

TOWN OF CHATHAM

SOUTH COASTAL HARBOR PLAN

PRIVATE PIER AND DOCK ASSESSMENT



**PUBLIC COMMENT DRAFT
AUGUST 2009**

SOUTH COASTAL HARBOR PLAN COMMITTEE

South Coastal Harbor Plan Private Pier and Dock Assessment

Table of Contents

	Page
Executive Summary	ii
1. Introduction	1
1.A Background on the South Coastal Harbor Management Plan	
1.B Recommended Actions in the SCHP Regarding Docks	
1.C Policy Guidance from Other Chatham Plans	
2. Purposes of the Private Pier and Dock Assessment	5
2.A Existing Local Regulatory Framework	
2.B Chapter 91 and Required Consistency Findings	
2.C Purposes of the Assessment	
2.D Additional Considerations about Public Access and Private Piers and Docks	
3. Methodology	9
3.A Review of Alternative Approaches	
3.B Selection and Description of Environmental, Physical and Human Use Criteria	
3.C Selection and Description of Shoreline Segments	
3.D Application of Assessment Criteria to Shoreline Segments	
4. Results	23
4.A Assessment Rankings and Evaluation	
4.B Additional Considerations Regarding New Private Piers and Docks in the Stage Harbor Complex	
5. Findings and Recommended Actions	25
5.A Findings	
5.B Recommended Actions	
6. Appendices	27

Executive Summary

1. Introduction

Chatham's South Coastal embayments—the Stage Harbor Complex, Nantucket Sound, the Southway—encompass critical environmental, economic and cultural resources of the Town. The intensity and diversity of activities in these areas, which include shellfishing, finfishing, boating, sailing, kayaking, nature viewing, and beach going, combined with the environmental sensitivities of the areas, place heavy demands on resources and facilities and set the stage for potential management conflicts. With growth in seasonal and year-round populations, more pressures have been placed on natural resources, the limited public access points, and the use and enjoyment of the waterways themselves.

The Town developed the Stage Harbor Complex Harbor Management Plan in 1992 and the South Coastal Harbor Management Plan (SCHP) in 2005 to protect the environmental resources and variety of historic uses of these areas. Goals of these plans are to:

- Maintain the navigability of the harbor waterways;
- Protect the viability of the commercial fishing and shellfishing industries;
- Maintain a mix of recreational uses in the harbor areas;
- Protect water quality, and the quality and quantity of shellfish, finfish and wildlife species and habitat;
- Maintain and enhance adequate public access to the harbor shoreline and waterways; and
- Preserve the character and scenic quality of the harbor areas.

A central management issue that was identified in the plans was impacts associated with private piers and docks. Private piers and docks are an important element of the marine infrastructure. However, piers and docks constitute a private use of a public resource, and have the potential to cause negative environmental impacts, alter habitat, and reduce public access for other coastal activities.

In light of potential management impacts from private piers and docks, the SCHP recommended development of permitting guidelines for the structures to be based on an assessment of impacts on natural resources, public access, water quality, and navigation. The assessment was undertaken by the South Coastal Harbor Plan Committee (SCHPC).

2. Purposes of the Assessment

The purposes of the assessment are to:

Respond to Recommendations in the SCHP. First and foremost, the assessment was designed to fully respond to the recommendation in the SCHP to

“evaluate primary and secondary impacts on natural resources, public access, water quality and navigation,” and to determine where along the shoreline private piers may be found in compliance with the SCHP and areas where piers are not in compliance with the plan due to negative impacts on the harbor planning values.

Achieve consistency between the SCHP and local and state regulations. As noted above, the existing local and state regulatory framework relies on an assessment of consistency with the SCHP. Determinations on applications undergoing zoning, conservation and reviews under 310 CMR 9.00: *The Massachusetts Waterways Regulations* (hereinafter “Chapter 91”) should reflect the community objectives for harbor planning area. The assessment was designed to provide a consistent basis for assessing applications based on the community’s harbor planning objectives.

Provide clear guidance for the SCHPC in its consistency review. Because of their weight in the local and state regulatory review process, consistency findings made by the SCHPC should be guided by a comprehensive and system-wide assessment of potential resource impacts. The assessment was designed to provide this framework for consistency findings.

Provide a clear and fair permitting environment for prospective applicants. The process of seeking permits through local boards and commissions and state agencies can be lengthy, involved and costly for both the applicant and the review body. It is in the interests of the private property owner and the public review bodies to have a way to form a reasonable assessment of the potential for meeting performance standards required for permitting success, prior to initiating permitting.

3. Methodology

This assessment is modeled after dock and pier assessments in other estuarine systems, including the Pleasant Bay Resource Management Plan, which encompasses Chatham’s eastern and northern embayments. The methodology consists of (1) selection of assessment criteria; (2) definition of shoreline segments; and (3) application of criteria to shoreline segments.

(1) Assessment Criteria

The SCHP private pier and dock assessment relied on a combination of eight environmental, physical and human use factors to characterize the potential impacts resulting from the installation or use of new piers or docks. Two of the eight factors had current and historic components for a total of ten evaluative criteria. Each factor was assigned a numeric rating scale.

Environmental criteria describe the resource conditions within the area that could be adversely impacted by piers and docks. These criteria include: existing and historic shellfish resources, existing and historic eelgrass, and fringe marsh.

Human use criteria characterize the activities around the waterways that could be adversely affected by piers and docks. These criteria include: access to moorings, navigation access and recreational activity.

Physical criteria describe physical features of the area that have a bearing on the impacts of a pier or dock. The physical criteria are water depth, and whether the water body is opened or closed, which relates to an area's sensitivity to alterations in water circulation from a pier or dock.

(2) Shoreline Segments

Given the large expanse of shoreline and intermittent differences in characteristics, it was necessary to break the shoreline into twenty-six segments in order to evenly apply the criteria. The demarcation of segments was based largely on physical characteristics such as a defined point or entrance to a subembayment, as well as a common understanding of dominant use or feature. Segments are shown on Figure 1.

(3) Application of Criteria to Segments

The assessment team of the SCHPC and Town staff met monthly over more than two years to develop the criteria, rating system and shoreline segments described above. The assessment team relied heavily on local current and historical knowledge of the study area. The team also carefully reviewed available resources including aerial photography, and resource maps from the Town to assess the criteria for each shoreline segment.

4. Results

The assessment results are summarized in Tables 1 and 2 (pages 21 and 22). The score of 18 points provided a natural breaking point in the distribution of segments. Roughly half of the segments achieved a total score of 18 points or above, indicating a relatively higher level of negative impact. The other half of segments achieved a total score below 18 points indicating a relatively lower level of negative impact.

The assessment team considered not only the total score but also the number of sensitivity criteria that measured at the highest level for each segment. On average the twelve segments scoring 18 or higher had the highest rating for on average more than half of the ten sensitivity criteria. This analysis confirmed the assessment team's initial conclusion that a score of 18 reflected a relatively high degree of sensitivity to the effects of new piers.

Further consideration was given to the geographic distribution of ratings. Nearly all of the segments within the Stage Harbor Complex scored 18 or above, indicating a high level of sensitivity to new piers and docks within this particular embayment. The four segments in the Stage Harbor Complex with a score below 18 exhibit characteristics that may render them unable to meet the performance standards for piers and docks built into the existing Chatham regulations, and specifically the required depth of water.

5. Findings and Recommendation

The application of assessment criteria provided a comprehensive evaluation of the environmental, physical and human use impacts associated with piers in each shoreline segment. The geographic distribution of ratings revealed that nearly all of the shoreline segments located inside the Stage Harbor Complex rated as highly sensitive to the impacts associated with addition of new private piers. Based on these findings, the addition of new private piers and docks in the Stage Harbor Complex would be inconsistent with the SCHP objectives and should not be permitted.

The assessment revealed that other shoreline segments, located primarily in the Nantucket Sound and Southway, were relatively less sensitive to the evaluative criteria. The suitability of these areas for new private piers and docks would need to be determined based on an application of existing performance standards in Chatham regulations.

In light of these findings, the following actions are recommended:

Prohibition on New Private Piers and Docks in Stage Harbor Complex

Based on the findings described above, the SCHPC voted unanimously to recommend to the Board of Selectmen and the Planning Board to amend the current Chatham Protective By-Law to extend the prohibition on new or additional private piers and docks currently in effect in Chatham's northern and eastern waters to shoreline areas within the Stage Harbor Complex. This prohibition would not apply to existing licensed structures in these areas.

Catwalks

This proposed amendment would not apply to the permitting of catwalks as defined in the zoning bylaw.

Case-by-Case Review of Public Piers and Docks

It is also important to note that this prohibition would exclude piers and docks for public use. Although similar in nature to structures for private use, public piers and docks are consistent with the objective of the SCHP to enhance public access to the waterways in balance with the protection of natural resources. Such proposals should be subject to stringent review at the local and state level to determine whether the access benefits outweigh impacts to natural resources, and should not be subject to a blanket prohibition.

Continued Investment in Public Access Points

The Town should maintain its dedication and funding commitment for the upkeep of existing public access facilities in the Stage Harbor Complex and throughout the SCHP area, and to the exploration of opportunities for expanding or creating new public access opportunities in balance with natural resource protection.

1. Introduction

The private pier and dock assessment was a recommended action for implementation of the South Coastal Harbor Management Plan (SCHP) and is in keeping with the policy direction of other Town of Chatham resource management plans. This section explains the background on the development of the SCHP, and the policy direction provided by related plans.

1.A Background on the South Coastal Harbor Management Plan

Located at the proverbial elbow of Cape Cod, the Town of Chatham is surrounded by coastal waters on three sides. With an active commercial fishing and shellfishing fleet, extensively developed shoreline, and miles of beaches and popular waterways, the Town is acutely aware of the commercial, recreational and environmental significance of its coastal and estuarine resources as well as the vulnerabilities and management challenge they pose.

Chatham is among the few towns on Cape Cod to have a current management plan for all of its locally managed coastal waters. In 1992 the Town adopted the Stage Harbor Management Plan, becoming the first community in the state to develop a harbor plan pursuant to 301 CMR 23.03, the state regulations governing local harbor management plans. In 1998 Chatham, along with Orleans and Harwich, adopted the Pleasant Bay Resource Management Plan for its north-facing waters of Pleasant Bay and Chatham Harbor. In 2005, the Town adopted the South Coastal Harbor Management Plan (SCHP). Its purpose was to update the provisions of the prior Stage Harbor plan and extend harbor planning to Chatham's other south coastal waters of Outermost Harbor, the Southway and the Nantucket Sound shoreline west to its border with Harwich.

Chatham's South Coastal planning area contains a wide variety of estuarine and open ocean locations that are heavily used by residents and visitors year-round. The intensity and diversity of activities and demands on resources in the planning area, which include shellfishing, finfishing, boating, sailing, kayaking, nature viewing, and beach going, combined with the environmental sensitivities of the areas, set the stage for potential management conflicts. The updated and geographically expanded plan set forth a vision for managing Chatham's active and dynamic south coastal waterways. This vision sought to achieve balance among the various commercial and recreational uses of the harbor systems and the quality and quantity of the natural resources they contain. Underlying this vision are the following management objectives:

- Maintaining the navigability of the harbor waterways;
- Protecting the viability of the commercial fishing and shellfishing industries;
- Maintaining a mix of recreational uses in the harbor areas;
- Protecting water quality, and the quality and quantity of shellfish, finfish and wildlife species and habitat;
- Maintaining and enhancing adequate public access to the harbor shoreline and waterways; and

- Preserving the character and scenic quality of the harbor areas.

The SCHP was developed through an extensive public participation process and with a recognition that in order to achieve the desired balance between various harbor uses and the long-term environmental health of the natural marine systems, on-going management activities would need to continue to be open and inclusive of diverse community interests.

Accordingly, the local and state approvals of the SCHP called upon the Board of Selectmen to name a South Coastal Harbor Plan Committee (SCHPC) to work with Town staff to coordinate management activities and have overall responsibility for implementing the recommended actions in the SCHP. The current committee membership, appointed by the Chatham Board of Selectmen, is comprised of nine Chatham residents with diverse water-related backgrounds: commercial and recreational fishing, shellfishing and boating, representatives of Chatham marinas, and members of water-related Town Committees. Backgrounds of SCHPC members are presented in Appendix A.

1.B Recommended Actions in the SCHP Regarding Docks

The SCHP encompasses a thorough review of environmental and physical resource conditions and human use characteristics throughout the South Coastal planning area, identification of management issues, evaluation of management responses and recommendations for action. The SCHP is comprehensive in its consideration of management topics. The section on harbor facilities and activities encompasses: town landings and access points, commercial and recreational fishing and shellfishing, commercial and recreational boating, moorings, piers, erosion control structures, and dredging. The treatment of natural and cultural resources includes wetlands, eelgrass, water quality, shellfish resources, land use and visual character.

The management of private docks and piers is one topic that tends to bridge a number of integrated management issues, from navigation and shellfishing, to public access and resource protection. On the one hand, private docks and piers are an important element of the marine infrastructure. When properly located and constructed, they can provide safe access to waterways without undue impacts from the structure itself. On the other hand, the SCHP notes that docks and piers have the potential to cause negative environmental impacts, alter habitat, and reduce public access for other coastal activities.

Environmental impacts from docks cited in the SCHP include:

- Blocking wind and tidal flow, which can restrict water circulation;
- Shading, which can block sunlight needed for aquatic plants;
- Displacing bottom sediments with piles, thereby altering habitat;

- Disturbing marine plants and animals through the process of installing piles on a seasonal basis; and
- Chemical leaching from materials treated with anti-fouling agents such as chromated-copper-arsenate (CCA).

In addition to these direct environmental impacts from the structure itself, docks generate impacts from the use of motorized vessels, which they support. These additional impacts can include prop dredging, erosion from waking, and air and water emissions from marine engines.

The SCHP also notes that private docks have the effect of privatizing an area of public tideland and that the area removed from public use can be considerably larger than the dimension of the structure. The location of structures can reduce access to areas for shellfishing, reduce areas available for shellfish seeding, and encroach on mooring areas and navigable waters.

The direct and indirect impacts of private piers and docks need to be considered in terms of the possible cumulative impacts on the system, according to the SCHP. In light of these potential management impacts from private docks and piers, the plan recommended the development of permitting guidelines for private docks and piers to be based on an assessment of primary and secondary impacts on natural resources, public access, water quality, and navigation. The assessment would determine in which areas along the shoreline the addition of new private piers could be considered consistent with the SCHP, and in which areas along the shoreline would the addition of new private piers be considered inconsistent with the plan.

The need to manage the potential impacts from the addition of new private docks and piers is reflected in other recommended actions found in the SCHP. In support of commercial and recreational shellfishing, the SCHP recommends that the Town require applicants for public or private waterways projects such as dredging, mooring fields, piers and docks, erosion control structures, and catwalks to provide documented assessment of impacts on shellfish or shellfish habitat and access to shellfish beds. The SCHP states that “preservation of shellfish, shellfish habitat and public access to shellfish habitat should be given special consideration, in balance with broader public access needs.”

On-going transfer and redevelopment of shorefront property would continue to fuel demand for private piers. Management recommendations would need to be aimed at this potential for new piers, allowing that existing licensed piers would remain unaffected by future management actions.

1.C Policy Guidance from Other Chatham Plans

The assessment and treatment of private docks and piers in the SCHP is consistent with the tone and content of management recommendations found in other of the Town’s management plans. Together, these planning documents provide clear direction for

carefully assessing and managing the impacts of private docks and piers on natural resources and public access.

Pleasant Bay Resource Management Plan (1998, Updated in 2003 and 2008)

The Pleasant Bay Resource Management Plan is a comprehensive resource management plan for the Pleasant Bay Area of Critical Environmental Concern (ACEC) and the Bay's watershed. This planning area encompasses the remainder of Chatham's shoreline not within the South Coastal jurisdiction: Inner Chatham Harbor, Ministers Point to Ryders Cove, Crows Pond, Bassing Harbor, and Eastward Point along to Jackknife Cove and the Chatham-Harwich town border at Muddy Creek. The Pleasant Bay management plan is administered by the Pleasant Bay Alliance, an inter-municipal organization of the Towns of Chatham, Orleans, Harwich and Brewster.

Citing similar concerns about the environmental and access impacts associated with docks and piers, the initial Pleasant Bay management plan included a resource assessment of docks and piers based on nine biological, human use and physical characteristics of the shoreline. The assessment identified areas where new docks and piers should be prohibited, and identified areas where new docks or piers may be permitted based on the ability to meet enhanced performance standards. The plan recommended that all structures be prohibited until such time as each town adopted enhanced performance standards for permitting docks and piers.

To implement the plan's recommendation for enhanced performance standards, the Alliance issued *Guidelines and Performance Standards for Docks and Piers in Pleasant Bay* (1999). The guidelines identified areas for on-going prohibition of new private piers, including all of Chatham's Pleasant Bay shoreline. The guidelines also set forth enhanced performance standards for areas where the prohibition was not recommended to be continued. The guidelines were accepted by the Towns and the state and implemented through an amendment to the zoning bylaw in Chatham, and in the applicable local regulations in Harwich and Orleans.

Town of Chatham, Comprehensive Plan (2003) and Open Space and Recreation Plan (draft, 2005)

The *Town of Chatham Comprehensive Plan* also seeks to balance the benefits of increased access to resources with the potential impacts to resources that access may cause. The plan introduces the concept of carrying capacity to convey that natural resource systems cannot continue to absorb or support ever-increasing development or utilization, and will begin to degrade when development pressure or utilization exceeds that system's ability to regenerate. Recognizing the existence of this tipping point, the plan states that:

“To be consistent with the carrying capacity of the Town's natural resources, all projects involving new or expanded access to, and increased or more intensive use of its natural resources [which include coastal resources] shall include an assessment of the

resulting impact on those resources and include steps to minimize any adverse impact that might result before being approved.”

The plan also recommends that:

- Future growth and development projects be encouraged to locate away from sensitive natural resource areas to maintain and enhance wildlife habitat; and
- Additional regulations and bylaw revisions be used to improve the protection and preservation of land areas adjacent to coastal and inland waters.

Specifically relevant to the potential for new private piers in the South Coastal planning area:

- Policies be developed for structures in areas not presently covered in a harbor management plan; and
- Findings of consistency with these policies be required prior to the issuance of any special permit or state permit for such structures.

The public review draft of the *Town of Chatham, Open Space and Recreation Plan* reiterates a concern about the encroachment of private shoreline development on natural resources and public access. “Continued construction in coastal areas has gradually reduced the public’s access to resources and has led to an increasing need to try to control those resources. The filling of wetlands, construction in dunes and on bluffs, construction of docks, paving of back dunes for roads and parking, and the addition of groins, jetties and revetments to manage coastal processes, have incrementally altered the coastline and reduced public access in favor of private ownership.”

2. Purposes of the Private Pier and Dock Assessment

The recommendation to undertake an assessment of direct and indirect impacts of private piers and docks throughout the South Coastal area was made in the context of a regulatory process that involves both local and state permitting review and decision making. This section explains the local and state regulatory framework, and how the assessment was designed to meet purposes consistent with and in support of that regulatory framework.

2.A Existing Local Regulatory Framework

In the Town of Chatham, private piers are regulated through zoning and conservation regulations. As a zoning matter, private piers are a special permitted use within the Coastal Conservancy overlay district. Section IV.A.6(c) of the zoning bylaw sets forth the general requirements of a special permit for a private dock. Specifically the bylaw states that:

The Zoning Board of Appeals may authorize a Special Permit for the construction

of a private pier if it is found that the proposed structure will not be detrimental to safety on waterways, preservation of water quality, ease of access to and on waterways, equity of interest in utilizing waterways, the protection of the natural environment, and the protection of the aesthetic values of the Town. The Zoning Board of Appeals shall consider, in assessing the potential impact of a proposed pier or pier extension, the distance of the pier and its approach area from designated or customary navigation channels, from designated or customary mooring areas, from areas traditionally used for sailing, and from public swimming areas. The Zoning Board shall also consider whether the proposed pier or pier extension is consistent with locally adopted plans, including the comprehensive plan, any applicable harbor plan, and any applicable resource management plan.

Piers are within the area of wetlands jurisdiction and require the issuance of an Order of Conditions under Chatham's Wetlands Protection Bylaw (Chapter 272) and Wetlands Protection Regulations administered by the Conservation Commission. The regulations set forth the performance standards for obtaining an Order of Conditions for a pier in a wetland resource area. The regulations are designed to protect the wetland resource interests outlined in the wetland bylaw, which include water quality, erosion control, fisheries, shellfisheries, marshlands, eelgrass, marine and shoreline ecology and passive recreation.

In the course of their reviews, both the Zoning Board of Appeals and the Conservation Commission seek input from the Harbormaster, Shellfish Constable and other town resource managers. They may also seek input from the group responsible for administering the applicable harbor or resource management plan for the area. In the South Coastal planning area they look to the SCHPC for comments as to whether the application is consistent with the goals and objectives of the SCHP.

2.B Chapter 91 and Required Consistency Findings

In addition to the local zoning and wetlands regulatory requirements noted above, projects that extend seaward of mean low water must obtain a license under Massachusetts Waterways Regulations (310 CMR 9.00) known as a Chapter 91 license, which is issued by the Massachusetts Department of Environmental Protection (MassDEP). As a state-approved harbor management plan, the SCHP can include amplifications or substitutions for Chapter 91 licensing provisions that must be considered by MassDEP in its review of a Chapter 91 license application. In other words, MassDEP will look to the SCHPC for a finding of consistency before it issues a Chapter 91 license in the harbor planning area.

In its review of applications for private piers, the SCHPC considers impacts to shellfishing habitat, encroachment on the public tidelands and waterways, and dangers to navigation. Reviews based on these factors have resulted in limited findings of consistency.

This regulatory framework has been in effect since the adoption of the Harbor Management Plan for Stage Harbor in 1992, and was expanded to include the Southway and Nantucket Sound in 2005. During this time, ten applications have come forward for private piers in the study area. Of these, four obtained approvals from the Conservation Commission and Zoning Board of Appeals. Five applications were denied by the Conservation Commission, the ZBA or both, and one was withdrawn in light of opposition based on impacts to shellfish and navigation. In all cases the SCHPC provided the local boards and Chapter 91 reviewers with comment on applications and in some instances formal consistency findings were provided.

2.C Purposes of the Assessment

The regulatory framework described above allows for case-by-case assessment of impacts associated with a private pier. The harbor planning process encourages each application to be viewed in terms of its consistency with a broader plan. The approved SCHP calls for a system-wide assessment of the shoreline focusing on the public access, navigation and natural resource values addressed by the plan. In calling for this assessment, the SCHP recognizes that a determination of consistency needs to be based on the full range of harbor planning objectives and on a system-wide basis. The plan also recognizes the benefits of clear and predictable guidelines for the SCHPC to conduct its consistency reviews, as well as for private property owners to reasonably assess the potential for meeting permitting and consistency criteria necessary to obtain approvals for a private pier.

In designing and undertaking the assessment, the SCHPC sought to serve the following purposes.

Respond to Recommendations in the SCHP. First and foremost, the assessment was designed to fully respond to the recommendation in the SCHP to “evaluate primary and secondary impacts on natural resources, public access, water quality and navigation,” and to determine where along the shoreline private piers may be found in compliance with the SCHP and areas where piers are not in compliance with the plan due to negative impacts on the harbor planning values.

Achieve consistency between the SCHP and local and state regulations. As noted above, the existing local and state regulatory framework relies on an assessment of consistency with the SCHP. Determinations on applications undergoing zoning, conservation and Chapter 91 waterways reviews should reflect the community objectives for harbor planning area. The assessment was designed to provide a consistency basis for assessing applications based on the community’s harbor planning objectives.

Provide clear guidance for the SCHPC in its consistency review. Because of their weight in the local and state regulatory review process, consistency findings made by the SCHPC should be guided by a comprehensive and system-wide

assessment of potential resource impacts. The assessment was designed to provide this framework for consistency findings.

Provide a clear and fair permitting environment for prospective applicants.

The process of seeking permits through local boards and commissions and state agencies can be lengthy, involved and costly for both the applicant and the review body. It is in the interests of the private property owner and the public review bodies to have a way to form a reasonable assessment of the potential for meeting performance standards required for permitting success, prior to initiating permitting.

2.D Additional Considerations about Public Access and Private Piers and Docks

The Town of Chatham's commitment to providing public access to the waterways, and the public trust doctrine inherent in state regulations which protects the public's rights to access Commonwealth tidelands are two additional considerations built into the Private Pier and Dock Assessment.

Facilitating ample and safe access to Chatham's waterways is a priority objective consistently referred to in the SCHP, Pleasant Bay Resource Management Plan, Chatham Comprehensive Plan, and Draft Chatham Open Space and Recreation Plan.

The Town's commitment to public access for a variety of commercial and recreational users is demonstrated by the Town's maintenance and investment in the twenty-eight public coastal access points located throughout the South Coastal planning area, which include landings, mooring access, beaches, boat ramps and offloading locations for shellfishing and finfishing. The Town has consistently sought to make necessary repairs and renovations as well as plan for future upgrades to its water-dependent public access infrastructure to improve the efficiencies and effectiveness of these facilities. Through careful planning and management of public access points the Town maintains a delicate balance between the increasing demand for access for a wide variety of activities, with the need to protect against congestion, encroachment on natural resources and conflicts among user groups.

The Town's commitment to public access provides a crucial counterweight to its careful management of private access ways such as piers. As private piers and docks have been placed during recent years, each has undergone review regarding potential impacts on the community's harbor management objectives, and the many commercial and recreational activities competing for space in the South Coastal area.

Viewing private piers and docks as a private use of a public resource provides an important conceptual framework for regulations to limit any impact a pier or dock may have on public access or on wetland resources. The premise of Commonwealth regulations is to protect the public interests that wetland resources provide; to maintain

public access to tidelands and protect the public's colonial rights to fish, fowl and navigate below the historic Mean High Water line. For instance, a Chapter 91 license confers a right to use the public tidelands for private purposes under specific terms that are intended to limit any interference with public access to tidelands and waterways.

In areas such as the South Coastal shoreline, where demand for access to the waterways is strong, care is needed to ensure that private piers either individually or in the aggregate, do not unduly limit public access for fishing or navigation. Construction of private piers simply as a means of enhancing property values is antithetical to the purposes of Chapter 91 and the SCHP. Chatham is among a number of towns on Cape Cod that do not allow a private pier unless it is an accessory use to a principle structure such as a residence.

3. Methodology

3.A Review of Alternative Approaches

Within the recommendation in the SCHP to undertake a pier and dock assessment, reference is made to a resource assessment of docks and piers undertaken for the Pleasant Bay Resource Management Plan. The Pleasant Bay assessment is noted as a useful model for the design of the SCHP assessment.

The Pleasant Bay assessment was undertaken as a basis for determining which areas of shoreline within that system may be suitable for new piers and docks, and which areas are not suitable for new piers and docks. Like the South Coastal Planning area, the Pleasant Bay system contains a long and varied shoreline that encompasses quiescent, enclosed salt ponds as well as open waters, and supports a variety of activities (moorings, boating, swimming, shellfishing) and resource conditions (shellfish, salt marsh, eelgrass.)

Ultimately, the diverse South Coastal shoreline was divided into twenty-six segments based on natural physical characteristics. Each segment of shoreline was assessed based on nine criteria that encompassed natural resource characteristics, human use characteristics, and physical characteristics.

A numerical rating system was developed for applying each of the criteria. The numeric ratings were combined to yield a total rating for each shoreline segment. Segments with a score above a cut-off were deemed too resource sensitive to support the addition of new piers and docks. Segments with a score below the cut-off were deemed potentially suitable to support the addition of new piers. The assessment provided the basis for the recommendation in the initial Pleasant Bay Resource Management Plan to recommend a prohibition on new piers and docks in the areas deemed resource sensitive, and to develop enhanced performance standards for piers and docks in the other areas.

The Pleasant Bay assessment was followed by the development of *Guidelines and Performance Standards for Docks and Piers in Pleasant Bay*. The Guidelines codified

the recommendation to prohibit new docks in areas deemed by the assessment to be resource sensitive, and provided detailed performance standards and design criteria to apply in other areas. The guidelines were relied upon by the Towns of Chatham, Harwich and Orleans to modify their applicable regulations for treatment of piers in Pleasant Bay waters.

Other towns have used an assessment of resource conditions to determine the suitability of shoreline areas for new piers, or to determine the applicable performance standards. The Town of Barnstable undertook a *Significant Shellfish Resource and Habitat Mapping Project*, which assigned a numeric value to the significance of shellfish habitat along the shoreline of the Three Bays and the Centerville River systems. Shoreline areas with a rating of six and above are considered high value shellfish areas and are subject to a more stringent minimum water depth requirement of thirty inches. The Town also enacted two overlays to prohibit new piers in defined areas of these waterways. The Dock and Pier Overlay District is a permanent prohibition. The Temporary Recreational Shellfish and Shellfish Relay Area prohibits new piers in designated shellfish areas, yet this overlay is under assessment and may be altered or eliminated.

The Town of Marion has proposed, but not yet adopted, a *Watersheet Zoning Dock and Pier Bylaw*. The bylaw applies to waters seaward of Mean Low Water, and proposed designation of no pier construction zones in certain areas based on a rating assessment of shellfish resources and habitat. The bylaw also establishes detailed design criteria for piers in areas where they are allowed.

The review of alternative approaches demonstrates that other communities have successfully used a system of rating shoreline areas based on resource criteria to determine suitability for new piers and docks. These assessments have been used as the basis for establishing areas of prohibition and for development of enhanced performance standards. The prohibitions and performance standards have been applied through a combination of zoning and conservation (wetlands protection) regulations. Generally speaking, zoning is an effective tool for enforcing areas of prohibition and dimensional requirements, while conservation regulations are an effective tool for applying resource-based performance standards.

The SCHP pier and dock assessment was modeled on the Pleasant Bay model. This was due to the similarities between the two resource areas, and the local and state permitting environment, and because the community had a familiarity and level of comfort with the Pleasant Bay approach. The remainder of this section describes how the methodology was adapted to the SCHP area and specifically the:

- Selection of environmental, physical and human use characteristics and the rating system that was used to apply them;
- Identification of shoreline segments;
- Application of the criteria to the shoreline segments.

3.B Selection and Description of Environmental, Physical and Human Use Criteria

The SCHP private pier and dock assessment relied on a combination of eight environmental, physical and human use factors to characterize the potential impacts resulting from the installation or use of new piers or docks. Two of the eight factors had current and historic components for a total of ten evaluative criteria.

Environmental criteria describe the resource conditions within the area that could be adversely impacted by piers and docks. These criteria include: existing and historic shellfish, existing and historic eelgrass, and fringe marsh.

Human use criteria characterize the activities around the waterways that could be adversely affected by piers and docks. These criteria include: access to moorings, navigation access and recreational activity.

Physical criteria describe physical features of the area that have a bearing on the impacts of a pier or dock. The physical criterion are water depth, and whether the water body is opened or closed, which relates to an area's sensitivity to alterations in water circulation from a pier or dock.

The eight criteria were adapted from the Pleasant Bay assessment by the SCHPC with input from the Town of Chatham Coastal Resources Director, Health and Environment Department Director, Shellfish Constable, and Conservation Agent. These individuals also worked with the SCHPC to develop the rating system for each criterion. Each of the eight criteria are described in more detail below, along with an explanation of the rating system used.

1. Enclosed/Restricted Water Bodies. Bodies of water that are semi-enclosed are more susceptible to poor flushing. Reduced flushing can contribute to nutrient loading of the water body from upland sources. Enclosed water bodies also generally have more fine-grained sediments that may be re-suspended, causing increased turbidity and additional nutrient loads from the nutrients contained in the sediments. Nutrient loading above certain parameters can lead to significant water quality degradation, which in turn can significantly impact indigenous marine resources. Chatham is working on major improvements to its wastewater system with the goal of reducing nutrient input to the marine system. Docks, piers and other water-based structures may cause increased friction and/or constriction within the waterway further reducing flushing.

In addition to water quality concerns, enclosed water bodies can also be important shellfish habitat since shellfish often set in quiescent waters of semi-enclosed areas. The protected nature of enclosed water bodies also make them particularly viable as mooring areas and there is often heavy recreational activity.

Impact Rating

The extent to which the water body is enclosed or naturally restricted.

3= High (significantly enclosed or naturally constricted)

2= Medium

1= Low

0= Open water, not enclosed

2. Existing and Historic Shellfish Habitat. Protection and preservation of shellfish resources is one of the priority goals for resource protection identified within the SCHP. Chatham has one of the foremost natural shellfisheries in Massachusetts. Chatham also has one of the most effective municipal shellfish propagation programs in the Commonwealth and it expends considerable time and money toward enhancing its shellfish resources through these propagation efforts. Furthermore, the Town is in the process of implementing substantial improvements to the wastewater and nutrient loading issues which have negatively impacted the water quality of surrounding embayments and subsequently, the town's shellfish resources. Areas that historically were known to have had viable shellfish habitat may have the potential to again be productive with improvements to water quality or other environmental conditions and thus should be protected.

This criterion refers to shellfish habitat as determined by the current shellfish constable, commercial and recreational fishermen, and historical records. It refers to the five most common and most highly regulated species of clams, quahogs, scallops, mussels, and oysters. Habitat is defined as areas that have the characteristics including but not limited to sediment type, and grain size, circulation patterns, hydrologic regime, water chemistry, plant communities and food supply necessary to support the above species. For the purposes of this analysis, the presence of shellfish habitat was considered along the ribbon of land approximately 100 feet from the edge of fringe marsh or measured from the MHW if no fringe marsh is present. Shellfish habitat is one of the principal biological criteria for private pier evaluation since the installation, physical presence of pilings or other structures, operation of boats to and from the docks, and chemical leaching in the water can all negatively affect shellfish abundance. Private piers and docks can also severely limit access to the habitat for harvesting shellfish by recreational and commercial shellfishermen.

Impact Rating

Habitat (either existing or historical) within 100 feet of the seaward edge of fringe marsh or from Mean High Water (MHW) if no fringe marsh is present. (For traditional species: soft shell clams, quahogs, mussels, scallops, oysters)

Existing Shellfish Habitat

4= Extremely important/critical shellfish habitat and/or resources

3= High

2= Medium

1= Low

0= No evidence of supporting or being able to support shellfish

Historical Shellfish Habitat

1= yes; historical shellfish habitat

0= no; no historical evidence of supporting shellfish

3. Fringe Marsh. Fringe marsh systems are widely considered as some of the most productive habitat on earth and they play a key role in the marine ecosystem. Docks and piers can cause impacts to the marsh through shading, physical disturbance during seasonal removal and installation, and displacement of substrate by piles or other structural attributes. This criterion refers to the presence or absence of fringe salt marsh and the estimated width of the marsh perpendicular to the shoreline. The width of marsh determines the amount of man-made structure that would have to be constructed in order to traverse over the marsh.

Impact Rating

The presence and width of fringe marsh that would have to be traversed by a structure.

3= High (Heavy fringe marsh in excess of 10 feet)

2= Medium (6-10 feet of fringe marsh)

1= Low (1-5 feet of fringe marsh)

0= None

4. Existing and Historic Eelgrass. Similar to fringe marsh, eelgrass is acknowledged as being extremely important to the marine ecosystem. Eelgrass beds are highly productive communities that support a diverse assemblage of animals and have been long recognized as important in coastal food webs. Eelgrass beds act as a refuge, feeding ground, and habitat to many marine biologic communities and the loss of eelgrass can result in profound shifts in fauna, including commercial and recreational species. Eelgrass coverage has diminished appreciably throughout the local and regional waterbodies and regulatory restrictions are becoming increasingly strict in order to preserve remaining beds of eelgrass. Therefore, efforts should be made to preserve both existing and historical habitat, since the evidence of historical eelgrass habitat is indicative of the potential for reestablishment of future eelgrass if environmental conditions improve.

This criterion refers to the presence or absence of eelgrass and its relative abundance as shown on state maps and personal knowledge by shellfish constables, harbor masters, fishermen and biologists.

Impact Rating

The presence or absence and relative abundance of eelgrass within 150 feet of the seaward edge of fringe marsh or from MHW if no fringe marsh is present.

Existing Eelgrass:

3= High (significant density of eelgrass)

- 2= Medium
- 1= Low
- 0= No evidence of eelgrass
- Historical Eelgrass:
- 1= yes
- 0= no

5. Water Depth. This refers to the average depth of water at 100 feet from MHW. Water depth is important because of sediment re-suspension issues below the propeller of a vessel motor. “Prop scour” can also dislodge/kill juvenile shellfish during the setting season if there is not enough water above the sediment when the engine is operating. Motor boat operation will commonly occur at all stages of the tide which can be detrimental to shellfish and eelgrass when boats access or leave from a dock with shallow water conditions at low tides. Generally, 4 feet water depth at low tide is judged sufficient depth to avoid the majority of prop scour for the typical vessels in Chatham waters.

Impact Rating

- Water depth at Mean Low Water (MLW) at a point of 100 feet from MHW.
- 3= Shallow (< 2.5 ft mlw)
- 2= 2.5-4 ft MLW
- 1= 4-6 ft MLW
- 0= >6 ft MLW

6. Moorings. Public waterways and harbors are extremely important for the mooring of vessels by the public. The number of moorings in a particular area can indicate the amount of boating activity and congestion in an area. This criterion looks at the existence of public moorings and mooring fields in close proximity to the shore. Private dock and other structures have the potential to displace existing or future public moorings, as well as to limit the ability to relocate moorings at the discretion of the Harbormaster. Docks also can limit the ability to maneuver within a mooring area in order to safely access a particular mooring.

Impact Rating

- Presence of public mooring areas designated by a harbormaster within 150 feet of the seaward edge of fringe marsh or from MHW if no fringe marsh is present.
- 3= High density of moorings < 150 feet
- 2= Medium density within 150 feet
- 1= Low density within 150 feet
- 0= No moorings within 150 feet

7. Navigational Access. This criterion refers to the presence or absence of a recognized navigational channel or the traditional use of the area for other open navigation in the vicinity of the shoreline. Docks adjacent to marked navigation channels can impact the ability of vessels to safely navigate through these channels while docks protruding into naturally narrow rivers and channels from each side can unduly limit the area for

navigation. Many water bodies do not have formally marked channels but still provide open navigation along its shores in order to pass through an area or to access a particular location. Public navigation access should be preserved for both powered and sail vessels and not be unduly hindered by the presence of private structures in the waterway.

Impact Rating

The presence or absence of marked or unmarked navigational access within the proximity of the MHW mark.

3= Marked channel within 100 feet

2= Marked channel within 150 feet

1= Open unmarked traditional use navigation within 150 feet

0= Limited to no channel or navigation access within 150 feet

8. Recreational Activity. This criterion refers to the historical use of an area for, among others, sailing, kayaking, boating, fishing, fly fishing, shellfishing, swimming and other recreational activities. Water bodies with numerous moorings leading to rivers that lead to open water are generally very busy with recreational activity. Open water is generally less busy or restricted for these activities because of its open nature. Proximity of town landings, public beaches and other public water access points can also often add considerable congestion in the vicinity of these facilities. The popularity of hand paddled watercraft such as kayaks, rowboats and canoes should also be considered since these watercraft are often relegated to the fringes of the primary navigation channels and private structures may limit their ability to pass through areas unhindered.

Impact Rating

Intensity of boating, fishing, and other recreational activities such that the addition of structures could impede access or compromise safety or conduct of the recreational activity.

3= High degree of recreational activity in vicinity

2= Medium

1= Low

0= Little to no recreational activity in the zone

3.C Selection and Description of Shoreline Segments

As noted above, the SCHP area consists of a variety of shoreline types, from the inside of salt ponds, to narrow tidal rivers to open waters. These areas vary in many respects, from the resources they contain, the amount of nearby development, and the nature and intensity of shoreline activities.

Given the large expanse of shoreline and intermittent differences in characteristics, it was necessary to break the shoreline into segments in order to evenly apply the criteria. The SCHP with input from the Town officials noted above, divided the shoreline into twenty-six segments for the purposes of the assessment. The

demarcation of segments was based largely on physical characteristics such as a defined point or entrance to a subembayment, as well as a common understanding of dominant use or feature.

The shoreline segments are shown on Figure 1.

With the selection of criteria and rating scale, and the identification of shoreline segments, it was possible to apply the criteria to each segment and develop an understanding of each area's suitability for new piers.

3.D Application of Assessment Criteria to Shoreline Segments

The assessment team of the SCHPC and Town staff met monthly over more than two years to develop the criteria, rating system and shoreline segments described above. The SCHPC and staff spent a considerable amount of that time applying the criteria and rating scale to each shoreline segment.

The assessment team relied heavily on local current and historical knowledge of the study area. The team also carefully reviewed available resources including aerial photography, and resource maps from the Town to assess the criteria for each shoreline segment. These assessment resources included:

- Aerial photography from the Town's annual series of vertical photography;
- Eelgrass mapping from the MassDEP eelgrass mapping project (MassGIS);
- Wetlands maps from the Town and from MassGIS;
- Shellfish resource maps from the approved SCHP.

As a first step the review team assessed physical characteristics such as water depth and the size and shape of the adjoining waterway. Next, the group assessed each shoreline segment in terms of the environmental criteria, including eelgrass, shellfish habitat, and fringe marsh. Thirdly, the assessment team evaluated each segment in terms of the human use criteria.

Throughout this process the assessment team compared ratings among areas among similar and dissimilar shoreline segments. They also compared ratings with those of areas with similar characteristics in the Pleasant Bay assessment. These comparisons within and outside of the SCHP area were intended to ensure that criteria were being applied consistently across the system and throughout the Town.

A summary of the criteria ratings for each shoreline segment are shown in Table 1 (unsorted, listing segments as they run east to west) and Table 2 (sorted by total score.) Below is a brief narrative of key observations for each of the segments is found below.

1. South Beach/Southway

This segment has relatively open water. It is a prime shellfish habitat currently and historically. It contains moderate fringe marsh and some eelgrass, but less

than was present historically. Water depth is a moderate 2.5—4 feet at a point 100 feet from MHW. Few, if any, moorings exist in the area. There is a buoy system to aid navigation, and the area is actively used for kayaking, canoeing, motor boating and beach activities.

2. Outermost Harbor

This segment is enclosed. It is a good shellfish habitat with substantial fringe marsh but no eelgrass. Water depth is shallow. There are significant moorings plus access from one marina with ramp. The area is buoyed and navigable. There is both commercial and recreational activity.

3. Quitnessett

This segment has relatively open water. There is good shellfishing here. There is no fringe marsh, but there is some eelgrass. The area has adequate water depth. There are a few moorings, but navigation is restricted. The area abuts swamp and marsh lands. There is recreational activity.

4. Morris Island - East

This segment has relatively open water. There is good shellfish habitat. There is no fringe marsh, but there is modest eelgrass. There are few moorings and buoys to guide navigation. Currents are strong, resulting in beach erosion. There is recreational activity., including shuttle service to and from South Beach.

5. Morris Island Cut

This is an open waterway. Shellfish habitat is moderate. There is no fringe marsh or eelgrass. Water depth is shallow. There are no moorings and many buoys to aid navigation. There is much beach activity, and several areas are affected by beach erosion.

6. Nantucket Sound Beaches

This area is open water. This is a good shellfish area, but there is no fringe marsh or eelgrass at present. Water depth is shallow water. There are few moorings. There is much beach activity and several areas are affected by beach erosion.

7. Crescent Beach

This segment has relatively open water. This is a good shellfish habitat with some fringe marsh and good eelgrass. Shoal water depth. There are few, if any, moorings and little restriction to navigation other than water depth. There is active recreational use through the buoy system (Morris Island Channel) and the beach areas. The area abuts publicly-owned land.

8. Island Flat

This area is mostly open water. This is a major shellfish area with a good growth of fringe marsh and eelgrass. Water depth is shallow. There are no moorings and little restriction to navigation other than the Town of Chatham shellfish growing

area marked by buoys. This is an active boating area with several guest moorings managed by the Harbormaster.

9. Stage Island

This area is mostly open water. There is good shellfish habitat. There is moderate fringe marsh and some eelgrass. Water depth is moderate for piers and docks. This is one of the premier mooring areas in Town, and there are many existing docks limiting navigation. There is much recreational activity from the Stage Harbor Point public access.

10. Morris Island Dike

This area is mostly open water. This is a major shellfish area. There is good fringe marsh and eelgrass. Water depth is shallow. There is a large number of moorings, but there is considerable boating and fly fishing in this sector. The area is mostly public land including Morris Island Dike access with only a few private properties.

11. Mitchell River

This is a restricted waterway and a major shellfishing area. There is good fringe marsh and eelgrass growth, and questionable water depth for docks. There is a moderate number of moorings in a restricted and buoyed navigational area. This is an active boating area with access from one marina and also Bridge Street West landing both with ramp.

12. Mill Pond

This area is moderately enclosed. There is a major shellfishery, popular with longrakers. There is good fringe marsh and eelgrass. Legal water depth for the many existing piers and docks. Many moorings and existing docks which restrict navigation. Access from Eliphamets Town Landing and the adjacent Marina plus Water Street West make this a very active boating area.

13. Little Mill Pond

This area is an enclosed estuary. There is a major shellfishery for scratchers and longrakers. There is some fringe marsh and eelgrass. Many moorings and private docks are located on the western shoreline. Water depth is shallow on the eastern shore. The Town pier and dock gets very active recreational use.

14. Champlain Flat

This is a marginally restricted waterway. There is some fringe marsh and eelgrass present. This is an excellent shellfishery. Water depth is shallow. There are some moorings and restriction to navigation, but recreational use is active.

15. Old Mill Boatyard to Port Fortune

This is a restricted waterway with some shellfishing. There is no fringe marsh but the area has eelgrass beds. Water depth is shallow to marginal. The fish offloading piers, Yacht Club, Old Mill Boat Yard ramp, pier and dock plus many

moorings, buoys pose limitations to navigation. This segment sees a very high level of commercial and recreational activity.

16. Port Fortune to Sears Point

This area has moderately open water and good shellfish habitat. There is some fringe marsh and rather significant eelgrass present. Water depth is too shallow for docks. There are many moorings. Port Fortune landing supports commercial users, and Battlefield Town Landing supports much recreational use.

17. Outer Oyster River – North Side

This is a somewhat restricted and buoyed waterway. This is a good shellfishing area, with modest fringe marsh and some eelgrass. Water depth is too shallow for docks. A number of moorings provide limitations to navigation in addition to buoys for guidance. Commercial and recreational use is very heavy as boaters exit the inner Oyster River and Oyster Pond waters. Sears Road Town Landing is an active launch area. The area abuts conservation land.

18. Outer Oyster River – South Side

This is a shallow, restricted waterway. The shellfishery is good, with good fringe marsh and some eelgrass. Water depth is insufficient for docks. Some moorings and channel buoys provide limitations to navigation. There is heavy recreational use. The area abuts conservation land.

19. Inner Oyster River

This is an extremely restricted waterway. There is good shellfishing, fringe marsh and eelgrass. Water depth is limited. There are many moorings and a high density of existing piers and docks, including Barn Hill town landing with pier, dock and ramp (commercial and recreational), plus two marinas. Navigational access is very restricted through this major boating area.

20. Outer Oyster Pond and Stetson Cove

This is a moderately enclosed waterway, and a moderate shellfishing area. There is good fringe marsh, but no eelgrass. Water depth is shallow with a marshy shore. There is an aquaculture grant on North side. There is some recreational use from marinas and Oyster River Hills Boat Basin.

21. Inner Oyster Pond

This is a large enclosed estuary. The area is a major shellfishing area for scratchers and longrakers. There is good fringe marsh, but no eelgrass. Water depth is moderate. There are many moorings and existing piers and docks. This is a major recreational area including Town of Chatham public guarded swimming beaches. This also is the sole area in the Stage Harbor Complex where full-speed boating for tubing and waterskiing is allowed. Recreational activity can launch from Oyster Pond Furlong town landing.

22. Buck’s Creek and Cockle Cove Creek

This is an enclosed waterway with some shellfishing. There is good fringe marsh, but no current or historic eelgrass. Water depth is shallow. There are no moorings or restrictions to navigation and recreational use is moderate.

23. Sulphur Springs

This is an enclosed area with good shellfishing and fringe marsh, but no eelgrass. There is some recreational use from Ridgevale Road South landing.

24. Mill Creek

This is an enclosed area with good shellfishing and fringe marsh, but no eelgrass. There is some recreational use from Mill Creek Landing.

25. Taylor’s Pond

This is an enclosed waterway. There is moderate shellfishing and good fringe marsh, but no eelgrass. Water depth is modest. There is a moderate number of moorings, and varied recreational activity from Taylor’s Pond Landing.

26. Red River

This is a narrow waterway, and a modest shellfishing area. There is good fringe marsh, but no eelgrass. Water depth is shallow water. There are no moorings and minimal recreational use.

The following tables show the criteria rankings for each shoreline segment listed geographically east to west (Table 1) and listed by total impact score for all criteria, highest to lowest (Table 2). Section 4 describes how the ranking data were interpreted and used as the basis for policy recommendations.

TABLE 1. ASSESSMENT OF BIOLOGICAL, PHYSICAL AND HUMAN USE IMPACTS OF PRIVATE DOCKS OR PIERS ALONG SOUTH COASTAL SHORE - LISTED GEOGRAPHICALLY EAST TO WEST

Seg	Area	Environmental Criteria						Access/Public Use				TOTAL
		Enclosed/ Restricted	Shellfish		Fringe Marsh	Eelgrass		Water Depth	Presense of Mooring	Navigation Access	Recreation Activity	
1	SOUTH BEACH/SOUTHWAY	0	4	1	2	1	1	2	0	1	3	15
2	OUTERMOST HARBOR	2	3	1	3	0	0	3	2	1	1	16
3	QUITNESSETT	0	2	1	0	1	1	0	1	2	1	9
4	MORRIS ISLAND-EAST	0	2	1	0	1	1	0	1	1	1	8
5	MORRIS ISLAND CUT	0	3	1	0	0	1	3	0	1	3	12
6	NANTUCKET SOUND BEACHES	0	3	1	0	0	1	3	1	0	3	12
7	CRESCENT BEACH	1	3	1	1	2	1	3	0	1	3	16
8	ISLAND FLAT	1	4	1	3	3	1	3	0	1	3	20
9	STAGE ISLAND	1	3	1	2	1	1	2	3	1	3	18
10	MORRIS ISLAND DIKE	1	4	1	3	2	1	3	2	1	3	21
11	MITCHELL RIVER	2	4	1	2	0	1	3	3	3	3	22
12	MILL POND	3	4	1	2	0	1	2	2	2	3	20
13	LITTLE MILL POND	3	4	1	2	0	1	2	2	1	3	19
14	CHAMPLAIN FLAT	1	4	1	2	1	1	3	0	0	3	16
15	OLD MILL BOAT YARD TO PRT FORTUN	2	2	1	0	1	1	3	1	2	3	16
16	PORT FORTUNE TO SEARS POINT	1	3	1	1	2	1	3	3	1	2	18
17	OUTER OYSTER RIVER, NO. SIDE	2	2	1	1	1	1	2	3	2	3	18
18	OUTER OYSTER RIVER, SO. SIDE	2	2	1	3	1	1	3	1	2	3	19
19	INNER OYSTER RIVER	2	2	1	1	0	1	2	3	3	3	18
20	OUTER OYSTER PD & STETSON COVE	2	2	1	3	0	1	3	1	0	1	14
21	INNER OYSTER POND	3	4	1	3	0	1	2	3	1	3	21
22	BUCK'S CREEK & COCKLE COVE CRK	3	2	1	3	0	0	3	0	0	2	14
23	SULPHUR SPRINGS	3	3	1	3	0	0	3	0	0	1	14
24	MILL CREEK	3	3	1	3	0	1	3	0	3	2	19
25	TAYLOR'S POND	3	2	1	3	0	1	2	2	1	2	17
26	RED RIVER	3	1	1	3	0	0	3	0	0	0	11

TABLE 2 ASSESSMENT OF BIOLOGICAL, PHYSICAL AND HUMAN USE IMPACTS OF PRIVATE DOCKS OR PIERS ALONG SOUTH COASTAL SHORE - LISTED BY TOTAL SCORE, HIGHEST TO LOWEST

SEGMENT	Area	Environmental Criteria						Access/Public Use				TOTAL
		Enclosed/	Shellfish		Fringe	Eelgrass		Water	Presence	Navigation	Recreation	
		Restricted	Current	Historical	Marsh	Current	Historical	Depth	of Mooring	Access	Activity	
11	MITCHELL RIVER	2	4	1	2	0	1	3	3	3	3	22
10	MORRIS ISLAND DIKE	1	4	1	3	2	1	3	2	1	3	21
21	INNER OYSTER POND	3	4	1	3	0	1	2	3	1	3	21
8	ISLAND FLAT	1	4	1	3	3	1	3	0	1	3	20
12	MILL POND	3	4	1	2	0	1	2	2	2	3	20
13	LITTLE MILL POND	3	4	1	2	0	1	2	2	1	3	19
18	OUTER OYSTER RIVER, SO. SIDE	2	2	1	3	1	1	3	1	2	3	19
24	MILL CREEK	3	3	1	3	0	1	3	0	3	2	19
9	STAGE ISLAND	1	3	1	2	1	1	2	3	1	3	18
16	PORT FORTUNE TO SEARS POINT	1	3	1	1	2	1	3	3	1	2	18
17	OUTER OYSTER RIVER, NO. SIDE	2	2	1	1	1	1	2	3	2	3	18
19	INNER OYSTER RIVER	2	2	1	1	0	1	2	3	3	3	18
25	TAYLOR'S POND	3	2	1	3	0	1	2	2	1	2	17
2	OUTERMOST HARBOR	2	3	1	3	0	0	3	2	1	1	16
7	CRESCENT BEACH	1	3	1	1	2	1	3	0	1	3	16
14	CHAMPLAIN FLAT	1	4	1	2	1	1	3	0	0	3	16
15	OLD MILL BOAT YD TO PRT FORTUNE	2	2	1	0	1	1	3	1	2	3	16
1	SOUTH BEACH/SOUTHWAY	0	4	1	2	1	1	2	0	1	3	15
20	OUTER OYSTER PD & STETSON COVE	2	2	1	3	0	1	3	1	0	1	14
22	BUCK'S CREEK & COCKLE COVE CRK	3	2	1	3	0	0	3	0	0	2	14
23	SULPHUR SPRINGS	3	3	1	3	0	0	3	0	0	1	14
5	MORRIS ISLAND CUT	0	3	1	0	0	1	3	0	1	3	12
6	NANTUCKET SOUND SHORELINE	0	3	1	0	0	1	3	1	0	3	12
26	RED RIVER	3	1	1	3	0	0	3	0	0	0	11
3	QUITNESSETT	0	2	1	0	1	1	0	1	2	1	9
4	MORRIS ISLAND-EAST	0	2	1	0	1	1	0	1	1	1	8

4. Results

4.A Assessment Rankings and Evaluation

As shown in Table 1, none of the segments obtained the maximum total score of 27 points in the ten criteria ratings indicating the highest level of sensitivity to impacts from new piers and docks. However, as described below, the ratings did reveal a significant level of sensitivity to the effects of new piers and docks in portions of the SCHP area, and particularly in the Stage Harbor Complex.

The score of 18 points provided a natural breaking point in the distribution of segments, with twelve of the segments achieving that score or higher, and fourteen scoring below 18 points. However, the assessment team considered not only the total score but also the number of sensitivity criteria that measured at the highest level for each segment. On average, the twelve segments scoring 18 or higher had the highest rating for more than half of the ten sensitivity criteria. This analysis confirmed the assessment team's initial conclusion that a score of 18 reflected a relatively high degree of sensitivity to the effects of new piers.

Further consideration was given to the geographic distribution of ratings (see Figure 2.) Nearly all of the segments within the Stage Harbor Complex scored 18 or above, indicating a high level of sensitivity to new piers and docks. The four segments in the Stage Harbor Complex with a score below 18 exhibit characteristics that may render them unable to meet the performance standards for piers and docks built into the existing Chatham regulations, and specifically the required depth of water.

The segments with scores below 18, deemed relatively less sensitive to the effects of new piers, were located predominantly in the South Coastal and Nantucket Sound portions of the SCHP area. These areas may or may not be able to meet performance criteria for new piers and docks contained in the existing regulations. For example, Morris Island (segment 4) and Quitnessett (segment 3) had the lowest scores of all segments but are areas subject to strong currents and beach erosion and also may not be suitable for a new pier.

In conclusion, the assessment revealed that nearly all segments within the Stage Harbor Complex consistently rated highly with respect to the sensitivity criteria. The few "less sensitive" segments in the Complex exhibited other characteristics that render the addition of new piers and docks in these areas problematic or unlikely. The assessment team therefore concluded that the entire Stage Harbor Complex is unsuitable for the addition of new private piers and docks.

4.B Additional Considerations Regarding New Private Piers and Docks in the Stage Harbor Complex

Massachusetts law conveys property rights to owners only to the mean low water mark in coastal areas. Waterways beyond the mean low water mark are public property, and, therefore, structures extending into such waterways encroach on public property. In Chatham many of these waterways are used for recreational purposes and for shellfishing. Structures built into these waterways have an impact to a greater or lesser degree on the public's use and enjoyment of such public property. Water recreation draws thousands of visitors and seasonal residents to Chatham every year, and the shellfishing industry is actively supported and monitored by the Town. Each is a major asset for Chatham.

The Stage Harbor Complex contains some of the most heavily used harbor infrastructure in the Town. It is also home to some of Chatham's most prolific shellfishing areas. Commercial and recreational harvesting of bay scallops, quahogs, soft-shell clams and mussels occurs throughout Stage Harbor, the Mitchell River and Mill Pond. Chatham's shellfishing industry is an important part of the local economy. The wholesale value of shellfish harvested from Chatham waters varies from year to year, but has been as high as \$5 million. Much of this is from areas within the Stage Harbor Complex.¹ In addition to the significant economic value, shellfishing is an important part of Chatham's community character, and an important amenity of coastal living.

The Stage Harbor Complex is an important location for deep draft vessels and commercial fishing fleet. The waterways are also a center of recreational activity including youth sailing, swimming, water-skiing, kayaking and operation of personal watercraft.

Extensive coastal wetlands and eelgrass in the Stage Harbor Complex serve many important environmental functions. They provide habitat to a wide variety of terrestrial, avian and aquatic species, they moderate flooding caused by storm events, and they absorb pollutants from ground water and surface waters before reaching coastal waters. Salt marshes are a critical part of coastal wetland and are important to the protection of wildlife habitat, marine fisheries, shellfish and shellfish habitat. Salt marshes produce large amounts of organic matter fostering the growth of marsh plants and substrate that help remove pollutants from surrounding waters. Salt marshes also provide a spawning and nursery habitat for several important estuarine forage fin fish as well as important food, shelter, breeding areas, and migratory and over-wintering areas for many species.

The conclusion reached by the assessment team is that the addition of new piers and docks in the Stage Harbor Complex is inconsistent with the SCHP objectives of protecting natural resources and promoting a balance of harbor uses and natural resource protection in that area. This conclusion was based on the assessment of sensitivity criteria and related considerations noted in section 4.A above. This conclusion is

¹ Chatham Shellfish Department
Town of Chatham
South Coastal Harbor Plan

consistent with other local and state policy guidance as expressed through related town plans and state regulations for waterways and wetlands protection. In reaching its conclusions and recommendations, the assessment team also considered the following factors:

- Private piers and docks represent a loss of public tidelands to private use. Obtaining necessary permits for a dock represents a privilege granted to utilize a public resource, not a right of property ownership, and should only be granted when such a structure would not diminish natural resources or public access opportunities. Allowing a private pier for the primary purpose of enhancing property values is not consistent with this principle.
- As a community Chatham has demonstrated a significant commitment to providing a wide variety of public access opportunities and facilities, which obviate the need for structures dedicated to single user private access only. Within the Stage Harbor Complex there are sixteen public access points including three town-owned piers with docks. Appendix D lists all public and private docks and marinas in the SCHP area.
- Limitations on private piers and docks protect opportunities for enhancing access that can be enjoyed by a broader segment of the community, such as the placement of moorings. Presently there are more than 1,300 moorings located in the Stage Harbor Complex with waiting lists for all publicly managed mooring locations.
- A prohibition on the addition of new private pier and dock structures in the Stage Harbor Complex is consistent with the management of Chatham's shoreline in Pleasant Bay, a system with similar natural and human use characteristics. Comparable treatment of the two areas provides a consistent and comprehensive approach to managing shoreline access.

5. Findings and Recommended Actions

5.A Findings

The SCHPC conducted an assessment of shoreline segments to determine the suitability of shoreline areas in the SCHP area for new private piers and docks. The assessment methodology was based on a model used successfully in the Pleasant Bay system, and encompassed eight environmental, human use and physical factors for a total of ten criteria. Each criterion was given a rating scale to represent sensitivity. The ratings of shoreline segments were conducted by the SCHPC and Town staff over the period of more than two years, and were compared among similar segments in the SCHP area and with similar areas in the Pleasant Bay assessment.

The evaluation of assessment ratings revealed that shoreline segments scoring 18 points or higher exhibited a relatively high sensitivity to the impacts associated with new private piers and docks. These segments tended to have the highest rating in at least half of the sensitivity criteria. The remaining shoreline segments scoring below 18 points were considered relatively less sensitive to the impacts associated addition of new private piers and docks.

The geographic distribution of ratings revealed that nearly all of the segments located inside the Stage Harbor Complex rated as highly sensitive to the impacts associated with addition of new private piers. The four segments in the Complex scoring below 18 exhibited other characteristics such as shallow water depth or presence of swamp or marsh, that are likely to be inconsistent with performance standards for new piers under current Chatham regulations. These findings led to a conclusion by the SCHPC that the entire area within the Stage Harbor Complex was unsuitable for the addition of new private piers and docks.

The assessment revealed that other shoreline segments, located primarily in the Nantucket Sound and Southway, were relatively less sensitive to the evaluative criteria. The suitability of these areas for new private piers and docks would need to be determined based on an application of existing performance standards in Chatham regulations.

Based on these findings, the assessment team led by the SCHPC concluded that the addition of new private piers and docks in the Stage Harbor Complex would be inconsistent with the SCHP objectives and should not be permitted.

5.B Recommended Actions

Prohibition on New Private Piers and Docks in Stage Harbor Complex

Based on the findings described above, the SCHPC voted unanimously to recommend to the Board of Selectmen and the Planning Board to amend the current Chatham Protective By-Law to prohibit new or additional private piers and docks within the Stage Harbor Complex. This prohibition would not apply to existing licensed structures in these areas. A draft proposed zoning amendment is found in Appendix E.

Catwalks

This proposed amendment would not apply to the permitting of catwalks as defined in the zoning bylaw.

Case-by-Case Review of Public Piers and Docks

It is also important to note that this prohibition would exclude piers and docks for public use. Although similar in nature to structures for private use, public piers and docks are consistent with the objective of the SCHP to enhance public access to the waterways in balance with the protection of natural resources. Such proposals should be subject to stringent review at the local and state level to determine whether the access benefits outweigh impacts to natural resources, and should not be subject to a blanket prohibition.

Continued Investment in Public Access Points

The Town should continue to maintain its dedication and funding commitment for the upkeep of existing public access facilities in the Stage Harbor Complex and throughout the SCHP area, and to the exploration of opportunities for expanding or creating new public access opportunities in balance with natural resource protection.

6. Appendices

Appendix A. List of South Coastal Harbor Plan Committee Members

Appendix B. Figure 1 Shoreline Segments

Appendix C. Figure 2 Ratings of Shoreline Segments [needs to be created]

Appendix D. Appendix D. Public and Private Marinas, Piers & Docks by Segment

Appendix E. Draft Amendment to the Protective Zoning By-law

Appendix A. List of South Coastal Harbor Plan Committee Members**Dean Ervin, Chairman**

Dean has served as a member of South Coastal Harbor Plan Committee since 2006; and assumed the role of Chairman in 2009. Dean is a former Associate Member of Conservation Committee, a member of Friends of Chatham Waterways and the Chatham Water Watchers. He is a year round resident of Chatham and recreational boater. Dean is a graduate of the U.S. Naval Academy and Harvard Business School.

Ernest R. Eldredge, Vice Chairman

Ernie Eldredge is a multi-generational Chatham native who literally stepped into his father's boots to operate the family's historic Nantucket Sound fish weirs. Eldredge collaborates as a commercial fisherman with the Massachusetts Division of Marine Fisheries, University of Massachusetts / Dartmouth SMAST and the New England Aquarium's scientific tagging and research programs. Raised in South Chatham, Eldredge has also worked in the construction industry and as a shellfisherman and can respect the dynamics and conflicts of natural resource stewardship and coastal development. Eldredge served on the Stage Harbor Management committee in the late 1980s and has been a member of the South Coastal Harbor Committee for four years and is presently Vice-Chair.

Charles "Tony" Murphy, Chairman

Charles "Tony" Murphy moved to Chatham in 1973 after summering here as a youth. He worked for the Chatham Seafood Coop during the summers from 1972 thru 1976. After graduating from college in 1976, Tony then crewed on a variety of commercial fishing boats on the Lower Cape and for a short time in Alaska. In 1985 he went to work for Stage Harbor Marine where he is presently employed. Tony is a past member of the Stage Harbor Yacht Club, a past member and Chairman of the Chatham Waterways Committee and is a member and past Chairman of the South Coastal Harbor Plan Committee. Charles is also a trustee on the board of the Chatham Conservation Foundation.

Martha Stone, Clerk

Martha has been a recreational boater in Chatham (sail, kayak, power) since 1967. She has been a Friends of Chatham Waterways Board Member since the founding of the not-for-profit organization (1983). Martha has participated in development and implementation of South Coastal Harbor Management Plan, providing pump-out facility for boaters in Stage Harbor, co-coordinating Chatham Water Watchers for 10 years, co-coordinating Coastal Sweep for 3 years, and developing Board of Health policy of septic system inspection at time of property transfer in Chatham.

Kurt Hellfach

Kurt is a year round Chatham resident. He is an active recreational boater (sail and power) in Chatham waters. Kurt is active in Chatham community planning, having served on Harbor Planning Committee and then Co-chair of the Chatham Comprehensive Harbor Plan Committee which developed the Stage Harbor Management Plan , adopted by Town Meeting in 1992 and approved by the Executive Secretary of Environmental Affairs (the first Harbor Plan approved outside of Boston Harbor, re-authorized by the Commonwealth in 1997. He has been a member of Friends of Chatham Waterways since 1987, and served as President and Co-President and as a Chatham Water Watcher. Co-founder of the Chatham Alliance for Preservation and Conservation, an alliance of 16 Chatham non-profit organizations. He serves on the Chatham Alliance Board of Directors, former President, Co-President and Vice President. He was appointed to the Stage Harbor Plan Implementation Committee which developed the South Coastal Harbor Management Plan, and is a member of the North Beach Management Advisory Committee.

Thomas G. King

Tom's family has roots in Chatham going back many generations and has spent most summers since early childhood fishing, sailing, and generally "messaging about boats" in the waters of Nantucket Sound, Stage Harbor and Pleasant Bay. After graduating from Chatham High School in 1975, Tom was a commercial fisherman in Alaska on the Bering Sea for five years fishing for salmon and king crab. He earned a BA from the University of Washington. Living in Chatham year round since 2004, Tom is an active member of the Waterways Advisory Committee, South Coastal Harbor Plan Committee and a director of Friends of Chatham Waterways. He is also currently Commodore of the Stage Harbor Yacht Club. Tom and his wife Jessica have been married for 24 years and have two children, Alexa and Peter.

Theodore Lucas

Ted is a Chatham native, year 'round resident, and has been fishing and shellfishing for 32 years. He has been involved with his family's fish weir company for 22 years, and its owner for last 10 years. He has a Master Coast Guard license (100 ton) and is an active recreational boater. He is back up Captain for Center of Coastal Studies research vessel; Captain of dinner boat out of Sesuit Harbor. He is a member of the Chatham Shellfish Advisory Committee for 10 years, Chairman 4 years. Ted has been the Shellfish Advisory Committee liaison to South Coastal Harbor Plan Committee for 3 years.

George Olmsted

George is a year round Chatham resident, recreational boater (sail, power, paddle), and a recreational shellfisherman (permitted in Chatham, Wellfleet). He is a former Chatham representative to Pleasant Bay Resource Management Alliance and served as Chair of Steering Committee for three years. He is a former Director of Friends of Chatham Waterways serving as its President 3 years. He participated in the design and

development Chatham Navigational Chart #50E. He has been Co-Coordinator for the Chatham Water Watchers for 10 years, and for the Chatham Beach Watchers for 4 years

Patricia Siewert

Pat has been a year round Chatham resident since 1990, having spent her summers here since 1962. She is an avid swimmer, shellfisher, and long-time recreational boater (mostly sailing, racing and cruising out of Stage Harbor). Having served several environmental groups before moving here, she became a charter member of Friends of Stage Harbor, predecessor of Friends of Chatham Waterways. She was a Director for many years, recently retiring to open a spot for new, younger candidates.

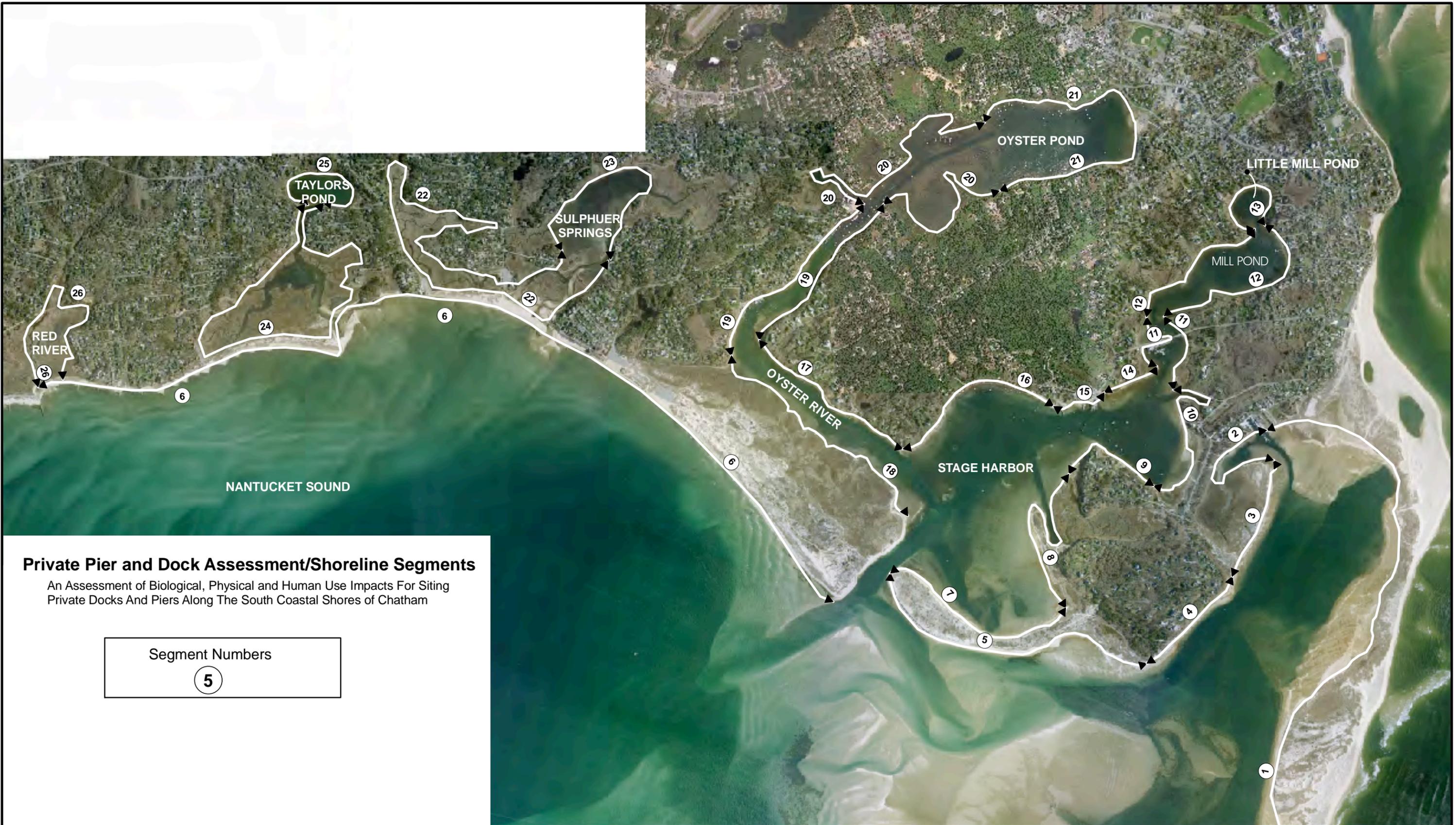
Town Officials attending Committee meetings (Staff Liaison, Non-Voting)

Kristin Andres, Conservation Agent

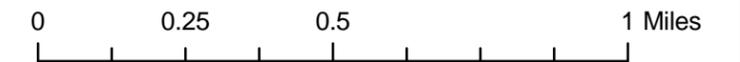
Robert Duncanson, Director Health and Environment

Ted Keon, Director Coastal Resources

Stuart Moore, Shellfish Constable



South Coastal Harbor Management Plan - Figure 1



Aerial Photo: May 2009



South Coastal Harbor Management Plan - Figure 2



Aerial Photo: May 2009

Appendix D. Public and Private Marinas, Piers & Docks by Segment

Appendix - D					9/30/08
PREEXISTING MARINAS, PUBLIC PIERS & DOCKS AND PRIVATE PIERS & DOCKS					
ALONG THE SOUTH COASTAL SHORES OF CHATHAM					
Zone	Area	Marina	Public P&D	Private P&D	
1	SOUTH BEACH/SOUTHWAY	0	0	0	
2	OUTERMOST HARBOR	1	0	0	
3	QUITNESSETT	0	0	0	
4	MORRIS ISLAND East	0	0	0	
5	MORRIS ISLAND CUT	0	0	0	
6	NANTUCKET SOUND BEACHES	0	0	0	
7	CRESCENT BEACH	0	0	0	
8	ISLAND FLAT	0	0	1	
9	STAGE ISLAND	0	0	6	
10	MORRIS ISLAND DIKE	0	0	2	
11	MITCHELL RIVER	1	0	1	
12	MILL POND	1	0	9	
13	LITTLE MILL POND	0	1	5	
14	CHAMPLAIN FLAT	0	0	0	
15	OLD MILL BOAT YARD TO PORT FORTUNE	0	1	4	
16	PORT FORTUNE TO SEARS POINT	0	0	0	
17	OUTER OYSTER RIVER, NO. SIDE	0	0	4	
18	OUTER OYSTER RIVER, SO. SIDE	0	0	0	
19	INNER OYSTER RIVER	2	1	18	
20	OUTER OYSTER POND & STETSON COVE	0	0	3	
21	INNER OYSTER POND	0	0	14	
22	BUCK'S CREEK & COCKLE COVE CREEK	0	0	2	
23	SULPHUR SPRINGS	0	0	2	
24	MILL CREEK	0	0	1	
25	TAYLOR'S POND	0	0	2	
26	RED RIVER	0	0	0	
	TOTALS	5	3	74	

Appendix E. Draft Amendment to the Protective Zoning By-law

Following is excerpted from **Chatham Protective By-Law** as amended through May 2007:

SECTION IV OVERLAY REGULATIONS

A. Conservancy District

6. c. Procedures, Private Piers (Commercial and Residential), page 35

“The construction of private piers or the extension of existing piers shall be specifically prohibited in the following locations:

In Pleasant Bay from the Town Line at Jackknife Harbor to the southerly property line of 4 Minister’s Lane, including Crows Pond, Ryders Cove, Frost Fish Creek, and Bassing Harbor: and in Chatham Harbor from the southerly property line of 4 Minister’s Lane to Cow Yard Landing.”

In the Stage Harbor waterways inside Stage Harbor Inlet, Oyster Pond, Stetson Cove, Oyster River, Little Mill Pond, Mill Pond, Mitchell River, and total Stage Harbor including Snake River.

“Maintenance of existing piers in the above locations is permitted provided no work is done beyond the existing, licensed footprint.”

Proposed Amendment to section 6. c. by addition to the current list of specifically prohibited locations within quotation marks *the locations in italics*.