

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 both the ecological and public perception of the 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 of pathogens. As the public becomes educated concerning the impact of personal behaviors on the environment, e.g., improper disposal of pet wastes, inappropriate feeding of wildlife, changes in such behaviors may benefit the Sound. There are many ongoing federal, state and local programs to control and prevent pathogen contamination and to educate the public on best practices to avoid infection.

LIS 2003 AGREEMENT GOAL:

The 2003 Agreement Goals under this section are replaced by the 2011 Action Agenda.

ENVIRONMENTAL INDICATORS/RESULTS/TRENDS:

LISS environmental indicators for pathogens include the number of beach closure days and number of vessel pumpout stations. There were 1,539 LIS beach closure days reported in 2015, with Connecticut reporting 1,389 and New York reporting 150 closure days at LIS beaches. This represents about 7 percent of the total beach days from Memorial Day-Labor Day. There are approximately 240 LIS beaches that are monitored for pathogen contamination by local health departments, counties or state agencies. Most closures are due to rainfall levels exceeding a range of ½-1 inch in a 24 hour period, which requires local officials to close beaches as a health precaution.

2015 HIGHLIGHTS:

- The Alley Creek Long-Term Control Plan (LTCP) was resubmitted in June 2014 and NYCDEP responded to NYSDEC's comments in October 2015. The Bronx River LTCP was submitted in June 2015.
- The Town of North Hempstead obtained a grant to undertake GIS stormwater mapping for 20 villages within the Town as well as the Village of Sea Cliff. In December, 2015, New York State announced that it was awarding \$316,250 toward this project.
- New York State Environmental Facilities Corporation administers the Clean Vessel Act Program funds for the installation, upgrade, and/or operation and maintenance costs of vessel pumpout facilities. This year, funding included over \$11,730 for upgrades to a pumpout boat and a pumpout dock and more than \$57,260 for operation and maintenance of pumpout facilities and boats throughout NY's side of Long Island Sound.
- The Interstate Environmental Commission (IEC) continues to conduct its tri-state water quality monitoring program.

SUMMARY OF CCMP MANAGEMENT ACTIONS:

CONTROLLING MAJOR SOURCES OF PATHOGENS

P-1. Controlling Pathogen Contamination From Combined Sewer Overflows (CCMP Table 31, P. 83)

Key Elements: Many municipalities with older sewerage facilities have combined storm water 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.

| 2015 Description | 2016 Planned Action |
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| <p>1 The Greater New Haven Water Pollution Control Authority is continuing to implement its approved Combined Sewer Overflow Long Term Control Plan for the containment of a 2 year frequency storm. Recently completed projects include the Phase 2 of sewer separation projects in the area of Lombard Street and Trumbull. Future projects include to expand the hydraulic capacity for treatment of higher CSO flows. In 2012 over \$3.8M in SRF funds were administered to New Haven to complete this project.</p> | <p>Ongoing projects include: Phase 2 sewer separation projects in the area of Yale University, and Lombard and Trumbull Streets.</p> |
| <p>2 The City of Bridgeport, completed its Long-Term Control Plan (LTCP) for CSOs in 2011 and continued work in areas 41W and 41E. Over \$3.5M in SRF funding was paid to Bridgeport for this project.</p> | <p>Continued CSP project work will be conducted in 2013.</p> |
| <p>3 Under the 2005 Consent Order, the NYCDEP has completed Waterbody/Watershed Facility Plans, which are the initial phase of CSO planning, and are required to construct various grey infrastructure projects, and develop Long-Term Control Plans (LTCP). The Alley Creek LTCP was resubmitted in June 2014 and NYCDEP responded to NYSDEC's comments in October 2015. The Westchester Creek LTCP was submitted in June 2014, the Hutchinson River LTCP was submitted in September 2014 and the Bronx River LTCP was submitted in June 2015. Guidance from the EPA on the LTCP process for CSO can be found at: http://yosemite.epa.gov/water/owrccatalog.nsf/e673c95b11602f2385256ae1007279fe/ed5ffbc2f0fe1ce185256b06007232bf!OpenDocument</p> | |

P-2. Controlling Pathogen Contamination From Nonpoint Sources (CCMP Table 32, P. 84R)

Key Elements: Nonpoint source runoff, including urban storm water runoff, is one of the most significant sources of pathogen contamination in Long Island Sound. Pathogens in urban storm water 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.

| 2015 Description | 2016 Planned Action |
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| <p>1 CTDEP continued to implement its Phase II MS4 Permit program. The general permit expired in January 2009 and the original 2004 permit has</p> | <p>A new MS4 permit is in the process of being drafted for reissuance later this year or into</p> |

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| <p>been extended as-is to January 2015. The program is currently in the process of issuing consent orders to 11 MS4s that have MS4 violations and industrial stormwater violations. In 2012, 70 municipalities submitted their MS4 Annual reports and to date 40 Annual reports have been submitted by MS4 communities for 2012.</p> | <p>2014. Plans for education outreach to municipalities are being developed.</p> |
| <p>2 CTDEEP recieved LISS funding to conduct a Green Infrastructure/Low Impact Development (LID) Symposium to be held in 2013.</p> | |
| <p>3 The Hempstead Harbor Protection Committee supported the efforts of the Town of North Hempstead to obtain a grant to undertake GIS stormwater mapping for 20 villages within the Town as well as the Village of Sea Cliff. In December, 2015, New York State announced that it was awarding \$316,250 toward this project.</p> | |
| <p>4 Following the closing of Glen Cove’s Crescent Beach from excessive bacteria levels in June of 2009, the Hempstead Harbor Protection Committee (HHPC) has been assisting the City of Glen Cove with its efforts to re-open the beach. When Nassau County announced in 2014 that it was appropriating \$2 million for a sewer feasibility study for the Crescent Beach area, the HHPC saw this as an opportunity to also assess the feasibility of connecting other un-sewered areas along the eastern watershed of the harbor (Sea Cliff, Glenwood Landing, Roslyn Harbor and parts of Glen Head and Greenvale) to the Glen Cove Wastewater Treatment Plant. Through the assistance of Nassau County Legislator Delia DeRiggi-Whitton, a meeting was held and the County agreed to expand the scope of the feasibility study to cover these areas. Following the meeting, the County also announced that it was appropriating an additional \$10 million for implementation of the study results. The County issued a Request for Proposals for the feasibility study in December, 2014 with a return date of January 9, 2015 and awarded a contract in mid 2015. The HHPC met with County officials on December 22, 2015 to learn of the study’s progress, to offer guidance and to seek the County’s help in facilitating the connection of the new Sea Cliff business district sewer line to the Glen Cove Wastewater Treatment plant.</p> | |

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.

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| <p>1 No Connecticut sewage treatment plants had pathogen control upgrades done in 2012.</p> | |
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- 2 All New York SPDES Permits for WWTPs discharging to surface waters in the LIS watershed have disinfection requirements to ensure the applicable water quality standard will be met. These requirements are met through either chlorine limits or disinfection via ultra violet systems.

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 cause local water quality problems. Creation of vessel no-discharge zones areas, use of best management practices, and increasing the number of vessel pumpout facilities are major actions to manage pathogen contamination from vessel discharges.

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- 1 CTDEEP received a \$1.4 M grant in 2011 and \$1.5M in 2012 from the USFWS Clean Vessel Act (CVA) Pumpout grants program for distribution of grants in CT for 2012 and 2013 for coastal projects. In 2012 35 recipients received grants totaling \$1,075,022. During the 2012 Boating Season, grantees who received Clean Vessel Act Funding reported removing a total of 581,103 gallons of recreational boat sewage in Connecticut, preventing this recreational boat sewage from entering Long Island Sound, its harbors, bays, rivers and adjacent tributaries. The pumpout directory is posted on the CTDEP website: www.ct.gov/dep/cva along with a variety of information about Connecticut's CVA program. Pumpouts are also listed in the annual Connecticut Boater's Guide.

Upgrades and repairs of existing pumpouts are slated for 2013 Grants are available for installation, operation and maintenance (O&M) of Marine Sewage Disposal Facilities (MSDFs). A Request for Proposals is being issued. 2013 anticipated awards are \$1,114,641.

- 2 New York State Environmental Facilities Corporation administers the Clean Vessel Act Program funds for the installation, upgrade, and/or operation and maintenance costs of vessel pumpout facilities. This program is additionally important as the entirety of Long Island Sound is a vessel sewage no-discharge zone. The Long Island Sound Study (LISS) pushed for this designation and LISS staff were fundamental in securing the designation.

This year, funding included over \$11,730 for upgrades to a pumpout boat and a pumpout dock and more than \$57,260 for operation and maintenance of pumpout facilities and boats throughout NY's side of Long Island Sound.

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.

| 2015 Description | 2016 Planned Action |
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| <p>1 In 2012, the Town of Old Saybrook has implemented phase 1 of its decentralized wastewater management system.</p> | |
| <p>2 A Long Island Sound Futures Fund grant was awarded to engage a partnership amongst the Town of Oyster Bay and three watershed protection committees representing 34 municipalities along the north shore of Long Island focused on reducing on-site wastewater treatment system (OWTS) discharges to ground water which are causing nitrogen and pathogen water quality problems in Long Island Sound. The project conducted a two pronged education /training and certification campaign for municipal officials and public and private OWTS professionals with the aim of raising awareness and increasing the capacity to care for and manage OWTS. A conference was held where participants were exposed to tools and resources that would enable local government to improve oversight and management of OWTS through policies and regulations and advancing inter-jurisdictional agreements and strategies. Two 16 hour OWTS inspection classroom and field training sessions were held involving a certification examination for approximately 50 public / private employees in the OWTS inspection field. Participants went out in the field to learn and apply OWTS inspection techniques, and techniques for recognizing substandard systems. Participants who passed the examinations may be listed in a New York State conventional onsite wastewater system inspectors' registration.</p> | <p>In 2016, the Long Island Sound Futures Fund will continue to support projects to control pathogen contamination from individual onsite wastewater treatment systems.</p> |
| <p>3 The Town of Oyster Bay received a \$45,000 grant from the NYS Department of State (funded through the EPF) to both survey and educate residents with septic systems in late 2011/early 2012. The Town partnered with Friends of the Bay, the Manhasset Bay Protection Committee, the Hempstead Harbor Protection Committee, and the Oyster Bay/Cold Spring Harbor Protection Committee, who matched the grant with in-kind services. The project is called the Coordinated Environmental Solutions for Septic Problems Occurring on Long Island (CESSPOOL). A conference for municipal officials was held on March 25th, 2014 and two two-day part classroom/part field raining and certification sessions for municipal officials and septic companies took place in April 2014. This resulted in the first-ever certification of septic companies and inspectors on Long Island. At the same time, a professional poll was undertaken by the Stony Brook University Center for Survey Research to determine the knowledge of residents in un-sewered areas about the issues and the best way to motivate them to maintain their systems. The results of the polling were unveiled at the joint protection committee meeting on May 14th. During 2015, a professional educational campaign was designed for us by Peconic Green Growth based on the results of this survey. It is anticipated that the campaign will be implemented during the Spring of 2016.</p> | |

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.

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1 Boater education and the Clean Marina program continued to be a focus of the CTDEEP CVA program in 2012. CTDEEP staff attended the CT Boat Show and other events to distribute information regarding clean marina and boating practices, marine sanitation devices and pumpouts. Two interactive kiosks are in place for use at boat shows and other various locations throughout the state to educate the public about the Clean Vessel Act, pumpouts, and other clean boating practices. An Action Guide for Boaters was distributed at events such as boat shows and other informational events. CT DEP maintains its "Clean Boater Program" that includes a segment on pathogens.

Continue to promote the clean marina and boating initiative by increasing media usage via radio. Incorporate clean boating practices into the DEP-Boating AquaSmart program, which teaches children about water and boat safety.

2 In 2010-2012, the New York Sea Grant Nonpoint Education for Municipal Officials Program (NYSG NEMO) provided direct stormwater management support to municipalities throughout Long Island. Of note, consultations, presentations, and/or workshops were provided to Long Island Sound communities, including the Nassau County Stormwater Coalition, the Towns of Oyster Bay and Southold, the Suffolk County Highway Superintendents Association, the Hempstead Harbor and Manhasset Bay Protection Committees, and to the Villages of Plandome Heights, Port Jefferson, and Russell Gardens. Further, NYSG NEMO continued to administer the "Phase II LI" listserv. Now reaching over 200 L.I. officials, "Phase II LI" has proven to be an effective means of leveraging expertise, technical resources, and information among municipalities.

Continue to deliver outreach and support designed to ensure integration of municipal PH II storm water anagement with advancement of LIS CCMP objectives.

3 A Long Island Sound Futures Fund grant was awarded to engage a partnership amongst the Town of Oyster Bay and three watershed protection committees representing 34 municipalities along the north shore of Long Island focused on reducing on-site wastewater treatment system (OWTS) discharges to ground water which are causing nitrogen and pathogen water quality problems in Long Island Sound. The project conducted a two pronged education /training and certification campaign for municipal officials and public and private OWTS professionals with the aim of raising awareness and increasing the capacity to care for and manage OWTS. A conference was held where participants were exposed to tools and resources that would enable local government to improve oversight and management of OWTS through policies and regulations and advancing inter-jurisdictional agreements and strategies. Two 16 hour OWTS inspection classroom and field training sessions were held involving a certification examination for approximately 50 public / private employees in the OWTS inspection field. Participants went out in the field to learn and apply OWTS inspection techniques, and techniques for recognizing substandard systems. Participants who passed the examinations may be listed in a

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| <p>New York State conventional onsite wastewater system inspectors' registration.</p> | |
| <p>4 The CT LISS Outreach Coordinator is a member of the LISS Nonpoint Source Work Group, which provided information to the CAC Policy Committee on suggested priorities for state fertilizer regulations (2015).</p> | |
| <p>5 The CT LISS Outreach Coordinator provided assistance to CT NOFA on a LISFF funded project to create green infrastructure at two Connecticut community colleges, including Three Rivers in Norwich. Undergraduate students taking Environmental studies were engaged in a student project around this initiative. (2015)</p> | |
| <p>6 The CT LISS Outreach Coordinator worked with the Fairfield Garden Club and Historical Society to enhance education and outreach about the importance of riparian buffers to the health of LIS. An on-site project emerged on Brown's Brook, a tributary of the Mill River that is less than 2.5 miles from LIS. Volunteers designed and constructed a functional native plant riparian buffer that was also designed to attract local pollinating insects. The Outreach Coordinator also gave a presentation to 50 of the clubs' members. (2015)</p> | |
| <p>7 The CT Sea Grant LIS Outreach Coordinator collaborated on a webinar as part of the CT NOFA Organic Lawn Care Certificate program now being offered online (http://www.organiclandcare.net). This online venue greatly expands the potential audience for information about turfgrass, water quality and Long Island Sound. The Certificate program is also available to students at Three Rivers Community College as continuing education credits. (2015)</p> | |
| <p>8 The Association of Marine Industries published a free 2015 boater's guide, funded through the Clean Vessel Act grant provided by the NYS Environmental Facilities Corp. The guide includes a page on Vessel Water No Discharge Zones and pumpout locations in Long Island waterways. http://boatli.org/wp-content/uploads/2015/12/ami-boaters-guide.pdf</p> | |

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.

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| <p>1 There were 1,539 LIS beach closure days reported in 2015, with Connecticut reporting 1,389 and New York reporting 150 closure days at LIS beaches. This represents about 7 percent of the total beach days from Memorial Day-Labor Day. There are approximately 240 LIS beaches that are monitored for pathogen contamination by local health departments, counties or state agencies. Most closures are due to rainfall levels exceeding a range of ½-1 inch in a 24 hour period, which requires local officials to close beaches as a health precaution. EPA's Beach Watch website is: http://water.epa.gov/type/oceb/beaches/.</p> | <p>Changes in number and timing of beach monitoring is anticipated due to grant amount reductions in the Federal Beach Act program.</p> |
| <p>2 *[Needs CT update] The CT Dept. of Public Health (CTDPH) received \$223,000 from EPA for FY2009 Beach Act funding for implementing elements of the Beach Monitoring program in Connecticut. CTDEP, in partnership with the CTDPH, samples state beaches and CTDPH analyzes the samples. The NYSDOH received \$351,000 from EPA for FY2010; \$357,000 in FY2011; and \$341,000 from EPA for FY2012 BEACH Act funding in New York State.</p> | <p>Expect continued, but limited EPA funding for Beach Act monitoring in 2013.</p> |
| <p>3 The Connecticut Department of Agriculture, Division of Aquaculture (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>4 The Interstate Environmental Commission (IEC) continues to conduct its tri-state water quality monitoring program. The IEC conducts compliance monitoring in which wastewater treatment and industrial facilities discharging into the Commission's District are investigated throughout the year, in coordination with the NYSDEC, NJDEP, CTDEP, and USEPA. The Commission's nationally certified laboratory performs analyses on samples collected at municipal, private, and industrial wastewater treatment facilities. Data sets generated by these investigations are used to determine compliance with applicable regulations.</p> | |
| <p>5 With support from the LISS through the Long Island Sound Futures Fund, the Hempstead Harbor Protection Committee continues to collect water quality data at 18 stations in order to open additional portions of the harbor to shellfish harvesting and to monitor impacts of planned projects.</p> | |
| <p>6 Following the closing of Glen Cove's Crescent Beach from excessive bacteria levels in June of 2009, the Hempstead Harbor Protection Committee (HHPC) has been assisting the City of Glen Cove with its efforts to re-open the beach. In 2014, Nassau County announced that it was appropriating \$2 million for a sewer feasibility study for the</p> | |

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Crescent Beach area. The HHPC saw this as an opportunity to also assess the feasibility of connecting other un-sewered areas along the eastern watershed of the harbor (Sea Cliff, Glenwood Landing, Roslyn Harbor and parts of Glen Head and Greenvale) to the Glen Cove Wastewater Treatment Plant. The County agreed to expand the scope of the feasibility study to cover these areas and announced that it was appropriating an additional \$10 million for implementation of the study results. The County issued a Request for Proposals for the feasibility study in December 2014 with a return date of January 9, 2015 and awarded a contract in mid 2015.