A Partnership to Restore and Protect the Sound

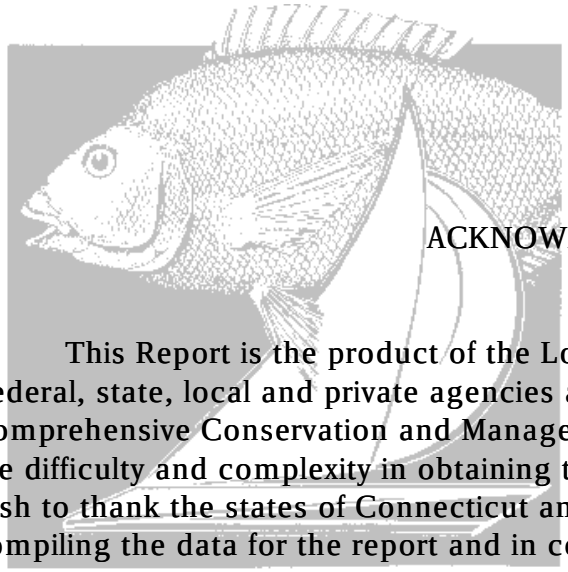
2001 CCMP IMPLEMENTATION TRACKING REPORT

January-December 2001

The Comprehensive Conservation and Management Plan

March 2002

THE LONG ISLAND SOUND STUDY



ACKNOWLEDGMENTS

This Report is the product of the Long Island Sound Study partnership of Federal, state, local and private agencies and organizations. The diversity of the Comprehensive Conservation and Management Plan for Long Island Sound increases the difficulty and complexity in obtaining the information and data for this report. We wish to thank the states of Connecticut and New York for their invaluable assistance in compiling the data for the report and in coordinating their efforts with the many other state and local agencies and organizations participating in the Study.

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Foreword

This 2001 report documents the seventh year of implementation of the *Long Island Sound Study (LISS) Comprehensive Conservation and Management Plan (CCMP)* for Long Island Sound (LIS). This Report summarizes the continuing work of the LISS *Management Conference* partners in carrying out the CCMP.

The LISS Management Conference is sponsored by the U.S. Environmental Protection Agency (EPA), the New York State Department of Environmental Conservation (NYSDEC), and the state of Connecticut Department of Environmental Protection (CTDEP). Additional partners include:

- Interstate Environmental Commission (IEC);
- U.S. Army Corps of Engineers (ACOE);
- U.S. Department of the Interior's Fish and Wildlife Service (USFWS);
- U.S. National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS);
- New York City Department of Environmental Protection (NYCDEP);
- U.S. Department of Agriculture Natural Resource Conservation Service (NRCS);
- New York State Department of State (NYSDOS);
- New York and Connecticut Sea Grant College programs;
- LISS Technical Advisory Committee (TAC); and
- LISS Citizens Advisory Committee (CAC).

Many other federal, state, municipal academic, and local public and private organizations contribute to implementation of the CCMP. Among these are the:

- U.S Geological Survey (USGS);
- U.S. Department of Agriculture's Cooperative Extension Service;
- Connecticut Department of Agriculture Bureau of Aquaculture (CTDOA/BA);
- New York and Connecticut state Departments of Health;
- New England Interstate Water Pollution Control Commission;
- University of Connecticut (UConn); and
- State University of New York (SUNY).

Together, these Federal, state, local, academic, and citizen partners combine their efforts to achieve the common CCMP vision for the long-term health, restoration, and economic well-being of Long Island Sound, its watersheds and tributaries, and living marine and marine-dependent resources.

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About the 2001 Report

UNDERSTANDING THIS REPORT

This *2001 CCMP Implementation Tracking Report* is organized into seven sections, each corresponding to the seven priority management areas identified in the CCMP:

1) Continuing the Management Conference;
2) Hypoxia;
3) Pathogen Contamination;
4) Toxic Substances;
5) Floatable Debris;
6) Management and Conservation of Living Resources and Their Habitats; and
7) Public Involvement and Education.

Each of these sections contains a brief narrative that highlights accomplishments of the Management Conference in that area in calendar year 2001. New for 2001 is a section describing the environmental results, trends or indicators of progress for the CCMP priority area. This section attempts to relate CCMP actions to real and measurable environmental progress. The program will strive to improve its environmental indicators and refine the relationships to management actions over time.

This report provides information in the 36 CCMP subcategories outlined in the Index to the report. As in prior year reports, the charts following each narrative section correspond to the appropriate table in the CCMP for each priority area.

The charts contain self-explanatory information under the 36 action areas identified in the CCMP, such as *Description*; and *Planned Action*.

The Appendix contains the entire set of 232 CCMP actions indexed to the detailed charts in the report.

An Annual Snapshot of Progress

Because of the inherent long-term nature of initiating and assessing the results of environmental restoration and improvement efforts, this report should be viewed as a one-year snapshot of accomplishments against the 36 action areas identified in the CCMP.

Environmental Indicators

The LISS has developed a set of 43 environmental indicators for Long Island Sound, with an ultimate goal of linking progress on the CCMP to actual environmental improvements in the Long Island Sound ecosystem. In this way, environmental results may be used in the future to assess the effectiveness of CCMP actions, and the Management Conference will be in a better position to consider and adjust CCMP plans, actions, and resources according to the environmental results desired or achieved. The LISS environmental indicators are accessible on the LISS website at: http://www.epa.gov/region01/eco/lis.

Executive Summary

The Long Island Sound Study released its first comprehensive public report on the health of Long Island Sound in April 2001. *Sound Health 2001* provides an in-depth look at 15 principal environmental indicators of the health of the Sound over the last 10-15 years. The report presents data and trends in such areas as water quality, habitat restoration, toxic and pathogen contamination, as well as the status of important living resources native to the Sound or dependent on its health. An expanded suite of 43 indicators of the health of the Sound is posted on the LISS website.

This *2001 CCMP Implementation Tracking Report* should be viewed in concert with *Sound Health 2001* indicators. These reports, when considered as a whole, can provide an overview of the impact of management actions on the health of the Sound, and can help managers to refocus priorities if a desired environmental outcome is not being achieved. These reports are available on the LISS homepage at: http://www.epa.gov/region01/eco/lis.

SUMMARY OF 2001 ACCOMPLISHMENTS

Nitrogen TMDL Approved

The most significant accomplishment in 2001 was the final submission and approval of the Total Maximum Daily Load (TMDL) for nitrogen in Long Island Sound. The states of Connecticut and New York submitted the TMDL in January 2001and EPA approved it in April 2001. The TMDL allocates responsibility for reducing nitrogen loads among all nitrogen sources, setting enforceable targets over the next 14 years.

Nitrogen Loading

In 2001 the total point source nitrogen load to the Sound was estimated at 152,645 lbs/day, a decrease of more than 59,000 lbs/day from 1990 base levels. As of December 2001, New York's 2001 point source nitrogen load was 111,413 lbs/day, compared with 109,518 lbs/day in 2000. This slight increase was due to STP upgrade construction projects that take capacity off line and temporarily increase loads. As of December 2001, Connecticut's 2001 point source nitrogen loading was 41,232 lbs/day compared with 46,951 lbs/day in 2000. The decrease is attributable to progress in bringing facilities online with improved nitrogen controls.

Hypoxia Indicators

The maximum areal extent and duration of low (< 3mg/l) dissolved oxygen (DO) in LIS in 2001 was was estimated at 133 square miles (mi^2), with an overall duration of 66 days compared to the fifteen year averages of 201 mi^2 and 56 days. Hypoxic conditions began on or about July 10 and lasted until September 10 during Summer 2001.

Habitat Indicators

The states of Connecticut and New York continued overall progress toward the LISS goal of restoring 2000 acres of habitat and reopening 100 miles of river corridors to anadromous fish passage by 2008. Since 1998, Connecticut and New York have restored over 338 acres of tidal wetland habitat, treated or retreated many acres of phragmites-infested habitat, and restored 39.5 miles of river corridor to anadromous fish passage.

Toxics , Pathogens, and Floatables Indicators

Toxic emissions in and around the Sound continue to decline due to more stringent environmental regulations. In Connecticut, 98 percent of the 84 municipal sewage treatment plants passed toxicity testing. Phased combined sewer overflow projects to alleviate pathogen contamination continued in both states and New York City in 2001. The City increased capture of runoff in CSO areas from 40 percent in 2000 to 55 percent in 2001. The number of vessel pumpouts in the Sound increased from 43 in 1995 to 127 in 2001. CSO efforts also help to reduce floatable debris from reaching the Sound. National Beach Cleanup Day resulted in more than 2000 volunteers removing more than 40,000 pounds of debris from 87 miles of shoreline in both states. Due to the tragic events of September 11, a number of beach volunteers were called to respond to the disaster, and several sites in Connecticut and New York were closed due to the disaster.

LIS Research and Monitoring

The Management Committee continued to make funding available for the LIS research fund in 2001. The New York and Connecticut Sea Grant programs contributed $25,000 each for a total 2001 fund of $400,000. The LISS selected five research projects for funding in 2001, which will study key areas of nutrient and phytoplankton dynamics, factors affecting the distribution and abundance of the salt marsh sparrow, and new approaches for assessing mutagenic risk of contaminants in Long Island Sound. The three research projects funded in 2000 were ongoing in 2001.

The LISS partners -- CTDEP, IEC, and NYCDEP-- continued ambient monitoring of LIS in 2001 for DO, temperature, salinity, chlorophyll a, visibility, and other selected parameters. CTDEP continued its ambient monitoring of 48 deep water stations across the Sound. NYCDEP performed ambient monitoring of NY waters in Western LIS. IEC continued its weekly summer hypoxia monitoring at 21stations, and at a subset of stations, samples were collected for phytoplankton and Pfiesteria in 2001. Under a continuing EPA grant program, UCONN's Department of Marine Sciences at Avery Point continued its real-time ambient water quality monitoring at five fixed stations in key LIS locations, posting this information on its website at: http://www.mysound.uconn.edu.

Both states continued participation in EPA's National Coastal Assessment program in 2001, monitoring a national set of indicators for water and sediment quality and biota in LIS.

Citizen Action

The Citizens Advisory Committee (CAC) met in March, June, and December 2001. The September meeting scheduled for New York City had to be cancelled due to the tragic events of September 11. The CAC rescheduled its December meeting for New York City, and focused this meeting on setting a new strategic vision and direction for the coming years. The CAC formed a new living marine resources subcommittee to give focus and attention to this important area, and recommended that the Management Committee reconstitute its own former living marine resource work group.

Reaching and Educating the Public

The LISS outreach and education programs continued to conduct many meetings, conferences and workshops attended by hundreds of public officials and concerned citizens. The LISS produced and distributed many thousands of copies of its LIS newsletter, *UPDATE*, as well as fact sheets, publications, and brochures covering timely and critical LIS topics. Many of these documents were posted on the LISS world wide web page at: http://www.epa.gov/region01/eco/lis. The LISS webpage continued to be one of the most visited pages on the EPA New England Region website, with more than 106,750 recorded site visits in 2001. Demand for information on the status and health of the Sound continues to increase from students, teachers, researchers, managers and the public.

LISS outreach and education program staff continued to provide LIS displays at annual public events, such as Earth Day and LIS Days in Connecticut and New York; address scores of teachers, educators, school children, groups and classes; issue LIS press releases, make public service announcements, and give radio and press interviews on timely LIS issues.

Continuing the Management Conference

Implementing the CCMP is the combined responsibility of the Management Conference partners. Through their ongoing programs and day-to-day program operations, and through federal, state, local, and private LIS funding initiatives and activities, CCMP priorities are assessed, implemented, and reported.

CCMP Strategy:

An essential element of the Long Island Sound Study strategy to implement the CCMP was to continue the Management Conference partnership in carrying out the plan to restore and protect the Sound. The states and EPA signed LIS Agreements in 1994 and 1996, formally committing EPA and the states to the Management Conference partnership as the primary means of implementing the CCMP. Most of the original 13 CCMP actions to address this strategy continue to be key to the viability of the LISS partnership. Federal legislation in 1990 created the EPA Long Island Sound Office to bridge the bi-state, multi-agency, public/private efforts to restore and protect the Sound. In 2000 Congress reauthorized the LISS through 2005 and increased its authorization of appropriations to $40 million annually.

2001 Highlights:

- Congress appropriated $4.489 million for the LISS in 2001 under CWA §119; EPA included $477,400 in its 2001 budget for the LISS; and EPA allocated $340,000 of the National Estuary Program under CWA §320 for LIS.

- The states used FY2001 LISS federal appropriations of $1.58 million each to assist distressed communities in Connecticut in developing plans to upgrade STPs for nitrogen control and in New York for CCMP implementation projects and to assist communities in project planning.

- The Management Committee developed a draft Long Island Sound Agreement for 2001 that envisions an ecologically restored Sound by 2014. The draft agreement establishes measurable environmental goals for implementation of CCMP priorities over the next 5-10 years. Due to the tragic events of September 11, the September 2001 Governors' signing ceremony was delayed until 2002.

- The Management Committee met in January, April, July, and October 2001. The Committee agreed to a new Living Marine Resources Work Group to give special emphasis to this critical resource. Several new agency representatives replaced retiring members. NOAA/NMFS, NYSDOS, EPA Narragansett Lab, and EPA New England Region named new members to the Committee.

- The Management Committee continued its commitment to fund applied research on the Sound, providing $350,000 for LIS research grants in 2001. The Connecticut and New York Sea Grant College Program partners each contributed $25,000 for research in 2001 for a total LISS research budget of $400,000.

- The LISS Citizens Advisory Committee (CAC) met in March, June, and December 2001. The CAC received the 2001 EPA New England Region Environmental Merit award for its outstanding work on the restoration and protection of the Sound.

- The CAC welcomed the Connecticut River Estuary Regional Planning Agency (CRERPA) and the North Fork Environmental Council (NFEC) as new CAC members in 2001. CRERPA received NOAA's 2001 *Walter B. Jones Award for Excellence in Local Government* for its leadership in coastal management planning and implementation. CRERPA successfully increased regional awareness of coastal issues through its day-to-day planning and zoning advice to municipalities.

SUMMARY OF CCMP MANAGEMENT ACTIONS: CONTINUING THE MANAGEMENT CONFERENCE

M-1. SUPPORTING IMPLEMENTATION (CCMP TABLE 50, P. 141)

Key Elements: The CCMP committed the LISS to formally extend the Management Conference to guide CCMP implementation, and to continue its Citizens Advisory Committee as an integral part of the conference. The plan also called for the EPA LISO to continue and expand its efforts to coordinate among Management Conference participants in support of CCMP implementation by providing funding and staffing, conducting education, outreach, monitoring, and data management, and ensuring consistency with other federal and state goals and policies.

Description	2002 Planned Action
EPA and Congress continued to provide Federal funding for the LISS in FY2001 under Clean Water Act Sections 119 and 320. The LISS program budget in 2001 was $5.329 million. Congress appropriated $3.0 million to support LIS CCMP implementation projects, including assistance to distressed communities in Connecticut for STP upgrade planning.	The FY2002 President's Budget for EPA included a line item of $477,400 for the LISO, with Congress earmarking an additional $6.022 million and $4.0 million in EPA appropriations for LIS. The LISS also received $510,000 under EPA's National Estuary Program for LIS in FY2002.
At the direction of the Policy Committee In September 2000, the Management Committee developed a draft Long Island Sound Agreement in 2001, which includes quantifiable environmental goals in CCMP priority areas over the next 5-10 years. The Governors' signing ceremony was unavoidably delayed due to the tragic events of September 11.	Signing of the Agreement in 2002.
The LISS continued to provide funds for state program coordination and involvement and for the LISS public outreach and education and habitat restoration programs.	
The Management Committee met quarterly in January, April, July and October 2001. A new living marine resources work group was formed to address this critical area. The Committee supported continued funding under CWA Section 320 for the LISS in 2002.	The Committee will continue to meet in 2002 to address issues of concern to LIS.
The Citizens Advisory Committee met in March, June, and December 2001. The CAC followed up on the 2000/2001 priorities it presented to the Policy Committee in June 2000, advocating for development of a LIS reserve system and continued research funding; continued state efforts to implement the nitrogen TMDL and habitat restoration strategy; and increased emphasis on toxics reductions. The CAC continued to advocate support for Federal appropriations for the LISS and for continued NEP funding for LISS under CWA Section 320. The CAC approved two new organizational members in 2001: the North Fork Environmental Council and the Connecticut River Estuary Regional Planning Agency. In 2001 the CAC received the EPA Environmental Merit Award for its work on behalf of the LISS. The CAC received briefings by management conference staff on the New York NEMO program, the NY/NJ Harbor Estuary Program, and the BEACH Act of 2000 during its 2001 meetings. The EPA NEP program provided the services of a trained facilitator at the December 2001, and January and March 2002 meetings to assist the CAC in developing a strategic vision over the next five years and to develop work plans for its subcommittees.	The CAC will continue to advocate for the full $40 million appropriation for the LISS.
The EPA LISO continued to coordinate the efforts of the Management and Citizens Advisory Committees, and the Technical Advisory Committee. The LISO continued to support implementation efforts of LISS work groups, including the SWEM, MEG, Habitat Restoration Team, Implementation Team,, and dredging EIS work group. The LISO continued coordination of the management conference, development of the annual budget and work plan, the LISS research agenda and RFP, and developed several reports and commissioned a study on the economic value of LIS to the regional economy.	The LISO will continue to support implementation of the CCMP and the Management Conference partners.

Long Island Sound Study
Comprehensive Conservation and Management Plan
Actions

CONTINUING THE MANAGEMENT CONFERENCE

M1-1. Formally extend the Management Conference for a minimum of five years to continue coordination and oversee implementation of the management plan. The Citizens Advisory Committee will remain part of the Management Conference structure.

M1-2. Continue and expand the role of the EPA Long Island Sound Office, consistent with the requirements of the LIS Improvement Act of 1990. Funding is available in FY 1994, but will be required in future years.

M1-3. Continue state program coordination and involvement in the Management Conference. Funding is available in FY 1994, but will be required in future years.

M1-4. Maintain public involvement and education efforts with an added focus on local government involvement. Funding is available in FY 1994, but will be required in future years.

M1-5. Establish delegation of authority to allow the EPA Long Island Sound Office to support projects of studies as authorized by the Long Island Sound Improvement Act.

M1-6. Advocate modification to Clean Water Act § 320(g)(2) to allow the EPA to provide base funding through cooperative agreements to National Estuary Programs that complete their management plans.

M1-7. Develop a coordinated monitoring plan to assess the effectiveness of implementation, considering innovative approaches and building upon existing programs.

M1-8. Coordinate data management efforts between Long Island Sound and New York-New Jersey Harbor Estuary Program (HEP), including support for a system wide data manager.

M1-9. Modify the current structure of the LISS as needed to oversee implementation of the plan.

M1-10. Ensure that the LISS is consistent with existing state coastal zone management (CZM) policies.

M1-11. Incorporate relevant elements of the plan into the state CZM program for federal consistency review.

M1-12. Continue to support and enhance data management, analysis and reporting.

M1-13. Prepare an annual progress report on implementation including recommendations to redirect efforts.

HYPOXIA

H1-1. The states of New York and Connecticut will continue their point and non-point source permitting and enforcement programs as a primary mechanism of pollutant load reduction. Fundamental to the direction of these programs are the states' water quality standards and classifications that provide the basis for management policies and decisions.

H1-2. The state of New York will ensure compliance with the consent order to upgrade the Newtown Creek plant to provide secondary treatment with biological nutrient removal retrofit modifications.

H1-3. The state of Connecticut will freeze nitrogen discharges and, if appropriate, explore opportunities to reduce nitrogen discharges at three industrial facilities with significant nitrogen discharges.

H1-4. The municipalities in the states of Connecticut and New York will implement biological nutrient removal retrofits to reduce the load of nitrogen to the Sound on an interim basis.

H1-5. Conduct feasibility studies and pilot demonstrations for nitrogen removal at 13 of its [NYC] 14 sewage treatment plants, with actual design for Newtown Creek.

H1-6. Westchester County will investigate sludge re-handling at their four facilities to determine if opportunities exist for nitrogen load reduction.

H1-7. The state of New York will continue to seek to reach agreement with Belgrave, Great Neck East Shore, Huntington, Oyster Bay, Port Washington, and Kings Park on permit modifications for implementing the no net increase in nitrogen policy.

H2-1. The states of Connecticut and New York will continue to use their existing authority to manage non-point source pollution and appropriate federal grants such as CWA§ 319, 604(b), and 104(b) to carry out projects that will help prevent increases and, to the extent practicable, achieve reductions in the non-point source loads from high priority drainage identified in the CT and NY portions of the watershed.

H2-2. The states of CT and NY are developing their coastal non-point source control programs, as required by §6217 of the Coastal Zone Management Act.

H2-3. The states of CT and NY will continue to implement general storm water permit programs to control the discharge of storm water from industrial, construction, and municipal activities, in accordance with EPA's national program regulations. These permits will regulate discharges from construction activity greater than five acres and from eleven industrial categories.

H2-4. The states of CT and NY will continue to implement their existing permitting programs, such as the inland and tidal wetland programs, to address non-point nutrient control with respect to LIS management needs, as appropriate.

H2-5. The states of CT and NY will implement the requirements of the reauthorized Clean Air Act to achieve additional nitrogen emission controls. Major actions include reduction of nitrous oxide emissions through adoption of statewide enhanced vehicle inspection and maintenance programs and stricter emission controls for stationary sources such as power plants.

H2-6. The EPA will make non-point source management of nitrogen and other pollutants identified by the LISS, through wetlands and riparian zone protection as well as best management practices implementation, high priorities for funding under §319, 104(b), and 604(b) of the Clean Water Act.

H2-7. Investigate expansion of storm water permitting programs to regulate communities with populations fewer than 100,000 that border Long Island Sound within high priority management zones.

H2-8. In cooperation with the state of New York, Westchester County is developing a non-point source management plan that will include implementing best management practices for non-point source nitrogen control, monitoring their effectiveness and establishing a Westchester County management zone (or bubble) for assessing compliance with the nitrogen load freeze.

The LISS will explore extending the bubble concept to other management zones throughout Connecticut and New York state portions of the Long Island Sound drainage.

H2-9. Westchester County will implement the recommendations of the County Executive's Citizens Committee on Non-point Source Pollution in Long Island Sound.

H2-10. Point and non-point nitrogen load estimates will be made in the City of Stamford to assess feasibility of a point/non-point source *trading* program. A cost-effective mix of management options will be proposed that may be used to help decide how nitrogen reduction targets can be met once they are established.

H2-11. New York state will pursue the expansion of the State Building Code to include provisions for erosion and sediment control and storm water practices for all construction activities in order to prevent increases in non-point nitrogen runoff.

H2-12. Provide technical assistance to coastal municipalities to address impacts of hypoxia in their municipal regulations and plans of development, as required by law.

H2-13. Advocate the use of the June nitrate test on agricultural lands to ensure that fertilizer applications to crops do not exceed crop needs.

H2-14. In addition to continuing general storm water permitting programs, the state of New York should determine if the general permit adequately regulates nitrogen from activities subject to national storm water regulations.

H2-15. Explore the expansion of current requirements for federally licensed or permitted projects to obtain a water quality certification in New York to protect water quality from sources of pollution to include all projects adjacent to wetlands and other sensitive areas (e.g., adjacent to wetlands) or those that exceed a minimum size (e.g., greater than one acre).

H2-16. The states of Connecticut and New York should develop a habitat restoration plan that includes a list of potential project sites and priorities. Wetland projects that are in close proximity to priority nitrogen management areas should be highlighted.

H2-17. Evaluate Maryland's *Critical Areas* regulations and the reported nutrient reduction benefits and make recommendations of the potential value of a similar program for Long Island Sound.

H3-1. The LISS will complete work on the LIS 3.0 model and the necessary management scenario projection runs.

H3-2. Develop LIS 3.0-based dissolved oxygen targets and nitrogen load reduction targets for each management zone.

H3-3. Establish a firm timetable for achieving, within 15 years, the load reduction targets by zone, with progress measured in five year increments.

H3-4. Develop zone-by-zone plans to achieve the nitrogen load reduction targets.

H3-5. Encourage and support development of innovative, cost-effective technologies to reduce point and non-point sources of nitrogen.

H3-6. Periodically recalibrate LIS 3.0 to reflect the changing conditions of the Sound and use it to explain these changing conditions and to evaluate proposals to modify the management plan, as necessary.

H4-1. Increase funding of the Connecticut and New York State Revolving Fund Programs to meet statewide wastewater control needs, including Long Island Sound nitrogen control needs.

H4-2. Appropriate $50 M to fund a *Long Island Sound Challenge Grant Program,* a significant portion of which would be used to ensure that the Phase III nitrogen control efforts get off to a fast start with full local government cooperation.

H4-3. Fully fund the non-point source control programs under §319 of the Clean Water Act and §6217 of the Coastal Zone Act Reauthorization Amendments to support additional non-point source management activities.

H5-1. The states of Connecticut and New York, New York City, and the Interstate Sanitation Commission will monitor dissolved oxygen and nutrients in Long Island Sound, its major tributaries, and key sewage treatment plants.

H5-2. Develop a coordinated monitoring plan to assess the effectiveness of implementation, considering innovative approaches and building upon existing programs.

H5-3. As part of a combined National Estuary Program Action Plan Demonstration Project and a CTDEP Long Island Sound Research Fund project, the EPA and the state of Connecticut will complete a demonstration project designed to evaluate and quantify the benefits of a riparian zone in the denitrification process.

H5-4. The state of Connecticut, through its Long Island Sound Research Program, has solicited proposals to identify the role of riverine transport in attenuating the load of nitrogen delivered to the Sound in the Housatonic or Naugatuck Rivers. If an acceptable proposal is identified, it will be a priority for funding in 1994.

H5-5. The state of Connecticut, through its Long Island Sound Research Program, will continue to fund atmospheric deposition monitoring of nitrogen a two coastal locations through May, 1994.

H5-6. The EPA Office of Research and Development will continue to develop regional dissolved oxygen criteria for marine and estuarine waters.

H5-7. The NYSDEC will complete its initial study on the effects of hypoxia and disease on Long Island Sound lobsters.

H5-8. Continue long-term dissolved oxygen and nutrient monitoring of the Sound, its major tributaries, and key sewage treatment plants.

H5-9. Continue to monitor finfish and crustaceans of the Sound with emphasis on determining population response to low dissolved oxygen.

H5-10. Continue to monitor the effects of hypoxia on disease of lobsters.

PATHOGEN CONTAMINATION

P1-1. Continue CSO implementation and update overall management plans to assure implementation addresses bathing beach and shellfish closures and is consistent with water quality standards.

P2-1. Implement the state nonpoint source management initiatives supported from Section 319 funding

P2-2. Develop state coastal nonpoint source control programs, as per Section 6217 of the Coastal Zone Management Act to address the nonpoint source pathogen load from the LIS coastal zone.

P2-3. Implement general storm water permit programs to control the discharge of storm water from industrial, construction, and municipal activities, as per EPA regulations.

P2-4. Provide technical assistance to coastal municipalities to address impacts of pathogens in their municipal regulations and plans of development, as required by state law.

P2-5. Pursue changes of the State Building Code to include provisions for storm water management.

P2-6. Initiate a pilot program to control storm water discharges using enforceable instruments (i.e., permits or consent agreements). Connecticut and New York will evaluate the effectiveness of the pilot program for more widespread implementation.

P2-7. Expand current requirements for federally licensed or permitted projects to obtain a water quality certification to include all projects in sensitive areas or where a contaminant or parameter is found to exist at or exceeding a threshold value.

P3-1. Minimize malfunctions of treatment systems and eliminate dry weather overflows and illegal hookups to storm sewers through aggressive management programs. Ensure prompt notification and response and take quick enforcement action.

P3-2. Identify and take priority enforcement actions to control wet weather overflows from sewers caused by excessive infiltration and inflow.

P3-3. Implement a beach and shellfish closure action plan to take immediate corrective and priority enforcement actions addressing improperly treated municipal discharges. Preventable incidents involving beaches and shellfish areas will be emphasized.

P4-1. During the permitting process, minimize the impacts of boat dockage facilities and temporary live-aboard anchorages by considering their proximity to productive and certified shellfish waters, existing boat channels, wetlands, and critical habitat areas, and tidal flushing.

P4-2. Consider the impacts of vessel discharges through appropriate resource management and recovery programs and limit or condition the siting or operation of boating facilities as necessary to minimize such impacts.

P4-3. New York and Connecticut will apply to the EPA to create vessel *No Discharge* areas in specific embayments and harbors after ensuring the sufficient availability of pump-out stations and treatment facilities.

P4-4. New York state has identified Huntington and Lloyd Harbors as areas requiring additional protection and the EPA has Public Noticed its tentative determination that there are adequate pump-out facilities in these areas.

P4-5. Connecticut, through a 319 grant, will ensure completion of a marina and mooring area water quality assessment guidance document. Connecticut has also completed a marinas *best management practices* project report for nonpoint sources of pollution, which may be used to develop requirements for use of certain best management practices at marinas. New York state will review these documents for potential incorporation into state management programs.

P4-6. Complete regulations to require pump-out facilities as required by, and in accordance with, state law.

P4-7. The states of Connecticut and New York have received funding from the Federal Clean Vessel Act to conduct a pump-out needs survey, determine the effectiveness of existing facilities, develop and implement plans for construction of additional pump-out stations by marinas and prepare education/information plans.

P4-8. Collect information on sewage discharge controls in Long Island Sound, disinfection chemicals used, boater education and sewage treatment plant acceptance of pump-out wastes. Evaluate availability of treatment capacity for pump-out wastes and secure commitments from municipalities to accept these wastes.

P5-1. Connecticut and New York are coordinating management actions with local governments when on-site septic systems are found to be failing and impacting shellfish growing areas and bathing beaches.

P5-2. Continue and enhance management actions with local governments when on-site septic systems are found to be failing and impacting shellfish growing areas and bathing beaches.

P5-3. Evaluate existing septic system controls (including system monitoring, required maintenance and repair and replacement of failing systems) to determine if they are sufficient to protect coastal ecosystems and recommend changes to local governments.

P6-1. Develop and implement a public education plan, targeting specific audiences, in cooperation with federal, state and local public outreach experts and environmental education.

P7-1. Review existing data and reports and the recommendations of the Monitoring Workshop to identify shell fishing or bathing area in need of further assessment.

P7-2. Perform bacterial surveys of harbors and embayments to identify contaminated shellfish areas and potential sources of pathogens as required by the National Shellfish Sanitation Program.

P7-3. Use seasonal or conditional certification of shellfish harvest areas, as may be warranted by water quality variations, under guidelines provided by the National Shellfish Sanitation Program.

P7-4. Meet annually with health directors of coastal municipalities to refine monitoring and bathing beach closure protocols and share information

P7-5. Evaluate existing monitoring programs and, as necessary, make recommendations for enhancements.

P7-6. Conduct a workshop to determine appropriate and consistent methods for bathing beach monitoring and laboratory analysis and work to adopt, if feasible, common methods.

P7-7. Implement the recommendations of the LISS Monitoring Plan to enhance pathogen monitoring.

P7-8. Develop and conduct a dry and wet weather sampling program for specific drainage basins. Both states will evaluate this pilot program for possible expansion.

P7-9. Assess the impacts of identified point and nonpoint sources and assign priorities to areas where management actions are most likely to be beneficial. Priority criteria will include viability of the resource, feasibility and cost-effectiveness of management. Enhance state bacterial surveys of harbors and embayments to identify contaminated shellfish areas and potential sources of pathogens.

P7-10. Support the efforts to develop a better understanding of the relationship between pathogen indicators and the risk to public health such as the National Indicator Study.

P7-11. Along with supporting the National Indicator Study, investigate funding for a regional epidemiological survey to determine the relationship between waters of varying indicator quality and public health.

TOXICS CONTAMINATION

T1-1. The states of Connecticut and New York and the Army Corps of Engineers will continue to regulate dredging and the disposal of dredged sediments through the existing permit programs.

T1-2. The states of Connecticut and New York and the EPA will continue their pretreatment programs to ensure that toxic discharges to sewage treatment plants are controlled. The states of Connecticut and New York, through their Pollution Discharge Elimination System Programs, will continue to ensure that facilities comply with their permit limits.

T1-3. The states of Connecticut and New York and the EPA will apply pollution-prevention techniques, as appropriate, to both direct and indirect discharges of toxic substances by emphasizing wastewater minimization, recycling of wastewater, and alternative processes and chemicals to reduce toxicity and toxics loads and to minimize effects on all environmental media.

T1-4. The states of Connecticut and New York will review municipal and industrial discharge permits to surface waters to reduce the allowable concentrations of toxic pollutants from the previous permitted values.

T1-5. The LISS will encourage adequate funding to continue and expand pollution prevention site visit programs targeting industrial dischargers to the Sound and its tributaries.

T1-6. As part of the NY-NJ Harbor Estuary Program, total maximum daily loads, wasteload allocations for point sources, and load allocations for nonpoint sources will be developed to ensure that water quality standards for mercury are met in the Harbor, the East River, and Long Island Sound.

T1-7. As part of the New York - New Jersey Harbor Estuary Program, the states of New York and New Jersey will establish water quality-based effluent limits for copper, mercury, and six other toxic metals, as necessary. Permits will be subsequently modified.

T1-8. Support education on the environmental impact of using home, garden, and commercial hazardous chemicals and pesticides and continue to provide guidance on how to minimize use of these chemicals and properly dispose of them through household hazardous waste collection.

T1-9. Evaluate mass loadings of toxic contaminants and determine their relationship to ambient water and sediment quality.

T1-10. Identify and assign priorities to toxic substances which should be banned from use and for which *virtual elimination of discharge* should be the goal.

T2-1. The LISS will review the National Oceanic and Atmospheric Administration (NOAA) 1991 sediment chemistry and toxicity survey results of harbors and embayments, when available in the Spring 1994.

T2-2. The LISS will provide a preliminary review of the data on sediment contamination on a site-by-site basis. State and federal experts will evaluate the problem at each site and recommend additional assessments needed to fully characterize the problem, ascertain the need for and feasibility of remediation and prepare a remediation plan.

T2-3. The City of Glen Cove plus their Review Committee will evaluate the contamination of Glen Cove Creek.

T2-4. The LISS will review and evaluate sediment remediation approaches developed in the Great Lakes ARCS Program and HEP.

T2-5. Conduct further assessments and develop site plans addressing the feasibility, technical approach, cost and value of conducting remediation activities for Black Rock Harbor and Glen Cove Creek, where data may be sufficient to conduct case study analyses. Recommend other harbors for characterization and feasibility studies to be conducted at a rate of two harbors per year.

T3-1. The LISS will advocate the coordination between the states of Connecticut and New York to review health risk and advisory recommendations and formulate plans to ensure consistency.

T3-2. Develop strategies for controlling loadings of contaminants for which seafood consumption advisories have been issued.

T3-3. Develop a strategy for identifying toxic substances of human health risk concern in Long Island Sound seafood species and tolerance levels for those substances.

T4-1. The mussel watch and benthic surveillance components of NOAA's Status and Trends Program and the EPA's Environmental Monitoring and Assessment Program provide regular and systematic sampling of contaminant levels in the Sound.

T4-2. A monitoring workshop was held to integrate findings of the LISS and develop a comprehensive, Soundwide monitoring plan for toxic substances.

T4-3. Under the auspices of the New York- New Jersey Harbor Estuary Program (HEP), the U.S. Army Corps of Engineers has agreed to develop a work plan and budget to develop system wide models for PCBs, mercury, and other toxic pollutants that will provide the technical foundation for comprehensive efforts to eliminate these contamination problems in the Sound-Harbor-Bight system. The Corps of Engineers and other participants have agreed to seek the funding necessary to complete these models. Special attention will be directed to fully account for nonpoint sources of mercury.

T4-4. Monitoring initiatives will be coordinated with the EPA Regional - Environmental Monitoring and Assessment Program (EMAP) to further the understanding of sediment toxicity and benthic community structure gradients in western Long Island Sound.

T4-5. Conduct site-specific characterization surveys of water, sediment and biota in harbors where active sources of toxic substances are believed to persist at a rate of two harbors per year.

T4-6. Identify sources and sites of PCB loadings to the Sound ecosystem from in-Sound and NY-NJ Harbor Estuary sources. Focus on reducing and eliminating PCB loadings on a priority basis, concentrating on areas of known contamination such as Black Rock Harbor.

T4-7. Monitor contaminant levels in selected estuarine organisms to ascertain their effects on the biology of the species and their effects on the edibility of the species.

T4-8. Implement the recommendations from the LISS Monitoring Plan to improve contaminant monitoring.

T5-1. The relationship between organism body burdens and their toxic response needs to be investigated as an important mechanism of toxic impact.

T5-2. Trophic level transfer and bioaccumulation effects of contaminants up the food chain need to be quantified to better manage both the aquatic community and human health risk.

T5-3. While toxicity testing of sediments and waters is an efficient means of identifying toxicity problems, the relationship between toxicity and specific causative agents needs to be determined.

T5-4. Evaluate the use of an ecological risk assessment approach, demonstrated in the LISS Black Rock Harbor Action Plan Demonstration Project, for more widespread application to identify toxicity and its sources in embayments and harbors of the Sound.

T5-5. Continue to monitor finfish and crustaceans of the Sound with emphasis on determining population response to low dissolved oxygen.

FLOATABLE DEBRIS

F1-1. Continue implementation of long-term CSO abatement programs to manage or eliminate all CSO areas remaining in the Long Island Sound region.

F1-2. Control discharge of stormwater from industrial, construction, and municipal activities in accordance with EPA's national program regulations.

F2-1. Continue to implement the *Pack It In/Pack It Out* anti-litter campaign.

F2-2. The New York-New Jersey Harbor Estuary Program has developed detailed short- and long-term floatable debris action plans for the New York-New Jersey Harbor.

F2-3. National Beach Cleanup Program. As part of this program, annual cleanups of Long Island Sound shorelines have taken place since 1988. This program costs $10,000 per year per state to coordinate and support volunteer efforts.

F2-4. Continue to implement *Clean Streets/Clean Beaches* anti-litter campaign.

F2-5. Conduct a demonstration project to encourage proper solid waste handling and recycling at five marinas.

F2-6. Expand involvement in *Coastweeks* program to include a second beach cleanup in the spring, prior to the beach season.

F2-7. Continue to coordinate volunteers to paint stenciled messages on storm drains, such as *Don't Dump - Drains to Long Island Sound.*

F2-8. Maintain clean beaches and minimize resuspension of debris back into Long Island Sound waters by: -Cleaning beaches in the evening to prevent resuspension overnight; -Using solid waste receptacles with lids instead of the open mesh type; -Providing recycling containers in convenient locations; -Using environmentally responsible containers for food and beverages at concession stands.

F2-9. Distribute a directory of volunteer groups in the Long Island Sound watershed that work on projects and activities to reduce marine debris.

F2-10. Encourage the public and manufacturers to promote recycling, use less packaging, and substitute products made from degradable material whenever possible.

F2-11. Encourage marina operators to accept responsibility for litter control and recycling.

F2-12. Require floatation materials that are resistant to decomposition and fragmentation.

LIVING RESOURCES AND THEIR HABITATS

L1-1. Connecticut, New York, and federal agencies will continue to pursue restoration of degraded habitat.

L1-2. Through Connecticut's coastal permit programs and consistency with the CT Coastal Management Act, applicants may be required to protect, restore or enhance aquatic resources.

L1-3. Connecticut preparing a tidal wetland management plan that includes an identification of potential wetland restoration sites.

L1-4. Connecticut will continue the Coves and Embayments Restoration program to restore degraded tidal and coastal embayments and coves.

L1-5. Connecticut, New York, and federal agencies currently administer programs for the restoration of habitats other than tidal wetlands such as dunes, submerged aquatic vegetation, and coastal woodlands.

L1-6. New York is phasing out, and Connecticut prohibits, maintenance ditching of mosquito ditches in favor of selective use of open marsh water management techniques to control mosquitos and restore pools and ponds on tidal wetlands.

L1-7. Coastal America, a cooperative effort of several federal agencies, is conducting a study in Connecticut to evaluate the impacts of transportation facilities upon ten tidal wetland sites. This study is sponsored by the CTDEP and undertaken by the USACE. When the study is completed, restoration plans will be developed for those sites where a transportation facility is shown to be the cause of degradation. Restoration is expected to be implemented through a combination of ISTEA, Water Resources Development Act, Long Island Sound Cleanup Account funds, New York's Environmental Protection Fund, and, where appropriate, natural resources damages recovered under CERCLA or OPA90.

L1-8. Connecticut's Coves & Embayments Program will complete nine restoration projects in progress and commitments to begin three new projects.

L1-9. Connecticut and New York should continue to pursue the use of funds from the following programs, and explore additional funding sources, to support restoration and enhancement activities described in the previous recommendation: The Land and Water Conservation Fund, the Intermodal Surface Transportation Efficiency Act (ISTEA) Enhancement Program, the Partners in Wildlife Program,§ 319 of the Clean Water Act, Army Corps of Engineers Section 22 Planning Funds, the Water Resources Development Act, National Coastal Wetlands Conservation Grants, the North American Waterfowl Management Plan, Connecticut's Long Island Sound Cleanup Funds, and the Coastal Zone Management Act.

L1-10. The rapid displacement of native brackish and fresh tidal plant communities on the Connecticut River has been identified as the single most significant habitat problem in this estuary. A specific restoration program for the control of common reed in these tidal wetlands needs to be implemented to check and reverse the spread of common reed and develop the most efficient means of effecting this restoration. Control techniques need to be evaluated for the full range of wetland habitat types on the river. Baseline surveys will be established and post-control monitoring over multiple years will be conducted.

L1-11. New York should continue to phase out maintenance ditching for mosquito control. These programs should receive additional support for selective use of open marsh water management techniques to control mosquitos and restore pools and ponds on tidal wetlands.

L1-12. Obtain long-term funding for Connecticut wetland restoration staff.

L1-13. Connecticut and New York should develop a restoration plan for the full range of coastal terrestrial and estuarine aquatic habitats adjacent to and in Long Island Sound. The restoration plan will include a list of potential restoration projects and a priority listing of projects to be implemented. Preliminary sites identified for future restoration in New York include: City Island ($300,000); Pelham Bay Park ($400,000); Wading River ($50,000); Sunken Meadow Creek ($50,000); Crab Meadow ($50,000); and Mattituck Creek ($100,000). Other sites in New York where costs have not been estimated include Pugsley Creek, Udall's Cove, Oak Neck Creek, Frost Creek, and East Creek. Connecticut has estimated that ten priority sites could be restored for $750,000, or approximately $75,000 per site.

L1-14. New York should strengthen their capabilities for implementing programs that restore degraded habitats. This should be undertaken in cooperation with the implementation of the Long Island Sound Regional Coastal Management Plan.

L2-1. The states of Connecticut and New York and the USACE will continue to implement their permit programs and coastal consistency provisions of states' Coastal Management Programs to regulate use and development of aquatic resources and critical habitats such as tidal and freshwater wetlands, intertidal flats, submerged aquatic vegetation beds, beaches, and dunes.

These programs also regulate dredging and the disposal of dredged sediments at designated sites in Long Island Sound. Open water disposal is only permitted at the designated open water sites and may only occur if the disposal will not cause adverse impacts to estuarine organisms.

L2-2. Connecticut will continue to reduce habitat degradation caused by storm water runoff projects (e.g. chronic dilution effects and sedimentation) through the goal of retaining the first one-inch of runoff.

L2-3. Connecticut and New York have programs to acquire by easement, fee simple acquisition, or other means habitats important for populations of plants and animals. These programs include the development of priority listings for acquisition and protection.

Connecticut and New York have land acquisition and management programs that use state funds and federal fund programs such as the Land and Water Conservation Fund, the National Coastal Wetland Conservation Program, and the North American Waterfowl Management Plan to protect and acquire coastal lands and wetlands.

L2-4. The USFWS maintains a national system of refuges, which includes the Stewart B, McKinney National Wildlife Refuge in Connecticut (i.e., Salt Meadow, Chimon Island, Sheffield Island, Goose Island, Milford Point and Falkner Island Units) and Long Island National wildlife Refuge Complex in New York (i.e., Oyster Bay and Target Rock units).

L2-5. Congress has authorized the creation of the Silvio Conte Connecticut River National Fish and Wildlife Refuge within the Connecticut River Watershed for the purpose of conserving, protecting and enhancing the Connecticut River Valley populations of plants, fish, and wildlife; preserving natural diversity and water quality; fulfilling international treaty obligations relating to fish and wildlife; and providing opportunities for scientific research and education.

L2-6. Connecticut has established a Migratory Bird Conservation Stamp Program, the proceeds of which can be used for acquisition and management. The newly created state income tax form check off for endangered species, natural areas preserves, and watchable wildlife creates a fund that can be used for the identification, protection, conservation, management, and education activities related to the above listed wildlife and habitats.

L2-7. Create a Long Island Sound Reserve System consisting of areas of land and water of outstanding or exemplary scientific, educational, or biological value to reflect regional differentiation and variety of ecosystems and to include representatives of all of the significant natural habitats found in the Sound. Where appropriate, sites will be selected from existing lands and wetlands held for conservation purposes so that acquisition funds will be directed towards those lands in private ownership that are needed to complete the reserve system.

The primary activities in the recommendation include site identification (2 years) and site protection through the development of management plans, acquisition where necessary, and site management.

L2-8. Connecticut and New York should continue to acquire or protect through less than fee simple means, significant coastal habitats through funding sources such as the Land and Water Conservation Fund, the National Coastal Wetland Conservation Program, the North American Waterfowl Management Plan, Connecticut's Recreation and Natural Heritage Trust Program, Connecticut's Migratory Bird Conservation Stamp Program, New York's Environmental Protection Fund, and, where appropriate, natural resource damages recovered under CERCLA or OPA90.

L2-9. Acquire and protect those sites that are considered for acquisition in the New York State Open Space Conservation Plan. Sites include Oyster Bay Harbor ($5 million); Porpoise Channel ($2 million); Plum Point ($1 million); Udall's Cove ($8 million). Other sites on Long Island Sound that are among the state's highest priority acquisition sites include: Bronx River Trailway, Udall's Ravine, Alley Creek ($750,000); Long Creek and Mattituck Creek ($340,000); Premium River ($750,000); and Cedar Beach Creek ($186,000).

L2-10. Acquire and protect those sites that are considered priorities for acquisition in Connecticut. The Great Meadows site is the highest priority. (See also Ongoing Programs portion of this table in the CCMP.)

L2-11. Encourage activities of existing Long Island Sound-specific land trusts and encourage formation of new trusts, to seek donations and easements of localized habitat areas for the plants and animals of Long Island Sound.

L3-1. Connecticut, New York and The Nature Conservancy will continue the Natural Diversity Database in Connecticut and the Natural Heritage Program in New York. These programs collect, maintain, and update information pertaining to significant terrestrial and aquatic habitats.

L3-2. The USFWS will continue the Southern New England-New York Bight Coastal and Estuary Project. The project focuses on assessing and monitoring the regional geographic distribution and population status of a large number of key species called *Species of Special Emphasis* and their habitats including evaluating the threats to physical integrity of these habitats and the viability of species populations. Primary objectives are to determine and delineate those regionally important habitats and species populations requiring both immediate and long term protection, conservation, enhancement, and restoration.

L3-3. The NYSDEC will, on a pilot basis, develop a site-specific habitat management strategy for the Oyster Bay/Cold Spring Harbor complex. Phase II will entail implementation of the identified strategy.

L3-4. Connecticut is identifying wetland complexes of statewide significance and general wetland protection strategies for areas located in Long Island Sound and the Connecticut River. This project has been funded by the EPA under §104(b) of the Clean Water Act.

L3-5. Develop a nomination document to recommend the designation of the Connecticut River estuary as a *Wetland of International Importance* for the purpose of establishing a formal designation of this area to recognize the ecological significance of this ecosystem and to foster increased protection of its significant habitat complex and living resources.

L3-6. Develop a strategic plan for the estuarine portion of the Connecticut River that will identify habitat and species issues/problems, monitoring, and research needs and recommendations to foster increased protection of this nationally significant ecosystem.

L3-7. Develop and periodically update a list of significant habitats, habitat complexes, and sensitive areas for protection and management. When completed, habitat management plans will be developed for these areas. In New York this should be undertaken in cooperation with the implementation of the NYSDOS Long Island Sound Regional Coastal Management Plan.

L3-8. Expand the Southern New England-New York Bight Coastal and Estuary Project to: 1) include the watersheds of Long Island Sound; and 2) reexamine the habitat complexes previously identified in Long Island Sound based upon the most current listing of Species of Special Emphasis. Examine the complexes more carefully to fine tune the management recommendations and implement these recommendations through state, county and municipal agencies.

L3-9. Federal habitat programs should develop a watershed approach to protection of living resources of Long Island Sound and their habitats, such as development of a Connecticut River/Long Island Sound Management Unit by the USFWS.

L3-10. Designate portions of the Connecticut River estuary as a National Estuarine Research Reserve. A reserve designation will result in promoting research that is directed towards resource management issues and provide facilities and programs for public education and interpretation.

L4-1. Connecticut, New York, and federal agencies will continue to implement their Endangered Species Programs in order to protect endangered and threatened species that live in and adjacent to Long Island Sound.

L4-2. Develop a list of endangered and threatened invertebrates. Maintain and update the diversity database. Periodically revise the list of threatened and endangered species. Expand the monitoring program, identify essential habitats, and develop recovery plans.

L4-3. Develop legislation or regulations in New York state that will minimize disturbance to the essential habitats of rare plants and animals.

L4-4. Revise and publish a list of rare and sensitive species associated with the coastal lands and waters of Long Island Sound.

L5-1. Development and implementation of fishery management plans, including research, monitoring, and conservation law enforcement activities.

L5-2. Management of shellfish aquiculture activities including resource monitoring.

L5-3. Improvement of anadromous fish passage opportunities including associated research and monitoring activities.

L5-4. Wildlife management, including research and monitoring activities in support of management programs.

L5-5. Activities that minimize mortality due to entrainment and impingement of eggs, larvae, and juvenile and adult aquatic organisms at industrial facilities.

L5-6. Define, revise, and coordinate the establishment of seasonal restrictions for dredging that minimize adverse effects on aquatic organisms, especially finfish and shellfish and their habitats.

L5-7. Enhance implementation of interstate fishery management plans for Long Island Sound fishery resources.

L5-8. Expand efforts to bypass obstructions to anadromous finfish migrations on Connecticut tributaries to Long Island Sound and the Connecticut River by constructing or installing fishways or fishlifts.

L5-9. Enhance municipal shellfish restoration programs.

L5-10. Enhance the Connecticut Oyster Restoration Program on public beds in state waters by stocking settling habitat (cultch) and conducting related activities (e.g., resource sampling).

L5-11. Develop a marine biotoxin assessment program for shellfish.

L5-12. Develop artificial reefs in appropriate areas of New York waters to increase fishing opportunities, consistent with the New York State Artificial Reef Development Plan. Plans have been developed to construct reefs in New York waters of Long Island Sound off Matinecock Point, Eatons Neck, Miller Place/ Mt. Sinai, and Mattituck Inlet.

L5-13. Develop methods to reduce the incidental take of nontarget species and undersized individuals in fishing activities.

L6-1. Develop measures to prohibit or prevent the induction or release to Long Island Sound and its watershed of known or potentially undesirable species.

L6-2. Implement a management program to reduce abundance of mute swans that are causing losses of certain aquatic habitat types such as submerged aquatic vegetation and certain types of emergent tidal wetland vegetation.

L7-1. Develop an outreach program to inform and educate the public about the plants and animals in Long Island Sound.

L7-2. Develop a citizens monitoring program specific to the plants and animals of Long Island Sound sufficient to aid managers in identifying problems and assessing the effects of management efforts.

L8-1. Connecticut will continue its statewide Geographic Information System (GIS) Program to digitize spatial information and data for resource management purposes.

L8-2. Connecticut has created a Long Island Sound Resources Center for the purpose of : 1) developing the full potential of estuarine related GIS applications; 2) computerizing pertinent literature and data for rapid access through standard word search and spatial basis; and 3) completion of the estuarine geology of Long Island Sound. Additionally, this Center is taking a leadership role in the development of side scan sonar mapping of Long Island Sound that is now being overlaid with benthic community information. This will become the foundation of future living species and habitat management programs.

L8-3. Identify spatial data for living resources and habitat on a Sound wide basis and digitize priority data sets for incorporating into a Sound wide Geographical Information System.

L8-4. Expand the data layers for living resources and their habitats on a Sound wide basis.

L8-5. Develop and maintain state databases and an integrated Long Island Sound database describing the living resources of Long Island Sound and their habitats.

L8-6. Expand the side scan sonar/benthic habitat mapping program in order to create baseline information for management and conservation purposes.

L8-7. Maintain and enhance the Long Island Sound literature, indexing and GIS capabilities of the Marine Sciences Research Center at SUNY, Stony Brook.

L9-1. Connecticut conducts a Sound wide open water fishery survey that has become an integral component of the LISS monitoring and Management programs. In addition, Connecticut conducts a nearshore finfish survey, and surveys of lobster, shad, anadromous herrings, Atlantic sturgeon, and shortnose sturgeon (the latter is listed by the federal government as an endangered species). Other marine surveys include a survey of oyster recruitment (Connecticut Department of Agriculture, Aquiculture Division) and recreational and commercial fishery statistics activities.

L9-2. Connecticut conducts nesting surveys of colonial water birds, Least Tern and Piping Plover, Osprey, waterfowl, a mid-winter eagle survey, and surveys of diamond-backed terrapin, threatened and endangered terrestrial species, and other species of special concern.

L9-3. New York conducts an American lobster mortality project funded by the LISS. In addition, New York conducts the NMFS's Recreational Fishery Statistics Survey, surveys of commercial fishery landings, seabird surveys, (e.g., ospreys, piping plovers, least terns), surveys of threatened and endangered species and species of special concern, and other surveys as needed.

L9-4. Connecticut should pursue the construction and staffing of a marine science technology center at Avery Point with a research focus on Long Island Sound.

L9-5. Enhance wildlife monitoring activities (e.g., seabirds, waterfowl, and marine turtles).

L9-6. Monitor the status and trends of eelgrass in the Sound and all species of submerged aquatic vegetation in the Connecticut River using remote sensing and ground surveys.

L9-7. New York should initiate a nearshore fishery independent survey of Long Island Sound.

L9-8. Continue the lobster mortality and disease monitoring project in Long Island Sound.

L10-1. Connecticut will continue the Long Island Sound Research fund. This fund is used to foster research that addresses priority management issues in Long Island Sound including living species and their habitats.

L10-2. Connecticut has funded the following living resources and habitat research: evaluation of the causes of declines of eelgrass; assessment of contaminant levels in the greater scaup; changes in the phytoplankton community resulting from nitrogen enrichment; effects of hypoxia on bottom feeding fish; vegetation changes in a restoring tidal wetland; and mapping of benthic communities.

L10-3. Identify priorities for management-oriented research about the living resources of Long Island Sound and their habitats.

PUBLIC INFORMATION & EDUCATION

E1-1. The LISS and state public involvement and education programs are: developing printed and other educational materials for specific audiences; exhibiting LIS materials at regional and local fairs and events; encouraging education and information on the Sound for urban populations; promoting the importance of the Sound's resources to children in the region; and, using public educational material of non-profit organizations.

E1-2. Support research conferences such as: the CTDEP conference to highlight its LIS Research Grant Program; the LIS Watershed Alliance *Citizens' Summit* annual conference on the Sound; and the bi-state LIS research conference sponsored by local universities, Sea Grant programs, and the states.

E1-3. *Coastweeks*, an annual three week celebration of marine and coastal environments is supported by both states.

E1-4. Enhance the LISS and state public involvement and education programs to provide additional funding to build upon the current outreach and education activities with a new focus on interpretation and implementation of the management plan.

E2-1. Incorporate LIS information into all related programs conducted by state staff wherever possible.

E2-2. Provide information to all municipalities on the LISS and the importance of protecting and restoring the Sound. Special attention will be given to coastal municipalities in the form of briefings by state officials to explain exactly how implementation of the plan will affect that particular city or town and how to work cooperatively together to implement the management plan. Briefings will also be held for specific user groups, local officials, and elected representatives.

E2-3. Assess opportunities for training and educating the environmental decision-making community and provide technical information and assistance on implementation of the plan to the regulated community.

E2-4. Utilize the Bi-state Marine Resources Committee to ensure Long Island Sound related legislation moves on a parallel track in both Connecticut and New York and to help educate local governments and the public about the importance of the Sound and the successful implementation of the LISS recommendations.

E2-5. Pursue reestablishment of funding for the Long Island Sound Resource Center at Avery Point and further development of a similar resource center in New York to serve as clearinghouses and depositories for information about the Sound and investigate ways to improve funding for these centers.

E3-1. Encourage public participation in activities relating to the cleanup and protection of the Sound and provide support for activities including storm drain stenciling, beach grass planting, and beach cleanups.

E3-2. The LISS Citizens Advisory Committee will continue to provide guidance to the Management and Policy Committee and serve as a link between the public and LISS management agencies. The CAC has been instrumental in providing guidance to the Study and serving as a conduit between the Management Conference and the public.

E3-3. Enhance funding for hands-on activities such as storm drain stenciling, beach grass planting and beach cleanups to allow the public to actively participate in the cleanup and restoration of the Sound and learn more about its ecosystem.

E3-4. Promote citizen involvement in educational and monitoring activities in and around the Sound and consider:
-Providing technical assistance to citizen monitoring groups;
-Developing a reward system for citizens participating in Long Island Sound protection and restoration programs;
-Developing environmental habitat kits and guide maps;
-Production and distribution of videos of Long Island Sound research cruises.

E4-1. Increase efforts to coordinate ongoing governmental and non-governmental public outreach efforts as the plan becomes implemented and encourage private and nonprofit groups to continue to develop and implement Long Island Sound educational and outreach programs.

E4-2. Establish a public outreach work group to guide the implementation of the public involvement and education commitments and recommendations. The work group will work closely with and serve to complement the ongoing public outreach and education efforts of the Citizens Advisory Committee. The group will also be charged with determining funding resources for implementation of public involvement and education recommendations, consulting with staff on tactics, working to provide coordination of public outreach efforts from both an internal and external basis, and assessing program effectiveness.

E5-1. Support ongoing actions that assist teachers in their efforts to integrate LIS issues into existing curricula.

E5-2. Continue Connecticut's Long Island Sound High School Research Grant Program, initiated in 1990. This program provides funding for students to conduct research on the Sound and its watershed.

E5-3. Encourage natural history museums and nature centers to promote Long Island Sound issues within their programs.

E5-4. Work with school districts and, where appropriate, the Department of Education, in Connecticut and New York to develop Long Island Sound educational materials and outreach programs for primary and secondary schools. Help teachers integrate Long Island Sound information into their curricula and provide materials wherever possible. This should include hiring a Long Island Sound education coordinator.

E5-5. Enhance ongoing actions to assist teachers in their efforts to integrate Long Island Sound issues into their existing curricula including the development and support of teacher workshops.

E5-6. Consider a Long Island Sound High School Research Grant Program to provide resources to allow a variety of high schools to conduct research on the Sound and its watershed.

Glossary of Acronyms

A	
ACOE	Army Corps of Engineers
B	
B	Billion
BAT	Best Available Technology
BMP(s)	Best Management Practice(s)
BNR	Biological Nutrient Reduction (Removal)
BOD	Biological Oxygen Demand
C	
CAC	Citizens Advisory Committee
CCMP	Comprehensive Conservation and Management Plan
CD	Compact Disc
CD-ROM	Compact Disc - Read-Only Memory
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (Superfund)
CES	Cooperative Extension Service
CSO(s)	Combined Sewer Overflow(s)
CT	Connecticut
CTDEP	Connecticut Department of Environmental Protection
CTDOA	Connecticut Department of Agriculture
CTDOA/BA	Connecticut Department of Agriculture Bureau of Aquaculture
CTDOHS	Connecticut Department of Health Services
CTDOT	Connecticut Department of Transportation
CVA	Clean Vessel Act
CWA	Clean Water Act
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
D	
DO	Dissolved Oxygen (expressed in milligrams per liter [mg/l])
E	
EIS	Environmental Impact Statement
EMPACT	Environmental Monitoring for Public Access and Community Tracking (EPA)
EPF	Environmental Protection Fund (New York State)
F	
FY	Fiscal Year
FFY	Federal Fiscal Year
G	
GIS	Geographic Information System
H	
HEP	Harbor Estuary Program (New York/New Jersey)
Hg	Mercury

I

ICM	Integrated Crop Management
IEC	Interstate Environmental Commission

I Cont'd

IPM	Integrated Pest Management
ISTEA	Intermodal Surface Transportation Efficiency Act

K

K	thousand
k	kilogram
km	Kilometer
Km^2	Square kilometer

L

l	liter
LA	Load Allocation
lbs	pounds
LIS	Long Island Sound
LISO	Long Island Sound Office (EPA)
LISS	Long Island Sound Study
LISWA	Long Island Sound Watershed Alliance

M

M	Million
MC	Management Committee
MEG	Model Evaluation Group
mg	milligrams
mgd	million gallons per day
mg/l	milligrams per liter
MPRSA	Marine Protection, Research and Sanctuaries Act
MSD(s)	Marine Sanitation Device(s)
MSRC	Marine Science Research Center (SUNY)

N

N	Nitrogen
NDD	National Diversity Database
NDZ	No Discharge Zone
NEIWPCC	New England Interstate Water Pollution Control Commission
NEMO	Nonpoint Education for Municipal Officials
NJDEP	New Jersey Department of Environmental Protection
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NO_x	Nitrous Oxide
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source(s)
NRCS	Natural Resource Conservation Service
NRWI	Norwalk River Watershed Initiative
NY	New York
NYC	New York City
NYCDEP	New York City Department of Environmental Protection
NYDOT	New York Department of Transportation

NY/NJHEP	New York/New Jersey Harbor Estuary Program
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOS	New York State Department of State
NYSOPRHP	New York State Office of Parks, Recreation and Historic Preservation

O

O^2	Oxygen
ODA	Ocean Dumping Act
O&M	Operations and Maintenance
OLISP	Office of Long Island Sound Programs (State of Connecticut)

P

P.A.	Public Act
PCB(s)	Polychlorinated Biphenyl(s)
PIE	Public Information and Education
PS	Point Source

R

RFP(s)	Request for Proposal(s)
RNHT	Recreation and Natural Heritage Trust (State of Connecticut)

S

SAV	Submerged Aquatic Vegetation
SEP	State Environmental Protection (fund, CT)
SFY	State Fiscal Year
SIP	State Implementation Plan
sq. mi.	Square Miles
SUNY	State University of New York
SPDES	State Pollution Discharge Elimination System
SRF	State Revolving Fund
STORET	STORage and RETrieval System (EPA Data System)
STP(s)	Sewage Treatment Plant(s)
SWEM	System-Wide Eutrophication Model

T

TAC	Technical Advisory Committee
TMDL	Total Maximum Daily Load

U

UCONN	University of Connecticut
USACOE	Unites States Army Corps of Engineers
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USDOI	United States Department of the Interior
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

W

WAC(s)	Watershed Advisory Committee(s)
WLA(s)	Waste Load Allocation(s)

WMA	Wildlife Management Area
WPCP	Water Pollution Control Plant
WWW	World Wide Web

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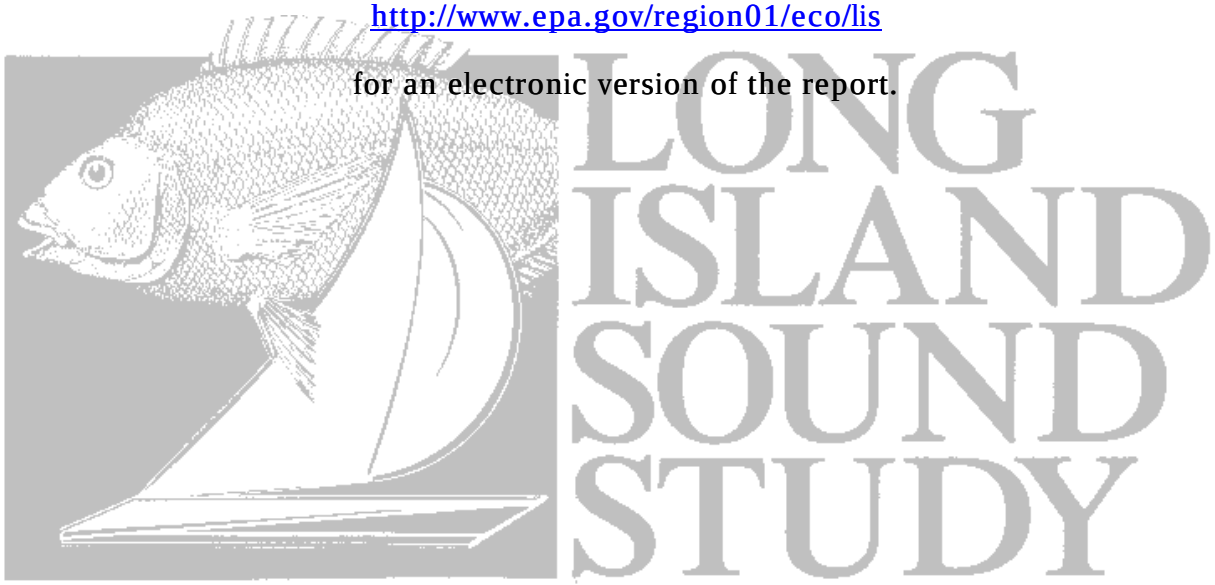


Eliminating Adverse Impacts of Low Dissolved Oxygen in the Sound

The Long Island Sound Study identified low dissolved oxygen (hypoxia) as the most significant water quality problem in LIS affecting critical life cycles of living marine resources. Since 1990, EPA and the states of Connecticut and New York have implemented a phased program to reduce human-caused nitrogen loads to LIS and improve dissolved oxygen levels to meet water quality standards.

CCMP Strategy:

The CCMP identifies a five part strategy to address the elimination of adverse impacts of low dissolved oxygen on the aquatic habitat and living marine resources of the Sound: 1) reducing nitrogen from sewage treatment plants (STPs) and other point sources; 2) reducing nitrogen loads from nonpoint sources; 3) continuing the management of hypoxia; 4) funding implementation of hypoxia management plans; and 5) monitoring and assessing hypoxic conditions in the Sound.

Environmental Indicators/Results/Trends

Total point source nitrogen loads to the Sound have declined significantly over the last 10 years as STPs implement more stringent nitrogen controls. The areal extent and duration of hypoxia have also declined since the late 1980s, but summer hypoxia is still a significant impairment to water quality and continues to affect critical life cycles of living marine resources. Nitrogen loads to LIS from nonpoint sources have also declined over the last 10 years. Developing the ability to directly link declining nitrogen loads to water quality improvements and to changes in living marine resource juvenile recruitment and survival rates is an ongoing challenge and goal of the program.

2001 Highlights:

- The states of New York and Connecticut completed and EPA approved the nitrogen Total Maximum Daily Load (TMDL) in 2001. The TMDL is consistent with the July 1998 ***Phase III Actions for Hypoxia Management,*** the LISS bi-state agreement establishing a 58.5 percent reduction in nitrogen loads to the Sound over a fifteen year period ending in 2014.

- New York City entered into an historic Consent Agreement with the state of New York and EPA to upgrade its four upper East River STPs for nitrogen control and upgrade secondary treatment at the Newtown Creek facility. The City will invest $1.4 billion in capital improvements at these facilities over the next five years, reducing the nitrogen load to LIS from these NY sources.

- Connecticut proposed a General Permit for Nitrogen Discharges in 2001 and formally adopted it on January 1, 2002. Under Connecticut Public Act 01-180, the state established a Nitrogen Credit Exchange program that allows participating municipal STPs to trade nitrogen credits to meet water quality standards, saving funds that would otherwise be necessary for capital upgrades for nitrogen control at all plants.

- The estimated nitrogen load from STPs in the LIS drainage basin that entered the LIS in 2001 is approximately 152,645 lbs/day, a decrease of more than 59,000 lbs/day from base year levels. This significant level of effort has been voluntarily achieved by the states and municipalities over the last ten years by cooperating for the benefit of the environment in anticipation of the adoption of enforceable nitrogen TMDL permit limits.

- As of December 2001, New York's 2001 point source nitrogen load was 111,413 lbs/day, compared with 109,518 lbs/day in 2000. As of December 2001, Connecticut's 2001 point source nitrogen loading was 41,232 lbs/day compared with 46,951 lbs/day in 2000. **Figure 1** shows the total

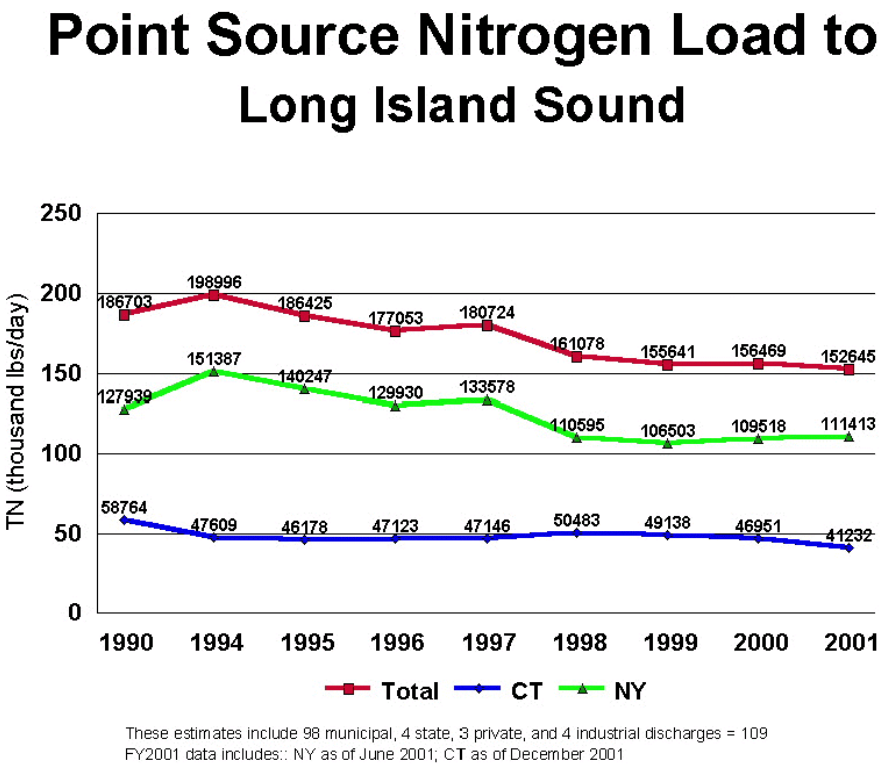
point source nitrogen load and trends in New York and Connecticut since 1990.

- In 2001, the maximum area and duration of dissolved oxygen (DO) levels less than 3 mg/l observed in LIS was 133 mi^2 and 66 days. The fifteen year averages are 201 mi^2 and 56 days. Hypoxic conditions began on or about July 10 and lasted somewhat longer than average in 2001, ending around September 14. **Figure 2** shows the timing and duration of hypoxia in LIS since 1987. **Figure 3** shows the areal extent of hypoxic conditions during August 2001.

- In 2001 the USGS New York District completed and published a report presenting estimates of nitrogen loads entering Long Island Sound from surface water and ground water discharging from Long Island: ***Estimates of Nitrogen Loads Entering Long Island Sound from Ground Water and Streams on Long Island, New York, 1985-96;*** USGS Water-Resources Investigations Report 00-4196, Scorca, M. P. and Monti, J..

- In January 2001, the Westchester County Department of Planning, with six municipalities under the auspices of Watershed Advisory Committee 4, completed ***Controlling Polluted Stormwater: A Management Plan for the Sheldrake and Mamaroneck Rivers and Mamaroneck Harbor***. The plan recommends actions to control nonpoint source pollution through municipal ordinances and comprehensive plans, streams and wetlands stormwater management, and public outreach and education.

Figure 1



Timing and Duration of Hypoxia in Long Island Sound

Figure 2

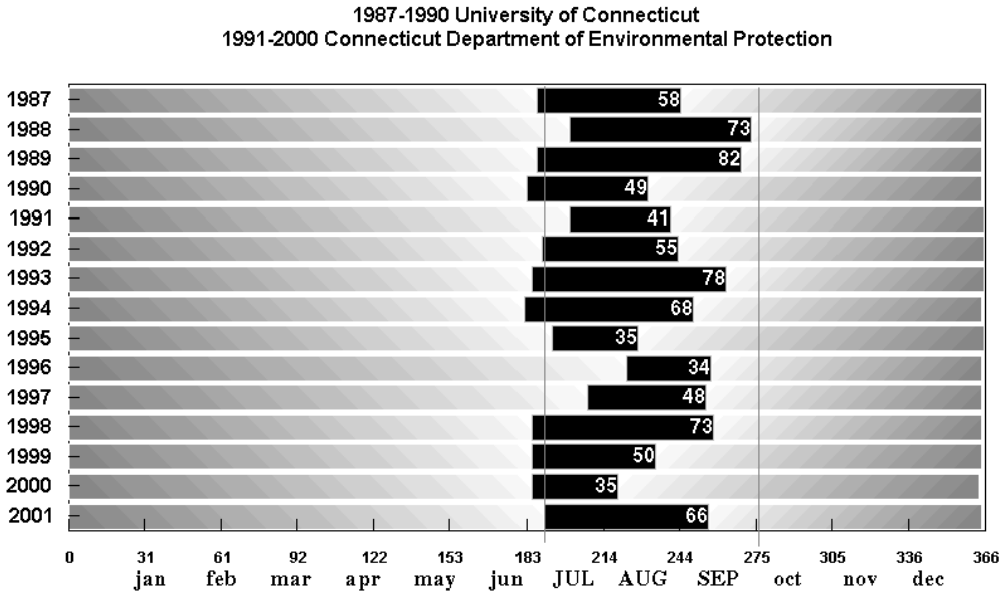
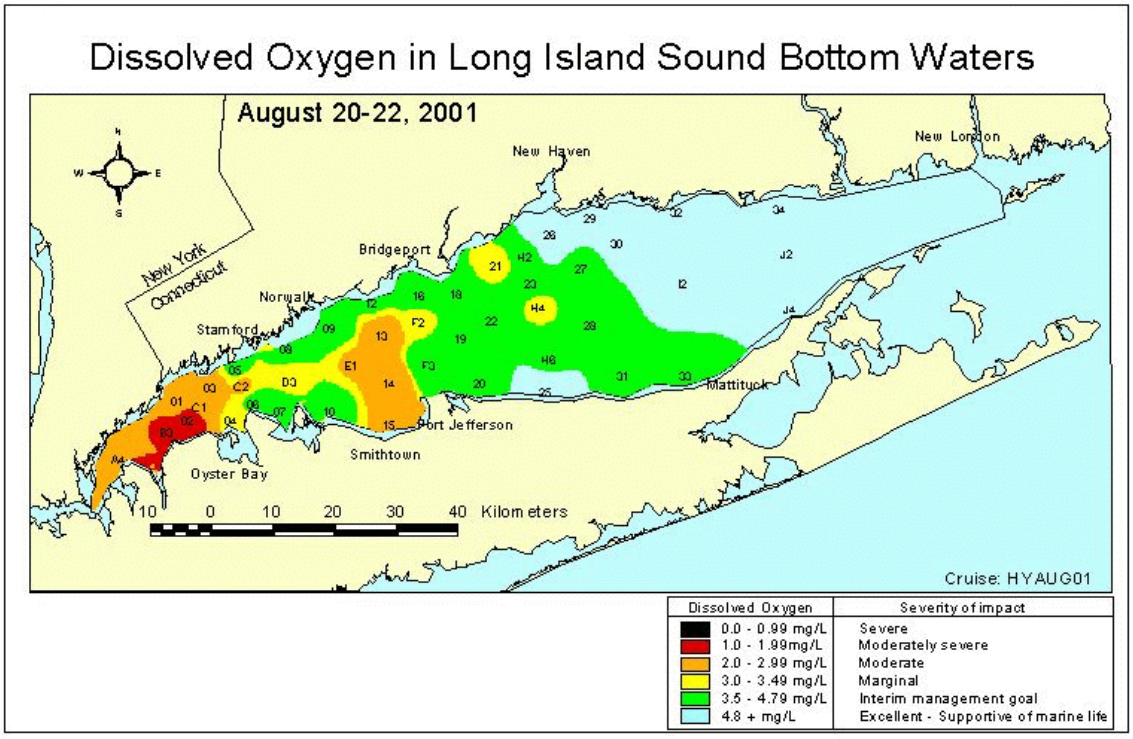


Figure 3



SUMMARY OF CCMP MANAGEMENT ACTIONS: HYPOXIA

H-1. REDUCING NITROGEN FROM SEWAGE TREATMENT PLANTS AND OTHER POINT SOURCES (CCMP TABLE 4, P. 32)

Key Elements: The states of Connecticut and New York committed to reducing nitrogen loads throughout the Long Island Sound basin using a mixed approach of retrofits, pilot studies and upgrades under existing permitting authorities. With adoption of the TMDL, state requirements to remove nitrogen loads will be formalized and expanded well beyond the commitments specified in the CCMP. In anticipation of TMDL adoption, the states have been using a variety of legal, voluntary, and funding mechanisms to promote nitrogen removal from point sources, with considerable success.

Description	2002 Planned Action
The total estimated point source load to LIS in 2001 is 152,645 lbs./day, a decrease of more than 59,000 lbs/day from 1990 base levels. New York loads totalled 111,413 lbs/day; Connecticut loads totalled 41,232 lbs/day.	Continued emphasis on TMDL targets.
In Connecticut as of December 2001, 23 municipal sewage treatment plants have completed upgrades including nitrogen removal at a cost of over $280 million. Six municipal STPs currently have initiated over $71.5 million of upgrades including nitrogen removal. Two municipal STPs have begun designs for upgrades including nutrient removal at costs totalling over $98 million.	Continue to assist municipalities with upgrades to STPs. Implement the General Permit for Nitrogen Discharges and the Nitrogen Credit Exchange.
In 2001 New York City initiated a program for Advanced Wastewater Treatment Management that will establish operational procedures for operating the City's Water Pollution Control Plants (WPCP) during wet weather during construction projects to maximize nutrient removals. The program will also identify new technologies for nutrient treatment.	Continue program in 2002.
The Village of Great Neck Sewer District and Great Neck Water Pollution Control District (GNWPCD) are conducting an engineering feasibility study to evaluate diversion of current flows outside the Long Island Sound Basin. The study was completed in April 2001. The Report shows that it is technically quite feasible to divert entire flow to the Cedar Creek wastewater treatment plant, which discharges into Atlantic Ocean. The GNWPCD decided that it needed more information before committing to the diversion. A detailed engineering study is underway to ascertain costs and more detailed design work.	The engineering study is currently underway and should be completed by the end of 2002 the latest.
Belgrave Sewer District, with assistance of $110,000 in 2001 Clean Water/Clean Air Bond Act Funds, will install upflow fluidized bed technology to evaluate treatment of effluent from a trickling filter facility. The pilot project is near completion. Preliminary results suggested that the system is producing inconsistent effluent results. The technology is feasible but further testing and refinement appears necessary. The District will most likely consider other alternatives to reduce nitrogen.	
Clean Water/Clean Air Bond Act grants in the following amounts have been provided to the following entities to construct new nitrogen removal facilities: Glen Cove, $3.3 million; emergency construction started in 2000. Construction related to nitrogen removal started in 2001. Huntington Sewer District, $3.24 million (in final Plans and Specs stage) Oyster Bay Sewer District, $3.7 million (in final design stage) Kings Park Sewer District, $3.152 million (in Plans and specs stage, SBRs will be used for nitrogen removal) Village of Northport, $977,50 (finalized Plans and specs, ready to go to bid, construction scheduled to begin in 2002) Town of Huntington, Huntington Sewer District, $5.682 million (finalized Plans and specs, ready to go to bid, construction scheduled to begin in 2002) Suffolk County DPW, Port Jefferson facility, $3.048 million (in design stage, will utilize SBRs) NYC $30.828 million for phase I upgrade of the Hunts Point STP. Port Washington Water Pollution Server District, $222,000 to convert existing tankage to create nitrification/denitrification zones to demonstrate nitrogen removal at this trickling filter facility (system went into operation in December 2001; the system is currently accepting 1 MGD, biomass is being established)	

Description	2002 Planned Action
NYSDEC, in conjunction with the Office of the New York State Attorney General, and the City of New York Department of Environmental Protection entered into an administrative order-on-consent (the Long Island Sound/Jamaica Bay Order) to improve water quality in Long Island Sound and Jamaica Bay. The order, which NYSDEC and NYCDEP entered into in the context of resolving ongoing litigation between the State and City, requires NYCDEP to upgrade the City's four Upper East River Water Pollution Control Plants – Hunts Point, Wards Island, Tallman Island, and Bowery Bay – that discharge to Long Island Sound, by installing Step-Feed Biological Nitrogen Removal (BNR). These upgrades are designed to make the WPCPs capable of achieving the nitrogen removal requirements of the LIS nitrogen TMDL, which became effective April 2001. The Consent Order requires NYC to achieve secondary treatment by the end of 2007, instead of 2010. The cost of the proposed upgrade is approximately $1.7 billion, which is approximately $600 million lower than the estimated cost of the upgrade under the former Newtown Creek Order.	
CTDEP's Municipal Facilities Management Program completed major construction projects to rebuild the Norwalk, Waterbury, Thomaston, and New London Sewage Treatment Plants and to improve water quality in the Norwalk Harbor, Naugatuck River, and Thames River. The effluent discharge from the Watertown Fire District to the Steel Brook was eliminated by diverting it through the new Waterbury plant.	
The CT Legislature passed an Act Concerning Nitrogen Reduction in Long Island Sound in July. The Governor signed the legislation into law that gave DEP authority to establish a General Permit for Nitrogen Discharges and set up a Nitrogen Credit Exchange Program. CTDEP held a series of Public Informational Meetings for the Nitrogen General Permit and Credit Exchange in Connecticut in 2001.	Implement the General Permit and institute the first year of Nitrogen Credit Exchange collection and payments.

H-2. REDUCING NITROGEN LOADS FROM NON-POINT SOURCES (CCMP TABLE 5, P.34)

Key Elements: The states of Connecticut and New York have broad authorities to manage nonpoint sources of pollution and have agreed in the CCMP to emphasize control of nitrogen in ongoing state and federal programs. These include state nonpoint source programs (CWA Sec. 319), the coastal nonpoint source control program (CZARA Sec. 6217), and stormwater permitting programs. Most of the site specific studies and activities identified in the CCMP have been completed. The states have committed to using nonpoint source control programs to begin the difficult task of reducing nonpoint sources of nitrogen and anticipate continuing those efforts as the primary means to meet the reduction goal specified in the TMDL upon adoption. In addition to the regulatory and funding programs, the states have made commitments to promote essential technical assistance and training programs through NRCS and NEMO as well as agency watershed and nonpoint programs that have become widespread since development of the CCMP.

Description	2002 Planned Action
Currently CTDEP is implementing 87 active §319 projects from FY96-2001 grants. Twenty-five new projects were funded under §319 in 2001and 17 projects were closed out.	
CTDEP completed a §104(b)(3) a Long Island Sound watershed model, similar to that used by the Chesapeake Bay Program, to generally guide nonpoint nitrogen and watershed management. The model: 1) assesses nonpoint source contributions of nitrogen, phosphorus, and carbon to Long Island Sound, and 2) assists CTDEP in managing these nutrients to reduce hypoxia. The final model report was issued in 2001.	.
EPA continued to provide staff support to the Norwalk River Watershed Initiative in 2001. Implementation of the Norwalk River Watershed Action Plan is guided by the Norwalk River Watershed Advisory Committee, with representatives from EPA, NRCS, CTDEP, the seven watershed communities, several citizen groups, and area residents. From FY98-01, EPA awarded $340,000 in CWA§319 funds to support several high priority implementation activities including a watershed coordinator, riparian buffer restoration, stormwater management, road sand/salt reduction, and septic system outreach and education.	
In January 2001, the Westchester County Department of Planning, with six municipalities, under the auspices of Watershed Advisory Committee 4, completed *Controlling Polluted Stormwater: A Management Plan for the Sheldrake and Mamaroneck Rivers and Mamaroneck Harbor*. The plan recommends actions to control nonpoint source pollution via municipal ordinances and comprehensive plans, streams and wetlands, stormwater management, and outreach and education.	Implement the plan and monitor.

In June 2002 Westchester County completed a project to monitor two of the county's largest tributaries to LIS – Mamaroneck River and Blind Brook. In 2001 the County analyzed the data from the monitoring program and determined nutrient loads to the Sound compared with LIS 3.0 model predictions. The results were presented in a November 2001 report, *Applying the Results of the Manhattan College Water Quality Monitoring Program for Lower Westchester County,* WCPD0010. The Westchester County Planning Department held a briefing for interested parties in December 2001. Information on the County's LIS watershed efforts may be found on their web page at: http://www.westchestergov.com/planning.	
In 2001 Governor Rowland signed Executive Order No. 19 to reduce NOx emissions from more than 60 point sources by nearly 30% by 2003.	In 2003, it is expected the regulations will result in the reduction of nitrogen oxide emission by nearly 3,550 tons per year.

H-3. CONTINUING MANAGEMENT OF HYPOXIA (CCMP TABLE 6, P. 39)

Key Elements: The actions specified in the CCMP primarily reference research, monitoring and modeling activities and the use of that information and those tools to improve understanding and management of hypoxia in the Sound. Much progress has been made in this area to provide the scientific basis for the TMDL and the TMDL specifies the implementation steps recommended in the CCMP to control hypoxia. Finally, the action to continue appropriate modeling and research and periodically review management plans is central to the adaptive management approach promoted in the TMDL.

Description	2002 Planned Action
The final TMDL with WLA was completed by the states and submitted to EPA in January 2001. The TMDL outlines a comprehensive adaptive management strategy to reduce nitrogen loads, assess effects and improve estimates of loading. EPA approved the TMDL in April 2001.	Begin implementation of TMDL.
The Management Committee adopted the SystemwIde Eutrophication Model (SWEM) as a successor to the LIS 3.0 model. The Model Evaluation Group and agencies met in 2001 to review information and data collected as part of the refinement process.	
CTDEP adopted and EPA approved new DO criteria for saltwater in 2001.	NYSDEC and IEC are reviewing the new DO criteria for modification of their DO standards.
EPA has funded NEIWPCC to coordinate a work group charged with improving estimates of nitrogen loading to the CT River from the states of MA, NH and VT. Work in 2001 included synthesis of existing data on water quality, land use and point source discharges	Recommend monitoring and modeling program to improve estimates.

H-4. FUNDING TO IMPLEMENT HYPOXIA MANAGEMENT PLANS (CCMP TABLE 7, P. 41)

Key Elements: The intentions of the CCMP actions were to fully fund existing nonpoint source (CWA Sec. 319 and CZARA 6217) programs, have states supplement state revolving fund programs, and to appropriate additional federal funds for management, emphasizing the Phase III management efforts incorporated in the TMDL.

Description	2002 Planned Action
From 1996-2001, CT committed $350 million for sewage treatment plant reconstruction projects that will benefit LIS and estimates that Clean Water Funding will be adequate to finance Phase III upgrade Total CT funding through 2001 including all completed projects, projects still under construction, and projects still in the design phase totals over $449 million.	For 2002 it is anticipated that the Bond Commission will continue to award CWF funds toward upgrades to STPs for advanced nitrogen removal.
In 2001 the Bond Commission awarded CT Clean Water Fund (CWF) monies to eleven additional STP design and construction projects to be completed over the next three years. A total of $119 million of CWF financing was committed to these projects.	

H-5. MONITORING AND ASSESSMENT OF HYPOXIA (CCMP TABLE 8, P. 4

Key Elements: The CCMP recognized the importance of continuing and expanding monitoring efforts to answer fundamental questions on the health of LIS and to identify trends and changes that may be related to management activities. Most of the recommended monitoring was to be directed towards oxygen and nutrients because of the hypoxia problem in LIS. In addition, several specific monitoring/research projects were listed, most of which were completed shortly after the CCMP was released. Lobsters were identified for special attention because of disease problems that pre-dated the 1999 lobster die-off in Western LIS.

Description	2002 Planned Action
The LISS partners continued ambient monitoring of LIS in 2001. CTDEP continued its ambient monitoring of 48 stations in 2001. NYCDEP performed ambient monitoring of NY waters in western LIS. IEC continued its summer hypoxia monitoring in LIS by collection and weekly measurements of DO, temperature, salinity, chlorophyl a at 21stations, and at a subset of stations, samples were collected for phytoplankton and Pfiesteria in 2001. IEC made weekly data transmissions to LISO, CTDEP, NYCDEP, NYSDEC, MARINE RESOURCES, CSHH and HydroQual. The IEC Annual Report, released each year on January 24, details all monitoring activities. All data is entered into the EPA database, STORET. CTDEP and NYSDEC participated the EPA's National Coastal Assessment in 2001. In addition to its standard water quality parameters, sediment samples were collected once from half of the fixed (sampling point) stations in LIS.	In the summer of 2002 CT and NY will continue to participate in the National Coastal Assessment by recording usual water quality parameters and collect sediment samples from the other half of the fixed (sampling point) stations in LIS.
Hypoxic conditions in LIS were estimated to have extended for a period of 66 days and to cover a maximum area of 133 square miles compared to the 15 year averages of 56 days and 201 square miles.	Continued ambient monitoring of LIS.
CTDEP revised its water quality criteria for DO in 2001 based on the EPA criteria document, *Ambient Aquatic Life Water Quality Criteria for DO (Saltwater): Cape Cod to Cape Hateras*, EPA-822-R-00-012, November 2000.	
The University of Connecticut Department of Marine Sciences at Avery Point, Connecticut, continued to operate and maintain its real-time water quality monitoring network, MYSOUND through a 2001 LISS grant and EPA grants under the EMPACT (Environmental Monitoring for Public Access and Community Tracking) program. The five MYSOUND monitoring stations are located in: 1) the Western Sound, maintained by the Indian Harbor Yacht Club; 2) Hempstead Harbor, maintained by the Coalition to Save Hempstead Harbor; 3) Bridgeport Inner Harbor; 4) Lower Thames River; and 5) Eastern Sound Offshore. The MYSOUND stations monitor surface and bottom waters for dissolved oxygen, temperature, salinity and selected other parameters at specific sites. The MYSOUND website address is: http://www.mysound.uconn.edu.	Continued operation of the fixed monitoring stations through 2002.
In 2001, the LISS funded 3 research projects to study nutrient and phytoplankton dynamics in LIS: 1) isotope tracers of nitrogen in Western LIS (PI- Dr. Fairbanks, Columbia U.); 2) phytoplankton dynamics in LIS (PI- Dr. Ward, UCONN); 3) water column O^2 production and consumption in LIS (PI- Dr. Kremer, UCONN).	These projects will begin in 2002 and extend through 2003.

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, human and environmental exposures lessen and ambient conditions improve. 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/illegal feeding of wildlife, changes in such behaviors may benefit the Sound.

Environmental Indicators/Results/Trends

Current LIS indicators include number of beach closure days and number of vessel pumpout stations. The number of LIS beach closure days reported in 2001equal less than one-half of one percent of all available beach days from Memorial Day to Labor Day (240 beaches x 106 days = 25,440 beach days). Historically, most closures are due to rainfall levels that require presumptive action by local health departments. There is one chronically closed beach (closed for ≥3days/yr. for 3 of last 5 years) in the LIS watershed – Harbor Island Park, Mamaroneck, NY. The number of pumpouts in NY and CT has increased from 43 in 1995 to 127 in 2001.

2001Highlights:

- Phased CSO abatement projects to alleviate pathogen problems continued in both states in 2001. Connecticut anticipates spending $560 million over the next 15 years completing these projects.

- 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.

- New York City has increased capture of runoff in CSO areas from 40 percent last year to 55 percent in 2001, and is almost in complete compliance with EPA's minimum standards for CSO controls.

- As of 2001, Connecticut has 67 land-based pumpout facilities and 9 pumpout boats; of the 76 pumpouts, 75 are accessible to the general public; there are 15 total dump stations, 14 of which are accessible to the public. There are 51 pumpout stations in the New York LIS coastal area. This brings the total number of pumpout stations/boats available in LIS to 127.

- The NRCS conducted the Watershed Collaboration Assistance Project to develop and make available tools to assist stakeholders and communities in working in a collaborative, participatory approach to watershed protection. The project developed draft Community Collaboration Guide Sheets in 2001 and expects to release them in 2002.

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.

Description	2002 Planned Action
New York City: 1) continued its $1.5 billion program to abate CSOs. The CSO program is continuing facility planning and preliminary design for CSO abatement of discharges to tributaries of the East River and Western Long Island Sound. Ongoing comprehensive planning for CSO floatables and settleable solids abatement will also result in future reductions of pathogens discharges to the East River and Western Long Island Sound.; 2) is reviewing recreational water uses and attainability for the City's CSO facility planning and watershed-based controls affecting the Bronx River through its *Use and Standards Attainment Project*. This effort specifically addresses pathogen controls for the City's current CSO abatement plans and evaluating opportunities for improvements in the plans; 3) increased capture of runoff in CSO areas from 18 percent to 55 percent in 2001, and is in almost complete compliance with EPA's minimum standards for CSO controls; 4) continued 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 for the Bowery Bay WPCP service area. This project is likely to result in the recommendation of additional CSO controls, which will further reduce discharges of pathogens to the East River, its tributaries and the City's waters of western LIS.	Construction of one major CSO retention facility on Flushing Creek that will reduce impacts to Flushing Creek, the East River, and Western Long Island Sound and is part of NYC's comprehensive sewer abatement program is scheduled for completion by 2004. Continue planning and initiate planning for the Hunts Point and Tallman Island WPCP service areas.
New Haven has been working toward the removal of all CSO's since early 1981. A plan was developed to set forth a path for the containment of a 10-year storm and elimination of the City's 22 CSO's by completely separating the City's stormwater and sanitary sewer systems. The first phase completed in 1996, eliminated two CSO's at a cost of $15 million. The project has been divided into several geographical areas designated by an alphabetical and numerical identification system, i.e., A, B, C, etc. In 2001 area F-4 entered the construction phase for separating the combined sewer overflows. Clean Water Fund $1,249,850 was awarded in 2001 for the design phase of area "G" of the city's CSO system. In 2001, New Haven also submitted their Long Term Control Plan (LTCP) for CSO control to CTDEP for approval. Bridgeport submitted its LTCP on January 24, 2001. (Total expected state grant & loan funding is over $5 M) The CT State Bond Commission awarded over $4.3 M toward CSO projects statewide in 2001.	A second phase, to be completed in 2002, will eliminate two additional CSO's (area F-4) at a cost of $26 million. The City proposes to eliminate remaining CSO's over 15 years at a cost of $180 million. Allocate funding for additional projects in 2002.
Bronx River CSO Storage Conduit Project will provide storage capacity. Meetings and field investigations have taken place	The East River CSO Facility Plan is expected to be completed in the summer of 2002.
Flushing Bay CSO Retention Facility is an underground storage tank which has a storage capacity of 43 million gallons, 48 MG in the tank and 15 MG in upstream sewers. Phase I construction of the project is complete.	Stage II is scheduled for completion in December 2004.
Hutchinson River CSO Storage Conduit Project will provide storage capacity. Meetings and field investigations have taken place.	The East River CSO Facility Plan is expected to be completed in the summer of 2002.

Alley Creek drainage area improvements/CSO abatement Facilities project has three components. The Alley Creek drainage area improvements, Alley Creek CSO abatement facility, and the Oakland Ravine Stormwater Treatment System. Meetings and field investigations have taken place.	Construction to begin in 2002.
Westchester Creek CSO Storage Tank Project includes construction of 12 MG underground storage tanks.	The East River CSO Facility Plan is expected to be completed in the summer of 2002.

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

Key Elements: LISS has determined that nonpoint sources, including urban stormwater runoff, is one of the two most significant sources of pathogen contamination in Long Island Sound. Urban stormwater runoff containing pathogens can originate from many sources. Therefore, it presents a challenge to manage pathogens from nonpoint sources. Methods of controlling pathogens from nonpoint sources include, but are not limited to: best management practices; permitting activities; changes in building codes; consent agreements; and technical assistance and education.

Description	2002 Planned Action
In 2001 the LISS funded year 2 of the New York NEMO nonpoint source education program for municipal officials for $75,000. The program is described further below under P-6, *Controlling Pathogen Contamination Through Public Education*, page 18, and under E-2, *Public Information and Education*, page 39.	NY NEMO has applied for year 3 funding from the LISS.
The LISS continued to support the Norwalk River Watershed Initiative, guided by the Norwalk River Watershed Advisory Committee. EPA, NRCS, CTDEP, the seven watershed communities, several citizen groups, and area residents comprise the Committee. From FY98-01, EPA awarded $340,000 in CWA§319 funds to support several high priority implementation activities, including the watershed coordinator position, riparian buffer restoration, stormwater management, road sand/salt reduction, and septic system outreach and education.	
The NYSDEC Phase II storm water implementation plan will involve the permitting of many storm sewer systems which discharge to the Long Island Sound. NYSDEC is also looking into a phase-in approach (statewide) and have discussed the possibility of LIS as one of the first areas to begin this effort.	NYSDEC has made some progress, but will need to have SPDES permits in place for these discharges by March 2003.

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

Key Elements: If operating properly, most 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.

Description	2002 Planned Action
NYCDEP continued planning for maximizing wet weather flow to its WPCPs through operation optimization. These actions specifically affect discharges to the East River, its tributaries, and the City's waters of western LIS.	Continue to improve wet weather capture through operational and structural changes to the WPCPs and collection system. Enhance capture for Hunts Point and Tallman Island WPCP service areas. Continue evaluating operational changes in the other drainage areas.
Thomaston, South Windsor, and Salisbury, CT STPs completed installation of UV pathogen control equipment during 2001.	Construction of UV units will continue for the Fairfield and Litchfield, CT STPs.

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

Key Elements: If operating properly, most 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.

Description	2002 Planned Action
The Watertown, CT STP went off line and tied into the Waterbury STP system, which has a state of the art ultraviolet (UV) disinfection unit to eliminate pathogens and reduce the chlorine toxicity resulting from traditional chlorine disinfection systems.	Continue to operate the new facilities and closely monitor for efficiency.

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.

Description	2002 Planned Action
CTDEP received $692,000 in CVA funding in 2001. One additional boat was operational for the 2001 boating season. In CT by the end of the 2001 boating season there were 76 total pumpouts (9 of which are boats) 75 of which are available to the general public and 15 dump stations (including one floating rest room) 14 of which are available to the general public.	A decision on Federal FY 2002 funding for CT is anticipated in April 2002. CT has proposed to construct 1 additional stationary pumpout and provide further O&M funding.
New York State Environmental Facilities Corporation awarded $15,898 in CVA funds in 2001 for three projects in the LIS coastal zone.	Development of a Local Information & Education Grant Program.
The Mystic pumpout boat was operated and maintained by the Towns of Groton and Stonington with a CVA grant. The DEP pumpout boat continued its education and outreach mission exclusively in the Connecticut River for the 2001 boating season.	The DEP pumpout boat will continue its education and outreach mission exclusively in the Connecticut River for the 2002 boating season. It is anticipated that an additional pumpout boat will be purchased by DEP during the Federal FY2002.
There are 51 pumpout stations in the LIS coastal watershed area of New York State. Pumpout station locations are posted on the NY Sea Grant website at: http://www.cce.cornell.edu/seagrant/pumpouts/lipumpouts.html. Several CVA projects were completed in the LIS marine district in 2001: Island View Marina, Suffolk County, Brookhaven Township; and Port of Egypt Marine, Inc., Suffolk County, Southhold Township.	
Publication in the "Embassy Guide" of the locations of pumpouts in all of Long Island Sound was coordinated between staff of the CT and NY CVA programs.	This biennial publication will again be prepared prior to the 2003 boating season
Progress has been made on the establishment of EPA designated no discharge areas in the Pawcatuck River/Little Narragansett Bay complex and for Stonington Harbor all in eastern CT. A consultant has been selected to develop the application to EPA.	Work will proceed on the establishment of no discharge areas for the CT side of the Pawcatuck River/Little Narragansett Bay complex (the RI side is already so designated) and for the Stonington Harbor area.
The LISS Small Grants Program provided funding in 2001 to Friends of the Bay (Oyster Bay) for a bilge sock education program for boaters in the bay area. The project will provide 5,000 bilge socks to raise boaters' awareness of vessel discharges to the Sound.	

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

Key Elements: When they are 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 become a source of pathogens to the Sound. Both states' and local governments must play a role in managing pathogen contamination from individual on-site systems to the Sound.

Description	2002 Planned Action
NYSDEC is using CWA Section 319 funds to support development of an on-site training center. A demonstration facility is located at the campus of the SUNY College at Morrisville, New York. Part of DEC's funds subsidize tuition for public officials that take the training. As of Fall 2001, the administration of the Onsite Training Network has moved to SUNY-Delhi.	A 2002 - 2003 training schedule is expected in March 2002 and will be distributed to DEC Regional Offices and to County Water Quality Coordinating Committees.
The Nonpoint Source Coordinating Committee (NPSCC), coordinated by the NYSDEC Division of Water, NPS Management Section, convenes an On-site Wastewater Treatment System(OWTS) Work Group. The work group is comprised of stakeholders interested in the proper siting, design, installation, and operation and maintenance of septic systems. A white paper was drafted in 2001 with highlights of problematic issues and possible solutions presented to the NY NPSCC in April	A final white paper is expected in April 2002. Actions will depend on stakeholder agencies responsible to the management suggestions from the OWTS Workgroup.
The NYSDEC and NYSDOS are drafting a management strategy for Onsite Wastewater Treatment Systems (OWTS), in conformance with the provisions of the Coastal NPS Management Program under Section 6217 of the CZMA. Specific issues being addressed are the periodic inspection of operating systems, and the possible impact on nitrogen limited waters. Components addressing specific issues were submitted to EPA and NOAA: Periodic inspection and management of existing systems (December 2001), and the possible impact on nitrogen limited waters (November 2001). The Real Property Law "Property Condition Disclosure Act" was amended in the 2001 legislative session to include septic systems use and location identification, and inspection status, at the time of property transfer and signed by Governor Pataki on November 11, 2001.	Continued implementation of the OWTS strategy while awaiting EPA and NOAA approval of Coastal NPS Management Program.

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.

Description	2002 Planned Action
Education of boaters continued to be a focus of the CT 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 2002. In addition a interactive computer/video kiosk is under development.
The LISS reprinted and distributed thousands of copies of a four-part poster series highlighting nonpoint source pollution problems. The posters humorously illustrate four common nonpoint pollution problems for the Sound, including runoff from car washing, fertilizing, leaking automotive oil, and pet waste. The posters were adapted for LIS from the Washington State Department of Ecology's posters for Puget Sound.	Continue to reprint and distribute materials.

The New York NEMO Program delivered locally customized workshops to watersheds and sub-watersheds in Hempstead Harbor and Manhasset Bay, developed and conducted focus workshops pertaining to the EPA Phase II Storm Water regulations and provided a focus presentation to municipal staff regarding reduction of landscaping practices' NPS impacts. In addition, the program expanded to Suffolk County and has achieved a broader reach as the result of its participation on the NYS Nonpoint Source Coordinating Committee and the Nassau County Water Quality Strategy Coordinating Committee.	Expansion of the Program to support additional Long Island Sound local governments, potentially linking intermunicipal efforts in Nassau and Suffolk Counties. This will involve development of new, locally specialized NY NEMO "Linking Land Use to Water Quality" workshop presentations. Goals for 2002 also include creation of new focus topic modules, e.g., compliance with the EPA Phase II Storm Water regulations.
IEC produced its 2001 Annual Report summarizing its tri-state water quality monitoring program and results. 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 2001 for environmental district members. IEC developed a new website at www.iec-nynjct.org.	
NYCDEP produced its annual *Regional Harbor Survey* report for 2000 in November 2001. The report summarizes water quality conditions in NY Harbor, specifically the Upper East River and Western Long Island Sound region. Among other water quality parameters measured, the report indicates that summer-averaged fecal coliform concentrations have fallen dramatically and significantly throughout much of this region of the Harbor over the past 16 years. A regional summary of the report is available on the NYCDEP website at: http://www.ci.nyc.ny.us/html/dep.	

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

Key Elements: Monitoring of pathogens is a tool that will allow assessment of 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. A well-designed monitoring program is an essential element for effective management of Long Island Sound and its watershed.

Description	2002 Planned Action
The *Beaches Environmental Assessment and Coastal Health Act* (BEACH) of 2000, PL 106-284 ensures standards for pathogens that protect human health; establishes monitoring and notification measures, and provides initial development and implementation grants to states. EPA requested and Congress appropriated $5.0 million in FY2001 for this program. On May 30, 2001 EPA published a Federal Register notice of availability of funding for state development grants to begin implementing portions of the Beach Act.	The states of Connecticut and New York will determine appropriate actions to implement Beach Act requirements.
IEC continued to chair 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 members include NY, NJ, CT environmental and health departments, IEC, EPA, FDA, NYCDEP, and county health officials. The RBWG developed a model to predict which areas may be affected by a particular bypass. Timely model predictions can determine whether a discharge occurring at a certain point will affect another area, and if a beach or a shellfish area should be closed. In addition, regional notification protocols are in place.	The IEC will continue to chair the RBWG.
During 2001, 26 beach-days were lost in Nassau County beaches on Long Island Sound. All were pre-emptive closures, i.e., closed due to rainfall that has typically resulted in high coliform levels. Closures involved five beaches, four of which were in Hempstead Harbor (4 days for each beach) and one of which was in Cold Spring Harbor (10 days). There were no beach closures due to pathogen contamination on LIS beaches in Suffolk County during 2001. In Westchester County, there were 136 total beach closure days due to pathogens. Of these, 68 were at Harbor Island Park in Mamaroneck, where a pathogen problem in the Mamaroneck River (which feeds the embayment where the park is located) was present. In 2000, the latest reporting period available, there were no closings at Orchard Beach, the NYC public beach in Western LIS. There were two closing due to high coliform counts at the 11 private East River beaches, but they did not appear to be attributed to NYC point sources. Avian sources, such as geese and sea gulls, have, on occasion, been implicated as important contributors of bacteriological contamination of recreational waters.	Monitoring for pathogens will continue in 2002.

Description	2002 Planned Action
In Connecticut, during 2001, 79 beach days were lost due to closures based on tests showing elevated levels of bacteria (pathogens). There were 404 beach closure days as pre-emptive "Administrative Closures" due to heavy rainfall events and nearby beach closures.	CT municipalities, regional health districts, and CTDEP will continue to monitor for bacteria (pathogens) in 2002.
IEC continued to conduct unannounced effluent surveys at CT and NYS WPCPs that discharge into the LIS portion of the Interstate Environmental District, which includes the counties of Nassau, Suffolk and Westchester in NY and Fairfield and New Haven Counties in CT. These surveys are conducted to check compliance with SPDES permits and IEC water quality regulations, which are included in the SPDES permits. Pathogens monitored include fecal and total coliforms.	IEC will continue to conduct effluent surveys at CT and NY WPCP's; additional pathogens for monitoring include fecal streptococcus and enterococcus.
NYCDEP continued its Harbor Survey program by monitoring *fecal coliform* and *enterococcus* in the City's waters and its waterbodies in Western Long Island Sound. Several East River tributary stations were added to the program in 2001.	Continue Harbor Survey program and enhance enterococcus sampling.
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.	Continue to monitor shellfish beds for health and viability.

Protecting the Sound from the Adverse Effects of Toxic Substances

Toxic substances can cause adverse human and ecosystem health effects, and can result in significant negative economic impacts on the value of the natural resources of the Sound.

CCMP Strategy :

The CCMP strategy to address toxic contamination in LIS has five principal elements: 1) controlling and preventing toxic contamination from all sources; 2) addressing sediment contamination; 3) improving human health risk management; 4) monitoring and assessing toxic contaminants; and 5) conducting research to investigate toxic contamination.

Environmental Indicators/Results/Trends

Overall, toxic emissions in the region and to the Sound have been declining over the last 15 years due to more stringent environmental regulations. Historical contaminant levels as measured in sediments and living marine resources are also showing a downward trend, which is particularly evident for banned or controlled chemicals such as DDT and chlordane. Today, the major sources of toxic chemicals to the Sound are from STPs, industrial discharges, urban stormwater, and atmospheric deposition. Programs strive to reduce chemical discharges and minimize toxicity of effluents. However, the legacy of historical discharges of contaminants often remains in the sediments of Long Island Sound long after discharges cease.

2001 Highlights:

- EPA and ACOE continue work on the Environmental Impact Statement (EIS) for the designation of open water dredged material disposal sites in Long Island Sound. In 2001 a multitude of field studies were completed and reports were finalized. A Working Group of about 40 citizens met to review and comment on the findings of the field work. Due to funding restraints, additional work has not been approved. In the year 2002 it is anticipated that the site selection process will move forward, based on the completed field work.

- CTDEP completed development of a Long Island Sound Sediment Quality Information Database (SQUID) for the waterways and harbors of LIS in which dredging occurs. SQUID is a repository for sediment chemistry data and was compiled from dredging evaluation reports. SQUID enables users to determine where sediment sampling and analysis have occurred and how historic contaminant levels at proposed dredging sites have changed over time.

- In 2001, over 98% of the 84 Connecticut STPs discharging into the Sound or its tributaries passed toxicity testing. This is a 3% increase from 2000 in the number of facilities that discharge treated waste water that is safe for most aquatic life.

- The CT Department of Public Health maintained its general health advisory in 2001 for PCBs in striped bass caught in LIS. The NY State Department of Health maintained its general advisory for PCBs in striped bass, bluefish, blue crabs and American eel taken in LIS west of the Wading River.

- In 2001, EPA approved CTDEP's TMDLs for copper, lead, and zinc for the upper Willimantic River; copper for the Steele Brook, and copper, zinc, ammonia, and chlorine for Transylvania Brook.

SUMMARY OF MANAGEMENT ACTIONS
TOXIC SUBSTANCES

T-1. TOXIC CONTAMINANT SOURCE CONTROLS AND POLLUTION PREVENTION (CCMP TABLE 21, P. 65)

Key Elements: Permit programs and enforcement activity for both direct and indirect discharges, including toxicity testing of those discharges, are responsible for greatly reducing toxic substance loads over the past 25 years. LISS' priority management recommendation for toxic substances is to continue these successful activities, all of which are funded under current programs. Other programs that are designed to prevent pollution and reduce pollutant loads must also be supported as part of a comprehensive program to manage toxic contamination in the Sound.

Description	2002 Planned Action
CTDEP completed development of the Geographic Information System (GIS) project for the Sediment Quality Information Data (SQUID) system for Long Island Sound in 2001. A User Manual has been developed.	Distribution of the Long Island Sound SQUID. A Technical Manual is under development and almost completed.
CTDEP submitted to EPA a TMDL for copper for Steele Brook. EPA approved the Steele Brook TMDL on January 25, 2001.	Follow up monitoring will be conducted under the rotating watershed basin sampling plan.
CTDEP submitted to EPA a TMDL for copper, zinc, ammonia, and chlorine for Transylvania Brook. EPA approved the Transylvania Brook TMDL on March 27, 2001.	Follow up monitoring will be conducted under the rotating watershed basin sampling plan.
CTDEP submitted to EPA a TMDL for copper, lead, and zinc for the upper Willimantic River. EPA approved the upper Willimantic River TMDL on June 6, 2001.	Follow up monitoring will be conducted under the rotating watershed basin sampling plan.
Over 98% of the CT STPs passed toxicity testing in 2001; this is a 4% increase from 2000 in the number of facilities that discharge treated water safe for most aquatic life.	As more STPs upgrade their facilities, the expected goal of 100% discharge passing the toxicity test will be achieved.

T-2. ADDRESSING SEDIMENT CONTAMINATION (CCMP TABLE 22, P. 67)

Key Elements: To begin the process of remediating sediments, LISS will conduct further assessments of toxic contaminant distribution in sediments of western Long Island Sound and embayments identified as having elevated toxic contaminant burdens. Based on these assessments, it will be possible to determine the feasibility, value, and cost of remediating contaminated sediments, where remediation may be necessary.

Description	2002 Planned Action
EPA and the ACOE continued work on the EIS for dredged material disposal site designation in LIS. Several work group meetings were held to present and discuss elements of the EIS. Assessments for sediments, living marine resources, physical oceanography and economics were completed in 2001.	The uncertainty of continued funding places current time lines for completion of the EIS in question.

T-3. IMPROVING HUMAN HEALTH RISK MANAGEMENT (CCMP TABLE 23, P. 68)

Key Elements: The objective of human health risk management is to determine the likelihood that exposure to a toxic substance will have adverse impacts on human health and to estimate the degree of the effects. In the case of Long Island Sound, the states of Connecticut and New York have issued advisories on consumption of selected seafood taken from the Sound. By improving communication of consumer advisories, it is anticipated that public health risk will be improved.

Description	2002 Planned Action
CTDEP continued to support UCONN researchers conducting research and monitoring for air deposition of mercury in LIS.	

T-4. MONITORING AND ASSESSMENT OF TOXIC CONTAMINANTS (CCMP TABLE 24, P. 71)

Key Elements: The LISS toxic contaminant monitoring program will focus on water, sediment and tissue media. The data collected from the monitoring program will be used to answer questions about resource and human health risks and sources of toxic contaminants.

Description	2002 Planned Action
CTDEP and NYSDEC through the Waste Management Institute of SUNY Stony Brook, continued participation in the EPA-sponsored National Coastal Assessment (Coastal 2000) monitoring program in 2001. Elements of the existing NYCDEP harbor water quality survey, the LIS ambient water quality monitoring program, Suffolk County DOHS and the Town of Hempstead water quality monitoring programs have been integrated with the National Coastal Assessment. The program is monitoring and assessing water and sediment quality parameters and biota in LIS.	Continued participation in 2002 is planned.
Under the EIS process for designation of dredged material disposal sites in LIS under MPRSA, in 2001 the ACOE and EPA conducted sampling and characterization of sediments at disposal sites in LIS. Sediments were analyzed for texture, chemistry and toxicity. Summaries of this and other EIS reports: 1) Combined Sediment and Grain Size, July 2001; 2) Identification of Upland Alternative Disposal Sites, July 2001; 3) Economic Significance of Navigation Dependant Industries, October 2001; 4) Dredging Needs Report, October 2001; 5) Sediment Quality Triad Report, November 2001; 6) Essential Fish Habitat Summaries, November 2001; 7) Analysis of CT DEP Trawl Data, November 2001; and 8) Physical Oceanographic Evaluation of Long Island Sound and Block Island Sound 2001 are available on the EPA New England Region website at http://www.epa.gov/region01/eco/lisdreg/rpfs.html.	

T-5. RESEARCH TO INVESTIGATE TOXIC CONTAMINATION (CCMP TABLE 25, P. 73)

Key Elements: Toxic contaminants identified in Long Island Sound are numerous; their pathways to the Sound are varied, and their effects on the environment, marine life and human health are not fully understood. These factors must be understood if effective management is to be accomplished. The CCMP identified these needs are identified as recommendations, though continuation of work begun by LISS through the EPA Long Island Sound Office and other parties should recognize these recommendations as priority research topics.

Description	2002 Planned Action
The Hudson River Foundation continued overseeing the development of the CARP (Contaminant Assessment Reduction Project) project, a model to assess in-place loadings and levels of toxics in New York Harbor. This project is funded through Port Authority of NY and NJ funds. Once competed in 2004, the model will enable managers to more accurately evaluate what toxic source controls are necessary in order to render newly deposited sediments cleaner. The model will be used to develop TMDLs for the Harbor, which could in turn, influence levels of toxics in LIS. The contractor for the CARP was selected and began work in November 2001.	

Under the LISS Research Grant Program, the Marine Science Research Center, SUNY Stony Brook research project of the effects of trace metals, organic carbon and inorganic nutrients in surface waters of LIS on phytoplankton growth began in 2001. (Dr. Wilhelmy, P.I.) The LISS-supported research project to investigate metal contaminant concentrations in LIS sediments over time (Dr. Varekamp, P.I.) also began in 2001. These two-year research projects are ongoing.	In 2002 the LISS will fund SUNY Stony Brook to conduct a research project to investigate new approaches for assessing mutagenic risk of contaminants in LIS (Dr. McElroy, P.I.)
The Summer 2000 edition of the *Journal of Coastal Research*, Vol. 16, No. 3 published 10 studies of regional processes, conditions, and characteristics of the LIS sea floor that were conducted since 1995 under the auspices of the USGS Center for Coastal and Marine Geology, Woods Hole, MA. The multidisciplinary project, in cooperation with CTDEP, was designed to understand the distribution of bottom contaminants and benthic habitats in LIS. In 2001, work continued on data analysis and synthesis.	

Reducing Floatable Debris in the Sound

Litter, debris, and trash floating in LIS coastal waters and washing up on LIS shorelines can be a nuisance to, or hazard for boaters, beach-goers, bathers, fishermen, and other recreational or commercial LIS users. Floatable debris can harm wildlife and living marine resources, and it diminishes the aesthetic enjoyment of the Sound as well as the surrounding environment.

CCMP Strategy

Floatable debris contributes to unsightly, unsanitary, or unhealthy beach and shoreline conditions, and can adversely affect environmental quality and the health of living marine resources, water-dependent birds and other aquatic life, This type of pollution can reduce the market value of shoreline property, affecting the regional economy, and can also adversely affect public perception of the health of the Sound. This CCMP priority area identifies two principal management actions: 1) controlling floatable debris from combined sewer overflows (CSOs) and storm sewers; and 2) increasing floatable debris cleanup efforts.

Environmental Indicators/Results/Trends

Programs in place to control sources of debris to the Sound include regional or statewide anti-litter campaigns, beach cleanup and adopt-a-spot programs, municipal street sweeping, refuse pick-up and recycling programs, solid waste facility management practices, public awareness campaigns, and enforcement of local ordinances. Indicators for this element include: miles of beaches cleaned; tons of trash removed; and numbers of volunteers involved. Hundreds of volunteers around the Sound annually spend thousands of hours collecting, sorting, recording, and properly disposing of thousands of pounds of debris from miles of LIS beaches. Plastics account for more than 50 percent of debris collected, with cigarette butts vastly outnumbering all other trash picked up.

2001 Highlights:

- Efforts to control combined sewer overflows (CSOs) and improve stormwater management, described under *Pathogens*, are also helping to reduce the amount of litter reaching the Sound.

- As a result of *National Beach Clean Up Day* in September 2001, 1,629 volunteers from New York removed 39,351 pounds of debris from 73 miles of the shoreline along the Sound at 43 sites. Due to the events of September 11, eight organizations cancelled their cleanups in New York, as many participants and beach captains were called to duty in response to the tragedy.

- In Connecticut, 331 volunteers removed 3,050 pounds of trash from 14 miles of shoreline. The scheduled cleanup at Sherwood Island State Park in Westport, CT was cancelled due to the park's designation as a staging area for the September 11 emergency response. Half the usual number of Connecticut participants volunteered in 2001, as a number of them responded to the September 11 emergency.

- CTDEP completed development of its Clean Marina Program and updated its *Best Management Practices for Coastal Marinas* guide in 2001. The Clean Marina program will certify marinas that take steps to reduce the impacts of nonpoint source pollution and improve the environmental quality of the facility and adjacent waters. The guide encourages marina operators to accept responsibility for litter control and recycling. CTDEP plans to begin certifying marinas for the 2003 boating season.

- The amount of litter entering area waters from New York City has continued to decrease from 1995 baseline levels through the City's street sweeping efforts. The amount of streets rated *Acceptably Clean* was 85 percent in 2001, compared to 77 percent in 1995. The number of

streets rated *Filthy* in 2001 was 1.7 percent, down from a 1995 level of 4.9 percent.

- A floatable debris collection system has been installed by the City of New Rochelle at the mouth of Stephenson Brook. The County of Westchester is assessing the installation of collection system(s) on county-owned lands.

NYCDEP Floatables Collection Program

SUMMARY OF CCMP MANAGEMENT ACTIONS: FLOATABLE DEBRIS

F-1. CONTROLLING FLOATABLE DEBRIS FROM CSOs AND STORMWATER SEWERS (CCMP TABLE 38, P. 96)
Key Elements: Ongoing programs conducted by state and municipal governments to reduce floatable debris; and long-term CSO abatement and NPDES stormwater permitting programs.

Description	2002 Planned Action
CTDEP completed development of its *Clean Marina* program in 2001. As part of this new initiative, CTDEP updated its *Best Management Practices for Coastal Marinas* guide. The guide provides best management practices for marinas to reduce pollution potential, and includes a section on reducing floatable debris. The *Clean Marina* program includes a recreational boater outreach and education component, part of which addresses control of solid waste on boats. Laminated *Clean Boating Tips* cards detailing methods to minimize the environmental impacts of common boating practices are part of the program.	CTDEPs *Best Management Practices for Coastal Marinas* encourages marina operators to accept responsibility for litter control and recycling.
New York City continues to implement actions for reducing floatables in its harbor waters and neighboring water bodies including Western Long Island Sound. NYCDEP developed a comprehensive plan to control floatables in 1997 that embodied EPA's Nine Minimum Controls as well as other activities such as improving catch basin effectiveness, booming/skimming, and CSO abatement, all of which are contributing to improved floatables conditions. In 2001 New York City: 1) continued to improve the effectiveness of its catch basins to prevent street litter from entering combined and separated sewers that would eventually be discharged as floatables to harbor waters. 2) continued to increase the number of hooded catch basins and to evaluate potential improvements to their effectiveness of retaining litter through the catch basin inventory program; 3) progressed with planning, design and construction of CSO retention facilities for the East River and Western Long Island Sound that will include discharge volume reductions and screening to reduce floatables discharges to these waters. NYCDEP's comprehensive floatables planning is also continuing for reducing floatables discharges to non-tributary waters of the East River and the City's waters in Western Long Island Sound; 4) initiated a program to evaluate its current *Interim Floatables Containment Program* and identify methods of improvement to maximize CSO floatables capture throughout the City including the upper East River and several of its tributaries; and 5) continued to retrieve debris from local waters from CSO and non-CSO sources. The Interim Floatables Containment Program features CSO containment booming and skimming in the City's tributaries and open waters of the East River and Western Long Island Sound. NYCDEP removed 431 cubic yards of debris from harbor tributary waters. The City's harbor skimmer retrieved 242 tons of debris from open water areas of the harbor.	NYCDEP's construction of a CSO retention facility for Flushing Creek continues, while planning and design continues for the Bronx River, Westchester Creek, the Hutchinson River, and Alley Creek.
New York City continued in 2001 to retrieve debris from local waters from CSO and non-CSO sources. Its current *Interim Floatables Containment Program* features CSO containment booming and skimming in the City's tributaries and open waters of the East River and Western Long Island Sound. In 2001 NYCDEP removed 431 cubic yards of debris from harbor tributary waters. The City's harbor skimmer retrieved 242 tons of debris from open water areas of the harbor in 2001.	Continue floatables containment and reduction programs.
Floatable debris is a significant problem in Westchester County. A floatable debris collection system has been installed by the City of New Rochelle at the mouth of Stephenson Brook. The County of Westchester is assessing the installation of collection system(s) on county-owned lands.	The Westchester County departments of Planning and Parks, Recreation and Conservation will apply for a grant under the New York State Clean Water/Clean Air Bond Act to install two floatable debris collection systems on the Bronx River in Bronx River Parkway Reservation.

F-2. INCREASING FLOATABLE DEBRIS CLEANUP EFFORTS (CCMP TABLE 39, P. 99)

Key Elements: Anti-litter educational campaigns, annual beach clean-ups, litter control demonstration projects and storm drain stenciling programs.

Description	2002 Planned Action
National Beach Clean Up Day in September 2001 resulted in 1,629 volunteers from New York picking up over 39,351 pounds of debris at 43 sites on LIS. In Connecticut, 331 volunteers removed 3,049 pounds of debris from 14 miles of shoreline. The number of volunteers and sites was reduced in 2001 due to the events of September 11, which closed facilities and roads in NY, and to which a number of CT and NY participants volunteered their time.	Save the Sound, Inc., in cooperation with the CT Sea Grant program and the American Littoral Society in New York will promote National Clean Up Day in 2002.
The amount of litter entering area waters from New York City has continued to decrease from 1995 baseline levels through the City's street sweeping efforts. The amount of streets rated *Acceptably Clean* was 85 percent in 2001, compared to 77 percent in 1995. The number of streets rated *Filthy* in 2001 was 1.7 percent, down from a 1995 level of 4.9 percent.	Continue street sweeping programs.
NYCDEP completed a $200,000 study to measure the potential benefits of a public education or public awareness campaign that may reduce discharges of floatables to the harbor and neighboring waterbodies.	Meet with local citizens and other agencies to obtain their input on the potential campaign and identify cost sharing opportunities.

Managing and Conserving Living Resources and Their Habitats

The overall abundance and diversity of habitats and living marine resources in the Sound is a strong indicator of the health of the ecosystem. Years of neglect, mismanagement, and damaging actions have diminished these environmental indicators. These actions have resulted in water quality problems, have adversely affected critical habitats, and have contributed to damaging economic and environmental impacts from flooding, erosion, and runoff pollution.

CCMP Strategy:

The CCMP identifies the following elements to preserve, protect and enhance LIS living marine resources and their habitats: 1) restoring and enhancing aquatic and terrestrial habitats; 2) protecting and acquiring habitat; 3) developing inventories and management strategies for aquatic and terrestrial habitats; 4) managing endangered and threatened species; 5) managing harvested species; 6) managing exotic and nuisance species; 7) educating the public; 8) developing databases; 9) conducting Soundwide and site-specific research and monitoring; and 10) conducting living resource s and habitat research.

Environmental Indicators/Results/Trends

Primary environmental indicators are acres of habitat restored and miles of river corridor restored to anadromous fish passage. Of its goal of 2000 acres restored by 2008, the LISS has restored 338, with a number of acres of projects nearing completion. Of the goal of 100 river miles reopened to fish passage by 2008, more than 39 miles have been restored to date.

2001 Highlights:

- The states of Connecticut and New York made good progress toward the goals of the *1998 Habitat Restoration Strategy* to restore 2,000 acres of habitat and open 100 river miles to anadromous fish passage by 2008. As of 2001, more than 338 acres of habitat have been restored and 39 miles of river corridor have been reopened to anadromous fish passage. In 2001, 27.5 acres were restored and 7.25 river miles were reopened to fish passage.

- In 2001CTDEP partnered with the New Haven Land Trust, USFWS, CWRP, and NRCS in completing a steeppass fishway at Pond Lily Dam on the West River, New Haven. CTDEP partnered with Save the Sound and the Town of Milford to repair a fishway at Clark Pond on the Indian River, Milford. The Lees Pond fishway on the Saugatuck River in Westport was modified to improve fish passage.

- During 2001, Connecticut purchased 4,182 acres of land, and awarded Open Space grants to municipalities and land trusts to purchase an additional 3,576 acres at a cost of $45.6 million. New York's Open Space Plan serves as the blueprint for the State's land conservation efforts, which during the past several years, has conserved more than 300,000 acres of land across the state with an investment of $300 million in Environmental Protection Fund and Clean Water/Clean Air Bond Act funds.

- Save the Sound, Inc., the National Audubon Society of New York State (NAS-NY), and the Regional Plan Association (RPA) continued work on the CCMP goal to create a Long Island Sound reserve system. In 2001 NAS-NY led a diverse working group of federal, state, and local agencies and organizations to coordinate development of a LIS reserve system proposal.

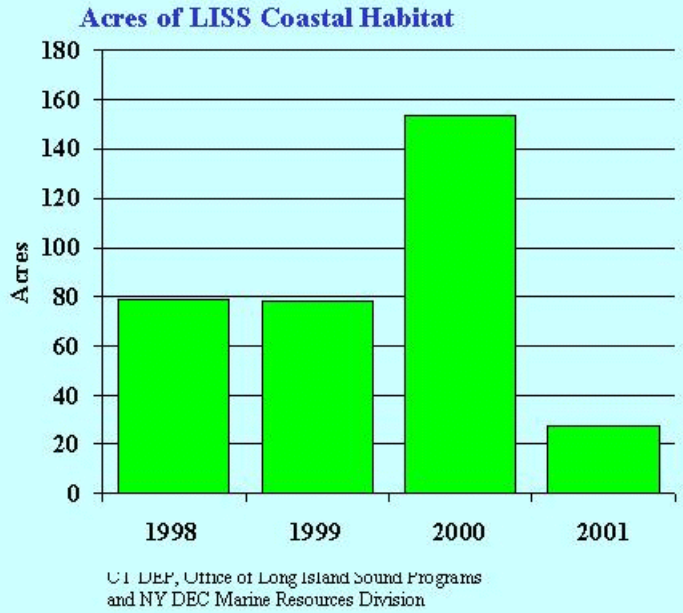
- The Westchester County Department of Planning and Soil and Water Conservation District have,

through 2001, received $2.06 million in county, state, and federal funding to restore streams, wetlands and coastal habitat in the LIS watershed in Westchester County. Fourteen restoration projects have been completed or are in design. Projects range from stream bank stabilization and pond enhancement to salt marsh and vegetated dune creation to freshwater marsh restoration.

- The Management Committee approved a 2001 LISS research fund of $350,000 to address a number of key areas of research on LIS, including living marine and marine-dependent resources. In 2001 five projects were selected for funding from the 38 proposals submitted.
- The LISS funded an intern at the University of Connecticut in Summer 2001 to begin development of a web-based guide to living marine resources research projects. The *Long Island Sound Finding Guide* will be maintained by the UCONN library system and may be found at: http://www.averypoint.uconn.edu/LIfindin.html.

- The New York and Connecticut Sea Grant College Programs continued to coordinate and manage the LIS lobster research initiative in response to the 1999 lobster mortalities and shell disease outbreaks in the Sound. In November 2001 the Sea Grant programs sponsored, in cooperation with the Atlantic States Marine Fisheries Council the *2nd Annual Long Island Sound Lobster Health Symposium* in Ronkonkoma, NY. The Symposium focused on the status of the lobster mortalities in LIS, bringing together researchers, academics, scientists, professional managers and lobstermen to exchange information and concerns. In 2001 the Sea Grant programs selected fourteen science research teams in seven states to study the causes of these lobster events.

Coastal Habitat Restoration Trend



CT DEP, Office of Long Island Sound Programs and NY DEC Marine Resources Division

In 1998, the LISS adopted a goal of restoring 2000 acres of coastal habitat (e.g. dunes, tidal freshwater wetlands, forests, salt marsh wetlands, and submerged aquatic vegetation) by the year 2008.

Since 1998, more than 338 acres of coastal habitat have been restored in Connecticut. and New York around Long Island Sound. Additional restoration projects are underway.

SUMMARY OF CCMP MANAGEMENT ACTIONS: MANAGEMENT AND CONSERVATION OF LIVING RESOURCES AND THEIR HABITATS

L-1. RESTORATION AND ENHANCEMENT OF AQUATIC AND TERRESTRIAL HABITATS (CCMP TABLE 40, P.107)

Key Elements: Continue and enhance programs to restore tidal wetlands and other habitats. Develop a coordinated strategy to inventory and prioritize habitat restoration and enhancement needs.

Description	2002 Planned Action
The USFWS-Coastal Program assisted CTDEP, Coastal America, and corporations in exploring restoration opportunities and incentives to increase corporate participation in the Corporate Wetland Restoration Partnership. Northeast Utilities hosted a meeting during which benefits to corporate sponsors, candidate restoration sites, and partnership improvements were discussed. The USFWS offered to produce a map that would portray the priority restoration projects and completed works.	Continue to work with Coastal America and the corporate partners to expand the CWRP and implement priority restoration projects.
Connecticut continues to restore degraded tidal wetlands through its existing programs and in collaboration with the Long Island Sound Study Habitat Restoration initiative, which funds a restoration coordinator. CTDEP has established a Tidal Wetland Restoration Team (i.e., USFWS, NMFS, NRCS, Save the Sound) which identifies annual work priorities. In 2001 construction was completed at Tuttle Point, Guilford. This project resulted in an additional 4 acres of tidal wetlands restored toward the goal of 2000 acres by 2008. Connecticut continues to use the Coves and Embayments Program to fund preliminary engineering, design and construction for the restoration of degraded coves especially those dominated by tidal wetlands.	A project begun in 2001 on the Lower CT River (Great and Upper Island) is expected to be completed adding another 300 acres of restored and enhanced tidal wetland toward the goal. The preliminary work plan for 2002 has nearly 17 wetland restoration projects identified - this includes preliminary engineering, design and construction activities. Phragmites control work will continue in 2002 at several sites.
Through 2001, the Westchester County Department of Planning and Soil and Water Conservation District have received $2.06 million in county, state and federal funding to restore streams, wetlands and coastal habitat in the Long Island Sound watershed in Westchester County. Fourteen restoration projects have been completed or are in design. Projects range from stream bank stabilization and pond enhancement to salt marsh and vegetated dune creation to freshwater marsh restoration. Information on the County's habitat restoration efforts may be found on their homepage at: http://www.westchestergov.com/planning.	Stream restoration construction will be completed; restoration of a pond and freshwater marsh will start, and design of three other restoration projects will begin. Westchester County will seek New York State Clean Air/Clean Water Bond Act grants and other funding for additional projects.
Connecticut has established a coastal barrier habitat restoration team.	Invasive species control for Black Point Beach in E. Lyme and the Team will be identifying a work plan for 2002.
The CTDEP LISS Habitat Restoration coordinator is the lead for removal of the invasive aquatic plant water chestnut from Connecticut River waters. Funds for this project were received from USFWS, National Fish & Wildlife Foundation, NMFS, and The Nature Conservancy.	Continue to harvest water chestnut for Connecticut River sites.
In 2001 Connecticut used the following sources of non-state funds to support habitat restoration: National Fish & Wildlife Foundation, USFWS, CWA §319, The Nature Conservancy, Intermodal Surface Transportation Efficiency Act, Corporate Wetlands Restoration Partnership funds, Ducks Unlimited, Connecticut Waterfowl Association, CT Conservation Stamp Program, Connecticut Valley Waterfowlers Association, Connecticut Audubon, and NRCS.	On-going
The LISS Small Grants program provided funding to North Shore Audubon Society for the Garvies Point Museum and Preserve in 2001 to restore a pond and habitat area.	

L-2. HABITAT PROTECTION AND ACQUISITION (CCMP TABLE 41, P.110)

Key Elements: Maintain the effectiveness of permit programs (e.g. for wetlands, stormwater, dredging) to regulate use and development affecting aquatic resources and critical habitats. Expand acquisition programs and efforts to protect habitats from development and establish a reserve system of areas of land and water of outstanding or exemplary scientific, educational, or biological value. Manage Federal wildlife refuges.

Description	2002 Planned Action
New York City's CSO facility planning projects for the Hutchinson River, Westchester Creek, the Bronx River, Flushing Creek and Bay, and Alley Creek are continuing at various levels of planning, design, and construction. Once completed, the facilities will minimize CSOs and protect habitats in these tributaries to the East River and Western Long Island Sound.	
The FWS began work on the development of an ecological component for the LIS reserve system in 2001. FWS assembled information on existing reserve concepts, coordinated with the state resource specialists, acquired relevant data layers for GIS use, and provided progress summaries to the Management Committee.	FWS expects to complete development of ecological criteria, propose a site nomination process, and draft a list of eligible sites.
The State of Connecticut Bond Commission approved $20 million for the Recreation and Natural Heritage Trust Program (RNHT) and $12 million toward the Open Space and Watershed Land Acquisition Program (OSWLA). The RNHT program enables the CTDEP to purchase open space for additions to or establishment of State parks, forests, wildlife management areas, aquatic access, and natural resource areas. During 2001 the State of CT purchased 4,182 acres through RNHT, and awarded Open Space grants to municipalities and land trusts to purchase an additional 3,576 acres at a total cost of over $45.6 M. Since the establishment of the Governor's Open Space Program more than 21,500 acres has been protected at a cost of approximately $85.6 million. This includes the $40.1 million spent in partnership with towns, conservation groups and water companies, and an additional $45.5 million the state has spent on direct purchases of open space that is now part of the state's inventory of public land.	The CT DEP will close on the acquisition of fee ownership and conservation easements to permanently protect over 15,400 acres of open space land. Continue to evaluate and acquire land through the RNHT program. Currently there are over 49 purchase and sales agreements pending and over 28 properties being actively pursued for acquisition. The CT DEP will initiate a multi-year inventory and mapping of all open space land in CT.
The goals of Connecticut's open space acquisition program are to acquire 10 percent of the state's land area as open space held by the state, and not less than 11 percent of the state's land area held by municipalities, water companies, or nonprofit land conservation organizations as open space. The state currently owns 221,200 acres its system of state park, forest, wildlife, fishery, and natural resource management areas. As of 2001, the CTDEP has 69% of the 320,576 acre goal of open space land targeted for state acquisition. Municipalities, nonprofit land conservation organizations, and water companies own 220,160 acres of their targeted goal of 352,600 acres (62%). To date 65.6%of the total combined goal has been achieved. Combined, these CT entities currently hold 13.5% of Connecticut's land area as open space.	
New York's Open Space Plan serves as the blueprint for the State's land conservation efforts, which during the past several years, has conserved more than 300,000 acres of land across the State with an investment of $300 million in Environmental Protection Fund and Clean Water/Clean Air Bond Act funds. NYSDEC issued its draft 2001 Open Space Conservation Plan in October 2001. The Draft plan contains: a comprehensive description of programs and policies that affect the conservation of the State's open space resources; a compilation of major conservation successes accomplished under the plan; a list of priority projects; conservation strategies for major resource areas; evaluation and criteria used to determine Environmental Protection Fund (EPF) and Clean Water/Clean Air Bond Act spending priorities; and recommendations by regional advisory committees and the Governor's Quality Communities Task Force to improve New York's open space conservation program. A number of priority projects are included in the LIS watershed area, including on Long Island, the LIS Coastal Area, and Western Suffolk/Nassau Special Groundwater Protection Area; the Bronx River Trailway; the Westchester Marine Corridor, and the Eastchester Bay Waterfront. The draft Plan is posted on the NYSDEC website at: http://www.dec.state.ny.us/website/dlf/osp/toc2001.html.	Finalization of the plan in 2002.

L-3. INVENTORIES AND MANAGEMENT STRATEGIES FOR AQUATIC AND TERRESTRIAL HABITATS (CCMP TABLE 42, P.112)

Key Elements: Develop habitat management strategies for specific complexes or regions using a watershed perspective.

Description	2002 Planned Action
NOAA's Office of Response and Restoration completed the production of Environmental Sensitivity Index maps, printed in December 2001. A digital version is scheduled for delivery to CTDEP in Winter 2002.	CTDEP will obtain and incorporate the ESI data into its Oil Spill GIS system.
CTDEP continues to assist the CT Corporate Wetland Restoration Program (CWRP). Several new corporations have donated businesses and services. The program funded a project to identify potential inland wetland restoration sites and provided funding for the restoration of the Pond Lily Dam riverine migratory corridor project.	Convene an Advisory Board, finalize the prospectus and assist CWRP in selecting restoration projects.
CTDEP continues to create coverages of coastal resource information to support oil spill response. The NOAA-funded Environmental Sensitivity Index mapping project was completed and printed in December. An anadromous finfish restoration GIS was completed. CTDEP completed the Sediment Quality Information Database to manage data related to dredging.	On-going. Eelgrass beds in eastern LIS will be mapped from aerial photography to be taken in the spring of 2002.
In 2001 NYSDEC conducted a study of tidal wetlands losses in the LIS/Jamaica Bay coastal area. Wetlands losses were seen to be significant and are currently unexplained. Similar losses were noted in Connecticut by CTDEP, first noted at the Fivemile River in Darien. NYSDEC briefed the Management Committee on their preliminary findings at the October 2001 meeting.	Further study of tidal wetlands losses is planned for 2002.

L-4. MANAGING ENDANGERED AND THREATENED SPECIES (CCMP TABLE 43, P.116)

Key Elements: Continue endangered species programs and develop lists of Long Island Sound endangered species to aid management programs

Description	2002 Planned Action
The USFWS-McKinney Refuge, in partnership with CTDEP, USGS, CT Audubon Society, National Audubon Society, The Nature Conservancy, Little Harbor Lab, Inc., and several municipalities studies, and monitored managed, and protected the nesting population of the endangered roseate tern on Falkner Island. The number of nesting pairs was down slightly from 115 pairs in 2000 to 100 pairs in 2001.	The USFWS CT River-LIS Ecosystem Team plans to contribute funds to continue efforts.
The LISS Small Grants Program funded a project in 2000 to study the diamondback terrapin population and nesting habitats in the Oyster Bay, Long Island area in Spring/Summer 2001.	
NYSDEC's Natural Heritage Program updated its *Rare Plant List* in April 2001. The 62 page document is posted on the NYSDEC website at: http://www.dec.state.ny.us/website/dfwmr/heritage/plants.htm.	The program annually reevaluates the list.

L-5. MANAGING HARVESTED SPECIES (CCMP TABLE 44, P.117)

Key Elements: Ensure safe consumption and enhanced production of harvested species through fishery management plans, improved fish passage and habitat improvements. Support related programs such as oyster cultch placement, artificial reef development, dredging windows, and incidental take of nontarget species or entrainment/impingement at industrial facilities

Description	2002 Planned Action
The USFWS CT River-LIS Ecosystem Team funded seasonal positions vital to hatchery production and distribution of Atlantic Salmon to the Connecticut River watershed. This commitment enhances efforts to restore Atlantic Salmon to historically used habitats.	USFWS will continue its salmon production and work with partners to restore Atlantic salmon.
CT DEP continues to award grants and participate in restoration of riverine migratory corridors for anadromous fish in the streams and rivers of the state. In 2001 a steeppass fishway was completed at Pond Lily Dam on the West River, New Haven. CTDEP partnered with the New Haven Land Trust, USFWS, CWRP, and NRCS. CTDEP partnered with Save the Sound, Inc. and the Town of Milford to repair a fishway at Clark Pond on the Indian River, Milford. A fishway was modified to improve fish passage at Lees Pond on the Saugatuck River, Westport, CT. A total of 6.25 riverine migratory corridor (RMC) miles in CT were opened up in 2001. The total RMC habitat restored since 1998 now stands at 38.15 miles.	Continue to work with partners to open up additional fish passages and provide funding for design and construction of fish bypasses and ladders. The preliminary anadromous fisheries restoration workplan for 2002 has three Connecticut projects slated for completion in 2002 and another nine projects identified for the next few years. The goal is to restore 100 miles by 2008.
The Hydrologic Habitat Modification Workgroup of the NPS Coordinating Committee has identified preparation of a "Strategic Plan for Dam Removal and Mitigation" as a priority activity. The NYSDEC will use CWA 319 funds to develop this plan under leadership of the USFWS. A specific element of the plan will be a set of evaluation criteria and a screening tool to identify potentially suitable sites for action to restore fish passage.	

L-6. MANAGING EXOTIC AND NUISANCE SPECIES (CCMP TABLE 45, P.120)

Key Elements: Develop measures to prevent the introduction of undesirable species and implement a program to reduce the abundance of mute swans.

Description	2002 Planned Action
In July 2001, CTDEP led a group of eight department and four non-agency volunteers in the removal of the invasive aquatic water chestnut plant from sites in the Connecticut and Hockanum Rivers. Hand pulling and raking from canoes was the method of choice. Removal of water chestnut before the plants can drop seeds is proving to be a very effective means of controlling this non-native plant. Last year's efforts yielded an estimated 50 tons of plant material removed from rivers. In 2001 the total harvest amounted to only 4.25 tons (a 91% decrease in the volume of plants). No water chestnut plants were found or harvested in Vinton Mill Pond in South Windsor and the population appears to have been eliminated.	Monitoring of these sites and the entire river will be ongoing for as long as 7-10 years. Invasive species control is planned for Black Point Beach in E. Lyme and the Team will be identifying a work plan for 2001. Continue to harvest water chestnut for Connecticut River sites. Monitoring of this site and the entire River will be ongoing for as long as 7-10 years.

L-7. EDUCATING THE PUBLIC ABOUT THE PLANTS AND ANIMALS OF LONG ISLAND SOUND (CCMP TABLE 46, P.120)

Key Elements: Educate the public about the plants and animals of Long Island Sound and elicit volunteers assist plants and animals monitoring programs.

Description	2002 Planned Action
CTDEP continues to support a volunteer Secchi Disk network that is evaluating trends in light availability to help identify appropriate times or locations for restoring eelgrass.	Continue data collection efforts.
The Connecticut Sea Grant College Program in cooperation with the LISS is updating and reprinting the booklet, *Plants and Animals of Long Island Sound*. The booklet is very popular with elementary and secondary school teachers for classroom and field use. Approximately 10,000 copies of the booklet are being printed.	
The LISS Small Grants program funded a project to develop a horseshoe crab model for use in classrooms in Connecticut. The program also funded an oyster culture demonstration project at the Waterfront Center in Oyster Bay, and the Connecticut River Shad Festival to promote restoration of this species.	

L-8. DEVELOPING AN INFORMATIONAL DATABASE ABOUT LIVING RESOURCES AND THEIR HABITATS (CCMP TABLE 47, P.122)

Key Elements: Develop and expand informational databases on living resources and their habitats with an emphasis on GIS data for resource management

Description	2002 Planned Action
Through the NOAA Coastal Services Center's Coastal Fellow program, CTDEP completed the Sediment Quality Information Database (SQUID) to manage data related to sediment dredging and quality.	
CTDEP continues to create coverages of coastal resource information to support oil spill response. NOAA completed the production of the Environmental Sensitivity Maps (see Table L-3). Funding was secured for this project and NOAA's consultant produced ESRI maps based upon data provided by CTDEP staff. Through the NOAA Coastal Services Center's Coastal Fellow program, CTDEP had a coastal fellow complete the second year of the Sediment Quality Information Database (SQUID) to manage data related to sediment dredging and quality.	Integrate into the dredged sediment management process the SQUID project.
CTDEP developed an anadromous finfish GIS project. The project will be implemented and training in the use of the system will be given to in house and partner agency staff .	
The UCONN Marine Sciences Center is conducting preliminary studies of southeastern (CT) coves to evaluate and model the impacts of nitrogen upon biological communities.	
The LISS funded a summer intern to develop a "finding guide" to LIS living marine resource research projects. The finding guide will be managed through the UCONN library system and is posted at: http://www.averypoint.uconn.edu/LIfindin.html.	

L-9. SOUND WIDE AND SITE-SPECIFIC RESEARCH AND MONITORING (CCMP TABLE 48, P.123)

Key Elements: Continue and enhance monitoring of living resource populations with an emphasis on fishery surveys, colonial water birds, submerged aquatic vegetation, and lobsters.

Description	2002 Planned Action
New York City's *Use and Standards Attainment Project* conducted extensive biological sampling programs in the East River and its tributaries for ichthyoplankton, benthic and epibenthic biota, and fish. Sediment and water column sampling was conducted simultaneously. These programs are developing data for characterizing existing biotic abundance and diversity, and habitat. Use attainability is being evaluated and areas of opportunity are being identified for restoring, enhancing and protecting habitats in the East River, its tributaries, the Hutchinson River, Eastchester Bay, Alley Creek and Little Neck Bay in Western Long Island Sound.	
The LISS provided funding for CTDEP and NYSDEC to map eelgrass beds in eastern LIS. A MOA has been developed with the National Wetlands Inventory Section of the USFWS. Funding was awarded too late to collect aerial photography in 2001. That flight will take place in the spring of 2002, the FWS will photo interpret eelgrass beds and digitize data. Colonial waterbirds - Human activity at sandy beaches used as nesting areas by plovers and terns continues affect reproductive success. Twenty volunteers, trained on plover and tern biology and how to educate the public about recovery efforts of the CTDEP Wildlife Division, monitored several beaches and distributed educational materials to beachgoers. Equipment was contributed to the long term roseate tern (state and federally endangered) project being conducted on Faulkner Island. Equipment was also contributed to a new foraging fish survey being conducted along the Connecticut coastline where roseate terns feed. CTDEP staff with the help of USFWS McKinney Refuge, CT Audubon Society, and other volunteers, completed the seventh Colonial Waterbird Survey in June checking 78 sites by boat and on foot. Lobster -- CTDEP Fisheries Division has compiled data showing the trend of lobster licenses issued over time. CTDEP's annual fisheries trawl survey continues to record lobsters caught in its trawls.	Aerial photography will be flown, photointerpretation will be done and a report will be produced to describe the project and where historic data exists, discussion o f eelgrass trends will be reported. Ornithologist now think Southern New England may be home to half the world's population of saltmarsh sharp-tailed sparrows. Grant money from CT State income tax donations will be used to study declining populations of salt marsh sharp-tailed sparrows in CT coastal areas.

L-10. LIVING RESOURCES AND HABITAT RESEARCH (CCMP TABLE 49, P.124)

Key Elements: Identify priorities for research to fill gaps in our understanding of the Long Island Sound ecosystem and to assist management of living resources.

Description	2002 Planned Action
The Management Committee approved a LIS research fund of $350,000 in 2001 supplemented by the New York and Connecticut Sea Grant College programs of $25,000 each for a total LISS research fund of $400,000. The LISS funded five research grants in 2001 to study: 1) isotope tracers of nitrates in Western LIS; 2) phytoplankton dynamics in LIS; 3) water column oxygen production and consumption; 4) saltmarsh breeding sparrows; and 5) new approaches for assessing mutagenic risk of contaminants in LIS.	The management committee approved a LIS research fund of $350,000 in 2002. Work funded under the 2001research grants is continuing in 2002.
CTDEP funded three research projects through the LIS License Plate Program: 1) a study of sediment accumulation rates at the Barn Island tidal wetlands (relates to assessing the effects of accelerated sea level rise upon coastal wetlands); 2) an investigation of potential impacts of new dock construction on the lower Connecticut River, and 3) an assessment of hypoxia in deep coastal embayments such as Frash Pond, Stratford. This program annually publishes research priorities - for the 2001 grants, this information was posted on the CTDEP website. In 2001 the funding awarded for these three projects totalled $61,084.	Continue to fund priority research through the LIS License Plate program.

The Long Island Sound Lobster Initiative was formed after a July 2000 Congressional appropriation of $6.6 million in federal funds to NOAA to research the scientific and economic impacts of the 1999 die off. Congress directed that approximately $3.5 million of those federal funds be dedicated for research investigating potential causes. New York and Connecticut Sea Grant both received $165,000 each in federal funding to facilitate communication of the research findings to lobster fishers, resource managers, and the public. In June 2001 NOAA NMFS and National Sea Grant College Program announced awards of $3.5 million in federal research grants to 14 science research teams in seven states to determine the causes behind the 1999-2000 winter die-off of the Long Island Sound lobster fishery. The research is jointly-funded under the Long Island Sound Lobster Initiative, an endeavor of Sea Grant programs in Connecticut and New York along with the CTDEP and NMFS's Northeast Fisheries Science Center. The funded research will investigate many different factors on an ecosystem-wide basis. These include disease-causing organisms, pesticides, pollution, lobster crowding, water quality conditions including elevated temperatures and changes in salinity, and environmental conditions such as storm events.	
In 2001, the LISS provided Year 2 funding to UCONN's Department of Pathobiology to continue work begun in 2000 on the causes of the LIS lobster mortalities (PI- Dr. French).	
In 2001, the LISS funded UCONN to study the status and productivity of the saltmarsh breeding sparrow in LIS, a globally important population (PI- Dr. Elphick).	The two-year study will start in 2002 and continue through 2003.

Long Island Sound Study
2001 CCMP Implementation Tracking Report
Addendum
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Page #3, ¶5, Hypoxia Indicators: delete double "was" in sentence #1.

Page #12, H-4, Funding to Implement Hypoxia Management Plans, Description, ¶1,

Of the $350 million dollars spent on completed construction alone for projects at CT STPs from 1996 to 2001, $90 million in State Grants were awarded to municipalities from the Clean Water Fund (CWF) and about $260 million in loans were awarded from the State Revolving Fund (SRF). Also over $449 million has been funded for all completed projects, projects still in construction, and projects still in the design phase. These funds came from approximately $120 million in State Grants and $330 million from the SRF loan account.

As of 12/31/01 New York State has committed $82 million of the $200 million authorized in the Bond Act. See page 10, H-1 for further description of individual NY Bond Act projects for nitrogen removal facilities.

Page #21, 2001 Highlights, ¶3, sentence 2; change 3% to 4%.

Page #22, T-1. Toxic Contaminant Source Controls and Pollution Prevention, Description, ¶5, Sentence 2, clarification: *New York State requires toxicity testing in NYSPDES permits when appropriate to adequately protect aquatic life. The need for considering whole effluent toxicity testing is based on the following factors, as appropriate: (1) The presence of substances for which ambient water quality criteria do not exist; (2) High natural background concentrations of a substance relative to water quality criteria such that allocation procedures cannot be applied; (3) The presence of substances for which water quality-based effluent limits are below analytical detectability; (4) The possibility of complex or synergistic interactions of chemicals; and (5) Observed detrimental effects on the receiving water biota. There are 23 STPs in New York that discharge into the LIS watershed.* **Revise Sentence 2:** " In New York, of the 23 STPs discharging into the LIS watershed, two facilities are currently required to, and actively conduct toxicity testing per their NYSPDES permit. In 2001 these two facilities passed all toxicity tests.

Page #31, L-1. Restoration and Enhancement of Aquatic and Terrestrial Habitats, Description, ¶3, change Sentence #2 to read, "Of fourteen restoration projects, eight have been completed, three are under construction and three are in design."

Page #32, L-2. Habitat Protection and Acquisition, Description, ¶2; add new ¶3, "Save the Sound, Inc., Audubon New York, and the Regional Plan Association received a two-year grant award of $250,000 from the New York Community Trust to work on elements relating to the CCMP goal to create a Long Island Sound reserve system. In Fall 2001, Audubon New York received a $20,000 LISS grant to coordinate development of a LIS reserve system proposal. Audubon NY coordinated formation of a work group to oversee the effort. The work group's first meeting was held in December 2001."