Evaluation of Management Alternatives for Mecox Bay and Inlet Southampton, New York

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ABSTRACT

Mecox Bay is a valued coastal area with a variety of stakeholders located on the east end of Long Island in Southampton, NY. The Southampton Town Trustees have the responsibility and authority to make management decisions about the bay and inlet. The management of Mecox Bay has consisted of artificially cutting a channel through the natural sand spit that encloses the bay from the ocean as the Trustees determined it to be necessary. The stakeholders for this area are the private community of people who live on the waterfront, the public community that comes to the bay for recreation, the commercial fisheries that rely on the habitat primarily for shellfish such as blue crabs, oysters, and soft clams, and the ecology and environmental quality of the Mecox Bay ecosystem. The Southampton Town Trustees are challenged to protect the Mecox Bay ecosystem as a natural resource while also considering the interests of these various stakeholders. These current circumstances indicate the need for policies that take into consideration the physical morphology of the inlet, the ecology of the bay, and the social and economic characteristics of the area in order to develop adaptive ecosystem management strategies for managing Mecox Bay and Inlet.
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INTRODUCTION

Estuaries are bodies of water along our coasts that form when fresh water from rivers flow into and mix with salt water from the ocean. Estuaries block fresh river water from emptying directly into the open ocean by surrounding and insulating mainland, peninsulas, barrier islands, fringing salt marshes or any combination thereof. This mixing of fresh and salt water acts as the transition zone between the land and sea and creates a unique environment where a variety of life flourishes. Estuaries are critical for much of our ocean life because they provide the essential fish habitat for spawning and food for much of the world’s fisheries (Mann, 2000). The land directly adjacent to estuaries is equally perceived as critical to the millions of people who pay large amounts for the waterfront properties and travel long distances to enjoy them. Others use the resources produced by estuarine environments to earn a living through tourism and commercial fisheries (EPA, 2003).

Beyond recreation and commerce, estuaries are an essential factor to the health and quality of life in surrounding communities. They assist in improving water quality, are used for research and education, and protect coastal communities from erosion and storm surge. Estuaries are vital ecological and community resources whose ecosystem health affects the public health of the community and economy (EPA, 2003).

Mecox Bay has all the characteristics of an estuary, but lacks one fundamental principle—it has no open connection with the ocean. This unique trait of Mecox Bay would allow it to physically be characterized as a coastal pond. It is the management practices that maintain Mecox Bay as an estuary with a rich brackish water environment. Manual openings of a small inlet establish a connection between Mecox Bay and the open ocean to create and support the desirable estuarine conditions. The openings are conducted by the Southampton Town
Trustees and performed based on the water level and the salinity level of Mecox Bay. The bay also contains a variety of stakeholders with different value structures that are affected by the fluctuating conditions. The result is a tradeoff between the stakeholders depending on how management alters their behavior. It is the balance of tradeoffs between the groups from the physical effects of the inlet openings that has posed problems. The Trustees must look out for the environment while providing access to the resource; this leaves them engaged in a balancing act: the tradeoffs for promoting a quality habitat for shellfish versus those that provide recreational access.

In this paper I will describe the environmental characteristics of Mecox Bay that make it a unique and valuable resource. I will discuss the governance of Mecox Bay and the current management practices. I will discuss the tradeoffs that occur through the management of Mecox Bay. Then I will evaluate the current policies and potential management alternatives based on a survey that quantitatively examined the stakeholder’s views, and the results from a focus group that evaluated the potential alternatives. I will conclude by discussing the chosen alternative and describing an implementation strategy.
BACKGROUND

Description of Mecox Bay

Mecox Bay is approximately 1,045 acres and is located on the east end of Long Island, New York in Southampton Town. It does not have a river input, but receives its freshwater from runoff and ground water infiltration directly into the bay or the seven tributaries: Channel Pond, Burnett Creek, Mill Creek, Hayground Cove, Calf Creek, Swan Creek, and Sam’s Creek (see Figures 1 and 2). Mecox Bay serves as the catchment area for much of the surrounding lands—approximately 1 inch of rainfall will raise the bay’s water level 3 inches (Trustee Interviews, 2003). Mecox Bay supports one of the areas healthiest shellfish populations, consisting of oysters, soft shell clams, mussels, and blue crabs.

What makes Mecox Bay so unique is that it is a temporarily open/closed system. Most of the year the inlet is closed, cutting off the connection between the bay and ocean. The local government artificially opens the inlet to maintain the rich brackish water environment and control water levels. Mecox Inlet will remain open until the along shore transport of sediment from the ocean fills in the inlet (Trustee Interviews, 2003). The time it takes to fill in the inlet depends on the tides and ocean conditions—rough ocean conditions move sediment more quickly than calm conditions.

In South Africa 70% of the estuaries are classified as temporarily open/closed systems. These estuaries are unique because their ecosystems vary tremendously during the seasonal pattern as they open and close (Froneman, 2002). These unique physical characteristics play an important role in the estuaries’ biological interactions. Water from the land is trapped in temporarily open estuaries, allowing for the accumulation of pollutants because of the lack of consistent water exchange (Nozais et al., 2001). The infrequency of the water exchange will also
cause the salinity levels to remain low for extended periods of time, then increase rapidly during breaching (Triennial Coliform Data, 1993).

The physical characteristics of Mecox Bay from the opening and closing process are very similar to those in South Africa. When the inlet is closed freshwater from runoff and groundwater enters the bay and tributaries carrying nutrients and sediment, but also harmful pollutants. The increase in freshwater raises the water level and lowers the salinity level of the bay. Mecox Bay has an average depth of 1.6 meters and has reached depths of 2.0-2.2 meters before an artificial opening. Mecox Bay has an average salinity level of 17.4 ppt and will typically range from 10-25 ppt between closed to open conditions. Fecal Coliform counts generally range from 0-100 colonies/100mL between open to closed conditions. In the summer months fecal Coliform levels can reach 450 colonies/100mL, prior to opening (Gobler, 2003). This is due to the summer months having a higher rate of primary productivity and many more people within the area, thus increasing the amount of pollutants in the runoff.

*Management of Mecox Bay*

The Shinnecock Native Americans gave Mecox Bay its name and called its small connection with the Atlantic Ocean the seapoose, or “little river,” an accurate description. As the sand spit is dug open the bay water courses its way into the ocean and quickly becomes a little river. The Shinnecock first managed this unique natural resource with their opening of the seapoose, or cut as its known today. Supposedly, they dug the cut open by hand in order to increase the exchange with ocean water, promoting better growth of the shellfish they harvested (Seapoose, 1994).
Today opening the cut has different effects on the surrounding community. For the Native Americans, the cut was a tool to promote a healthier natural resource, and therefore, more food. The current management practices of Mecox Bay remain the periodic opening of the cut. It is still done to support shellfish growth, but also to prevent flooding and to maintain the environmental quality for recreation and aesthetics.

Two criteria are used now to determine when to open Mecox Inlet—salinity level and water level. Mecox Bay’s shellfish resource is very important to the area’s commercial shellfishers, and the salinity level is critical to the shellfish’s health. The salinity level is monitored weekly at 5 testing stations throughout Mecox Bay. Salinity level between 14-28ppt will provide ideal conditions for shellfish, while lower levels can inhibit growth (Rivara, 2001). Mecox Inlet is typically opened when the salinity level reaches 10ppt. At 10ppt the shellfish will survive but their growth and spawning can be affected. Prolonged exposure to salinity levels below 10ppt has resulted in the loss of entire shellfish stocks in Mecox Bay (Reichert, 1988).

The water level is monitored daily by observing reference points to determine depth. The water level will increase as freshwater enters the bay from runoff or groundwater infiltration, and when saltwater enters the bay from extreme tidal occurrences or overwash from storm surge. The water level will typically rise to a reference point that indicates the inlet needs to be opened just before flooding occurs of some surrounding lands. The western side of the bay is most susceptible to flooding, as water will run onto parts of the surrounding road and homes.
Stakeholders

The physical effects of artificially opening the cut will flush contaminants out of the bay, increase the salinity, and reduce the water level. All of these promote a healthier bay and are in some way necessary to each of the stakeholder groups.

The private homeowners around Mecox Bay can be characterized as users concerned with aesthetics and recreational access. All of the homeowners are concerned with the aesthetics, which is why they have very expensive waterfront homes. One of the primary reasons they buy these properties is for the enhanced quality of life that unique aesthetic environments, such as Mecox Bay, provide. Many homeowners participate in recreational boating; they generally use paddleboats, sailboats, motorboats or personal watercraft. The fluctuating water level affects their access by making it difficult or impossible to use these watercrafts at times of low water. The homeowners who live along the bay’s tributaries are more heavily affected by the fluctuating water level. These are shallower than Mecox Bay, so when the inlet is opened some areas are left with only mudflats or dry land.

The single most controlling factor of water level is the frequency of inlet openings and the most significant use of recreational boating occurs during the high tourist season from Memorial Day to Labor Day. Therefore, it is during this time that there are the most requests to NOT open Mecox Inlet.

A large public contingency also uses the bay for recreation—mainly the public beaches on both sides of the inlet. These people are rarely affected by any of the management practices; in fact, once it is opened, the bay provides a popular area for children to play. The water quality in the cut is a concern but there have been no reported problems. Some members of the public
use watercraft for recreation on the bay. They can launch boats from a variety of public ramps; regardless of the water level, there is always a ramp with enough water on the bay.

There are also members of the public who use Mecox Bay for its resources. Commercial shellfishers rely on the oyster and soft clam populations for income. The water quality and salinity level of the bay affects these stakeholders. When the inlet is opened more frequently it increases the salinity, and provides better water quality by flushing contaminants out of the bay, supporting healthier shellfish. More frequent openings also result in clearer water and a lower water level, making it much easier to spot and harvest shellfish.

Managing the salinity level and water level has different affects on how the bay may be used. Maintaining salinity levels to support ecosystem health could cause a lower water level more often and reduce access to the bay. Water level management can be done to promote recreational access to the bay waters, or reduce flooding occurrences. If a higher water level is maintained in favor of recreation, the overall health of the ecosystem suffers from a harmful increase in freshwater to the environment (see Figure 3 for a summary of physical, social, and economic effects).

The fundamental problem has been the lack of communication regarding, and understanding of, the tradeoffs between the quality and utility of Mecox Bay. The Southampton Town Trustees have all the responsibility and authority for regulating the periodic openings of the inlet and the balance of these problems are now what they must face.
Governance: Mandate and Structure

The local governance structure for Mecox Bay stems from the original colonial settlements. The Town of Southampton was established in 1640 when the first settlers left from Massachusetts in search of new plantation lands. Southampton became primarily an agricultural town from which much of their product was exported back to England (Town of Southampton, 2003). In 1686, King James II of England through his General Governor, Thomas Dongan, granted over 25,000 acres of land to the settlers, instituting the first official government in the Town of Southampton. The Dongan Patent, as it has become known, also granted the freeholders and commonalty of the Town of Southampton access and rights to common underwater land, rights of ways to bay and ocean waters, and surrounding marshlands, and created the Board of Trustees to act as stewards for these waterfront lands and resources (Trustees Responsibilities, 2003).

The Board of Trustees is made up of 5 members, all of which must be Southampton town residents. The community elects them every 2 years and the board nominates a chairman. Trustees are generally people who have lived in the community for years. Some are employed, some are retired, but all participate because they care about the community and its resources.

Local and State Courts and even the Supreme Court of the United States have ruled that the Dongan Patent is as valid today as it was in 1686 (Trustees Responsibilities, 2003). Today, the Dongan Patent and the Trustees guarantee every Town Freeholder's right to access the bays, ocean and their resources. With this guarantee also comes the responsibility to develop policies and enforce them to ensure all freeholders equal rights to the resource’s use.

Since 1686 the Trustees have continued to manage these marine resources. However, now federal, state, county, and village governments all have their own governance structures that
have some stake in the management polices regarding Southampton Town waters. Specifically for Mecox Bay, the main overlaps occur among the Army Corps of Engineers (USACE) on the federal level, the New York Department of Environmental Conservation (NYDEC) on the state level, and the Division of Land Management from Southampton Town. The USACE has the authority to regulate all dredging activities for all “navigable waters” of the United States, and the NYDEC is involved in the management of all state environmental resources. For artificially opening Mecox inlet, the USACE and NYDEC both issue 10 and 15 year maintenance permits, respectively, to the Trustees because the Dongan Patent gives the Trustees the authority to govern the waters (Trustee Interviews, 2003).

The NYDEC does exercise the authority over the shellfish sanitation issues in Mecox Bay. They perform water quality testing throughout the bay for total and fecal coliform bacteria counts and then determine closure areas and times based on their data (NYDEC, 2003). However the responsibility for enforcement of the regulations is given to the Trustees and executed through the Bay Constables.

This is a very unique situation because the Dongan patent gives the Trustees the authority to make all decisions regarding Mecox Inlet. If this was to change the authority could be given to various groups such as the NYDEC or the USACE, or even the environmental division of Southampton town. All of these entities would not be as easily approachable or imbedded in the community as are the Trustees. Their personal investment is one of the reasons the Trustees have proven to adequately protect the resources for the community. Furthermore, the other governmental organizations would probably not be as receptive to community members as are the Trustees.
Today Mecox Bay is used by a diverse group of people for very different reasons. Some individuals still use the bay for commercial and recreational shellfishing. Others have no interest in Mecox Bay’s production, but only want a “healthy” bay for aesthetics and/or a higher water level for easier watercraft recreation. The Southampton Town Trustees are challenged to protect the Mecox Bay ecosystem as a natural resource while also considering the interests of these various stakeholders. So no longer can the seapoose be managed to solely support a plentiful food source, but now management needs to combine social, economic and environmental factors in order to determine when to artificially open Mecox Inlet.
METHODS

An evaluation of the management alternatives was conducted to find the best balance of tradeoffs between the stakeholders. A survey and a focus group workshop examined how this balance could be achieved. The survey design gathered information about the stakeholders and their perceptions of Mecox Bay's resources. The focus group allowed a thorough discussion of all the management alternatives for Mecox Bay and Inlet before any new policy was proposed.

Survey

Two separate surveys were administered: one to commercial shellfishers and the other to homeowners. I chose these groups based on a judgment-sampling scheme, because they are representative of populations most concerned with the issues being discussed (Bernard, 1988). Commercial shellfishing licenses for Southampton Town waters are only available to town residents. The commercial shellfishers selected are individuals who obtained commercial shellfishing licenses from Southampton Town; a survey was mailed to their address (see Figure 3 for a copy of the survey). The homeowners selected are individuals with property surrounding Mecox Bay or its tributaries; a survey was mailed to their address as well (see Figure 4 for a copy of the survey).

I designed both surveys in such a way that they would begin easily with demographic and participatory questions regarding the respondents’ involvement with Mecox Bay. Next, I asked about the changes they observed on Mecox Bay and how they were affected. Finally, I asked opinion and value-based questions to examine the groups’ attitude towards Mecox Bay’s resources and management (Parker and Rea, 1997).
I used open-ended and closed-ended questions in both surveys. The closed-ended questions provided for the comparison of values among respondents and between groups. The open-ended questions allowed the respondents to voice their opinion without the constraints of choosing a fixed response (Parker and Rea, 1997). These responses were assigned to categories based on the personal examples provided. The categories of responses for each question can be found in the Commercial Shellfisher and Homeowner Survey Results in the Appendix. The results for the opinion and value-based questions for Mecox Bay’s resources and management are presented in the Results and Discussion section.

**Focus Group**

A focus group is a group of people brought together for a joint interview session focusing on a particular issue. The group should contain participants from different backgrounds to obtain the most well rounded discussion of the issues (Bernard 1988).

The goal of this focus group is to attain comments from all the stakeholder groups on the different alternatives available for the management of Mecox Bay and Inlet. The participants include two Southampton Town Trustees (one is a commercial shellfishermen); three homeowners; two individuals from environmental organizations: an aquaculture specialist and an estuarine project manager (and former president of the Baymen’s Association); the Chief Environmental Analyst for Southampton Town; and an environmental consultant.

To organize the discussion, a public policy model called an alternatives/criteria matrix is used (see Figure 5 for a copy of the matrix). This is a model for public policy analysis and is designed to provide information about the expected effect of a change for a policy. The entries
in the cells of the matrix are not a preference, but an estimation of the probable effects of each policy alternative based on the evaluation criteria (MacRae and Whittington, 1997).

The management alternatives are designed to encompass all possibilities that the Southampton Town Board of Trustees may consider. They range from keeping the inlet open all the time to no artificial openings and only letting natural breaches occur. The first alternative, Stabilization, would keep the inlet open all the time by stabilizing its banks using engineering structures such as a jetty or groin. The next alternative, Continual Dredging, would also keep Mecox Inlet open all the time by continually dredging the channel. Another alternative is Seasonal Dredging, which would continually dredge the channel to keep it open during a seasonal period, but only call for periodic openings during the non-seasonal period. The current management (Status Quo) is also evaluated, which are Periodic Openings based on salinity levels and water levels. The next alternative, Periodic Opening with Assessment of Criteria, would periodically open the inlet based on specific, quantitative (water level, water quality and salinity) and qualitative (social and economic) criteria. The inlet would be kept open until desirable levels for these standards are met then the inlet will be allowed to or engineered to close also based on these criteria. The last alternative, No Artificial Openings, would discontinue artificially opening the inlet so that only natural breaches from overwash occur.

The evaluation criteria are standards for valuing the proposed alternative. The criteria used in this assessment are a set of social, economic, and environmental criteria. The first evaluation criterion is the alternative’s effect on the Coastal Habitat and includes factors such as the effects from keeping the inlet open, effects from erosion on the inlet banks and inlet migration along the coast, and the effect on the general habitats for birds, plants and fish. This will include lands inside Mecox Bay, through the inlet and on the surrounding ocean beaches.
The next criterion is the effect on Water Level Management, including the effects from change due to the alternative and who will be affected. Another criterion is the effect on Salinity Level Management, including the effects from change due to the alternative and who will be affected. The next criterion is the effect on Water Quality Management, including the effects from change due to the alternative and who will be affected. The alternative’s effect on the Shellfish Resource is estimated by the potential changes from water level, water quality and salinity. Next the effect on Public Access consists of assessing public access for launching watercraft, and beach access. Lastly the Costs of Administration consist of assessing the initial and continuous costs for each alternative and who is responsible to pay.

To evaluate the management alternatives relative to one another we must estimate their probable affects on the criteria, that is, fill in the cells of the matrix. The expert analysis of the focus group is used to conduct the estimation. Each of the management alternatives is rated using a positive, neutral, or negative method of evaluation. The alternatives are given a ‘+’, ‘0’, ‘--’ according to each criterion. All comments or statements concerning each alternative also need to be included in order to obtain a complete evaluation. The results from the matrix and additional comments were used to develop recommendations for the Trustees management of Mecox Bay and Inlet.
RESULTS AND DISCUSSION

Survey Results and Discussion

The last three questions asked to the commercial shellfishers and the homeowners are the same. One is a closed-ended question that asked the respondents to rank the management criteria for Mecox Bay in order of importance from 1 (most important) to 5 (least important). The other two questions are open-ended. The first asked if the respondents preferred Mecox inlet open or closed, and why. The second asked if the respondents agreed with the Trustees policies for managing Mecox Bay, and why or why not.

The average ranking of importance for Mecox Bay’s management criteria from the shellfishermen survey responses are as follows: Water Quality (1.14), Shellfish Resource (2), Ecology/Wildlife (3.29), Water Level (3.57), Recreation (5). These results show that the participant’s values are in the expected order. The shellfishers rely on the quality of shellfish for their income. Therefore, water quality and the condition of the shellfish resource are ranked as the top factors for management. Recreation is ranked last because it has the least Effect on the health of shellfish populations.

When asked if the shellfishers prefer the inlet opened or closed, and why, 42% of the respondents said they preferred the inlet open to promote a healthier bay. 33% responded with no preference, but said that the periodic opening of the inlet was necessary to maintain the present ecological functions. The remaining 25% of the respondents did not answer this question.

84% of the shellfishers responses agreed with the trustees policies for managing Mecox Bay. They described how the trustees support the health of the bay and the shellfish crop. Some responses agreed with the trustees and their attempt to try and support the homeowners’ desires
during the tourist season. 8% of responses disagreed with the trustees’ policies, but the reasons involve personal issues respondents have with the board members. The last 8% did not answer the question.

These results are as we would expect. The shellfishers understand the physical and biological characteristics of Mecox Bay as part of their job. Generally these people have lived in the area for many years and know the social problems as well.

The average ranking of importance for Mecox Bay’s management criteria from the homeowner survey responses are as follows: Water Level (2.065), Water Quality (2.097), Ecology/Wildlife (2.290), Recreation (3.871), Shellfish Resource (4.667). The results show that the homeowners are a diverse group. There are a significant number of surveys that ranked water level as a top management aspect; half of the responses ranked water level at number one. Alternatively, there are many other homeowners who are much less concerned with water level. Many of these homeowners also indicated that they use watercraft on the bay, but realize that the fluctuation is a part of Mecox Bay’s unique character.

Most of the other top rankings from homeowners went to water quality or ecology/wildlife. These responses generally described activities where more children would be using the bay, so health concerns were a top priority, or that aesthetics and overall environmental quality were top priority. Recreation and shellfish resource had a significant number of responses valuing them the least. Regarding the shellfish resource, this was to be expected, as there were only a few homeowners who indicated they participate in any type of shell fishing activities. However, the low value for recreation is a surprise, and only reiterates that the homeowners are a diverse group and that there are a significant number of individuals who value the environmental quality of Mecox Bay.
The homeowners are also asked if they prefer the inlet open or closed, and why. Most of the responses (34%) said that they would prefer the inlet closed because they desired a higher water level or better aesthetics. The rest of the responses are divided between other answers. 20% preferred the inlet to be open because it offered a cleaner, healthier bay and reduced water level. 25% replied that both the openings and closings were needed to balance quality with utility. 21% of respondents did not answer this question.

Although most of the homeowners who responded desired an overall water level higher than is presently maintained, there are a significant number of responses that preferred the inlet to be open. This shows that homeowners don’t categorically desire the highest possible water level, as the Trustees generally expected. Also, there is a significant group that understood the need to have the opening and closing of the inlet. Most of their reasons are explained well. They understood the balance the Trustees are trying to achieve by maintaining the environmental quality while still providing the homeowners and community with access to the resource.

The next question asked the homeowners whether they agreed with the Trustees policies for managing the inlet, and why. From their responses to the previous question I would have concluded that there would be significantly more who disagreed with the trustees than agreed. From the responses received 40% replied no, 35% replied yes, 23% replied that they agreed sometimes or were indifferent, and 2% did not answer. To analyze these responses we must first look at the reasons why they chose these answers.

The responses to the question “Do you agree with the trustees policies, and why?” can be classified in four main groups. 18% of the respondents said that management was done well for balancing water level, ecology, and the stakeholder desires. 17% of the respondents said that management was not done well, with typical reasons being that the inlet was opened too
frequently, openings caused low water levels, prevented boat access, exposed mudflats, or was just less aesthetically pleasing. 11% of the respondents felt that the trustees are not properly managing the bay because stakeholder groups pressured them or that they were ignorant to what was happening as a result of inlet openings. Most of the answers received, 24%, replied that they were indifferent or did not agree with the trustees’ policies because they did not know or understand what these policies are. 30% of the respondents did not answer this question.

From the data we can see that overall the majority did not agree with the trustees policies. However, 24% of the respondents said that they did not agree because of a lack of information, highlighting the need for better communication regarding these issues between the Trustees and the stakeholders.

Focus Group Results and Discussion

The focus group discussion did not exactly follow the matrix format. The beginning of the meeting dealt with current issues regarding the immediate opening strategy. A holiday weekend was approaching, the water level was reaching the flooding stage, and salinity was hovering around 10-12ppt. The discussions centered on explaining the ecological effects of letting the salinity remain at the low level.

Once no more progress could be gained by discussing current issues, the group focused on the matrix. However, each alternative was not evaluated using each of the criteria. Typically, negative evaluations on one or two criteria outweighed any of the positive evaluations on other criteria for a given alternative. What follows is a summary of the focus group discussion of the alternatives.
The first alternatives examined were ways to keep the inlet open all the time. One method is stabilization using jetties or revetment walls and the other is to maintain the open inlet by continual dredging. Both of these alternatives would have the same effects on the bay itself. First, a continually open inlet would change Mecox Bay to a tidally dominated system, the result being a more consistent water level, only at a much lower level. This would allow for constant exchange of ocean and bay water so the water quality would improve. Also, the salinity would increase and remain at a consistently higher level but still within brackish standards. The increased water quality and salinity could create a healthier ecosystem, but the water level would drop so significantly that portions of the upland channels could become dry land in the process. This is an unacceptable affect since the homeowners and the town would never let prime waterfront plots be systematically converted into dry-land properties. While both alternatives keep the inlet open, continual dredging would be more expensive to maintain but would not have consequences as serious as stabilization with jetties, which would trap the sediment transport along the south shore and create downstream erosion.

The next alternative was a seasonal dredging program where the inlet is maintained open for a certain part of the year based on what the ecosystem objectives are. If the inlet were opened in the warm months it would promote more flushing and better water quality during times of greater runoff. Because during the cold months there are fewer pollutants entering the bay and less productivity, bacteria levels are lower and it would not be necessary to open the inlet as often. If the inlet were maintained open for the winter months, during the warm months the reduction in salinity and water quality would be detrimental to the shellfish during their growing season, as well as to human health. The major problem here is that either way one stakeholder group faces a scenario where their needs will be compromised. The lack of
flexibility with setting time constraints in the decision process reduced the viability of this option.

The next alternative was the status quo, or present policy. This is a periodic opening based on salinity levels and water levels. Water levels are monitored using an indicator on a bulkhead and salinity levels are taken at five testing sites every week. This alternative is based on the right decision making tools, but the major problem is that it is enforced without communication and fails to acknowledge those who will be affected. Once the salinity or water levels reach their designated points (predetermined by the Trustees), the inlet is opened. As we’ve established above, these standards mark the level at which the salinity will hurt the shellfish and the level at which water volume threatens flooding. Usually increases in freshwater create salinity-deficiency issues before water-overflow, but there are also instances of the opposite case.

Another alternative was to continue with the periodic openings, but make the opening policy based on an assessment of specific, quantitative (water level, water quality and salinity) and qualitative (social and economic) criteria. The inlet will be opened when the most desirable levels for these standards are met. After each opening the inlet would be allowed to, or engineered to, close also based on these criteria. This alternative provides few negative impacts while also allowing for flexibility in the decision strategies.

The final alternative evaluated was to have no artificial openings. This alternative would have extremely detrimental effects to the ecology and the community. The bay has been managed within these brackish tolerances for approximately 350 years. To discontinue opening the inlet would be very destructive to marine and plant life. Also, the water levels would rise so
high that they would flood many waterfront homes before a natural breech occurred. This was not judged to be a viable option.

From the discussion of each management alternative it was the consensus decision that the periodic openings with an assessment of criteria is the best option because it is based on the most important factors, water level and salinity level, and directs the Trustees to estimate the social and economic impacts of opening the inlet and determine which factors are the most critical to the decision for opening Mecox Inlet.

In this plan, the Trustees would continue to manage using salinity and water level criteria, because they are the most critical and easiest to monitor for measuring the health and utility of Mecox Bay. They would also estimate the social and economic impacts of opening the inlet. For example, when the water level is rising but salinity level remains within a healthy range, should the inlet be opened right away? Questions need to be asked to evaluate the effect of opening or not opening the inlet, such as: is there a holiday weekend coming up and can the cut remain closed; how will the shellfish be affected from exposure to a moderate salinity level and for how long would it be necessary; how much rain has occurred or is forecasted to occur, and what effect has the rain had or can potentially have on the salinity and water quality?

The trustees must set goals for how they want the bay to be managed—will it be strictly for keeping ideal salinity levels for shellfish, maintaining high water levels for the summer, or is it a combination? The Trustees must protect the natural resource first and foremost and use the assessment of social criteria in situations where the social impacts would outweigh the environmental impacts, and most importantly, communicate fully with the stakeholders.

Even though the focus group ultimately agreed on the best management alternative, there was still a disagreement on how the groups judged the quantitative and qualitative criteria.
homeowners expressed that they felt that since there is tax revenue produced from their neighborhood, this should require management to focus on their needs (a significant amount of expensive properties surround Mecox Bay). This group wanted a higher water level, which would cause some homeowners to suffer from flooding and a degradation of the environmental quality, especially the shellfish resource. They argued that a significant shellfish population was not necessary, and only modest environmental quality should be maintained to promote more recreational access. This opinion was heard, but ultimately dismissed because the Trustees are in place to act as stewards of the marine resources for the entire community. They cannot favor one group for whatever reason, but must manage to provide for equitable use by the entire community.

Once the homeowners understood what the Trustees were trying to accomplish they could appreciate why management was conducted with a strict minimum salinity level, however, they still refused to agree in the focus group session. The fact that so much time needed to be devoted to laying groundwork in the focus group is a confirmation of the lack of communication expressed in the homeowner survey. This is a problem on both sides. The homeowners are complaining about a management strategy that they don’t understand, and have made minimal or no effort to understand. The Trustees are attempting to do better management by obtaining more science, on which to base their management decisions, but now need to make serious efforts to communicate that information to the stakeholders and keep them informed.
CONCLUSION

Stakeholders desire different polices for different outcomes; the question is, what is the best balance of interests? Regardless of what one stakeholder group wants, management for one group is directly related to what another group wants, through its effects on the environment. The Trustees are trying to perform this balancing act, and the next step is actually implementing the chosen alternative as a management strategy. This can be accomplished through the principles of adaptive ecosystem management. “Ecosystem management is management driven by explicit goals, executed by policies, protocols, and practices and made adaptable by monitoring and research based on our best understanding of the ecological interactions and processes necessary to sustain ecosystem structure and function (Christiansen, 1996).” There are five management objectives that should be undertaken to apply adaptive ecosystem management strategies to the decision making process, they are: 1) valuing long term sustainability; 2) clear, operational goals; 3) understanding ecological functions and interconnectedness; 4) incorporation of humans as ecosystems components (communication and education); and 5) commitment to adaptability and accountability (Christiansen, 1996).

The trustees have to make short-term decisions for each opening, but must start thinking about management in the long-term to ensure all resources are available in the future. Making long-term sustainability a clear goal and communicating the goal to the stakeholders can achieve this.

Developing clear operational goals for a management plan can be extremely difficult. This will be the essential challenge for the Trustees because goals need to be set so that there cannot be any subjective interpretation. Keys to eliminating any subjective interpretation are to communicate goals to the stakeholders and remain loyal to the management plan.
Trying to categorize ecological functions is very difficult. It is necessary to incorporate all available science and then organize the information to express the ecological connections and relationships. Understanding the interconnectedness within Mecox Bay can be done by scientific research, or just through speaking with stakeholders to understand how changes affect them. One major ecological function that could be addressed is the oyster and soft clams’ tolerance to fluctuating or low salinity levels.

The Trustees have already made great efforts to accomplish the objective of understanding ecological functions. They have supported a project that monitored the physical, biological, and chemical changes from the openings of Mecox Inlet (Gobler, 2003). This project investigated the stakeholders’ perceptions and evaluated alternative management strategies for Mecox Bay. The goal here will be to bring this information together—this project can help to understand how the physical, biological, and chemical changes impact the people.

The acknowledgement of humans as ecosystem components is a fundamental objective for implementing a successful management plan. Once the people are part of the decision process it is imperative to maintain communication and education. Education of the stakeholders for Mecox Bay can be accomplished by explaining the management goals and the effects they will have on the entire system. This should address the current problems, why openings are made, and what happens due to the openings. Also, communicating, the opinions of fellow stakeholders are important so that each group understands what the other desires and why.

All the various points made in the survey and focus group are surrounded by one fundamental problem—lack of communication. This is the most important objective to be implemented. The other objectives are necessary to be successful, but nothing will work if communication between, and education of, the constituents is not paramount and complete. Full
comprehension of all the ecological and social factors, as well as the opinions of their stakeholder counterparts will provide constituents with the clarity and empathy necessary to understand and support the management of Mecox Bay.

Lastly, having a commitment to adaptability and accountability is the premise that management goals will be explicitly stated, communicated to constituents, tested and monitored, and the feedback used to direct future goals towards better management of the resource.

Recommendations

The essential goals of management strategy implementation are to clearly define goals and objectives, incorporation of all management bodies and available science, and clear communication with, and between, stakeholders (Christensen, 1996).

The most difficult part is going to be for the Trustees to determine the first set of criteria as their goals and objectives. They need to let everyone know what the goals are and what decisions will be made—which is the new and thorough communication as previously discussed. They need to stick to their objectives while continuing to monitor how the bay behaves and who is affected.

Once the goals are set, making the scientific research and the criteria for inlet openings available will provide answers to most communication problems with the stakeholders. This can be achieved by providing access to scientific reports, salinity readings, and giving notice of openings. One method is to make copies of the scientific reports available for viewing in the Trustee’s office, or placing portions of them on the Trustee’s website. Also, once a week when
salinity readings are taken, have them entered on a database on the website. Everyone can view the readings and understand why openings are made.

The increased incorporation of the NYDEC and their water quality testing are important for the new decision process. Water quality data should also be performed for human health concerns along with shellfish sanitation status. Coordination with the NYDEC should be implemented to examine water quality in the cut during the high tourist season, as this area is mostly used by small children and is the focus area for the pollutants from the tributaries.

The final step is a commitment to keep an ongoing relationship with stakeholders to see how management strategies are functioning. One example is to work with homeowners and explain practices they can engage in to provide for a healthier bay—using organic fertilizers, vegetative buffers, or monitoring/rebuilding old septic systems.
REFERENCES


APPENDIX

Figure 1: Map of Long Island, Southampton Township and Mecox Bay

Figure 2: Satellite Photograph of Mecox Bay

Figure 3: Model of Physical, Social, and Economic effects

Figure 4: Copy of Shellfisher Survey

Figure 5: Copy of Homeowner Survey

Figure 6: Focus Group Alternatives/Criteria Matrix

Figure 7: Shellfisher Survey Results

Figure 8: Homeowner Survey Results
Figure 1: Map of Long Island, Southampton Township and Mecox Bay
Figure 2: Satellite Photograph of Mecox Bay
Figure 3: Summary of Physical, Social, and Economic Effects

**Environmental Effects**
- Inlet Closed: Water Level Rises, Salinity Level Falls, Water Quality Declines
- Inlet Open: Water Level Falls, Salinity Level Rises

**Social Effects**
- Tourism Season: Memorial Day to Labor Day, Greatest Demand for Recreation
- More people in summer = more pollutants = higher coliform levels
- Shellfishing only allowed in winter

**Economic Effects**
- Environmental Quality supports two industries:
  - Tourism Demand
  - Commercial Shellfishing
Survey for Commercial Shell Fishermen Involved with the Mecox Bay and Inlet System

I am a graduate student from Duke University performing a research project on the management of Mecox Bay and Mecox Inlet. In order to make informed decisions about the bay and inlet system it is very important to obtain the views of people who use the natural resources. I would appreciate if you could take a few minutes to fill out this survey. Thank you for your assistance.

Please return the survey to:
c/o Stephen J. Frano
Southampton Town Trustees
116 Hampton Road
Southampton, New York 11968

1) Do you participate in shell fishing in Mecox Bay? Yes___No___
2) If yes, what type of shellfish do you catch?

3) Do you notice changes in the water level of Mecox Bay? Yes___No___
4) If yes, how do they affect you?

5) Do you notice changes in the water quality of Mecox Bay? Yes___No___
6) If yes, what do you notice? 7) How do those changes affect you?

8) Do you use a boat or watercraft on Mecox Bay? Yes___No___
9) If yes, what type of watercraft is it? 10) From where do you launch it?
11) While shell fishing, can you tell if Mecox Inlet is open or closed? Yes___No___
12) If yes, how can you tell?

13) Do you prefer if Mecox Inlet is open or closed? 14) Why?

15) The Town of Southampton Board of Trustees engage in policy to manage the dynamics of Mecox Inlet. Do you feel your interests are represented in these policies? Yes___No___
16) Why or Why not?

17) Please rank the following issues in their order of importance for managing the Mecox Bay and Inlet system. (1 = Most Important, 5 = Least Important)

   Water Level ________
   Water Quality ________
   Ecology/Wildlife ________
   Recreation ________
   Shellfish Resource_______

Thank you very much for your time and input to this project. If you have any questions regarding this project, please contact Stephen Frano at the Southampton Town Trustees office (phone: 631-287-5717), or by email at stephen.frano@duke.edu.
Survey for the Homeowners Involved with the Mecox Bay and Inlet System

I am a graduate student from Duke University performing a research project on the management of Mecox Bay and Mecox Inlet in conjunction with the Southampton Town Trustees. Understanding the perspectives of the private community is essential in order to make informed decisions about managing the bay and inlet system. I would appreciate if you could take a few minutes to fill out this survey. Thank you very much for your assistance.

Please return the survey to:

c/o Stephen J. Frano
Southampton Town Trustees
116 Hampton Road
Southampton, New York 11968

1) How long have you or your family lived in the area?

2) Do you use Mecox Bay? Yes ___No___  
3) If yes, what type of activities do you do?

4) Do you use the ocean beach around Mecox Bay? Yes___No___
5) If yes, what type of activities do you do?

6) Do you notice changes in the water level of Mecox Bay? Yes___No___ 
7) If yes, how do they affect you?

8) Do you notice changes in the water quality of Mecox Bay? Yes___No___
9) If yes, what do you notice? 
10) How do those changes affect you?

11) Do you use a boat or watercraft on Mecox Bay? Yes___No___
12) If yes, what type of watercraft is it? 
13) From where do you launch it?

14) Do you participate in shell fishing in Mecox Bay? Yes___No___
15) If yes, is it for commercial or personal use and what type of resources do you use?
Figure 5: Copy of Homeowner Survey

16) From your home, can you tell the difference if Mecox Inlet is open or closed? Yes___No___
17) If yes, how can you tell?

18) Do you prefer if Mecox Inlet is open or closed?         19) Why?

20) Have you ever experienced flooding from high water levels of Mecox Bay? Yes___No___
21) If yes, what was the extent of the flooding (lawn, basement, septic system, etc.)?

22) If yes, when did it happen or how often does it happen?

23) The Town of Southampton Board of Trustees engage in policy to manage the dynamics of Mecox Inlet. Do you feel your interests are represented in these policies? Yes___No___
24) Why or Why not?

25) Please rank the following issues in their order of importance for managing the Mecox Bay and Inlet system.  (1 = Most Important, 5 = Least Important)

Water Level __________
Water Quality __________
Ecology/Wildlife __________
Recreation __________
Shellfish Resource __________

Thank you very much for your time and input to this project. If you have any questions regarding this project, please contact Stephen Frano at the Southampton Town Trustees office (phone: 631-287-5717), or by email at stephen.frano@duke.edu
<table>
<thead>
<tr>
<th>Management Alternatives</th>
<th>Affect on Coastal Habitat</th>
<th>Affect on Water Level Management</th>
<th>Affect on Salinity level Management</th>
<th>Affect on Water Quality Management</th>
<th>Affect on Shellfish</th>
<th>Affect on Public Access</th>
<th>Cost of Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stabilization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continual Dredging</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seasonal Dredging</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Periodic opening (Status Quo)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Periodic Opening with Assessment of Criteria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Artificial Openings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 7: Shellfisher Survey Results

Twelve survey responses were received from commercial shellfishers. The survey results are as follows:

1) Do you participate in shell fishing in Mecox Bay? Yes_11_ No_1_
2) If yes, what type of shellfish do you catch?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>oysters, softshell clams, crabs</td>
<td>3</td>
</tr>
<tr>
<td>oysters, softshell clams</td>
<td>6</td>
</tr>
<tr>
<td>oysters</td>
<td>2</td>
</tr>
</tbody>
</table>

3) Do you notice changes in the water level of Mecox Bay? Yes_11_ No_1_
4) If yes, how do they affect you?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>low level= less access points to water</td>
<td>1</td>
</tr>
<tr>
<td>low level= easier access to soft clam areas</td>
<td>4</td>
</tr>
<tr>
<td>high level= low salinity, harm shellfish</td>
<td>1</td>
</tr>
<tr>
<td>Less access to water &amp; Easier to Soft clam</td>
<td>1</td>
</tr>
<tr>
<td>Easier to Soft clam &amp; Low salinity harms shellfish</td>
<td>1</td>
</tr>
<tr>
<td>No Affect</td>
<td>1</td>
</tr>
<tr>
<td>No Answer</td>
<td>2</td>
</tr>
</tbody>
</table>

5) Do you notice changes in the water quality of Mecox Bay? Yes_12_ No_0_
6) If yes, what do you notice?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>notice changes in water clarity</td>
<td>7</td>
</tr>
<tr>
<td>notice improved quality</td>
<td>4</td>
</tr>
<tr>
<td>smaller shellfish from lower salinity</td>
<td>1</td>
</tr>
</tbody>
</table>

7) How do those changes affect you?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>ability to extract</td>
<td>3</td>
</tr>
<tr>
<td>better quality = more shellfish</td>
<td>4</td>
</tr>
<tr>
<td>poor quality = harm shellfish</td>
<td>1</td>
</tr>
<tr>
<td>No Answer</td>
<td>4</td>
</tr>
</tbody>
</table>

8) Do you use a boat or watercraft on Mecox Bay? Yes_11_ No_1_
9) If yes, what type of watercraft is it? 10) From where do you launch it?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>small motor boats 16-20'</td>
<td>11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Various Ramps</td>
<td>3</td>
</tr>
<tr>
<td>Watermill Ramps</td>
<td>2</td>
</tr>
<tr>
<td>Mohawk &amp; Bay Ave Ramps</td>
<td>2</td>
</tr>
<tr>
<td>Mohawk Ave Ramp</td>
<td>1</td>
</tr>
<tr>
<td>Town Ramp</td>
<td>1</td>
</tr>
<tr>
<td>No Answer</td>
<td>2</td>
</tr>
</tbody>
</table>
11) While shell fishing, can you tell if Mecox Inlet is open or closed? Yes_10_ No_2_

12) If yes, how can you tell?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>observe inlet &amp; tidal action</td>
<td>2</td>
</tr>
<tr>
<td>observe inlet &amp; low water level</td>
<td>1</td>
</tr>
<tr>
<td>low water level &amp; tidal action</td>
<td>2</td>
</tr>
<tr>
<td>low water level</td>
<td>2</td>
</tr>
<tr>
<td>tidal action</td>
<td>2</td>
</tr>
<tr>
<td>poor quality when closed</td>
<td>1</td>
</tr>
</tbody>
</table>

13) Do you prefer if Mecox Inlet is open or closed?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>open</td>
<td>5</td>
</tr>
<tr>
<td>no opinion</td>
<td>2</td>
</tr>
<tr>
<td>needs both opening &amp; closing</td>
<td>5</td>
</tr>
</tbody>
</table>

14) Why?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>open for a healthier bay for shellfish</td>
<td>5</td>
</tr>
<tr>
<td>opening and closing necessary to maintain conditions</td>
<td>4</td>
</tr>
<tr>
<td>no opinion</td>
<td>1</td>
</tr>
<tr>
<td>No Answer</td>
<td>2</td>
</tr>
</tbody>
</table>

15) The Town of Southampton Board of Trustees engage in policy to manage the dynamics of Mecox Inlet. Do you feel your interests are represented in these policies? Yes_10_ No_1_  

16) Why or Why not?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>support shellfish/baymen—periodic opening and closing plan</td>
<td>8</td>
</tr>
<tr>
<td>support shellfish and homeowners</td>
<td>1</td>
</tr>
<tr>
<td>support shellfish but need more monitoring efforts for decisions</td>
<td>1</td>
</tr>
<tr>
<td>support only select individuals</td>
<td>1</td>
</tr>
<tr>
<td>No Answer</td>
<td>1</td>
</tr>
</tbody>
</table>

17) Please rank the following issues in their order of importance for managing the Mecox Bay and Inlet system. (1 = Most Important, 5 = Least Important)

<table>
<thead>
<tr>
<th>Water Level</th>
<th>Water Quality</th>
<th>Ecology/Wildlife</th>
<th>Recreation</th>
<th>Shellfish Resource</th>
<th>Average</th>
<th>Range</th>
<th>Most often rank</th>
<th># Of times most often rank occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.57</td>
<td>1.14</td>
<td>3.29</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-4</td>
<td>1-2</td>
<td>2-4</td>
<td>5</td>
<td>1-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>3 &amp; 4</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>3</td>
<td>7</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 8: Homeowner Survey Results

One hundred and seven survey responses were received from Mecox Bay Homeowners. The survey results are as follows:

1) How long have you or your family lived in the area?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10 years</td>
<td>29</td>
</tr>
<tr>
<td>11-25 years</td>
<td>40</td>
</tr>
<tr>
<td>26-50 years</td>
<td>27</td>
</tr>
<tr>
<td>51+ years</td>
<td>5</td>
</tr>
</tbody>
</table>

2) Do you use Mecox Bay? Yes _97_ No _9_

3) If yes, what type of activities do you do?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boating/ Swimming and other water activities</td>
<td>61</td>
</tr>
<tr>
<td>fishing and shell fishing</td>
<td>0</td>
</tr>
<tr>
<td>Enjoying Aesthetics</td>
<td>5</td>
</tr>
<tr>
<td>water activities and fishing activities</td>
<td>19</td>
</tr>
<tr>
<td>Water activities and enjoying aesthetics</td>
<td>10</td>
</tr>
<tr>
<td>No Answer</td>
<td>2</td>
</tr>
</tbody>
</table>

4) Do you use the ocean beach around Mecox Bay? Yes _98_ No _9_

5) If yes, what type of activities do you do?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beach Activities</td>
<td>89</td>
</tr>
<tr>
<td>Boating</td>
<td>2</td>
</tr>
<tr>
<td>Beach Activities and boating</td>
<td>3</td>
</tr>
<tr>
<td>No Answer</td>
<td>4</td>
</tr>
</tbody>
</table>

6) Do you notice changes in the water level of Mecox Bay? Yes _98_ No _9_

7) If yes, how do they affect you?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>no affect</td>
<td>14</td>
</tr>
<tr>
<td>low level= less boat access</td>
<td>38</td>
</tr>
<tr>
<td>low level= unpleasant aesthetics</td>
<td>7</td>
</tr>
<tr>
<td>low level= less wildlife: birds, crabs</td>
<td>3</td>
</tr>
<tr>
<td>high level= flooding</td>
<td>11</td>
</tr>
<tr>
<td>varying water level, affects access to activities except boating</td>
<td>11</td>
</tr>
<tr>
<td>Less access and unpleasant aesthetics</td>
<td>5</td>
</tr>
<tr>
<td>Less access and less wildlife</td>
<td>2</td>
</tr>
<tr>
<td>Unpleasant aesthetics and less wildlife</td>
<td>1</td>
</tr>
<tr>
<td>Less access and flooding</td>
<td>1</td>
</tr>
<tr>
<td>No Answer</td>
<td>5</td>
</tr>
</tbody>
</table>
8) Do you notice changes in the water quality of Mecox Bay? Yes 61  No 44
9) If yes, what do you notice?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>negative change in water quality- algae, clarity</td>
<td>30</td>
</tr>
<tr>
<td>unpleasant smell and bugs</td>
<td>2</td>
</tr>
<tr>
<td>positive change in water quality- clarity</td>
<td>7</td>
</tr>
<tr>
<td>fluctuation of water quality/clarity</td>
<td>14</td>
</tr>
<tr>
<td>Overflow from Cesspools</td>
<td>1</td>
</tr>
<tr>
<td>Negative change in water quality and unpleasant smell</td>
<td>5</td>
</tr>
<tr>
<td>No Answer</td>
<td>2</td>
</tr>
</tbody>
</table>

10) How do those changes affect you?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>unaffected</td>
<td>7</td>
</tr>
<tr>
<td>unpleasant aesthetics—takes away from quality of life or limits access</td>
<td>24</td>
</tr>
<tr>
<td>negative quality—harmful to environment</td>
<td>7</td>
</tr>
<tr>
<td>positive quality—improved environment</td>
<td>4</td>
</tr>
<tr>
<td>unpleasant aesthetics and harmful to environment</td>
<td>3</td>
</tr>
<tr>
<td>No Answer</td>
<td>16</td>
</tr>
</tbody>
</table>

11) Do you use a boat or watercraft on Mecox Bay? Yes 86  No 21
12) If yes, what type of watercraft is it? 13) From where do you launch it?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>paddle boat (canoe, kayak, rowboat)</td>
<td>38</td>
</tr>
<tr>
<td>sailboat</td>
<td>4</td>
</tr>
<tr>
<td>motorboat</td>
<td>16</td>
</tr>
<tr>
<td>personal watercraft (jet ski)</td>
<td>3</td>
</tr>
<tr>
<td>Paddleboat and sailboat</td>
<td>11</td>
</tr>
<tr>
<td>Paddleboat and motorboat</td>
<td>3</td>
</tr>
<tr>
<td>Sailboat and motorboat</td>
<td>3</td>
</tr>
<tr>
<td>Motorboat and PWC</td>
<td>3</td>
</tr>
<tr>
<td>Paddleboat, sailboat and motorboat</td>
<td>1</td>
</tr>
<tr>
<td>Paddleboat, motorboat, and PWC</td>
<td>2</td>
</tr>
<tr>
<td>No Answer</td>
<td>2</td>
</tr>
</tbody>
</table>

14) Do you participate in shell fishing in Mecox Bay? Yes 15  No 90
15) If yes, is it for commercial or personal use and what type of resources do you use?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crabs for Personal use</td>
<td>12</td>
</tr>
<tr>
<td>Crabs and Clams for Personal use</td>
<td>1</td>
</tr>
<tr>
<td>Oysters and Clams for Commercial use</td>
<td>1</td>
</tr>
<tr>
<td>No answer</td>
<td>1</td>
</tr>
</tbody>
</table>
16) From your home, can you tell if Mecox Inlet is open or closed? Yes_96 No_10  
17) If yes, how can you tell?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Level Fluctuation</td>
<td>82</td>
</tr>
<tr>
<td>Observe Inlet</td>
<td>7</td>
</tr>
<tr>
<td>Water Clarity/Quality Changes</td>
<td>1</td>
</tr>
<tr>
<td>No Answer</td>
<td>6</td>
</tr>
</tbody>
</table>

18) Do you prefer if Mecox Inlet is open or closed?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td>47</td>
</tr>
<tr>
<td>Open</td>
<td>23</td>
</tr>
<tr>
<td>Need Both, open and closed</td>
<td>21</td>
</tr>
<tr>
<td>Don't Care/ No Affect</td>
<td>4</td>
</tr>
<tr>
<td>No Answer</td>
<td>12</td>
</tr>
</tbody>
</table>

19) Why?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed to maintain high water level</td>
<td>30</td>
</tr>
<tr>
<td>Closed for high water level and better aesthetics with improved quality</td>
<td>6</td>
</tr>
<tr>
<td>Open for cleaner/healthier bay</td>
<td>11</td>
</tr>
<tr>
<td>Open to control water level</td>
<td>6</td>
</tr>
<tr>
<td>Open for low water level</td>
<td>4</td>
</tr>
<tr>
<td>Need both to maintain environmental quality and control water level</td>
<td>12</td>
</tr>
<tr>
<td>Need both to maintain high water level</td>
<td>1</td>
</tr>
<tr>
<td>Need both to maintain low water level</td>
<td>0</td>
</tr>
<tr>
<td>Need both to control water level</td>
<td>6</td>
</tr>
<tr>
<td>Need both to balance quality and utility</td>
<td>9</td>
</tr>
<tr>
<td>No Answer</td>
<td>22</td>
</tr>
</tbody>
</table>

20) Have you ever experienced flooding from high water levels of Mecox Bay? Yes_26 No_81  
21) If yes, what was the extent of the flooding (lawn, basement, septic system, etc.)?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lawn</td>
<td>12</td>
</tr>
<tr>
<td>Basement</td>
<td>5</td>
</tr>
<tr>
<td>Septic System</td>
<td>1</td>
</tr>
<tr>
<td>Lawn and Basement</td>
<td>0</td>
</tr>
<tr>
<td>Lawn and Septic System</td>
<td>2</td>
</tr>
<tr>
<td>Basement and Septic System</td>
<td>1</td>
</tr>
<tr>
<td>Lawn, Basement and Septic System</td>
<td>4</td>
</tr>
<tr>
<td>No Answer</td>
<td>1</td>
</tr>
</tbody>
</table>

22) If yes, when did it happen or how often does it happen?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Occasionally</td>
<td>12</td>
</tr>
<tr>
<td>Occasionally</td>
<td>7</td>
</tr>
<tr>
<td>Regularly - before some openings</td>
<td>6</td>
</tr>
<tr>
<td>Consistently - before every opening</td>
<td>1</td>
</tr>
</tbody>
</table>
23) The Town of Southampton Board of Trustees engage in policy to manage the dynamics of Mecox Inlet. Do you feel your interests are represented in these policies? Yes___No___

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>43</td>
</tr>
<tr>
<td>Yes</td>
<td>37</td>
</tr>
<tr>
<td>Indifferent/ No Opinion/ Sometimes</td>
<td>25</td>
</tr>
<tr>
<td>No Answer</td>
<td>2</td>
</tr>
</tbody>
</table>

24) Why or Why not?

<table>
<thead>
<tr>
<th>Response</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management is done well for water level, ecology, and balancing stakeholder desires</td>
<td>19</td>
</tr>
<tr>
<td>Low Water Level Prevents Use: boat access, mud flats, too frequently opened, creeks/coves not maintained, or just less aesthetically pleasing</td>
<td>18</td>
</tr>
<tr>
<td>Never Been asked—No communication to find out opinions</td>
<td>10</td>
</tr>
<tr>
<td>Don't Know or understand the policies—No communication to explain them</td>
<td>16</td>
</tr>
<tr>
<td>Trustees forced to make decisions from outside pressures/stakeholder groups</td>
<td>4</td>
</tr>
<tr>
<td>Trustees don't understand what they are doing, make the wrong decisions or just don't care</td>
<td>6</td>
</tr>
<tr>
<td>Leave it alone</td>
<td>2</td>
</tr>
<tr>
<td>No Answer</td>
<td>32</td>
</tr>
</tbody>
</table>

25) Please rank the following issues in their order of importance for managing the Mecox Bay and Inlet system. (1 = Most Important, 5 = Least Important)

<table>
<thead>
<tr>
<th>Water Level</th>
<th>Water Quality</th>
<th>Ecology/Wildlife</th>
<th>Recreation</th>
<th>Shellfish Resource</th>
<th>Average</th>
<th>Range</th>
<th>Most often rank</th>
<th># Of times most often rank occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.065</td>
<td>2.097</td>
<td>2.290</td>
<td>3.871</td>
<td>4.667</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td>1-5</td>
<td>1-5</td>
<td>2-5</td>
<td>1-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>36</td>
<td>27</td>
<td>34</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>