

SHELLFISH AQUACULTURE LEASE PROGRAM IN PECONIC BAY AND GARDINERS BAY SUFFOLK COUNTY, NY



Steve Levy
County Executive

GENERIC ENVIRONMENTAL IMPACT STATEMENT STATEMENT OF FINDINGS

Prepared for:
Suffolk County Department of Planning
PO Box 6100
Hauppauge, NY 11788-0099

Prepared by:
CASHIN ASSOCIATES, P.C.
1200 Veterans Memorial Highway
Hauppauge, NY 11788



September 22, 2008

***SUFFOLK COUNTY SHELLFISH AQUACULTURE LEASE PROGRAM
IN PECONIC BAY AND GARDINERS BAY***

GENERIC ENVIRONMENTAL IMPACT STATEMENT

STATEMENT OF FINDINGS



**Steve Levy
County Executive**

Department of Planning

Thomas A. Isles, A.I.C.P.

Director

Suffolk County Department of Planning

H. Lee Dennison Building

100 Veterans Memorial Highway

P.O. Box 6100

Hauppauge, NY 11788-0099

September 22, 2008

THIS PAGE INTENTIONALLY LEFT BLANK

***SUFFOLK COUNTY SHELLFISH AQUACULTURE LEASE PROGRAM
IN PECONIC BAY AND GARDINERS BAY***

GENERIC ENVIRONMENTAL IMPACT STATEMENT

STATEMENT OF FINDINGS

Preparation Date: September 22, 2008

Issuance Date: As of adoption by the Suffolk County Legislature

SEQRA Classification: Type I

Lead Agency: County of Suffolk
H. Lee Dennison Building
100 Veterans Memorial Highway
Hauppauge, New York 11788

Contact Name: DeWitt S. Davies, Ph.D.
Chief Environmental Analyst
Suffolk County Department of Planning
H. Lee Dennison Building
100 Veterans Memorial Highway
Hauppauge, New York 11788

Prepared by: Cashin Associates, P.C.
1200 Veterans Memorial Highway
Hauppauge, New York 11788

Location: Underwater lands in Peconic Bay and Gardiners Bay, seaward of 1,000 feet from the high water mark, within the jurisdiction of Suffolk County

THIS PAGE INTENTIONALLY LEFT BLANK

***Suffolk County Aquaculture Lease Program Advisory Committee
(ALPAC)***

Committee Members

| | |
|---|--|
| Thomas A. Isles, A.I.C.P., Chairman DeWitt S. Davies, Ph.D. (<i>Alternate</i>) | Suffolk County Department of Planning |
| Carrie Meek Gallagher Todd Stebbins (<i>Alternate</i>) | Suffolk County Executive Designee Suffolk County Department of Environment and Energy |
| Hon. Jay H. Schneiderman | Suffolk County Legislature Environment, Planning and Agriculture Committee |
| Martin Trent Kimberly Paulsen (<i>Alternate</i>) | Suffolk County Department of Health Services |
| Gilbert Anderson, P.E. Robert H. Whelan, P.E. (<i>Alternate</i>) | Suffolk County Department of Public Works |
| John Aldred | Town of East Hampton |
| Victor Bethge | Town of Shelter Island |
| David O. Conover, Ph.D. William M. Wise (<i>Alternate</i>) | School of Marine and Atmospheric Sciences, Stony Brook University |
| Vacant Debra A. Barnes (<i>Alternate</i>) | New York State Department of Environmental Conservation, Bureau of Marine Resources |
| Wayne L. Grothe | The Nature Conservancy |
| Stuart Heath Arnold Leo (<i>Alternate</i>) | East Hampton Town Baymen's Association, Inc. |
| Lt. David Lessard | Town of Riverhead |
| James McMahon | Town of Southold |
| Gregg Rivara Christopher F. Smith (<i>Alternate</i>) | Cornell Cooperative Extension of Suffolk County |
| Karen Rivara | East End Marine Farmers Association |
| Cornelia G. Schlenk | New York Sea Grant Institute |
| Hon. Jon S. Semlear Hon. Edward J. Warner, Jr. | Town of Southampton (joint appointment) |

THIS PAGE INTENTIONALLY LEFT BLANK

**SUFFOLK COUNTY SHELLFISH AQUACULTURE LEASE PROGRAM
IN PECONIC BAY AND GARDINERS BAY**

GENERIC ENVIRONMENTAL IMPACT STATEMENT

STATEMENT OF FINDINGS

Table of Contents

| Section | Page |
|--|-------------|
| 1.0 Introduction..... | 1 |
| 2.0 Location of Proposed Action..... | 1 |
| 3.0 Description of Proposed Action | 1 |
| 4.0 Procedural History..... | 2 |
| 5.0 Alternatives Considered | 4 |
| 6.0 Findings Concerning Relevant Environmental Impacts | 5 |
| 6.1 Natural Resources..... | 5 |
| 6.1.1 Amplification of Native and Exotic Shellfish Diseases | 5 |
| 6.1.2 Shellfish Harvest Techniques..... | 6 |
| 6.1.3 Impacts to Sediment Characteristics and Benthic Fauna | 6 |
| 6.1.4 Impact to Phytoplankton Composition and Nutrient Cycling..... | 7 |
| 6.1.5 Displacement and Attraction of Species | 8 |
| 6.1.6 Suspended Sediment/Turbidity | 8 |
| 6.1.7 Carrying Capacity-Phytoplankton/Nutrients Depletion | 9 |
| 6.1.8 Enhanced Recruitment..... | 9 |
| 6.1.9 Site Impacts and Down-drift Impacts | 10 |
| 6.1.10 Accidental Release of Shellfish | 10 |
| 6.1.11 Genetic Changes..... | 10 |
| 6.1.12 Impacts to Protected and Important Species | 10 |
| 6.2 Socio-Economic and Cultural Impacts | 10 |
| 6.2.1 Loss of Harvest Area | 10 |
| 6.2.2 Loss of Maritime Traditions | 11 |
| 6.2.3 Changes in Employment Opportunities/Incomes | 11 |
| 6.2.4 Value of Fishery Resources..... | 11 |
| 6.2.5 Potential Supplemental Income | 11 |
| 6.2.6 Shoreline Facilities..... | 11 |
| 6.2.7 Conflicts over Lease Boundaries | 11 |
| 6.3 Transportation | 12 |
| 6.3.1 Hazards to Navigation | 12 |
| 6.3.2 Restrictions on Use..... | 12 |
| 6.4 Visual..... | 12 |
| 6.4.1 Loss of Aesthetic Values/Qualities..... | 13 |
| 6.5 Use and Conservation of Energy | 13 |
| 6.6 Solid Waste Management..... | 13 |
| 6.7 Acquisition of Land..... | 13 |

| | |
|--|-----------|
| 6.8 Groundwater Resources | 13 |
| 6.9 Air Quality | 13 |
| 7.0 Cumulative and Growth Inducing Impacts | 13 |
| 7.1 Existing Aquaculture, Fishing/Shellfishing | 13 |
| 7.2 Shore-side Requirements | 14 |
| 8.0 Unavoidable Adverse Impacts | 14 |
| 8.1 Restriction on Navigation | 14 |
| 8.2 Loss of Access to Bottomlands | 14 |
| 8.3 Loss of Access to Water Column | 14 |
| 8.4 Loss of Bottomland to Other Species | 14 |
| 8.5 Utilization of Shoreline Areas | 15 |
| 8.6 Escape of Cultured Bivalves | 15 |
| 9.0 Irreversible and Irrecoverable Commitments of Resources | 15 |
| 10.0 Alternatives | 15 |
| 10.1 Overview of Alternatives Analysis | 15 |
| 10.2 Alternative 1A – Minimum Lease | 16 |
| 10.3 Alternative 1B – Proposed Action | 17 |
| 10.4 Alternative 2 – No Action | 17 |
| 10.5 Alternative 3 – Elimination of Existing Aquaculture Activities | 18 |
| 10.6 Alternative 4 – Unlimited Lease Growth | 19 |
| 10.7 Summary of Impact Analysis of Alternatives | 20 |
| 11.0 Conclusion | 20 |

Tables

Table 1.Total Conceivable Acreage and Potential Impact Outcomes for Each Alternative

1.0 Introduction

This Statement of Findings is issued pursuant to the State Environmental Quality Review Act (“SEQRA”), New York. Environmental Conservation Law (NYS ECL) Article 8, and its implementing regulations adopted by the New York State Department of Environmental Conservation (“NYSDEC”) and codified at Title 6 of the New York Code of Rules and Regulations (“NYCRR”) Part 617 (the “SEQRA Regulations”). This statement sets forth the findings of the Suffolk County (the County), with respect to the development of the Suffolk County Shellfish Aquaculture Lease Program in Peconic Bay and Gardiners Bay as summarized in the Draft Generic Environmental Impact Statement (DGEIS), dated March 19, 2008 and further addressed in the Final Generic Environmental Impact Statement (FGEIS), dated September 3, 2008. Although, Suffolk County, as Lead Agency, has the authority to approve the proposed action, implementation will require additional permitting from all relevant local, state, and federal agencies as more fully described in Section 3.0 of the DGEIS.

This Statement of Findings has been prepared to demonstrate that:

1. the procedural requirements of SEQRA have been met;
2. the proposed Lease Program was selected from among the reasonable alternatives as the choice that minimized potential adverse impacts;
3. as required by 6 NYCRR Section 617.11(d), consistent with social, economic and other essential considerations from among the reasonable alternatives available, the action is one that avoids or minimizes adverse environmental impacts to the maximum extent practicable; and,
4. the comments and concerns submitted by the public as well as the Suffolk County Council on Environmental Quality have been addressed and mitigated to the maximum extent practicable.

2.0 Location of Proposed Action

The proposed Shellfish Aquaculture Lease Program study area is located in the Peconic Estuary system which comprises the coastal waters between the north and south forks of eastern Long Island, Suffolk County, New York (DGEIS, Figure 1). These coastal waters are within the boundaries of Suffolk County’s five eastern towns: Riverhead, Southold, Southampton, East Hampton, and Shelter Island. The extent of County jurisdiction for shellfish aquaculture leasing purposes encompasses approximately 110,000 acres and extends from the western shore of Great Peconic Bay easterly to a line running from the easternmost point of Plum Island to Goff Point at the entrance to Napeague Harbor, excluding those underwater lands within 1,000 feet from the high water mark.

3.0 Description of Proposed Action

Pursuant to New York State Environmental Conservation Law §13-0302 (2004 Leasing Law), the State of New York ceded to Suffolk County all underwater lands of Peconic and Gardiners Bays seaward of 1,000 feet from the high water mark for the purposes of shellfish cultivation. The Peconic Estuary has approximately 158,000 acres of surface water area. However, the project study area consists of approximately two-thirds of the open water within the estuary, roughly 110,000 acres, which is naturally divided by

peninsulas (necks) and islands into a series of interconnected embayments. The 2004 Leasing Law also requires that the County adopt regulations governing: applications for leases; notices to be given; the form and term of leases; standards for the approval or denial of leases; administration of leases; the transfer or renewal of leases; marking grounds and testing; fees; recording of leases; and other matters as are appropriate to the Lease Program. If no leases for shellfish aquaculture are executed by December 31, 2010, the authority of Suffolk County to issue such leases shall terminate and the County will forfeit any of its title to the underwater lands.

The County is proposing an action to institute a shellfish aquaculture lease program in Peconic and Gardiners Bays that will support existing aquaculture activities, and promote a moderate growth of the industry. The program components have been designed to ensure that any negative impacts on the environmental, socio-economic, and historic resources have been identified and either mitigated or eliminated entirely.

The Shellfish Aquaculture Lease Program proposed by the County has been designed to provide access to public lands for the purpose of shellfish aquaculture. Implementation of this program does not obviate the need to comply with all other relevant regulatory and permit requirements. In particular, shellfish harvesting activities are closely regulated under New York State Environmental Conservation Law by NYSDEC. As the regulatory agency, the NYSDEC issues permits for shellfish aquaculture and establishes conditions on aquaculture activities that must be met as part of permit requirements. The conditions can include, but are not limited to, types of shellfish to be cultured, number of shellfish to be cultured, number and types of equipment (e.g., cages), harvesting methods, and siting of aquaculture operations. NYSDEC also regulates shellfish harvesting activities relating to sanitary quality and species size limits. It is not the intent of the Suffolk County Lease Program, nor is it within the authority of the County, to regulate the specific activities and requirements that have been established under the Environmental Conservation Law. As stated above, the leasing program will be established to provide access to underwater lands for shellfish aquaculture within the area ceded to the County by the 2004 Leasing Law. Obtaining and renewing a lease with the County will be contingent upon possession of a valid aquaculture permit from the NYSDEC; the specific conditions of that permit must be established by the NYSDEC. The dual function of the County and NYSDEC will help to ensure that the Lease Program is carried out in accordance with proper environmental mitigation measures to protect existing resources and marine activities in areas of Peconic and Gardiners Bays included in the program.

4.0 Procedural History

As per 6 NYCRR Section 617, the Suffolk County Department of Planning, on behalf of Suffolk County, conducted a coordinated review with NYSDEC and all East End Towns and Villages, sought SEQRA lead agency status and issued its Notice of Intent to serve as lead agency on February 5, 2007. In its role as lead agency, Suffolk County prepared and distributed an Environmental Assessment Form (EAF). The County was subsequently designated the SEQRA lead agency for the action. Based on the information contained in the EAF, Suffolk County, in Resolution #241-2007 determined that the project could have the potential to result in significant adverse environmental impacts and issued a

Positive Declaration on April 11, 2007. In addition to the Positive Declaration, Suffolk County also issued a Draft Scoping Document for the GEIS. The Draft Scoping Document was posted on the Suffolk County Department of Planning web site and widely distributed to public officials and agencies and other interested parties. A combined Notice of Positive Declaration, Public Scoping, and Intent to Prepare a Draft Environmental Impact Statement was published in the *Environmental Notice Bulletin* on April 18, 2007.

A public scoping meeting was held on May 3, 2007, at the Suffolk County Community College, Eastern Campus; at 121 Speonk-Riverhead Road. Written comments were accepted through May 17, 2007, and a Final Scoping Document dated August 23, 2007, reflecting consideration of comments made during the scoping process, was adopted by Suffolk County through Resolution #780-2007, and a Notice of Completion of the Final Scoping Document on the Draft GEIS was issued on September 6, 2007.

The DGEIS was then prepared in accordance with the Final Scoping Document. On March 19, 2008, pursuant to Chapter 279 of the Administrative Code, the Suffolk County Council on Environmental Quality, in Resolution 03-08, determined that the DGEIS was satisfactory with respect to its scope, content, and adequacy, and a Notice of Completion was issued. Copies of the DGEIS were posted on the Suffolk County Department of Planning web site and were widely distributed to public officials and agencies and other interested parties. Copies were also sent to East End libraries for convenient local viewing. A Notice of Completion and Public Hearing was published in the March 26, 2008 issue of the *Environmental Notice Bulletin*. Hearing notices were also published according to SEQRA Regulations in the *Smithtown News* and the *Long Island Business News*. All notices also invited written comments with respect to the DGEIS, and established a comment period extending to May 1, 2008.

On April 17, 2008, the Suffolk County Council on Environmental Quality in conjunction with the Suffolk County Department of Planning, Legislature and County Executive held a public hearing on the DGEIS at Riverhead Town Hall, 200 Howell Avenue, Riverhead.

On June 24, 2008, Suffolk County reviewed all substantive comments on the DGEIS and authorized the preparation of a FGEIS through Resolution 477-2008.

A FGEIS has been prepared to address all substantive comments that were raised during the public review process of the DGEIS and was presented at the September 17, 2008 meeting of the Suffolk County Council on Environmental Quality. The FGEIS was also posted on the Suffolk County Department of Planning web site and copies were widely distributed to public officials and agencies and other interested parties. Copies were also sent to East End libraries for convenient local viewing. A Notice of Completion of Final GEIS was issued on September 3, 2008.

The remaining steps of the process for the proposed action, including completion of SEQRA review and subsequent actions, are as follows:

- Based on the information and analysis contained in the DGEIS and FGEIS, the County will adopt a Statement of Findings, which is the final environmental basis for the County decision, and will: (a) establish whether the proposed action avoids or mitigates significant adverse environmental impacts to the maximum extent practicable, consistent with social, economic, and other essential considerations from among the reasonable alternatives available (Positive Findings); or (b) establish that the proposed action does not satisfy this prerequisite for approval (Negative Findings). Adoption of this Findings Statement completes the SEQRA process.
- Using Positive Findings, the County can proceed with the official adoption of the Shellfish Aquaculture Lease Program in Peconic Bay and Gardiners Bay and associated management techniques, which comprise the proposed action.

5.0 Alternatives Considered

Alternative 1A - Minimum Lease

The minimum lease alternative as described in the DGEIS would allow for all existing aquaculture activities currently operating in Peconic and Gardiners Bays that comply with the requirements set forth in the 2004 Lease Law to become part of the County's Lease Program. Private land grants would be eligible, as well as the NYSDEC Temporary Marine Area Use Assignments (TMAUAs) located within those areas identified as to avoid environmentally or socio-economically sensitive areas. There would be no provision for additional leases on underwater lands not previously used for shellfish aquaculture.

Alternative 1B - Proposed Action (Minimum Lease with Moderate Growth)

Under this preferred alternative, Suffolk County would allow for the inclusion of existing aquaculture activities seaward of the 1,000 feet from high water mark, and provide for a moderate growth of the aquaculture industry. Portions of oyster grants that are currently permitted to cultivate species other than oysters, or have been so between January 1, 1999 and December 31, 2008, would be allowed to convert to a Suffolk County aquaculture lease. Fallow grants and those that have been used to cultivate oysters only in the above-mentioned time period would be allowed up to two 10-acre leases within grant boundaries. TMAUAs that fall within the environmentally/socio-economically sensitive area must remain 5-acre circular plots. Those that lie outside this area have the opportunity to expand to 10-acre square sites. Furthermore, in keeping with the intent of the 2004 Lease Law, Suffolk County would also allow for up to 60 acres of new leases a year for the first 10 years of the program. These leases would be square in shape and located in areas that have been previously identified so as to minimize environmental and/or socio-economic impacts to the greatest extent possible.

Alternative 2 - No Action

As described by 6 NYCRR § 617.9(b)(5)(iii)(v), "Preparation and Content of Environmental Impact Statements," the No-Action alternative "evaluate(s) the adverse or beneficial site changes that are likely to occur in the reasonably foreseeable future, in the absence of the proposed action." The No-Action alternative is the primary frame of reference for evaluation whether the proposed components of this lease program conform

to the requirements of SEQRA. Should the County decide not to proceed with the development and adoption of the proposed lease program, aquaculture in the Peconic Estuary would remain limited to use of existing oyster grants and the TMAUAs. The County would not comply with the 2004 Leasing Law and would subsequently lose all rights, title and interest to approximately 110,000 acres of underwater lands for the purposes of shellfish cultivation.

Alternative 3 - Elimination of Existing Aquaculture Activities

This alternative suggests that the County will not support any shellfish aquaculture activities in the Peconic Bay System. This alternative assumes the hypothetical case that the TMAUAs and grant lands will also no longer be available for aquaculture. In addition, this alternative suggests an action that will intentionally create a negative impact to certain environmental and socio-economic resources and, although addressed as an alternative in the DGEIS, would not be practicable or meet the intent of the 2004 Leasing Law.

Alternative 4 - Unlimited Lease Growth

An unlimited growth alternative would not only allow the continuance of the TMAUAs program and aquaculture on private oyster grants, but would also allow for the unbridled addition of new lease areas within the Peconic Bay System. Allowing for the unlimited growth potential of private aquaculture practices could potentially have a severe negative effect on other East End maritime industries, as well as pose a possible threat to the environmental integrity of the bays. Although evaluated as part of the SEQRA process, the unlimited growth alternative would not be practicable, and should be avoided to prevent unavoidable environmental and socio-economic impacts.

6.0 Findings Concerning Relevant Environmental Impacts

6.1 Natural Resources

6.1.1 Amplification of Native and Exotic Shellfish Diseases

Shellfish diseases naturally occur in the marine environment, and some of them are known to affect both wild and cultured populations of shellfish. When introduced or amplified by aquaculture, diseases and parasites could theoretically be a threat to wild shellfish populations. While the proposed lease program will not cause or create new shellfish diseases, the potential for disease outbreaks in limited density natural populations as a result of seed importation cannot be dismissed.

Mitigation

Regulatory requirements under the jurisdiction of NYSDEC already provide for the reduction of risk from introduced shellfish diseases. To minimize the potential for disease introduction, local sources of shellfish seed should be used for cultivation. Information on disease history for each lot and site of origin should be provided. A certificate certifying each lot to be disease-free will be required.

In addition, the NYSDEC is currently working on adopting a “Policy of Acceptable Origin of Shell and Shellstock for Introduction in New York.” Criteria identified include: the use of native species only; restriction on the source of shellfish to locations north of New York with no known disease presence (specific exceptions apply); health certification required prior to the issuance of a permit; Shellfish Importation Permit required prior to importing shellfish from locations outside of New York; and altered strains generally not permitted to be introduced into state waters with the exception of disease resistant stocks. These requirements will serve to avoid adverse impacts associated with the use of non-native species.

6.1.2 Shellfish Harvest Techniques

On-bottom harvesting of cultivated shellfish is typically done through either manually operated devices or mechanical equipment, such as dredges. Although any type of disturbance to the bay bottom, mechanical or not, could be considered to adversely impact benthic flora and fauna, mechanical harvest methods seem to be the major issue of concern for the proposed action. Effects are generally related to the intensity of the operation, the time scale within which the operations are undertaken, and the bottom type of the area being harvested. For example, structured and vegetated bottoms are more likely to be adversely affected by mechanical harvesting than flat, un-vegetated bottoms.

Mitigation

Limiting the number and area of leases and using a conservative growth rate of new leases, will provide for the opportunity to learn from experience what the impacts of aquaculture would be at selected sites. A limit on the total area of underwater lands committed to aquaculture will limit the extent of potential adverse impacts to ecological and socio-economic conditions in the bay system.

The program will provide for the placement of leases in areas where conflicts with existing users of the estuary, and environmental impacts to sensitive marine and coastal environments will both be minimized.

If the use of mechanical devices is permitted by the NYSDEC on a lease under the County’s program, impacts to environmentally-sensitive areas (i.e., eelgrass beds, natural and historic shellfish beds) would be minimized, as new leases would not be issued in such areas. Because of the limits on the number and area of leases mentioned above, the amount of lease area that would be actually subject to mechanical harvest would be minimal, and therefore, the estuary bottom that would be affected would also be minimal. The actual authorization of mechanical harvesting on a lease must be approved by the NYSDEC through the existing regulatory permit process under NYS ECL.

6.1.3 Impacts to Sediment Characteristics and Benthic Fauna

Shellfish aquaculture structures can lower current velocities or alter current patterns in growing areas which may increase sediment deposition through bio-deposition from bivalve feeding. This could have a significant impact in areas that already have limited current velocity. The increase in sedimentation can change the infaunal community structure to one dominated by deposit-feeding species.

Another impact associated with shellfish aquaculture structures is sediment scouring. Aquaculture gear may present obstructions to local tidal flow with flow increasing around and underneath the structure. Tidal flow restrictions from a large grouping of submerged gear may result in strong tidal flow underneath, possibly resulting in localized scouring and a coarsening of the bottom sediments.

Mitigation

Several different mitigation measures to avoid any adverse impacts to the sediment and benthic fauna are listed in the DGEIS and FGEIS which include, but are not limited to: controlling lease size; limiting the number of leases; limiting the type of culture; limiting the biomass of shellfish; and monitoring of environmental conditions. These mitigation measures will allow the County to diversify the placement of shellfish leases and the NYSDEC to modify activities on such leases to ensure that minimal impacts are sustained in any given environment found within the project area.

By utilizing one or more of the above-mentioned mitigation methods, the County believes that any impact associated with the proposed action, such as increased sediment deposition or changes to benthic fauna, can be mitigated. For example, by limiting the number of leases and/or limiting biomass of shellfish on a lease in areas with limited velocity, any significant impacts to that area from the proposed action can be reduced or eliminated.

Impacts from the proposed action that may result in sediment scouring can also be mitigated utilizing one or more of the methods mentioned above. For example, by limiting the type of culture activity (i.e., not allowing off-bottom structures in areas prone to high sediment scouring), sediment scouring that could result from the proposed action can be eliminated or mitigated.

6.1.4 Impact to Phytoplankton Composition and Nutrient Cycling

Shellfish bivalves feed by filtering particulate matter including phytoplankton and zooplankton from the water column. Introduction of additional numbers of filtering shellfish will theoretically affect the abundance and composition of plankton communities which, in turn, will affect nutrient cycling in the bays.

Mitigation

The level of any impact on plankton composition and nutrient cycling is scale dependent, and the small increase in shellfish populations proposed under the aquaculture program will not have significant adverse impacts. Aquaculture may

have beneficial effects by increasing the numbers of shellfish in the bays, which historically had greater shellfish populations, and by providing additional filtering capacity for moderating plankton populations. Additional mitigation of potential impacts to phytoplankton composition and nutrient cycling will be brought about by program components that limit the size of aquaculture sites, provide buffer areas between sites, limit the numbers and biomass of cultured species, distribute leases throughout the bay system, and provide for monitoring of environmental conditions.

The environmental monitoring program should include water quality and ecological analyses necessary to assess both possible adverse and beneficial effects of aquaculture for Peconic Bay and Gardiners Bay.

6.1.5 Displacement and Attraction of Species

Aquaculture infrastructure can alter benthic communities by providing both substrate for attachment and forage/refuge areas. These alterations have the potential to increase secondary productivity and may impact local species through shading, sedimentation, and erosion, by disturbances associated with gear set-up and harvesting.

Mitigation

The displacement and attraction of species, like many other impacts that could potentially develop from the proposed action, are scale-dependent. In other words, an impact's severity will be dependent upon the size of the action. For this reason, several of the mitigation methods discussed in the DGEIS and FGEIS about this impact relate to limiting lease numbers, lease sizes, types of culture activity, and biomass of shellfish. Plot rotation by individual aquaculture operations is also another method discussed. Including this impact as another parameter to be monitored will help to assess any potential issues as the County's aquaculture program grows in accordance with its moderate growth potential.

Much of data acquired during the research portion of this project suggested that submerged aquaculture gear, in general, increases species diversity and improves nursery habitat for mobile invertebrates and juvenile fish. It is suggested that the gear creates underwater structure that provides refuge from predation, reduces physical and physiological stress, enhances settlement and recruitment, and increases food supply. This improved habitat can be potentially beneficial to native species, especially in areas devoid of any relief or hard substrate. This would also hold true with areas that have been impacted by anthropogenic actions, such as over-harvesting.

6.1.6 Suspended Sediment/Turbidity

The concern expressed over the potential for the proposed action to suspend sediments and create turbidity is linked to mechanical harvesting methods. There is a fear that large-scale harvesting by mechanical dredges will create extensive turbidity plumes that will significantly impact the bay system.

Mitigation

The method of shellfish harvest is regulated and controlled by the NYSDEC. The County is prepared to coordinate with NYSDEC to implement a best management practice (BMP) approach that will help to avoid any significant impacts within the project area. As discussed in Section 3.0, the County Lease Program will provide for access to underwater lands, while the NYSDEC maintains regulatory authority over aquaculture operations under NYS ECL.

As discussed in the DGEIS and the FGEIS documents, few aquaculture operations exist that meet the documentation of existing activity requirements set forth by the NYSDEC that make them eligible to conduct mechanical harvesting on their sites.

6.1.7 Carrying Capacity-Phytoplankton/Nutrients Depletion

The suggested adverse impact is that shellfish associated with increased aquaculture operations could overly deplete the plankton resources through filter feeding, and adversely affect competing species.

Mitigation

As discussed under item 6.1.4, the scale of the proposed alternative provides for only a moderate increase in shellfish populations. The potential increase in shellfish populations is not expected to have significant impacts on bay-wide plankton populations. Several different mitigation measures to avoid any adverse impacts to the carrying capacity and nutrient depletion are listed in the DGEIS and FGEIS which include, but are not limited to: controlling the lease size; limiting the number of leases; limiting the type of lease; limiting the biomass of shellfish; and monitoring of environmental conditions. These mitigation measures will allow the County to diversify the aquaculture program to ensure minimal impacts occur in any given environment within the project area.

Based on the above, it is concluded that there will be no significant impact to the carrying capacity of the bay system because of the program's small scale commitment of resources (a maximum potential use of less than 3% of the total bay system).

6.1.8 Enhanced Recruitment

It is believed that the proposed action will not have a significant adverse impact on recruitment. In fact, the data acquired during the information gathering part of the program development seems to indicate that shellfish aquaculture has a positive impact on wild stock populations. Aquacultured shellfish provide a breeding stock that can serve to increase shellfish spawning, setting, and recruitment in the surrounding areas. It should be noted that the NYSDEC regulates aquaculture activities through a permitting process that helps to ensure that impacts to the wild shellfish stock of the Peconic Bay system are minimized.

6.1.9 Site Impacts and Down-drift Impacts

It is believed that the proposed action will not have significant adverse site and down-drift impacts. As stated previously, because the proposed action will only involve less than a maximum of 3 percent of the Peconic Bay system, any site or down-drift impacts that may occur will most likely be localized and no more severe than those impacts caused by commercial fishery activities currently occurring in the bay.

6.1.10 Accidental Release of Shellfish

It is believed that the proposed action will not have a significant adverse impact related to the accidental release of non-native or exotic shellfish. Several mitigation methods discussed in the DGEIS and FGEIS are designed to eliminate or mitigate this impact, including the use of local seed stock. In addition, the NYSDEC regulates importation through its permitting process.

6.1.11 Genetic Changes

It is believed that the proposed action will not have any significant adverse impacts on the genetics of wild stock. As stated in the DGEIS, because there is the potential for the comingling of genes between selectively bred and wild shellfish stocks, one of the County's mitigation recommendations is to use local varieties of shellfish stock in culture operations. The NYSDEC also regulates the use of shellfish stock in aquaculture programs.

6.1.12 Impacts to Protected and Important Species

It is believed that the proposed action will not have any significant adverse impacts to protected and important species. As part of the program's design, significant research was performed to delineate environmental and socio-economic sensitive areas. Such areas were not included in the area where leases could be issued (i.e., the Shellfish Cultivation Zone) in order to ensure minimal impacts to protected and important species. Should additional information indicating the presence of protected and/or important species arise during the public review process, an alternative site will have to be selected.

6.2 Socio-Economic and Cultural Impacts

6.2.1 Loss of Harvest Area

Off-bottom shellfish aquaculture structures could preclude the use of the water column and underwater land for commercial and recreational fisherman. In addition, if a lease site becomes abandoned, aquaculture gear could impact fishing vessels and associated gear.

Mitigation

Under the proposed program, the area in which a lease may be placed has been delineated to reduce impacts to commercial and recreational fisherman. This includes naturally productive finfish and shellfish areas. The application process also provides for the opportunity for the public to object to a chosen site for

productivity reasons which would, in turn, require either a benthic survey or the selection of an alternative location. The lease program also has an administrative mechanism that provides for the identification of gear owners and the removal of aquaculture gear in the event that a lease is terminated or abandoned.

6.2.2 Loss of Maritime Traditions

As early as the mid 1800s, aquaculture has been utilized as a means to sustain shellfisheries on Long Island. Therefore, as a maritime tradition in itself, it is believed that the proposed action will not have a significant adverse impact on the loss of maritime traditions, but instead promote them.

6.2.3 Changes in Employment Opportunities/Incomes

As fishery opportunities decline and state/federal catch and license regulations increase, the ability to earn a sustainable income by harvesting wild marine life has become more difficult. Although there are mixed opinions among baymen about possibly entering the aquaculture industry, the proposed action will provide the opportunity for a displaced fisherman to remain employed in a maritime industry, if he or she wishes to do so. Therefore, the proposed action will not have a significant adverse impact on employment opportunities, but instead may increase them.

6.2.4 Value of Fishery Resources

It is possible that increased production of cultured shellfish may result in a higher demand for cultured shellfish than those harvested from wild stocks. However, shellfish prices are currently governed by out-of-state suppliers, and the shellfish industry on Long Island is losing ground to out-of-state aquaculture operations, not local aquaculture businesses. Therefore, it is believed that the proposed action will not have a significant adverse impact on the value of fishery resources and, in fact, may help keep the Long Island shellfish industry competitive.

6.2.5 Potential Supplemental Income

Any increased activity in the maritime industries in Peconic Bay and Gardiners Bay has the potential to supplement East End residents' incomes. Therefore, it is believed that the proposed action will not have a significant adverse impact on potential supplemental income, but instead, it may provide opportunities to increase such income.

6.2.6 Shoreline Facilities

It is believed that the proposed action will not have a significant adverse impact on shoreline facilities, but instead may provide opportunities for restoring local waterfronts by increasing the demand for seafood processing areas, marine mechanics and boat repair businesses, aquaculture gear manufacturing, and related water-dependent activities.

6.2.7 Conflicts over Lease Boundaries

Conflicts between users of public resources are not uncommon, and are sometimes unavoidable. However, it is believed that the proposed action will not have a significant adverse impact related to conflicts over lease boundaries.

Mitigation

The County has several different mitigation methods included in the DGEIS and FGEIS to address conflicts over lease boundaries. Most importantly, the boundaries of all leases will be properly marked in a standardized fashion that clearly identifies the corners of the lease plots. Lease boundaries must be surveyed and marked by a New York State licensed surveyor. Lease plots will be surrounded by substantial buffer zones. Therefore, it is believed that the proposed action will not have a significant adverse impact on conflicts over lease boundaries.

6.3 Transportation

6.3.1 Hazards to Navigation

Underwater structures or gear associated with the proposed action could have the potential to adversely impact navigation. In addition, an increase in the number of shellfish aquaculture leases would also increase the number of buoys marking the sites, and locating gear, thus possibly creating navigational hazards.

Mitigation

By requiring standards for marking lease areas; notifying the public, towns, and government agencies during the public comment period of the leasing process; and limiting the placement of structures and requiring lease buffer zones, the County believes that any potential adverse impact from the proposed action on navigation will be minimized/mitigated.

6.3.2 Restrictions on Use

The placement of gear in public water will preclude the use of the water column and underwater land by commercial and recreational fishermen. Floating gear could impact recreational activities, such as boating, windsurfing, and waterskiing.

Mitigation

The mitigation methods described in Section 6.3.1 above, would also apply when mitigating impacts from the proposed action on restricting use. Because of the scaled down level of leasing (a maximum potential use of less than 3 percent of entire system), restrictions on use are expected to be minimal. Therefore, it is believed that the proposed action will not have a significant adverse impact on restricting use of the bay system.

6.4 Visual

6.4.1 Loss of Aesthetic Values/Qualities

Boundary markers for lease sites, as well as individual gear markers, may interfere with the visual resources of the estuary. Some off-bottom culture gear involves numerous markers or floatation devices that intrude upon the visual resources/seascape views.

Mitigation

The 1,000-foot shoreline buffer will minimize the view of floating markers and buoys associated with submerged aquaculture gear from the shoreline and important scenic vistas. Visual impacts from large floating structures or gear can be mitigated by restricting the use of such gear where aesthetic values would be significantly impacted. Markers or buoys associated with submerged gear should be visually unobtrusive, standardized, and deployed in a minimum amount per lease site. In addition, underwater lands in high traffic areas, mooring areas, and popular fishing areas have been excluded from leasing as part of the process to develop the proposed program.

6.5 Use and Conservation of Energy

It is believed that the proposed action will not impact the use and conservation of energy.

6.6 Solid Waste Management

While shellfish aquaculture operations may generate some solid waste, it is not expected to have a significant impact on solid waste management.

6.7 Acquisition of Land

It is believed that the proposed action will not have a significant impact on the acquisition of land.

6.8 Groundwater Resources

It is believed that the proposed action will not impact groundwater resources.

6.9 Air Quality

It is believed that the proposed action will have no impact on air quality.

7.0 Cumulative and Growth Inducing Impacts

Shellfish aquaculture leasing in the Peconic Estuary will be limited. Given that the magnitude of aquaculture activity proposed is not extensive, and that cumulative on and off-site impacts are proportional to both the number and spatial extent of culture operations, it follows that growth inducing impacts will also be limited.

7.1 Existing Aquaculture, Fishing/Shellfishing

The adoption and implementation of the *Shellfish Aquaculture Lease Program in Peconic Bay and Gardiners Bay* is likely to increase the area of the estuary utilized for aquaculture operations. However, a carefully considered and controlled expansion under the program can help protect sensitive habitats, avoid immediate and

cumulative adverse impacts on present finfishing and/or shellfishing activities, and prevent unacceptable industry growth. While some areas of bottom and surface water will become unavailable for finfishing or shellfishing, the lease program is designed to avoid currently and potentially productive areas.

7.2 Shore-side Requirements

For the proposed project, it is anticipated that existing shoreline facilities can accommodate the increase in shellfish aquaculture activities likely to occur over the next 10 years or more. Certain commercial facilities associated with fishing of wild stocks have declined in use as wild stocks have declined (e.g., bay scallops), and aquaculture activities may help to off-set some of this loss.

8.0 Unavoidable Adverse Impacts

Although most of the potential adverse impacts associated with the proposed action can be mitigated, few unavoidable impacts remain. However, the magnitude of these unavoidable impacts, like cumulative effects, is scale-related and are expected to be minimal.

8.1 Restriction on Navigation

In some areas, aquaculture activities on leases will restrict vessel navigation, and boaters will be required to navigate around lease boundary markers and gear buoys. The degree of this impact is likely to be minimal, since leases will be limited in number and size, and the scale of operations will also be limited.

8.2 Loss of Access to Bottomlands

The New York State Environmental Conservation Law prohibits others from taking shellfish from licensed aquaculture operations and from tampering or damaging aquaculture equipment. Cultured shellfish cannot be taken by other commercial fishermen, and the placement of aquaculture gear will restrict certain commercial fishing activities as well as recreational activities within the aquaculture sites. These impacts will be very limited due to the scale down nature of the proposed alternative.

8.3 Loss of Access to Water Column

Commercial and recreational fisherman and other recreational uses may be restricted in some areas where submerged aquaculture gear would pose a hazard to such uses. However, the degree of this impact is likely to be minimal, since leases will be limited in number and size, and the scale of operations will also be limited.

8.4 Loss of Bottomland to Other Species

Benthic species and submerged aquatic vegetation (SAV) beds may be impacted by the placement of aquaculture gear on the bottom, or from shading effects from suspended gear. The degree of impact to eelgrass is expected to be non-existent, since leases will not be issued in areas where eelgrass beds exist. In addition, no lease will be permitted within 1,000 feet of the shoreline where the majority of the historic and current eelgrass beds are known to occur. The degree of impacts to

bottom-dwelling finfish is expected to be minimal, since leases will be limited in number and size, and the scale of operations will also be limited.

8.5 Utilization of Shoreline Areas

Off-loading and staging efforts associated with aquaculture will most likely take place at existing shoreline facilities, such as marinas and public boat ramps. This increase in usage may affect other users of these shoreline areas. However, since the number of leases is limited, and because they will be dispersed throughout the estuary, the degree of this impact is expected to be minimal. Use of shoreline areas for aquaculture operations may tend to offset declines in usage from diminished wild stock fisheries.

8.6 Escape of Cultured Bivalves

On-bottom hard clam culture involves a technique known as broadcasting (i.e., planting) seed on the bay bottom. During the broadcasting process, it is not uncommon for some seed to intermittently escape into the wild. However, the NYSDEC policy requires the use of native shellfish species only; therefore any escape of seed would pose minimal if any risk to native populations or the environment. In fact, spawning activity of cultured shellfish may help to restore/augment native shellfish populations.

9.0 Irreversible and Irrecoverable Commitments of Resources

It is believed that the proposed action will not result in an irreversible and irretrievable commitment of resources.

10.0 Alternatives

10.1 Overview of Alternatives Analysis

A discussion of alternatives to the proposed action is required by SEQRA. It is important to discuss reasonable alternatives to the project, or portions of the project, that achieve the same or similar objectives of the project sponsor (i.e., Suffolk County). The purpose of the alternatives analysis is to provide comparative assessment of the impacts of each alternative. A “no action” alternative must always be discussed and is especially relevant for governmental actions involving the expenditure of public funds. For the preparation of Generic EISs, the alternatives analysis must address alternative actions at the conceptual stage, and because of the broad scope of future site specific actions following a Generic EIS, hypothetical scenarios are appropriate for the alternatives analysis.

During the scoping process and follow-up development of the proposed alternative, several alternatives were identified for consideration in the Draft GEIS. As a Generic EIS, the use of specific types of equipment, technologies and other site related activities could not be performed. Site selection under the proposed aquaculture plan will be performed at a later stage through a lease application review process by the County, and the process will be subject to public and agency review. Furthermore,

specific lease sites will be subject to permit application review, most importantly by the NYSDEC, which is the issuing agency for aquaculture permits.

As required by SEQRA, alternatives to the proposed County Lease Program (Alternative 1B) were identified and are addressed below in this section. The alternatives considered include a minimum lease program (1A), a no action alternative (2), an elimination of aquaculture alternative (3), and an unlimited growth alternative (4). These alternatives represent the range of hypothetical alternatives to the proposed action.

As part of the analysis, the potential maximum acreages of underwater land committed to shellfish aquaculture have been calculated for each alternative including the recommended alternative. The results of this calculation demonstrate that the total amount of underwater land potentially committed to shellfish aquaculture under the program is a very small (approximately 2.9 percent) portion of the total area.

10.2 Alternative 1A – Minimum Lease

Alternative 1A represents a reduced scale shellfish aquaculture lease program. It provides for the establishment of leases only on sites where aquaculture is presently or has recently been conducted (i.e., grants and TMAUAs). The restrictions of the 2004 Leasing Law still apply, specifically the exclusion of areas 1,000 feet from the shore, areas identified as productive for other fisheries, and areas where significant conflicts with other users of the estuary cannot be avoided.

This alternative allows the conversion of all existing NYSDEC TMAUAs and private oyster grants that meet the 2004 Leasing Law requirements into leases issued under the Suffolk County Aquaculture Lease Program.

Aquaculture 1A Components

- Currently the combined acreage of these two entities (grants and TMAUAs) that meet the 2004 Leasing Law requirements is a total of approximately 2553.5 acres, which is approximately 2.3 percent of the 110,000 acres of underwater land within the project area.
- Those TMAUAs that appear to be within the 1,000 ft. shoreline buffer are not within the jurisdiction of this program and will not be considered for leasing. However, the area directly offshore of 1,000 ft. in the same general area of the TMAUAs (within the cultivation zone) will be made available for leasing.
- Some of the grants have a portion of their acreage located within the 1,000 ft. shoreline buffer. Those portions of the grants that are within the 1,000 ft. shoreline buffer zone will be excluded from the lease program. However, all of the remaining acreage of those grants that is located in the cultivation zone will be permitted to participate in the County Lease Program.
- Private grant owners will be allowed to apply for an aquaculture lease for species other than oysters and, dependent on past and current activities, will

be permitted into the program on a case-by-case basis as applicable under the 2004 Lease Law. Expansion of aquaculture operations on grants will also be subject to NYSDEC regulatory process as well.

Assessment

This alternative is similar to Alternative 1B (Proposed Action) in that it will provide for establishment of County leases for grants and TMAUAs. It differs in one important way – it does not provide for any expansion of aquaculture into new areas of the estuary. With the exception of moderate growth in Alternative 1B, the impacts of this alternative would be comparable to the impacts of the proposed action because the total acreage of underwater lands committed to aquaculture is comparable under both scenarios. This alternative would provide an increased level of security and business stability to existing grant and TMAUAs holders. Although impacts of this alternative are comparable to that of the proposed action, Alternative 1A is deemed to be unacceptable because it does not satisfy an important mandate of the 2004 Leasing Law, which is to provide for an expansion of aquaculture in the Peconic/Gardiners Bay system.

Also in contrast to Alternative 1B, this alternative would not have a provision for educational/experimental leases and municipal leases for shellfish resource restoration, which represent beneficial impacts associated with the proposed action. This alternative was not considered further because it did not meet the primary objective of the 2004 Leasing Law.

10.3 Alternative 1B – Proposed Action (Minimum Lease with Moderate Growth)

This alternative includes all areas being considered in Alternative 1A and also provides for future growth of the industry by permitting additional use of underwater lands for aquaculture within defined limits. This alternative would make available approximately an additional 300 acres of bottom land for new entities at the end of the first five-year period, and another approximately 300 acres at the end of 10 years. This alternative is the proposed action. The full description of this alternative, its program components, and associated impacts are given in Sections 1 through 4 of the DGEIS document, and modified in the FGEIS. Currently this alternative will include all TMAUAs and underwater land grants seaward of the 1,000 ft. buffer zone that will meet the County's program requirements. This alternative includes the acreage discussed in Alternative 1A and allows for an additional 600 acres during the first 10 years of the program. This total potential acreage to be committed to shellfish aquaculture under this alternative after 10 years is approximately 3,153.5 acres (2.9 percent of 110,000 acres available).

10.4 Alternative 2 – No Action

Under this No Action Alternative, Suffolk County would not institute a Shellfish Aquaculture Lease Program for Peconic Bay and Gardiners Bay and no Shellfish Cultivation Zone Map would be adopted. Access to bottom lands for aquaculture would be obtained under current practices. These current practices include the

existing NYSDEC TMAUAs and all 65 of the underwater land grants that have the right to cultivate oysters. Under this alternative, between the NYSDEC TMAUAs and privately owned oyster grants there is a total conceivable area of approximately 5,977 acres of underwater land available for aquaculture activity. No leases would exist under this alternative.

No ecological or physical impacts associated with the proposed action would be expected under the No Action alternative. It would not provide any further stability or security to existing aquaculture activities, and it would not provide a program for expansion of aquaculture. The TMAUAs would be subject to annual approval by the NYSDEC, and growth would be limited by the constraints of the TMAUA program and permitted activities on existing privately owned oyster grants. Socio-economic benefits of an expanded and improved aquaculture program would not be realized. The beneficial impacts of expanded aquaculture on the ecology of the estuary, such as those related to water quality and improved spawning stock, would not be realized. A positive impact of this alternative is that there would be no expenditure of County funds required to implement and manage a lease program; conversely, there would be no revenue generated by lease fees and economic activity. Although this alternative would not have significant environmental impact beyond that of current conditions, the No Action alternative was deemed unacceptable because it does not meet the fundamental objectives of the 2004 Leasing Law.

10.5 Alternative 3 – Elimination of Existing Aquaculture Activities

Under Alternative 3, Suffolk County would not institute a Shellfish Aquaculture Lease Program for Peconic and Gardiners Bays and no Shellfish Cultivation Zone Map would be adopted. In addition, under this hypothetical alternative, TMAUAs would no longer be issued by NYSDEC in the Peconic Estuary, all existing TMAUAs would be terminated, and shellfish aquaculture would be eliminated on oyster grants. Under this alternative there would be no acreage available for shellfish cultivation in the County's program.

Existing shellfish aquaculture businesses currently operating under TMAUAs would be forced to cease operations. The termination of the existing shellfish aquaculture businesses would have adverse economic impacts on existing aquaculture operations and companies/individuals who provide supplies to those operators, including hatcheries that provide seed. This alternative would not have beneficial impacts to the bays' ecology, or to socio-economic conditions of the area that are associated with an expansion of aquaculture. Furthermore, this alternative is not viable due to the fact that Suffolk County does not have legal authority to terminate the NYSDEC TMAUA program if no County Lease Program is adopted.

This alternative was deemed unacceptable because it does not meet the objectives of the 2004 Leasing Law, it would have adverse socio-economic impacts, and would not have the beneficial impacts associated with aquacultural activity.

10.6 Alternative 4 – Unlimited Lease Growth

This alternative would provide for the unlimited growth of aquaculture throughout the Peconic Bay/Gardiners Bay system. Allowing this alternative would make available the entire 110,000 acres of underwater land ceded to the County.

This alternative would involve the conversion of all NYSDEC TMAUAs and private oyster grants into leases issued under the Suffolk County Aquaculture Lease Program and would allow for the addition of new leases throughout the entire estuary without excluding areas that are environmentally or socio-economically sensitive (in conflict with the 2004 Leasing Law). Under this alternative, the amount of new leases would not be restricted to a defined growth rate, and a cap on new leases would not be implemented. This alternative would have significant adverse impacts in numerous areas:

- Impacts on ecological resources would be greater than that of the proposed action because the amount of underwater land committed to aquaculture would be potentially many times larger than that associated with the proposed action.
- Lessons learned from a phased program would be unavailable, and the potential for the occurrence of irreversible ecological effects would be magnified.
- Impacts to other users of the estuary would be intensified because aquaculture would expand into areas presently used by other groups including commercial fishermen, recreational boaters, and other commercial operations. In contrast, the proposed action is designed to minimize conflict with other users of the estuary.
- This alternative could have adverse impacts to economic conditions if expanded aquaculture suppressed product value because of overproduction.
- This alternative would conflict with other jurisdictions, such as those associated with town and village Local Waterfront Revitalization Plans (LWRPs) because leases could potentially be placed in areas deemed by LWRPs as environmentally or socio-economically important.
- Enforcement needs would be substantially greater than those for the proposed alternative, because of the greater potential for user conflicts, gear conflicts, abandoned gear, vandalism and theft, and unauthorized activity by aquaculture operations.
- Alternative 4 would meet the objectives of the 2004 Leasing Law by providing for an expansion of aquaculture, but would be in contradiction of the law by not providing for protection of existing fisheries and environmental conditions in the estuary. Alternative 4 has been deemed unacceptable because it would not comply with all the objectives of the 2004 Leasing Law and would potentially have adverse impacts to environmental and socio-economic conditions.

This alternative is not considered feasible since it is an extreme alternative that would likely cause conflicts with other commercial and recreational users of the estuary.

10.7 Summary of Impact Analysis of Alternatives

Alternatives 1A, 1B and 2 have the least potential for significant adverse environmental, socio-economic, and cultural impacts. The expansion of aquaculture activities under the proposed action, Alternative 1B, will reduce the potential of significant adverse impacts through specific mitigation measures, as discussed in detail in Section 5. The potential for significant adverse impacts associated with Alternatives 1A and 2 would also be minimal since the extent of shellfish aquaculture operations would be equal to or less than what currently exists. The elimination of aquaculture activities under Alternative 3 would result in potential significant adverse socio-economic impacts to the local shellfish industry and to baymen currently earning their income from the industry. The greatest amount of significant adverse impacts would occur under Alternative 4, based on the extreme scale of aquaculture activities. Table 1 shows the total acreage conceivable for each alternative and the potential impacts that would likely occur for each.

11.0 Conclusion

The County has fully considered the relevant environmental impacts, facts, and conclusions disclosed in the DGEIS and FGEIS for the Shellfish Aquaculture Lease Program in Peconic Bay and Gardiners Bay, Suffolk County, New York. Having analyzed the relevant socio-economic and environmental impacts and other considerations set forth in this Statement of Findings, Suffolk County, as the Lead Agency, hereby certifies that: the requirements of 6 NYCRR Part 617 have been met; the findings are consistent with social, economic, and other essential considerations from among the reasonable alternatives available in such a way to minimize or avoid the adverse environmental impacts disclosed in the EIS to the maximum extent practicable; and adverse environmental effects revealed in the SEQRA process will be minimized or avoided to the maximum extent practicable through the mitigation methods that were identified as practicable in DGEIS, FGEIS, and Statement of Findings.

In addition, the implementation of the *Shellfish Aquaculture Lease Program in Peconic Bay and Gardiners Bay* is expected to yield the following benefits:

- Provide people with the opportunity to obtain access to underwater lands for raising shellfish.
- Encourage private investment in aquaculture businesses and the establishment of shellfish farms at secure locations that do not pose conflicts with commercial fishermen and other bay users.
- Expand the marine-based economy and create related job opportunities.
- Augment the spawning potential of native shellfish populations and exert positive influence on water quality by helping to control nutrient cycling and

to prevent noxious plankton blooms as a result of the increase in the number of shellfish.

- Provide other potential positive impacts related to the establishment of aquaculture leases such as increasing suitable substrate for both flora and fauna on bottom structures as well as commensal relationships between commercial fishing activities and culture activities.
- Provide additional opportunity for commercial fisherman to maintain their economic viability.
- Help to re-establish and strengthen traditional shellfish farming activities which have experienced decline since the early 1900s.
- Establish a monitoring program that will help to provide data and information about the shellfish aquaculture activities in Peconic Bay and Gardiners Bay.
- Provide a mechanism for the establishment of educational/experimental shellfish aquaculture operations which will enable valuable scientific and operational information to be collected.

The following table (Table 1) presents the total acreage conceivable and the potential outcomes associated with each alternative.

Table 1. Total Conceivable Acreage and Potential Impact Outcomes for Each Alternative

| ALTERNATIVE | Alt. 1A Minimum Lease | Alt. 1B Minimum Lease Moderate Growth | Alt. 2 No Action | Alt. 3 Elimination of Aquaculture | Alt. 4 Unlimited Lease Growth |
|---|------------------------------|---|------------------------------|--------------------------------------|----------------------------------|
| Potential Major Negative Impacts | | | | | |
| Geology | N | N | N | N | Y |
| Benthos | N | N | N | N | Y |
| Water column | N | N | N | N | Y |
| Water quality | N | N | N | N | Y |
| Submerged Aquatic Vegetation | N | N | N | N | Y |
| Sediment transport | N | N | N | N | Y |
| CNRAs | N | N | N | N | Y |
| Protected species | N | N | N | N | Y |
| User activities | N | N | N | N | Y |
| Potential Minor Negative Impacts | | | | | |
| Introduction of shellfish pathogens/diseases | N | N | N | N | Y |
| Harvest method impacts | N | N | N | N | Y |
| Sediment characteristics & benthos impacts | N | N | N | N | Y |
| Phytoplankton composition & nutrient cycling | N | N | N | N | Y |
| Restrictions on public access | N | N | N | N | Y |
| Maritime traditions | N | N | N | Y | Y |
| Employment / incomes | N | N | N | Y | Y |
| Wild fishery industry | N | N | N | N | Y |
| Navigation | N | N | N | N | Y |
| Aesthetic values | N | N | N | N | Y |
| Energy | N | N | N | N | Y |
| Beneficial Impacts | | | | | |
| Economy (direct and support sectors) | N | Y | N | N | Y |
| Employment opportunities | N | Y | N | N | Y |
| Maritime traditions | N | Y | N | N | Y |
| Ecology | N | Y | N | N | N |
| Seafood production | N | Y | N | N | Y |
| Total Conceivable Acreage of Leased Underwater Lands | 2,553.5⁽¹⁾ | 3,153.5⁽¹⁾ | 5,977^(1,2) | 0 | 110,000 |

Notes: Y=Yes
 N=No

⁽¹⁾ Please note that these estimated acreages do not include a possible total of 20 acres associated with the Winery Power LLC site near Plum Island, which was added to the Shellfish Cultivation Zone during the FGEIS process.

⁽²⁾ Leases would not exist, but aquaculture would be performed on TMAUAs and grants.