

New York City watershed agricultural program overview: Water quality protection through public-private partnership between New York City and the watershed agricultural council

New York City and the Watershed Agricultural Council, USA

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1. Background

The New York City water-supply system is one of the largest surface-storage and supply complexes in the world, consisting of over 1,900 square miles, or 1,216,000 acres, covering parts of eight counties north and northwest of the City. Portions of the watershed are located as far as 125 miles from New York City. On average, 1.34 billion gallons of water are conveyed to the City each day. In addition to its 8 million residents, the City supplies high quality drinking water to one million residents in upstate counties, as well as millions of daily commuters, tourists and visitors to the City.

Agriculture is one of the major land uses in New York City's upstate watershed. Dairy and livestock farming in particular present one of the greatest challenges to the City's comprehensive watershed management program. Agriculture is potentially a significant source of pathogens, nutrients and other forms of pollution to surface waters. There are approximately 400 dairy and livestock farms in the City's watershed.

While non-point agricultural pollution is a must-solve problem, farmers are often bitterly antagonistic toward traditional regulatory programs. That makes for the following challenge: reconciling the public health and environmental resource protection interests of a large and distant city with the farm community's desire to maintain a fragile agricultural economy and way of life in the watershed region.

In response to farmers' concerns about the potential economic impact of proposed revisions to New York City's watershed rules and regulations in 1990, the City put aside its purely regulatory approach and entered into partnership

with the watershed farm community to carry out a locally developed and administered voluntary Watershed Agricultural Program. The City committed \$3.9 million over the first two years (September 1992 to September 1994) to refine and demonstrate an environmentally sound approach to farm management, called "Whole Farm Planning," on ten pilot farms in five counties in the watershed, and use those ten farms to market the approach throughout the region. In the second phase of the program, again with the City's financial support (\$35.2 million), Whole Farm Planning will expand to all willing farmers in the watershed over the next five years.

The farmer-led Watershed Agricultural Council, Inc. was established in 1993 to provide a forum for farm industry input and leadership in the Watershed Agricultural Program. The watershed's agricultural leadership has itself committed to a goal of 85% farm participation in this program by 1997, at which date the program will be evaluated and assessed. If the Program is not judged a success, the City would then consider more traditional regulatory approaches as needed.

In addition, the Watershed Agricultural Council, consisting of farmers and federal, New York City and State representatives, has assumed administrative and operational responsibility for the Watershed Agricultural Program. This is desirable because the success of the program depends on farmers marketing the program to farmers. To be able to assume these significant responsibilities under its \$35.2 million agreement with New York City, the Council has incorporated itself and received 501(c)(3) nonprofit status. In Phase II, over the next five years, the Watershed Agricultural Council intends to enlist the active participation of all farms in the watershed to achieve the program's goals.

As part of this collaborative pollution prevention effort, Cornell University's College of Agriculture and Life Sciences, College of Veterinary Medicine, Center for the Environment, and Water Resources Institute faculty and staff have been active participants in the development and implementation of the Agricultural Program and in providing scientific research and data to guide the program.

Locally, county soil and water conservation districts and cooperative extension associations are likewise actively involved in developing and implementing the Watershed Agricultural Program. Soil and water conservation districts work directly with individual farmers to provide funding from New York City and technical assistance in implementing the management practices called for in Whole Farm Plans. Cooperative extension professionals provide agronomic assistance to the farmers so that they are able to integrate Whole Farm Plans fully into their farm operations. The U.S. Natural Resources Conservation Service provides engineering support for the design of best management practices.

For 1995 to 1999, New York City has committed \$35.2 million in financial support to carry out the Watershed Agricultural Program in the following areas:

Program Element	Amount (\$ millions)
1. Whole Farm Planning, Design and Engineering	8.9
2. Implementation and Construction of Best Management Practices	19.7
3. Program Management, Administration and Outreach	2.7
4. Continuing Research and Technical Support 3.9 TOTAL	35.2

2. Model Program

The Watershed Agricultural Program has become a model for reconciling environmental and public health protection with the economic and operational concerns of the farm industry. The Program has already received attention nationally, and has served as a model for other water-supply watersheds in New York State.

The Watershed Agricultural Program is guided by the following principles:

Scientifically based risk assessment framework for pollution prevention;

Regulatory relief for affected industry that does not compromise environmental and public health goals;

Public-private partnership involving industry, government and academic stakeholders;

Urban-rural partnership

3. Institutional and Administrative Challenges

In putting together the Watershed Agricultural Program, New York City and the watershed farm community had to confront and overcome numerous significant institutional and administrative obstacles, many of which are unique to New York City and State. The establishment of the not-for-profit Watershed Agricultural Council as the central administrative agent of the Program was key to overcoming these challenges, which include:

- Long standing watershed-New York City animosities and mistrust, dating back to the condemnation of lands for the City's reservoirs;
- Lack of institutional cooperation across county political lines in the watershed;
- Weak institutional links and coordination among the traditional Federal, state and local agricultural agencies;

- Complex City budgeting, contracting and procurement rules, by which the financing of the Watershed Agricultural Program had to abide;
- Tensions inherent to the desire for flexibility and innovation while adhering to established Federal standards and specifications for conservation best management practices;
- Undertaking a thorough environmental and financial assessment of each farm, including the identification of actual and potential pollution sources, while assuring adequate individual landowner confidentiality.

At times, it appeared that some of these obstacles might be insurmountable, and many of these issues still require constant attention. Keeping together and advancing the Watershed Agricultural Program demands patience, open-mindedness and frankness from all participants. Nevertheless, or as a result, the strength of the City-watershed farm community partnership is best expressed in the ability to work through and resolve conflicts while maintaining the focus and direction of the Program on mutual goals and objectives.

4. Objectives of the Watershed Agricultural Program

A. The objective of the program is to protect the sources of the New York City's water supply while keeping farms in operation. Agriculture should be continued and promoted as a preferred land use in the City's watersheds.

Except for a general prohibition to safeguard against individual farm operators who exhibit a willful and irresponsible intent to pollute in a manner that threatens to significantly increase the farm's pollution levels, the program has been substituted for the initial agriculture regulations the City proposed in 1990.

B. While entirely voluntary as to any individual farmer, farmer participation in the program will be strongly driven by incentives, including 100% "cost-sharing" for Best Management Practice (BMP) planning and implementation, to be provided by the City and supplemented by State, federal and local funding sources, if available.

C. The preferred approach to source protection for farms is the use of BMPs developed to meet water-pollution control policies under the 1989 New York State Nonpoint Source Water Pollution Control Act and Section 319 of the Federal Clean Water Act amendments of 1987. Cornell University faculty will assist in the development of new BMPs, based on on-farm research and experience gained through the program, particularly to address pathogens.

D. The mechanism of choice for selecting agricultural BMPs is preparation of a Whole Farm Plan for each farm. A collateral objective for each Whole Farm Plan is to sustain and improve the economic viability of the farm.

Whole Farm Plans should be prepared by local County Project Teams, including professional staff from the county Soil and Water Conservation District, Cooperative Extension and the Soil Conservation Service.

Whole Farm Plans should address agricultural contaminants in the form of nutrients, pathogens, sediments, toxicants and organic matter. The level of control required for each Whole Farm Plan should depend on the location of hydrologically sensitive areas on the farm and the farm's location in the watershed.

In managing agricultural contaminants, Whole Farm Plans should involve these components: soil erosion control, animal waste management, plant nutrient management, domestic animal pathogen management and chemical and pesticide management.

E. Continuing education, professional training and local involvement are essential components of the Whole Farm Planning approach to agriculture.

While many of these mechanisms and approaches for farm management are not new, combining them into a whole package for each individual farm represents a significant innovation and challenge. Agencies that did not work closely together in the past, such as Soil and Water Conservation Districts and Cooperative Extensions, now sit down together with farmers to develop and implement plans for protecting water quality and the economic health of the farm. In addition, in the past, the process of selecting BMPs often overlooked the farm's broader economic strategy and business needs. Whole Farm Planning seeks to harmonize these objectives. To our knowledge, the Watershed Agricultural Program is unique in its holistic approach to addressing farm sources of pollution, including pathogens, as well as the individual farmer's operational and financial circumstances.

5. Multiple Barrier Approach

The Whole Farm Planning process takes a "multiple barriers" approach to best management practice planning and implementation on the farms. This approach is reflected in the kinds of practices developed for the ten demonstration farms in Phase I. These on-farm barriers control or eliminate to the best extent possible the generation, transport and viability of agricultural pollutants before they enter the surface waters of the City's watershed system, whose size and natural features act as a further off-farm barrier. Examples of the three "barriers" include:

First Barrier - Pollutant Source Controls:

These controls might include herd health maintenance, sanitary improvements, calf housing improvements, separation of young and old stock to eliminate or minimize pathogen infection in livestock; soil sampling, grass/hay production

to reduce need for excess fertilizer; Integrated Pest Management (IPM) to reduce amounts of pesticides used on farms; and conversion of fields from row crops to grass/hay and altering rotational patterns to reduce soil runoff.

Second Barrier - Landscape Controls:

These controls might include barnyard improvements, manure storage, scheduled and directed spreading of manure and composting to control application of animal waste to the landscape to reduce or eliminate the risk of pathogens, nutrients, sediments and pesticides from reaching surface waters.

Third Barrier - Stream Corridor Controls:

These controls might include stream-bank stabilization, stream crossings, animal watering systems, and vegetated buffers to keep animals out of watercourses and slow down and reduce transport of pollutants into watercourses.

Notes to readers

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