

SUFFOLK COUNTY
AGRICULTURAL ENVIRONMENTAL MANAGEMENT TASK FORCE FOR
NITROGEN AND PESTICIDE REDUCTION

May 26, 2004

Hon. Steve Levy
Suffolk County Executive H. Lee Dennison Building
P.O. Box 6100
Veterans Memorial Highway
Hauppauge, NY 11788

Hon. Joseph T. Caracappa
Presiding Officer, Suffolk County Legislature
Wm. Rogers Legislature Bldg.
725 Veterans Memorial Highway Smithtown, NY 11 787

Dear County Executive Levy, Presiding Officer Caracappa, and Members of the Legislature:

The Suffolk County Agricultural Task Force is pleased to present its recommendations for the development and implementation of a Suffolk County Agricultural Stewardship Program, pursuant to Suffolk County Resolution No. 520-2003. The Suffolk County Agricultural Stewardship Program is envisioned as a comprehensive program for maintaining and strengthening farming in Suffolk County, while improving groundwater and surface water quality.

The Suffolk County Agricultural Task Force has had nine meetings since September 2003 and numerous communications attendant to those meetings. Spirited and informative discussions centered on improving environmental management while keeping the business of farming profitable. We believe that these matters are properly balanced in the report.

There are two principal findings:

- Current funding to support agricultural environmental management is inadequate to materially improve best management practices to prevent or reduce non-point or point contamination from agricultural inputs.
- Existing agricultural environmental management responsibilities are dispersed between several agencies, including Cornell Cooperative Extension of Suffolk County, Suffolk County Soil and Water Conservation District and US Department of Agriculture - Natural Resources Conservation Service, and monitored by the Suffolk County Department of Health Services. At present, these programs are not well integrated or well coordinated.

First Recommendation: A voluntary Suffolk County Agricultural Stewardship Program centered on the concept of Agricultural Environmental Management based on whole farm planning with strong incentives

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to maximize participation, be established formally by the Legislature. This voluntary program, with 100% cost sharing, will cover the entire spectrum of farm management.

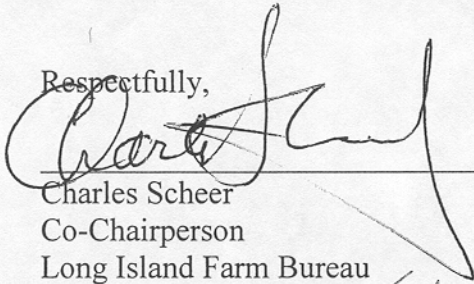
Second Recommendation: The creation of **Suffolk County Watershed Agricultural Stewardship Advisory Council** to help guide the current diffuse and under funded agricultural management responsibilities. We believe that the Council will be instrumental in establishing, evaluating, and coordinating the entire Suffolk County Agricultural Stewardship Program.

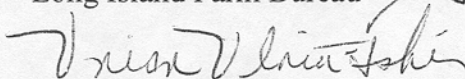
Third Recommendation: The proposed effort will require a meaningful commitment of technical support and funding, approaching \$3.5 million annually in the first five years. We propose that the initial funding come from a pool of funding from Federal, State, and County sources. It also may require new funding sources.

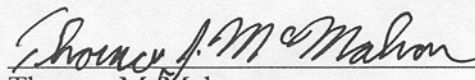
The Task Force appreciates the leadership that the Suffolk County Legislature has shown in this matter. To achieve meaningful pollution reduction, changes must be made in the way nitrogen and pesticide products are managed while ensuring agricultural profitability. To do this, Suffolk County must forge a new and better agricultural paradigm, as outlined in the report.

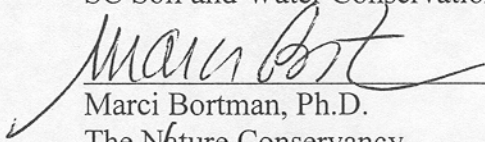
Suffolk County has led the region and the nation in a number of public policy innovations. Considering the value that residents place on the region's agricultural heritage and environment, and its economic importance to the County, we believe this is another area where Suffolk County is poised to lead the nation again.

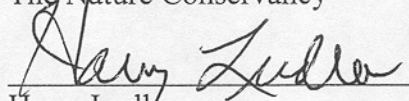
Respectfully,

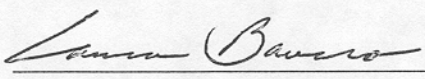

Charles Scheer
Co-Chairperson
Long Island Farm Bureau

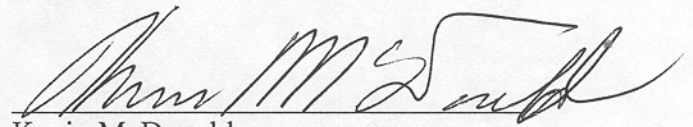

Vivian Vilorio-Fisher
Suffolk County Legislature, 5th District

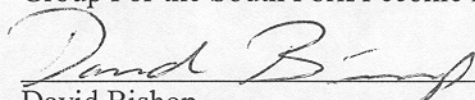

Thomas McMahon
SC Soil and Water Conservation District

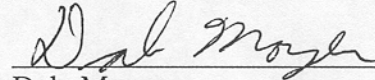

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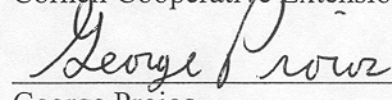

Harry Ludlow
Farmer

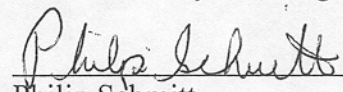

Laura Bavaro
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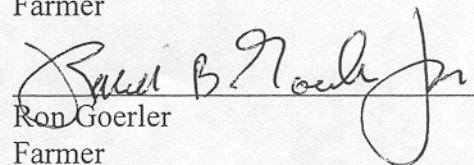

Kevin McDonald
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A Strategy to Develop and Implement the Suffolk County Agricultural Stewardship Program

*A Report of the Agricultural Environmental Management Task Force
for Nitrogen and Pesticide Load Reduction*

Final Report

May 26, 2004

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Summary

I. Goal

Cooperatively develop a strategy to lower nutrients and pesticide loading¹ to the groundwater and surface waters of Suffolk County, in accordance with the goals in Suffolk County Resolution 520-2003 which was based in part on Appendix H of the Peconic Estuary Program's Comprehensive Conservation and Management Plan², while maintaining a strong, viable agricultural industry in Suffolk County by:

- Providing technical staff, educational and cost-sharing opportunities to improve stewardship of agricultural inputs that are specifically oriented to Suffolk County's conditions and traditional agricultural activities.
- Encourage the use of new crops/varieties that will reduce the need for high levels of nitrogen and/or pesticide applications.
- Fund research to develop best management practices that reduce nitrogen and pesticide impacts on the environment.
- Provide educational programs that encourage the adoption of best management practices thereby preventing or reducing non-point or point contamination from agricultural inputs.
- Provide regional marketing assistance such as "Grown on Long Island" to Suffolk County growers.

II. Methodology

Develop and implement a voluntary Suffolk County Agricultural Stewardship Program through

- Use of Farm Site/Crop Agricultural Environmental Management (AEM) Worksheets developed by Cornell Cooperative Extension of Suffolk County (CCE) and Suffolk County Soil & Water Conservation District (SCSWCD), approved by New York State, to enable growers to achieve a higher level of environmental stewardship.
- Adoption of "Whole Farm Plans" using AEM technology, a New York State legislated program under the direction of the NYS Department of Agriculture & Markets and the NYS Soil & Water Conservation Committee.
- A Suffolk County Stewardship Certification Program, which will certify that a farm is participating in the Suffolk County Agricultural Stewardship Program.
- Additional comprehensive sustainable programs for individual commodities, including crop-specific guidelines on pest, nutrient, soil, water, and pesticide management.
- Additional research developing new best management practices to reduce and minimize the impact of nutrients and pesticides on groundwater and surface waters.
- Pilot integrated crop management projects demonstrating new best management practices in the areas of nutrient and pest management.

¹ The main concern is the amount of fertilizer and pesticides leaching to groundwater and surface waters. Theoretically, if fertilizer is applied such that the plant absorbs nearly all the nitrogen, the plant will incorporate the nitrogen into plant growth, and minimal nitrogen leaching will result.

² See Appendix B – Peconic Estuary Program Comprehensive Conservation and Management Plan, Appendix H: Agricultural Environmental Management Strategy, Attachment H-2

- Cost sharing for conservation plan implementation.

III. Management and Leadership

- A Suffolk County Watershed Agricultural Stewardship Advisory Council (SCWASAC), responsible to the Suffolk County Legislature, shall be created to develop and oversee the implementation of the annual workplan detailing nitrogen and pesticide reduction strategies. The SCWASAC shall be comprised of thirteen representatives, as further described in this report.
- An Agricultural Stewardship Director position shall be created to serve as the coordinator and staff of the SCWASAC. Duties of this position are further described in this report.
- An Agricultural Stewardship Coordinator position shall be created to coordinate research, education and technical aspects of the Suffolk County Agricultural Stewardship Program. Duties of this position are further described in this report.
- Cornell Cooperative Extension of Suffolk County and Suffolk County Soil & Water Conservation District will serve as lead agencies involved in this program.

IV. Evaluation

- Targeted Use Goals - The SCWASAC shall prepare detailed, targeted use goals for pesticides and nitrogen. Each year, the Agricultural Stewardship Director, in coordination with contract agencies, will draft a report to the SCWASAC and SC Legislature, outlining the activities and progress made in achieving the stated goals.
- Integrated Pest Management AEM Reporting - Pursuant to the AEM whole farm plan program, participating farmers shall report annual land stewardship activities to CCE and SCSWCD. An annual blind report will be prepared by CCE and SCSWCD, in cooperation with the Agricultural Stewardship Coordinator, to the SCWASAC.
- Groundwater Monitoring - The Suffolk County Department of Health Services shall monitor wells as appropriate to evaluate each main crop-type grown on Long Island and annually produce a “blind” report for the SCWASAC.

V. Funding Recommendations

- Funding approaching \$3.5 million per year for the first five years is recommended.
- County funding sources may include the Capital budget, the Suffolk County Water Quality Protection and Restoration Program (funded through the Suffolk County ¼% Sales Tax Program), and the operating budget.
- State funding sources may include the Environmental Protection Fund, Clean Water Act Section 319, and AEM funding.
- Federal funding sources may include EQIP and various other US Department of Agriculture grants available under the new Farm Bill.
- The SC Legislature may wish to consider potential new revenue sources to fund this program.

I. Introduction

Suffolk County is the leading agricultural county in New York State, based on the wholesale value of its agricultural products. The agricultural industry of Suffolk County is critical to the region's quality of life and agri-tourism economy but has had adverse impacts on groundwater (Long Island is a designated sole source aquifer for drinking water needs) and marine waters. These factors, plus the high level of awareness and concern for health, safety and environmental issues, have presented policy makers with real challenges. This report proposes robust policies to promote the county's agricultural industry while protecting groundwater and surface water.

Long Island's groundwater and estuarine waters are subject to contamination from the use of agricultural pesticides and fertilizers. Excessive nitrogen loading, contributed in part from fertilizers, has already resulted in adverse environmental impacts such as depressions in dissolved oxygen in select streams and embayments throughout Suffolk County. Both nitrogen and pesticides are a concern as they have adversely affected groundwater and numerous private water supply wells.¹

The voluntary Suffolk County Agricultural Stewardship Program proposed herein is envisioned as a comprehensive program for maintaining and strengthening farming in Suffolk County, while improving groundwater and surface water quality. The Program is centered on the concept of voluntary participation in the five-tiered NYS Agricultural Environmental Management Initiative, which is based on whole farm planning and implements best management practices to reduce nitrogen and pesticides over the entire spectrum of farm management. This report also recommends: 1) comprehensive sustainable programs for individual commodities, 2) pilot projects, 3) research, 4) cost-sharing for program implementation, 5) evaluation methodology, 6) leadership and personnel needs, 7) cost estimates for program implementation and 8) funding sources. The primary goal is to attain at least 90% participation by farmers in Suffolk County within five years.

II. Goals

A. Cooperatively develop a strategy to lower nutrients and pesticide loading² to the groundwater and surface waters of Suffolk County, in accordance with the goals in Suffolk County Resolution 520-2003 which was based in part on Appendix H of the Peconic Estuary Program's Comprehensive Conservation and Management Plan³, while maintaining a strong, viable agricultural industry.

1. Ensure methodologies that will retain agricultural diversity and profitability by promoting efficient and environmentally responsible crop production by:

¹ See Appendix B - Peconic Estuary Program Comprehensive Conservation and Management Plan, Appendix H: Agricultural Environmental Management Strategy

² The main concern is the amount of fertilizer and pesticides leaching to groundwater and surface waters. Theoretically, if fertilizer is applied such that the plant absorbs nearly all the nitrogen, the plant will incorporate the nitrogen into plant growth, and minimal nitrogen leaching will result.

³ See Appendix B - Peconic Estuary Program Comprehensive Conservation and Management Plan, Appendix H: Agricultural Environmental Management Strategy, Attachment H-2

- a. Adopting best management practices (BMPs) to prevent or reduce non-point or point contamination from agricultural inputs. BMPs will include methods of reducing pesticide and nitrogen use and/or maximizing the efficiency of these agricultural inputs by improved timing, formulations, new products, new technologies, water and soil management and use of new crops/varieties. These practices will be incorporated into an individual's whole farm plan.
 - b. Promoting regional marketing assistance such as "Grown on Long Island."
2. Provide technical support staff, educational and cost-sharing opportunities to improve stewardship of agricultural chemicals and nutrients that are specifically oriented to Suffolk County's environmental conditions and historical practices.
 3. Provide educational programs that encourage the adoption of best management practices that prevent or reduce non-point or point contamination from agricultural inputs.
 4. Fund research to develop best management practices that reduce nitrogen and pesticide impacts on the environment.

B. Implement a voluntary Suffolk County Agricultural Stewardship Program

III. Suffolk County Agricultural Stewardship Program

A. Agricultural Environmental Management (AEM)

The five (5) steps or tiers used in the NYS-AEM Initiative will be followed to allow farms to address environmental concerns on their farms, while maintaining a healthy agricultural economy. Although the AEM Initiative was developed in New York State and is a state-codified program, some modifications to the tools, such as the worksheets, are needed to tailor the program to Long Island's agricultural commodities and environmental concerns. The five tiers and any required modifications are:

- Tier 1 – A questionnaire designed to collect basic information, such as the type of commodities grown and farm practices, is completed by the farmer. This tier identifies farmer interests, stewardship opportunities, and potential environmental concerns.
- Tier 2 – Specific worksheets that assess the farm's impact and potential impact on the environment are completed by the farmer with assistance from a natural resources professional (technician). The worksheets selected are based upon answers to the Tier 1 questionnaire. Additional commodity worksheets need to be developed, and enhancements to existing worksheets are needed. Information collected in Tier 2 can be used to prioritize farms for Tiers 3 and 4.
- Tier 3 – A plan is developed to address specific environmental problems and concerns identified in Tiers 1 and 2. The plan will identify needed best management practices (BMPs) and/or changes in farm practices. Since the use of nutrients and pesticides is a major environmental concern, nutrient and pest management practices must be a

significant part of the plan. It is proposed that to adequately address the management of nutrients and pests, a holistic approach is needed. This could be accomplished by incorporating a comprehensive sustainable program (see III.B.) into the plan.

- Tier 4 – Plans developed in Tier 3 are implemented. Tier 4 may involve engineering and construction measures, or changes in farm practices and methods. Technical assistance will be provided to the farmer for implementation of the plan by staff from the Suffolk County Soil and Water Conservation District (SCSWCD), Cornell Cooperative Extension of Suffolk County (CCE) and the US Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS). Financial incentives are a critical factor to ensure implementation of the plan. Many of the BMPs and changes in farm practices can be expensive; an expanded cost-sharing program (see III.E.) shall be established.
- Tier 5 – Evaluation of both the local AEM Initiative as a whole and individual farm environmental evaluations shall be conducted. This includes measuring both participation in and effectiveness of the AEM Initiative at the individual farm level and at the larger area or watershed level (see III.F.).

B. Comprehensive Sustainable Programs for Individual Commodities

Thirteen environmental risk assessment worksheets have been developed for Long Island's agriculture/horticulture industries. These worksheets are general in nature and address common practices within all commodities. Due to the complexities of each commodity with regards to a crop management approach, comprehensive sustainable programs need to be developed. A recently developed, albeit in draft form, sustainable viticulture program will be used as a template to develop other comprehensive sustainable programs. These programs are expanded versions of the AEM worksheets. Developing comprehensive sustainable programs for the following crops/commodity groupings is envisioned: apples/peaches, container nursery, field stock nursery, potatoes, sweet corn, pumpkins (cucurbits), crucifers, tomato/peppers, spinach/lettuce (greens), snap beans, sod, greenhouse, field corn, and organic crops (nutrient management only).

These comprehensive sustainable programs will include crop-specific guidelines on pest management, nutrition management, soil management, water management, pesticide management, continuing education and action plans. Suffolk County Agricultural Stewardship Program technicians, with significant support from CCE, SCSWCD, and USDA-NRCS staff, will develop these programs.

C. Pilot Projects

To maintain their economic viability, Long Island growers need assistance to implement best management practices. The risks in changing practices must be reduced. Pilot integrated crop management (ICM) projects in the areas of nutrient and pest management will be used to demonstrate new best management practices such as:

- Evaluation of practices to reduce nitrogen loading in the range of 5 to 30 percent, depending on crop
- Utilization of split nitrogen applications to reduce leaching potential
- Use of slow release nitrogen fertilizers especially in nursery and sod crops

- Management of water and soil to minimize nitrogen loading
- Reduction of pesticide loadings and/or use of reduced-risk-pesticides along with integrated pest management practices
- Implementation of best management practices for storage, handling and application of pesticides

These projects will demonstrate to Suffolk County growers the economic and environmental viability of best management practices, which will result in reduction of nutrients and pesticides into the surface and groundwater.

D. Research

Extensive pest and nutrient management research has been conducted on crops such as potatoes and grapes. While in other commodities such as sod, nursery stock and vegetables, minimal research has been conducted. However, even with those extensively researched, additional work must be conducted due to recent developments in technology and varieties. It is estimated that an average of eight research projects for each of the 14 commodity groups would be conducted during a five-year period. Each project would be conducted for a two- to three-year period to confirm the results of the study.

The research conducted would result in the development of new best management practices to reduce and minimize the impact on the groundwater and surface waters. Nutrient management trials will focus on formulations, rates and timing of nitrogen application. Pest management trials will include evaluations of alternative pest controls, biological controls, pest-resistant crops and organic strategies. Other research should focus on providing economic data to local farmers to help them remain economically competitive and financially able to implement BMPs. The following are examples of research that should be conducted:

- Evaluation of various formulations of nitrogen, especially slow release forms
- Evaluation of new cultivars which will use less nitrogen compared to standard varieties
- Use of lysimeters, resin bags and other measuring devices to determine the impact of timing, rates and formulations have on nitrogen leaching
- Development of alternative pest management practices to replace pesticides which have the potential to impact the environment
- Development of irrigation management practices, including the evaluation of the most effective equipment.
- Development of scouting procedures
- Development of economic thresholds for pests

E. Cost-Sharing for Conservation Plan Implementation

To keep Suffolk County farms viable, cost-sharing is the preferred strategy for implementing best management practices. Historically, Federal and State programs designed to protect natural resources on agricultural lands contained financial incentives or cost-sharing to increase participation and/or implementation. Programs used in the past included both reimbursement of a percentage of actual costs and flat payments, such as dollars per acre or dollars per linear foot. Cost-sharing might include single payments for a BMP, such as constructing a grassed waterway. Others could be annual payments for BMPs, which need to be repeated each year, such as nutrient and pest management.

Most Federal and State cost-sharing or grant programs are competitive and subject to annual allocations. Consequently, predicting the availability or the amount of funding in a given year will be difficult. Federal cost-sharing programs that are currently available and pursued include:

- **USDA – Environmental Quality Incentives Program (EQIP).**
EQIP identifies appropriate conservation practices to address local resource concerns and provides cost-sharing and incentive payments to install or implement structural and management practices, respectively. EQIP contracts are written anywhere from one year after the implementation of the last scheduled practice up to a maximum term of ten years. The program will pay up to 75 percent of the cost of certain practices with incentive payments provided up to three years. Contract proposals are prioritized according to NYS ranking criteria that reflect identified resource concerns and are assigned an Environmental Benefit Index (EBI). New York State program dollars are divided among 8 major watershed basins. Suffolk County EQIP contract proposals will compete within the Long Island Sound Watershed Basin, which was allocated \$496,265 (5 percent of NYS funding) in FY2004.
- **USDA – Agricultural Management Assistance (AMA)**
AMA funds implementation of conservation practices relating to 4 focus groups: Prescribed Grazing Management; Erosion Control on Cropland; the Transition to Organic Production; and Pest Management. Cost-sharing rate is 75 percent of the total eligible cost, with a \$50,000 maximum annual payment and maximum \$150,000 multi-year (3-10 yrs) contract payment. Current (FY2004) New York State program funding is \$1,500,000, of which 5 percent is allocated to each of the eight NYS major watershed basins (\$600,000 total). The remaining 60 percent of the state funding is divided among the 4 focus groups through state-wide competition.
- **USDA – Conservation Reserve Program (CRP)**
CRP is a land retirement program that provides rental payments and cost-share assistance to producers to protect environmentally sensitive land and /or groundwater and to help improve surface water quality. Locally, eligible land must be highly erodible or be land expiring from a CRP contract. Maximum cost-share rate is 50 percent for implementing practices, and the maximum local rental rate is \$181 per acre. CRP contracts range from 10 to 15 years. CRP contract proposals are ranked and selected by a state-wide Environmental Benefits Index (EBI).
- **USDA – Conservation Reserve Enhancement Program (CREP)**
CREP, introduced this year, combines the existing USDA program (CRP) with state programs to meet specific state and national environmental objectives. Local enrollment is limited to highly erodible cropland within 1,000 feet of surface water or cropland qualifying on the basis of a NYS Department of Health-approved wellhead protection area and within 2,000 feet of an approved wellhead. Annual rental rates and cost-sharing are the same as in CRP. CREP will also require 10 to 15-year commitments, which could have started on December 31, 2003. USDA will provide \$15 million, and New York State will provide an additional \$10 million toward the program.

In addition to Federal cost-share programs, potential funding for implementation of agricultural BMPs could be sought through the following State and County sources:

- New York State – Agricultural Nonpoint Source Abatement and Control Grant Program Funding for this program is primarily through the State Environmental Protection Fund (EPF) and limited funding through the NYS CleanWater/Clean Air Bond Act for local projects. Requests For Proposals for this program have been offered annually for the past 10 years. Grants for individual or groups of farms can be awarded and can be used for planning or implementation projects. Maximum state funding is 75 percent of total eligible costs if the proposal contains no contribution from the owner or operator of the land. With landowner contributions, the maximum state funding could be nearly 90 percent. Grant proposals are ranked and compete on a state-wide basis.
- Suffolk County – Water Quality Protection and Restoration Program Pollution abatement and control from agricultural non-point sources is a specific activity eligible for funding through this program. To date, one round of proposals has been reviewed, and funding recommendations were made to the County Legislature by the County Water Quality Review Committee.

F. Evaluation Methodology

1. Targeted Use Goals and Evaluation at End of Year

The Suffolk County Watershed Agricultural Stewardship Advisory Council (SCWASAC; see IV.A.) shall come up with detailed, targeted use goals (overall, by geographic area, or by crop, as needed) for pesticides that have a tendency to leach and nitrogen. Each year, the Agriculture Stewardship Director, in coordination with the contract agencies, will draft a report to the SCWASAC with detailed discussions of the following:

- Each goal that has and has not been reached, and why
- Whether each goal was reasonable and what adjustments, if any, should be made and why
- Other strategies that should be implemented and ways of undertaking them
- Identification of emerging trends or other factors that the Legislature should know about that may affect the fulfillment of this plan

2. Integrated Pest Management AEM Reporting for Nitrogen and Pesticide Use

Pursuant to the AEM program, farmers shall report annual land stewardship activities (activities that result in reduced nitrogen and pesticide leaching to groundwater). Report parameters shall include pounds of active ingredient applied per acre, types of fertilizer applied (*e.g.*, slow release encapsulated fertilizer, urea, etc.), methods of application, as well as additional parameters, which will be mutually agreed upon by the Suffolk County Watershed Agricultural Stewardship Advisory Council, CCE, SCSWCD and the Agriculture Stewardship Director. Reporting by the farmer is already incorporated into the AEM Tier 5 plan evaluation and revision, whereby a technician works with the farmer to report activities/accomplishments and assists the farmer in fine-tuning the plan for the coming year.

An annual blind report (by geographic area and/or by crop) will be prepared by CCE and SCSWCD, in cooperation with the Agricultural Stewardship Coordinator. The report will be presented to the SC Agricultural Stewardship Director, who will in turn present it to the SCWASAC. The report will summarize information including, but not limited to:

- Pounds of active ingredient applied per acre in the previous year
- Fertilizer types used in the past year
- Application methods in the past year
- Active ingredient reductions achieved when comparing the past year to prior years
- Method changes when comparing the past year to prior years
- Past year's results in comparison to the targeted use goals
- AEM participation: *i.e.*, # of farms and acreage in the AEM program; participation by AEM tier; # of farms and acreage with plans
- Other parameters mutually agreed upon

3. Groundwater Monitoring

The Suffolk County Department of Health Services (SCDHS) shall monitor wells as appropriate to evaluate each main crop-type grown on Long Island. Crops monitored may include, but not be limited to, sod, vineyards, nursery, potatoes, corn, vegetables, pumpkins, and fruit trees. Groundwater samples shall be collected near the water table in order to detect nutrients and pesticides applied locally, and to minimize potential inferences from up-gradient land uses. Samples will be collected and analyzed in accordance with existing Federal and State protocols. SCDHS staff will review the data, periodically update the Suffolk County Watershed Agricultural Stewardship Advisory Council, and produce an annual blind report. The annual report will be presented to the SC Agricultural Stewardship Director, who will in turn present it to the SCWASAC.

IV. Management and Leadership

A. Suffolk County Watershed Agricultural Stewardship Advisory Council

The Task Force recommends that the Legislature create a Suffolk County Watershed Agricultural Stewardship Advisory Council to oversee the Suffolk County Agricultural Stewardship Program and coordinate the existing diffuse agricultural management initiatives that currently exist. The principle function of the SCWASAC shall be to develop and oversee the implementation of the annual workplan relating to nitrogen and pesticide loading reduction strategies pursuant to this report. In addition, the Council shall advise the Suffolk County Legislature on the progress and implementation of reducing pesticide and nitrogen leaching. Tasks shall include but not be limited to:

- a) Report to the Legislature on the progress of meeting the nitrogen and pesticide reduction goals;
- b) Evaluate and advise the Suffolk County Legislature on the progress and effectiveness of programs underway and recommend additional reduction strategies;
- c) Propose an annual budget and recommended workplan to the Suffolk County Legislature that enables the goals of reaching targeted nitrogen and pesticide reduction goals within five years; and,
- d) The Council shall oversee a public education campaign to assist in this regard.

The thirteen member council shall be made up of one member from each office or area of interest: Suffolk County Executive Office, Suffolk County Legislature, Suffolk County Department of Health Services, NYS Department of Environmental Conservation, NYS Department of Agriculture and Markets, Suffolk County Water Authority, US Department of Agriculture - Natural Resources Conservation Service, two members of the farming industry, an environmental advocate, Cornell Cooperative Extension of Suffolk County, Suffolk County Soil and Water Conservation District, and the US Environmental Protection Agency.

B. Agricultural Stewardship Director

This position will serve as the coordinator and staff of the SCWASAC. The Task Force recommends that consideration be given to merging the Agricultural Stewardship Director position with the Suffolk County Planning Department's current Farmlands Administrator position and that the new position be located in the County Executive Office. This recommendation reflects the critical nature of this task.

Among other duties the Agricultural Stewardship Director will:

- a) Draft the annual report to the SCWASAC evaluating the attainment of the past year's targeted use goals, in coordination with the contract agencies (see III.F.1.)
- b) Draft the SCWASAC's annual workplan, including targeted use goals, with assistance from the Agricultural Stewardship Coordinator and contract agencies
- c) Develop a draft proposed annual budget
- d) Help guide broad policies and strategies necessary to implement the comprehensive nitrogen and pesticide reduction strategies to minimize loading into groundwater, subject to the approval of the watershed council
- e) Assist in grant writing and identification of funding sources as needed
- f) Coordinate cooperating contract agencies' annual work plans, budgets, and regular activities so that they are consistent with a comprehensive annual workplan to reduce nitrogen and pesticides loading
- g) Assist in the evaluation of the success of practices of the overall program and suggest modifications as needed
- h) Other measures as deemed appropriate to implement the nitrogen and pesticide reduction strategies desired in the authorizing resolution of the task force

C. Lead Agency and Cooperator Roles

Cornell Cooperative Extension of Suffolk County (Education) and Suffolk County Soil & Water Conservation District (Technology) shall be lead agencies.

Cooperating agencies include, but are not limited to:

US Department of Agriculture – NRCS
NYS Department of Agriculture & Markets
Suffolk County Department of Health Services
Suffolk County Water Authority
NYS Department of Environmental Conservation
NYS Soil and Water Conservation Committee

The lead agencies and cooperators will create a working group to implement the Suffolk County Agricultural Stewardship Program.

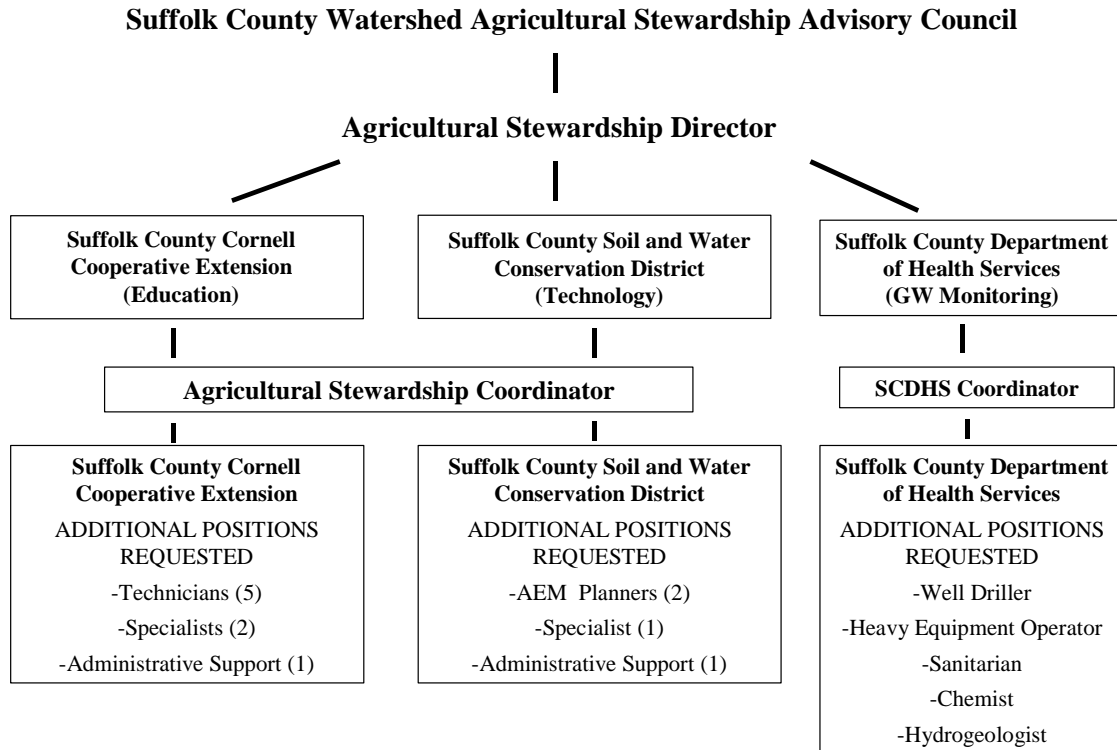
D. Agricultural Stewardship Coordinator

An Agricultural Stewardship Coordinator shall be hired to work with the staff of the Cornell Cooperative Extension of Suffolk County and Suffolk County Soil and Water Conservation District and will report to the Suffolk County Watershed Agricultural Stewardship Advisory Council, contract agencies and the Agricultural Stewardship Director, on the progress of the annual workplan to reduce nutrients and pesticide contamination.

Duties of the Agricultural Stewardship Coordinator shall include, but not be limited to:

- a) Coordinate research, education and technical aspects of the Suffolk County Agricultural Stewardship Program
- b) Supervise the technicians
- c) Manage the budget
- d) Assist in developing the annual plan of work
- e) Draft the annual report evaluating land stewardship activities, in coordination with CCE and SCSWCD (see III.F.2.)
- f) Assist in grant writing
- g) Develop and undertake an evaluation protocol for the best management practices initiated, and suggest modifications as needed

E. Framework for Suffolk County Agricultural Stewardship Program



F. Supporting Staff

Supporting staff from CCE, SCSWCD and USDA-NRCS is essential in the fulfilling the goals of the Suffolk County Agriculture Stewardship Program. This staff will provide professional guidance in the development of worksheets, comprehensive sustainable programs and best management practices and the implementation of pilot projects, BMPs, Agricultural Environmental Management and Conservation Plans. These specialists are of utmost importance as liaisons to growers and experts in the understanding of the economics and viability of new practices. Specialists include:

- Cornell Cooperative Extension of Suffolk County
 - Nursery
 - Viticulture
 - Greenhouse
 - Potato/Vegetable (vacant)
 - Sod (new)
 - Tree and Small Fruit (new)
 - State Specialists
- Suffolk County Soil and Water Conservation District
 - District Manager
 - Technicians
- U.S. Department of Agriculture – Natural Resources Conservation Service
 - District Conservationist
 - Technician
 - State Specialists

V. Financial Estimates – Five Year Project Budget

	Annual	Over Five Years
A. Agricultural Environmental Management		
1. Two AEM Planners	\$110,000	\$550,000
B. Sustainable Programs Development		
1. Three technicians	\$165,000	\$825,000
2. Professional Consultation (\$20,000/program – 14 programs)	\$ 56,000	\$280,000
C. Pilot Projects		
1. Two projects (nutrients and pest management) at three sites for two to three years: \$36,000/commodity, \$504,000 for all crops	\$100,800	\$504,000
2. Two technicians	\$110,000	\$550,000
D. Research		
1. An average of 8 projects per each group: \$25,000 per project for a 2 to 3 year period	\$560,000	\$2,800,000

E. Cost-Sharing for Implementation			
1. See Appendix A for details		\$1,710,000	\$8,550,000
F. Personnel (excluding technicians)			
1. Ag. Stewardship Coordinator		\$ 95,000	\$ 475,000
2. Specialists		\$ 225,000	\$1,125,000
IPM			
Nutrient			
Engineer			
3. Administrative Support			
Two support staff		\$ 80,000	\$ 400,000
G. SCDHS Groundwater Monitoring ⁴			
1. Sampling and laboratory supplies/equipment		\$ 35,000	\$ 175,000
2. Well Driller I (grade 20)		\$ 43,483	\$ 217,415
3. Heavy Equipment Operator (Grade 13)		\$ 31,685	\$ 158,425
4. Sanitarian (grade 21)		\$ 45,571	\$ 227,855
5. Chemist II (grade 22)		\$ 47,424	\$ 237,120
6. Hydrogeologist (grade 29)		\$ 63,371	\$ 316,855

GRAND TOTAL \$17,391,670 over five years (\$3,478,334 annually)

VI. Funding Recommendations and Strategies

Funds shall be procured to provide technical assistance to prepare whole farm plans (AEM Tier 3) for all Suffolk farms and to implement actions that anticipate reductions in nitrogen and pesticide leaching, as per Suffolk County Resolution 520-2003. A public recognition program for early entrants could be considered if so desired by the participating farmer. The Task Force envisions a budget of \$3.5 million a year.

Implementing AEM for nitrogen and pesticide loading reduction strategies will require an increase in funding to the agricultural service agencies, as explained in more detail in this report, approximating \$3+ million per year, for the first five years. While there are State and Federal sources of funding that can be aggressively pursued, an expanded role for Suffolk County is also required.

The committee investigated potential new revenue sources such as a nitrogen/pesticide surcharge on all products sold in Suffolk County. Revenues would be dedicated to a special fund to assist reductions in loading and more environmentally compatible uses of such products. The Ag Task Force was unable to reach consensus on this matter. The SC Legislature may wish to

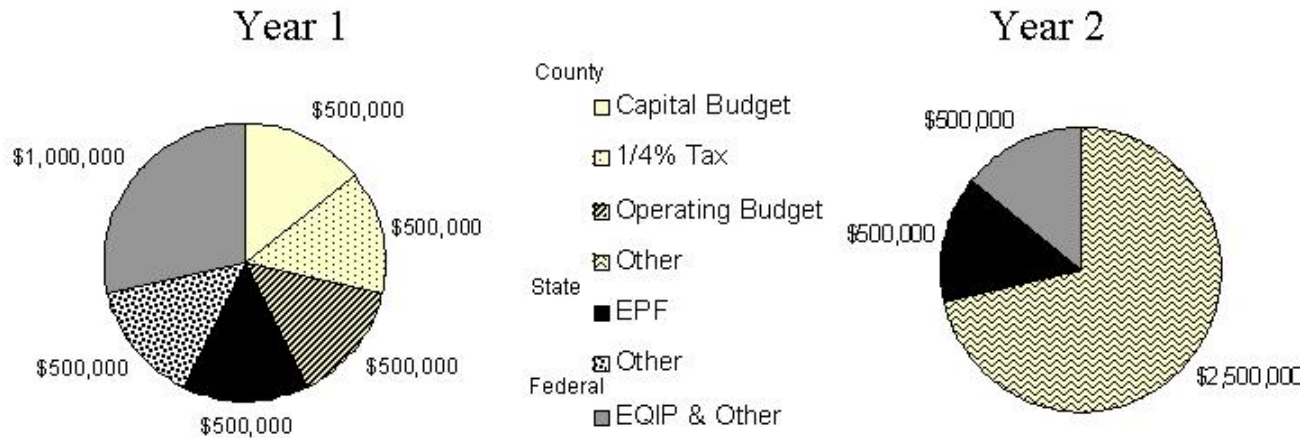
⁴ The Suffolk County Department of Health Services' funding needs for groundwater evaluation are based on monitoring wells at six farms for each main crop-type grown on Long Island (*i.e.*, 8 main crops would result in 48 farms monitored with a minimum of 48 wells). It is estimated that two samples will be taken from each well per year (summer and winter).

consider this option, among others, when developing the means to finance this important program.

Funding for year one assumes an ambitious yet necessary funding proposal and is only one of many scenarios pooling Federal, State and County funding sources. Please note that any targeted sources of funding not realized would have to be made up from another source or sources.

	Year 1	Year 2, 3, ...
County Share		
Capital budget	\$500,000	\$ -
1/4% Sales Tax	\$500,000	\$ -
Operating budget	\$500,000	\$ -
Other revenue source	\$ -	\$2,500,000
State Share		
EPF	\$500,000	\$500,000
Other..319 etc	\$500,000	\$ -
Federal Share		
EQIP & other USDA	\$1,000,000	\$500,000
<hr/>		
Totals	\$3,500,000	\$3,500,000

Funding Recommendations



APPENDIX A

**Cost Sharing Budget For Implementing Agricultural Environmental Management (AEM)
(See Section V.E. Cost Sharing for Implementation)**

Cost Estimate for Lowering Agricultural Nutrient and Pesticide
Inputs into the Environment

Major Agricultural Best Management Practices (BMPs) to be implemented to improve water quality of ground water:

- 1) Pest Management - \$30/AC
- 2) Nutrient Management - \$20/AC
- 3) Irrigation Water Management - \$10/AC
- 4) Cover Crops - \$50/AC
- 5) Crop Rotations - \$10/AC
- 6) Agricultural Chemical Mixing Facility - \$20,000/EA
- 7) Agricultural Fuel Storage Facility - \$2,000/EA

Items 1-5 would be implemented on an annual basis.

Additional Agricultural BMPs to be implemented to improve water quality of surface water:

- 1) Stripcropping - \$12/AC
- 2) Critical Area Planting - \$500/AC
- 3) Filter Strip - \$6/FT
- 4) Grassed Waterway - \$10/FT

Item 1 could be implemented annually.

BMP Implementation

Estimated Permanent BMPs:

1) Agricultural Chemical Mixing Facilities – 213 x \$20,000/EA	=	\$4,260,000
2) Agricultural Fuel Storage Facilities – 253 x \$2000/EA	=	560,000
3) Filter Strip – 2,425FT x \$6/FT	=	14,550
4) Grassed Water – 39 x 150FT x \$10/FT	=	58,500
5) Critical Area Planting – 19.5AC x \$500/AC	=	9,750
Sub Total	=	\$4,902,800

Estimated Annual BMPs:

1) Pest Management – 18,000AC x \$30/AC	=	\$ 585,000
2) Nutrient Management – 19,250AC x \$20/AC	=	385,000
3) Irrigation Water Management – 15,600AC x \$10/AC	=	156,000
4) Cover Crops – 13,7000AC x \$50/AC	=	685,000
5) Crop Rotations – 3,250AC x \$10/AC	=	32,500

6) Stripcropping – 1,200AC x \$12/AC	=	14,400
Sub Total	=	\$1,857,900/YR

Summary of 90% Participation Within a Five-Year Period

Year 1: AEM Planning (\$425,070 x 90%)	=	\$ 382,563
Year 2: Permanent BMP's (\$4,902,800 x 22.5%)	=	1,103,130
Annual BMP's (\$1,857,900 x 22.5%)	=	418,028
Year 3: Permanent BMP's	=	1,103,130
Annual BMP's (\$1,857,900 x 45%)	=	836,055
Year 4: Permanent BMP's	=	1,103,130
Annual BMP's (\$1,857,900 x 67.5%)	=	1,254,083
Year 5: Permanent BMP's	=	1,103,130
Annual BMP's (\$1,857,900 x 90%)	=	1,672,110
Project Grant Total	=	\$8,550,289

APPENDIX B

**Peconic Estuary Program Comprehensive Conservation and Management Plan
Appendix H: Agricultural Environmental Management Strategy**

APPENDIX H

Agricultural Environmental
Management Strategy

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PECONIC ESTUARY PROGRAM AGRICULTURAL ENVIRONMENTAL MANAGEMENT STRATEGY

Foreword

The Agricultural Nitrogen Management Committee extends its deep appreciation to the East End farming community, which has been instrumental in investigating and developing a nutrient and pesticide reduction strategy.

Summary of Goals

To cooperatively develop, with the region's agricultural community, a strategy to lower nutrients and pesticide inputs into the environment. A 20 percent to 30 percent reduction of agricultural fertilizer nitrogen inputs is targeted over a five-year period, and may be measured by voluntary reporting, surveys, fertilizer sales data, and groundwater monitoring.

To maintain, and hopefully increase, farm profitability while demonstrating that changes in farming practices can have measurable environmental improvements.

To emphasize incentive-based pollution reduction strategies (*e.g.*, tax credits). This will be linked to market development and product distribution associated with other agricultural economic planning efforts underway in the region.

To attain 90 percent participation within the farming community in a Long Island Agricultural Environmental Management (AEM) program within five years.

Summary of Recommendations

This Committee strongly recommends that the following tasks be pursued to begin reducing nutrient and pesticide impacts on the Peconic Estuary. The rationale and supporting details of each task is outlined in further detail in the body of this report.

- Task I** Develop a Long Island component to the New York State Agricultural Environmental Management (AEM) program. The Long Island component would be tailored to the Peconic Estuary Region (as well as other Long Island regions, as appropriate).
- Task II** Identify potential pilot projects to demonstrate Best Management Practices and test them, where appropriate.
- Task III** Investigate the creation of a farm insurance plan.
- Task IV** Provide funding for increased local AEM development and implementation.
- Task V** Investigate and implement innovative/alternative finance mechanisms for education and outreach and other tasks noted above.



Task VI Gather and analyze economic data on a regular basis and continue to promote and integrate economic analyses and support mechanisms into the AEM initiatives.

Agricultural Nitrogen Management Committee — Background

Because of the need to develop a regional, quantitative nitrogen loading management process, the Peconic Estuary Program (PEP) formed work groups (committees) to deal with agricultural issues, non-agricultural issues and a west estuary total maximum daily load (TMDL). The goal of each committee is to set quantitative loading targets and detailed plans for load management (timing, costs, responsible entities, etc.).

The Agricultural Nitrogen Management Committee was charged with refining existing agricultural nitrogen loading estimates and developing an implementation plan for regional nitrogen load reductions. This effort includes expanding the Agricultural Environmental Management (AEM) initiative and considering the “Purchase of Development Rights” links to farm management plans. The Committee has also expanded its issues to include pesticides.

To date, the Agricultural Nitrogen Management Committee has made significant progress towards its goals, including producing agricultural use geographic information systems (GIS) maps (for the Towns of Southold, Southampton and Riverhead), and determining the nitrogen loading rates and estimates of potential reductions for specific crops (see **Attachment H-2**). These are major tasks that will be described and integrated in future reports.

While these initiatives were developed with a focus on the Peconic Estuary Program’s needs, the Committee notes that there will be a countywide benefit for groundwater and surface water. For example, AEM programs will be countywide, and not just targeted at the Peconic Estuary watershed. Thus, benefits will also accrue to the surface waters of the Long Island Sound and South Shore Estuary Reserve.

Introduction

Maintaining a viable farming industry that serves its community (broadly Long Island) is important for the region economically. Suffolk County is the top producer of agricultural products in terms of sales in New York State, representing up to six percent of Suffolk County’s gross domestic product. Recent estimates indicate that an estimated 10,000 people are employed by agriculture-related businesses.

Agriculture is a significant underpinning of eastern Suffolk County’s tourism-based economy. Residents and visitors enjoy the rural quality of the area and shopping at numerous local farm stands. A survey of 968 residents, second homeowners and tourists in 1995 revealed that the public’s overall priority for land protection was protecting farmland. The survey responses imply that the public would be willing to spend \$74.5 thousand per



acre of farmland protection, using a 25-year time horizon and a seven percent discount rate in 1995 dollars (EAI, 1999).

The State of Agriculture

At the end of World War II, more than 110,000 acres of arable land were cultivated in Suffolk County. In response to the rapid suburbanization of the 1950s and 1960s, the County adopted the nation's first Farmland Protection Program in the mid-1970s. Through the Farmland Protection Program, the county pays farmers for their development interest (rights) and in return, farmers agree not to develop their land in perpetuity. The program gives farmers the opportunity to invest back into their farms or to settle estate matters with heirs. Presently, Suffolk County owns the development rights to 6,280 acres of agricultural land.

The Agricultural and Farmland Protection Plan (Suffolk County Agricultural and Farmland Protection Board, 1996) states that Suffolk County has had a large decline in the amount of farmland over the last several decades and continues to see a rapid decline in farmland today in spite of conservation efforts. The Plan downgraded the initial goal of farmland protection in Suffolk from 35,000 acres to 20,000 acres. According to the New York Agricultural Statistics Service, about 35,858 acres of Suffolk County land was farmed in 1997. Ten percent of the total land area in the Peconic Estuary watershed (14,539 acres) was agricultural land in 1995, most of which is still located on the north fork (SCPD, 1997). Undoubtedly there are fewer acres of farmland in Suffolk County now than in 1997 and 1995. The Suffolk County Farmland Protection Plan further states that at the present rate of agricultural land loss, there will be only 10,000 acres left in Suffolk in 2012.

Areas at the outskirts of large metropolitan regions are under the greatest threat of losing their farmland resources to sprawl, houses, and commercial developments. This is well documented across the nation. The American Farmland Trust ranked Suffolk County as the 18th most threatened agricultural county in the nation.

While recent efforts to secure new funding for farmland protection have been successful, there is literally a race against time to secure the preservation of critical farmland in eastern Suffolk against the backdrop of ever escalating land values tempting farmers to cash out.

High land values coupled with New York State's continued reliance on property taxes to fund government operations increase the opportunity costs of farming. The fixed costs associated with farming add to the problem and create a situation likely to: 1) accelerate the need to adopt high value-added strategies to support farm enterprises, and 2) drive more marginal commercial farmers out of business.

The future of agriculture is also threatened by the high degree of reliance on rented land for farming in Suffolk County. An estimated 60 percent of Suffolk County farmers rent land. Farmland owners who seek rental payments sufficient to cover property tax obligations will force farmers in turn to seek ever higher value and more land-intensive (*e.g.*, with possible greater environmental impacts) crop production methods. As development pressures



increase, so do incentives for conversion of rented farmland to alternative uses (*i.e.*, development and golf courses).

Yellow Wood Associates (YWA), under contract with the Town of Southampton to update the town's agricultural section of its comprehensive plan in 1995, found that agriculture in Southampton has evolved in response to market demand. Agriculture now includes horse farming, nursery and greenhouse production, potatoes, vegetables, sod production, vineyards, duck farms, pheasant farms, orchards, small fruits and row crops. There is an increased emphasis on direct marketing from roadside stands and farm services such as winery tours, horse boarding, breeding, training and riding lessons. These conclusions can be applied to the entire East End.

Citing trends common to areas like the East End, YWA identified the transformation from a commodity-based production to a (mostly) land intensive production of high value crops that can be differentiated in the market. This trend is underway in many urban fringe areas in the northeast and, in fact, represents a kind of agricultural resurgence (See **Attachment H-3**).



Environmental Concerns

Conventional farming practices are typically fertilizer (nitrogen) and pesticide dependent. Nitrogen is a major management issue for the Peconic Estuary Program, since nitrogen contributed from fertilizers has already resulted in adverse environmental impacts, such as depressions in dissolved oxygen (see Nutrient Chapter). Nitrogen is soluble and is particularly mobile in Suffolk County’s highly permeable soils. While fertilizers and pesticides have resulted in an increase in crop biomass, much of the byproducts are carried into the estuary by groundwater and, locally, by stormwater runoff.

Overall groundwater total nitrogen loading to the Peconic Estuary is approximately 6,500 pounds per day, about 32 percent of which occurs in the western estuary (Peconic River and Flanders Bay groundwater-contributing area). The dominant sources of total nitrogen to the estuary are agriculture (41 percent of the TN loading) and residential development (40 percent of TN loading). Agriculture has a per-acre TN loading rate of about double the residential land in the study area (SCDHS, 1999). Loading rates for various land uses are illustrated in **Figure H-1**.

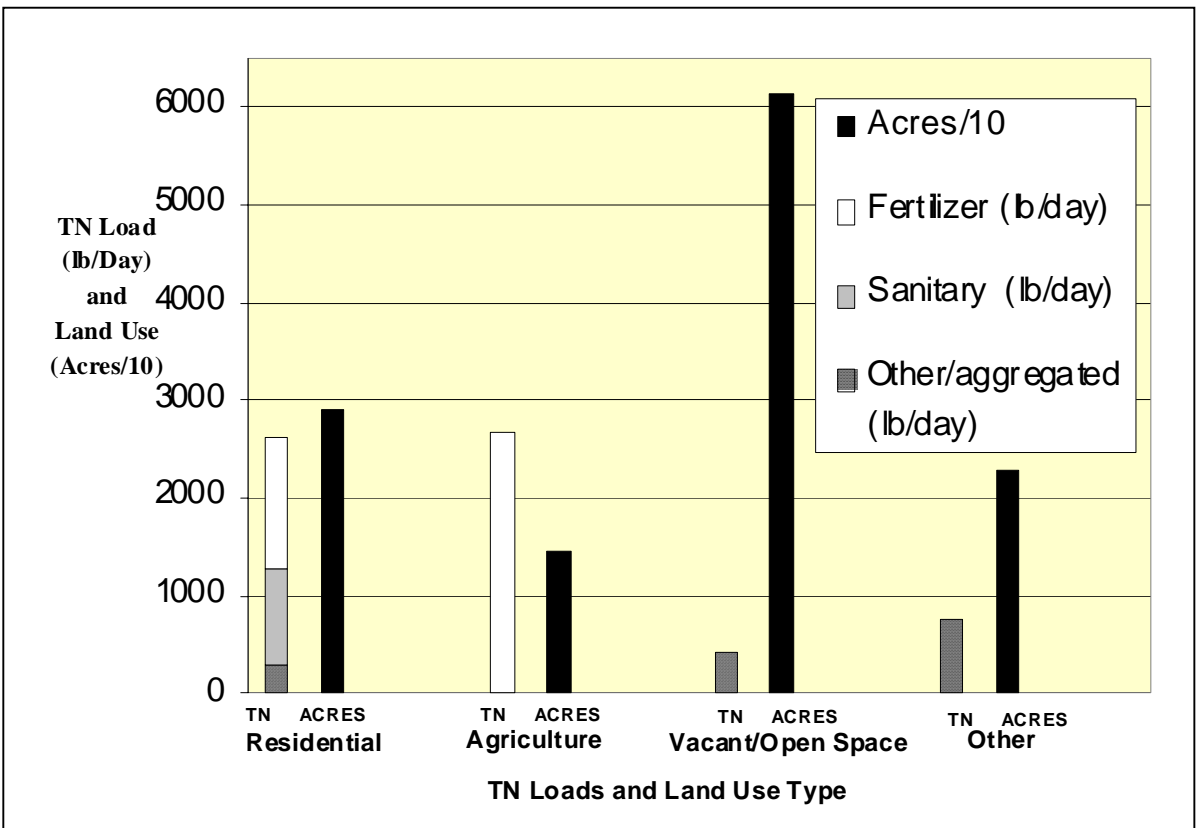


Figure H-1. Total Nitrogen (TN) Load by Land Use.

Public Health



Many studies indicate that nitrogen from synthetic fertilizer is the most important source of nitrate in groundwater. Ingestion of water with high nitrate levels is known to cause methemoglobinemia in infants under one year of age. In addition, the Centers for Disease Control has reported two episodes of an association between first trimester miscarriages and elevated nitrate concentrations in the drinking water.

The SCDHS monitored ten wells that were primarily down gradient from agricultural land over a 22-year period (SCDHS, 1996). For the 20 year period 1975 through 1994, the average annual nitrate concentration for all ten wells was 11.3 mg/l. The ten well annual averages ranged from a minimum of 9.2 mg/l in 1982 and 1984 to a maximum of 13.7 mg/l in 1988. The EPA and New York State drinking water Maximum Contaminant Level (MCL) for nitrate is 10.0 mg/l.

The impact of agriculture on nitrate concentrations is also reflected in the results of private well testing by the SCDHS. The SCDHS tested 45,985 private wells between the years 1972 and 1994. Of all the private wells tested, 7.4 percent exceeded the nitrate MCL (SCDHS, 1996). The percentage of private wells exceeding the nitrate MCL was significantly greater in the agricultural communities than the countywide average.

Agricultural pesticides have also found their way into Suffolk County's groundwater. Concentrations of the carbamate pesticides, including Aldicarb (Temik), carbofuran (Furadan), and oxamyl (Vydate), have been detected in Suffolk County's monitoring wells but have steadily decreased since their ban in 1979 and 1982. The dacthal metabolite TCPA can be found in some areas despite its removal from the Suffolk County market in 1988. In 1999, the SCDHS concluded an 18-month study of pesticide contamination in the groundwaters of Nassau and Suffolk Counties (SCDHS, 1999). Wells were chosen for testing based upon a variety of considerations including selecting wells that had shown detectable traces of pesticides in previous monitoring. Other criteria included land use type, geographic coverage, and random selection. Of the 1,901 wells tested in Suffolk County, Aldicarb metabolites were the most frequently detected pesticide, followed by the dacthal metabolite TCPA, 1,2-dichloropropane, metalaxyl, and metachlor. These are all agricultural chemicals with the exception of TCPA, which is also used on turf and residential lawns. There were 191 wells found to exceed pesticide MCLs of which 91 percent were impacted by agricultural chemicals (including nursery and sod uses). The towns found to have the greatest percentage of pesticide impacted wells are Southold (51 percent), Riverhead (38.7 percent), and Southampton (34.5 percent); these towns also contain the bulk of Long Island's remaining agricultural land. In response to the pesticide problem, the NYSDEC has recently created a committee to reduce pesticide usage.

Estuarine Health

Excessive levels of nitrogen can be harmful to the estuary. When nutrients are introduced to the estuary at higher than normal rates, they can stimulate aquatic plant growth, including plankton and larger communities of macroalgae. Algae consume oxygen (respire) at night,



potentially depleting dissolved oxygen levels in the water column. Also, when algae die, they can settle through the water column to the sediments, where the organic matter is decomposed by bacteria. Bacterial decomposition uses oxygen (“sediment oxygen demand”), as well as releases nitrogen back into the water column (“sediment nutrient flux”). Processes such as diurnal DO depression, sediment oxygen demand, and sediment nutrient flux can result in dissolved oxygen levels which are low enough to be harmful to marine life.

Currently, the estuary is not experiencing widespread low dissolved oxygen levels related to nitrogen loading. However, the western portion of the system (Peconic River and Flanders Bay) has a legacy of nutrient over enrichment and periodic, short-term dissolved oxygen problems. According to the Nitrogen Loading Budget and Trends Report (SCDHS, 1999), nonpoint source loading of nitrogen has risen dramatically over time, far outweighing historic point source nitrogen loading from duck farms. Considering the trends of nutrient enrichment in the region, implementing nitrogen reduction strategies is critical.

The increased production of microscopic algae caused by increased nutrient enrichment results not only in dissolved oxygen problems but also discolors the water, decreases water clarity and diminishes the amount of light received by rooted aquatic plants (*i.e.*, eelgrass). Submerged aquatic vegetation beds serve as a prime habitat for juvenile fish, a food source and bottom stabilization. Aquatic plants that are at a species’ depth limit for clear water conditions would be expected to decline due to the lack of sufficient light energy in turbid waters. Excessive influxes of nutrients will also increase the growth of epiphytes on eelgrass blades, again shading the plant itself and hindering production. Furthermore, species such as red or green macroalgae, which adsorb nutrients more quickly than eelgrass, may competitively exclude eelgrass plants. It is also thought that the lack of a mechanism to terminate nitrate uptake in eelgrass coupled with excessive nitrate in the system results in impaired plant health and a decline in eelgrass shoot production (Cashin Associates, 1996).

Nitrogen levels may also be linked to the Brown Tide. While data suggest that gross concentrations of nitrogen do not trigger blooms, the relative concentrations among the various forms of nitrogen may play a role in Brown Tide blooms. One theory holds that increases in nitrogen in groundwater may play a role in triggering Brown Tide blooms.

Though no causal link has been identified, low levels of pesticides may be affecting aquatic resources, including eelgrass, sensitive larval stages of commercially and recreationally important finfish and shellfish, and other ecologically important species.

Recommendations

The Committee’s recommendations are shown in **Table H-1**, which also includes a designation of responsible entity, cost, and timeframe for each recommendation. The following discussion provides additional background and details regarding the recommendations.

Table H-1. Agricultural Nitrogen Committee Interim Workplan Actions.*

Action		Responsible Entity	Timeframe	Cost *	Status
AgN-1 Priority	Develop a Long Island component to the New York State Agricultural Environmental Management (AEM) program.	NYS Dept. of Agriculture & Markets	2000	\$250,000–\$500,000 for program development (estimated)	R
AgN-2	Identify potential pilot projects to demonstrate Best Management Practices and test them.	Suffolk County & Cornell Coop. Extension	2001	To be determined	C
AgN-3 Priority	Investigate the creation of a farm insurance plan.	PEP Agriculture Nitrogen Management Committee	2000	To be determined	R
AgN-4 Priority	Provide funding for increased local AEM development and implementation.	USDA NRCS, Cornell Coop. Extension, SC Soil and Water Conservation District, Suffolk County & NY State	2000	\$175,000/year for staff at SCSWCD; \$175,000/year for staff at CCE \$1 million annually for implementation start up (from NYS Bond Act, Suffolk County ¼% Sales Tax, and funding sources in AgN-5); Long-term to be determined.	R
AgN-5 Priority	Investigate and implement innovative/alternative finance mechanisms for education and outreach, and actions 1-4.	NY State: fertilizer/pesticide tax; subsidizing capital improvement loans from EFC	2000	To be determined	R
AgN-6	Gather and analyze economic data on a regular basis and continue to promote and integrate economic analyses and support mechanisms into the AEM initiatives	PEP Agriculture Nitrogen Management Committee	2001	To be determined	R

C = Commitment R = Recommendation

*Note: Actions and costs are also contained in the Nutrient Chapter of the PEP CCMP.





Task I The New York State Agricultural Environmental Management Program (AEM)

New York State Department of Agriculture and Markets and the New York State Soil and Water Conservation Committee manage the New York State Agricultural Environmental Management Program wherein whole farm management plans are undertaken with farm operators to reduce environmental impacts. This program has focused on the livestock farmers in upstate New York, with an emphasis on phosphorus reduction and little emphasis on nitrogen reduction (Long Island's primary issue). Total AEM State funding for 1999 was 4.5 million dollars, but the program was still oversubscribed. Expanding this program for Long Island will require a one-time estimated commitment of \$250,000–\$500,000 of State funds. This cost estimate deals with program planning, design, and development, and *not* implementation, which is discussed below.

The current AEM program is the preferred model for nutrient and pesticide reduction in the Peconic Region since enhancements can be added to the conventional AEM program to satisfy Long Island's program requirements. In a high cost area, like Long Island, AEM must be enhanced with incentives to be viewed as a viable working option to reduce nitrogen and pesticides. The tax credits, cost sharing, and the program itself should be enticing enough so that 90 percent of the farmers working the remaining agricultural acres within the watershed are participating by 2005.

A Long Island AEM Plan outlining the management objectives and the available financial incentives will be developed. The plan will be prepared by the U.S. Department of Agriculture – Natural Resources Conservation Service (USDA–NRCS), Suffolk County Soil and Water Conservation District (SCSWCD), Cornell Cooperative Extension (CCE), and other stakeholders and approved by the New York State Department of Agriculture and Markets and the New York State Soil and Water Conservation Committee. Farmers would then be eligible to have whole farm management plans prepared for them with respect to the LI AEM Plan. Practices such as fertilizing, pesticide application, irrigating, and soil testing would be examined and then a financial/feasibility plan would be prepared showing the farmer how the recommended actions could be financially undertaken.

An ambitious Agricultural Environmental Management (AEM) Initiative program has already been piloted in the Peconic Estuary. Using the AEM approach, a comprehensive inventory and analysis was conducted for most farms within one subwatershed to assess the potential impact the farms may have had on that part of the Peconic Estuary and shallow aquifer. Plans were developed for high priority farms and best management practices (BMPs) were implemented. A total of 13 farms within the watershed implemented the high priority BMPs.

This pilot effort and other limited and localized efforts have been targets for agricultural environmental management by the USDA Natural Resources



Conservation Service and the Suffolk County Soil and Water Conservation District. Their success is a promising foreshadowing of a much-needed regional program.

The task before the Peconic Estuary Management Conference is to manage for improved environmental practices without driving farms out of business. Any discussion about environmental improvements should be incentive-driven as it relates to the burdens placed on the farmer. More applications of the same products at reduced loading rates and other best management practices may reduce total pollutant loadings but increases farm operation costs in terms of fuel, labor, wear on equipment, etc. Since it is within the public interest to seek changes in agricultural practices, the public should offer several incentives to farmers that carry out the recommendations of their whole farm plans. The tax credits option is consistent with school district tax relief practices that the State legislature has provided to farmers.

A recent study by the Northwest Area Foundation compared certain conventional farming practices with aggressive AEM-based approaches. That study concluded that the cost of chemicals decreased in certain instances while labor and managerial costs rose in some cases. Sustainable farming tends to be more labor-intensive than conventional farming. This translates into greater job creation potential. Diversification leads to a more even distribution of labor requirements throughout the year.

Other States have achieved substantial reductions in nutrient loadings as a result of their investment in AEM.

Task II Pilot Projects

To initiate the AEM effort as soon as possible, pilot projects will be identified and carried out. One pilot site that has already been identified is at the Suffolk County Yaphank research farm; others will be sought, as well. Possible pilot projects include:

- Evaluation of fertilizer and pesticide application rates as related to crop yield and quality, as well as leaching rates and pollution potential. Fertilizer trials (CCE) with potatoes show that a substantial reduction in nitrogen can be obtained with no reduction in yield. Overall, nitrogen reductions in the range of 10 to 30 percent are believed to be feasible for most crop types (except grapes and grain);
- Utilization of slow release nitrogen fertilizers. Most suited for nursery stock and longer term crops;
- Irrigation evaluations for water efficiency and nitrogen loads;
- Zero discharge nursery greenhouses currently exist. Others could be retrofitted but new equipment costs money;
- Best management practices for pesticides (IPM);
- Soil testing;



- Pesticide storage handling and application equipment evaluations should be undertaken with a specific intention of improving handling practices etc.;
- Stormwater runoff mitigation practices, including soil loss and erosion control; and
- Agricultural wellhead protection.

Task III Farm Insurance Plan

There is a perceived risk in trying unfamiliar farming practices instead of the accustomed methods. Although proven by researchers and innovative farmers, most growers are reluctant to adopt new practices, even when crop costs can be reduced, because of concerns about yield variability. Necessary to any real environmental improvements is making certain that risks to the farmer in implementing these procedures could be neutralized, possibly by creating a farm insurance program. The farm insurance plan could be modeled after the Mississippi Soil Conservation District and Campbells Corporation private-sector crop insurance programs. They were designed to raise the comfort level of new farmers participating in conservation programs that depart from traditional farming practices. Similarly, the Agricultural Conservation Innovation Center, in cooperation with the IGF Insurance Company, has designed insurance coverage to help farmers adopt conservation practices (see **Attachment H-5**).

The USDA has undertaken the development of an Adjusted Gross Revenue (AGR) insurance plan to provide an insurance safety net for multiple agricultural commodities in an insurance product. The AGR plan was piloted in New England last year. The USDA intends to expand this program to 16 counties in New York State, including Suffolk County. The AGR insurance plan will replace the Federal government disaster program of the past and the crop insurance which growers found much too expensive for anything near adequate coverage. The AGR plan is not the same as reduced losses due to new practices, however the principles of the plan may be applicable to the proposed farm insurance plan.

Task IV AEM Implementation

The Federal, State and county governments must expand their operating budgets to provide for more staff at the USDA–NRCS, CCE, and SCSWCD to provide technical support to develop 1) the regional plan, 2) whole farm plans and 3) initiate necessary pilot demonstration projects. Respective budgets should appropriate two more staff persons at SCSWCD at \$175,000 per year, and 2 more staff at CCE at \$175,000 per year specifically for this Committee’s initiatives (figures include salaries, benefits, associated equipment and space needs).

In terms of funding to support implementation of the LI AEM, the program should be financed by New York State with at least a \$1 million commitment. The New York State Bond Act, Environmental Protection Fund, the new 1/4 percent sales tax water quality improvement fund from the non-point source pollution category, and Suffolk County Capital Funds are all reasonable candidates for additional funding for implementation.



Another option for securing funding to implement AEM plans designed for specific farms is the Suffolk County Farmland Development Rights Program, which is authorized and administered in accord with the criteria in *Laws of Suffolk County*, Volume 1, Part III, Administrative Local Laws, Chapter 8, Development Rights to Agricultural Lands (pp. 801-806). This program is currently limited to the expenditure of funds for the purchase of non-farm development rights in response to recommendations made by the Suffolk County Farmland Committee.

Suffolk County should evaluate the potential and utility of amending Chapter 8 to authorize the payment of additional funds to a willing seller of development rights so as to encourage participation in the AEM program for a specified time period. This offering could be linked to farms in watershed areas that have been identified as having significant impacts on Peconic Estuary water quality, and to farms located within 1500 feet of the regional groundwater divide in order to protect drinking water supplies. The new 13-year, 1/4 percent sales tax extension program will have a funding stream dedicated specifically for purchase of development rights to farms. If authorized, yearly participation payments from this fund could be made to farmers who implement AEM farm plans.

Task V Finance Mechanisms

While some finance mechanisms are noted above (New York State Bond Act, Environmental Protection Fund, the new 1/4 percent sales tax), several other conventional and innovative/alternative finance mechanisms need to be investigated to fund education and outreach, as well as the other tasks. For example, crop insurance, additional personnel, and tax credits could be financed by levying a small fee on all fertilizer and pesticide sales at the wholesale to retail distribution level in Suffolk County. A well-developed marketing and public outreach program targeted to homeowners and larger users should also be developed with these funds. Aspects of this educational program should be extended to large institutional users such as golf courses (See **Attachment H-6**; the Michigan Groundwater Stewardship Program and the Northwest Michigan Groundwater Stewardship Program, both financed by a small fee on nitrogen and pesticides).

Another topic raised by the Committee includes subsidizing capital improvement loans for farms from the Environmental Facilities Corporation. This and other mechanisms need to be explored more fully.

Task VI Gather and analyze economic data

Economic data need to be gathered and analyzed on a regular basis, and the Committee needs to continue to promote and integrate economic analyses and support mechanisms into the AEM initiatives. Ideas posed by the Committee include securing an agricultural economist and creating a Farm Development Agency.

Summary of Costs and Benefits



Developing a LI AEM program will require an estimated commitment of \$250,000 to \$500,000. While the cost of long-term implementation of the plan is unknown, \$350,000 is needed to fund additional staff at CCE and SCSWCD for agriculture-related issues, and a minimum of \$1 million is required to support initial implementation efforts. The costs of providing State tax credits to farmers, conducting pilot projects, and developing and implementing farm insurance plans have not yet been developed.

Environmental benefits of nutrient management are well documented in the PEP CCMP, and include attainment of dissolved oxygen standards throughout the estuary. Other benefits include public health/drinking water considerations (attainment of standards), as well as support of a sustainable agricultural community, which is essential to the economy and quality of life in the Peconic Estuary watershed.

Conclusions

AEM enhanced with tax credits as presented herein can be initiated now. If so, it will accelerate the conversion of conventional agriculture to lower impact practices. This may lead to organic, community-supported agriculture and niche farming or other innovations. A successful AEM program will result in less pollution to the groundwater, and consequently the Peconic Estuary, and reduce pesticide use in the region by providing direct economic incentives to farmers.

YWA concludes its report by stating, “Sustainable farming is not universally financially sustainable or profitable. The crucial factor in financial sustainability is good management, particularly necessary since many sustainable farms are highly diversified. Ecological sustainability in agriculture requires use of modern, emerging technologies that are information-driven and management centered. Sustainable agriculture requires a highly adaptive management technology that responds to the ecology of the farm, and will spread as environmental constraints grow. The ability to farm sustainably will be in increased demand as environmental constraints grow because it has real and measurable environmental benefits.”

The State and the County have robust economic development programs, investing millions of dollars each year. In order to address AEM correctly we must augment this effort to other agricultural-related economic assistance programs in order to fully support the conversion of the region’s current agricultural economy to one that is more environmentally harmonious with groundwater and surface water protection issues.

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ATTACHMENT H-1



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**AGRICULTURAL NITROGEN
MANAGEMENT COMMITTEE MEMBERSHIP**

<u>Name</u>	<u>Agency</u>
George Proios, Chairman	Suffolk County Executive Office/Suffolk County Soil & Water Conservation District
Kevin McDonald, Co-Chairman	Group for the South Fork/Peconic Estuary Program CAC
Bill Sanok	Cornell Cooperative Extension
Joe Sieczka	Cornell Cooperative Extension
Mary Barbato	East End Initiative
Mary McGlone	East End Initiative
Joe Gergela	Long Island Farm Bureau
Marci Bortman	The Nature Conservancy
Stuart Lowrie	The Nature Conservancy
Alpa Pandya	The Nature Conservancy
Matthew Sclafani	New York State Department of Environmental Conservation/Peconic Estuary Program
John Wildeman	New York State Soil and Water Conservation Committee
Debbie O’Kane	North Fork Environmental Council
Susan Dodson	Suffolk County Department of Health Services
Martin Trent	Suffolk County Department of Health Services
Walter Dawydiak	Suffolk County Department of Health Services/Peconic Estuary Program
Vito Minei	Suffolk County Department of Health Services/Peconic Estuary Program
Laura Klahre	Suffolk County Department of Health Services/Peconic Estuary Program
DeWitt Davies	Suffolk County Planning Department
Lauretta Fischer	Suffolk County Planning Department
Steve Jones	Suffolk County Planning Department
Thomas J. McMahon	Suffolk County Soil & Water Conservation District
Allan Connell	United States Department of Agriculture — NRCS
Rick Balla	United States Environmental Protection Agency

Other Contributors:

Long Island Agricultural Stewardship Working Group
Peconic Land Trust
Town of Southampton
Town of Southold



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ATTACHMENT H-2



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NITROGEN LOADING RATES AND POTENTIAL REDUCTIONS*

Category	Fertilizer Load Rate Reduction (lb N/ac/yr)	Potential (%)
Vineyards	40	5-10
Mixed Vegetables	125-175	10
Potatoes	150-200	10-20
Orchards	60-80	20
Nurseries	160-250	20-30
Sod**	250	25
Grain	0-50	0
Greenhouse (inc. Container Stock)	***	—
Field Corn	120-180	15
Christmas Trees	160-200	20

* All values result from the publication “Protection and Restoration of Groundwater in Southold, NY” Cornell University C.E.R., April 1983, Draft, and subsequent discussions with the Long Island Agricultural Stewardship Working Group Meeting at the Cornell Cooperative Extension of Suffolk County on June 22, 2000.

** Sod values were further refined with input from Tamsen Yeh from the Cornell Cooperative Extension of Nassau County in July and August, 2000.

*** Approximately 80 percent of container stock greenhouses use slow release fertilizers instead of liquid feeding.



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ATTACHMENT H-3



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AGRICULTURAL TRENDS ANALYSIS FOR TOWN OF SOUTHAMPTON

Yellow Wood Associates (YWA) analyzed the existing agricultural and fisheries resources and developed recommendations for fostering an economically and environmentally viable climate for the natural resource-based economy of Southampton, New York. They identified several important components to changes in the agriculture industry. The major components of their trends analysis are listed below and incorporate a strategy to assess capacity and develop a response strategy.

1. The transformation from commodity production to specialty crop production may contribute positively to environmental sustainability. This will depend, in large part, on the capacity of farmers to employ more information and management-intensive approaches to production. Farmers will need to have the financial capital to invest in modern technologies. This transformation will depend as well on continued growth in consumer demand for organic or “green” products and services.
2. Diversification of agricultural production will increasingly include service provision in tourism, recreation and education, whether through direct marketing (*e.g.*, roadside stands, pick your own) or activities such as farm vacations, school field trips, riding lessons, hay rides, wine tasting events or farm tours. There are two reasons for this trend. First, services provide an additional income opportunity to farmers who face ever-higher costs of production. Second, consumers rank the ocean as their #1 most popular vacation setting, followed in third place by rural destinations.
3. The long-term success of agriculture, based on product differentiation and services depends heavily on economical provision of appropriate infrastructure (*e.g.*, parking, signage, and sewage disposal) and market infrastructure development in both retail and wholesale markets. Market diversification is as important as product diversification to ensure the long-term viability of agriculture. East End farmers must be able to capture local sales and tap more distant markets as appropriate.
4. One of the substantial challenges facing agricultural entrepreneurs is that of matching the scale of production to market demand. Another is in securing the range of professional services from translating to graphic design, labeling, packing, transportation and pricing information required to survive in a highly competitive marketplace. A third is developing the supply relationships, market relationships and information systems needed to meet demands for “just-in-time” deliveries. Advantages to the East End farmers include proximity to major markets, but proximity alone is not enough to ensure marketing success.



-
5. The requirements of agricultural diversification into specialty products and related production and marketing requirements can lead to increased vertical integration of farm operations.
 6. Diversified agricultural activity, with a significant service and processing component, will require new approaches to land use regulation.



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ATTACHMENT H-4



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IATP'S NUTRIENT MANAGEMENT YARDSTICK

The Institute for Agriculture and Trade Policy (IATP) uses a Nutrient Management Yardstick to promote on-farm efficiency and environmental protection for use on Minnesota farms. This is a summary of that program.

Summary

The Nutrient Management Yardstick measures nutrient inputs and outputs that go beyond the farm boundary. An imaginary boundary is drawn around the farm, so that nutrients that remain on the farm are not counted; but those that enter or leave the farm boundary are measured. Nutrients that enter the farm from beyond the boundary include nitrogen in rainfall, feed and livestock inputs, fertilizer and manure inputs, nitrogen-fixing plants, and nitrogen in irrigation water. Nutrients that leave the boundary may include exported crops, volatilization and denitrification into the atmosphere, runoff into surface water, and leaching into groundwater.

The project, based on a successful Dutch program, is in its second year in the United States and Canada. The Yardstick is a bookkeeping tool to help farmers understand and better manage the flow of primary nutrients (nitrogen, phosphorus, potassium) on their farms. By providing farmers with a method of measuring nutrient utilization, unnecessary inputs can be eliminated, reducing costs as well as excess nutrients flowing to the environment.

Excess nutrients are measured using a simple equation: inputs — outputs = excess nutrients. The farmer completes worksheets, entering estimated figures, and calculates a score that indicates the pounds per acre of excess nitrogen, phosphorus, and potassium on the farm. Cash-grain farms tend to have minimal (-50 pounds per acre) nutrient excesses. Scores are used by the farmer to more fully understand the nutrient flows on the farm; since conditions vary from farm to farm and year to year, the scores should not be used for comparison purposes. The Yardstick is not a regulatory tool; scores are kept confidential.

Determining Nutrient Outputs

Crop farmers need the following information to complete the worksheets:

- amount of fertilizers used;
- amount of crops that left the farm;
- if legumes are grown, the acreage, cutting, and type of stand; and
- if irrigation is used, the nitrate content and volume of water used.

The program describes how to convert the dry matter weight of crop products that were sold or removed from the farm and determines the nutrient content of sold crop products. A useful chart of nutrient contents of common crops and forages is included. The farmer then



determines the nutrients in purchased fertilizer and manure and the nitrogen fixated by legumes. Finally, environmental inputs are estimated from deposition and irrigation water.

Once all known factors are figured in, the farmer totals all nitrogen, potassium, and phosphorus inputs and outputs, then determines the difference. The final result is a score for excess pounds per acre for each of the three nutrients.

SIGNIFICANCE OF SCORES

The closer a yardstick score is to zero, the more efficient is the on-farm nutrient use. The document includes criteria that increase or decrease efficiency, and fertilizer data.



ATTACHMENT H-5



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BMP-PLUS™: INSURANCE COVERAGE FOR INNOVATIVE PRACTICES

Conservation Practices Could Be More Widely Adopted if RISKS Could be Neutralized

Best Management Practices (BMPs) are research-proven, cost-reducing farming methods designed to optimize crop income while protecting the land. Yet it is hard for farmers to change the way they farm. They stick with accustomed methods because of concerns about yield variability that tend to outweigh either cost-cutting appeal or environmental impact reduction concerns. Until farmers have seen that the risks have been worked down, they continue to use current practices.

THE BMP-PLUS™: Conservation Innovation Policy

To boost adoption of proven conservation techniques, the Agricultural Conservation Innovation Center (ACIC) has designed insurance coverage for innovative practices. The approach uses split fields (or orchards) to isolate the risk. The innovative steps are followed on one half while conventional methods are used on the other. All other practices must be identical across the split field system to make sure that the conservation practice is the only thing that is different in the two portions. The yield difference between the two halves is insured.

Sponsoring organizations play a pivotal role. Proposals originate with them and they screen participants. They identify technicians who'll guide growers as the innovative practice is implemented. They track yields, analyze differences in the split field results, and help process any claims.

ACIC empanels expert committees to evaluate conservation practices for their suitability. Other criteria may become evident as proposals are processed.

A Specialized Insurance Policy Can Resolve This Dilemma

To boost adoption of proven conservation practices, the ACIC and IGF Insurance Company have designed insurance coverage to help farmers adopt conservation practices.



How It Works and What It Costs

1. A split field approach is commonly used to demonstrate a different practice or product. For BMP-PLUS™ split fields will be used to isolate risk in proven conservation methods. The innovative procedure is followed in one half while conventional methods are continued in the other. All other farming practices must be identical across the split field system to make sure that the conservation practice is the only thing that is different. Yield variance between the two halves is then insured neutralizing a grower's risk as innovative conservation practices are adopted.
2. The BMP-PLUS™ insurance will have premiums set at 50 percent of the established Multiple Peril Crop Insurance (MPCI) rates for any crop.

Sponsoring Groups

The enhanced AEM program proposed herein recognizes that the County and State (Department of Agriculture and Markets) have a bona fide stake in conservation. Their leadership makes the whole process work by:

- Identifying conservation proposals;
- Clarifying the benefits and the risks;
- Communicating with farmers;
- Screening farmer participants;
- Ensuring sufficient technical support; and
- Assisting in loss adjustment.

How the BMP-PLUS™ Policy Works

1. A bona fide conservation practice is identified (in this case, AEM practices);
2. Either a sponsoring organization persuades farmer members to enroll crop acreage or a producer persuades his organization to sponsor a proposal;
3. A simplified description of the conserving practice is submitted by the sponsoring organization to ACIC for an initial review;
4. ACIC reviews the concept and the needs, responding to the applicant organization with assistance in either making a full application or in obtaining more information and refining how the proposal may be specified more effectively;
5. The sponsoring organization:
 - a. Nominates the producer participants;
 - b. Vouches for the participants;
 - c. Identifies the field support for farmers using the practice; and



-
- d. Certifies that the split fields have comparable productive capacity.
 6. ACIC initially rates the insurance based on a non-probability premium structure developed jointly with IGF Insurance Company:
 - a. Empanels a vetting committee to assess the technical aspects of the proposal; and
 - b. Customizes the innovation insurance policy to fit the circumstances.
 7. IGF Insurance Company writes and distributes the BMP-PLUS™ policy via agents;
 8. The producer grows his crops according to the split field method;
 9. The sponsoring organization provides technical support for enrolled producers and oversees the steps of the recommended conservation practice;
 10. The sponsoring organization performs the initial adjustment process and prepares a preliminary report if a loss occurs and verifies that all other farming practices were consistent across both portions of the split field system; and
 11. IGF Insurance Company performs the final adjustment process and pays out claims as necessary.

Source: Agricultural Conservation Innovation Center, 1999



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ATTACHMENT H-6



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Mission

To provide information and assessment tools for pesticide and nitrogen fertilizer users which help them identify risks to groundwater associated with their pesticide and nitrogen fertilizer use practices and to coordinate local, State, and Federal resources to help individuals reduce those risks.

The Michigan Groundwater Stewardship Program is designed to be voluntary, to be locally driven, to address the concerns of individuals, and to maintain a focus on the financial and technical constraints which drive real-world decisions.

The Michigan Groundwater Stewardship Program is relatively narrow in focus addressing only risks to groundwater associated with pesticide and nitrogen fertilizer use. However, it has a wide scope and addresses the many uses of these materials, including agricultural, turfgrass, and household uses.

Local Programs

Local Groundwater Stewardship Programs are being funded through a competitive grants program. Technical assistance personnel are hired to help individuals complete an on-site evaluation of risks and help implement practices which reduce those risks.

Farm *A* Syst (FAS)

Farm *A* Syst (FAS) identifies potential risks posed by farmstead operations. Fact sheets provide educational information and list reference people to contact if questions arise. F*A*S* work sheets use a simple question-and-answer format to evaluate farmstead practices that may pose a risk to groundwater.

Farm *A* Syst is voluntary and confidential. All Farm *A* Syst materials stay with you on your farm. It is important to recognize that Farm *A* Syst only identifies risk. It does not tell you if you have contaminated water or that you will never have contaminated water.

Technical assistance with completing Farm *A* Syst evaluations is available free of charge from the Michigan Groundwater Stewardship Program.



Home *A* Syst

Home *A* Syst helps homeowners identify and lower risks to groundwater and surface water, protecting human health and the environment. A home assessment system to help you identify and lower risks to groundwater and surface water. Groundwater is a limited resource. Its contamination can occur in several ways:

- Contaminants moving down well casings of unused or unusable wells;
- Excess or poorly timed use of yard and garden fertilizers and pesticides, leading to groundwater or surface water contamination;
- Poorly maintained septic systems; and
- Improper disposal of wastes.

Groundwater Stewardship Practices

Technical assistance personnel may work with landowners to develop a Groundwater Stewardship Plan describing the cost-share and technical assistance resources available to implement Groundwater Stewardship Practices.

The practices not only provide easy-to-access information about reducing risks but also can provide technical assistance and cost-share for closing abandoned wells.

One-Stop Shopping

In the past, individuals have gone to MSU Extension for general information on implementation of the Groundwater Stewardship Practices. Then they would go to the Natural Resources Conservation Service for technical standards, visit the Consolidated Farm Service Agency for cost-share information, and finally work through the Natural Resources Conservation Service and the local conservation district to set up technical assistance and learn about other cost-share opportunities.

To address this problem, a series of Groundwater Stewardship Practice Manuals have been developed by the Michigan Groundwater Stewardship Program which integrate:

- MSU Extension descriptive information
- Natural Resources Conservation Service technical standards
- State and Federal legal requirements
- Information on State and Federal cost-share opportunities, and
- Evaluation tools.



Groundwater Stewardship Teams

These teams determine the mixture between cost-share, technical assistance, and/or demonstration provided by the local program. They ensure coordination of local resources and make sure the local program meets the groundwater protection needs of local pesticide and fertilizer users.

Groundwater Stewardship Teams (GST) are a part of Michigan's Groundwater Stewardship Program (GSP). They provide a collective voice of pesticide and nitrogen fertilizer users in determining the direction of the statewide program. GSTs help ensure that local information, technical assistance, demonstration projects and cost-share opportunities supported by the Michigan Groundwater Stewardship Program meet local needs and interests. They can also serve as local forums to communicate the groundwater protection activities, needs, and concerns of the pesticide and nitrogen fertilizer users to the nonagricultural community.

Field *A* Syst

Field *A* Syst is designed to help individuals identify ways to reduce the risk of groundwater contamination associated with field applications of pesticides and nitrogen fertilizers.

Field *A* System is a series of worksheets and fact sheets that help identify and offer ways to reduce the risk of groundwater contamination associated with pesticide and nitrogen fertilizer use. These in-field risk assessment tools are based on the highly popular Farm *A*Syst program which is used to evaluate farmstead practices and structures that may pose a risk to groundwater.

Currently, Field*A*Syst materials are available for the following topics:

- General Pesticide & Nutrient Management Work Sheets;
- General Irrigation Management Field Screening Work Sheets; and
- Corn Nutrient & Pesticide Management.

The general pesticide, nutrient and irrigation management packages focus on practices such as: split nitrogen application, nitrate testing, pesticide selection, sprayer calibration, and pesticide safety.

The field screening worksheets help evaluate the impact of soils, subsurface geology, cropping practices, and depth to the water table on the relative vulnerability of the fields you manage. The idea is that if you are going to try using a groundwater stewardship practice, you'll get the biggest benefit using it on your most vulnerable fields.

The materials are designed to integrate MSU Extension bulletins and recommendations into a single fact sheet, using the same easy Farm*A*Syst question-and-answer format to



help you apply the recommendations to your own fields. Just like Farm*A*Syst, the Field*A*Syst program is voluntary and confidential. All materials stay with you on your farm.

Funding

Funds for this program come from industry-supported pesticide and fertilizer registration fees on specialty and agricultural products. Registration fees are paid for by companies that register their products for use in Michigan. A tonnage fee on bulk nitrogen fertilizers is also a source of funding. Nitrogen tonnage fees are paid directly by bulk fertilizer users.

Pesticide registration fees account for about 72 percent of the revenues with the remaining being provided by nitrogen fertilizer users. Specialty (household) products generate approximately 40 percent of the total revenues with the remaining coming from agriculture and other wide-area pesticide uses.

Over 85 percent of the revenues generated by these fees are returned directly to pesticide and fertilizer users through education, technical-assistance, applied research, and cost-share programs.

Funding Revenues

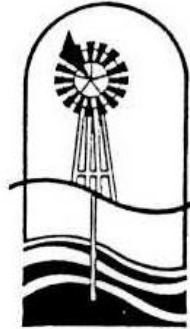
Funds for the Michigan Groundwater Stewardship Program come from industry-supported pesticide and fertilizer registration and tonnage fees.

Pesticide registration fees are paid for by companies which register both specialty (homeowner) and wide-area (agricultural, right of way, golf course, etc.) pesticides for use in Michigan. The rate for specialty pesticides is \$100/product while the rate for wide-area pesticides is equal to three-quarters of one percent of the annual wholesale value with a \$150/product minimum.

Specialty fertilizer registration fees are equal to \$100 for each product and grade registered for sale. Nitrogen fertilizer tonnage fees are set at one-and-a-half cents per percent of nitrogen in each ton of fertilizer sold. For example, the fee on one ton of 28-0-0 would be $28 \times .015$ or \$0.42. So, if 28-0-0 were selling at \$160/ton, the groundwater fee would raise the price by two-tenths-of-one-percent.

Pesticide registration fees account for about 74 percent of program revenues with the remaining being provided by nitrogen fertilizer users. Specialty products generate approximately 40 percent of the total revenues with the remaining coming from wide-area pesticide uses.

Total annual revenues were about \$2 million in 1994 and \$3.5 million in 1995. Revenues not spent in one year are carried forward to fund the next year's programs and are not returned to the general fund.



Northwest Michigan Groundwater Stewardship Program

The Northwest Michigan Groundwater Stewardship Program is here to be of service to you.

The Program offers:

- Farmstead Assessments (Farm*A*Syst);
- Homestead Assessments (Home*A*Syst);
- Cost-share Funding; and
- An Information Network/Partnership.

It's about Risk Reduction to improve the quality of our region's groundwater and your personal groundwater supply. This program is funded through PA216 of 1994, which assesses a surcharge on nitrate fertilizers and pesticides. The revenues generated are to be used to help farmers and homeowners to undertake management changes that will reduce the threat of groundwater contamination on their property. The bulk of the grant funds will be used to deliver on-site technical assistance to landowners and to provide cost-share funds to landowners for closing abandoned wells, installing anti-backflow devices on agricultural wells and implementing other practices that protect groundwater.

Groundwater Facts and Trivia

- The earth is a closed system; there is the same amount of water here today as there was three billion years ago;
- Water moves through the hydrologic cycle, changing from solid to liquid to gas (water vapor) over and over again;
- Ninety-seven percent of the earth's water is salt water, only three percent is fresh water. Of the freshwater, 77 percent is frozen in ice and glaciers, 22 percent is groundwater, and less than 1 percent is found in lakes, marshes, rivers, and streams;
- About 95 percent of the United States' total supply of fresh water is groundwater. The remaining is surface water found in lakes and streams;



- About 27 trillion gallons of groundwater are withdrawn for use in the United States each year;
- Three-quarters of the cities in the United States use groundwater as part of their water supply. Almost 350 municipalities throughout Michigan use groundwater for their public water supply system;
- More than 800,000 new water wells are drilled in the United States each year;
- Unconsolidated sands and gravels compose nearly 90 percent of all aquifers developed for water supplies. Porous sandstone, limestone, and highly fractured crystalline and volcanic rock make up most other aquifers;
- Forty-three percent of Michigan's residents depend on groundwater for drinking;
- Thirty-seven percent of Michigan's farmers use groundwater for irrigating crops and watering livestock;
- Groundwater supplies water to many of our streams, lakes, and wetlands. In fact, about 30 percent of stream flow in the U.S. is from groundwater discharge;
- Rainfall is the main source of fresh groundwater. About 25 percent of rainfall in the United States becomes groundwater. That is equal to about 300 trillion gallons per year;
- Groundwater is constantly moving. The rate of movement may be as fast as 50 feet per day or as slow as 50 feet per 500 years;
- Groundwater nearly always contains more mineral matter than nearby surface water, but is generally much cleaner;
- About a quarter of the Earth's population drink contaminated water;
- The two major groundwater problems are overdraft (withdrawing more water than is being naturally replenished), and unnatural contamination;
- Since water will dissolve more things than any other substance it is very susceptible to contamination;
- Groundwater contamination has been found in every State. Groundwater is known to be contaminated at about 1,300 sites in Michigan;
- Agricultural activities constitute the single largest use of groundwater; and
- Approximately one-fifth of the earth's fresh water is contained in the Great Lakes Basin.

Farm*A*Syst

A Farm*A*Syst is an assessment to help identify potential risk of groundwater contamination posed by farmstead operations. Fact sheets provide education information. F*A*S worksheets use a simple question-and-answer format to evaluate farmstead practices that may pose a risk to groundwater. A groundwater technician will come out



to the farm and work with you to identify practices which would help reduce the risk of contamination on you farm and develop a Groundwater Stewardship Plan.

Farm*A*Syst areas which are addressed are:

- Well location and condition;
- Pesticide and/or fertilizer storage and handling;
- Fuel storage (see EQIP info for cost-share info);
- Hazardous waste management;
- Household and milking center wastewater treatment;
- Livestock manure storage;
- Livestock yard management;
- Silage storage;
- Emergency preparedness planning; and
- Overall farmstead assessment.

After doing a Farm*A*Syst, one is eligible to apply for cost-share funding to help implement safer groundwater practices. For more information about the Farm*A*Syst program, please contact Ginger Bardenhagen at (616) 941-4191 or email her at: spice@northlink.net.



*Home*A*Syst*

Home*A*Syst is a home assessment system to help you identify and lower risks to groundwater and surface water. The packet fact sheets can be done alone or with assistance and cover the following topics:

- Drinking Water Well Management;
- Yard and Garden Care;
- Household Wastewater;
- Stormwater Management;
- Hazardous Household Products;
- Household Trash;
- Liquid Fuels; and
- Homesite Assessment.

The assessment will allow you to:

- Protect your drinking water;
- Learn the basics about your home septic system;
- Reduce runoff which may harm lakes and streams;
- Gain information on the health and environmental impact of your yard and gardening activities;
- Lower risks from hazardous household products;
- Reduce and improve handling of household waste; and
- Safely manage liquid fuel storage (gas, fuel oil, kerosene, etc.).

For more information or for a Home*A*Syst packet contact:

Kelly Wood-Arnold
Phone: 616-935-1514
Fax: 616-922-4633



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APPENDIX C

Impacts of Agriculture on Shallow Groundwater in Suffolk County, NY (SCDHS, 2002) **Executive Summary**

Abstract:

This report describes the results of a five-year (1998-2002) monitoring effort at agricultural sites in eastern Suffolk County. Monitoring wells were installed at each of five agricultural fields to evaluate the groundwater impacts of fertilizer and pesticides applied to traditional row crops including, potatoes, corn, tomatoes, cabbage and other cole crops, eggplant, and recently, sod (at one site). Routine sampling of each monitoring well was initiated in April 1998, and has continued to the present. Over this five-year period, each well was sampled 36 times for a total of 180 sampling events. The investigation shows no improvement from the 1996 SCDHS study of agricultural impacts that examined 20 years of monitoring well data in agricultural areas.

Findings:

- The nitrate MCL (10 mg/L) was exceeded in more than two-thirds (67.8%) of monitoring samples and exceeded 6 mg/L in 93.8% of the samples. The average nitrate concentration was 13.1 mg/L, and the observed trend for the last three years is toward increasing nitrate concentrations.
- Agricultural management practices to limit groundwater contamination from pesticides and fertilizers have not resulted in measurable improvements to groundwater quality.
- Nitrate concentrations contributed by row crop agriculture (13.1 mg/L) are double that of vineyards (6.7 mg/L), more than triple that of golf courses (3.6 mg/L), double that of housing densities of two dwelling units per acre (DU/ac – 6 mg/L), and triple that of one DU/ac (4 mg/L).
- There were from four to 10 pesticide-related compounds detected in each monitoring well, and the total pesticide concentrations ranged from 14.88 to 52.01 ug/L. Drinking water MCLs may not adequately address exposures to mixtures of pesticides in well water.
- Nineteen pesticide related chemicals were detected, and most of these are known to have a moderate to high potential to leach to groundwater. More than one-half of the pesticides (or parent compounds or degradates) detected remain registered for use on Long Island.
- Only two of the 19 pesticide chemicals detected have specific drinking water MCLs. Monitoring for many of these chemicals is not mandated by federal or state health agencies. However, SCDHS has incorporated these analyses into monitoring of community water supply wells, and even private wells as resources allow.
- Metolachlor ESA, metolachlor OA and metalaxyl were the most frequently detected compounds, appearing in 100%, 98.7% and 52.4%, respectively, of the samples in which they were analyzed.
- A trend toward declining concentrations of aldicarb was observed. The data suggest that older potato pesticides are beginning to exit from the groundwater system.
- The frequency of detection of the contaminant perchlorate is a concern because a new draft reference dose has been issued by USEPA, thereby increasing the probability that a revised drinking water standard (1-2 ug/L) will be established (current NYS guideline 18 ug/L).

Recommendations:

- All involved interests, including chemical manufacturers, the farming community, and regulatory agencies, need to act to better protect groundwater. Greater efforts locally are needed to educate farmers about leaching of pesticides and nitrogen fertilizers, and the impacts on groundwater quality.

- A monitoring program to alert growers to water quality impacts from pesticides and/or excessive fertilizer applications should be implemented. Legislation to require a groundwater monitoring program at all agricultural parcels greater than 10 acres in size should be enacted by the Suffolk County Legislature.
- Pesticides and their degradates that have adversely affected drinking water quality or that adversely impact ecological resources should be prohibited from sale and use.
- A federal or state program to identify pesticide and fertilizer products that contain perchlorate should be implemented. This identification would allow Suffolk County to develop regulations regarding their use, similar to the prohibition proposed for Ironite Fertilizer (Intro. Res. No. 2019-2002).
- As Suffolk County is recognized as operating one of the leading environmental laboratories in the nation, the county should continue to increase its analytical capabilities to test for pesticides and degradates of concern, and test private drinking water wells in vulnerable areas.
- Funding by the NYS Department of Environmental Conservation for pesticide monitoring should be restored under the requirements of the NYS Pesticide Reporting Law (1996).
- Reliance on private drinking water wells in agricultural areas should be discouraged, and efforts to extend public water supplies to these areas should be increased. A comprehensive analysis, including pesticide and degradate compounds, should be required of all private wells serving new construction in agricultural areas.
- AEM programs should be implemented to reduce pollution from agricultural chemical use. The Peconic Estuary Program has outlined strategies and identified funding needed to develop these initiatives. The programs should consider requiring a groundwater monitoring program at all agricultural parcels greater than 10 acres in size in order to demonstrate improvements in groundwater quality.
- Regulatory agencies should act to establish specific drinking water MCLs for pesticide chemicals found in groundwater and to better address contamination by multiple pesticide compounds.

APPENDIX D

Suffolk County Resolution No. 520-2003, Establishing Task Force for Agricultural Environmental Management in Suffolk County

Intro. Res. No. 1222-2003

Laid on Table 4/8/2003

Introduced by Legislators Fisher and Cooper

RESOLUTION NO. 520 -2003, ESTABLISHING TASK FORCE FOR AGRICULTURAL ENVIRONMENTAL MANAGEMENT IN SUFFOLK COUNTY

WHEREAS, Resolution No. 997-2001 established an Eco-Tourism Task Force to:

- a.) review and evaluate how to establish and promote an ecological-based tourism industry which can generate a steady stream of revenue from the already protected nature preserves, open spaces, beaches, historic sites, and parklands; and
- b.) review and evaluate how the Long Island Convention and Visitors Bureau can increase the market segment of tourism by improving its focus and direction in targeting Suffolk County's ecological tourism (low-impact recreational and leisure activities such as reel and fly-fishing (salt and freshwater); kayaking; sailing; hiking; scuba diving; surfing; bird watching; nature photography and painting); and

WHEREAS, Suffolk County is the top producer of agricultural products in terms of sales in New York State, representing approximately six percent (6%) of the county's gross domestic product; and

WHEREAS, agriculture and a rural quality of life are significant contributors to eastern Suffolk County's tourism-based economy; and

WHEREAS, the Suffolk County Legislature has been pro-active in the preservation of farmland; and

WHEREAS, conventional farming practices are typically fertilizer (nitrogen) and pesticide dependent; and

WHEREAS, as evidenced by water quality sampling conducted by the Suffolk County Department of Health Services, nitrogen and pesticide runoff and groundwater contributions raise concerns for the Suffolk County surface water as well as for ambient groundwater; and

WHEREAS, the Peconic Estuary Program's Comprehensive Conservation Management Program's Agricultural Environmental Management Strategy recommends the cooperative development and implementation of a strategy to lower the migration of nutrients and pesticides into the environment; and

WHEREAS, a coordinated public/private effort is needed to develop and implement this Agricultural Environmental Management Strategy; and

WHEREAS, State resources through the New York State Agricultural Environmental Management Program are available but untapped; now, therefore, be it

1st RESOLVED, that the Task Force for Agricultural Environmental Management (Task Force) is hereby created to:

- a.) cooperatively develop, within the County's agricultural community, a strategy to lower nutrients and pesticide inputs into the environment by 25%, in accordance with reduction and participation goals established and agreed to in

Appendix H of the Peconic Estuary Program's Comprehensive Conservation Management Agricultural Environmental Management Strategy (PEP);

- b.) maintain, and increase, farm profitability while demonstrating that changes in farming practices can produce demonstrable environmental improvements;
- c.) emphasize incentive-based pollution reduction strategies linked to market development and product distribution associated with other agricultural economic planning efforts underway in the region;
- d.) Attain ninety percent (90%) participation within the farming community in a Long Island Agricultural Environmental Management (AEM) Program within five years;
- e.) Use resources available through the New York State Agricultural Environmental Management Program;
- f.) Explore the feasibility of applying for State low-interest financing through the New York State Environmental Facilities Corporation (EFC) to finance farmland preservation, in order to accelerate the rate of preservation;
- g.) Develop an implementation program which will meet the PEP goals of 25% nitrogen reduction and 90% participation, and incorporated strategies; and
- h.) Look at existing County staff and funding resources to implement the above program's goals and strategies and recommend ways to close any potential staff or funding gaps which stand in the way of implementation; and be it further

2nd **RESOLVED**, that this Task Force shall consist of the following thirteen (13) members:

- 1.) four (4) representatives from the farming community to be selected by the County Legislature;
- 2.) a representative from the PEP Agriculture Nitrogen Management Committee;
- 3.) a member from a widely recognized or publicly acknowledged environmental organization, to be selected by the County Legislature;
- 4.) the Director of the Suffolk County Department of Planning, or his/her designee;
- 5.) a representative from the Cornell Cooperative Extension;
- 6.) a representative from the Soil & Water Conservation District;
- 7.) one member of the Suffolk County Legislature, to be selected by the Chairman of the Environment, Land Acquisition, and Planning Committee, or any successor committee thereto of the Suffolk County Legislature;
- 8.) one member of the Suffolk County Legislature, to be selected by the Presiding Officer of the Suffolk County Legislature;
- 9.) a representative from the County Executive's Office; and
- 10.) a representative from the Suffolk County Department of Health Services Office of Ecology in the Division of Environmental Quality, designated by the Commissioner of the County Department of Health Services;

and be it further

3rd **RESOLVED**, that the Task Force shall hold its first meeting no later than ten (10) days after the oaths of office of all members have been filed, for the purpose of organization and the appointment of a chairperson and a secretary; and be it further

4th **RESOLVED**, that the members of said Task Force shall serve without compensation and shall serve at the pleasure of their respective appointing authorities; and be it further

5th **RESOLVED**, that the Task Force shall hold regular meetings, keep a record of all its proceedings, and determine the rules of its own proceedings with special meetings to be called by the chairperson upon his or her own initiative or upon receipt of a written request therefor signed by at least four (4) members of the Task Force. Written notice of the time and place of such special meetings shall be given by the secretary to each member at least four (4) days before the date fixed by the notice for such special meeting; and be it further

6th **RESOLVED**, that seven (7) members of the Task Force shall constitute a quorum to transact the business of the Task Force at both regular and special meetings; and be it further

7th **RESOLVED**, that the Task Force may submit requests to the County Executive and/or the County Legislature for approval for the provision of secretarial services, travel expenses, or retention of consultants to assist the Task Force with such endeavors, said total expenditures not to exceed Two Thousand (\$2,000.00) Dollars per fiscal year, which services shall be subject to Legislative approval; and be it further

8th **RESOLVED**, that clerical services involving the month-to-month operation of this Task Force, as well as supplies and postage as necessary, will be provided by the staff of the County Department of Planning; and be it further

9th **RESOLVED**, that the Task Force may conduct such informal hearings and meetings at any place or places within the County of Suffolk for the purpose of obtaining necessary information or other data to assist it in the proper performance of its duties and functions as it deems necessary; and be it further

10th **RESOLVED**, that the Task Force may delegate to any member of the Task Force the power and authority to conduct such hearings and meetings; and be it further

11th **RESOLVED**, that the Task Force shall cooperate with the Legislative Committees of the County Legislature and make available to each Committee's use, upon request, any records and other data it may accumulate or obtain; and be it further

12th **RESOLVED**, that the Task Force shall expire, and the terms of office of its members terminate twelve (12) months subsequent to the effective date of this Resolution, at which time the Task Force shall deposit all the records of its proceedings with the Clerk of the Legislature; and be it further

13th **RESOLVED**, that this special Task Force shall submit a written report of its findings and determinations together with its recommendations for action, if any, to each member of the County Legislature and the County Executive no later than nine (9) months subsequent to the effective date of this Resolution for consideration, review, and appropriate action, if necessary, by the entire County Legislature; and be it further

14th **RESOLVED**, that this study shall not be performed by any outside consultant or consulting firm unless explicit approval and authorization for such consultant or consulting firm is granted pursuant to a duly enacted resolution of the County Legislature; and be it further

15th **RESOLVED**, that this Legislature, being the State Environmental Quality Review Act

(SEQRA) lead agency, hereby finds and determines that this resolution constitutes a Type II action pursuant to Section 617.5(c)(20), (21), and (27) of Title 6 of the NEW YORK CODE OF RULES AND REGULATIONS (6 NYCRR) and within the meaning of Section 8-0109(2) of the NEW YORK ENVIRONMENTAL CONSERVATION LAW as a promulgation of regulations, rules, policies, procedures, and legislative decisions in connection with continuing agency administration, management and information collection, and the Suffolk County Council on Environmental Quality (CEQ) is hereby directed to circulate any appropriate SEQRA notices of determination of non-applicability or non-significance in accordance with this resolution.

DATED: June 24, 2003

APPROVED BY:

/s/ Robert J. Gaffney
County Executive of the County of Suffolk

Date of Approval: July 3, 2003