Connecticut Department of Environmental Protection
Bureau of Water Management

Nonpoint Source Management Program

Nonpoint source pollution, unlike pollution from point sources, is diffuse in its origin and in the manner that it enters ground and surface waters. It originates from a variety of human activities that take place throughout Connecticut, affecting many different uses of water resources. These activities serve to increase the volume of runoff and often contribute pollutants to the runoff that may end up in surface waters or infiltrate into the ground water. If nonpoint source contributions are high enough, surface or groundwater impairments may occur. Pollutant loadings from many nonpoint sources are closely linked to rainfall, thunderstorms, or snowmelt and are, therefore, unevenly distributed in time and space, depending on weather conditions.

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I. CONNECTICUT NONPOINT SOURCE MANAGEMENT PROGRAM ELEMENTS

1. PROGRAM GOALS, OBJECTIVES, AND STRATEGIES

Connecticut's Nonpoint Source Management Program is a network of many programs administered by numerous federal, state, and municipal government agencies and organizations. The Connecticut Department of Environmental Protection (CT DEP) was designated by Environmental Protection Agency (EPA) as the primary state nonpoint source management authority, and its Bureau of Water Management (BWM) Planning and Standards Division (PSD) serves in a coordinating role for the various nonpoint source programs and administers the state's §319 grant program. Further networking occurs within each of these agencies and organizations among their numerous offices, bureaus, and divisions. Collectively, these agencies and organizations establish long- and short-term goals, objectives and strategies that effectively implement nonpoint source pollution management.

The following are excerpts from the key statewide nonpoint source management planning documents that describe the broader, more general long-term goals for managing nonpoint source pollution in Connecticut, and specific, short-term goals, objectives, and strategies with milestones that will lead toward the attainment of the long-term goals.

A. NONPOINT SOURCE ASSESSMENT AND MANAGEMENT PLAN

The draft revised *Nonpoint Source Assessment and Management Plan*, completed in September 1997, describes goals, objectives, and strategies related to nonpoint source management (Appendix 1). The management plan was developed over the course of several years by the BWM, with input from a statewide nonpoint source advisory committee comprising representatives of federal, state, and local government agencies, and citizen organizations.

Long-Term Goal

- Protect public health and the environment from the impacts of nonpoint sources of pollution.

Objective

- Promote practices and adopt controls to reduce nonpoint sources of pollution.

Strategies

- Implement and improve BMPs for the control of all nonpoint source water pollution.
- Accelerate the drafting, adoption, and implementation of the basin overview documents.
- Improve education and increase the incentive to control nonpoint source pollution at the municipal level.
- Develop and implement the required stormwater discharge permit program.
- Develop a program to implement nonpoint source demonstration projects through the Connecticut Clean Water Fund.

Short-Term Goals

Water Quality

- Nonpoint source load allocations in support of priority TMDL development for 1998 303(d)-listed watersheds will be completed by April 1, 2000 (Appendix 2).

- Consistent with the nitrogen TMDL for Long Island Sound, Connecticut will achieve a:

    - 4% reduction in nonpoint nitrogen loads (from a 1990 baseline) by December 31, 2004;
    - 7.5% reduction in nonpoint nitrogen loads by December 31, 2009; and
    - 10% reduction in nonpoint nitrogen loads by December 31, 2014.

- The NPDES stormwater permitting program will be expanded and modified, consistent with the new Phase 2 stormwater rule, by March 1, 2002 (Appendix 3).

- A new stormwater management technical guidance manual will be completed by December 31, 2001.

- CT DEP will establish and implement an AFO/CAFO permitting system consistent with the new NPDES AFO/CAFO permitting strategy by January 31, 2005 (depending on final discussion with EPA Region I on priorities).

- CT DEP will coordinate the development and implementation of nutrient management plans for agricultural operations not subject to the state's Coastal Nonpoint Pollution Control Program and NPDES AFO/CAFO permitting requirements, with 50 percent converge by December 31, 2004, and 100 percent by December 31, 2014.

- University of Connecticut Cooperative Extension System, with assistance from the soil and water conservation districts, will facilitate the implementation of integrated crop/pest management (IPM/ICM) on 35,000 acres by December 31, 2004.

- Revised *Guidelines for Soil Erosion and Sediment Control* will be completed by December 31, 2000.

- CT DEP, with assistance from USDA/NRCS, will establish a system for tracking restoration of riparian buffers by September 30, 2001.

Groundwater

- Aquifer Protection Area land use regulations will be adopted by December 31, 2004.

- A scientifically-based groundwater separation distance for new septic system installations will be identified/adopted (pursuant to 6217 conditional approval) by December 31, 2001.

Public Water Supplies

- Connecticut Source Water Assessment Program (SWAP) to be approved by EPA by

November 31, 1999.

- CT DEP/CT DPH will complete 5000 SWAP assessments by June 30, 2003 (assuming EPA deadline extended).

Land Use/Open Space

- An additional 200,000 acres of open space, of which 110,000 acres will be held by the state, will be preserved by December 31, 2004.

- University of Connecticut Cooperative Extension System will conduct 10 Nonpoint Education for Municipal Officials (NEMO) workshops per year, with an average of 20 participants per workshop.

- CT DEP will complete 5 targeted "brownfield" assessments/year totaling 25 by December 31, 2004.

- CT DEP will complete 1-2 outreach programs per year in support of urban redevelopment initiatives by December 31, 2004.

- Four "brownfield" sites will be restored in Bridgeport by December 31, 2004.

Habitat Protection/Restoration

- CT DEP will conduct 10 Inland Wetland Commissioner training workshops per year, with an average of 40 participants per workshop.

- CT DEP Office of Long Island Sound Programs (OLISP) will coordinate the restoration of 1000 acres of degraded tidal wetlands by December 31, 2005 (Appendix 4).

- CT DEP will coordinate the restoration of 67.75 miles of anadromous/migratory fish habitat through fish ladder installation, dam removal, and other habitat enhancements by December 31, 2004 (Appendix 5).

B. COASTAL NONPOINT POLLUTION CONTROL PROGRAM

Connecticut's Coastal Nonpoint Pollution Control Program, developed pursuant to § 6217 of the 1990 Coastal Zone Act Reauthorization Amendments (CZARA), received a conditional approval from EPA and the National Oceanic and Atmospheric Administration (NOAA) on June 3, 1998. The CNPCP is administered by the Office of Long Island Sound Programs (OLISP), in cooperation with the BWM. The national program requires states to comply with the conditions established in the conditional approval within three years, which, for Connecticut, is June 3, 2000.

Long-Term Goal

- Implement all 6217 management measures required by the fully approved CNPCP by June 3, 2016.

Short-Term Goals

- Comply with conditions established by the conditional approval of the state's CNPCP by EPA and NOAA by June 3, 2001 (Appendix 6).

- CT DEP will continue outreach to coastal "6217 management area" municipal officials in support of program implementation, conducting 15 workshops with an average attendance of 10 by December 31, 2000.

- CT DEP will develop outreach program for non-coastal "6217 management area" municipal officials by December 31, 2001.

- Establish mechanism to better focus harbor masters' responsibilities on nonpoint source pollution control enforcement by December 31, 2001.

C. WATERSHED MANAGEMENT PROGRAM

CT DEP is currently developing a watershed management strategy that describes the framework within which the CT DEP will work through a networked approach with federal, state, and municipal government and non-government agencies and organizations to conduct watershed management and strengthen the state's ability to control nonpoint source pollution.

Goal

Create a statewide watershed management program to:

- realize measurable improvements in water quality;

- protect and restore aquatic habitats, including wetlands, riparian areas, fish and shellfish habitats;

- improve public access to water resources and balance multiple uses;

- improve local capacity to manage, protect and restore water resources;

- promote shared responsibility for watershed protection and management through outreach, partnerships, and education programs; and

- maintain existing programs that control or remediate sources of surface and ground water pollution and manage other water-related resources.

Objective

To develop a process to efficiently implement water resource management programs based upon watershed boundaries and the susceptibility of natural hazards, emphasizing the long-term qualitative and quantitative aspects of all water-dependent resources and activities.

Strategies

- Develop a statewide watershed management strategy integrating relevant BWM and agency programs, and seek public review and comment from advisory committees, watershed organizations, and other interested parties by December 31, 2000.

- Reorganize the eight county soil and water conservation districts into four or five natural resource conservation districts to build local capacity for watershed management by December 31, 2000.

- Appoint five full-time watershed coordinators for each of the five major basins by December 31, 1999.

- Develop overview reports that describe current environmental conditions and outline broad restoration and protection strategies for the five major river basins by December 31, 2001.

- Continue watershed activities currently underway for the: Quinnipiac, Norwalk, Hockanum, Mattabesset, Scantic, Quinebaug, Shetucket, and Naugatuck rivers and Sasco Brook.

  - High priority action items identified in the *Norwalk River Watershed Action Plan*, completed in October 1998, will be implemented by December 31, 2005.
  - Complete a draft Quinnipiac River watershed management plan by June 30, 2000.
  - Complete a Mattabesset River watershed management plan by December 31, 2000.

- Develop training program for watershed partners by December 31, 2000.

- Continue to support rotating basin water quality monitoring and stream assessment gaging, and provide results to watershed partners.

- Manage the use of §319 grant funds consistent with the *Unified Watershed Assessment*, the *Nonpoint Source Assessment and Management Plan*, the Coastal Nonpoint Pollution Control Plan, and their watershed priorities.

- Provide oversight of PCB remediation activities in the Housatonic River being conducted as part of the settlement with General Electric.

- Develop watershed management guidance documents, fact sheets, and web site.

D. OTHER PLANNING DOCUMENTS

Additional long- and short-term goals, objectives and strategies are described in several planning documents developed by the CT DEP and other state agencies. Their overall consistency demonstrates the institutionalization of nonpoint source management throughout the various levels of government in Connecticut.

- Connecticut's *Water Quality Standards* describe water quality goals and designated uses for all of the state's surface and ground water resources, including very strong anti-degradation provisions, and is revised triennially to reflect new data and other information. Surface water quality goals related to nonpoint source management are described in the section entitled, "Surface Waters Standards" (Appendix 7).

- Connecticut's *Unified Watershed Assessment*, developed in 1998 in cooperation with the USDA Natural Resources Conservation Service (NRCS) and in accordance with the federal Clean Water Action Plan, prioritizes watersheds for management based on the degree of impairments.

- The state Office of Policy and Management's (OPM) *Conservation and Development: Policies Plan for Connecticut*, which is updated every five years, outlines broad strategies for guiding growth and development in the state, taking into consideration environmental resources and pollution control and prevention principles. Water quality goals related to nonpoint source management are described in the section entitled, "Environmental Quality: Water Quality Management" (Appendix 8).

- CT DEP produces biennial reports required by federal Clean Water Act §§ 305(b), *Connecticut's Water Quality Report to Congress*, which describes the general conditions of the state's waters, and 303(d), *List of Waterbodies Not Meeting Water Quality Standards*, which lists impaired waters and prioritizes them for the development of total maximum daily loads (TMDLs).

- The *Pollution Prevention Plan for Connecticut* cites pollution prevention goals for pesticides and runoff to Long Island Sound Pollution. (Appendix 9).

- The *Long Island Sound Comprehensive Conservation and Management Plan* (CCMP), completed by the Long Island Sound Study (LISS) in 1994, characterizes the priority water quality and habitat impairments affecting the Sound, and describes action plans to address these problems.

- The Long Island Sound *Habitat Restoration Strategy*, developed by a multi-agency team under the auspices of the LISS, identifies and prioritizes over 450 potential sites, including degraded wetlands and obstacles to anadromous fish passage, and describes restoration strategies.

- CT DEP develops biennial Performance Partnership Agreements and annual Clean Water Act §319 "categorical" work plans describing projects that support attainment of long- and short-term goals, objectives, and strategies.

2. PARTNERSHIPS

A significant strength of Connecticut's NPS Program is its "networked" approach to nonpoint source management. Joint nonpoint source management programs have been initiated with: the USDA Natural Resources Conservation Service (NRCS) and Farm Services Agency (FSA); the state departments of public health (DPH), transportation (DOT), and agriculture (DOA); county soil and water conservation districts (SWCDs); University of Connecticut Cooperative Extension System (UCONN/CES); regional planning agencies (RPAs); municipal governments (wetland, zoning, planning and conservation commissions); academic institutions; watershed associations; environmental groups; and business and trade organizations. Citizens groups have played a major role in volunteer monitoring, planning, and public involvement activities. Some of these partnerships are institutionalized by state law or regulation, while others are more informal in nature. For example, Connecticut state law enabled the

establishment of county soil and water conservation districts, requiring that they work closely with the CT DEP, and created the Council on Soil and Water Conservation, which oversees district operations while acting as a liaison between CT DEP and the districts. This strong legal connection, plus the CT DEP's interest in strengthening local conservation leadership, contributes to numerous successful collaborative efforts to improve nonpoint source management in Connecticut. The CT DEP anticipates that this relationship will be strengthened by restructuring the eight county district offices to four natural resource, or watershed-based offices. (This issue will be discussed in further detail in Section II.)

A. STATEWIDE ADVISORY COMMITTEES

To support this networked approach, CT DEP has established numerous advisory groups and supports project work by many organizations. The state regularly utilizes external and internal advisory committees in planning and implementing projects. For example, statewide nonpoint source advisory committees were used to review revisions to the *Nonpoint Source Assessment and Management Plan* and *Managing Coastal Nonpoint Sources of Pollution*. Other water resource management activities are guided with assistance from the Water Bureau Advisory Committee and the Rivers Advisory Committee, both of which include representatives from industry and the general public as well as river and watershed advocacy organizations. The NRCS formed a State Technical Committee to guide implementation of its new Environmental Quality Incentives Program (EQIP) and Wildlife Habitat Improvement Program (WHIP), but it's role has been expanded to serve as a broader communication and coordination mechanism with the agricultural community. Rosters for these four statewide committees are provided in (Appendix 10).

B. WATERSHED COMMITTEES

This consultation process also includes coordination with organizations on a more geographically-oriented basis through the watershed management approach. This is proving to be a more efficient approach, since only those organizations and agencies with a stake in, or involvement with resource management activities specific to that watershed, are asked to participate in planning and implementation activities. The state's evolving watershed approach has engendered broad participation and involvement in various aspects of the NPS Program by federal, state, interstate, regional, and local government agencies, academic institutions, industries, and citizens' groups. Depending on the unique characteristics of a targeted watershed, management efforts may address some or all of the following issues: urban storm water, agricultural nonpoint sources, riparian restoration, anadromous fish restoration (e.g., fish ladders or dam removal), other impacts associated with hydromodification, tidal and inland wetland restoration/creation, wastewater treatment plant upgrades, septic system impacts, open space, public access, and land-use management. Depending on the issues for a specific watershed, different agencies and organizations may be involved in the planning and implementation efforts.
For example, the Quinnipiac River watershed is heavily urbanized and faces problems such as stormwater discharges, contaminated sediments, habitat degradation, low flows, and flooding. Through the Quinnipiac River Initiative, EPA and CT DEP helped form the Quinnipiac River Partnership to develop and oversee implementation of a watershed management plan. The Partnership includes representatives from the key watershed stakeholders, including federal, state, and municipal government agencies, area universities, environmental and other private organizations, and the general public. With guidance from the Partnership Steering Committee and its various subcommittees, EPA and CT DEP have targeted significant §319 grant funds to support implementation of high priority actions identified early in the planning process. Grant funds have gone to the UCONN/CES to work with nursery growers, groundskeepers, and farmers to promote integrated pest and crop management (IPM/ICM), thereby reducing pesticide and nutrient applications to the landscape. The UCONN/CES Nonpoint Education for Municipal Officials (NEMO) program has been contracted to provide technical assistance to municipal land use decision-makers, to help them reduce the impact of new development and redevelopment.

Similar to the Quinnipiac, the Hockanum River is heavily developed and suffers from many stormwater discharges. To address this problem, §319 funds were awarded to the Tolland County SWCD to initiate a program targeting commercial property owners, encouraging and rewarding them for managing their properties in a more environmentally-sound fashion. Additional funds have gone to build the capacity of the Hockanum River Watershed Association, which in turn has organized river cleanups, educational activities, canoe races, and, recently, a workshop for municipal officials and others on the NPDES Phase 2 Stormwater Regulations. The watershed

association is also working to build a larger constituency for the river by facilitating the development of a linear trail system.

Despite the fact that the Norwalk River watershed is located in a densely populated area of the state, it has relatively good water quality and fish habitat. Nevertheless, it is listed as impaired by bacterial contamination in the state's 303(d) list, and is threatened by further development throughout the watershed. EPA, CT DEP, and the NRCS, under the auspices of the Long Island Sound Study (LISS), established the Norwalk River Watershed Initiative (NRWI) to build local capacity for improving water quality and habitat conditions, and to demonstrate how watershed management can support implementation of the Long Island Sound CCMP. The first major step was the formation of the NRWI Committee, a group comprising representatives from federal, state, and municipal government agencies, environmental and other citizen groups, and watershed residents. The Committee established an 18-month time-frame to develop a watershed action plan to address the high-priority problems affecting the river and its surrounding land area. In October 1998, the NRWI Committee released the *Norwalk River Watershed Action Plan*, with actions organized under four broad categories: water quality; habitat restoration; land use/open space/flooding; and education and stewardship. Subsequent to the release of the action plan, the Committee reformed as the Norwalk River Watershed Advisory Committee, to oversee implementation of the plan. The Advisory Committee comprises approximately 20 members, with representative from each of the seven watershed municipalities, EPA, CT DEP, NRCS, the Southeastern Connecticut Regional Planning Agency, the Norwalk River Watershed Association, the First and Second Norwalk Taxing Districts (private water companies), the Greater Norwalk Chamber of Commerce, and the Norwalk Aquarium and Maritime Center.

Data and other information on the effectiveness of stormwater treatment systems and other BMPs, generated through such projects as the Jordan Cove Urban Watershed National Monitoring Project, are used to conduct outreach and education to the development community, through workshops and publications targeting land use officials, developers, realtors, landscape architects, and engineers.

Erosion and sedimentation associated with sand and gravel mining is a problem in several areas of the state, including the Naugatuck and Scantic river watersheds. The New Haven, Hartford, and Tolland county SWCDs have provided technical assistance to sand and gravel mine operators and municipal governments through the development of model ordinances and demonstration projects, and education and outreach through workshops and other means.

Agricultural production is concentrated in several priority watersheds around the state, including the upper Housatonic River basin, the upper Thames River basin, including the Shetucket, Quinebaug, and Yantic river watersheds, and the upper Connecticut River, including the Scantic and Farmington river watersheds. These areas have been targeted for Environmental Quality Incentives Program (EQIP) and Widlife Habitat Improvement Program (WHIP) funding by the State Technical Committee, which includes representatives from the Connecticut Farm Bureau as well as the CT DEP, DOA, NRCS, FSA, EPA, and SWCDs. Fairfield County has the largest concentration of horse farms in the state. The Sasco Brook watershed is home to one of the largest horse boarding facilities in the county, and is also on the state's 303(d) list as impaired by bacterial contamination. One of the first major management actions in the watershed involved working with an equestrian center to install a new septic system, improve manure management practices, and create riparian buffers.

C. REGIONAL EFFORTS

A few nonpoint source pollution problems extend farther than the borders of Connecticut. Specifically, CT DEP has been active in the issues of atmospheric deposition of nitrogen and mercury. Nitrogen deposition contributes to acidification of waterbodies, nutrient saturation of forests, and eutrophication of Long Island Sound. Consumption advisories have been issued for several species of fish due to mercury contamination, much of which originates from atmospheric deposition.

To address these problems, CT DEP has been at the forefront of promoting regional and national efforts to control both nitrogen and mercury. The Air Bureau has worked to implement rigorous controls of stack emissions and auto

emissions through regulation and testing. CT DEP has used supplemental enforcement penalty funds to conduct research and modeling on atmospheric sources, deposition, and management planning for both nitrogen and mercury. CT DEP is also a driving force on the New England Governors and Eastern Canadian Premiers committees to implement both the Acid Rain Action Plan and the Mercury Action Plan. Finally, the LISS management actions have scheduled activities beyond point and nonpoint source controls of nitrogen in Phase III to a Phase IV directed at atmospheric nitrogen deposition control as well as other actions.

D. FINANCIAL ASSISTANCE

The CT DEP provides financial support to many of its partners by "passing through" 50-60 percent of its annual §319 allocation to regional and municipal government and non-government organizations; the balance is used to fund NPS Program staff in the Bureau of Water Management and other CT DEP staff (e.g., Project WET coordinator, water quality monitoring, basin coordinators, Environmental and Geographic Information Center for GIS support). CT DEP administers a competitive §319 grant program that receives approximately 30-40 applications annually for new projects, and typically funds 20-25 projects targeting both priority watersheds and statewide issues.

E. TRIBAL COORDINATION

CT DEP also has an excellent working relationship with the two federally-recognized Indian tribes in Connecticut, the Mashantucket Pequots and Mohegans. The CT DEP has assigned a Water Bureau supervisor involved with the NPS Program as the lead technical point of contact for the two tribes. Coordination with CT DEP during construction of the Mashantucket Pequots "Foxwoods" casino resulted in the implementation of several innovative best management practices, including created wetlands, to treat parking lot runoff.

3. BALANCING STATEWIDE AND WATERSHED APPROACHES

Connecticut's NPS Program is well-balanced, with an appropriate mix of statewide programs and geographically-targeted watershed projects.

A. WATERSHED PROGRAMS

As described in Element 1, the CT DEP is in the process of establishing a formal watershed management program, including some reorganization and refocusing of base program staff, hiring five major basin coordinators, and targeting grant funds based on watershed priorities. Consistent with this approach, CT DEP has dedicated 50-60 percent of the annual §319 grants to watershed initiatives for the Quinnipiac, Norwalk, Hockanum, Mattabesset, Scantic, and West rivers, and Sasco and Fenger brooks. New watershed management initiatives are either underway or in the planning stages for the Quinebaug and Shetucket rivers in the Thames River basin, and other priority watersheds. The watershed approach is also being utilized to restore lake water quality, building upon studies and plans developed with funds provided by the state Lake Water Quality Grant Program, the federal Clean Lakes Program (pursuant to §314 of the C.W.A), and §319 grants. The CT DEP routinely meets and consults with property owners, lake associations, and town officials to promote and assist in lake and pond management projects.

B. STATEWIDE PROGRAMS

The balance (40-50 percent) of the annual §319 grants are used to support statewide programs, including groundwater management (e.g., Aquifer Protection Program) nonpoint source education and outreach (Project WET), technical assistance and training (e.g., erosion and sediment control, NEMO), regulatory (e.g., stormwater permitting and wetlands protection), and GIS development (including land cover data and digitized soils mapping). Some statewide programs are largely delegated to municipalities (e.g., inland wetlands regulation, coastal site plan review, erosion and sediment control, small residential septic system regulation), with oversight by CT DEP and, in the case of small septic systems, the DPH. Because all the state's rivers drain to Long Island Sound, all statewide

and watershed programs include elements to address Long Island Sound priority issues, including nonpoint source nitrogen reduction and habitat restoration.

4. POLLUTION ABATEMENT AND PREVENTION

The goals and objectives of the NPS Program include abatement of known water quality impairments and prevention of significant threats to water quality from nonpoint source pollution. The NPS Program abates existing impairments and prevents threats to water quality through a network of statutory and regulatory authorities, policies, and voluntary compliance assistance, implemented through both formal and informal programs administered by federal, state, and municipal government agencies. Some laws and regulations are implemented by more than one entity and address both existing impairments and future threats. For example, implementation of the state Inland Wetlands and Watercourses Act is delegated to the municipalities, with CT DEP oversight, and is used to both abate existing problems (e.g., remove wetland fill) and prevent future threats (e.g., require buffers between new development and water resources). In addition, implementation of the Coastal Nonpoint Pollution Source Program (CNPCP) management measures, developed pursuant to CZARA §6217, will further abate and prevent nonpoint source pollution that significantly affects coastal water quality. Significant threats to coastal water quality from nonpoint sources of pollution such as urban runoff and hydromodification, and the opportunity to reduce these sources, will also be identified through the state's watershed management efforts.

A. POLLUTION ABATEMENT

Existing impairments are largely the result of historical land use decisions and practices; therefore programs to address them are primarily abatement or restoration-oriented in nature. Some authorities and programs that address existing problems include emergency erosion control, agricultural waste management, and best management practice demonstration projects, which are often implemented through the watershed approach. The state NPS Program has historically targeted a majority of its annual §319 grant at restoring watersheds impaired by nonpoint source pollution. One of the primary eligibility criteria for funding projects under §319 has been documentation of an existing nonpoint source pollution problem, including the specific impairment(s), the contributing source(s), and actions necessary to abate the problem.

As required by the federal Clean Water Action Plan, the state's Unified Watershed Assessment (UWA) describes current environmental conditions throughout the state organized by major basin, identifies watersheds as either impaired (Category 1) or threatened (Category 2), and prioritizes impaired watersheds for restoration. Connecticut's UWA is a product of the compilation and review of available information on water quality, land use, natural resources, and pollution sources. As stated in the UWA document, "(it) will facilitate the targeting of watershed restoration funds that may become available under §319 of the federal Clean Water Act. These funds will be targeted to Category 1 watersheds in accordance with three priorities: (1) watersheds with active, multi-partner management efforts already underway; (2) watershed with waterbodies identified as high-priority for development of TMDLs analyses pursuant to the state's 303(d) list, when problems relate to watershed management needs; and (3) new restoration initiatives with substantial local support." Clean Water Act §305(b) and §303(d) assessments, volunteer monitoring data, NRCS Environmental Quality Incentives Program (EQIP) priorities, and the Connecticut Resource Protection Project were primary data sources for the state's UWA.

Specific restoration activities will be guided through the development of Watershed Restoration Action Strategies (WRAS).

Through watershed management initiatives, watershed stakeholders work together to identify nonpoint source impairments, establish priorities for implementation, and develop action plans to address those priorities. For example, the NRWI Committee identified septic systems, loss of riparian buffers, sedimentation (from road sanding), and nutrient enrichment as priority problems. The Committee then developed action plans including: adopting septic inspection and maintenance ordinances; riparian buffer restoration; enhanced spring sand removal; and public education on reduced fertilizer use and the importance of restoring and maintaining vegetated buffers. EPA and CT DEP are now providing §319 funding to support implementation of these high priority action plans, and local governments and organizations have used this federal support to leverage significant financial and in-kind contributions. Grant funds have gone to the Fairfield County SWCD to work with municipal departments of public works to minimize the impact of road sand applications, the Norwalk River Watershed Association to work with local health departments and septic system owners to promote septic system inspections and maintenance, to the Westport Nature Center for Environmental Activities to expand its Riverwatch/Harborwatch water quality monitoring in the watershed, and to the NRCS to restore riparian buffers. The CT DEP is also using funds to hire a watershed coordinator to provide staff support to the Advisory Committee and coordinate implementation activities. The Fairfield County SWCD succeeded in getting a private foundation grant to supplement the funding for the coordinator position, and the local Trout Unlimited chapter has received grants from its national office to work with the town of Wilton and several private contractors to restore in-stream fish habitat. The Initiative also has had success reaching out to commercial property owners in the watershed to gain support for restoring riverbank vegetation and other environmentally-sound landscaping practices.

B. POLLUTION PREVENTION

Consistent with the CT DEP's commitment to pollution prevention, the state NPS Program is placing an increased emphasis on preventing threats to water quality. Threats to water quality are strongly tied to future land use decisions, which are made at the local level, so programs to address them involve providing local governments with the authorities and tools to make environmentally-sound decisions. CT DEP has statutory and regulatory authorities, policies, and compliance assistance programs that address future threats, some of which are delegated to

municipalities with agency oversight and technical assistance (e.g., aquifer protection, erosion and sediment control, coastal zone management, wetlands permitting/enforcement, local hazardous waste collection and disposal, recycling). In addition, state law gives municipal governments the authority to administer land use planning and zoning programs, which have a direct bearing on local water quality.

One of the statewide programs that addresses preventing threats to water quality is the UCONN/CES NEMO Program. The basic NEMO Program provides training to local land use decision makers on the connection between land use and water quality, particularly the relationship between levels of impervious surface and degrees of impairment. In addition to the basic NEMO presentation, UCONN/CES also provides advanced modules on reducing impervious surfaces, best management practices (BMPs), and open space planning. The CT DEP has provided §319 funds to support both the statewide NEMO Program and targeted efforts in priority watersheds.

In addition to the NEMO Program, CT DEP also provides assistance and training to coastal municipalities in identifying various methods to prevent nonpoint source pollution and protect coastal water quality. The OLISP has developed and disseminated a manual describing BMPs for urban runoff, and marina operation and maintenance, and with model stormwater, and erosion and sediment control ordinances. The manual has been presented at several regional and municipal workshops, and more workshops are anticipated in the future. Similar outreach and training efforts will be expanded throughout the §6217 management area once Connecticut's CNPCP receives full approval and implementation is formally underway.
As described in Element 3, nonpoint nitrogen management is an overriding concern in all watershed management initiatives. As part of the *Phase III Actions for Hypoxia Management*, which calls for a 58.5 percent reduction in nitrogen loadings from the Connecticut and New York portions of the Long Island Sound watershed, the CT DEP is committed to achieving a ten percent reduction in nonpoint nitrogen loads to the Sound. The state is developing a nitrogen effluent trading program that may allow trading between point and nonpoint sources to achieve the most cost-effective net reduction.

Protecting and preserving open space, particularly in sensitive watershed areas (e.g., wetlands, riparian zones, and aquifer protection areas) is the ultimate nonpoint source management tool.
The General Statutes of Connecticut were amended by Public Act 99-235 to reflect in Section 23-8 that: "Twenty-one percent of the State's land areas shall be held by the state as open space land. The goal of the state's open space acquisition program shall be to acquire land such that ten percent of the state's land area is held by the state as open space land and not less than eleven percent of the state's land area is held by municipalities, water companies or nonprofit land conservation organizations as open space land..."

In order for the State to acquire not less than ten percent of the state's land as open space in state ownership, an additional 111,000 acres must be acquired. To help protect not less than eleven percent of the state's land as open space owned by municipalities, land conservation organizations and water companies, the state must work with municipalities, private nonprofit organizations, and water companies to foster and encourage the protection of an additional 127,000 acres. The CT DEP has been charged to meet these two important goals by 2023.

Between 1998 and 2003, Governor Rowland has proposed spending $166 million in state bond funds for land protection, a plan that has been widely supported by legislators, local officials, and the public. In 1998, the General Assembly passed the first proposed allocation of $29.5 million, $19.5 million for the Recreation and Natural Heritage Trust Program and $10 million for the Open Space and Watershed Land Acquisition Grant Program, for fiscal year 1998-99. The FY2000 State Budget includes $32 million: $20 million for the Recreation and Natural Heritage Trust Program and $12 million for the Open Space and Watershed Land Acquisition Grant Program.

In FY99, the CT DEP acquired 3,550 acres through the Recreation and Natural Heritage Trust Program. These lands are in addition to the state's system of parks, forests, wildlife, fisheries, and natural resource management areas. The acreage acquired during FY99 was the highest total for any one year in the past twenty years.

During FY99, the CT DEP awarded $10 million through the Open Space and Watershed Land Acquisition Grant Program for 45 projects to cost share with municipalities, private nonprofit land conservation organizations and water companies to acquire approximately 4,200 acres of open space land. Currently, the CT DEP is soliciting

project applications for the commitment of $6 million through the Open Space and Watershed Land Acquisition Program.

Chapter 439 of the Connecticut General Statutes, commonly referred to as "The Environmental Policy Act" requires all State Agencies to evaluate all actions which may affect the environment. The Office of Policy and Management determines if any proposed State action including actions partially or wholly funded by the State required an environmental impact evaluation, with review
by CT DEP and other appropriate Agencies. This process often results in altered design or location in a manner that will lower environmental risk.

5. IDENTIFYING AND ADDRESSING IMPAIRED AND THREATENED WATERS AND WATERSHEDS

The CT DEP utilizes several approaches to identify waters impaired and threatened by nonpoint sources. One approach uses water quality monitoring and assessment data to characterize surface waters as either impaired, threatened, or unimpaired, and identify potential causes of impairments or threats. Water quality monitoring, for both chemical and biological parameters, is conducted by the CT DEP, DPH, USGS, EPA, and citizen monitoring groups. The state's ambient monitoring program is administered jointly by the CT DEP and USGS, while some intensive surveys are conducted with EPA assistance.

Some of the organizations most active in conducting volunteer, citizen monitoring include the Connecticut River Watch Program (administered jointly with the Middlesex County Soil and Water Conservation District), the HarborWatch/RiverWatch Program (administered through the Nature Center for Environmental Activities - Westport), Save the Sound's harbor monitoring program, and Project SEARCH (administered by the Connecticut Science Museum for high schools throughout the state). To support volunteer monitoring efforts, CT DEP is utilizing §319 funds for a staff person in the water quality monitoring unit to provide technical assistance to these organizations. CT DEP uses this water quality data as part of its §305(b) assessment and §303(d) listing processes, which in turn are used to target more detailed assessments, development of total maximum daily load (TMDL) analyses, and watershed implementation plans.

Another approach, as described in the state's *Nonpoint Source Assessment and Management Plan*, uses land cover analyses to identify areas where nonpoint source problems may exist based on the predominant existing land uses. In Connecticut, as elsewhere, nonpoint source pollution is most severe where land use is intense. Watersheds with high percentages of urban or agricultural land cover, for example, are likely to be impaired or threatened by urban storm water or agricultural runoff, and have been identified as producing much of the nonpoint source nutrients affecting inland water resources and Long Island Sound. Areas with high percentages of forested or natural lands have been targeted for protection activities. With the potential effects of development of forested lands in Connecticut, protecting these lands to maintain high quality surface and groundwater resources is officially recognized as a high priority in such documents as the state's Clean Water Act, *Water Quality Standards*, and *Conservation and Development Policies Plan for Connecticut.* New initiatives, including the Connecticut Resource Protection Project and the UCONN/CES NEMO Program, are placing a greater emphasis on preventing future nonpoint source problems. The state's Open Space Initiative is providing state bond funds to acquire open space, with water quality protection one of the key criteria being used to prioritize land for acquisition.

The process to progressively address impaired waters is driven largely by the state's Unified Watershed Assessment (UWA), which draws heavily on the water quality and land use data described above. The UWA identifies watersheds as either Category 1 (impaired and in need of restoration) or Category 2 (threatened and in need of protection), and then prioritizes Category 1 watersheds for more detailed assessments and management. This approach is consistent with §303(d) of the Clean Water Act, which requires states to list impaired waters and prioritize them for the development of management plans. For example, Connecticut's *1998 List of Waterbodies Not Meeting Water Quality Standards* commits the state to develop, within two years, total maximum daily load (TMDL) analyses and water quality management plans (that include nonpoint source reduction goals) for Long Island Sound and some of its tributaries, including Sasco Brook. These detailed assessments and management plans

are often conducted and developed through targeted watershed management efforts. As described under Element 4, these detailed assessments lead to the development of action plans to address priority problems.

One important factor not reflected in this prioritization scheme is community interest. Successful watershed management planning and implementation relies heavily on the participation of local government officials and residents, since most existing problems and future threats result from local land use decisions and individual actions. The degree of community interest is often the deciding factor when selecting the next watershed for focused management activity.

6. MECHANISMS TO ACHIEVE AND MAINTAIN WATER QUALITY STANDARDS

The state NPS Program includes all components required by §319(b), and establishes flexible, targeted, and iterative approaches to achieving and maintaining beneficial uses of water.

A. WATER QUALITY- AND TECHNOLOGY-BASED MECHANISMS

The draft revised *Nonpoint Source Assessment and Management Plan* describes the best management practice regulations or guidelines relevant to each of the 16 major categories and numerous subcategories of nonpoint sources. Best management practice guidance documents developed by or for the CT DEP include, but are not limited to:

- *Protecting Connecticut's Groundwater: A Guide for Local Officials*
- *Manual of Best Management Practices for Agriculture*
- *A Practical Guide for Protecting Water Quality While Harvesting Forest Products*
- *Assessment of Nonpoint Sources of Pollution in Urbanized Watersheds: A Guidance Document for Municipal Officials*
- *Best Management Practices for Commercial, Industrial, and Institutional Land Uses in Aquifer Protection Areas*
- *Best Management Practices for the Protection of Ground Water*
- *Best Management Practices for Coastal Marinas*
- *Guidelines for Soil Erosion and Sediment Control*
- *An Inland Wetland Commissioners Guide to Site Plan Review*
- *Guidelines for Upland Review Regulations Under Connecticut's Inland Wetlands and Watercourses Act*
- *Protecting Connecticut's Water-Supply Watersheds: A Guide for Local Officials*
- *Ponds in Connecticut: A Guide to Planning, Design, and Management*
- *Caring for Our Lakes*
- *Coastal Water Quality Protection. A Guide for Local Officials*

It is important to note that most of these documents are constantly evolving and being revised to reflect advancements in the science and technology of nonpoint source management. Most of the BMP regulations and guidelines dictate a technology-based approach (e.g., the 80 percent total suspended solids (TSS) removal goal for construction sites). Water quality-based programs are usually the result of intensive studies indicating that technology-based approaches will not achieve water quality standards. For example, the promotion of nitrogen removal at sewage treatment plants and BMPs that reduce nonpoint source loadings of nitrogen is a direct response to the nutrient enrichment of Long Island Sound and the resultant low dissolved oxygen levels (hypoxia) experienced every summer. The technology-based (i.e., secondary treatment) approach was unsuccessful in addressing this important water quality problem.

B. REGULATORY AND NON-REGULATORY MECHANISMS

The *Nonpoint Source Assessment and Management Plan* also describes the full suite of regulatory and non-regulatory programs utilized to minimize or prevent nonpoint source pollution. Non-regulatory programs are currently delivered on both a statewide basis and through the state's watershed management approach (as described under Element 4).

The State of Connecticut's Water Pollution Control Statutes (Sections 22a-416 through 22a-484, Connecticut General Statutes) provide the Commissioner of Environmental Protection with myriad regulatory authorities to abate, prevent or minimize all sources of water pollution, including nonpoint sources. The authorities include establishment of site specific water quality goals and criteria, best management practices, product bans, discharge permitting and multiple enforcement tools to abate or prevent pollution. Connecticut is also able to manage all sources of pollution in part because the statutes broadly define terms such as "waters" (of the state), "pollution", "wastes", "sewage", "discharge", "rendering unclean or impure", and other terms to give the Commissioner expansive powers.

Technical assistance is provided through various training and educational programs administered by the CT DEP, the USDA/NRCS, the Connecticut Association of Conservation and Inland Wetland Commissions (CACIWC), the University of Connecticut Cooperative Extension System, the Connecticut (Transportation) Technology Transfer Center, and the county soil and water conservation districts. Examples of these programs include the Inland Wetland Commissioners Training Program, coastal zone management training by OLISP, the NEMO Program, training on the *Guidelines for Soil Erosion and Sediment Control*, and Project WET (Water Education for Teachers). The state is currently investigating the development of a new training program on storm water management system design and maintenance. As an initial step, CT DEP has funded the development of revised hydrologic "storm" curves based on current rainfall data, information that ultimately will be delivered through this proposed training program. Regulatory programs include those administered by the CT DEP or delegated to municipalities under the state's Inland Wetlands and Watercourses Act; Tidal Wetlands Act; Structures, Dredging and Fill Act; Coastal Management Act; Soil Erosion and Sediment Control Act; Aquifer Protection Act; and National Pollutant Discharge Elimination System (NPDES) Storm Water Permit Program.

All these programs promote technology transfer based on demonstration and monitoring projects conducted in Connecticut and elsewhere. Demonstration projects in Connecticut include the Jordan Cove Urban Watershed National Monitoring Project, with monitoring by the University of Connecticut to determine the effectiveness of best management practices for residential development, and monitoring the pollutant removal efficiency of four new stormwater treatment systems (Vortechnics™, DownStream Defender™, StormTreat™, and Stormceptor™), also being conducted by UCONN. One of the first successful BMP demonstrations involved constructing and monitoring a combined wet pond/wetland ("treatment train") system to treat stormwater prior to discharging into Lake Whitney, a public water supply in Hamden.

Financial assistance is provided through numerous federal, state, and municipal government agencies and private sources, including federal grants awarded under Clean Water Act §§ 319, 604(b), 104(b)(3), and 119 (Long Island Sound Improvement Act, National Estuary Program); federal cost-sharing with agricultural producers under the USDA/NRCS Environmental Quality Incentives Program (EQIP) and Wildlife Habitat Improvement Program (WHIP); state funds through the River Restoration Grant Program, Lake Water Quality Grants Program, Long Island Sound License Plate Fund, Coves and Embayments and Long Island Sound Research programs through Connecticut's Clean Water Fund; the U.S. Fish and Wildlife Service (e.g., Silvio Conte National Fish and Wildlife Refuge Challenge Cost-Share Program); and special bond acts by the Connecticut General Assembly. Local organizations are also encouraged to solicit grants from national environmental organizations and private foundations (e.g., National Fish and Wildlife Foundation, Trout Unlimited "Embrace-a-Stream" grant program).

7. FEDERAL CONSISTENCY

Because there is so little federal land in Connecticut, this is not a major issue for the state NPS Program. Since the federal (military) facilities in Connecticut are located in the coastal zone, the Connecticut Coastal Zone Management Program's federal consistency review requirements provide an opportunity to address nonpoint source issues on federal lands. Throughout C.W.A. §401 Water Quality Certification Program, the CT DEP is an active participant in the hydropower project relicensing process administered by the Federal Energy Regulatory Commission (FERC), and is currently providing guidance on the relicensing of the two hydropower (totaling five facilities) projects on the Housatonic River. Groundwater remediation activities at the Groton Sub Base also are subject to Bureau of Water Management review.

8. EFFECTIVE PROGRAM MANAGEMENT AND IMPLEMENTATION

The Connecticut NPS Program is particularly strong on this element. It's important to note that Connecticut is the *only* New England state to continue annual categorical §319 grant awards for projects other than Bureau of Water Management staff, which are funded through the Performance Partnership Grant (PPG). The state administers anywhere from 20-25 individual §319 "pass-through" projects each year, most of which are multi-year implementation projects that require carry-over of funds for several years before they are completed. By keeping the project funds separate under a categorical grant, the state NPS Program has been able to maintain an excellent project management system, including GIS mapping of project locations and solid financial tracking. While EPA has reduced its reporting requirements to a biannual cycle, CT DEP still requires its sub-grantees to submit quarterly progress reports to maintain strict control over NPS Program-funded activities. If a project falls behind or circumstances arise that prevent timely implementation, CT DEP can postpone additional funding or choose to re-program funds to another project that is ready to go or that is already underway but could use some supplemental funding. CT DEP's financial management practices are consistent with standard approved accounting practices and with federal financial assistance guidelines, ensuring the effective and efficient use of all available resources. The state NPS Program also has been very effective in leveraging resources from other federal, state, and local government agencies and nonprofit organizations through its grant programs, which all require significant matching contributions.

9. PROGRAM REVIEW AND EVALUATION

The Connecticut NPS Program does periodically review and evaluate its progress in meeting programmatic goals and objectives, and revises its management program based on these evaluations. Evaluation mechanisms include: periodic reviews by the statewide advisory committees described in Element #2; quarterly and annual reports; an annual §319 work plan;
"success stories" for EPA and CT DEP publication; and monitoring data for waters where nonpoint source implementation is occurring.

A. STATEWIDE ADVISORY COMMITTEES

As described in Element #2, the CT DEP utilizes several standing committees to provide input and guidance on NPS Program goals, objectives, strategies, and activities. The CT DEP has solicited input from these committees on the draft *Nonpoint Source Assessment and Management Plan*, this supplemental *Nonpoint Source Management Program* description, and the state's Coastal Nonpoint Pollution Control Program, described in the report, *Managing Coastal Nonpoint Sources of Pollution.* The CT DEP will continue to update the program and seek periodic reviews of this nature every 3-5 years, focusing on the attainment of the long- and short-terms goals, objectives, and strategies described in Element #1.

B. QUARTERLY AND ANNUAL REPORTING

The CT DEP requires quarterly progress reports from "pass-through" §319 grant recipients, and meets periodically with project managers, through which progress is evaluated on a project-by-project basis. These reports are compiled, summarized, and submitted to EPA semi-annually. Each year the CT DEP issues an annual report summarizing program accomplishments over the previous calendar year, highlighting programmatic and environmental results.

The LISS produces an annual *CCMP Tracking and Monitoring Report*, which describes progress in implementing the CCMP action plans for: hypoxia management; toxic contamination, pathogen contamination, living marine resources, floatable debris, and public education and outreach.

The NOAA Office of Coastal Resource Management (OCRM) requires OLISP to provide semi-annual progress reports, which includes development and implementation of the CNPCP.

C. ANNUAL WORK PLAN

In cooperation with EPA, USDA/NRCS, and other partners, the CT DEP BWM prepares and submits to EPA an annual budget and work plan (for PPGs and "categorical" grants) describing the specific projects, with measures of success, that will be initiated utilizing that year's grant funds (federal and non-federal).

D. SUCCESS STORIES

Every few years, EPA's Office of Water publishes a "Section 319 Success Stories" report. CT DEP has submitted four successful projects, two for each of the "success stories" compilations published by EPA, and will continue to seek and submit success stories upon request by EPA. CT DEP also publishes numerous fact sheets and brochures describing its successful projects for general distribution, through which feedback is sought from its various partners and the public.

E. MONITORING

Connecticut's *Ambient Monitoring Strategy for Rivers and Streams: Rotating Basin Approach* utilizes a rotating basin monitoring approach to improve assessment of the state's rivers and streams. This program targets its resources at Connecticut's major river systems, and provides a good, overall indicator of water quality in the state. The upper Thames River basin is the next hydrological assessment unit to be monitored under the rotating basin plan. This work will begin with benthic invertebrate sampling, starting in October 1999, and will continue with quarterly, physical and chemical sampling at 39 sites through September 2000. Currently, the CT DEP is evaluating new approaches to monitoring that will better gauge impacts to water quality from nonpoint sources during wet weather events.

Volunteer citizen monitoring supplements the ambient monitoring program by providing more data on priority watersheds. In addition, CT DEP is developing a statewide watershed model to improve tracking and monitoring of pollutants, and benefits of nonpoint source management. The Long Island Sound monitoring strategy focuses on nutrients and dissolved oxygen, the primary water quality concern for the state's estuarine waters. Additional work and resources will be necessary to effectively measure improvements in water quality resulting from implementation of nonpoint source control programs and individual projects. These needs are continually evaluated and addressed in management program upgrades.

II. IMPROVING NONPOINT SOURCE MANAGEMENT IN CONNECTICUT

Nonpoint source management remains a challenge for the CT DEP and the numerous other agencies, organizations, and individuals working to restore and protect the quality of the state's water resources. The complicating factor is that nonpoint source pollution is largely the result of land use, and land use decisions are made primarily at the local level. While the federal and state governments are charged with meeting the goals of the federal Clean Water Act and Coastal Zone Management Act and companion state laws, namely "fishable and swimmable" waters, they do not have the ability to regulate the primary remaining sources of the pollutants that prevent attainment of these goals. One of the biggest challenges to the state NPS Program is building awareness of the connection between land use and water quality, and then providing local land use decision-makers with the tools necessary to guide development in such a way as to minimize impacts to local water resources. The national program to control nonpoint source pollution, prescribed by §319 of the Clean Water Act, relies primarily on the voluntary use of "best management practices" (BMPs) to reduce the impacts of land use on water quality. CZARA §6217 requires the state to have enforceable policies to ensure the implementation of management measures to protect coastal water quality from nonpoint source pollution.

1. TECHNICAL TRAINING AND ASSISTANCE

The CT DEP, with funding provided in part by EPA under §319, administers several training programs to encourage municipalities to require BMPs for new development, and has conducted numerous demonstration projects to test the pollutant-removal effectiveness of different BMPs. While building local capacity remains a challenge, one measure of the success of Connecticut's

NPS Program is the increased recognition of nonpoint source pollution as a serious concern among the various local boards and commissions that deal with development, as borne out by the increased emphasis placed on soil erosion and sediment control, maintaining and restoring wetland and riparian buffers, stormwater treatment systems, and other runoff controls. The CT DEP BWM and OLISP must continue to build local capacity by providing timely and consistent technical assistance to these boards and commissions, many of which are staffed by citizen volunteers. Because membership on these boards and commissions turns over on a regular basis, there is a need to provide ongoing training programs, like the inland wetland commissioners training program and NEMO, and develop new programs as new issues arise. One example is the need for a stormwater management manual and accompanying training program for both municipal officials and the development community. Some of the tools and materials necessary for such a program are currently under development, including a §319-funded project by the University of Connecticut to update and revise "intensity/frequency/ durational" curves based on recent rainfall data on which stormwater management system designs are based.

A. NONPOINT SOURCE EDUCATION FOR MUNICIPAL OFFICIALS

One such program is administered by the University of Connecticut Cooperative Extension System (UCONN/CES) with §319 funding support from CT DEP. The primary purpose of the UCONN/CES Nonpoint Education for Municipal Officials (NEMO) Program is to educate municipal land use decision makers about the connection between land use and water quality, and provide them with technical information on how to reduce the environmental impacts of new development.

B. OFFICE OF LONG ISLAND SOUND PROGRAMS

The CT DEP Office of Long Island Sound Programs (OLISP) provides assistance and training to coastal municipalities in identifying various methods to prevent nonpoint source pollution and protect coastal water quality. The OLISP has developed and disseminated a manual describing BMPs for urban runoff and marina operation and maintenance, and with model stormwater, and erosion and sediment control ordinances. The manual has been presented at several regional and municipal workshops, and more workshops are anticipated in the future. Similar outreach and training efforts will be expanded throughout the §6217 management area once Connecticut's CNPCP receives full approval and implementation is formally underway.

2. ENFORCEMENT

In addition to the need for increased technical training and assistance, there also is a need for more consistent enforcement of environmental regulations by local governments. The state, which has an oversight role in many programs, also lacks the necessary resources to be fully effective in that role. An important component of the ongoing and future training programs is getting across to municipal boards and commissions the importance of enforcing state and local laws and regulations, and giving them greater access to support from the federal and state regulatory agencies.

3. WATERSHED MANAGEMENT

The transition from the traditional, program-driven approach to water resources management to a comprehensive, multi-media "watershed approach" is yet another challenge facing the department in the coming years.

A. BUREAU OF WATER MANAGEMENT

The CT DEP took the first step in 1996 by establishing, within the Water Bureau's Planing and Standards Division, a Watershed Management and Coordination Section to oversee the department's watershed management efforts. Staff in this new unit have been assigned to one or two priority watersheds, and act as liaisons between the department's base program staff, other state and regional agencies, and local stakeholders. They also administer the state's River Restoration Grant Program, and coordinate these activities to leverage §319 grant funds and other funding sources. At the same time the Bureau of Water Management began developing a "watershed management strategy," to determine and assign roles and responsibilities among the numerous state, regional, and local entities that have a stake in a watershed approach to water resources management. The culmination of this effort should result in a watershed management framework that describes, in a clear and concise manner, the roles and responsibilities of the state, regional, and local agencies and organizations involved in water resources management. As a follow-up to that exercise, the Water Bureau is currently assessing the need for further restructuring to facilitate more effective watershed management, and is using §319 funds to hire five full-time "watershed coordinators" for the five major basins in the state.

2. OFFICE OF LONG ISLAND SOUND PROGRAMS

The Office of Long Island Sound Programs' Coastal Programs Unit has also reorganized staff liaison assignments on a coastal watershed basis. OLISP Coastal Programs Unit staff serve as the coastal management program's contacts with coastal municipal planning and zoning authorities, providing technical assistance in the review of coastal development proposals and land use planning as well as outreach and education to municipal officials on coastal management-related issues such as the connection between nonpoint source pollution and land use. The coastal municipalities contiguous to the Thames River, the Connecticut River, the Quinnipiac River, the Housatonic River, and the Western Coastal Basin have been grouped according to their watershed and assigned to individuals on the Coastal Programs Unit staff.

C. SOIL AND WATER CONSERVATION DISTRICTS

On a parallel track, the CT DEP, in cooperation with the Connecticut Association of Conservation Districts (CACD), is exploring the potential for reorganizing the eight county soil and water conservation districts on a watershed basis. CT DEP believes the existing county-based soil and water conservation district system is not organized to effectively support watershed management as county boundaries have little relationship with natural resources. In support of this effort, CT DEP submitted legislation in early 1999 that would reorganize the eight county district structure to four watershed-based districts. The CT DEP believes that this change will facilitate greater local stewardship of natural resources; improve technical assistance to municipalities and agriculture producers on matters related to soil and water conservation; aid the department's watershed management initiatives; result in more efficient administration of district operations; and help to foster financial stability throughout Connecticut's soil and water conservation district system. Reorganizing by watersheds will foster greater working relations with CT DEP regarding resource needs for:

improved erosion and sediment controls; inland wetlands and watercourses training programs; storm water management; and farm resource management panning in aquifer protection areas. The CACD is committed to adopting a new management structure, with watershed-based conservation districts, by mid-1999, and CT DEP has set aside §319 funds to assist with this transition.

D. PRIORITY-SETTING

Utilizing this watershed management framework, the CT DEP and its partners will focus their resources on a subset of selected, high priority watersheds for a three-five year period (depending on the size and complexity of issues involved in the watershed) on a rotating basis, initiating one-two new projects each year. One important factor driving this schedule is the *List of Connecticut Waterbodies Not Meeting Water Quality Standards*, which is produced biennially pursuant to §303(d) of the Clean Water Act. Section 303 also requires that, once these waterbodies are identified, plans are developed and implemented that will eliminate the impairment and allow attainment of water quality standards. One important aspect of this new approach is soliciting and encouraging the participation of local government agencies and watershed residents in the decision-making process from the beginning of the project. This will involve extensive public outreach efforts to solicit input from local stakeholders on everything from the problems they would like to see addressed to the proposed solutions. Experience has shown this to be extremely labor intensive and time consuming in the initial stages of a watershed project, but the "buy-in" by local stakeholders committed to implementing the "watershed management plan" more than makes up for it.

The NPS Program is only one component of this emerging watershed management approach being developed by the CT DEP Water Management Bureau, but because of the predominance of water quality problems associated with nonpoint source pollution, it is an extremely important one. Many early watershed management efforts were conducted under the auspices of, and funded by the CWA §319 grant program, and the department learned many useful lessons from these projects. The success of the CT DEP's watershed approach will depend heavily on the Water Bureau's ability to learn from these lessons and to remove old institutional barriers to working across media, program, and personal boundaries.

4. NATIONAL ENVIRONMENTAL PERFORMANCE PARTNERSHIP SYSTEM

Beginning with FY96, the CT DEP entered into EPA's new National Environmental Performance Partnership System (NEPPS), and for the first time received several previously separate grants under three performance partnership grants (PPGs). The Bureau of Water Management applied for federal Clean Water Act funds authorized under §§ 106, 104(b)(3), and § 319 through a single grant application and work plan, or Performance Partnership Agreement (PPA). The Air and Waste Management Bureaus also applied for and received one PPG apiece encompassing several previously categorical grants. For FY98-99, CT DEP negotiated a two year PPA with EPA, but still applies for and receives an annual, multi-media PPG covering most of the eligible grant programs. The driving force behind the NEPPS is an emphasis on measuring a state's performance in protecting the environment by real improvements in the quality of air, water, and land resources, rather than the traditional, numbers-oriented approach often referred to as "bean counting." It also allows the state greater discretion and flexibility in determining its environmental priorities and how shared resources should be targeted to address these priorities. The CT DEP, and in particular, the NPS Program, faces a real challenge in establishing these new performance measures, or environmental indicators, as changes in the environment resulting from nonpoint source management are often slow to materialize and difficult to measure even using the most rigorous monitoring methods and practices.

5. BUILDING PARTNERSHIPS

As described in the Section I, one of the strengths of the state NPS Program is its close coordination and strong working relationships with other federal, state, and local government agencies and non-government organizations. However, some of these relationships are not as strong as they could or should be. For example, CT DEP often has to

operate in a reactive mode to projects proposed by the state DOT, because there isn't a mechanism in place to coordinate during the important preliminary planning stages of these projects. Rather than being forced to react to proposals to fill wetlands or increase stormwater discharges, CT DEP and DOT should work together during the early stages of projects to promote environmentally-sound approaches to road construction and stormwater management. One strategy might be to establish a workgroup of the appropriate CT DEP and DOT staff to create a mechanism though which the use of best management practices is institutionalized in DOT's capital planning process. Information on the pollutant removal capabilities of different stormwater treatment systems, generated through the NPS Program, will be used to promote the use of the most effective systems.

The CT DEP also must continue its efforts to ensure that nonpoint source pollution from local and state roads, highways, and bridges is controlled, especially when improvements to existing infrastructure are being proposed. On-going training and education for officials in DOT and local departments of engineering and public works must be improved to expand the project design focus to include water quality impact reductions in addition to water quantity issues and to ensure the implementation of best management practices (BMPs). One of the methods currently under development to achieve improvement in this area is an alternatives analysis flow chart to aid DOT and local public works and engineering staff in project designs to improve water quality. The flow chart will compel DOT and local road design officials to consider and evaluate the various best management practices that can be accommodated based on site and other constraints (e.g., presence of sensitive resources, right-of-way limitations, incompatible soils for infiltration, etc.) and explicitly describe why more advanced treatment is not feasible in those instances where such treatment is not proposed.

III. FUTURE DIRECTIONS FOR NONPOINT SOURCE MANAGEMENT

1. INFLUENCING LOCAL LAND USE DECISIONS

Land use regulation in Connecticut and throughout New England is the responsibility of municipal governments, and is effected through zoning ordinances, subdivision regulations, and other assorted authorities. "Home rule" as it pertains to land use regulation has a long and rich history in New England, and as a result, state government has little authority over local land use decision-making. In Connecticut, the state encourages municipalities to consider the goals and policies of the *Conservation and Development Policies Plan for Connecticut*, issued every five years by the state Office of Policy and Management (OPM).

A. STATEWIDE

As described in Section I, the CT DEP has developed numerous manuals and guidance documents describing a wide range of best management practices (BMPs) for different categories of nonpoint source pollution. The state also requires municipalities to enforce two important state laws that influence development proposals: the "Soil Erosion and Sediment Control Act" and "Inland Wetlands and Watercourses Act." Both laws are intended to minimize the adverse impacts of development activities on nearby wetlands and surface water bodies. The CT DEP is currently in the process of updating and revising its *Guidelines for Soil Erosion and Sediment Control*, which serves as guidance on the proper implementation of the state law. A companion training program will be conducted by CT DEP, in conjunction with the soil and water conservation districts, upon its completion in 2000.

Construction activities disturbing five acres or more are subject to the CT DEP's stormwater discharge permit program, which requires developers to adopt stormwater pollution prevention practices during construction. The second phase of this federally-mandated program, which will reduce the size threshold to one acre and therefore bring more construction activities under regulation, will become effective in 2000. To implement these state and local laws and regulations, municipalities routinely require BMPs to protect wetlands and water quality.

B. COASTAL

Coastal municipalities also are required to implement Connecticut's coastal management program through their existing planning and zoning authorities. A process called coastal site plan review (CSPR) enables planning and zoning commissions and boards in coastal municipalities to review most development projects proposed within the coastal boundary to ensure that they will be developed in a manner that avoids, minimizes, and mitigates adverse impacts to coastal resources and coastal water quality. OLISP's *Coastal Water Quality Protection: A Guide for Municipal Officials* and the *Best Management Practices for Coastal Marinas* provide additional information that boards and commissions can use in their decision-making to protect against nonpoint source pollution and to make improvements in stormwater management.

2. CONTROLLING EXISTING NONPOINT SOURCES

Implementing BMPs in existing developed areas is a much more difficult task than it is for new development.

A. URBAN AREAS

Through the state's evolving watershed management program, priority watersheds are subjected to extensive monitoring and assessment activities, which identify opportunities to retrofit existing stormwater management systems, treat uncontrolled runoff, and restore habitat. In the Hockanum River watershed, for example, the Tolland County SWCD worked with a local McDonalds restaurant to install an innovative stormwater treatment system to treat its parking lot runoff. The district is now conducting an outreach program to watershed businesses on how to manage their facilities in a more environmentally-sensitive fashion, including improved stormwater management. As part of the Norwalk River Watershed Initiative, habitat restoration opportunities were identified through a comprehensive assessment by volunteers under CT DEP and USDA Natural Resources Conservation Service (NRCS) direction. Several of these sites have already been restored through a variety of programs and funding sources, including §319. Utilizing this watershed management framework, CT DEP will focus its resources on a subset of selected high priority watersheds, for a

3-5 year period on a rotating basis, initiating 1-2 new projects each year. This schedule will be driven in large part by the need to develop total maximum daily load (TMDL) analyses and implementation plans for §303(d) listed waters.

B. AGRICULTURAL AREAS

Unlike many states, Connecticut doesn't exempt agriculture from environmental regulation. Concentrated animal feeding operations (CAFOs), an important source of agricultural pollution, are now defined as point sources and subject to the National Pollutant Discharge Elimination System (NPDES) program. The CT DEP will continue to work with its federal and state partners, like the USDA NRCS, Connecticut Department of Agriculture, soil and water conservation districts, and University of Connecticut Cooperative Extension System to test BMP effectiveness and promote implementation of the most effective ones to protect the state's waters. In addition to §319, the USDA NRCS has two relatively new programs, the Environmental Quality Incentives Program (EQIP) and Wildlife Habitat Improvement Program (WHIP), designed specifically to fund restoration of riparian buffers and implement other water quality practices. The CT DEP is
also working with the University of Connecticut Department of Plant Science and CES to educate agricultural producers on how to reduce or eliminate their pesticide and nutrients while maintaining productivity.

C. COASTAL AREAS

The Coastal Nonpoint Pollution Control Program (CNPCP), developed in accordance with §6217 of the Coastal Zone Act Reauthorization Amendments (CZARA) of 1990, requires the implementation of specific management measures within the §6217 management area to ensure against the introduction of significant nonpoint sources of pollution into coastal waters. Implementation of Connecticut's CNPCP will rely heavily on networking existing state and local

authorities, including the state Structures, Dredging and Fill Act and Tidal Wetlands Act, Soil Erosion and Sediment Control Act, Inland Wetlands and Watercourses Act, state coastal management consistency review for state-sponsored projects affecting the coastal boundary, municipal coastal site plan review and other local planning and zoning authorities.

In keeping with §6217 requirements, Connecticut's CNPCP implementation strategy over the next 2-3 years will focus on high priority watersheds as identified by the state's Unified Watershed Assessment, and on the urban category of nonpoint source pollution as established by §6217. CT DEP and other state agencies will have direct responsibility for implementing the CNPCP's management measures and will develop an appropriate mechanism to ensure local implementation of those measures that are not under direct state control. The state's wide-ranging enforcement authority to protect against actual and potential pollution of the state's waters will be utilized in those instances where municipal or other state agency implementation of management measures is lacking.

To improve and enhance municipal implementation of the §6217 management measures, CT DEP will continue an ambitious outreach program for municipal planning and zoning and engineering/public works officials. The outreach program will focus first in the coastal municipalities, especially those located within high-priority watersheds, and gradually moving inland throughout the §6217 management area, again, targeting the same high-priority watersheds. This outreach effort will be coordinated with other appropriate entities including the soil and water conservation districts, the University of Connecticut Cooperative Extension System's NEMO Program, and nonprofit environmental groups and watershed associations.

IV. GETTING MEASURABLE ENVIRONMENTAL RESULTS

Relatively speaking, one could argue that the NPS Program has been successful because, despite population growth and associated new development, water quality in the state has continued to improve. For example, reduced total suspend solids (TSS) and nitrogen concentrations in rivers and streams can be linked to more effective and consistent enforcement of the Soil Erosion and Sediment Control Act, and more recently, implementation of the Stormwater General Permit Program. However, the diffuse nature of nonpoint source pollution makes it difficult to determine whether specific programs or BMPs are responsible for these improvements.

Another approach taken by CT DEP has been to measure the pollutant removal effectiveness of BMPs, either through monitoring or existing data, promote the use of the most effective BMP's on a widespread scale, and assume improvements in water quality will follow. For example, CT DEP has funded monitoring of several BMP's around the state, including four stormwater treatment systems, and a combined wet pond/wetland system at Lake Whitney in Hamden. While monitoring has not been completed yet on the stormwater systems, the Lake Whitney demonstration project was very successful at removing pollutants from an approximately 20-acre residential area. As a result, CT DEP is promoting the use of similar systems around the state and expects similar results.

Because nonpoint source pollution results from the actions of many individuals and from many activities, the state NPS program has emphasized education and outreach aimed at changing certain behaviors. For example, §319 funds have supported the University of Connecticut Cooperative Extension System's (UCONN/CES) Integrated Pest/Crop Management Program, which teaches agricultural producers, turf managers, and others to reduce their use of pesticides and fertilizer while maintaining productivity. This program has been successful in measuring actual reductions in the use of high risk pesticides and nutrients. The UCONN/CES Nonpoint Education for Municipal Officials (NEMO) program teaches local land use officials about the link between land use and water quality, and the importance of reducing impervious surfaces and using BMPs. Measuring changes in water quality resulting from this program is more difficult, however, because changes in how municipalities regulate new development may be very subtle and take time to effect any real improvements in water quality.

Several watershed projects have involved citizen monitoring programs, including the Sasco Brook and Scantic, and Mattabesset river projects. As part of the Mattabesset River project, erosion from a commercial development adjacent to the river was controlled with the application of several BMPs, measurably reducing sediment loads to the

river. In Sasco Brook, improved manure management practices at a large horse boarding facility have lead directly to reduced bacteria levels downstream from the facility.

Section 319 funds also have supported tidal wetland restoration, including sites at Hammonasset Beach State Park in Madison and White Sands Beach in Old Lyme. Overall, the CT DEP's Wetland Habitat and Mosquito Management (WHAMM) Unit, with assistance from OLISP, restored approximately 150 acres of tidal wetland in 1998, bringing the total restored to approximately 1,650 acres since the 1970s. Restoring wetlands improves water quality by providing a buffer between marine waters and upland developed areas, and provides important habitat for fish and wildlife.

Other ongoing state wide programs targeted in reducing nonpoint source worth mentioning are the car emission inspection, hazardous waste collection, and recycling - leaves and lawn cuttings programs.

V. ENVIRONMENTAL EXPECTATIONS FOR NPS PROGRAM

Successful implementation of the CT DEP NPS Management Program should result in the elimination of nonpoint source pollution and attainment of water quality standards and designated uses in waters currently impaired by nonpoint source pollution. As described in Section II, consistent and effective implementation and enforcement of federal, state, and local laws and regulations (e.g., Clean Water Act, Soil Erosion and Sediment Control Act, Connecticut Coastal Management Act, Inland Wetlands and Watercourses Act, Tidal Wetlands Act), should protect and restore important natural resources, and result in widespread application of BMPs to reduce and treat stormwater runoff. Section 319 funding above the FY98 level ("incremental" funds) will be utilized to develop and implement Watershed Restoration Action Strategies (WRAS) for those watersheds classified as Category 1 under the state's Unified Watershed Assessment. For FY99, CT DEP will utilize §319 funds to remove barriers to migratory fish passage in several high priority watersheds, including the Quinnipiac and Naugatuck rivers. While restoration of fish passage will open up miles of previously underutilized habitat and improve dissolved oxygen conditions, it may not be sufficient to remove their current Category 1 classification. CT DEP will continue monitoring and assessment activities to determine whether additional management actions are necessary to achieve full restoration. Restoration of these Category 1 and 303(d)-listed waters will allow CT DEP to focus more energy on preventing future nonpoint source pollution resulting from population growth and new development.

Appendix 1

Connecticut Nonpoint Source Assessment and Management Plan **(Not available on web site)**

Appendix 2

1999-2000 TMDL Schedule			
Water body Name	**Pollutant**	**Major Basin**	**Watershed Area**
Beldon Brook	Bacteria	Southwest Coastal	2,024 acres
Factory Brook	Ammonia/metals	Housatonic	10,046 acres
Housatonic River	PCBs	Housatonic	1,240,960 acres
Lake Zoar	Hydromod.	Housatonic	986,240 acres
Limekiln Brook	Metals	Housatonic	8,832 acres
Long Island Sound	Nitrogen	Long Island Sound	16,000 sq.mi.
Rainbow/Seymour Hollow Brook	Deicing chemicals	Connecticut	1,058 acres
Sasco Brook	Bacteria	Southwest Coastal	6,534 acres
Steele Brook	Metals	Housatonic	10,904 acres
Transylvania Brook	Ammonia/ metals	Housatonic	4,608 acres
Hayden Creek	TSS/BOD	South Central Coastal	589 acres
Willimantic	Ammonia/metals/Cl	Thames	163,200 acres

Appendix 3

Phase II Stormwater Schedule	
Goal/Objective/Strategy	**Completion Date**
1. Confirm stautory authority	By 10/29/99
2. Develop permit	1/1/99-11/1/99
a. Finalize list of small MS4's (include state facilities)	6/1/99-7/1/99
I. DOT within MS4's and limited access highways	6/1/99-7/1/99
ii. contact prisons for list of facilities. Find those with MS4's	6/1/99-7/1/99
iii. contact education for universities within MS4's or greater than 1,000	6/1/99-7/1/99
iv. same for military bases	6/1/99-7/1/99
b. Internal outreach	7/1/99-9/1/99
c. Public outreach	9/1/99-11/1/99
d. BMP list	11/1/99-3/1/00
e. Permit language with outreach	1/1/00-9/1/00
f. Final approval and signature	9/1/00-3/1/01
g. Public hearings, etc.	3/1/01-9/1/01
h. Becomes effective	3/1/02

Appendix 4

1999-2004 Long Island Sound Tidal Wetlands Restoration Schedule					
Site Name	**Rank**	**Activity**	**Lead**	**Acres**	**Year**
Nott Island, Lyme	H	Permit application for ditch plugging	WHAMM	40	1998/99
Mill Meadows, Old Saybook	M	Construction 2/99	OLISP	17	1999
Hammonasset Beach State Park/Tom's Creek, Madison	M	Apply for permits, construct	DEP Parks	11	1999
Hammonasset Beach State Park, Madison	M	Construct/fill removal	WHAMM	2	1999
Davis Pond, East Lyme	M	Final design, secure permits, and Construct	WHAMM	10	1999
Connecticut River, Old Lyme	H	Phragmites control, ditch cleaning, plugging	WHAMM	70	1999
Quinnipiac River, North Haven/ Hamden	H	Phragmites control, need permits for ditch plugging/ponds	WHAMM	88	1999
South Cove, Old Saybrook	M	Phragmites control, permits for ditch plugging and ponds	WHAMM	40	1999
Housatonic River/Pope Island, Stratford	M	Phragmites control done, need permits for ditch plugging/ponds	WHAMM	42	1999
Great Meadows, Stratford	H	Construction	WHAMM	25	1999/2000
Sybil Creek, Branford	H	Complete Final Design, advertise for construction	OLISP	104	1999/2000
Old Field Creek, West Haven	M	Design-finalize scope of work; execute contract	OLISP	21	1999
Cove River, West Haven	M	Design-finalize scope of work; execute contract	OLISP	50	1999
Hammock River, Clinton	H	Design-finalize scope of work; execute contract	OLISP	202	1999
Bridgeport Airport, Bridgeport	H	Design-finalize scope of work; execute contract	OLISP	13	1999
Little River, New Haven	M	Phrag. control, permits for ditch plugging/ponds	WHAMM	84	2000
Bride Brook, East Lyme	H	Finish prelim. engineering report	OLISP	140	1999
Patchogue R., Westbrook	M	Construction	WHAMM	9	2000
Total Restored Acres				**968**	
DEP -CT Department of Environmental Protection; OLISP -Office of Long Island Sound Programs; WHAMM Wetland and Habitat and Mosquito Management Program					

Appendix 5

1999-2004 Targeted Anadromous Fish Restoration Areas		
Stream Name/Location	**Dam Slated for Action**	**Restored Miles**
Mill River, Fairfield	Samp Mortar	5.00
Pequonnock River, Bridgeport	Bunnels Pond	5.00
Naugatuck River , Waterbury/ Naugatuck/Derby	Tingue Dam, Union City Dam, Platts Mill Dam, Freight St. Dam, Anaconda Dam	23.00
Mad River, Waterbury	Brays Buckle Dam	3.00
West River, New Haven	Pond Lily Dam	2.50
Mill River, New Haven	Lake Whitney Dam	5.00
Quinnipiac River, New Haven	Wallace Dam, Hanover Dam	8.00
Chalker Millpond Stream, Old Saybrook	Chalker Millpond Dam	1.50
Falls River, Essex	Dennison Pond Dam	1.50
Mattabesset River, Berlin	StanChem Dam	6.00
East Branch Eightmile River, Lyme	Ed Bill's Pond	6.00
Mill Brook, Old Lyme	Upper Millpond Dam	1.00
Rowland Brook, Old Lyme	McColloch's Dam	0.25
Total	**13**	**67.75**
Note: River miles are estimated in some cases. Not all river miles were calculated from maps.		

Appendix 6

Coastal Nonpoint Pollution Control Program Schedule	
Conditions for Full Program Approval	**Due Date**
Legal opinion that CGS § 22a-430, in concert with other existing authorities, is adequate to ensure implementation of the new development, the urban site development, and the construction site erosion and sediment control management measures.	12/3/99
Incorporate 6217 new development management measure language requiring 80% TSS removal on an average annual basis and post-development runoff rates and volumes not exceeding pre-development rates and volumes into Phase II NPDES stormwater general permit for construction activities disturbing more than one acre.	3/1/02
Pursuant to the watershed protection management measure condition, identify priority local and/or regional watershed pollutant reduction opportunities and establish a schedule for implementing appropriate controls.	6/3/00
Legal opinion that CGS § 22a-430, in concert with other existing authorities, is adequate to ensure implementation of the urban construction site chemical control management measure.	6/3/00
Meet conditions of approval regarding new and operating onsite disposal systems: determine adequacy of/revise separation distance for new systems, and develop formal inspection process for existing systems.	6/3/00
Legal opinion that CGS § 22a-430, in concert with other existing authorities, is adequate to ensure implementation of the stormwater runoff at marinas management measure.	6/3/00
Denitrification systems condition must be addressed, and management measure must be included in program and implemented.	6/3/00
Management measure for non-DOT roads, highways, and bridges must be included in program and implemented.	6/3/01
Management measure for chemical and pollutant control at dams must be included in program and implemented; process to improve surface water quality and restore instream and riparian habitat through operation and maintenance of existing modified channels June 3, 2001. Identify and develop strategies to solve existing nonpoint source pollution caused by streambank or shoreline erosion not subject to existing permit authority, and develop a process to protect streambanks and shorelines against erosion due to uses of the adjacent shorelands or the adjacent waters (to be done in conjunction with watershed protection management measure).	6/3/01

Appendix 7

*Water Quality Standards, "*Surface Waters Standards" **(Not available on web site)**

Appendix 8

Conservation and Development: Policies Plan for Connecticut, "Environmental Quality: Water Quality Management"
(Not available on web site)

Appendix 9

Prevention Plan for Connecticut; Connecticut Department of Environmental Protection; 1996; pp. 38, 43. **(Not available on web site)**

Appendix 10

Stateside Advisory Committee Rosters **(Not available on web site)**