaps via research, management, or monitoring; another two by 2019

By 2018: Make available new and/or updated data sets for three key parameters

By 2020: Document sustained 30% increased traffic to www.massbays.org compared to 2014

Goal 1 Outcome

MassBays provides new resources for research and management in the Bays

Action 1.a.ii. Analyze and present existing data in multiple formats to document baselines and trends

MassBays is well-situated – and is mandated to – document the status of and trends for the Bays. The State of Bays reports, printed in 2004, 2010, and 2015 (planned) give the pulse of the MassBays planning region to partners and potential partners. Staff will dedicate significant resources to convene researchers and partners gathering data in the Bays, encouraging collaboration and exchange to increase the value of our State of the Bays reporting to decisionmakers. MassBays will:

- Identify connections among data sets and trends
- Prioritize analyses per need, data set completeness and reliability, and potential policy applications
- Update and maintaining analyses incorporated into the 2012 Estuary Delineation and Assessment

Measures

By 2016: Implement a first update of the EDA

By 2017: Establish a MassBays conditions and trends network

Action 1.a.iii. Support valid (QA/QC) data collection and application

In some areas of the MassBays region, citizen groups and nonprofit organizations have been conducting monitoring for many years without the benefit of input from trained scientists or statisticians, and data are kept in paper files, locked away from researchers and others who could benefit from their dedication. In partnership with others interested in putting these data to good use, MassBays should carry out the following activities:

- Identify ongoing and planned water quality monitoring, using existing data to synthesize region-wide water quality assessment(s), even qualitatively where data are more suspect.
- Convene citizen monitoring coordinators, researchers, and others to invest in and maintain valuable citizen monitoring efforts
- Assess innovative monitoring and data management approaches
- Identify and support research and monitoring efforts
- Develop and apply rapid assessments as alternatives to multi-faceted or complex monitoring protocols
- Provide input regarding data needs to those funding and conducting monitoring programs
- Determine local sentinel sites and relevant parameters to track ecosystem change in cooperation with larger regional efforts

Measures

By 2016: Define a MassBays-wide monitoring program

By 2016: Partner with others in the Northeast to convene a citizen monitoring summit

Goal 2: MassBays will be an important influence on local decisionmaking that recognizes the roles, functions, and values of healthy estuaries in the Bays

MassBays works with decisionmakers at all levels of government, but our particular focus is municipal-level action. Our regional coordinators have consistent, day-to-day interaction with local officials, and live alongside their constituents. Through these personal connections and understanding of local constraints, MassBays is well-situated to provide useful information and effective outreach to local decisionmakers regarding the importance of estuaries to public health, the economy, and the larger ocean system.

Goal 2 Outcome

MassBays reaches all planning-area municipalities with actionable information about estuaries.

Strategy 2.a. Conduct outreach and training regarding the value of estuaries

As is the case with the edge-zone of many ecosystems, the area where rivers meet the sea is rich in diversity of habitat and wildlife. Estuaries provide a wide range of services to human and wildlife communities. These areas are highly productive ecosystems characterized by productive habitats that provide nursery and foraging areas for fin and shellfish; habitat for a variety of wildlife; protection from storm damage, flooding, and erosion; water filtration; and treatment of nonpoint source pollution (Boston Harbor Habitat Atlas: http://www.mass.gov/envir/massbays/bhha_home.htm). MassBays will play a key role in education and outreach to multiple audiences about estuaries and their contributions to public health, economic vitality, and ecological sustainability.

Relative level of effort 2015-2022

Staff: 25%

Regional Coordinators: 40%

Subcontract/Grantees: 15%

Partners: 20%

Action 2.a.i. Revise and disseminate existing and new education and outreach materials, providing context and integrating multiple sources as needed

As an active member of the Association of National Estuary Programs and the New England Ocean Science Education Collaborative, MassBays has access to high-quality education and outreach tools and materials for multiple audiences. MassBays will identify and adapt them to local situations as needed, rather than duplicate past work or become redundant with ongoing efforts. When adequate materials are not available, or we can contribute to development of new materials, MassBays will step to the fore to produce materials suitable to our situations and audiences – and then offer those to the larger community. Some topics identified to date include:

- Make connections between healthy estuaries and public health
- Emphasize application of Rivers Protection Act in tidal rivers/embayments
- Communicate community-level adverse impacts and vulnerability of natural systems to climate change
- Identify and engage local stakeholders to document and promote values of estuaries
- Promote best practices to improve and protect estuarine values and resources.

- Engage local stakeholders regarding efforts to expand living shorelines for habitat protection and storm/sea level rise impact mitigation

Measures

Every year: Produce and disseminate one MassBays region-wide education and outreach product, reaching at least two decisionmakers in at least 35 of the 50 MassBays communities

By 2019: Update/revise/contextualize and disseminate five existing education and outreach products regarding estuaries

Strategy 2.b. Prompt local decisionmaking based on research findings and trends data

It is not enough to produce education and outreach materials, or expect decisionmakers to “see the light” and implement estuary-friendly practices. MassBays will work alongside decisionmakers to prompt and support action that restores and protects estuarine resources. We will share successes and lessons learned with others working toward the same goals, and in similar settings, to advance larger, region-wide efforts to gain improvements.

Relative level of effort 2015-2022

Staff: 25%

Regional Coordinators: 40%

Subcontract/Grantees: 15%

Partners: 20%

Action 2.b.i. Provide education, training, and technical support; share case studies (successful and not); and support collaboration and cooperation on specific topics

MassBays staff and Regional Service Providers have long provided technical and communications support to citizens and municipalities working for habitat protection and restoration. Over the next period of time, we will continue to assist on multiple issues, including:

- wastewater (S.208) and stormwater (MS4) treatment and management that emphasizes green infrastructure
- beneficial reuse of dredge materials for living breakwaters, and coastal habitat resilience
- robust offshore sediment characterization and sediment budget assessments
- habitat continuity/resilience, under current and future conditions, as part of new construction and reconstruction³
- distribution, threats, management and control of invasive species

Measures

Every year: Assist partners with two funding proposals in each sub-region

Every year: Document four cases in which MassBays has influenced local decisionmaking

Every year: Document local support from municipal, nonprofit, citizens, and research community via at least four letters of support and 1:1 leveraged dollars in each subregion

By 2017: Establish a region-wide municipal training coalition or network

³ Continuity includes hydrologic connections in marshes and fish runs, connections between beaches and dunes

Goal 3: MassBays will be a model program for management and planning that addresses diversity among estuaries

MassBays Regional Coordinators, working directly with Local Governance Committees, will continue to determine the on-the-ground priorities for action, putting our mission into action. To evaluate progress toward MassBays' vision of healthy and resilient estuaries, however, it is important to set targets. When assessing habitat and water quality improvement in the Bays, we are confronted with the fact that – depending on the parameter examined – there is significant variation among our 47 embayments with regard to environmental resources and stressors (e.g., see Geosyntec, 2012). It is only by looking at the intersection between resources and stressors that we will be able to measure relative improvement over time and geography. We see management planning that takes into account both current and desired conditions – with regard to both resources and stressors – as a key to progress in all embayments.

With Goal 3, MassBays commits to management and planning that addresses this diversity among estuaries. MassBays' Management Committee has devised a model approach that will allow us to compare embayments across the region on the basis of their similarities, by defining estuary “types” – and comparing apples to apples.

Strategy 3.a. Define estuary types within and among subregions

As a first step in demonstrating a new approach to cross-region management, MassBays will build on the framework developed in the EDA to make data-based comparisons among embayments.

Relative level of effort 2015-2022

Staff: 35% (framework development)

Regional Coordinators: 30% (identifying target conditions)

Subcontract/Grantees: 25% (helping to develop action plans)

Partners: 10% (local input to identifying target conditions)

Action 3.a.i. Develop methodology for comparison across embayments

Determine indicators and metrics to describe variability and similarity among the 47 embayments defined in the 2012 Estuary Delineation and Assessment Report

Measures

By 2016: produce a means for cross-embayment comparisons

By 2016: develop a matrix of embayment types

Goal 3 Outcome

MassBays provides regular and locally informed State of the Bays reporting that reflects the unique characteristics and progress toward targets for planning area embayments.

Action 3.a.ii. Establish target (improved) conditions for each embayment type

In consultation with local partners, and with reference to completed plans and assessments compiled in the Resource Inventory, MassBays will:

- Establish water quality and other targets tied to desired uses
- Identify and address data gaps associated with targets, including regional inventories of restoration and protection needs

Measures

By 2017: develop target conditions for each embayment type

By 2020: produce MassBays region-wide inventory of restoration and protection needs

Action 3.a.iii. Develop type-specific action plans

Using the targets established in Action 3.1.ii, MassBays will develop action plans for embayment types within the MassBays planning area. These action plans will draw upon the understanding the estuaries differ greatly and the methods to reach a target condition for an estuary will differ depending on the specifics of that region. The action plans developed here will be reasonable in focus and context to ensure the embayment is moving toward the pre-established target condition.

- Prioritize habitat restoration projects based on regional inventories
- Apply Goal 2 (Education & Outreach) strategies and actions
- Incorporate flexibility to take advantage of opportunities as they arise

Measures

By 2017: develop action plan template

By 2019: develop action plans for at least one embayment per subregion

VI. Conclusion

Implementing the CCMP

Over the next several years, MassBays will work hard to make progress toward our vision, collaborating with a spectrum of partners, informed by existing and new research and monitoring. This CCMP will define the boundaries of our work, and prompt a new effort to define success for the region's embayments. With the help and engagement of local partners, our targets for improvement will be specific to local conditions. Our efforts will be based on realistic fiscal planning that assumes level funding under CWA §320, and supplemental match and leveraging provided by grantees.

We look forward to sharing our successes with the larger community.

Appendix A. Management Committee Membership, 2013 to 2015

Members, 2013-2015	Organization	Member Category
Julia Blatt	Massachusetts Rivers Alliance	Statewide nonprofit
John Brawley	Woods Hole Group/Oyster farmer	Industry/business
Robert Buchsbaum	Salem Sound Coastwatch	Regional nonprofit
Bruce Carlisle/Brad Washburn	Massachusetts Office of Coastal Zone Management	Standing
Sam Cleaves	Metropolitan Area Planning Council	Standing
Mel Cote/Regina Lyons	Environmental Protection Agency	Standing
Ed DeWitt	Association to Preserve Cape Cod	Regional nonprofit
Tim Dexter	Massachusetts Department of Transportation	Standing
Harlan Doliner/Morgan McCarthy	Marine & Oceanographic Technology Network	Industry/business
Kathryn Ford/Mark Rousseau	Division of Marine Fisheries	Standing
Jon Kachmar	The Nature Conservancy	Statewide nonprofit
Beth Lambert/Tim Purinton/Hunt Durey	Massachusetts Department of Fish and Game	Standing
Wendy Leo	Massachusetts Water Resources Authority	Standing
Alan Macintosh/Joe Cosgrove	Merrimack Valley Planning Commission	Standing
Rebecca Newhall	NOAA Coastal Program	Federal government
Judith Pederson/Juliet Simpson	MIT Sea Grant	Research and academic
Jane Peirce/Cathy Vakalopoulos	Massachusetts Department of Environmental Protection	Standing
Vandana Rao	Executive Office of Energy and Environmental Affairs	Standing
Max Schenk	Eight Towns and the Great Marsh	Regional nonprofit
Maureen Thomas	Town of Kingston	Local government
Kristin Uiterwyk/Jack Wiggin	Urban Harbors Institute	Research and academic
Colin Van Dyke	Mintz Levin	Industry/business
Samantha Woods	North and South Rivers Watershed Association	Regional nonprofit

Appendix B MassBays Accomplishments, 2003 through 2014

In development

Appendix C. CCMP Revised Action Matrix, 2003

Lead Partner	Action Item	Progress*
<i>ACTION PLAN # 1 PROTECTING PUBLIC HEALTH</i>		
Department of Public Health (DPH)	1.1 Establish a central clearinghouse program for all beach testing and closure information generated for Massachusetts' coastal public beaches.	Substantial
<i>ACTION PLAN # 2 PROTECTING AND ENHANCING SHELLFISH RESOURCES</i>		
Division of Marine Fisheries (DMF)	2.1 Conduct three (3) Sanitary Survey Training Sessions annually -- one each on the North Shore, Metro Boston/South Shore, and Cape Cod -- to educate local shellfish constables and health officers on the proper techniques for identifying and evaluating pathogen inputs into shellfish harvesting areas.	Full
Division of Marine Fisheries (DMF)	2.2 Develop and administer a local Shellfish Management Grants Program to help communities finance the development and implementation of effective local shellfish management plans.	Substantial
Shellfish Bed Restoration Program (SBRP)	2.3 Continue and expand the Shellfish Bed Restoration Program to restore and protect shellfish beds impacted by nonpoint source pollution.	Moderate
Office of Coastal Zone Management (CZM)	2.4 Through the Shellfish Clean Water Initiative (SCWI), complete an Interagency Agreement to define agency roles and contributions to protect shellfish resources from pollution sources.	New
<i>ACTION PLAN # 3 PROTECTING AND ENHANCING COASTAL HABITAT</i>		
Municipalities	3.1 Prepare and implement an EOE A - approved Open Space Plan to preserve and protect key wetlands, floodplains, fish and wildlife habitat, and other ecologically- and recreationally-important natural resource areas.	Substantial
Municipalities	3.2 Adopt and implement a local Riverfront District Bylaw to maintain river water quality, preserve fish and wildlife habitat, and protect downstream nursery and shellfish resources.	Substantial
Municipalities	3.3 Work cooperatively with neighboring communities, EOE A agencies, and other interested parties to develop proactive, long-term ACEC Management Plans to preserve and protect these vital resource areas.	Some
Municipalities	3.4 Adopt and implement a local Wetlands Protection Bylaw to supplement the state Wetlands Protection Act Regulations.	Substantial
Municipalities	3.5 Prepare and implement ecosystem-based Barrier Beach Management Plans to promote responsible use and protection of these critical coastal resources.	Moderate
Municipalities	3.6 Employ full-time, professionally-trained conservation staff to provide ongoing technical and administrative support to local Conservation Commissions.	Moderate
Department of Conservation and Recreation (DCR)	3.7 Continue to develop Resource Management Plans for all DCR-owned coastal properties.	Substantial
Department of Conservation and Recreation (DCR)	3.8 Develop and promote the use of river basin planning reports to facilitate responsible water resources planning and management at the local and regional levels.	Some
Department of Conservation and Recreation (DCR)	3.9 Acquire and restore undeveloped coastal properties that offer outstanding living resources habitat and public recreation opportunities.	Some
Department of Environmental Protection (DEP)	3.10 Complete the statewide inventorying and mapping of coastal and inland wetlands, and provide local Conservation Commissions with: 1) accurate base maps depicting wetland boundaries, and 2) instruction on proper wetland map interpretation and use.	Substantial
Department of Fish and Game (DFG)	3.11 In collaboration with the Riverways Program, prepare an up-to-date inventory of anadromous fish runs in the Massachusetts Bays region and develop a strategy to prioritize, restore, and maintain these runs.	Substantial

Lead Partner	Action Item	Progress*
Department of Fish and Game (DFG)	3.12 In collaboration with the Riverways Program, develop and implement a citizen-based Fishway Stewardship Program to restore and maintain anadromous fish runs along the Massachusetts Bays coast.	Substantial
Executive Office of Environmental Affairs (EOEA)	3.13 Continue the Wetlands Restoration Program to restore and protect degraded coastal and inland wetlands.	Substantial
Environmental Protection Agency (EPA), National Marine Fisheries Service (NMFS), and U.S. Army Corps of Engineers (ACOE)	3.14 Continue and expand current efforts to support eelgrass habitat protection and restoration in Massachusetts and Cape Cod Bays.	Substantial
Massachusetts Bays Program (MBP)	3.15 Work with CZM to develop scientific methods for assessing the ecological integrity of coastal wetlands and to train volunteers in data collection.	New
<i>ACTION PLAN # 4 REDUCING AND PREVENTING STORMWATER POLLUTION</i>		
Municipalities	4.1 Adopt subdivision regulations that require the incorporation of stormwater runoff best management practices (BMPs) into all new development plans.	Some
Municipalities	4.2 Implement best management practices to mitigate existing stormwater discharges that are causing or contributing to the closure of shellfish harvesting areas and swimming beaches.	Moderate
Department of Environmental Protection (DEP)	4.3 In collaboration with Regional Planning Agencies, Natural Resources Conservation Service/MassCAP (formerly U.S. Soil Conservation Service), and Massachusetts Coastal Zone Management Office, should: 1) disseminate its Nonpoint Source Management Manual and Urban Best Management Practices for Massachusetts, and 2) sponsor public workshops to educate local officials about best management practices and performance standards for controlling stormwater runoff.	Substantial
Department of Environmental Protection (DEP)	4.4 Develop a coordinated and streamlined regulatory system within DEP to assure effective implementation of the stormwater components of the Massachusetts Clean Water Act, Wetlands Protection Act, and Federal Stormwater Program (Federal Clean Water Act, Sections 401 and 402).	Substantial
Environmental Protection Agency (EPA)	4.5 Reduce stormwater pollution in the Massachusetts Bays watersheds through: (a) technical assistance to communities in developing comprehensive stormwater management programs; and (b) National Pollutant Discharge Elimination System (NPDES) compliance for industrial stormwater dischargers. Targeted areas are the lower Charles River for the stormwater management programs and the Neponset River for the industrial stormwater dischargers.	Substantial
Massachusetts Highway Department (MHD)	4.6 Prepare an Environmental Manual to complement the Highway Design Manual and provide for the integration of environmental concerns (including stormwater management) into all phases of highway project planning, design, construction, and maintenance.	Some
Massachusetts Highway Department (MHD)	4.7 As part of its forthcoming pollution prevention plan, develop a Storm-water Pollution Mitigation Program to identify, prioritize, and correct existing stormwater pollution problems associated with state highway drainage facilities.	Moderate
Massachusetts Highway Department (MHD) and Metropolitan District Commission (MDC)	4.8 Sponsor annual workshops to train local public works personnel on the proper use of stormwater runoff best management practices.	Substantial
Massachusetts Highway Department (MHD)	4.9 Require the use of on-site stormwater best management practices as a precondition to the permitting of private property tie-ins to state drainage facilities.	Some
Municipalities	4.10 Develop and implement stormwater management plans for compliance with Phase II NPDES regulations.	New
Massachusetts Bays Program (MBP)	4.11 Provide technical assistance for developing and implementing non-structural Best Management Practices, support efforts to create local stormwater utilities, provide grant writing support to municipalities for implementing the stormwater policy, Phase II requirements, and resource protection efforts, and support the efforts of DEP and CZM to revise and update the stormwater policy.	New

Lead Partner	Action Item	Progress*
<i>ACTION PLAN # 5 REDUCING AND PREVENTING TOXIC POLLUTION</i>		
Municipalities	5.1 Adopt and implement the following set of regulations to ensure the safe use, storage, and disposal of toxic and hazardous materials: 1) Toxic and Hazardous Materials Regulation, 2) Underground Storage Tank Regulation, 3) Commercial/Industrial Floor Drain Regulation.	Substantial
Municipalities	5.2 Establish Household Hazardous Waste Collection Programs for difficult-to-manage hazardous products to ensure their proper disposal on a regular basis.	Substantial
Department of Education (DOE)	5.3 In collaboration with the Department of Environmental Protection, develop and offer continuing education courses on hazardous materials management to create a pool of trained "HazMat Specialists" at the local level.	Some
Executive Office of Environmental Affairs (EOEA), Municipalities, & Private Sector Partnership	5.4 Form partnerships to facilitate the safe management of hazardous products, emphasizing reduced products use and recycling wherever possible.	Substantial
Environmental Protection Agency (EPA)	5.5 Reduce and prevent toxic pollution through targeted National Pollutant Discharge Elimination System (NPDES) permitting of significant discharges in the Massachusetts Bays; in particular, oil tank farms on Chelsea Creek and the Island End River.	Full
EOEA Office of Technical Assistance for Toxics Use Reduction (OTA)	5.6 Continue to perform on-site assessments and provide instructional materials to help businesses and industries in the Massachusetts Bays region reduce the use of toxic sub-stances.	Substantial
<i>ACTION PLAN # 6 REDUCING AND PREVENTING OIL POLLUTION</i>		
Municipalities	6.1 Establish and promote the use of Used Motor Oil Collection Facilities to ensure the proper collection and disposal of used motor oil from do-it-yourself oil changes.	Substantial
Department of Environmental Protection (DEP)	6.2 In collaboration with the U.S. Coast Guard, EPA, and NOAA, implement the Policy on the Use of Oil Spill Chemical Countermeasures (Dispersants) to protect coastal resources from the adverse effects of oil spills.	Full
US Coast Guard (USCG)	6.3 In collaboration with other federal, state, and local agencies, continue to update and implement the Massachusetts coast-wide Area Contingency Plans to assure a rapid and effective response to discharges of oil and other hazardous substances into the marine environment.	Substantial
<i>ACTION PLAN # 7 MANAGING MUNICIPAL WASTEWATER</i>		
Department of Conservation and Recreation (DCR)	7A.1 In collaboration with other state and federal agencies, continue to implement the Ocean Sanctuaries Act by closely monitoring all facilities plans which propose increased waste-water treatment plant dis-charges into an ocean sanctuary.	Substantial
Environmental Protection Agency (EPA)	7A.2 Support the control of combined sewer overflows in the Massachusetts Bays watersheds, especially the lower Charles River, and target National Pollutant Discharge Elimination Systems (NPDES) permitting to implement technology and water quality-based requirements in the Merrimack River watershed.	Full
Environmental Protection Agency (EPA), EOEA, DEP and CZM	7A.3 Work collaboratively to develop and implement an effective program for monitoring and enforcing point source discharges from waste-water treatment plants and energy-producing facilities.	Moderate
Department of Environmental Protection (DEP)	7A.4 In cooperation with UMass, EOEA, CZM, and MBP, analyze and determine the Total Maximum Daily Loads (TMDLs) of nitrogen for coastal embayments and develop management plans for wastewater treatment facilities to adapt to these new standards.	New
Municipalities	7B.1 Identify resource areas sensitive to wastewater and develop management plans appropriate to these areas, focusing on the capacities of natural systems to assimilate wastewater.	Substantial

Lead Partner	Action Item	Progress*
Municipalities	7B.2 In cooperation with DEP, develop and implement regular inspection and maintenance (I/M) programs for on-site wastewater systems.	Substantial
Municipalities	7B.3 Employ full-time, professionally-trained public health staff to provide ongoing technical and administrative support to the local Boards of Health.	Substantial
Coastal Regional Planning Agencies	7B.4 Establish a Title 5 and alternative systems technical assistance program directed to local Boards of Health and health agents, systems engineers/ installers, and home-owners.	Substantial
Department of Environmental Protection	7B.5 Evaluate and build upon the centralized statewide repository for testing information on alternative technologies, to be established as part of the Buzzards Bay Project's two-year Environmental Technology Initiative Project.	Full
Multiple	7C Plan for decentralized wastewater management and treatment.	Full
<i>ACTION PLAN # 8 MANAGING BOAT WASTES AND MARINE POLLUTION</i>		
Municipalities	8.1 Work cooperatively with neighboring communities, private boatyards and marinas, and state agencies (DFG and CZM) to establish, promote, and maintain Boat Pumpout Programs in targeted embayment areas.	Full
Municipalities	8.2 With assistance from CZM and DEP, require private boatyards and marinas to implement effective storm-water runoff control strategies which include the use of pollution prevention measures and the proper design and maintenance of hull servicing areas.	Some
<i>ACTION PLAN # 9 MANAGING DREDGING AND DREDGED MATERIALS DISPOSAL</i>		
Army Corps of Engineers (ACOE)	9.1 Continue to monitor dredged material disposal sites in the Massachusetts Bays region and initiate the planning necessary to begin a capping demonstration project at the Massachusetts Bay Disposal Site.	Substantial
Executive Office of Environmental Affairs (EOEA)	9.2 Coordinate the development of a comprehensive Dredging and Dredged Materials Disposal Plan to improve and maintain access to the Commonwealth's ports, harbors, and channels, and to minimize adverse impacts to the marine environment.	Substantial
<i>ACTION PLAN # 10 REDUCING BEACH DEBRIS AND MARINE FLOATABLES</i>		
Municipalities	10.1 Work cooperatively with the Massachusetts Coastal Zone Management Office (CZM), neighboring communities, and waterfront users to design and implement Beach and Marine Debris Reduction Programs.	Some
<i>ACTION PLAN # 11 PROTECTING NITROGEN SENSITIVE EMBAYMENTS</i>		
Department of Environmental Protection (DEP)	11.1 Strengthen Massachusetts Water Quality Standards to enhance and protect nitrogen-sensitive coastal embayments.	Some
<i>ACTION PLAN # 12 ENHANCING PUBLIC ACCESS AND THE WORKING WATERFRONT</i>		
Regional Planning Agencies (RPAs), Department of Environmental Protection (DEP), and Municipalities	11.2 Work collaboratively to expand upon current Massachusetts Bays Program efforts to identify nitrogen-sensitive embayments, determine critical loading rates, and recommend actions to manage nitrogen so as to prevent or reduce excessive nitrogen loading to coastal waters and ground-water.	Some
Municipalities	12.1 Develop and implement Municipal Harbor Plans which: 1) promote marine-dependent waterfront uses, 2) enhance public access to the water, and 3) protect habitat of shellfish and other living resources.	Substantial
Office of Coastal Zone Management (CZM)	12.2 Enhance the Designated Port Area (DPA) program with new planning and promotional initiatives.	Substantial
Office of Coastal Zone Management (CZM)	12.3 Establish a new technical assistance program to accelerate municipal efforts to identify and legally reclaim historic rights-of-way to the sea.	Full
Office of Coastal Zone Management (CZM)	12.4 In collaboration with the Department of Conservation and Recreation and MassGIS, prepare and distribute a statewide Coastal Access Guide to facilitate public access to the shoreline.	Some

Lead Partner	Action Item	Progress*
Executive Office of Environmental Affairs (EOEA)	12.5 In collaboration with coastal municipalities, develop and implement an Access-Via-Trails program to enhance public access along the coast.	Some
<i>ACTION PLAN # 13 PLANNING FOR A SHIFTING SHORELINE</i>		
Municipalities	13.1 Adopt and implement strict development/ redevelopment standards within FEMA A and V flood hazard zones and other areas subject to coastal flooding, erosion, and relative sea level rise.	Moderate
Department of Conservation and Recreation (DCR)	13.2 Continue to assist communities in the development of effective Floodplain Management Regulations.	Moderate
<i>ACTION PLAN # 14 MANAGING LOCAL LAND USE AND GROWTH</i>		
Municipalities	14.1 Develop and implement Local Comprehensive Plans (LSPS) which: 1) direct development into areas in the community capable of absorbing the impacts of growth and its associated facilities, and 2) preserve and protect the community's important natural resources.	Substantial
Municipalities	14.2 Adopt local bylaws and ordinances that promote open space preservation and natural resource protection.	New
Regional Planning Agencies (RPAs)	14.3 Work with the Massachusetts Highway Department and other transportation agencies to ensure that facilities and infrastructure do not endanger sensitive resource areas.	New
Regional Planning Agencies (RPAs)	14.4 Work with EOEA and the Massachusetts Bays Program to assist communities in creating Community Development Plans.	New
Massachusetts Bays Program (MBP)	14.5 Work with EOEA to provide local support and expertise to communities on the Community Preservation Act and facilitate regional links and networking among neighboring communities.	New
Massachusetts Bays Program (MBP)	14.6 Provide technical assistance to municipalities to adopt and implement plans and bylaws that promote open space preservation and natural resource protection.	New
Office of Coastal Zone Management (CZM)	14.7 Support Conservation Commission Networks (Con Com Networks) in the coastal region by providing technical and management assistance.	New
<i>ACTION PLAN # 15 ENHANCING PUBLIC EDUCATION AND PARTICIPATION</i>		
Department of Education (DOE)	15A.1 In collaboration with the Executive Office of Environmental Affairs, continue to develop and integrate environmental education as an important component of the curriculum in the public schools of the Commonwealth, making broad use of the Benchmarks for Environmental Education developed by the Secretaries' Advisory Group on Education (SAGEE).	Substantial
Executive Office of Environmental Affairs (EOEA)	15A.2 Continue to work closely with the Department of Education through the Secretaries' Advisory Group on Environmental Education (SAGEE) in order to develop a strategy for the implementation of the "Bench-marks for Environmental Education". Further, EOEA should continue to place a priority on the role of environmental education and provide adequate staffing to insure that appropriate state leadership is maintained.	Substantial
Executive Office of Environmental Affairs (EOEA)	15A.3 In cooperation with the Department of Education, continue to develop a grant relationship with the National Science Foundation and other funding agencies in order to provide technological outreach aimed at enhancing environmental literacy. The goal is to make resource and curriculum materials widely accessible and to provide ongoing coordination among the various members of the education community. The Massachusetts Bays Program represents an important aspect of the total environmental picture and should play a key role in this effort, helping to establish a unified voice to speak for environmental education concerning the Bays region.	Moderate

Lead Partner	Action Item	Progress*
Exec. Office of Environmental Affairs (EOEA) and the Department of Education (DOE)	15A.4 Empower exemplary teachers, administrators, and/or schools, who demonstrate the competence, to carry out formal and non-formal environmental education initiatives that complement the Commonwealth's environmental education programs.	Substantial
Massachusetts Bays Education Alliance (MBEA)	15A.5 Continue and expand its current efforts to build a community of educators who can ably teach about and promote the protection of the Massachusetts Bays, their shores, and watersheds.	Substantial
Coastal Advocacy Net-work (CAN)	15A.6 Continue to serve as a vehicle for bringing information to and from the government on environmental issues affecting the Bays, with a particular emphasis on proposed projects or regulatory changes.	Moderate
Massachusetts Bays Business and Users Group (BUG)	15A.7 Continue to provide a public forum for the exchange of information and ideas on CCMP development and implementation among the Bays' business community and resource users.	None
Marine Studies Consortium	15A.8 Continue to offer undergraduate marine science and policy courses; and, through the bi-annual Massachusetts Marine Environment Symposium, bring together diverse marine interests to promote a better understanding of marine policy issues.	Substantial
Executive Office of Environmental Affairs (EOEA)	15B.1 Develop and maintain a clearinghouse of NPS education, information, and technical assistance materials, as well as a database of avail-able state NPS materials and programs.	Moderate
Executive Office of Environmental Affairs (EOEA)	15B.2 Develop and maintain a matrix, by to-pic, of NPS education, information, and technical assistance materials produced by state agencies and associated or-ganizations.	Substantial
Executive Office of Environmental Affairs (EOEA)	15B.3 Expand upon Massachusetts Bays Program efforts and develop a strategy for NPS outreach and technical assistance state-wide that would coordinate the development and production of NPS education, information, and technical assistance materials, and provide technical assistance in order to implement NPS pollution con-trols.	Moderate
<i>ACTION PLAN # 16 PREVENTING MARINE INVASIVE SPECIES</i>		
Office of Coastal Zone Management (CZM)	16.1 In collaboration with the MBP, work with other state agencies and partners to develop a public education program on marine invasive species.	New
Massachusetts Bays Program (MBP)	16.2 Coordinate with managers and scientists to develop a monitoring strategy for marine invasive species and periodically conduct rapid assessment surveys in coastal resource areas for the presence of marine invasive species.	New
Massachusetts Bays Program (MBP)	16.3 Work with CZM, MIT Sea Grant, and other parties to develop a monitoring and industry education strategy for pathways for marine invasive species.	New
<i>ACTION PLAN # 17 MONITORING THE MARINE ENVIRONMENT</i>		
Office of Coastal Zone Management (CZM)	17.1 In coordination with the MBP, DMF, DEP, BBP, and university scientists, coordinate on the design and implementation of a marine monitoring plan.	New
Office of Coastal Zone Management (CZM)	17.2 Work with the MBP and the BBP to develop and produce a State of the Coast report.	New
Department of Public Health (DPH)	17.3 Coordinate with the CZM and the MBP on the implementation of the state and federal Beaches Bills.	New

* From the 1998 Biennial Review and Report to the Environmental Protection Agency

Appendix D. Results of Regional Meetings



Massachusetts Bays Program

251 Causeway Street, Suite 800, Boston, MA 02114

Dear Mass Bays Partners:

October 2013

This past June and July, Mass Bays staff and regional coordinators were fortunate to meet with you to hear your priorities and needs for our coastal natural resources. Since then, we've been compiling results of our conversations and drawing parallels and distinctions among the five sub-regions that make up the Massachusetts Bays National Estuary Program. This letter is to summarize what we heard in individual meetings, as well as the take-away messages repeated from meeting to meeting. Skip to the end of this letter to see our next steps, informed by your important comments.

Cross-region themes

- Mass Bays' mission and vision are not specific enough to provide direction to the work. *We have draft vision and mission statements based in part on your input. While our vision is shared with many of you and other coastal organizations, our mission describes how the Mass Bays Program, uniquely, works toward that vision.*

Vision: We envision a network of healthy and resilient estuaries, sustainable ecosystems that support the life and communities dependent upon them.

Mission: The Massachusetts Bays Program is an EPA National Estuary Program dedicated to protecting, restoring, and enhancing the estuarine ecosystems of Massachusetts and Cape Cod Bays. We facilitate partnerships to prompt local, state, and federal action and stewardship, convening stakeholders on the local and regional level, providing scientific basis for management decisions, and educating decisionmakers about problems and solutions.

- Mass Bays' strength lies in convening stakeholders and facilitating partnerships. That work should continue.
- Estuarine natural resources – salt marshes, beaches, sea grass, shellfish beds – are variously and often inconsistently managed on the local level.
- Education and outreach about the role of estuarine resources in resilient coastal systems – their ecosystem values – are still needed for multiple audiences.
- Coastal communities need concrete advice for practical, ready-to-implement adaptations to climate change and sea level rise.

Cross-cutting needs

At each regional network meeting (and in the Cape Cod regional survey), we asked partners and stakeholders to highlight their primary concerns for their region, drawing from a list of past CCMP priorities, everything from expanding coastal monitoring to restoring benthic habitat. The interconnected nature of these issues was evident as stakeholders expressed difficulty in choosing just one topic as their primary concern. Suggestions for action that will have cascading benefits to estuarine systems, applicable across the Mass Bays planning area, include:

- Implement improved stormwater management – especially through municipal utilities and MS4 plans – that will reduce impervious surface and prevent nutrient and bacterial loading at the

source. Reduced inputs will enhance and restore marshes, benthic habitat, eelgrass beds, and shellfish beds, and support diadromous and anadromous fish runs.

- Encourage regional collaboration for planning and implementing climate change adaptation responses, for example providing practical guidance and technical support to plan for sea level rise with regard to stormwater infrastructure.
- Encourage cross-agency cooperation and planning for restoration projects, tying individual projects to the larger ecosystem's health and facilitating early input to project plans from local stakeholders.
- Determine/compile the state-of-knowledge of the benefits provided by coastal habitats – e.g., shellfish for nutrient and bacteria removal, salt marshes for flood mitigation – and make the case to local decisionmakers for protecting, restoring, and enhancing those resources.

Habitat-specific actions

Discussions reinforced the fact that while Mass Bays' sub-regions have unique characteristics and needs. However, estuarine habitats across the planning area would benefit from specific actions, for example:

- Remove all traditional moorings from eelgrass beds.
- Restore shellfish beds, taking into consideration the impacts of ocean acidification.
- Encourage beach management plans that consider habitat value.
- Model potential for marsh migration in response to sea level rise.

Each of these actions require groundwork to determine which agencies have existing authority and policies, compile maps, collect and compile monitoring data, and coordinated planning and implementation that take into account the cross-cutting needs identified above. Mass Bays' role going forward will be informed by our mission, with fluid prioritization of efforts that reflect current scientific understanding, political readiness, and availability of resources.

Next steps

Your contributions over this past summer have moved us a good way toward meeting our first two goals. This document is not the end point of our work, and we continue to process your and others' input as we look for opportunities to add to, rather than duplicate, efforts already underway or planned. Meanwhile, our next steps include:

- Soliciting additional input from stakeholders not already at the table, including academia, local elected officials, water-based industry, and region-wide nonprofits.
- Convening partners at the state and regional level to determine how Mass Bays can contribute most effectively to a common vision of resilient coastal ecosystems.
- Identifying ways to measure Mass Bays' impact at multiple scales.
- Drafting a CCMP for stakeholder and EPA review.

Thank you again for your commitment to Massachusetts and Cape Cod Bays. The Mass Bays National Estuary Program is only as strong as your continuing support of our mission. Please be sure to sign up for our e-newsletter (<http://www.mass.gov/eea/agencies/mass-bays-program/whats-new/>), stay in touch with your regional coordinator listed below, and keep your eyes on our website (www.massbays.org) for updates on how you can take part.

Sincerely,

Pam DiBona
Executive Director

Appendix E. Results of Stakeholder Interviews

Memo

To: Pam DiBona & Prassede Vella
From: Joshua Wrigley
Date: May 5, 2014
Re: Stakeholder Scoping Initiative

Purpose & Background

This memo contains the results of the 2014 winter scoping exercise that sought to gather individual perspectives from stakeholders in the five regions of the Massachusetts Bays NEP (MassBays). In preparation for redrafting the Comprehensive Conservation and Management Plan (CCMP), MassBays convened stakeholder meetings during June and July of 2013 on the Upper North Shore, Salem Sound, Metro Boston, and the South Shore. Additionally, feedback from Cape Cod was gathered through a survey. During that time, stakeholders involved in coastal and watershed conservation lent their views regarding a list of top priority concerns that included storm water, wastewater, invasive species, water monitoring, and other associated topics.

Desiring to sift the regions for perspectives that may have been missed in the meetings of already-engaged stakeholders, the 2014 follow-up scoping effort focused on personal interviews with professionals and citizens (“narrators”) otherwise involved in local decision making around coastal natural resources. In many cases, these interviews have bolstered the 2013 findings and have helped in further determining the unique characteristics of individual locations whose issues fall under the broader penumbrae of previously articulated concerns. The findings in this round of outreach included highly specific regional observations that spoke to the uniqueness of given areas and their individual environmental, regulatory, economic, and sometimes geomorphological characteristics. These scoping interviews convey the personal perspectives of each narrator in a manner that identifies their specific concerns and subjective views regarding the state of their coastal resources.

For a complete list of participating agencies and organizations, see Appendix I.

Background

Objective: The current CCMP, revised in 2003, contains seventeen action plans and corresponding Action Items. As MassBays revises the document in 2014, there is a significant need for stakeholder input that accurately reflects the state of the MassBays estuarine environment and the challenges that it faces. The process of revision has been guided by the following Outputs and Short-term Outcomes:

CCMP Revision Process Outputs & Short-term Outcomes

- MassBays vision to inform program and regional priorities
- Identified target audiences for MassBays education and outreach
- In all regions, re-engaged existing partners; new partners recruited
- Specific regional and region-wide priorities
- Up-to-date understanding of Massachusetts Bay, resources, and complementary programs
- CCMP scope focused on priorities, informed by capacity

- Education and outreach to target audiences
- Dynamic, realistic, performance-based guidance re: MassBays issues
- Time-bound (5-8 years), strategic CCMP

In support of these goals, the 2014 scoping interviews have sought to “conduct a...fact-finding mission to identify and compile data on issues of concern that have not already been voiced by currently engaged participants.” In this second phase, one of MassBays’ priorities now is to attain an up-to-date understanding of the Massachusetts Bays region and of its communities. By interviewing community leaders who by extension of their office or personal interest could offer an informed perspective on the coastal environment, the interviews have tried to establish a relationship between place and environmental issue. In addition to the purpose of data collection for the CCMP, this scoping campaign has intended to establish a base of information that may inform future collaborative considerations as MassBays continues to forge partnerships with neighboring agencies, nonprofits, research institutions, and municipalities.

The scoping interviews are especially useful for designing pathways toward process outcomes that are responsive to constituent needs. As a supplement to the outreach work already in progress by MassBays’ Regional Coordinators, this scoping campaign has intended to enlarge the existing base of knowledge by establishing a rich repository of background information useful for gauging the general concerns of future potential partners.

Previous Findings

Results of 2013 Scoping Meetings (Issues Ranked by Priority Highest to Lowest)

North Shore	Salem Sound	Metro Boston	South Shore	Cape Cod
Invasive Species	Monitoring	Storm water	Climate Change	Storm water
Land Use	Storm water	Nutrient Loading	Sea Level Rise	Wastewater
Sea-level Rise	Climate Change/Sea Level Rise	Wastewater	Nutrient Loading	Salt Marshes
Outreach	Outreach	Land Use Planning	Seagrass	SLR/CC
Climate Change	Land Use Planning	Shellfish	Saltmarsh	Storm water
Salt Marshes	Shellfish	Monitoring	Shellfish	Shellfish
Sedimentation	Eelgrass	Salt Marshes	Land Use Planning	Land Use Planning
Nutrient Loading	Wastewater	Benthic	Anadromous Fish	Benthic Monitoring
Storm Water	Salt Marshes	Climate Change/Sea Level Rise	Wastewater	Eelgrass
Holistic Restoration	Reducing Bacteria	Eelgrass	PR	Anadromous Fish
	Anadromous Fish	Anadromous Fish	Storm water	Sediment Budgets
	Invasive Species			
	Nutrient Loading			
	Working with other Organizations			

Methodology

The scoping process followed a stepwise methodology:

- a. Generate questions suggested by the literature review and report produced by the Urban Harbors Institute. E.g., What specific contributions can MassBays offer, and where? In what arenas/topics would MassBays' efforts be most helpful?
- b. Create a list of possible participants and interviewees, prioritize the list by region, schedule in-person and phone meetings, in cooperation with MassBays Regional Service Providers.
- c. Compile existing outreach materials (repackage as necessary) about MassBays' CCMP process to send out to stakeholders who may not know about MassBays and our mission.
- d. Manage discussions with MassBays abilities and priorities in mind to identify areas of potential impact.
- e. Conduct conversations across the region and collect notes in a central spreadsheet.

Through consultation with MassBays' Regional Coordinators, the 2014 scoping initiative began with the establishment of a list of potential contacts that included individuals from town governments, restoration specialists, advocates, business owners, and others who are engaged directly or peripherally with the coastal resources of the MassBays region.

The design of this scoping attempt has relied on the relative nature of personal opinions insofar that they can supply a strong contextual background for consideration of MassBays' own mission and goals. Using a semi-structured approach, the interviewer asked open ended questions that sought to explore themes central to the CCMP revision process. Three elements contributed to the interview structure including (1) the establishment of occupational background, (2) the avoidance of leading inquiries, and (3) the use of follow-up questions to pursue topic areas in greater depth. Additional questions centered around interviewees' current work as well as their present and past priorities. This was necessary to assess individual perspectives on the unique challenges of different offices, perceived drivers of environmental change, and the role that MassBays can play as a facilitator of coordinated action.

Supplementing the results from the 2013 group meetings, these interviews construct a mosaic of testimonies that operate on two levels. As narrative accounts of *local* environmental concerns, they offer specific details applicable to the environmental challenges and regulatory climates of many areas. At the same time, they remain connected to the *regional* priority lists. Such range allows for scalar analysis that embraces unique particulars as well as the commonalities that link regions together. In this way we can maintain continuity between regions, while allowing for broad-based, cross-region approaches to problem solving.

Challenges to Methodology

For an interview-based project reliant on stakeholder perspectives, there are certain challenges to its conception and execution. For one, the Massachusetts Bays coastline, stretching from Salisbury on the North Shore to Provincetown on Cape Cod includes fifty different communities including Boston. To

collect testimonies from this diverse geographic and population demographic is to encounter a wide breadth of information concerning vastly different communities. No community is the same in terms of its resources. With such heterogeneity, the details of each location—the individual vagaries of place, occupation, topography, and geomorphology—simultaneously accentuate differences and commonalities. Even two narrators from the same location may have different perspectives on the condition of their resources and what they perceive to be drivers of change.

Further complicating matters is the difficulty for both the interviewee and interviewer in parsing out relevant from irrelevant information. As was frequently emphasized by respondents, coastal and watershed concerns are not always connected to obvious pollution sources, but *are* frequently related to society's physical infrastructure wrought from concrete, asphalt, and steel that was designed to make the coast impervious to the elements. In doing so, these structures—the roads, bridges, and buildings that form the sinews of our modern world—facilitate the movement of organic and inorganic contaminants into coastal environments. Unlike environmental issues with relatively easy explanation (and straightforward responses), coastal health is influenced by wastewater, storm water, invasive species, and climate effects that in many cases are less pronounced to the naked eye and certainly more difficult to communicate via public discussion. Water, as a necessary element of everyday life remains for many a phenomenon that (as one observer noted) begins at the tap and ends at the drain. The challenge of articulating the breadth and urgency of these problems with stakeholders not already engaged in the discussion is particularly daunting.

Other Challenges

The Definitive Perspective:

- One of the first objections voiced by participants was the assumption that the interview must be looking for a “definitive perspective” on a set of issues. To gather good information, the interviewer was compelled to discuss with participants the relative validity of individual perspectives even if the connection between those perspectives and the work that MassBays undertakes is not always readily apparent. This also included validating participants' voices in a manner that allowed them to see their own role in the scoping process as a cumulative effort. Reassuring interviewees about the validity of their empirical testimonies helped them to divulge personal perspectives.

Relevance

- The relevance of the outreach was a challenge to participants who in some cases were disillusioned with the system at large and in other cases had conceptual difficulty envisioning how they fit into the process or what they could contribute to the overall endeavor. Because watershed conservation and restoration work encompasses so many different stakeholder communities, articulating the purpose of the outreach program in an inclusive manner proved important.

A Stake in the Outcomes

- Another barrier to gaining the participation of new stakeholders was some individuals' perception that they do not have a stake in the outcomes. Unfortunately, as an interviewee's perception of his or her stake in the outcomes diminishes, the individual's willingness to engage in discussion also decreases. For future scoping attempts, drawing these stakeholders into

discussion will require innovative methods of approach that can further solidify the linkage between coastal health and a potential stakeholder's conception of his or her official duties and responsibilities. Close attention to an individual's particular frame of reference may be necessary. One solution may be to activate them by directly appealing to their concerns in language that is familiar to them.

Post-Scoping Findings

The scoping interviews collected input from thirty-three individuals from the Upper North Shore, Salem Sound, Metro Boston, South Shore, and the Cape Cod regions. The views expressed in the interviews included a range of priorities, concerns, needs, ambitions, resource perspectives, ideas of progress, faults in the state system, environmental necessities, limitations of office, reference to area-specific duties, perspectives on constituent/mission conflicts, virtues and limitations of legal and state apparatuses, projections for the future, and overall descriptions of area environmental patterns.

Interviewees provided candid assessments of their areas in terms of environmental health and town efforts to address environmental issues. Views on resource quality tended to differ according to narrator especially if the office concerned was not primarily conservation oriented or there was a specific goal of which they were in pursuit. Some articulated similar modes of improving resource health by acting in collaboration with other towns. They frequently noted the difficulty in doing so.

Knowing the concerns and individual perspectives of diverse stakeholders provides us with an advantage in conceiving of the region as a whole instead of a set of atomized perspectives. This tapestry of viewpoints yields small truths when its component testimonies are considered in relation to one another.

Coastal Issues & Solutions

Key: The format below lists the concerns of each individual as "issue + issue, etc.." In italics are plans or thoughts regarding how those challenges may be addressed.

Example:

1. Issue + Issue + Issue (Participant Name, Office, Affiliation)
 - a. *Strategies for addressing concerns.*

Upper North Shore

1. Sea Level Rise + Climate Change + Stormwater Improvement + Beach Erosion + Identification of High Risk Locations (Ray Faucher, District Manager, DCR)
 - a. *Work with MassBays on land acquisition, public education initiatives, develop individual management strategies for individual places that take into account their geographic nuances while also maintaining a concept of how they fit into the entire coastal matrix.*

2. Sea Level Rise + Public Health from Mosquito Infestations + *Phragmites* + (Emily Sullivan, District Manager, NEMMC)
 - a. *Smart infrastructural improvements, better community management, stormwater design improvements, public education.*
3. Storm damage + Sea Level Rise + Site Specific Concerns for Road Maintenance & Redevelopment (Gerri Falco, Conservation Administrator, Rockport & Tim Olson, Highway Superintendent, Rockport)
 - a. *Improving stone revetments, and hard coastal infrastructure, increased coordination between MassBays and town ConsComms that gives the CCMP greater visibility*
4. Water Quality from Merrimack River Sewage Discharge + Invasive Green Crabs (Paul Hogg, Shellfish Constable & Harbormaster, Newburyport)
 - a. *Conversations between municipalities about sewage treatment, coalition-based efforts to combat green crabs, MassBays should emphasize oyster restoration in its North Shore work*
5. Invasive Green Crabs prey on shellfish beds + Shellfish Seeding Efforts + Climate Effects (John Gundstrom, Shellfish Constable, Rowley)
 - a. *Cooperation by North Shore towns to address crab issue by locating markets*
6. Invasive Green Crabs preying on softshell clam population + Law Enforcement Issues + Climate Change + Warming Patterns (Scott LaPreste, Shellfish Constable, Ipswich)
 - a. *Working with state legislators to find market solutions to crab issue, considering the crab's ecological effect on other inshore species including eelgrass,*
7. *Phragmites* + Beach Erosion + Sea Level Rise + Climate Change + Water Quality + Dam Removal + Septic Remediation (Doug Packer, Conservation Agent, Newbury)
 - a. *Cooperating with MVPC on coastal initiatives, MassBays could act as convener for inter-regional stakeholder conversations regarding wastewater/storm water solutions.*

Salem Sound

1. *Phragmites* Infestation + Marsh Drainage + Community Investment + Wetland Use (Geoff Lubbock, Goldthwait Marsh Trustee, Marblehead)
 - a. *Phragmites eradication by spraying, cooperation between town ConsComm and NE Mosquito Control, maintain drainage trenches in marsh, community education regarding proper marsh use and care*
2. Public Safety + Law Enforcement + Potential Effect of Power Plant Construction on Harbor + Environmentally Friendly Moorings + Channel Dredging + Waterfront Development (Dan McPherson, Harbormaster, Beverly)
 - a. *Continuing to pursue partnerships with local and state agencies to secure funding, in terms of environmental conservation focusing on public willingness to respect impact on the environment if incentivized properly*
3. Impervious Surfaces + Urban Development + Limitation of ConsComm Authority + Redevelopment of Pre-Existing Infrastructure + Renovation of LNG Power Plant + Sea Level Rise & Overall Effects of Climate Change (Tom Devine, Conservation Agent, Salem)
 - a. *Maintain Salem's strong network of stakeholder bodies and the flow of information between them, land acquisition, focus on climate change and development concerns*
4. Storm Water + Wastewater Discharges (Devon Winkler, Aquatic Biologist, Salem)
 - a. *Grassroots activism, identification of community concerns, translation of concern into political priority for the state, change public mentalities that see environmental declension as unalterable, maintain awareness of individual stakeholder perspectives on resources, maintenance of physical infrastructure*

5. Building Yacht Club Business + Regulatory Compliance + Customer Retention (Dan Delorenzo, Yacht Club owner, Danversport)
 - a. *Diversifying services, improving customer care, promoting eco-friendly boat practices for receptive clientele, more dissemination of practical information*

Metro Boston

1. Teacher Training + Professional Development + Education for the Under Served + Empowering Individuals Through Knowledge + Catalyzing Action & Investment from Knowledge (Carole McCauley, Outreach Coordinator, Northeastern Marine Science Center)
 - a. *Networking with science-based institutions to solidify institutional support, employ innovative strategies for bridging gaps between regulatory and scientific communities, increase education beyond technical assistance, tailoring education to specific audience frames of reference, establish reciprocity between academic research and government*
2. Maintaining herring runs + Eutrophication of Herring Spawning Ponds + Invasive Plant Species + Dredging Herring Pools + Public Water Supply Withdrawal + Flood Control Barriers + Salt marsh Restoration + Tidal Restriction Work + Seawall Reconstruction + Beach Nourishment (Mary Ellen Schloss, Conservation Administrator, Weymouth)
 - a. *State technical assistance, increased services and resources from MassBays*
3. Water Quality Improvement + Storm Water Outflow Control + CSOs + Contaminated Sediments + Phosphorus Inputs + Invasive Plant Species + Developing Green Corridor Along River + Public River Access + Herring Runs + Nurturing Holistic Vision of River Ecology and Management (Ek Ong Kar Singh Khalsa, Mystic River Watershed Association, Arlington)
 - a. *Aid from MassBays in articulating the river's problems as products of an urban/natural interface responsive to human/nature systems, CCMP as educational tool that impresses upon readers the link between land-based processes and riverine impacts, effective communication that tells the river's story in a manner that fosters public investment and understanding, use of education to activate a public will*
4. Water Quality + Monitoring Efforts + Invasive Plant Species + Fore River Access + River Cleanups + Fishway Restoration + Storm Water Runoff + Impermeable Surfaces + Climate Change + Impediments to Restoration Efforts (Kelly Phelan, Conservation Planner, Braintree)
 - a. *More public support and volunteer strength, a central repository of regulatory information, collaborative support for environmental efforts*
5. ConsComm Limitations + Plover Conservation + Dune Erosion + Beach Nourishment + Flood Map Designations + Shoreside Structural Improvements + Lack of Funding & Maintenance + Storm Water Permitting + Short Timeframes for Sewer Repair (Andrew DeSantis, Revere Conservation Commission & Chelsea DPW, Revere & Chelsea)
 - a. *Dune grass restoration, control of public access to ecologically vulnerable areas, nonprofit partnerships for green infrastructure, storm water education and outreach*
6. State Mentalities Toward Restoration Work + Intellectual and Methodological Divides Between Academic and Applied Science + Maintaining Stakeholder Engagement on an Issue Basis + Public Antipathy Towards Shorebird Conservation (Susannah Corona, National Park Service, Boston Harbor Islands)
 - a. *Reconsidering approaches to restoration work and definitions of success, restoration work should be conducted in a manner that allows for consideration of both the limitations and flexibility of an ecosystem which is often not the case.*

7. Climate Change + Sea Level Rise + Storm Damage + Coastal Erosion + Flood Damage + Beach Management (Anne Herbst, Conservation Administrator, Hull)
 - a. *Educate and plan for effects of sea level rise, ConsComm is becoming more active as a vehicle for outreach and public education, improve coastal infrastructure so that it is more resilient*
8. Invasive Plant Species + Climate Change Effects + Public Knowledge of Invasive Species Eradication Techniques (Lou Wagner, Regional Scientist, MassAudubon)
 - a. *Community outreach to ConsComms, relaying accurate information about current environmental threats to municipal offices, public/technical education regarding eradication efforts*

South Shore

1. Water Quality Control + Beach Management + Sewer Renovation + Tide Gate Scheduling + Harbor Dredging + Phragmites + Pond Drainage + Culvert Widening/Fishway Restoration + Funding Shortages + Improving Green Infrastructure + Finishing Sewer Repairs + Nutrient Loading + Storm Water (Paul Shea, Conservation Agent, Cohasset)
 - a. *Ongoing sewer work and rain gardens that have improved water quality of Little Harbor, consideration of Cohasset's geology in storm water planning, continuation of storm water mitigation projects, MassBays outreach and education on projects*
2. Public Safety + Proper Resource Use + Marking Navigational Hazards + Marsh Erosion + Educating Recreational Boaters (Ron Mott, Harbormaster, Norwell)
 - a. *Outreach and education to harbormasters, topical seminars*
3. Estuary Sodium Chloride Levels + Water Withdrawal + Impervious Surface Impacts on Groundwater Recharging + Private Well Regulation + Nonpoint Source Pollution + Evaluating Impacts of Impervious Surfaces (Peter Dillon, Water Commission, Norwell)
 - a. *Addressing storm water mitigation on a watershed basis, MassBays can help implement/communicate a vision of the South Shore's issues on a watershed/holistic basis, organize educational forums, shift focus away from water supply and withdrawal toward impervious surface mitigation*
4. Public Safety + Proper Marsh Use + License and Code Enforcement + Silt Accretion (Dennis Carvalho, Harbormaster & Shellfish Constable, Kingston)
 - a. *Continued care for shellfish resources & river channel dredging proposal*
5. Anadromous Fish Passage Restoration + Shellfish + Post-Restoration Monitoring + Sewer Outfall + Barrier Beach Protection + Wastewater + Sea Level Rise (David Gould, Director of Marine Affairs, Plymouth)
 - a. *Town/academic partnerships for monitoring and restoration work, wastewater improvement projects, MassBays stakeholder coordination for wastewater management issues, comprehensive data collection for municipal use*
6. Beach Nourishment + Conservation Land Management Plans for Protected Species + Shorebird Nesting + Climate Change + Storm Effects (Jorge Ayub, Coastal Ecologist, DCR)
 - a. *Dune reinforcement projects, indigenous plant restoration, habitat restoration for shorebird nesting*

Cape Cod

1. Adapting to Climate Change + Shellfish Aquaculture + Dune Restoration/Natural Resilience + Cranberry Bogs Abutting Wetlands + High Turnover Rates for Homeownership that Impede Social/Environmental Investment + Benthic Communities In Upper Cape Ponds + Storm Water + Dredging + Nitrogen Loading (Coastal Resources Committee, Barnstable)
 - a. *Public education regarding storm and waste water, outreach efforts about shellfish that counteract sensational media representations, acquiring federal/grant funding to pursue projects*
2. Progress on Fishway Restoration Projects + Expanding Herring Monitoring Efforts + Water Quality for Shellfish and Herring + Funding Constraints + Private Land Owner Conflicts + *Vibrio* + Continuing Data Collection + Municipal Shellfish Propagation Program + Collection of Northeast Specific Nitrogen Data + Storm Water + Wastewater + Potential Opening of Herring Rivers to Harvest + Expanding Offshore Aquaculture (Abigail Franklin & Diane Murphy, Cape Cod Cooperative Extension, Barnstable)
 - a. *MassBays support to DMF for ongoing work qualifying rivers as sustainable, grant money for projects, continued research efforts and environmental monitoring*
3. Property Acquisition + Habitat Restoration Efforts on Sandy Neck + Protecting Coastal Infrastructure + Storm Damage + Sea Level Rise + Beach Erosion + Sand Retention + (Rob Gatewood, Conservation Administrator, Barnstable)
 - a. *Use of coconut envelopes to prevent erosion, advancing land acquisition goals and ongoing restoration efforts, finding ways to reinforce current infrastructure*
4. Erosion + Coastal Protection + Beach Nourishment + (Jim Gallagher, Conservation Agent, Brewster)
 - a. *Continued use of drift fence and identification of better erosion solutions without use of hard structures, use of coconut envelopes*
5. Update to Section 208 Water Quality Plan + Storm Water Mitigation + Continued Development + Nitrogen Loading (Heather McElroy, Cape Cod Commission, Barnstable)
 - a. *Watershed-scale solutions to wastewater and storm water, constructed wetlands, fertigation wells, eco-toilets, rain gardens, bio-remediation, storm water filtration mechanisms, vulnerability analysis for expansion of salt marsh restoration efforts, closer coordination with Americorps, MassBays could bring stakeholders up to speed on available resources and best practices, continue to foster conversations between stakeholders*
6. Coastal Erosion + Permitting for Home Development + Dune Restoration + Sea Level Rise + Difficult Issues to Articulate to Public (Pat Pajaron, Conservation Agent, Truro)
 - a. *Public education regarding home improvements and permitting process, limitations on development by Wetlands Protection Act, how to make property repairs in a lawful manner, MassBays initiation of public outreach program on sea level rise effects and property rights/wetland protection*

Table of 2014 Scoping Issues (Issues Ranked by Frequency Highest to Lowest)

Key: Purple=5, Red=4, Blue=3, Green=2, Black=1

North Shore	Salem Sound	Metro Boston	South Shore	Cape Cod
Climate Change	Power Plant Construction	Invasive Species	Beach Erosion	Beach Erosion
Invasive Species	Invasive Species	Storm Water	Wastewater	Climate Change
Shellfish	Climate Change	Education	Harbor Dredging	Storm Water
Beach Erosion	Community Investment	Herring	Herring	Shellfish
Water Quality	Wetland Use	Beach Erosion	Public Safety	Nitrogen Loading
Identification of High Risk Locations	Public Safety	Climate Change	Proper Resource Use	Wastewater
Public Health	Law Enforcement	Flood Control	Climate Change	Protecting Coastal Infrastructure
Storm Damage	Environmentally Friendly Moorings	Water Quality	Water Quality	Education
Stormwater	Channel Dredging	Public Access to Rivers	Tide Gates	Permitting for Home Development
Law Enforcement	Waterfront Development	Shorebird Conservation	Invasive Species	Storm Damage
Dam Removal	Impervious Surfaces	Shoreside Structural Improvements	Pond Drainage	Habitat Restoration
Septic Remediation	Urban Development	Flood Maps	Green Infrastructure	Property Acquisition
	Limitation of ConsComm Authority	Limitations of ConsComm Authority	Nutrient Loading	Expanding Offshore Aquaculture
	Redevelopment of Existing Infrastructure	River Cleanups	Storm Water	Land Owner Conflicts
	Storm Water	Monitoring	Marking Navigational Hazards	Data Collection
	Wastewater	Holistic Vision	Marsh Erosion	Water Quality
	Maintaining Business Profits	Developing Riverine Green Corridors	Education	Herring
	Regulatory Compliance	Phosphorus	Sodium Chloride Loading	Dredging

	Customer Retention	Contaminated Sediments	Water Withdrawal	Benthic Communities
		Wastewater	Impervious Surface Impacts on Groundwater	High Homeowner Turnover
		Seawall Reconstruction	Private Well Regulation	Cranberry Bogs Abutting Wetlands
		Tidal Restrictions	Nonpoint Source Pollution	
		Marsh Restoration	Law Enforcement	
		Water Supply Withdrawal	Shellfish	
		Storm Damage	Monitoring	
			Conservation Land Management	
			Shorebird Conservation	

Thematic Elements

Several broader themes offer cohesion to the site-specific concerns that interviewees expressed during the scoping. These themes in some cases reflect continuity between the previous scoping efforts and in other cases prompt new consideration of the relationship between communities and their coastal environments.

Knowledge & Action: For many individuals, coastal issues can be difficult to conceptualize due to the often systemic nature of those problems. Knowledge of coastal environments and ecology can provide the educational base necessary for public engagement with environmental issues. However, education is only the first step toward action and investment. Activating meaningful public engagement around environmental concerns remains a challenge.

Advancing a Watershed Perspective: Coastal watersheds encompass vast areas that frequently cross town, county, and state boundaries. To visualize watershed areas as zones of connectivity requires an engagement with hydrologic and policy perspectives in relation to their socio-political boundaries. One narrator expressed appreciation for the City of Portland, Maine’s active embrace of problem solving strategies on a watershed basis. Another emphasized the importance of recognizing the relationship between urban and natural environments in the development of a watershed perspective.

Coastal Adaptation: As climate change effects force towns to adapt, coastal managers are rethinking the nature of coastal infrastructure. Emphasis on coastal resilience is evolving to embrace innovative methods for protecting existing structures and habitats. One of the greatest challenges for planners is using natural systems to create dynamic and responsive contingencies for coastal events while maintaining habitable community spaces.

Outreach & Education: Interviewees articulated a general acknowledgement that public engagement rests upon effective communication of environmental issues. Stakeholders discussed education as an issue in both technical/regulatory settings and general outreach. Interviewees suggest that outreach on

general coastal issues must resonate with citizens’ everyday lives and local concerns.. As general outreach takes place, discussion may also help identify commonalities that stimulate coordination among towns.

Scoping Results 2013—2014: Cross-Cutting Needs & Habitat Action Matching

Many of the views solicited during the secondary scoping campaign aligned with the issues that dominated the previous season’s discussions. Below are the scoping conclusions from those meetings paired with their corresponding inputs from the second round of interviews.

Cross-Cutting Needs

2013 Scoping Results	2014 Scoping Results
Implementation of Improved Storm Water Management	<i>Storm water management remains a high priority consideration for towns interested in compliance with the MS4 storm water permits. Shifts in regulatory regimes between the North Shore and Cape Cod demonstrate different approaches to mitigating a universal problem. Organizations on the Cape are considering bioremediation and other methods of improving filtration.</i>
Encourage regional collaboration for planning and implementing climate change adaptation responses	<i>Climate Change concerns loom for towns that are threatened with beach loss and residential impacts from rising water levels. Solutions range from short-term measures that replace sand and bolster soft infrastructure to state land acquisition efforts. Recognition of climate change has been manifested by landowner challenges to flood maps, locating markets for undesirable marine species, adaptation to rising sea levels, and continued efforts to eradicate invasive species.</i>
Encourage cross-agency cooperation and planning for restoration projects	<i>Restoration work by the DER, NRCS, and DMF currently pertains to storm water, marsh restoration, and fishway/shellfish restoration. Concerted effort between nonprofits, towns, and the state remains essential to progress and legal compliance.</i>
Determine/compile the state-of-knowledge	<i>Ecosystem services along the MassBays coast</i>

<p>of the benefits provided by coastal habitats</p>	<p><i>are of great value to industries such as tourism and fishing. As evidenced by the Urban Harbors Institute’s recent survey of academic and grey literature pertaining to the state’s coastal environment, the base of knowledge is increasing. Especially as climate change concerns continue to drive conservation perspectives, this will continue. There is a significant need to bridge gaps between scientific/academic and regulatory/policy communities to facilitate the transfer of knowledge. Challenges include gaps in monitoring and the changing nature of coastal ecosystem inputs and outputs.</i></p>
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Habitat Specific Actions

<p>2013 Scoping Results</p>	<p>2014 Scoping Results</p>
<p>Remove all traditional moorings from eelgrass beds</p>	<p><i>Several respondents noted that the public is often ready to learn and respond to conservation initiatives regarding areas of recreational concern. Accessible information is important for the continued education of pleasure boaters. The introduction of eco-friendly moorings can be prohibitively expensive. There may be a challenge in broaching this topic with harbormasters who have placed their faith in traditional moorings and who view their office as primarily oriented toward public safety. Harbor outreach may be useful in establishing a connection between public safety and environmental health. Also to note, green crabs have been blamed for degrading eelgrass habitat as well.</i></p>
<p>Restore shellfish beds, taking into consideration the impacts of ocean acidification</p>	<p><i>The challenges facing shellfish populations vary widely across the regions and are highly site-specific owing to their sedentary nature. Factors affecting shellfish health include municipal wastewater systems, downstream impacts from sewage and nonpoint source pollution, invasive species such as green crabs, land use conflicts, and Vibrio. Because shellfish fall under multiple regulatory jurisdictions, an open dialogue between the state, towns, and growers may facilitate ease of propagation.</i></p>

<p>Encourage beach management plans that consider habitat value</p>	<p><i>Beach management challenges include the balance between habitat enhancement and public access. Plover populations in several areas have drawn public ire for the space that is devoted to their conservation. A significant aspect of habitat-based beach management may be outreach related in order to communicate the fragility of that balance. Conventional measures for dune erosion are not working which has prompted some progressive individuals to look at the issue not as a matter of keeping sand in one place but of improving the natural absorbency of coastal habitats.</i></p>
<p>Model potential for marsh migration in response to sea level rise</p>	<p><i>Sea level rise impacts are broad. Newly inundated areas may be more susceptible to mosquito and Phragmites infestation as salinity levels change. GIS modeling similar to MVPC efforts on the Great Marsh and MassAudubon's public school mapping lessons may provide guidance for mitigating marsh habitat variability.</i></p>

Conclusions & Recommendations

During this scoping campaign, thirty-three stakeholders with backgrounds including those of municipal officials, restoration specialists, business owners, state officials, harbor masters, shellfish constables, and academics lent their input. The thoughts that they expressed reflected their highly individual perspectives on the challenges facing their regions and even more importantly on the nature of their relationships with their coastal resources. They communicated an intimate familiarity with communities and coastal ecosystems. Gathered through a suite of open ended questions, these perspectives sought not to lead participants but instead allow them to express their thoughts on various coastal concerns. Most importantly, the opinions expressed in these interviews reflect the nature of the tripartite relationship between individual, office, and resource.

The views that they expressed are not uniform. In this manner, they are a truthful representation of the breadth of concern that presently exists within the Massachusetts Bays watershed area. We have at hand the reality that issues are perceived differently according to location because each town's resources, needs, and priorities are uniquely their own. Encapsulated within this are themes that do speak to the commonalities linking towns and regions together. What emerges is a matrix of information that accurately reflects the current conditions of coastal areas from the Upper North Shore to the Outer Cape.

This sampling of perspectives is not an exhaustive study in that it only reached those who were most willing to take part in the process. Missing from these perspectives are the voices of municipal officials

who perhaps had difficulty envisioning their stake in the outcomes of MassBays' work. Helping to facilitate that connection will be a challenge for future outreach endeavors that hope to engage those stakeholders.

In general, the findings of this scoping attempt are closely aligned with the results of last year's stakeholder meetings. Like last year, a persistent concern for climate change effects and sea level rise seemed to drive many secondary priorities such as beach erosion and flood control. Along with that, individuals reiterated that MassBays can work well as a facilitator and convener of partners. Education and outreach also remain important for the continuation of restoration work and especially for introducing homeowners to the nature of sea level rise.

In conclusion, the information gained from this scoping campaign is useful on a broad level. It supplements the concerns stated during the initial scoping efforts in 2013 and it may act as a reservoir of useful information as MassBays presses ahead in the building of coalitions and collaborative partnerships.

FINAL RECOMMENDATIONS BASED ON SCOPING PERSPECTIVES

- Continue grant program
- Increase outreach efforts with emphasis on roles guiding, advising, educating, and connecting, particularly to towns whose ConsComms lack resources
- Emphasize technical and community education
- Consider expanding name recognition and branding
- Continue facilitating local/state conversations and use leverage as state organization to bring stakeholders into collaborative discussion
- Emphasize adaptive responses to climate change and sea level rise
- Facilitate bridging between academic and regulatory communities
- Behave as resource coordinator for coastal Conservation Commissions interested in informational resources
- Support DMF in its evaluation of herring

Appendix F. Results of Interagency Information-sharing Sessions

CCMP, Action!

Preliminary results of agency info sessions

Agency Info Exchange

- * October 2 & 8
- * Attendees represented MVPC, MAPC, CCC, MWRA, MassPort, DOT, DEP, DER, DMF, DPH, CZM, EEA,
- * Agenda included intro to MassBays, CCMP process, goals & strategies, around-the-table reports on activities in the Bays.
- * Brainstorming possible MassBays actions.

Goal 1: MassBays will be the primary source for information about conditions and trends in Massachusetts Bay and Cape Cod Bay.

Strategy 1a. Make data available

- * Document impact of “green” approaches.
- * Conduct rainfall-water quality modeling.
- * Support eelgrass delineation and mapping.
- * Support citizen monitoring and management efforts.
- * Delineate mean high water in salt marshes.
- * Identify and address knowledge gaps.
- * Review studies of climate change impact on restoration and management activities.

Goal 2. MassBays will be an important influence on local decisionmaking that recognizes the roles, functions, and values of healthy estuaries in the Bays.

Strategy 2a. Conduct outreach and training regarding the value of estuaries

- * Promote timely implementation of living shorelines for long-term habitat protection.
- * Address perception of eelgrass as a nuisance species.
- * Address Rivers Protection Act implementation in the coastal zone.
- * Promote model restorations and practices that have proven successful.

Goal 2. MassBays will be an important influence on local decisionmaking that recognizes the roles, functions, and values of healthy estuaries in the Bays.

Strategy 2b. Prompt local decisionmaking based on research findings and trends data

- * Make the wealth of climate change information useful for municipal planning.
- * Use tide gate inventory outputs to prompt adoption of sound management practices.
- * Provide guidance to communities re: responding to harmful algal blooms.
- * Share information about economic tools for habitat protection and restoration.

Goal 3. MassBays structure and programs will be an international model for fostering healthy, diverse, and functioning ecosystems that support life and communities.

Strategy 3a. Establish embayment-specific targets for improvement

- * Identify indicators and metrics for multiple embayment “types.”
- * Establish a methodology for comparisons across embayments in similar settings.
- * Tie municipal-level MS4 permit compliance to embayment-specific water quality targets.
- * Utilize Gulf of Maine sentinel monitoring recommendations to detect climate change impacts.
- * Examine the potential to bring stormwater treatment component to DOT Complete Streets program.

Goal 3. MassBays structure and programs will be an international model for fostering healthy, diverse, and functioning ecosystems that support life and communities.

Strategy 3b. Establish embayment-specific action plans

Next Steps

- * Solicit additional suggestions for action in line with our Goals and Strategies.
 - * Pull actions out of regional meeting notes.
 - * RCs meet with, gain input from Local Governance Committees.
- * Construct a logic model that connects specific actions with desired outcomes.
 - * Explicitly address climate change influence on those.
- * Work with Regional Service Providers to assess capacity and prioritize actions.
- * Present action plans to Management Committee.