CHAPTER 2:
SUMMARY OF ACCOMPLISHMENTS AND RECOMMENDATIONS

OVERVIEW

This chapter provides a summary of progress on the priority recommendations of the approved resource management plan, and sets forth the recommended action plan for the coming five years of proposed activity. A tabular summary of implementation actions and proposed recommendations is included as an appendix to the update.

ADDRESSING PRIORITY RECOMMENDATIONS

The approved resource management plan identifies ten priority recommendations for action. Below is a listing of those ten priority recommendations. In its first five years, the Alliance has completed or made substantial progress in each area.

#1 Form the Implementing Structure for the Plan

The *Pleasant Bay Resource Management Alliance* was formed in 1998 through a Memorandum of Agreement among the Towns of Orleans, Chatham and Harwich, to coordinate implementation activities among the departments of the member towns, and regional, state and federal agencies. The Alliance is governed by a Steering Committee, and receives support from a Technical Resource Committee. Both committees are appointed by the Boards of Selectmen in the member towns. A coordinator is hired by the Alliance to oversee implementation activities.

The Alliance follows the budgeting and reporting procedures of each member town. The Town of Chatham Director of Finance acts as fiscal agent. The budgeting policy of the Alliance is to seek municipal funds for essential administrative needs including the coordinator's compensation and a modest amount of seed money for grant writing. Municipal funds are allocated forty percent to Chatham, forty percent to Orleans and twenty percent to Harwich. Special studies and projects, such as those reported or recommended in this report, are funded through non-municipal grant sources. To date, the Alliance has obtained $106,500 in outside funding for special projects and studies, which represents 36% of total funds received over the five-year period. The only exception to this policy is funding for the water quality monitoring program. Since FY02 the total cost for this program has been included in the Alliance's budget to the towns. This is to ensure against the possibility that non-town funds are not available, which would jeopardize the program and the towns' investment in it.

The project management framework developed by the Alliance continues a high degree of coordination with federal, state, local, and regional agencies, and participation by regional experts and interested citizens. The Alliance promotes community awareness of its programs and activities through outreach to local media outlets, the Alliance website (www.pleasantbay.org), and presentations to local and regional organizations.

#2 Provide a New Regulatory Framework for Docks, Piers, Marsh Walkways, and Erosion Control Structures in the Bay
#8 Identify Changes Needed to Strengthen Local Wetlands Regulations:

The Alliance developed *Guidelines and Performance Standards for Docks and Piers in Pleasant Bay*, which were relied upon by the Alliance towns to amend wetland regulations and bylaws. The Secretary of the Executive Office of Environmental Affairs approved the guidelines as an implementation of the Pleasant Bay Resource Management Plan and in compliance with the Department of Environmental Protection's (DEP) Waterways Regulations 310 CMR 9.00 and MGL Chapter 91. The new local regulations replace the categorical restriction on Chapter 91 licenses in certain specifically described circumstances.

The Alliance also developed and distributed *Guidelines for Private Walkways and Stairways in Fresh and Marine Resource Areas of Pleasant Bay*. The guidelines are intended for use by local Conservation Commissions, Boards of Appeal and Planning Boards in the review of permit applications for walkways or stairways over marine or freshwater wetland resources.

#3 Increase Boating Regulations and Enforcement
#4 Reduce Environmental Impacts from Boating
#5 Minimize Safety and Environmental Impacts from Personal Watercraft (PWC)

The coordination of waterways activities resulting from the plan and the support of the Alliance has increased safety and patrol efficiency in the Bay. Specific accomplishments include:

- Implementation of a coordinated bay-wide patrol,
- Deployment of a greater number of navigational aides including renumbered channel markers, a greater number of rock buoys, and the addition of *slow* and *no wake* zones in congested areas, and
- Creation of a mooring free area in Big Bay to allow recreational activities unimpeded by moorings.

Management issues cited in the plan concerning personal watercraft were addressed through bylaws prohibiting PWC operation within the Bay. The bylaws were developed in response to a decision by the Cape Cod National Seashore to prohibit PWC operations within Park boundaries, which extend one-quarter mile or more into Pleasant Bay. The bylaws were approved by Town Meetings in the Alliance towns, as well as the

Massachusetts Attorney General and the Massachusetts Division of Environmental Law Enforcement.

***#6 Inventory and Monitor the Bay's Ecology, Water Quality, and Fisheries*:**
#7 Refine and Coordinate Fisheries Management Policies and Regulations

Water Quality Monitoring

A comprehensive Bay-wide citizen water quality monitoring program was designed, encompassing twenty-one monitoring stations from the Chatham inlet to Meetinghouse Pond. More than 150 volunteers have been recruited and trained by the Alliance and affiliated local groups to collect samples and monitor field conditions. The Alliance obtained state approval of its Quality Assurance Project Plan (QAPP) which outlines program goals, monitoring and analysis procedures, and quality control procedures. Three consecutive years of monitoring have been completed, and interim water quality reports were issued for the 2000 and 2001 seasons.

The emphasis of the data collected by the program is on nutrient loading of Pleasant Bay from surrounding land uses. It is recommended that the data be incorporated into a multi-year analysis through the Southeastern Massachusetts Embayment Restoration program. The program will identify critical nitrogen loads in Pleasant Bay and will assist towns in developing strategies for limiting or managing nitrogen.

Intertidal Habitat and Sediment Assessment

The *Intertidal Habitat and Sediment Assessment* study is the first phase of a comprehensive inventory and monitoring program for habitats within the Pleasant Bay estuary recommended in the plan. The study will classify and evaluate the variety of intertidal habitats in the Bay, inventory the plant and animal life that inhabit these areas, and outline a program to monitor the dynamics of these areas in light of environmental and human use factors. Results from the study will be used to:

- Develop a monitoring program for intertidal areas;
- Review the status of ten areas designated in the plan as Areas of Critical Marine Habitat; and
- Develop guidelines for aquaculture placement and management, and strategies for sustaining the Bay's fisheries.

Freshwater Resource Assessment

The resource assessment of freshwater ponds within the ACEC responds to two priority recommendations of the plan:

- To complete the inventorying of critical habitat areas in the Pleasant Bay study area, and to develop strategies to monitor their health; and
- To develop guidelines for permitting structures, particularly docks and piers, located on the shoreline of freshwater lakes and ponds.

The assessment provides a "snapshot" profile that identifies and documents the presence and distribution of rare, endangered, indigenous and invasive species of plants and animals within one hundred feet of the water's edge of the eleven freshwater ponds in the ACEC, including submerged and emergent species.

#9 Develop and Implement a Watershed Management Program

The Alliance found that a comprehensive assessment of future development potential within each sub-embayment of the Pleasant Bay watershed was needed to evaluate specific actions the towns could take to implement the watershed protection recommendations found in the plan. As a first step the Alliance developed the *Build Out Analysis within the Pleasant Bay Marine Water Recharge Area*, which analyzed the potential for new residential development within the Bay's watershed. The analysis is a key element to be integrated with water quality, hydrodynamic and nitrogen loading data to generate a comprehensive view of watershed impacts on the Bay. The analysis shows that 1,728 new dwellings could be added throughout the watershed on developable lots, an increase of 28%. Nine of the Bay's twenty-one sub-watersheds could see an increase in new dwellings of 40% or more. The build out analysis was developed with technical support from the Cape Cod Commission GIS Department.

In 2000 the Alliance produced a *Citizen's Guide to Estuarine Protection* focusing on the watershed of Arey's Pond, which has been identified to have critically high nitrogen levels. In 2002 the Alliance obtained a grant from the Community Foundation of Cape Cod to publish additional editions of a *Citizens Guide to Estuarine Protection.* Each edition will be targeted to the specific nitrogen loading conditions within a selected sub-embayment and associated sub-watershed of Pleasant Bay. The guides are intended to increase public awareness of the effects of nitrogen on marine eco-systems, and to provide a foundation for community debate and consensus building on water quality goals and strategies for nitrogen management.

#10 Enhance Public Access Opportunities:

A major impediment to public access to and along the Bay's inner shoreline is the low proportion of publicly held shoreline property. This observation, which appeared in the plan, was confirmed by a detailed analysis of shoreline access conducted by the Alliance. The *Shoreline Access Inventory Project* was developed with funding from the Department of Environmental Management Coastal Access Grants Program. The project showed that of more than 3,000 acres of parcels located on the shoreline of the Bay, only 13% are owned by the towns. Of the 65.7 total miles of the Bay's shoreline, 10.36 miles, or roughly 16 %, belong to the towns, and only 3.4 miles is accessible by car. Only 6.57 miles of municipally owned shoreline is passable at all levels of the tide.

The *Guidelines and Performance Standards for Docks and Piers in Pleasant Bay* prepared by the Alliance includes provisions for ensuring that private structures do not impede lateral public access.

CONTINUING WORK AND NEW DIRECTIONS

The projects and accomplishments outlined above have helped to fill out a picture of conditions in Pleasant Bay today:

- Eutrophication is a water quality concern throughout much of the Bay;
- The Bay's watershed is mostly developed with single-family residences using onsite septic systems that contribute nitrogen to groundwater and coastal water;
- Residential development within the watershed could increase substantially, and could result in greater impacts of nitrogen loading degradation of wetlands and associated habitats;
- Use of the Bay's waterways continues to intensify, and by a greater variety of users; and
- Areas of the Bay's shoreline and intertidal areas are changing, perhaps due to man made influences, and perhaps due to natural processes. However we are at the initial stages of understanding the full extent of these changes, their causes, and implications for the Bay's fisheries, navigation, and protection of shoreline.

While these indications are important, at this point in time there is not enough data to say that the Bay is materially better or worse off than it was five years ago. The accomplishments of the past five years have compiled baseline data and provided frameworks for further analysis and study concerning many aspects of the Bay. It is only through continuing this process of thorough data collection, policy development, and public education, that the Alliance communities will be able to ensure the continued health of the Bay.

The Alliance has charted a course for the next five years of activity. At that time a similar update report will be submitted to the Alliance communities for approval. The following is a summary of the action plan for the coming five years.

WATER QUALITY MONITORING

- ❖ Continue to build a base of reliable water quality data through the Citizen Water Quality Monitoring Program.
- ❖ Develop a comprehensive water quality analysis based on multi-year data. This analysis, as well as updated data on hydrodynamics and nitrogen loading, may be accomplished through participation in the Southeastern Massachusetts Embayment Restoration Program.

ECOLOGICAL INVENTORY AND HABITAT PROTECTION

- ❖ Complete the intertidal habitat and sediment assessment study and begin a monitoring program for selected intertidal areas. Pending the outcome of the study, identify needs for further research of selected intertidal or sub-tidal areas.

- ❖ Evaluate Areas of Critical Marine Habitat (ACMH) based on results of the intertidal study. Re-evaluate the designation of Areas of Critical Marine Habitat, and other intertidal areas addressed in the intertidal study, and develop management recommendations as needed.

- ❖ Review the results of the resource assessment of freshwater ponds and develop recommendations or guidelines for towns to consider in the management of the resource areas. The Alliance may also identify additional research, monitoring activities or remediation steps to protect the health of freshwater ponds and their associated habitats.

- ❖ Continue to monitor trends in the vitality of eelgrass and horseshoe crabs throughout the Bay.

- ❖ Develop an inventory of undeveloped parcels prioritized for their habitat value. The Alliance will work with the Compact of Cape Cod Conservation Trust and the Cape Cod Commission to analyze vacant parcels in the Pleasant Bay watershed in terms of their ecological significance and habitat value.

PROTECTION OF WETLANDS

- ❖ Review existing wetlands protection regulations in the Alliance communities, and where advisable, develop recommendations for strengthening regulations (as specified in Chapter 5).

- ❖ Work with Conservation Commissions, contractors and the County Cooperative Extension to develop a public information campaign focused on best management practices for landscaping within and outside of areas of jurisdiction. The effort should also evaluate the feasibility of training and certification procedures.

- ❖ Conduct a study of marsh-barrier beach sedimentation that looks at changes in marsh areas, beach profiles, and the impacts of existing and proposed erosion control structures on the marsh-barrier beach sedimentation process.

- ❖ Work with the involved towns and Massachusetts Highway Department to evaluate design alternatives to increase flushing and improve water quality, habitat and other natural resources in Frost Fish Creek, Muddy Creek, and the Bay as a whole.

WATERSHED PLANNING

- ❖ Continue analysis of development potential identified through the build out analysis, and develop recommended municipal actions and strategies.

- ❖ Continue work with managers of the Southeastern Massachusetts Embayment Restoration program to ensure that modeling Pleasant Bay is completed by 2006. The Alliance will work with the individual towns to ensure that the local share contribution required for modeling under the program is made available.

- ❖ Encourage efforts to identify sources of bacteria in areas experiencing sustained high levels of bacterial contamination.

- ❖ Encourage the towns to complete development of and implement Phase II Stormwater Management Plans as required by U. S. Environmental Protection Agency and Massachusetts Department of Environmental Protection (DEP).

- ❖ Encourage the towns to install and maintain "mutt mitt" dispensers at all public access locations on Pleasant Bay. Signs at public access points and other public information efforts should be used to increase public awareness of the public health and environmental impacts of pet waste that is not properly disposed of.

- ❖ Develop and distribute public education materials, including *Citizen's Guides*, for all subwatersheds of Pleasant Bay.

FISHERIES MANAGEMENT

- ❖ Continue to support the towns' efforts to increase the effectiveness of propagation efforts, and strengthen enforcement of shellfishing regulations.

- ❖ Develop a framework for long-term monitoring of the Bay's wild shellfisheries, with guidance from local shellfish officials, shellfish advisory groups, Massachusetts Division of Marine Fisheries, the County Extension Service, and regional scientific institutions.

- ❖ Support efforts to control QPX (Quahog Parasite Unknown), and the negative impacts of invasive species on the vitality of the wild shellfisheries. Best management practices and possibly predator control measures should be evaluated for their effectiveness, including impacts on shellfish and other aspects of the Bay's ecology. The Massachusetts Division of Marine Fisheries, the County Extension Service, and regional scientific institutions should be consulted in the evaluation or development of management responses to QPX and invasive species.

- ❖ Work with local shellfish officials and advisory groups, the Division of Marine Fisheries, Barnstable County and regional scientific institutions to study the status and trends related to the Bay's finfish and shellfish resources.

- ❖ Based on the results of the intertidal study, coordinate development of guidelines for locating aquaculture activity. The guidelines will:
  - Identify areas of the Bay that may be suitable for private aquaculture, and
  - Assess the cumulative impacts on the Bay's intertidal habitats and feeding areas resulting from the use of areas deemed suitable.

SHORELINE CHANGE AND THE REGULATION OF STRUCTURES

- ❖ Evaluate the resource characteristics of Muddy Creek and develop guidelines for structures there. Muddy Creek is a tidal area within the ACEC that, because of its unique characteristics, was not included in the resource assessment for docks and piers. As a result, the categorical restriction on new Chapter 91 licenses for new private docks remains in effect.

- ❖ Develop guidelines for docks and piers in freshwater areas. The categorical restriction on Chapter 91 licenses for private piers referred to above extends to freshwater great ponds (10 acres or more) within the ACEC boundary.

- ❖ Identify areas of high, moderate and low wave energy, and develop best management practices for shoreline stabilization in those areas. The designation of high, moderate or low wave energy areas would be re-evaluated at regular intervals. Best management practices would address selection of shoreline stabilization technology, provision of an alternatives analysis, re-nourishment guidelines, construction practices, erosion of adjacent properties and public access.

- ❖ Conduct a shoreline change study to develop a baseline shoreline profile against which future erosion could be measured. The shoreline change study would establish a shoreline and coastal bank profile using current and historical aerial photography, and would calculate the sediment loss due to coastal armoring. The study results would be used to monitor shoreline and bank erosion, address the loss of sediments at public beaches and other public access points, and manage the preservation of shoreline, marsh and intertidal habitats.

- ❖ Implement a shoreline-monitoring program. A volunteer-based program to monitor shoreline change at selected locations will be implemented. The monitoring program will help to build a database on shoreline conditions that can be compared with the shoreline baseline established by the shoreline change study, and over time.

- ❖ Identify and prioritize shoreline areas that could benefit from placement of dredged materials. By identifying and prioritizing sites to receive material, the Alliance hopes to encourage towns to consider the system-wide benefits of locating dredge material and to consider high priority sites when seeking a permit to dredge in the Bay.

- ❖ Repeat the aerial flyover in 2005, and in subsequent five-year intervals. Comprehensive aerial photography of Pleasant Bay was lacking until 2000, when the Alliance, with the Town of Chatham, conducted an aerial flyover of Pleasant Bay in 2000. The resulting aerial photography has been a useful tool in managing structures, monitoring changes at some shoreline locations, and in undertaking the intertidal study.

WATERWAYS SAFETY AND NAVIGATION

- ❖ Support continuation of the coordinated bay-wide Harbormasters' patrol. The towns should fund additional patrol personnel hours if Harbormasters find such an increase necessary to maintain adequate patrol coverage.

- ❖ Continue to deploy navigational aids in congested areas, or where necessary to protect resources or guard against excessive speeds. One area identified for additional aids is the area at Fox Hill and Bassing Harbor near the entrance to Ryder's Cove (markers 3-6).

- ❖ Support efforts to control the inappropriate placement of lobster pots where they pose a threat to navigational safety.

- ❖ Coordinate public education and evaluate the need for changes in waterways regulations to promote safe and appropriate use of recreational equipment and activities, including but not limited to kayaks and canoes, para-sails, kite boards, towed tubes and water skis, and swimming. Specifically, such activities should be prohibited from marked navigational channels unless safely crossing.

- ❖ Support enforcement and public education efforts aimed at encouraging compliance with the prohibition on the operation of personal watercraft in Pleasant Bay. Additional public education and enforcement measures should be considered if widespread abuses of local bylaws are observed**.**

- ❖ Promote the addition of pump out capacity in a centrally located and easy to access location. As soon as added capacity is secured, coordinate and submit an application to the U.S. Environmental Protection Agency (EPA) to designate the Bay as a No Discharge Area. Until the designation is obtained, disposal of treated (macerated or chlorinated) wastes is strongly discouraged by the Alliance.

- ❖ Encourage marinas, boatyards, and individual boat owners to relocate any activities that pose potential environmental hazards away from waterways, and

preferably to upland locations that have the infrastructure to properly contain any polluting impacts. The Alliance will continue to promote adherence to the best management practices outline in the *Massachusetts Clean Marina Guide* published by Massachusetts Coastal Zone Management. The Alliance will encourage marina owners to obtain a National Pollutant Discharge Elimination Service (NPDES) permit if applicable to their operations.

- ❖ The public education campaign and the evaluation of boating impacts, as outlined in the approved plan, should be undertaken.

- ❖ Encourage a continued limitation on mooring permits as a way to prevent overcrowding of the waterways, and associated impacts on resources. A limitation on mooring permits is also necessary to address overcrowding at town landings.

- ❖ Promote evaluation and use of alternative mooring technologies, tackle or techniques to limit bottom scouring, but not as a means of increasing mooring capacity in the Bay. The Alliance encourages local Harbormasters to explore the potential of one or more demonstration projects to test the long-term benefits of alternative mooring technologies or techniques.

- ❖ Conduct a study of the potential need for, impacts from, and feasibility of improvement dredging in areas where shoaling is limiting access through areas that traditionally have served as important public navigable waterways.

- ❖ Identify and prioritize locations for the disposal of dredged materials in the ACEC. Explore the feasibility of locating dredge material in a priority ACEC location, even if it is located outside of the town where dredging occurs.

PUBLIC ACCESS AND HISTORIC RESOURCES

- ❖ Continue to promote the plan's recommendations for enhancing access to and along the shoreline.

- ❖ Promote efforts to reduce existing shoreline obstructions, and to prevent future obstructions, as outlined in the approved plan.

- ❖ Continue to support efforts to identify and establish additional access points for low impact uses such as scenic viewing, walking, beach activities, and use of small, non-motorized vessels.

- ❖ Continue to pursue and support the public access recommendations in the approved plan:
    - Develop public education materials outlined in the plan intended to support responsible use of town landings;

- Develop a uniform sign program for town landings in the Pleasant Bay system;
- Support town guidelines and policies for the management of landings that are consistent with the resource management plan, and address the resource impacts outlined in the plan; and
- Support investments in town landings that serve to protect public access and protect resources.

❖ Work with local historians and historical commissions to evaluate management steps that could be recommended to the towns to protect pre-historic and historical resources.