

CONTROLLING MAJOR SOURCES OF PATHOGENS

Pathogens can cause illness in people exposed through bathing in, or consuming fish or shellfish from contaminated waters. Pathogen contamination results in closed beaches, fisheries, or shellfish areas, hurting local economies and damaging public perception of the ecological health of the Sound.

Overall CCMP Strategy: As sources of pathogens come under better control, ambient water conditions improve and human and environmental exposures lessen. The CCMP identifies a seven part strategy to control pathogen contamination to LIS from: 1) combined sewer overflows (CSOs); 2) nonpoint sources (NPS); 3) sewage treatment plants (STPs); 4) vessel discharges; and 5) individual on-site systems/discharges. The final two elements of the strategy are to control pathogen contamination through: 6) public education; and 7) monitoring and assessment. As the public becomes educated concerning the impact of personal behaviors on the environment, i.e., improper disposal of pet wastes, inappropriate feeding of wildlife, access to boat pumpouts, changes in such behaviors may benefit the Sound.

LIS 2003 Agreement Goal: *Increase the area for shellfish harvesting and eliminate bathing beach closures while maintaining protection of human health.* There is one 2003 action item under this goal: 1) by 2003, nominate vessel no-discharge areas for the Pawcatuck and Mystic Rivers in Connecticut and for all the Long Island Sound embayments in New York. EPA approved Connecticut's request for No Discharge Designation of the Stonington/Pawcatuck River area in 2003. EPA action on the Stonington/Mystic River area designation is pending, and no action has been taken on New York designations as of this writing. After more than three years of chronic closure due to pathogen contamination, Harbor Island Park in Westchester County' was reopened for swimming in June 2003.

Environmental Indicators/Results/Trends: Current LIS environmental indicators for pathogens include the number of beach closure days and number of vessel pumpout stations. There were 604 LIS beach closure days reported in 2003 in Connecticut (224) and New York (380), approximately 2 percent of the total beach days. Most closures are due to rainfall levels that require presumptive action by local health departments to close beaches. In New York, 192 closure days were attributable to system failures and 36 closure days were attributable to the August regional power blackout. The number of vessel pumpout stations in NY and CT has increased from 43 in 1995 to 142 in 2003.

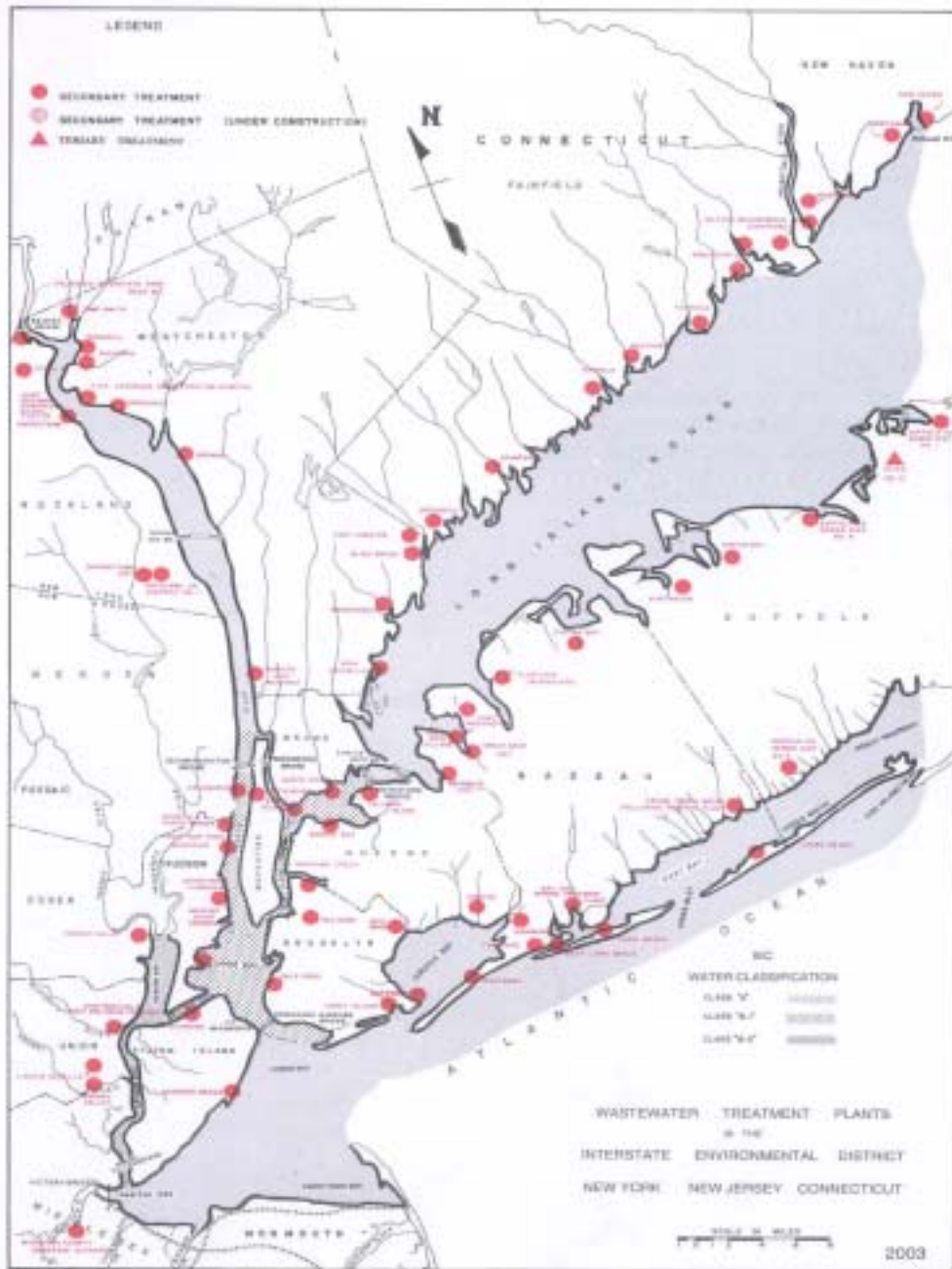
2003 Highlights:

- CT and NY implemented new programs to address EPA's Phase II requirements for storm water from municipal separate storm sewer systems in urban areas and for construction sites disturbing one or more acres. In 2003 CTDEP issued modifications to its industrial permit and issued a public notice of intent to modify the construction permit.
- Connecticut anticipates spending \$480 million over the next 14 years to eliminate combined sewers that deliver high volumes of untreated water directly into rivers.
- New York City continued its \$1.5 billion comprehensive program to abate CSOs, scheduled for completion by 2006. Facility planning and preliminary design for CSO abatement of discharges to tributaries of the East River and Western Long Island Sound continued. Construction of one major CSO retention facility on Flushing Creek will reduce impacts to Flushing Creek, the East River, and western Long Island Sound and is scheduled for completion by 2004.
- As of 2003, Connecticut has 90 land-based vessel pumpout facilities and 11 pumpout boats; there are 19 dump stations. There are 52

pumpout stations in the New York LIS coastal area. This brings the total number of pumpout stations/boats available in LIS to 142, an increase of 8 from 2002.

- After more than three years of chronic closure due to pathogen contamination,

Harbor Island Park in Westchester County reopened for swimming in June 2003. An 800-foot boom to trap pathogens was installed in September 2002, and subsequent testing by the Westchester County Department of Health indicated that pathogen levels had fallen sufficiently to allow the beach to be re-opened.



The network of wastewater treatment plants monitored by IEC during its ongoing effluent compliance surveys.

SUMMARY OF CCMP MANAGEMENT ACTIONS: PATHOGEN CONTAMINATION

P-1. CONTROLLING PATHOGEN CONTAMINATION FROM COMBINED SEWER OVERFLOWS (CCMP TABLE 31, P. 83)

Key Elements: Many municipalities with older sewerage facilities have combined stormwater and sanitary systems. These systems overflow during rainfalls, causing untreated sewage to reach the Sound. Abatement of combined sewer overflows (CSOs) will reduce a major source of pathogens to the Sound. CSO abatement programs are underway in New York and Connecticut.

2003 Description	2004 Planned Action
<p>1. New York City continued:</p> <ul style="list-style-type: none"> • to increase capture of runoff in CSO areas and is in compliance with EPA's minimum standards for CSO controls. NYCDEP continued planning for maximizing wet weather flow to its WPCPs through operation optimization. Wet weather operation plans were developed for the Hunts Point, Wards Island, Bowery Bay, Newtown Creek, Tallman Island and 26th Ward WPCPs to reduce CSO discharges to the Upper East River and Jamaica Bay. These plans were submitted to NYSDEC. A wet weather operating plan was also developed for the North River WPCP. • planning under its Comprehensive City-Wide Floatables Control Abatement Plan project that is evaluating needs for additional CSO abatement that are not part of the City's water quality based CSO control program. Planning is ongoing under the USA Project for the Hunts Point, Bowery Bay and Tallman Island WPCP service areas. • construction of its Flushing Creek CSO Retention Facility to provide storage capacity of 43 million gallons (28 MG in the tank and 15 MG in upstream sewers) that will abate CSO discharges to the head end of Flushing Creek. Phase I construction of the underground structural elements of the tank is complete. Phase 2 construction of the mechanical and above-ground portion of the facility is ongoing. Construction is progressing on schedule toward beneficial use of the storage facility. • planning for the Hutchinson River CSO abatement facility for constructing a storage conduit, which will provide 7 MG of additional storage capacity that will abate CSO discharges to the River. Field investigations and design work continued, although a relocation of a portion of the conduit has been required to gain public approval, thus necessitating redesign efforts. Efforts continued on ULURP and CEQR tasks. A modified facility plan was submitted to NYSDEC. • planning for its Alley Creek drainage area improvements. This comprehensive watershed improvement project has several components including drainage area improvements and CSO abatement facility construction. Construction of the drainage area improvement continued. • planning for its Westchester Creek CSO Retention Facility. The underground CSO storage tank will provide 12 MG underground storage capacity that will abate CSO discharges at Outfall HP-25 to Westchester Creek. Design work continued. A modified facility plan was submitted to NYSDEC. Site acquisition, ULURP and CEQR activities continued. 	<p>Submit North River WPCP WWOP to NYSDEC. Develop WWOPs for Red Hook, Owls Head, Coney Island, Jamaica and Port Richmond WPCPs. Continue to operate the facilities to increase flow to the maximum extent possible.</p> <p>Continue floatables control planning in areas not affected by CSO facility plans under USA Project. Draft Waterbody/Watershed Plans will be developed for Flushing Bay and Westchester Creek.</p> <p>Continue construction.</p> <p>Continue ULURP and CEQR activities.</p> <p>Continue drainage area improvements and initiate construction of CSO facilities.</p> <p>Continue design activities and site acquisition. Complete ULURP and CEQR activities.</p>

2003 Description		2004 Planned Action
	<ul style="list-style-type: none"> review of existing and attainable recreation water uses affected by pathogen bacteria for the City's CSO facility and watershed-based planning projects for the Upper East River, its tributaries, and the City's waters of western Long Island Sound through its Use and Standards Attainment (USA) Project. This effort specifically addresses pathogen controls for the City's current CSO abatement plans and evaluating opportunities for improvements in the plans - a preliminary water body/watershed plan has been developed for the Bronx River that addresses primary and secondary contact recreation water uses in the Bronx River. NYC submitted a modified facility plan to NYSDEC for the Bronx River area, which indicated that the CSO retention facility as being reviewed under the USA Project produced limited water quality benefits. 	Continue USA evaluations on the upper East River and its tributaries. Continue review of recreational use attainability and finalize the Bronx River Waterbody/Watershed Plan under the USA Project.
2.	The Connecticut State Bond Commission awarded more than \$15.4M toward CSO projects statewide in 2003.	Connecticut anticipates spending \$450 million over the next 14 years to eliminate combined sewers.
3.	The Hartford MDC began work on its revised Long Term Control Plan (LTCP) in 2003.	It is expected that Hartford's LTCP will be submitted by the end of 2004.
4.	The City of New Haven is continuing to implement its approved (2002) LTCP for the containment of a 10-year storm and elimination of the City's 22 CSOs by separating the City's stormwater and sanitary sewer systems.	The City proposes to eliminate remaining CSOs over the next 14 years at a cost of \$180 million.
5.	The City of Bridgeport LTCP is still under review by CT DEP. The project is divided into several geographical areas. In 2003, area F-4 construction was completed for separating the combined sewer overflows. The contract for area G-1 was approved by the DEP on July 14, 2003 and advertised for bids in the Fall of 2003. Contract G-2 is currently under DEP review.	CT DEP expects to act on the LTCP in 2004. Construction for area "G" is expected to start in 2004 and complete in 2005. A Clean Water Fund grant application for \$3.9M is awaiting Bond Commission approval.

P-2. CONTROLLING PATHOGEN CONTAMINATION FROM NONPOINT SOURCES (CCMP TABLE 32, P. 84R)

Key Elements: Nonpoint source runoff, including urban stormwater runoff, is one of the most significant sources of pathogen contamination in Long Island Sound. Pathogens in urban stormwater runoff can originate from many sources, presenting a management challenge. Methods of controlling pathogens from nonpoint sources include best management practices; permitting activities; changes in building codes; consent agreements; and technical assistance and education.

2003 Description		2004 Planned Action
1.	In 2003 the New York Nonpoint Source Education for Municipal Officials (NEMO) program received a LISS grant of \$87,281. The program is described further below under P-6, <i>Controlling Pathogen Contamination Through Public Education, #2</i> , and under E-2, <i>Public Information and Education</i> .	NY NEMO will continue operating with other funding sources in 2004.
2.	Watershed Advisory Committee (WAC) 7 has been organized by Westchester County as part of its efforts to help the health of Long Island Sound. WAC 7 will cover the Westchester portion of the Bronx River watershed, 48 square miles, from the southern tip of New Castle south to the Bronx line. The WAC includes representatives of the 13 Westchester towns, villages and cities that are part of the watershed, as well as three environmental groups: the Bronx River Conservancy, the Kensico Environmental Enhancement Program, and the Bronx River Alliance.	The WAC is scheduled to write a plan by the end of 2005, but interim projects are expected to begin prior to the completion of the plan.

2003 Description		2004 Planned Action
3.	The NYSDEC Phase II storm water implementation plan involves permitting many storm sewer systems that discharge to Long Island Sound. NYSDEC issued the new storm water Phase II general permits on January 8, 2003. Regulated storm water dischargers submitted a Notice of Intent by March 10, 2003. Information on the Phase II program in New York is posted on the NYSDEC website: http://www.dec.state.ny.us/website/dow/PhaseII.html .	Continued oversight and implementation of the program.
4.	On July 15, 2003 CTDEP issued modifications to its industrial permit and CT is the only state in the nation with a Stormwater Permit for Commercial sites with more than 5 acres of impervious surface, such as shopping malls. On November 1, 2003 CTDEP issued a public notice of intent to modify the construction permit. On January 9, 2004 the CT approved and implemented its new Phase II MS4 storm water permit program.	The MS4 Permit will be issued in 2004. Once the MS4 permit is issued, CTDEP will hold workshops to train municipal officials in the requirements of the permit.
5.	The Hempstead Harbor Protection Committee has completed its GIS Storm Drain Mapping project. The project was funded by a grant from the NYS Department of State (NYS DOS). NYS DOS approved the final product on September 15, 2003.	

P-3. CONTROLLING PATHOGEN CONTAMINATION FROM SEWAGE TREATMENT PLANTS (CCMP TABLE 33, P. 85)

Key Elements: If operating properly, sewage treatment plants contribute a relatively small percentage of pathogens to the Sound. However, malfunctions, illegal sewer hookups, and wet weather overflows can cause problems at STPs.

2003 Description		2004 Planned Action
1.	The City of Stamford, Connecticut's STP is operating under a State Consent Order to upgrade, expand and implement nitrogen removal capabilities, to be substantially complete by 2005. By an additional Consent Order, the plant converted from chlorine disinfection to UV disinfection, which came on-line in May 2003.	
2.	The Town of Litchfield, Connecticut completed installation of its UV disinfection system in 2003.	
3.	In 2003, IEC: <ul style="list-style-type: none"> conducted 49 unannounced effluent surveys at CT and NYS WPCPs that discharge into the LIS portion of the Interstate Environmental District. These surveys are conducted to check compliance with SPDES permits and IEC Water Quality Regulations. Pathogens monitored include fecal and total coliforms. IEC found nearly 100 percent compliance with the existing discharge permits. Additional samples were analyzed for fecal streptococcus and enterococcus in support of TMDL development. 	Continue to conduct effluent surveys at CT and NY WPCPs; additional pathogens for monitoring during 2004 include fecal streptococcus and enterococcus.
	<ul style="list-style-type: none"> chaired the Regional Bypass Work Group (RBWG) to address unplanned bypasses of raw and partially treated sewage, i.e., treatment plant upsets, broken pipes due to age, or construction mishaps. The RBWG developed a model to predict which areas may be affected by a particular bypass. From 1998-2003, the number of events has been consistent, ranging from 94 in 1998 to a peak of 115 in 2001 and 99 in 2003. During 2003, 10 percent of the events occurred in Long Island Sound and its embayments; 20 percent occurred in the East River. 	Continue to chair the RBWG.
4.	The Village of Mamaroneck sought bids for two major projects valued between \$500,000 and \$750,000 to fix leaking sewer lines that have caused widespread water contamination. The first project will replace several hundred feet of sewer pipes on local streets, and the second project will repair 132 sites of sewer inflow and infiltration that were identified in a Westchester County report seven years earlier. Mamaroneck's underground sewer system connects sewage pipes to the county sewage treatment plant.	It is anticipated that the project will be completed during 2004.

	2003 Description	2004 Planned Action
5.	The City of Glen Cove, New York has begun construction of an ultraviolet treatment system for its STP under a 2003 Clean Air/Clean Water Bond Act award of \$1.02 M. On October 21, 2003 the BNR portion of the project came on-line. The Act also provided \$100,000 for creation of retention basins and plantings to reduce stormwater runoff effects to Cedar Swamp Creek, which drains to Hempstead Harbor and to LIS.	The UV disinfection system is currently being designed and construction will likely begin in 2004.
6.	In December 2002 New York announced \$4.4M in state funding for four wastewater treatment projects to assist the Town of Huntington, the Village of Northport, the City of Glen Cove and the Belgrave Water Pollution Control District in protecting and improving water quality in Long Island Sound through construction of ultraviolet disinfection systems at the first three facilities. The Belgrave UV system is under design in 2003. The UV system for Huntington is scheduled for construction during 2004. Construction is underway to install UV disinfection at the Northport STP. The construction completion date is scheduled for December 2004.	
7.	The Village of Sea Cliff, NY completed construction of a sanitary sewer for Shore Road. Residents, as well as a beach pavilion have hooked up to the sewer.	

P-4. CONTROLLING PATHOGEN CONTAMINATION FROM VESSEL DISCHARGES (CCMP TABLE 34, P. 86)

Key Elements: Although not a primary source of pathogens in the Sound, vessel discharges can be a cause of local water quality problems in poorly-flushed embayments. Creation of vessel No-Discharge Zones, use of best management practices, and increasing the number of vessel pumpout stations are major actions to manage pathogen contamination from vessel discharges.

	2003 Description	2004 Planned Action
1.	CTDEP received \$874,000 from the USFWS Clean Vessel Act (CVA) Pumpout grants program in 2003. By the end of the 2003 boating season there were 90 total pumpout stations (eleven boats) and 19 dump stations, (including one floating rest room) at 89 boating facilities. A directory and map of pumpout stations and boats can be found on the CTDEP website at: www.dep.state.ct.us/olisp/cva/cva.html , along with a variety of information about Connecticut's Clean Vessel Act program.	A decision on Federal FY 2004 funding for CT is anticipated in April 2004. CT proposes to construct two stationary pumpouts, one additional pumpout boat and provide further O&M funding.
2.	<p>A goal of the Long Island Sound 2003 Agreement was: <i>By 2003, nominate vessel no-discharge areas for the Pawcatuck and Mystic Rivers in Connecticut and for all the Long Island Sound embayments in New York.</i></p> <p>EPA approved CTDEP's designation of the Pawcatuck River/Little Narragansett Bay complex and Stonington Harbor as a No Discharge Zone (NDZ) in 2003. An application was submitted to EPA for approval of NDZ designation of the remaining waters of Fishers Island Sound to Avery Point, Groton.</p> <p>A survey of vessel pump-out stations in harbors in the NYS portion of Long Island Sound was initiated in 2003, and is almost completed. The pump-out station survey is a prerequisite to nominating an area as a No-Discharge Zone. When/if it is determined that an adequate number of pump-out stations are present to handle boat traffic in an embayment, then it may be nominated.</p>	Work continues on development of applications for federal approval of the designation of the remaining coastal waters of Connecticut as a No Discharge Zone.
3.	New York State has received a \$450,900 grant from the U.S. FWS=s CVA Pumpout Program to support programs that construct, renovate and maintain marine pumpout facilities for recreational boaters. Pumpout station locations are posted on the NY Sea Grant website at: http://www.cce.cornell.edu/seagrants/pumpouts/lipumpouts.html .	Implementation of the grant program in 2004.
4.	<i>EarthPlace</i> in Westport, CT received LISS Small Grant funding to study indicator bacteria in the Silvermine River. <i>EarthPlace</i> established eight monitoring sites and determined that a small tributary is responsible for the elevated inputs of bacteria.	The project will receive continued funding in 2004

P-5. CONTROLLING PATHOGEN CONTAMINATION FROM INDIVIDUAL ON-SITE SYSTEMS/DISCHARGES (CCMP TABLE 35, P. 87)

Key Elements: When appropriately sited, functioning properly, and well-maintained, septic systems should not be a source of pathogens to the Sound. When not properly sited or maintained, they may fail and become a source of pathogens. Both state and local governments must play a role in managing pathogen contamination from individual on-site systems.

2003 Description	2004 Planned Action
No activity reported.	

P-6. CONTROLLING PATHOGEN CONTAMINATION THROUGH PUBLIC EDUCATION (CCMP TABLE 36, P. 88)

Key Elements: In many cases, simple lifestyle changes can reduce or eliminate a source of pathogen contamination in the Sound. Upon available funding, the CCMP called for development and implementation of a public education plan, targeting specific audiences, in cooperation with federal, state and local public outreach experts and environmental educators.

2003 Description	2004 Planned Action
1. Boater education continued to be a focus of the CTDEP CVA program. CTDEP staff attended boat shows with displays and contacted individual boaters. CTDEP staff attended the annual meeting of the Connecticut Harbor Management Association and displayed outreach materials.	Implement base work plan in 2004. In addition an interactive computer/video kiosk is under development.
2. The LISS revised and reprinted 4,000 copies of a four-part poster series highlighting nonpoint source pollution problems. The posters humorously illustrate four common nonpoint pollution problems, including runoff from car washing, lawn fertilization, leaking automotive oil, and pet waste. The posters may be seen at: http://longislandsoundstudy.net/publications.htm#posters	Continue to reprint and distribute materials as appropriate.
3. In 2003 the New York Sea Grant NEMO Program (NYSG NEMO) supported Long Island local governments' stormwater management programs. NYSG NEMO responded to municipal requests for support by providing presentations, producing reference materials, conducting meetings and by developing recommendations to promote municipal tie-ins to LISS CCMP objectives concurrent with PH II compliance.	Continue workshops, technical support and development of educational materials for Suffolk County Priority LIS watershed municipalities.
4. In July 2003 NYCDEP released its annual <i>New York Harbor Water Quality Report</i> for the year 2002. Among other water quality parameters measured, summer-averaged <i>fecal coliform</i> concentrations have fallen throughout much of this region over the past 16 years. However, slight increases were identified in 2001-2002. The report also highlights other monitoring and pollution control activities conducted by the City and other agencies, and is available at: http://www.nyc.gov/dep	New York City will release its new and updated Water Quality Report based on the 2003 monitoring program.

P-7. MONITORING AND ASSESSMENT OF PATHOGENS (CCMP TABLE 37, P. 89)

Key Elements: Monitoring of indicator bacteria helps assess the success of the pathogen reduction activities called for in the CCMP. Monitoring and assessment are essential to improved understanding of pathogen contamination in the Sound.

	2003 Description	2004 Planned Action
1.	<p>During 2003 there were 604 beach day closures out of a total of 25,440 beach days at the 240 monitored beaches on Long Island Sound from Memorial Day to Labor Day.</p> <p>Connecticut: 216 beach-day closures at private and three municipal beaches; of four state beaches on LIS, two had beach closures totaling eight days, for a total of 224 lost beach days in Connecticut.</p> <p>New York: 380 beach-closure days in the New York portion of Long Island Sound. All of the closures occurred in Westchester and Suffolk Counties; of these, 129 beach-days were at two beaches in Mamaroneck Harbor. Administrative (rain) closures accounted for 152 beach-closure days, while all other closures were caused by a sewer line break (28 beach days) and the August 2003 major electrical blackout (36 beach days).</p>	<p>CT municipalities, regional health districts, and CTDEP will continue to monitor for bacteria. NY state, city, town and county monitoring for pathogens will continue in 2004.</p>
2.	<p>After more than three years of chronic closure due to pathogen contamination, Harbor Island Park in Westchester County' was reopened for swimming in June 2003. An 800-foot floating boom to trap pathogens was installed in September 2002. Subsequent testing by the County Dept. of Health indicated that pathogen levels had fallen sufficiently to allow the beach to be re-opened.</p>	<p>Swimming beaches along the shore of Westchester County are continuously monitored by the Westchester County Health Dept.</p>
3.	<p>Connecticut's Department of Public Health received \$223,921 in EPA FY2003 Beach Act funding for implementing elements of the program in Connecticut.</p> <p>New York's Department of Health received \$359,215 in EPA FY2003 Beach Act funding to support program implementation state-wide; a portion of these funds will benefit LIS beaches.</p>	<p>In FY2004, if funds are appropriated, EPA expects to make grants to support implementation of monitoring and notification programs.</p>
4.	<p>CTDOA/DA continued its annual monitoring of shellfish beds for pathogens, providing invaluable information to the shellfish industry and the public on the classification and condition of shellfish beds.</p>	<p>Continue to monitor shellfish beds for health and viability.</p>
5.	<p>IEC:</p> <ul style="list-style-type: none"> • continued to conduct its tri-state water quality monitoring program and summarized its results in its 2003 Annual Report. The Report describes the status of plant upgrades and construction in the tri-state environmental district. IEC conducted its annual inspection trip of Commission waters in August 2003 for environmental district members. IEC continued to improve its new website at www.iec-nynjct.org. • conducted dry weather inspections of MS4s. For the period January 1 through September 30, 2003, 42 inspections were completed in Nassau County, NY. Three flowing MS4s under dry weather conditions were reported to NYS DEC, Region 1 for remediation. • continued pathogen monitoring in the NY-NJ Harbor Complex. A subset of the 61 station network is located within the LISS core area. Pathogens monitored include <i>fecal</i> and <i>total coliforms</i>, <i>fecal streptococcus</i>, and <i>enterococcus</i>. • coordinated development of a monitoring plan for pathogen track down in the Byram River. The QA/QC monitoring plan was approved by EPA, Region 1. Monthly ambient water quality monitoring began in May 2003; dry weather discharges were discovered on both the New York and Connecticut sides of the river. Track down and remediation is under way. 	<p>Continue preparation of the annual report and conduct the annual boat inspection trip in 2004.</p> <p>IEC will continue dry weather MS4 inspections in 2004.</p> <p>IEC will continue pathogen monitoring, laboratory analysis and data sharing during 2004 under dry weather conditions only in the Byram River.</p>
6.	<p>NYCDEP continued its Harbor Survey program by monitoring <i>fecal coliform</i> and <i>enterococcus</i> in the City's waters of the Upper East River and Western Long Island Sound. Monitoring continued at several East River tributary stations that were added to the program in 2001.</p>	<p>Continue Harbor Survey program and enhance <i>enterococcus</i> sampling.</p>