



A Partnership To Restore And Protect The Sound

# UPDATE

Spring 1996

## MESSAGE FROM THE EXECUTIVE DIRECTOR CAROLYN HUGHES

In the last issue of *Update*, we began to talk about nonpoint sources of pollution and how they impact the Sound. In that issue, we focused on nonpoint pollution as it relates to low dissolved oxygen, noting that nonpoint sources contribute over 20% of the total nitrogen load, making it a significant contributor to the hypoxia problems that plague the Sound each summer.

However, the impacts of nonpoint source pollution go beyond nitrogen and low dissolved oxygen. Some of the other problems that polluted runoff cause in the Sound include:

- **Toxics:** Toxic substances of concern in the Sound include some metals, pesticides, PCB's, and hydrocarbons. These substances originate from a variety of sources including industry, agriculture, home use and the burning of fossil fuels, trees, trash and even charcoal barbecues. At high concentrations, toxics can kill fish, shellfish and other aquatic organisms. Toxics can also bioaccumulate in the tissue of fish and shellfish and in humans that consume contaminated seafood. As a result toxics may affect both human and ecological health, and can result in fish advisories and restrictions on consumption of fish and shellfish.
- **Pathogens:** Pathogens are disease causing organisms such as bacteria and viruses. They originate from water fowl and animal waste, septic systems, stormwater runoff, sewage treatment plant breakdowns, and improperly or untreated sewage discharges from the combined sewer overflows. To protect human health, when indicators of pathogens are found in the water column, beaches and shellfishing areas are closed to the public.
- **Trash:** Debris wash off the streets and are carried into the Sound in stormwater runoff, and are also directly deposited by boaters and beachgoers. Debris that find their way into the Sound include plastics, metal, glass, paper, wood, rubber, and cloth.

Seventy-five percent of floatable debris in LIS consists of plastics. Floating trash diminishes our enjoyment of the water and can injure or kill wildlife that become entangled in or eat the trash. The total quantity of floatable debris and trash in the Sound decreases from west to east, probably due to decreasing population densities.

These problems affect some of our favorite uses and activities and can limit our basic enjoyment of the Sound, including swimming, fishing and shellfishing.

The primary sources of nonpoint pollution that affect coastal water bodies like the Sound are urban runoff, runoff from construction sites, physical modification of water courses and shorelines from activities like channelization, dams, streambank and shoreline erosion and from the atmosphere. The secondary sources such as forestry and agriculture impact rivers and streams which eventually affect the Sound.

Different types of land use or land cover contribute different types of pollutants. Generally, areas with more impervious surfaces, like roofs or pavement, contribute more pollutants to our waterbodies. Vegetated areas and wetlands can serve as natural "filters" that absorb pollutants before they reach our rivers and streams or enter the Sound directly. Loss of these natural filters can result in increased pollutant loads.

Nonpoint source pollution relates both to how we generate pollutants on the land and how we alter the landscape's ability to treat them.

In my view, there are really three major areas where change needs to occur if we are to be successful in resolving these problems. The first is in the area of individual actions that businesses, residents and property owners can take to minimize nonpoint source pollution. The second is at the municipal level, with attention to land use practices to prevent pollution from new development, and efforts to correct problems from existing development. The third is to encourage federal, state and local governments to work together with property owners, conservation organizations and others toward integrated watershed management. This issue of *Update* focuses on watershed management. By better coordinating planning, management, regulatory and voluntary programs on a watershed basis, we can help minimize water quality problems--both locally and in the Sound.

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## UPDATE

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## WATERSHED MANAGEMENT: WHY IT'S IMPORTANT TO LONG ISLAND SOUND WATER QUALITY

by *Mel Cote*

There is a growing consensus among those involved in managing our nation's water resources that the pollution and habitat degradation problems now facing us can best be solved by following a basin-wide or watershed approach. Taking a watershed approach provides a means to integrate governmental programs and improve decision-making by both government and private parties within a distinct geographical area. A watershed approach also enables a broader view of water resources that reflects the true inter-relationship of surface water, ground water, chemical water quality, non-chemical stressors, water quantity, and land management. It is becoming increasingly apparent that these components need to be considered together and that decision-making related to these components (e.g., waste water discharge permits, flood control programs, drinking water supply, fish and game management, and land management) needs to be integrated.

Nowhere is this more apparent than in the Long Island Sound watershed. While pollution caused by the discharge of sewage and industrial wastes into the rivers and streams that drain the basin is largely under control, many miles of river and stream and many acres of coastal water still fail to support their intended uses, such as swimming, fishing, and other water contact sports. Over the past 25 years, municipal sewage and industrial wastes have been successfully managed under the National Pollutant Discharge Elimination System (NPDES), which requires "point source" discharges to meet a certain minimum level of treatment to remove contaminants or reduce their concentrations. What the NPDES program fails to do, however, is deal effectively with the cumulative effect of the individual point source discharges that, in and of themselves, meet their permitted discharge standards, and address the problem of polluted runoff, or nonpoint source pollution.

The Long Island Sound Study (LISS) has determined that low-dissolved oxygen, or hypoxia, is the priority problem affecting the Sound's water quality, and that nitrogen is the pollutant most responsible for this problem. The LISS also has identified toxic contamination, pathogens, and floatable debris as adversely affecting water quality. While sewage treatment plants and polluted runoff from coastal areas adjacent to the Sound have received the most management attention, upstream sources in the Sound's watershed also play a large role. For example, of the total "in-basin, human-caused" nitrogen load, approximately 22 percent is delivered to the Sound from point and nonpoint sources discharging into its tributaries.

Upstream sources also contribute other pollutants to the Sound, including most heavy metals and bacteria, with loads usually dependent upon river discharge volume. Shellfish beds located where streams and rivers meet the Sound are often subject to closures as a result of upstream storm water discharges and septic system failures that contribute bacteria and other pathogens to the coast. Simply put, pollution of the rivers and streams that eventually discharge into the coastal waters can impact the Sound. Improving Long Island Sound water quality will inevitably require some degree of watershed management throughout the entire Sound basin.

Managing a watershed is based on understanding it as a hydrologic and ecological system and involving people who live and work there. Based on experience in Connecticut and

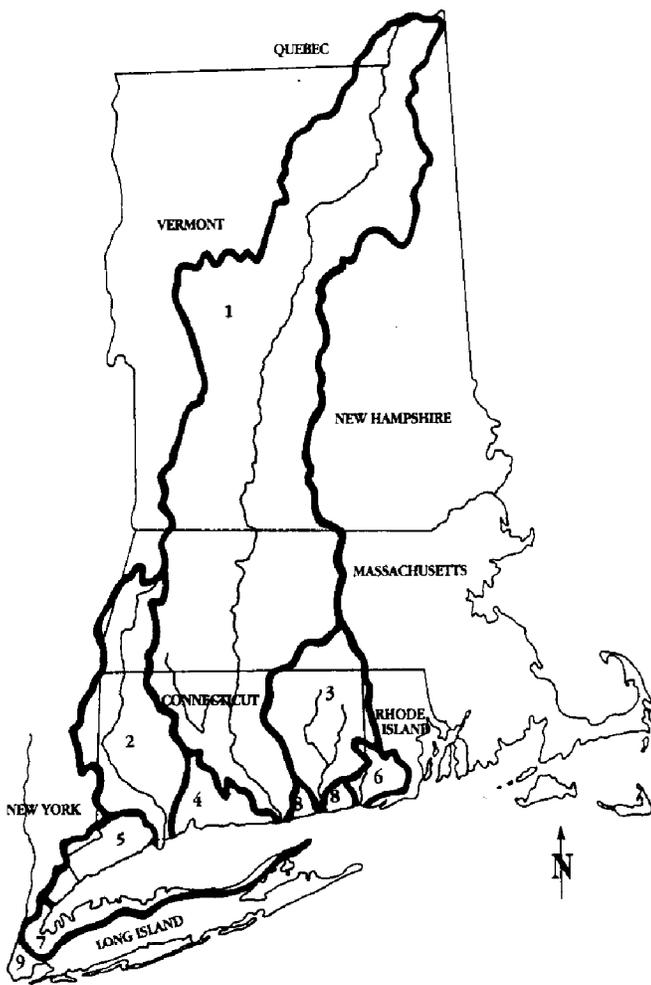
### Benefits of the watershed approach:

- Targets limited resources to achieve the most environmental benefit
- Defines a unit in which to measure results
- Develops a sense of identification with the watershed and a stewardship ethic
- Shares responsibility for watershed protection and management with a variety of stakeholders
- Considers issues of sustainable growth

elsewhere in the nation, water resource managers have concluded that comprehensive watershed management is best suited for smaller basins. This is because the larger the watershed, the more variables there are involved and, therefore, the more difficult it is to achieve any measurable results in a reasonable amount of time. Both the Connecticut Department of Environmental Protection (CTDEP) and the New York Department of Environmental Conservation have utilized a large proportion of their annual Clean Water Act section 319 grants over the past five years to target priority watersheds for nonpoint source management. A listing of these watersheds and their respective management projects are provided in the accompanying box on page 4.

Experience with these watershed projects oriented toward nonpoint source management has led state managers to believe that a more comprehensive approach that addresses point sources, water quantity, and habitat degradation in conjunction with nonpoint source problems is desirable. CTDEP, EPA, and Natural Resources Conservation Service are currently planning initiatives for the Quinnipiac and Norwalk Rivers that will attempt to take a more comprehensive approach, and should provide good models for future watershed management programs. Long Island Sound water quality depends on the success of these projects and those modelled after them in the years to come.

*Mel Cote is a watershed specialist with the New England Regional Office of the US Environmental Protection Agency.*



**Drainage Basins of the LIS Watershed**

1. Connecticut River	11,263 Sq. Miles
2. Housatonic River	1,946 Sq. Miles
3. Thames River	1,478 Sq. Miles
4. South Central Coast	482 Sq. Miles
5. Southwest Coast	355 Sq. Miles
6. Pawcatuck River	297 Sq. Miles
7. Long Island	210 Sq. Miles
8. Southeast Coast	148 Sq. Miles
9. New York City	66 Sq. Miles

**WHAT IS A WATERSHED?**

A watershed is the land that water flows across or under on its way to a stream, river or lake. Think of the hills in your neighborhood—a drop of water falling on one side will roll into one watershed, and a drop falling on the other side becomes part of another.

The landscape is made up of many interconnected watersheds or basins. Within each one, all water runs to the lowest point—a stream, river or lake. Along the way, the water flows across farm fields, forest land, our backyards, city streets or it seeps into the ground and travels as groundwater. As the water moves, it picks up contaminants along the way, and carries it into our water bodies.

We all live in a watershed and we all influence what happens there. What ever happens in our own small watershed also affects the larger watershed downstream.

The watershed for Long Island Sound is made up of thousands of smaller basins, draining over 16,000 square miles. The largest of these watersheds is the basin of the Connecticut River which begins its journey in Canada. The Long Island Sound watershed encompasses almost the whole state of Connecticut, and parts of Massachusetts, Vermont, New Hampshire, and New York. Over 8 million people live and work in the LIS watershed.

**EPA Watershed Events Newsletter**

This newsletter is intended to update interested parties on the development and use of watershed protection approaches. These approaches consider the primary threats to human and ecosystem health within the watershed, involve those people most concerned or able to take actions to solve these problems and then take corrective actions in an integrated and holistic manner.

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## States Receive Pollution Grants

The following is a listing of the watershed projects in New York and Connecticut supported by federal Clean Water Act grant funds, most of which are focused on urban and agricultural nonpoint source pollution (NPS) abatement and habitat restoration. Activities common to these projects include: identification of nonpoint sources and habitat impairments; technical assistance to municipalities; public education; volunteer monitoring; and Best Management Practices demonstrations.

### Connecticut Projects

**Mattabeset River Watershed NPS Program** *Contact: Ann Hadley, Middlesex County SWCD, (860) 345-3219*

**Scantic River Watershed NPS Program** *Contact: Denise Conkling, Hartford County SWCD, (860) 688-7725*

**Hockanum River Watershed NPS Program** *Contact: David Askew, Tolland County SWCD, (860)875-3881*

**Quinnipiac River Watershed NPS Program** *Contact: Emly McDiarmid, Yale University, (860) 432-3026*

**West River Watershed NPS Program** *Contact: Emly McDiarmid, Yale University, (860) 432-3026*

**Sasco Brook Watershed NPS Program** *Contact: Fairfield County SWCD, (203) 743-5453*

**Yantic River Watershed Agricultural Pesticide and Nutrient Management Project** *Contact: Frank Himmelstein, UConn/CES, (860) 875-3331*

**Fenger Brook Watershed Management Study** *Contact: Paul Stacey, CT DEP (860) 424-3728*

**Jordan Cove Watershed Urban National Monitoring Project** *Contact: Bruce Morton, Aqua Solutions, (860) 289-7664*

**Still River Watershed Stormwater Management Project** *Contact: Jack Kozuchowski, City of Danbury, (860) 797-4625*

### New York Projects

**Town of Mamaroneck Storm Drain Jet Cleaner** *Contact: Caesar Manfredi or Larry Wilson, NYS DEC, (914) 332-1835*

**Village of Mamaroneck Nonpoint Source Pollution Prevention and Analysis Project** *Contact: Caesar Manfredi or Larry Willson, NYS DEC, (914) 332-1835*

**Village of Larchmont, Storm Water Program** *Contact: Caesar Manfredi or Larry Wilson, NYS DEC (914) 332-1835*

**Town of Brookhaven Conscience Circle Infiltration Trench** *Contact: Rob Schneck, NYSDEC (516) 444-0405*

**Town of Brookhaven Dyke Road Runoff Improvements for Little Bay** *Contact: Rob Schneck, NYSDEC, (516) 444-0405*

**Town of Oyster Bay Stormwater Runoff Mitigation Program** *Contact: Rob Schneck, NYSDEC (516) 444-0405*

The following Natural Resources Conservation Service projects in Connecticut focus primarily on agricultural nonpoint sources and flood control:

**Housatonic River** *Contact: Kathy Johnson, NRCS (860) 626-8258*

**Scantic River** *Contact: Tom Morris, UConn, (860) 486-0637*

**Norwalk River Watershed Flood Control Project** *Contact: Phil Renn, NRCS, (860) 487-4016*

## LONG ISLAND SOUND NONPOINT SOURCE POLLUTION PLANNING IN WESTCHESTER COUNTY

In January 1992, Westchester County Executive Andrew P. O'Rourke formed a 30-member "Citizen's Committee" to evaluate means of reducing nonpoint sources of nutrient pollution throughout Westchester County and to explore how local action could help reduce pollution to Long Island Sound. Over the next year and a half the Committee developed 33 recommendations to control pollution from urban runoff. These recommendations were accepted and a Steering Committee was appointed to work with the County Planning Department to oversee their implementation.

A major component of the County Executive's program involves intermunicipal watershed planning throughout Westchester's portion of the Long Island Sound watershed. The portion of the Long Island Sound watershed located within Westchester County comprises 69,699 acres and supports approximately 300,000 people or one-third of the county's population. Watershed plans incorporating best management practices, land use, and institutional mechanisms are being developed to minimize the impact of urban pollution on interior waterways and the Sound. Westchester's watershed planning effort involves nineteen municipalities within 6 subwatersheds that drain to Long Island Sound. Nonpoint source management plans are being prepared for these 6 areas under the guidance of intermunicipal "Watershed Advisory Committees" (WACs) consisting of representatives from each constituent community and the County Planning Department. The watershed plans being developed by each WAC have two major goals: preventing an increase of nitrogen and related nonpoint source pollutants beyond the current condition, and implementing measures to further reduce these pollutants.

To meet these goals, each WAC is taking part in a two-phased watershed planning process. The first phase includes creation of a comprehensive watershed profile that describes general demographics of each watershed, the land use within the watershed area, natural features of the watershed system (wetlands, watercourses and waterbodies) and a matrix of municipal ordinances that are applicable to water quality in Long Island Sound. The first phase of the planning process also includes the collection, refinement and computerized mapping of key baseline data. The maps depict wetlands and hydrography, wetland and riparian buffers, land use, zoning, open space parcels, existing stormwater detention facilities, and large vacant parcels vulnerable to development. This baseline information is being used to evaluate opportunities to improve land use decision-making, protect and restore natural systems that renovate water quality, and install or retrofit facilities to improve their water quality functions.

The second phase of the process involves development of a Nonpoint Source Watershed Management Plan, outlining actions recommended to reduce nonpoint source pollution. The result of each phase will be presented to the constituent municipal boards for review and approval.

The recommendations of the watershed plans are expected to take the form of community education programs, revisions to local laws affecting water quality, modification of municipal roadway or catch basin cleaning programs, retrofit of dry detention basins to "first flush" pollutant removal, restoration or construction of wetlands, reclamation

of riparian buffers, and other similar actions. Ideally, recommended actions would be implemented by community groups, schools, corporations and public agencies.

Watershed planning for WACs 1, 3 and 5 began in January, 1995. WAC 1 comprises the Silvermine, Mill and Mianus River subwatersheds, located in portions of Lewisboro, Pound Ridge, Bedford and North Castle in New York and six towns in Connecticut. WAC 3 comprises the Blind, Beaver Swamp, and Brentwood Brooks as well as the Port Chester Harbor subwatersheds. These subwatersheds occupy portions of the Town/Village of Harrison, the City of Rye and the villages of Mamaroneck, Port Chester and Rye Brook in New York and the Town of Greenwich in Connecticut. WAC 5 comprises the Stephenson Brook, Pine Brook and Larchmont Harbor subwatersheds. These subwatersheds occupy portions of the City of New Rochelle, the Town of Mamaroneck, and the villages of Larchmont, Pelham Manor, Mamaroneck and Pelham in Westchester County and the City of New York. Although the WAC boundaries encompass municipalities in Connecticut, the current initiative is limited to areas within Westchester County. These three WACs are entering the second phase of the watershed planning process with a goal of completing the Watershed Plans by the end of 1996. Phase 1 planning activities for WACs 2, 4, and 6 are targeted to begin this summer with completion by the end of 1998.

If you have questions or would like more information regarding Westchester County's Long Island Sound Watershed Planning efforts, please feel free to call the Westchester County Department of Planning at (914) 285-4422.

*Editors Note: The Westchester County Nonpoint Source Pollution Planning effort is an example of the types of local action that are growing out of the Long Island Sound Study. This type of local action is a critical component of the overall strategy to successfully achieve our protection and restoration goals for the Sound.*

## CT DEP DEVELOPS WATERSHED MODEL

by Paul Stacey

For a number of reasons, including the need to manage nitrogen loads to Long Island Sound, the Connecticut Department of Environmental Protection (CTDEP) is investigating use of a watershed approach to more effectively manage water quality problems. This is especially key to nonpoint source control since nonpoint pollutants can originate anywhere within the watershed. While the watershed's "end of the pipe" might be considered the mouth of the river where the pollutants all come together and are discharged to Long Island Sound, there are also non-estuarine waters and habitat throughout the basin for which management needs and objectives must be established and that will benefit from a comprehensive, watershed approach to management.

Since there is no meaningful crossover of pollutants between neighboring watersheds, the inventory and management focus is very practical and tidy within each watershed. However, a watershed approach has even broader appeal and value. Through a comprehensive watershed management structure, CTDEP can draw in and consider other management activities of relevance in the watershed, such as flooding, diversion, in-stream flow, land development, wetlands preservation, recreation, habitat, and pollution prevention, to ensure that all management actions work in concert rather than against one another.

To improve understanding of watersheds and their contributions of nutrients to Long Island Sound, CTDEP is using a Clean Water Act 104(b)(3) grant from EPA to construct watershed models for all the basins in the state. HydroQual, Inc., the consultant that prepared the Long Island Sound water quality model, has been selected to conduct the work and the project will begin this spring. The objectives of the project are:

- to quantify all key sources of nutrients within each of the six nutrient management zones (watersheds) identified by the LISS and their delivery efficiency to Long Island Sound;
- to identify nonpoint source management opportunities within each zone;
- to compile data within a watershed model framework that allows load and delivery analysis of management options; and
- to test some relevant management scenarios based on management strategies developed by the LISS.

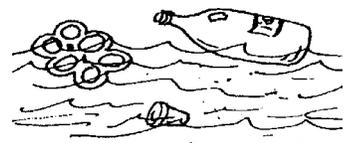
HydroQual will be using a tested model called the Hydrologic Simulation Program or HSPF, for the Connecticut watersheds. The HSPF model is being successfully employed in the Chesapeake Bay drainage and came highly recommended by the Chesapeake Bay Program. To ensure a high quality product, HydroQual will subcontract with AquaTerra, Inc., a California firm whose staff were involved in development of the HSPF model and are recognized authorities on

*Continued on page 6.*

## Results of the 1995 International Beach Clean Up

What a success for the marine life along the shore and underwater of Long Island Sound. Connecticut volunteers cleaned 23 miles of shoreline collecting 4,028 pounds of debris. There were 3 underwater cleanups, a first for Connecticut. New York volunteers collected 7,036 pounds of debris from 27.5 miles shore and divers gathered 4,355 pounds of trash from the depths of the Sound.

1996 Clean Up plans are underway for September. In Connecticut contact Peg VanPatten at (203) 445-3459 and in New York contact Barbara Cohen at (718) 471-2166.



its application. The effort will be further enhanced from a management perspective by including the Center for Watershed Protection of Silver Spring, Maryland in the project. The Center is widely recognized for its efforts in stormwater and nonpoint source control and publishes the journal, "Watershed Protection Techniques." This consulting team will receive assistance from CTDEP and from a steering committee composed of appropriate representatives of Connecticut, New York, EPA, and the LISS.

The HydroQual modeling effort is expected to provide many benefits as the state experiments with watershed approaches to management. Over the next few years, CTDEP will be putting the watershed approach to the test in the Quinnipiac River basin in south central Connecticut. A federal Clean Water Act Section 319 (nonpoint source) grant is being awarded through CTDEP to the Center for Coastal and Watershed Systems at Yale University to help identify needs for nonpoint source control in the basin through development of a watershed plan. In concert with that effort, CTDEP will bring other relevant water and habitat quality and quantity issues, and human use objectives, to the table to ensure compatibility of actions.

This concept of watershed management will not succeed, however, without strong participation from local government and citizen support. That is because so many of the solutions for improving water quality, particularly nonpoint aspects, lie in the hands of local land use decision makers and individual actions, rather than in steel and concrete treatment systems. There is no substitute to mother nature for treating runoff, no manufactured habitat as viable for fish and wildlife as natural habitats, and very little elasticity in assimilative capacity of land or water once thresholds of pollutant loading and development are exceeded. Cooperative efforts among communities that share a watershed is a key to good management and is being fostered in the Quinnipiac River basin and in other watershed management efforts in Connecticut. Citizens watershed associations are springing up throughout the state that often involve monitoring and activism to ensure land use decisions are compatible with water quality and habitat goals. In the Quinnipiac River effort, the Quinnipiac River Watershed Association will be a full partner in the Section 319 project and a key to effective implementation of management actions, particularly in the education and awareness areas.

There are many challenges in developing a successful watershed approach, including the sheer complexity of natural conditions and human activities that all must be weighed to ensure management plans achieve expected results when implemented. Providing such assurance requires a massive effort, even in a modest-sized basin like the Quinnipiac, and a more sophisticated understanding that computer models, like the HSPF model, can provide. Planning and regulatory staff at all levels of government must refocus efforts in a new direction without leaving fundamentally sound regulatory programs behind. Simply communicating among the myriad regulatory and user interests within the watershed is a large, but necessary, undertaking if the new approach is to be effective. CTDEP is committed to testing this approach in the belief that it is a more sensible way to manage problems and to ensure more widespread coordination and compatibility of management activities.

*Paul Stacey is a Supervising Environmental Analyst for Connecticut Department of Environmental Protection.*

## **WATERSHED INITIATIVES FOR HEMPSTEAD HARBOR AND OYSTER BAY-COLD SPRING HARBOR**

Local governments around two of New York's Long Island Sound embayments are joining forces to combat nonpoint source pollution. Over the next year, communities around Hempstead Harbor and Oyster Bay-Cold Spring Harbor will work cooperatively on watershed management plans to reduce the amount of nonpoint source pollution entering their coastal waters.

Each of these projects is noteworthy because they represent the first cooperative watershed management efforts on Long Island. They are also significant because they represent a truly grassroots watershed management planning process.

Both efforts will draw on information from the Long Island Sound Study Comprehensive Conservation and Management Plan and the Long Island Sound Coastal Management Program, as well as local studies and input from experts.

The Hempstead Harbor Protection Committee, which has been meeting since May 1995, coalesced around an informal discussion among local elected officials about the future of Hempstead Harbor. Each of the local governments signed a voluntary cooperative agreement to prepare and implement a water quality improvement program for Hempstead Harbor. The committee is composed of representatives of the towns of North Hempstead and Oyster Bay, the City of Glen Cove, Nassau County, and the villages of Sands Point, Flower Hill, Roslyn, Roslyn Harbor, and Sea Cliff.

The committee has hired Ms. Amy Waterman to oversee preparation of a detailed watershed management plan, which will be completed in 1997. The communities have made a financial commitment which will partially support necessary consulting services. The New York State Department of State has provided additional funding through the Environmental Protection Fund, Title 11 Local Waterfront Revitalization Program, and federal coastal zone funding.

Fourteen local governments surrounding Oyster Bay and Cold Spring Harbor are preparing to sign an intermunicipal agreement to undertake a watershed improvement program. Cooperators include the towns of Oyster Bay and Huntington, Nassau and Suffolk counties, and the villages of Cove Neck, Centre Island, Lattingtown, Matinecock, Mill Neck, Upper Brookville, Muttontown, Oyster Bay Cove, Laurel Hollow, and Lloyd Harbor.

The Oyster Bay-Cold Spring Harbor complex supports Long Island's most significant oyster shellfishery. The area has long

## PROTECTING A LAST GREAT PLACE: THE TIDELANDS WATERSHED PROJECTS

by Chester Arnold

Trends in the scope of natural resource protection and land use regulation seem to be going in opposite directions. Resource protection and management programs are increasingly focused on Mother Nature's organization -- ecosystems or watersheds. Land use decisions, however, are driven by political jurisdictions, which in this region are firmly rooted at the local level.

It's been said that "knowledge is power," and maps can be a uniquely effective tool for transferring knowledge, with their ability to convey complex information in a succinct and understandable way. With watershed maps serving as the common denominator, watershed-wide issues can be discussed while still recognizing the dominant role of municipal policies and individual actions in determining land use. Armed with this knowledge, local officials and land owners are much better able to work together to prioritize problems, discuss solutions, and chart courses of action for the protection of their local natural resources.

The Nature Conservancy (TNC) and the University of Connecticut Cooperative Extension System (CES) have teamed up to bring these powerful information tools to local officials and landowners in the Chester Creek and Eightmile River watersheds, two sub-basins of the lower Connecticut River area designated by TNC as the *Tidelands* "Last Great Place". The *Tidelands* region was chosen because of its exemplary complex of high quality salt, brackish and freshwater tidal marshes, and the many threatened and endangered species that the complex supports (*LISS Update Winter 1995*). The Chester Creek and Eightmile River watersheds drain to two of these marshes.

Colorful, hi-tech maps developed using computerized mapping technology are being used to reconcile watershed-based thinking with the reality of local land use decision-making. The *Tidelands* projects are an outgrowth of UConn's *Nonpoint Education for Municipal Officials* (NEMO) Project, which has developed an effective educational approach using computer generated maps and satellite-derived land cover information to teach local officials about the connections between land use and water quality. With the *Tidelands* "Last Great Place" designation in 1993 as the catalyst, CES and TNC staff conceived the watershed projects, which also involve Connecticut Sea Grant and Envirographics, Inc. as partners. A critical boost was provided by two one-year "start-up" grants from the Environmental Protection Agency.

The *Tidelands* projects expand on the NEMO model. The EPA funding enabled the collection and digitizing of an impressive body of information which has allowed the project team to expand the range of the educational programs beyond nonpoint source pollution to include other topics relevant to the watershed, such as forest stewardship, open space management, and streamside property management. An expanded list of educational topics translates to additional target audiences, broadening the constituency base for the projects. While the nonpoint and open space programs remain targeted at municipal officials and local groups like land trusts, the forestry and property owner programs are largely aimed at individuals.

The most important feature of these projects, however, is the close collaboration between the public/private project team from TNC and UConn, and the towns within the watersheds. Advisory committees made up of local officials and land owners from the towns in the watersheds advise and assist the project team (or visa versa!) every step of the way. And, while it often takes years for educational programs to bear fruit in the form of significant changes to local land use policies or practices, significant progress has been made. For instance, the Chester Creek Advisory Committee, with the approval of the Chester Board of Selectmen, are pursuing a list of actions that includes development of comprehensive watershed management and open space plans, multi-commission review of water quality issues and forest management strategies, continuation of elementary school environmental studies focused on the watershed, and investigation of the development of a town Natural Resources Center.

*Chester Arnold is a Water Quality Educator with the University of Connecticut Cooperative Extension System*

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### *Watershed Initiative Continued.*

been the focus of community stewardship. Citizens, local governments, and environmental groups have all played a vital role in protecting the resources of the area. This is one of the main reasons this embayment complex has such a high degree of ecological integrity, while lying only 20 miles from New York City.

The watershed plan will identify short- and long-term actions that would enhance, protect, and preserve the significant ecological resources of the watershed, most important of which is protection of water quality. The plan will provide a road map for implementation of recommended actions ranging from public volunteer projects to priorities for state and federal investment to refinement of local laws.

In addition to funding, the Department of State and Department of Environmental Conservation are providing technical assistance and support for Hempstead Harbor and the Oyster Bay-Cold Spring Harbor plans. Department of State staff have been particularly involved in the Oyster Bay-Cold Spring Harbor area, organizing public workshops to focus on local issues and drafting the plan document. This document will also compliment the Oyster Bay/Cold Spring Harbor Complex Habitat Management Strategy prepared by the Department of Environmental Conservation.

These cooperative planning efforts are models for other local governments around Long Island Sound that want to prepare watershed management plans to protect their embayments and safeguard the environment and economic benefits of a cleaner Long Island Sound.

## NEW EPA - NRCS WATERSHED MANAGEMENT INITIATIVE

The EPA Long Island Sound Office and the US Department of Agriculture Natural Resources Conservation Service (NRCS) have recently launched a joint watershed initiative to help achieve the goals of the Comprehensive Conservation and Management Plan (CCMP) for the Long Island Sound Study.

NRCS has assigned Water Quality Coordinator Walter Smith to begin the task. Smith will work with local governments, community groups, residents and property owners and federal and state agencies to identify opportunities to improve the quality of the water resources that drain into Long Island Sound. Smith will be looking at ways that NRCS can assist the clean up effort underway for Long Island Sound.

Smith's goal is to bring a broader understanding of water quality issues-especially nonpoint source pollution-by promoting a watershed focus to natural resource decision-making. He will work to develop a cooperative framework by which the federal, state, local and citizen partnerships can maximize resources to improve conditions both locally and in Long Island Sound.

To get started in this initiative, Smith is working on three fronts. His major focus is to develop a model watershed planning effort demonstrating cooperative approaches to solving natural resource problems. One watershed will be targeted for comprehensive planning in each state. Strategies will be developed for protection, remediation, and restoration to help achieve the land use and water quality goals outlined in the CCMP. Currently, Smith is talking to communities and groups in the Norwalk River watershed in Connecticut to assess the level of interest in pursuing this project. He is also working with the Citizen's Advisory Committee to identify a watershed in New York for development of a model planning program.

Under the new watershed initiative, the EPA Long Island Sound Office and NRCS worked with the CTDEP and the DEP's Rivers Advisory Committee to sponsor a statewide watershed management workshop held May 17 at Central Connecticut State University in New Britain.

Smith is also providing assistance to existing watershed projects in New York and Connecticut. Current efforts include assistance to the Fairfield County Soil and Water Conservation District's Sasco Brook Watershed Project for nonpoint source pollution control, the Town of Greenwich is investigating sources of pathogen in the Tom's Brook Watershed, and the Alley Pond Environmental Center in Queens for the Alley Watershed.

Funding for the first year of this two-year initiative was provided jointly by the Long Island Sound Study and Connecticut Office of NRCS. Smith can be reached at (203) 977-1543.

## WATERFACT:

1/4 teaspoon of oil will form a film over about 2000 square feet of the water's surface.

1 quart of motor oil contaminates 250,000 gallons of water, more water than 30 people will drink in a lifetime.

The oil from 1 engine (4-6 quarts) can produce an 8 acre oil slick.

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### Calendar

June 13 there will be a LISS CAC meeting in Stamford Connecticut. For more information call (203) 977-1541.

June 20 there will be a LISS Management Committee Meeting in Stamford Connecticut. Contact Mark Tedesco (203) 977-1541 for more information.

Save the Sound, Inc. is holding a volunteer monitoring training workshop on July 9 from 7-9 pm. Call (203) 327-9786 for more information.

July 15-16 a conference on Market Based Trading for Water and Wetlands in Washington DC. Call 1-800-869-4302 for more information.

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