

EXECUTIVE SUMMARY

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Background

Long Island Sound is an estuary, a place where salt water from the ocean mixes with fresh water from inland streams and rivers. Bounded by Connecticut and Westchester County to the north and Long Island to the south, it is approximately 110 miles long and up to 21 miles across at its widest point.

The Long Island Sound Study, a cooperative effort of the states of New York and Connecticut and the U.S. Environmental Protection Agency resulting in a management plan in 1994, found numerous threats to the future productivity and recreational viability of the Sound. The study noted that a primary inhibitor to the health of Long Island Sound is excessive nitrogen, a nutrient. The Long Island Sound Study recommends "capping" point and nonpoint nitrogen loading in critical areas of the Sound at 1990 levels. This recommendation commits local and state governments to specific actions to stop the trend of increasing nitrogen levels in the Sound.

In response to the significant concerns raised by the Long Island Sound Study, in 1992 Westchester County Executive Andrew P. O'Rourke created the Citizen's Committee on Nonpoint Source Pollution in Long Island Sound, consisting of elected officials and staffs of municipalities, representatives of the construction industry and building trades, members of the environmental community and Westchester County staff. The Citizen's Committee produced detailed findings and a plan in its "Report and Recommendations" in 1993 to reduce pollution and improve water quality in Long Island Sound. This report, accepted and approved by the County Executive, addresses point source nitrogen pollution, biological/structural nonpoint source controls, institutional and land use controls, education and financing. It was decided that, if implemented, these recommendations would result in improved water quality in Westchester's streams, rivers, ponds, lakes, groundwater, and ultimately, Long Island Sound.

To ensure implementation of the Citizen Committee's recommendations, County Executive O'Rourke created the Committee on Nonpoint Source Pollution in Long Island Sound. In 1993, the Westchester County Department of Planning, in conjunction with this committee, began the process of implementing the 33 recommendations made by the Citizen's Committee.

The committee and Planning Department embraced a cooperative municipal-County venture to develop and implement cost-effective local programs emphasizing legislative, regulatory, planning, education and outreach components. Many programs and policies have been, or are in the process of being, developed to enhance or improve the Sound's water quality. There are County programs which target technical upgrades for County water treatment facilities, and education and outreach programs, such as stormdrain stenciling and information guides, which promote water quality education. The County has also coordinated efforts with the New York State Department of Environmental Conservation to provide funding guidance to private marina owners for construction of pump-out facilities. Many of the Citizen Committee's simpler directives have been accomplished and the County is continuing to focus on other opportunities and innovations, such as watershed planning, to reduce nonpoint source pollution.

Watershed Planning

The Long Island Sound watershed in Westchester County comprises approximately 68,000 acres and supports approximately one-half of the county's population. Nineteen Westchester County municipalities within 10 subwatersheds contribute drainage to the Sound. To effectively plan for and manage the Long Island Sound watershed, the 68,000-acre basin was divided into 6 subwatersheds (see Map 1) as listed below in Table 1. A nonpoint source pollution control plan will be developed for each of these subwatershed areas.

Table 1. Subwatersheds of Long Island Sound

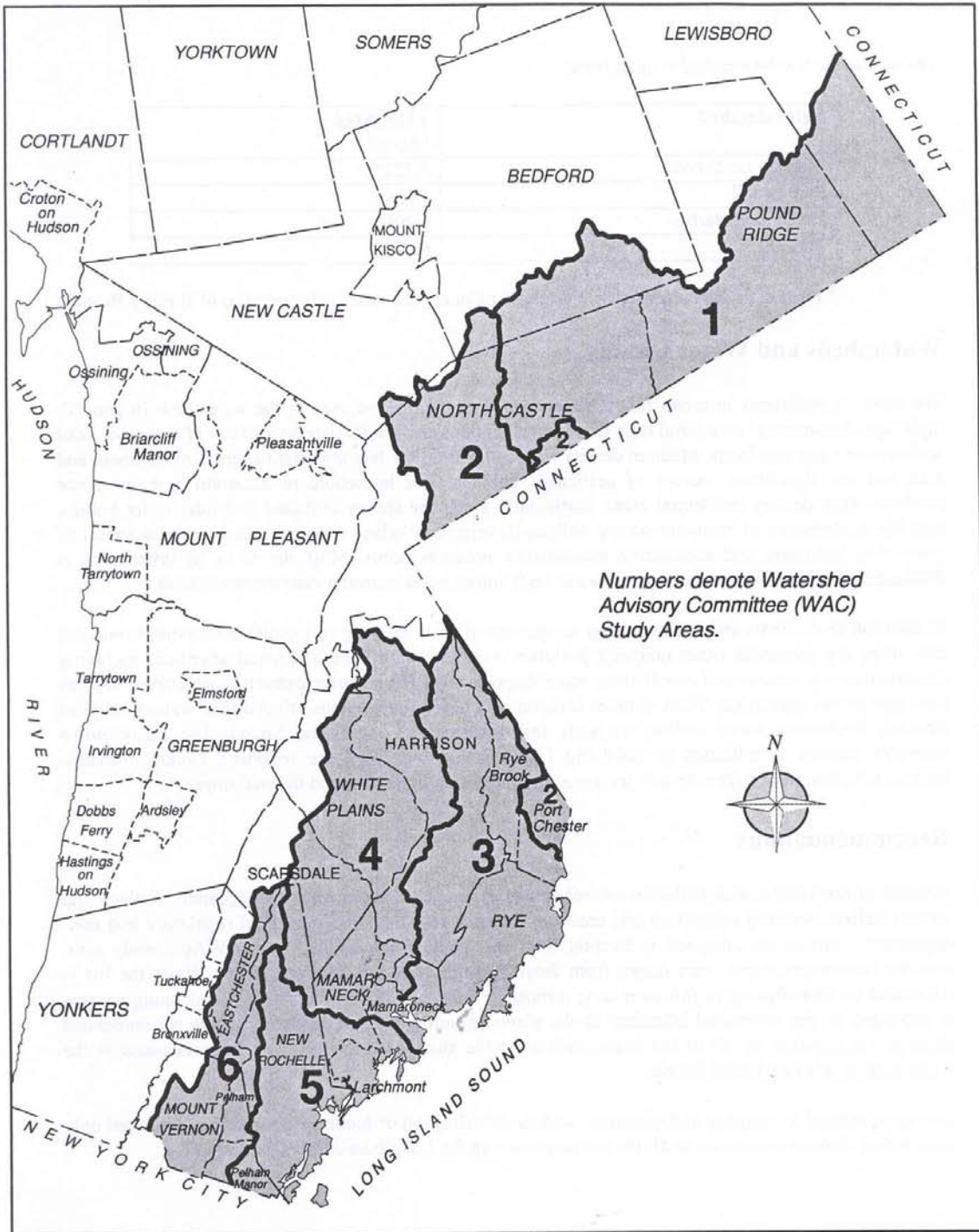
WAC #	Subwatersheds	Municipalities
1	Silvermine, Mill and Mianus Rivers	Bedford, Lewisboro, North Castle, Pound Ridge
2	Byram River	Bedford, New Castle, North Castle, Port Chester
3	Blind, Beaver Swamp, and Brentwood Brooks, and Milton and Port Chester Harbors	Harrison, Mamaroneck (Village), Port Chester, Rye Brook, Rye (City)
4	Mamaroneck and Sheldrake Rivers, and Mamaroneck Harbor	Harrison, Mamaroneck (Town and Village), New Rochelle, Port Chester, Scarsdale, White Plains
5	Pine, Stephenson, and Burling Brooks, and Larchmont Harbor	Mamaroneck (Town and Village), Larchmont, New Rochelle, Pelham, Pelham Manor
6	Hutchinson River	East Chester, Mount Vernon, New Rochelle, Pelham, Pelham Manor, Scarsdale

Watershed Advisory Committees

Six intermunicipal Watershed Advisory Committees (WACs) were formed, each representing one of the subwatershed study areas above, and each being essential to Westchester County's watershed planning approach. The WACs were created to foster a cooperative relationship between all municipalities in each of the subwatersheds and to recognize the importance of developing locally acceptable nonpoint source pollution control plans. Targeted land use measures, local ordinances, structural and vegetative best management practices, and education are most effective when implemented at the local level.

WAC 5 Study Area Profile

The WAC 5 study area comprises the Stephenson Brook, Pine Brook, Burling Brook and Larchmont Harbor subwatersheds. These subwatersheds occupy portions of the City of New Rochelle, the Town of Mamaroneck, and the villages of Larchmont, Mamaroneck, Pelham and Pelham Manor in Westchester County, and the City of New York (Borough of the Bronx). For the purposes of this profile, figures apply only to Westchester County; they do not, at this time, incorporate the City of New York.



MAP 1
**Long Island Sound
 Watershed Advisory Committees**



The size of each subwatershed is as follows:

Subwatershed	Total Area (Acres)
Stephenson Brook	4,122*
Pine Brook	1,334
Larchmont Harbor	1,201
TOTAL	6.657

* Portion of subwatershed in Westchester County (includes subwatershed of Burling Brook)

Watersheds and Water Quality

The types of pollutants in urban runoff depend on the type of land uses in the watershed. In general, highways, commercial areas, and high density residential areas are the largest sources of sediment, lead and zinc on a per acre basis. Medium density residential areas are less important sources of sediment and lead, but are significant sources of pesticides, bacteria, and household or automotive maintenance products. Low density residential areas, particularly along the shores of inland and tidal water bodies, also are contributors of nonpoint source pollutants, especially where the improper use and disposal of pesticides, fertilizers and automotive maintenance products occur. Most runoff in an urban area is discharged to a wetland, stream or other water body through a stormwater conveyance system.

In addition to nutrients and toxicants that are generated from existing residential and commercial land use, there are numerous other nonpoint pollution sources which need additional attention, including construction site erosion and runoff from waste disposal sites and resource extraction industries, such as sand and gravel operations. These sources cumulatively have a tremendous effect on the water quality of streams, freshwater water bodies, wetlands and, ultimately, Long Island Sound. The major urban nonpoint sources of pollution in the Long Island Sound watershed are sediment, excess nutrients, bacterias, hydrocarbons (petroleum), trace metals, chemicals, chlorides, and thermal impacts.

Recommendations

A series of nonpoint source pollution control strategies, including stormwater management, wetland and stream buffers, wetland restoration and creation, stream restoration, and municipal regulatory and nonregulatory controls are analyzed in Section II of this plan. When applied to the WAC5 study area, specific recommendations were drawn from those strategies and are itemized below. While the list is organized by municipality in this summary, it must be remembered that the watershed planning process is premised on the watershed boundary as the planning unit and implementation of the recommended strategies is required by all of the municipalities in the study area to maximize improvements to the water quality of Long Island Sound.

Strategies related to outreach and education, and to identification of funding opportunities are noted only once below, but are applicable to all the municipalities in the Long Island Sound watershed.

Watershed-wide Strategies

Outreach and Education

- Utilize local media (newspapers, radio and cable television), newsletters and public gatherings to disseminate information about nonpoint source pollution control activities.
- Identify and work with target corporations, businesses, utility companies, golf course and landscape/lawn care industry leaders to promote and co-sponsor nonpoint source pollution control educational activities.
- Host workshops for planning, conservation and other boards as well as municipal staff involved in land use planning and decision making.
- Work with garden clubs and the landscaping/lawn care industry to develop a targeted campaign for better lawn care and landscaping practices.
- Initiate an awards program that recognizes implementation of a nonpoint source pollution control program.
- Develop a handbook for municipal boards and commissions describing how to incorporate nonpoint pollution control strategies into local land use guidelines, policies and laws.
- Work with and encourage groups and organizations which work beyond your municipal boundaries to provide programs, publications, speakers, formal presentations and other information related to nonpoint source pollution control and to keep you advised of any activities they are planning which your community could benefit from.

Funding

- Grants - Pursue federal and state grant programs related to implementation of nonpoint source management programs under Section 319 of the Clean Water Act.
- State Revolving Funds (SRF)- Utilize SRFs, which are particularly suitable for funding structural best management practices such as extended detention and retention basins.
- New York State Clean Water/Clean Air Bond Act - Propose projects for funding through the 1996 Clean Water/Clean Air Bond Act. Eligible projects include nonpoint source control, habitat restoration and flood control.
- Special Fees and Taxes - Review the examples provided in the plan explaining user fee/tax programs and determine if such examples are appropriate for Long Island Sound communities.

City of New Rochelle

Municipal Comprehensive Plans and Ordinances

- Finalize and Adopt a Local Waterfront Revitalization Plan (LWRP) - The current draft LWRP should incorporate the recommendations of the WAC 5 management plan to control nonpoint source pollution in the city's tidal tributaries and embayments and Long Island Sound.
- Evaluate if the City's recently adopted freshwater wetland protection regulations adequately protect freshwater wetlands or if the City should adopt a comprehensive wetland ordinance, such as one patterned after the Westchester County Soil and Water Conservation District's A Model Ordinance for Wetland Protection.
- Evaluate if the City's recently adopted stormwater management regulations adequately control stormwater or if the City should consider a more comprehensive stormwater management ordinance, such as one patterned after the model ordinance in the New York State Department of Environmental Conservation's Reducing Impacts of Stormwater Runoff From New Development (1992).
- Evaluate if the City's recently adopted erosion and sediment control regulations adequately control erosion and sedimentation or if the City should consider a more comprehensive erosion and sediment control ordinance, such as one patterned after the Westchester County Soil and Water Conservation District's A Model Ordinance For Erosion and Sediment Control.
- Amend Zoning Ordinance - More wetland/watercourse/shoreline buffer and landscaping requirements should be incorporated into site plan reviews, particularly for parking lots, and more restrictive lot coverage requirements in environmentally sensitive areas, particularly the coastal zone, should be provided.
- Strictly enforce all laws pertaining to water quality protection.

Outreach and Education

- See watershed-wide strategies noted above.

Funding

- See watershed-wide strategies noted above.

Retrofit of Existing Stormwater Management Basins

- Basin 4, Victoria Boulevard - Conduct engineering study to determine need and best method to extend detention time to achieve both high levels of particulate removal and downstream channel erosion protection. Clean the outlet periodically.
- Basin 5, Pondview Lane (privately owned) - Conduct an engineering study to determine if dredging and conversion of the existing basin to an "extended detention" basin is necessary. Provide at least a 10-foot-wide vegetated buffer area around the basin.

- Basin 6 (A and B), Wykagyl Country Club - Provide an unmanaged (no fertilizer or pesticide applications and infrequent mowing) buffer strip around these basins to improve water quality protection.
- Basin 7, Paine Lake - Protect basin banks from erosion caused by pedestrian traffic and waterfowl grazing by providing a vegetated buffer around the basin (sections can remain open for limited access). Revegetate basin after dredging with appropriate aquatic and semi-aquatic species to enhance the nutrient and pollutant removal capabilities of the basin.
- Basin 8, Beechmont Lake - Protect basin banks from erosion caused by pedestrian traffic and waterfowl grazing by providing a vegetated buffer around the basin (sections can remain open for limited access). Revegetate basin after dredging with appropriate aquatic and semi-aquatic species to enhance the nutrient and pollutant removal capabilities of the basin.
- Basins 9 and 10, Huguenot Lake - Restore the eastern banks of both basins to improve their water quality capabilities. Establish a densely vegetated buffer around the basins. Plant appropriate aquatic and semi-aquatic species to enhance the nutrient and pollutant removal capabilities of the basins.

Tidal Wetland Restoration

- Pryer Manor Marsh (privately owned) - Working with the Pryer Manor Marsh Conservancy Inc., improve the hydrologic connection to Premium River and Long Island Sound; increase inundation or salinity to control common reeds and subsequently create additional open water for waterfowl use; introduce biological controls to control insect populations; and replace common reed monoculture with wetland vegetation to increase plant diversity and provide food and cover for wildlife.
- Davenport Park - Restore a small tidal marsh in the park, whose areal extent and functional value could be increased and improved by removing a stone wall between it and the mean high tide line
- Shoals in Echo Bay - Opportunities exist for wetland restoration activities, including to those wetlands encompassing the bay's small islands, some of which are part of the city's Five Islands Park.

Stream Restoration

- Pine Brook - Improve the water quality of the stream by modifying urban housekeeping practices such as street sweeping and mowing, enhancing riparian buffer areas and stream banks, and improving the stream channel.
- Burling Brook - Improve the water quality of the stream by modifying urban housekeeping practices such as golf course management and mowing, enhancing riparian buffer areas and stabilizing the stream banks.
- Stephenson Brook - Improve the water quality of the stream by modifying urban housekeeping practices of street sweeping, golf course management and mowing, enhancing riparian buffer areas and stabilizing the stream banks.

Town of Mamaroneck

Municipal Comprehensive Plans and Ordinances

- Amend Master Plan - The Village of Larchmont and Town of Mamaroneck Master Plan of Development should be amended to generally address the importance of controlling both point and nonpoint source pollutants and protection of existing natural resources on both public and private lands.
- Update Local Waterfront Revitalization Plan (LWRP) - The Village of Larchmont and Town of Mamaroneck LWRP should be periodically updated, as was done in 1994, as techniques for controlling nonpoint source pollution and educating the public about this pollution become more refined, and as regulations are changed to reflect this refinement.
- Amend Freshwater Wetlands Ordinance - Include specific standards and mitigation requirements. Ordinance should incorporate tidal wetland protection.
- Amend Surface Water, Erosion and Sediment Ordinance - Add provisions for treatments of first flush and outline of preferred management systems. Strengthen surface water protection provisions.
- Amend Zoning Ordinance - Add lot coverage limits to include all impervious surfaces and provide additional protection for sensitive areas (e.g. wetlands and steep slopes).
- Strictly enforce all laws pertaining to water quality protection.

Outreach and Education

- See watershed-wide strategies noted above.

Funding

- See watershed-wide strategies noted above.

Stream Restoration

- East Creek - Improve the water quality of the stream by modifying urban housekeeping practices such as golf course management and mowing, enhancing/stabilizing riparian buffer areas and stream banks, and improving the stream channel.

Village of Larchmont

Municipal Comprehensive Plans and Ordinances

- Amend Master Plan - The Village of Larchmont and Town of Mamaroneck Master Plan of Development should be amended to generally address the importance of controlling both point and nonpoint source pollutants and protection of existing natural resources on both public and private lands..
- Update Local Waterfront Revitalization Plan (LWRP) - The Village of Larchmont and Town of Mamaroneck LWRP should be periodically updated, as was done in 1994, as techniques for controlling nonpoint source pollution and educating the public about this pollution become more refined, and as regulations are changed to reflect this refinement.
- Replace Freshwater Wetlands Ordinance - Provide clearer definition of wetlands and incorporate tidal wetland protection.
- Adopt a Stormwater Management Ordinance - A comprehensive stormwater management ordinance patterned after the model ordinance in the New York State Department of Environmental Conservation's Reducing Impacts of Stormwater Runoff From New Development (1992) should be adopted.
- Adopt an Erosion and Sediment Control Ordinance - An ordinance, based on the Soil and Water conservation District's Model Ordinance for Erosion and Sediment Control, is needed to ensure adequate water quality protection.
- Amend Zoning Ordinance - Add lot coverage limits to include all impervious surfaces and provide additional protection for sensitive areas (e.g. wetlands and steep slopes).
- Strictly enforce all laws pertaining to water quality protection.

Outreach and Education

- See watershed-wide strategies noted above.

Funding

- See watershed-wide strategies noted above.

Tidal Wetland Restoration

- East Creek Wetland System - This system consists of a complex of intertidal marshes, called "low" marshes, and salt meadows, called "high" marshes. This complex system continues to be important from both ecological and water quality standpoints, despite human encroachment. Its functional value can be significantly improved through restoration and changes to land use practices.

Retrofit of existing stormwater management basins:

- Basin 1, Pine Ridge Condominiums - Dredge and reconstruct to convert the existing "dry" detention basin to an "extended detention" basin. Replant with wetland vegetation and provide a 10-foot-wide unmanaged, vegetated buffer around the basin.
- Basin 2, Pine Ridge Condominiums - Dredge and reconstruct to convert the existing "dry" detention basin to an "extended detention" basin. Replant with wetland vegetation and provide a 10-foot-wide unmanaged, vegetated buffer around the basin.

Stream Restoration

- East Creek - Improve the water quality of the stream by modifying urban housekeeping practices such as golf course management and mowing, enhancing riparian buffer areas and stream banks, and improving the stream channel.
- Premium River Marshes - Development activities at the southern and northern reaches of the Premium River, such as the development of Lorenzen Park, have encroached on tidal wetlands there. Encroachment should stop and consideration given to restoring degraded areas.

Village of Mamaroneck

Municipal Comprehensive Plans and Ordinances

- Update Master Plan and Local Waterfront Revitalization Plan (LWRP) - Although the Master Plan and LWRP discuss coastal natural resources and offer some protective recommendations and policies, they should include more specific recommendations and policies for improving the quality of tributaries and embayments of Long Island Sound. These recommendations should encompass the reduction of nonpoint source pollutants from residential, municipal, commercial and industrial facilities.
- Amend Freshwater Wetlands Ordinance - Amend existing ordinance to be more specific regarding wetland mitigation, wetland definition and wetland boundary delineation, and more specific criteria for permit issuance.
- Adopt Tidal Wetlands Ordinance - Provide better protection to the significant amount of tidal wetlands in the Village by adopting a local tidal wetlands ordinance.
- Adopt a Stormwater Management Ordinance - Consolidate all of the requirements found in various existing municipal ordinances into a separate stormwater management ordinance which could provide additional water quality protection.
- Amend Flood Damage Prevention; Erosion and Sediment Control Ordinance - Include a few additional standards into the existing ordinance to make it more complete.
- Amend Zoning Ordinance - Add lot coverage limits to include all impervious surfaces and provide additional protection for sensitive areas (e.g. wetlands and steep slopes).
- Strictly enforce all laws pertaining to water quality protection.

Outreach and Education

- See watershed-wide strategies noted above.

Funding

- See watershed-wide strategies noted above.

Retrofit of existing stormwater management basin:

- •Basin 3, Fairway Green Townhouses - Extend detention time by reconstructing the outlet. Provide an unmanaged (no fertilizer or pesticide applications and infrequent mowing) buffer strip around the basin to improve water quality protection.

Village of Pelham

Municipal Comprehensive Plans and Ordinances

- Adopt a Stormwater Management and Erosion and Sediment Control Ordinance - Adopt a combined ordinance to provide stormwater and erosion controls on all types of development and construction. The ordinance should be patterned after the model ordinance in the New York State Department of Environmental Conservation's Reducing Impacts of Stormwater Runoff From New Development (1992).
- Amend Zoning Ordinance - Include lot coverage limits in zoning ordinance to preserve remaining undeveloped land.
- Strictly enforce all laws pertaining to water quality protection.

Outreach and Education

- See watershed-wide strategies noted above.

Funding

- See watershed-wide strategies noted above.

Village of Pelham Manor

Municipal Comprehensive Plans and Ordinances

- Adopt a Wetlands and Watercourses Ordinance - Protect the freshwater and tidal wetlands in the Village and along the Hutchinson River by adopting a wetlands and water courses ordinance.
- Adopt a Stormwater Management and Erosion and Sediment Control Ordinance - Adopt a combined ordinance to provide stormwater and erosion controls on all types of development and construction.

- Amend Zoning Ordinance - Incorporate building and lot coverage requirements for non-residential districts and lot coverage requirements for residential districts into the existing ordinance which provides building coverage limits for residential districts only.
- Strictly enforce all laws pertaining to water quality protection.

Outreach and Education

- See watershed-wide strategies noted above.

Funding

- See watershed-wide strategies noted above.