

New York State
Nonpoint Source
Management Program

Annual Report
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Division of Water
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1.0 INTRODUCTION

This report describing progress in implementing the New York State's Nonpoint Source Management Program is intended to satisfy the requirement of the workplan for the Performance Partnership Grant (PPG) Base Program between the Department of Environmental Conservation's Division of Water and the United States Environmental Protection Agency, Region 2. This report addresses progress and accomplishments for the period from April 1, 2007 through March 31, 2008. This report also includes discussion of progress and accomplishments in previous years to provide a context for more recent program activities, and to establish continuity in the annual reporting.

The New York Nonpoint Source Management Program was established in 1990 and revised in 2000. The program's mission comprises three major components: (1) to control, reduce or treat polluted runoff through structural, operational or vegetative management practices; (2) to conduct local implementation, coordination and evaluation on a watershed basis; and (3) to coordinate all agencies and partners involved in managing nonpoint sources of pollution through the New York Nonpoint Source Coordinating Committee (NPSCC).

Toward this mission, New York defined long-term goals which placed special emphasis on three principal activities: (1) establishing and fostering partnerships to coordinate and implement county and local nonpoint source management; (2) assisting counties, local governments, landowners, and other organizations with incentives and funding to implement nonpoint source pollution controls and outreach; and (3) identifying approved nonpoint source management practices and supporting nonpoint source outreach and education activities.

The 2000 Nonpoint Source Management Program identified four priority categories of nonpoint source pollution to focus the development and implementation of controls. These categories are the basis of defining key areas of nonpoint source management:

- Stormwater Management ("Urban, Construction and Roadway Runoff" in 2000 Non Point Source report);
- Agricultural Environmental Management.
- Onsite Wastewater Systems Management; and
- Hydrologic Habitat Modification

Section 2 of this report presents a summary of accomplishments during the reporting period for these categories of the Nonpoint Source Management Program. In addition, Section 2 also summarizes accomplishments for two additional nonpoint source initiatives in New York:

- Watershed Management; and
- Coastal Nonpoint Source Management

Section 3 of this report presents information from New York's Watershed Assessment Program that addresses water quality issues related to nonpoint sources.

1.1 NATIONAL PROGRAM ACTIVITY MEASURES

The following measures of program activities are reported as required by the United States Environmental Protection Agency (EPA), as defined by EPA. This section does not include EPA Program Activity Measures that are reported in the Grants Reporting and Tracking System (GRTS).

- A. **Waterbodies identified by the State as being primarily nonpoint source-impaired that will be partially or fully restored.**

Waterbody Name(s):

Niagara River, Lower (0101-0027) partially restored, 4 organics now meet WQS
Niagara River, Upper (0101-0006) partially restored, 4 organics now meet WQS
DeRuyter Reservoir (0602-0086) fully restored, previously impaired by phosphorus
Oneida Lake (0703-0001) fully restored, previously impaired by phosphorus
Chittenango Creek (0703-0005) fully restored, previously impaired by phosphorus

Comment:

Other partially restored waterbodies include:

Onondaga Lake, northern end (0702-0003) for ammonia

Onondaga Lake, southern end (0702-0021) for ammonia

However, nonpoint source reduction activities that contributed to these restorations were likely to have been secondary to the primary municipal point source reductions

Definitions (EPA) :

"Partially restored" includes either of the following:

a) A water that is impaired for more than one use, but is restored for one or more (but not all) of those uses, and b) A water that has a use that is impaired by more than one pollutant, but meets the criteria for one or more (but not all) of those pollutants.

"Fully restored" means that all uses for the waterbody are now being met.

"Restored waters" means any waterbody that has been restored. These waters may be counted regardless of whether the restoration was supported with or without Section 319(h) funding. States do not need to show which nonpoint management actions took place to restore the water, but simply

verify that the water is primarily nonpoint source-impaired, and that it has been "partially" or "fully" restored. However, a waterbody cannot be counted simply because it was delisted from a state's 303(d) list for reasons other than actual restoration (e.g., it is determined that it was inappropriately listed from the start, it has a Total Maximum Daily Load (TMDL) done for it, etc.).

The definition of a "primarily" nonpoint source-impaired waterbody is left to the states' professional judgment. EPA does not expect a state to do a detailed analysis when deciding on whether a waterbody is "primarily" nonpoint source-impaired. A precise determination is difficult especially when considering a listed water flowing through both permitted Municipal Separate Storm Sewer Systems areas and non-permitted areas.

B. Number of watershed-based plans (and water miles/acres covered), supported under State Nonpoint Source Management Programs since the beginning of FY '02 that have been substantially implemented.

Number:

None

Comment: Although the Skaneateles Lake Watershed Plan has been substantially implemented, it pre-dates 2002 and it was developed for water quality protection, not to remove an impairment. Watershed-based planning in New York State is primarily focused on water quality protection, and is not designed according to the EPA definition: "Substantially-implemented means that only those actions called for in the initial plan specifically geared towards rededicating the impairment(s) have been implemented (EPA)."

2.0 SUMMARY OF ACCOMPLISHMENTS FOR THE REPORTING PERIOD

The following six sections briefly describe key components of New York's Nonpoint Source Management Program and summarize principal accomplishments for the reporting period from April 1, 2007 through March 31, 2008, including some discussion of progress and accomplishments in previous years to provide a context for more recent program activities. Certain activities that were in progress at the conclusion of the reporting period, but not yet completed, have also been included.

2.1 STORMWATER MANAGEMENT

The Stormwater Management Program is a principal priority of New York's Water Management Program and a key component of the Non-point Source Management Program. The

program's comprehensive approach places special emphasis on consistent implementation of technical standards for management of stormwater from construction sites, development of local legal authority, and on project review during the local land use planning process. Continuing education to professionals involved with development projects and municipal stormwater management and outreach to local officials are also important elements of the program. Finally, the program provides grant assistance to localities for the development of municipal stormwater management programs. On January 8, 2003, the New York State Department of Environmental Conservation (NYSDEC) issued two general permits to support implementation of the federal Stormwater Phase II program, one for Municipal Separate Storm Sewer Systems (MS4) in urbanized areas and one for construction activities, as part of the State Pollutant Discharge Elimination System (SPDES).

On October 10, 2007, the NYSDEC made the two draft renewal permits available for public review. The comment period for those draft general permits closed on December 10, 2007 and 125 sets of comments were submitted. Department staff expect to complete review and response to those comments in early April. Until the issuance of new general permits related to stormwater discharges from construction activity and from MS4s, new and existing authorizations are being administered under the existing general permits (GP-02-01 and GP-02-02).

The principal goal of the Stormwater Management Program is to reduce the impacts of stormwater discharges that preclude, impair or stress New York's waters, as reported in the NYS Priority Waterbodies List. Another key objective is to prevent stormwater impacts from causing future water quality impairments. The program is intended to prevent or correct such stormwater-related problems as closed beaches and shellfish beds, spoiled fishing and swimming, excessive weed growth, destruction of aquatic habitat, soil erosion, and flooding.

Direct coordination and oversight of New York's Stormwater Management Program is provided by the Stormwater Implementation Team (SWIT). The SWIT includes all key NYSDEC staff involved in the program and consults through periodic phone conferences. Broader coordination with federal, state and local agencies, academic institutions and community interest groups is provided by regular participation by SWIT staff in the NPSCC and the New York State Water Management Advisory Committee (and its Construction Stormwater Workgroup). Additional outreach and coordination is provided by SWIT staff involvement in meetings of the New York State Association of Regional Councils (NYSARC).

As of the compliance deadline of January 8, 2008, the department has shifted its focus to attaining compliance with MS4 requirements.

Accomplishments for the Reporting Period:

1. Permit Restrictions and Requirements

In 2007, 1,907 sites were authorized under the construction stormwater permit. 18,537 acres were authorized to be disturbed. 1,299 of those sites were required to install post construction controls for 14,380.4 disturbed acres and 3,503.49 new impervious acres.

2. Grants to Regional Planning Agencies for Stormwater Management Program Support

Despite declining Clean Water Act funding, the NYSDEC continues to provide mini-grants to Regional Planning Boards to assist in MS4 program development and oversight including outreach to MS4s and interested parties, assistance to MS4s developing Stormwater Management Plans and review of MS4 Annual Reports.

3. Support of Soil and Water Conservation District (SWCD) Involvement in Stormwater Program

The NYSDEC continues to endorse, and seeks to fund, a program to reimburse SWCD for activities related to Stormwater Phase II construction activities including: construction site complaint investigations; construction site compliance checks; site plan review; and technical assistance for pre-construction site remediation.

4. Technical Training for the Stormwater Program

A significant amount of stormwater training was performed during 2007. Through SUNY-ESF, eight stormwater courses were taught at eleven 2-day venues, training 445 consulting engineers, code enforcement officers, town engineers, municipal officials, planners, developers, contractors, landscape architects, resource management specialists, and others across the State. Courses were on: hydrologic methods and models, erosion and sediment controls, stormwater design and practices, Illicit Discharge Detection and Elimination (IDDE), Better Site Design, Certified Professionals in Erosion and Sediment Control review, and wetlands function and design.

In addition, over 3,000 code enforcement officers, municipal officials, and contractors were trained at another 60-plus events throughout the year. These were workshops and conferences sponsored by county SWCD, stormwater coalitions, and county/regional planning boards. Training was also conducted by statewide associations representing building officials, floodplain management, watershed and related interest groups. Most training was targeted to group sizes of 25 or 50 but three events were in the 75-200 range and four reached audiences greater than 200. Code enforcement officers and local municipal compliance officers were targeted for training on how to conduct erosion and sediment control inspections at 36% of the events and received continuing education credits at

most of these venues. MS4s were trained on general MS4 and construction permit requirements at another 34% of the events. In addition, other specific training was given; e.g., to contractors on sediment and erosion control, and to municipal audiences on better site design, and pollution prevention and good housekeeping.

5. Enhanced Phosphorus Removal.

On December 12, NYSDEC made the Enhanced Phosphorus Removal Standard available for a third and final public review. The comment period ended on January 11 and the department expects the standard to be final imminently.

6. Multi-Sector General Permit - Notice of Intent or Termination (NOIT)

The multi-sector general permit for industrial stormwater discharges was issued on December 27, 2007. Sites were required to obtain coverage under this permit by March 28, 2007 for new facilities and June 26 for existing facilities. As of February 2008, the NYSDEC has received 1,170 NOITs for authorizations under the permit, 210 of which are for facilities newly authorized under a general permit for industrial stormwater discharges.

2.2 AGRICULTURAL ENVIRONMENTAL MANAGEMENT

The Agricultural Environmental Management (AEM) Program, under the direction of the NYS Soil and Water Conservation Committee and the Department of Agriculture and Markets (NYSDAM), coordinates state and local agencies and the private sector to provide technical and financial assistance to address environmental and nonpoint source issues on farms. AEM is based on a tiered planning and implementation approach on individual farms, and is most effective where accomplished on a comprehensive basis across a priority watershed. AEM assesses farm practices related to environmental concerns, develops management plans to address those concerns, implements Best Management Practices to reduce environmental impacts, and evaluates resulting environmental improvements. AEM is the umbrella initiative used to implement New York's Agricultural Nonpoint Source Abatement and Control Grant Program and the Conservation Reserve Enhancement Program (CREP). AEM is also a key tool in participation in Federal Farm Bill Programs and Concentrated Animal Feeding Operations (CAFO) compliance in New York State. The AEM Certification Program certifies public and private sector professionals as Comprehensive Nutrient Management Planners and provides a foundation for the NYSDEC CAFO Permit Program.

The AEM Program has four general goals. The primary goal is to enhance and grow a voluntary program by encouraging proactive environmental stewardship through adequate technical assistance and incentives. New York intends to reinforce AEM as the primary framework for

coordination and delivery of local, state and federal agriculturally related environmental and nonpoint source programs. The AEM Program also is designed to project a consistent message to all stakeholders through coordinated and comprehensive communication. Finally, the AEM Program is intended to establish and nurture farmer, neighbor and community communications on a broad range of environmental concerns.

The New York State Soil and Water Conservation Committee (NYSSWCC) provides coordination and direction for the AEM Program. Its voting and advisory members represent a broad range of agricultural and community interests, federal, state and local agencies and academic institutions. The AEM partnership also includes other organizations and citizen groups, such as the American Farmland Trust and the Citizens Campaign for the Environment. Linkage to the broader membership of the NPSCC is provided by NYSSWCC participation in that committee.

The overall priority for funding AEM related projects is to support planning, implementation and evaluation projects on individual farms that form the core of the program. Additionally, a key funding priority is supporting AEM training. Other funding priorities include support of water quality monitoring related to AEM, stream assessment training, and minigrants to County Water Quality Coordinating Committees to support their function. AEM planning projects typically address farm environmental assessments or individualized Comprehensive Nutrient Management Plans. Implementation projects cover a wide range of Best Management Practices (BMP), including manure storage, barnyard runoff and pasture management, erosion control and waste management. Evaluation projects focus on achievements and stewardship at individual farms. The significant majority of funding for planning and implementation activities is from the NYS Environmental Protection Fund (EPF) through the Agricultural Nonpoint Source Abatement and Control Program. In 2005, the AEM Base program was established to provide non-competitive funding to Districts to carry out annual AEM priorities. This has been continued to provide a stable and reliable level of funding for AEM at the county level.

Principal Accomplishments from Previous Reporting Periods:

Round XI of the Agricultural Nonpoint Source Abatement and Control Grant Program – awarded **\$6,131,095** from the EPF for 32 contracts that support the AEM Program. Projects included 5 planning and 27 implementation contracts. Each of the 5 planning contracts have provided funding for AEM Tier III planning on several farms for the development of individualized Comprehensive Nutrient Management Plans (CNMPs). The 27 implementation contracts funded through Round XI cost- shared a wide variety of BMPs, including barnyard runoff management systems, manure storage systems, pasture management projects, and a variety of other practices that address waste management and erosion control.

Round XII of the Agricultural Nonpoint source Abatement and Control Grant Program - awarded \$5,332,233 from the EPF for 31 contracts that help farmers protect the state's soil and water resources from agricultural runoff. Projects included 2 planning and 29 implementation contracts.

Round XIII of the Agricultural Nonpoint source Abatement and Control Grant Program - awarded \$10,204,369 from the EPF for 42 contracts that support the AEM Program by funding 2 planning contracts and 39 implementation contracts. The vast majority of projects include multiple farmers and BMPs. A total of 273 farmers will receive assistance to develop CNMPs or employ BMPs for the protection of New York State's watersheds.

Non competitive funding source for AEM - With AEM participation exceeding 25 percent of the state's 36,000 farms, the NYSDAM, in partnership with the United States Department of Agriculture's Natural Resource Conservation Service (NRCS), the NYSSWCC and County SWCD (SWCD), accelerated AEM efforts at the local level by establishing a noncompetitive funding source for AEM activities. This program provides SWCDs with non-competitive funding through the EPF to develop and implement five-year strategic plans. Funded activities include Tier 1, Tier 2, Tier 3a (Conservation Plan), Tier 4 (implementation projects) and Tier 5. In addition to enabling more farms to participate, this initiative has increased conservation planning activities statewide and protected past investments through conservation plan updates and BMP evaluation. As of this date, two years of this program have been completed. A total of 53 counties are currently participating in the base program.

Principal Accomplishments for the Current Reporting Period:

Round XIV of the Agricultural Nonpoint source Abatement and Control Grant Program - awarded \$13,081,294 from the EPF for 46 contracts that support the AEM Program by funding 2 planning contracts and 44 implementation contracts. The vast majority of projects include multiple farmers and BMPs. A total of 362 farmers will receive assistance to develop CNMPs or employ BMPs for the protection of New York State's watersheds. Round 14 represents the single highest allocation of funding for this program.

Non competitive funding source for AEM - In 2007, Year 3 of the AEM Base Funding Program was launched utilizing \$ 1,654,904 from the EPF. Each District had the opportunity to earn \$40,000. Year 3 concludes on May 5th, 2008 and Year 4 commences on May 6th.

AEM Training (\$25,000) - Fifty-Three SWCD employees representing 53 counties attended the November 2007 training session. Also attending the training were: 12 Cornell Cooperative Extension employees, 28 NRCS employees, 12 NYSSWCC employees, and 8

employees from other agencies and organizations such as the NYSDAM, New York Farm Bureau, the New York Association of Conservation Districts, and county Water Quality Coordinating Committees. Sessions at the training covered topics including:

- Farmstead Livestock
- Manure and Nutrient Management
- Pasture Management
- Pest/Pesticide Management
- Tier 2 Specialty Worksheets (Viticulture & Tree Fruit)
- Tier 2 Specialty Worksheets (Vegetable & Irrigation)
- Soil and Water Conservation Society Discussions
- Cropland Conservation

Other Accomplishments:

This list represents additional past and present accomplishments, but is not comprehensive: **NYS Phosphorous Index** was established by Cornell Pro-Dairy to provide NRCS, SWCD and AEM Planners with a tool calibrated to New York State to assess the various landforms and management practices for potential risk of phosphorus movement to water bodies. The ranking of Phosphorus Index identifies sites where the risk of phosphorus movement may be relatively higher than that of other sites. The parameters of the index can serve as a basis for planning corrective soil and water conservation practices and management techniques.

The Staff of the New York State Soil and Water Conservation Committee provides support for the administration of Non Point Source programs including agricultural and non-agricultural activities.

Rotating Inventory Basin Study (RIBS) sampling is the foundation of NYSDEC Division of Water's Comprehensive Water Quality Monitoring Strategy and is used, in part, to satisfy requirements of Section 305(b) and 303(d) of the federal Clean Water Act. The St. Lawrence County SWCD is providing technical assistance during the sampling process of the St. Lawrence River, Main Stem (1 site) and 9 different tributary sites every three weeks for three consecutive days.

Warren County Water Quality Monitoring Project has developed and is conducting a cost-effective shoreline sampling program to monitor and potentially track Non Point Source inputs on small lakes. The results from the study will be used to develop operating procedures to undertake water quality assessments that can be cost-effectively implemented on small lakes.

Greene County Stream Assessment Training has been continued to emphasize the basic skills

required for the integration of geomorphology into stream corridor restoration/protection strategies. The project focuses on training for technical staff that have stream management responsibilities with an emphasis on the development of comprehensive stream corridor management plans and prioritization of projects based on multiple objectives.

Water Quality Mini-Grants provide opportunities for County Water Quality Coordinating Committees to present information to the NPSCC and receive funds to perform activities in priority nonpoint source areas. A call for projects focusing on Stormwater activities was developed by the NYSDEC in consultation with the State Committee in 2004, and grant awards have been made. The NYSSWCC has received completion reports from most participants. Only one remains outstanding.

Agricultural Environmental Management (AEM):

- AEM is codified in law (2000)
- Over 11,000 farms are participating in AEM, with local programs established in 54 counties.
- Over \$73 million has been allocated to local AEM programs to assess, plan, and implement BMPs on NYS farms.
- Growing AEM Certification program with 43 planners certified to develop CNMPs and over 300 resource professionals have received training on conservation planning by the NYSSWCC since 1999.
- Activated the CNMP Quality Control Program and conducted 21 CNMP Planner Quality Control Reviews.
- AEM Tier II Worksheets expanded to address NYS's diverse agricultural industry (including: equine operations, greenhouses, fruits and vegetables, and Long Island agricultural operations).
- AEM is recognized as part of USDA-NRCS planning policy in NYS.
- Training on Comprehensive Nutrient Management Plans and Agricultural Awareness was held for the NYSDEC, Division of Water, CAFO Inspectors in 2006.
- AEM is recognized in the NYS Nonpoint Source Water Quality Management Strategy

and the NYS Source Water Assessment as the program to address nonpoint source pollution originating from agriculture.

- AEM addressed objectives of the Non Point Source Management Program by funding the development and implementation of County AEM Strategies that provide an analysis of the problems in priority watersheds caused by agricultural Non Point Source pollution from agriculture.
- Produced and distributed AEM Annual Reports, brochures, CREP marketing materials, Ag. Non Point Source Brochure and CNMP Fact Sheet to Federal, State, and local stakeholders.
- Developed and made available AEM and CREP Display for statewide and local use.
- Produced a national television broadcast on five different states, featuring an AEM segment for NYS.
- Numerous articles published including recognition in EPA's Nonpoint Source Success Stories Volume III.
- *AEM Working with the Media' – Level 1& 2* Workshops have trained approximately 200 AEM partners, including Soil and Water Conservation District employees, AEM Planners, and Farmers.
- AEM information, draft news articles, and media tips were routinely provided to AEM partners through the *AEM Outreach Network*.
- Direct media assistance was also provided by the AEM Outreach Coordinator related to editorial responses, preparation for press interviews and media events.
- AEM Articles were published in Small Farms Quarterly, Conservation District's Employees Association FYI and the Auburn Citizen. The 2006 AEM '*Agriculture in the News Awards*' were publicized locally by winning SWCD, and in the February 6, 2007 issue of Country Folks.

2.3 ONSITE WASTEWATER TREATMENT SYSTEMS MANAGEMENT

The Onsite Wastewater Treatment Systems (OWTS) Management Program is a coordinated

effort involving state, local and inter-municipal agencies, academic institutions and the private sector which is intended to improve the performance and reduce the environmental impacts of onsite systems. The comprehensive management approach includes providing continuing education to professionals involved with onsite wastewater systems (installers, inspectors, engineers, maintenance providers, regulators and planners) and to owners of onsite systems. The program places special emphasis on encouraging and promoting periodic inspections and maintenance of onsite systems, improved guidance for regulators and other professionals, and the updating of regulations and development of new legislation. Finally, the OWTS Program provides assistance to localities through improving means to receive grants for replacing failed onsite systems and writing grants for local management of onsite systems.

The principal goal of the OWTS Program is to reduce the nonpoint source impacts of failing or improperly installed onsite systems that preclude, impair or stress New York's waters, as reported in the NYS Priority Waterbodies List. Toward this goal, New York targets key communities for federal or state-funded minigrants to inspect or manage onsite systems and works with federal, regional and state organizations to address community wastewater treatment needs with improved onsite systems, hybrid wastewater systems, or centralized sewers and treatment plants. Another important goal of the OWTS Program is to promote use of onsite systems as an alternative to, or in conjunction with, new sewers and expanded wastewater treatment plants, particularly in difficult topography or in communities that cannot afford sewer and treatment system upgrades or installation. The term used in the industry is "centralized management of decentralized wastewater treatment systems." Finally, the OWTS Program goals place emphasis on a self-sustaining training program for continuing education of OWTS professionals and on educating residential and commercial owners of onsite systems on providing the proper inspection and maintenance for their systems through service providers and, for innovative systems, according to manufacturer recommendations.

The OWTS Workgroup of the NPSCC provides coordination of statewide activities related to these objectives. It includes representation from key state, regional and local agencies, academic institutions, community assistance associations, and the private sector. Key partners at the local level include County Water Quality Coordinating Committees and their members. The New York Onsite Wastewater Treatment Training Network (OTN), administered by the SUNY College at Delhi, is the primary mechanism for outreach and education related to onsite wastewater treatment.

Emphases in 2007 have been on the OTN Design Course, pursuit of possible OWTS Demonstration Sites at two locations, revisions to the 1988 NYSDEC Design Standards for Intermediate-sized Wastewater Treatment Systems, Phase II Stormwater IDDE projects, and a new Water Pollution Control Linked Deposit program to fund residences and small businesses with failing on-site wastewater treatment systems. These initiatives and a lack of funds for the state Mini-Grant program have resulted in the OWTS Workgroup meetings being merged with the OTN Board of

Director meetings.

The overall priority for funding OWTS-related projects is to support the education programs of the OTN and to implement local projects to reduce water quality impacts of onsite systems. Local projects may include sponsoring OWTS inspection programs, support of pump-out efforts, sampling programs, or feasibility studies (maps, plans and engineering reports). The OTN has been supported through PPG funding, while grants to localities have been supported through a combination of EPF and PPG funds. While funds to the Mini-Grant program were not allocated this year there were three OWTS projects funded under the municipal nonpoint source portion of the Water Quality Incentive Program.

Accomplishments for the Reporting Period

1. Onsite Wastewater Treatment Systems (OWTS) Workgroup

Members of the OWTS Workgroup, an interagency coordination group, have conducted many meetings of the OTN Board of Directors, OTN Executive Board (Officers), OTN Curriculum Committee (Design Course) and the NYSDEC Design Standards Workgroup, and related industry groups. The workgroup members generally provide for coordination of onsite wastewater activities, projects and events between industry partners, academic institutions, watershed groups, and federal, state and county agency staff. The workgroup members continue to advise on state and federal funding priorities, and also address outreach, and education, predominantly through support and involvement in the OTN.

Key state agency members of the OWTS Workgroup participated in a wide range of key meetings, including: (1) the annual national State Onsite Regulators Association (SORA) meeting in Reno NV; (2) the 2007 National Onsite Wastewater Recycling Association (NOWRA) annual meeting in Baltimore MD; (3) the pre-NOWRA Performance-based Model Code Seminar; and (4) the New England Interstate Water Pollution Control Commission (NEIWPCC) Non Point Source Coordinators meetings and Onsite Task Force meetings.

OTN trainers and directors presented Homeowner Education at the May 2007 Federation of Lake Associations Annual meeting. Various OWTS Workgroup members also attended training provided by other state and national associations, such as the University of Rhode Island's OWTS Technology Demonstration Site and Monitored Residential System Tour (as part of the New England Interstate Water Pollution Control Commission, NEIWPCC, 17th Annual Non Point Source Meeting).

Combined meetings of the OWTS Workgroup members and the OTN Directors were held by

video-conference call in several areas of the state to promote greater involvement and to minimize travel (e.g. Monroe and Madison Co. Health Department, SUNY-Otsego Biological Field Station, SUNY-Delhi, NYSDEC-Albany, New York State Department of Health (NYSDOH)-Troy).

2. New York Onsite Wastewater Treatment Training Network

The OTN serves to enhance New York State's utilization of modern onsite and decentralized wastewater treatment technologies through training to industry professionals, policy makers and property owners.

The OTN provides hands-on training to those involved in the onsite industry. Training is designed to improve regulatory compliance as well as the utilization and performance evaluation of new and emerging technologies in the State. The NYSDEC entered into an agreement with the State University of New York College of Technology at Delhi to provide opportunities for training and increased technical knowledge for onsite professionals. Specialized instructors are available to provide training both at Delhi College and at sites throughout the state. Workshops are customized to the various areas involved in onsite wastewater treatment technologies.

Professionals who can greatly benefit from the various training programs include: code enforcement officers, designers, health officials, inspectors, installers, maintenance technicians, planning officials, property owners, and pumpers.

The OTN Board of Directors includes representatives from the NYSDEC, NYSDOH, New York State Department of State (NYSDOS), NYCDEP, and SUNY-Delhi. The Board met eight times in the 2007-2008 State Fiscal Year. The Board provides oversight of the outreach and education activities including curriculum development, instructor recruitment and training, and promotion and marketing of training. Significant emphasis is placed on development and maintenance of the cadre of trainers.

Training Courses: Four primary courses are currently offered, a fifth course on the Design of small OWTS is under development. All courses are (or will be) approved for continuing education credit by the NYSDEC, NYSDOS and the State Education Department.

- **Foundations of Onsite Wastewater Treatment Systems:** This two-day course provides an introduction to the biology of wastewater treatment, system design, system components, the importance of soil classification, recognition of system failure, and the technologies available to avoid pollution. Course structure is highly interactive, and includes classroom exercises and reference manuals.

- **Soil Analysis for Onsite Wastewater Treatment Systems:** This one-day course provides guidelines for making soil evaluations and other field investigations for onsite septic systems. Soil characteristics, data collection, seasonal effects, soil texture and test pit analysis are all discussed. A New York soils video, PowerPoint presentations, hands-on exercises and, whenever possible, a short field trip are all used to convey the course concepts. The workshop is intended for all individuals with an interest in Onsite Wastewater Treatment, especially code enforcement officers and other field professionals including system installers.
- **Inspection of Existing Onsite Wastewater Treatment Systems:** This one-day course is designed to review the purpose of inspections and issues involving environmental safety, identify physical and biological hazards, examine new and old technology systems, review concepts of hydrology and soils, teach blueprint reading, and provide installation tips.
- **Certified Onsite Wastewater Installer Training Course:** This one-day course presents information and guidance for the proper installation of onsite wastewater treatment systems. Installers gain a thorough knowledge of the proper methods of installation that result in acceptable systems ready for inspection and operation. The participants complete a written examination and those participants passing the exam are issued a certification number

OTN Cadre of Trainers: Two new trainers were added to the OTN in 2007-08. One had previous work experience with the URI Onsite Wastewater Program, and the other comes from a County Health Department with land both within and outside of the NYC Water Supply Watershed.

Funding of the OTN: The development of the training program has been supported by PPG funds, through MOUs between the NYSDEC and the College. The College and industry have contributed with cash and in-kind services. OTN members contribute a significant amount of time to management of the OTN organization.

OTN Outreach: The OTN has presented onsite wastewater workshops and other presentations at local government, lake association, and industrial conferences and meetings during the reporting period. Examples of these presentations include:

- NYS Association of Towns (2007)
- NYS Federation of Lake Associations Annual Meeting (2007)
- Albany County Stormwater Grant IDDE Training module (2008)

The OTN had participated in Regional EPA events and seminars during past reporting periods:

- The EPA-funded Skaneateles Lake Demonstration Project is in its last year of funding, but the City of Syracuse in partnership with SUNY-Delhi, OWTS technology manufacturers and industry

held the annual two-day classroom and field tour educational event for state and county agency staff and watershed professionals.

3. NYSDEC Design Standards for Intermediate-sized Wastewater Treatment Systems

NYSDEC Central and Regional office staff began a workgroup to revise the 1988 NYSDEC Design Standards for Intermediate-sized Wastewater Treatment Systems. These standards apply to private, commercial and institutional systems with design flow rates greater than 1,000 gallons per day. No upper limit of flow rate is identified, however, if the facility is owned by a municipality a separate set of standards applies - the Great Lakes-Upper Mississippi River Basin (Ten State) Recommended Standards for Wastewater Facilities.

The Design Standards workgroup was formed in early 2007. Seven conference calls, a video-presentation and four working meetings in the Regions were held to determine needed changes, discuss and identify recent research and references, and create new sections and revised text for the 1988 Design Standards. In addition, two NYSDEC Regional meetings and a P.E. association meeting dedicated to Ultraviolet Disinfection also served as research for the Design Standards revision. Members of industry have provided presentations and references, and the OTN Board of Directors / OWTS Workgroup members have provided comment and review of identified revisions. Presentations included the initiative to use Tire Chip Aggregate as a replacement for stone backfill, gravelless trench technology, and the certification of waterproof and structurally sound concrete septic tanks by the Pre-Cast Concrete Association of New York (PCANY). Other work involved NYSDEC geologists, an NRCS Soil Scientist and a consulting hydro-geologist developing density guidelines based on soil types for the prevention of nitrate contamination of drinking water where developments are served by private wells and septic systems. NYSDEC staff also attended presentations on RBCs, flow measurement devices, trickling filter retrofits and O & M, septic tank effluent collection systems (both pump and gravity flow), and fabric-media filters.

The Design Standards Workgroup has referenced and made use of the NYSDOH revisions to the Public Health Code (Appendix 75-A) toward one identified goal of being consistent with those standards. A draft of the 2008 NYSDEC Design Standards for Intermediate-sized Wastewater Treatment Systems is nearing completion.

4. Funding Local Implementation Projects

Local implementation projects related to onsite wastewater treatment systems were funded during the reporting period through Water Quality Improvement Projects (WQIP) program funded by the EPF, and a county WQCC Mini-Grants program funded in part with PPG dollars. Three 2006 projects at local lakefront areas were awarded in 2007. One 2005 watershed project awarded in 2006

is under construction and will serve as the site for OTN classroom and field training and a possible OWTS Demonstration Site is being pursued by the OTN. Another 2006 grant to a county for stormwater work includes OTN training in relation to the Illicit Discharge Detection and Elimination portion of the grant. The OTN training has been scheduled for Spring 2008.

The NYSDEC offers incentive funding annually for nonpoint source and MS4 grants. Members of the NPSCC serve on the score and evaluation panel.

2.4 HYDROLOGIC AND HABITAT MODIFICATION

The Hydrologic and Habitat Modification (HHM) initiative is a key component of New York's Nonpoint Source Management Program. HHM includes a wide range of physical modifications to rivers and streams. These physical alterations affect stream-bank erosion, interfere with the water cycle, generate pollutant loadings, impact water quality, reduce or degrade available habitat, exacerbate flooding, and change stream hydrology and hydraulics (including extremely low flows). The HHM program activities promote the implementation of scientifically supported measures to reestablish the structure, function and dynamics of river and stream ecosystems within watersheds.

The goal of the HHM initiative is to facilitate the protection and restoration of rivers and streams by involved stakeholders through promotion of local stewardship and effecting institutional and administrative improvements. Toward this goal, the program's objectives include training technical professionals across the state in stream restoration and protection methods and advancing education at the local level on sound land use and floodplain management. Another key objective is the implementation of stream restoration, protection and runoff management demonstration projects, and reduction in pollutant loadings that resulted from previous hydrologic and habitat modifications. Finally, the program recognizes the importance of improvements in regulatory and administrative practices, research, and water quality monitoring.

The HHM Workgroup of the NPSCC provides coordination of statewide activities related to these objectives. It includes members from over 15 federal, state and local agencies, academic institutions and non-governmental organizations. Key partners at the local level would include County Water Quality Coordinating Committees and their members (SWCD, health and planning agencies, citizen and volunteer groups) and other groups that may not be directly involved with the County Water Quality Coordinating Committees such as watershed coalitions or other student and citizen volunteer organizations. Meetings of the Workgroup are held 2 times each year to feature and exchange information on stakeholder achievements. Members of subgroup members meet on tasks assigned by the Workgroup

The overall priority for funding HHM related projects is to support training, research and technology implementation for restoring and protecting New York's rivers and streams. Examples of such projects include: (1) regionalizing the geomorphology characteristics for New York State streams; (2) development of stream corridor health maps; (3) developing and implementing strategic plans for selective stream barrier mitigation; (4) establishment of riparian buffers; (5) research on roadside ditch management; (6) screening dams for removal and mitigation; and (7) providing professional training in applied river and stream morphology (based on the Rosgen classification system and methodology). Stream and aquatic habitat restoration projects have been funded with PPG or EPF dollars. In addition, projects have received financial support from other agencies and organizations, including the New York City Department of Environmental Protection(NYCDEP), the NYSDEC Hudson River Estuary Program, and the NYSDEC Division of Fish and Wildlife and Marine Resources, other state and federal agencies, universities and environmental organizations. Multi-partner projects addressing stream and aquatic habitat restoration are central to the success of reducing the impacts of HHM in New York.

Accomplishments for the Reporting Period

1. Barrier Mitigation Guide

The Barrier Mitigation Guide will be finalized in 2008 as a working document to be used on pilot projects. Development of this guide was initiated early in 2006 when the HHM Workgroup established a Barrier Mitigation Forum, including 15-20 members representing Federal and State agencies, and a variety of non-governmental organizations, to assess the current regulatory issues (particularly given the pending dam safety rulemaking), and needs. In March 2006, the Forum charged a small subgroup to prepare guidance for potential project sponsors of barrier mitigation, particularly dam removal, in NY. The group met several times and draft guidance was presented at the HHM Workgroup meeting on January 26, 2007. At a meeting of the Forum subgroup in the fall of 2007, there was consensus on making the guide even more straight-forward; the pre-cursor to an "applicant's guide" to barrier mitigation in NYS.

2. The Plan to Restore and Protect New York Rivers and Streams from the Impacts of Hydrologic and Habitat Modifications

This completed plan contains goals, objectives and a plan for future HHM-related activities. The HHM Workgroup prepared this plan over an extended period of deliberation. It was initially presented, as a draft, in 2004 to the NPSCC Steering Committee. Letters of support were gathered for the plan in 2005. There are plans to post the document on the new NYSDEC Nonpoint Source web pages in 2008.

3. Barrier Mitigation Assessment Protocol (Phase I)

This protocol was produced for use by regulatory agency and stream professions to identify candidate non-federal dams for possible removal or mitigation (e.g., installation of fish ladders). A multi-agency task force developed the original assessment worksheet. USFWS refined the worksheet and GIS database protocol, and the HREP has adopted a version for use in working with local tributary watershed groups in the Lower Hudson River Basin. In January 2008, a peer review was conducted of the final report, including a summary of regulatory requirements, sources of funding, and references. The final report and companion CD will be available through the new Non Point Source web pages later in 2008.

4. Statewide Professional Training

Natural stream channel assessment and design courses were developed and a series of three courses were taught by the Greene County SWCD Fall 2004-June 2005. Venues included the Lake Champlain region and the Schoharie/Catskill region of New York State. NYSDEC continues to discuss inclusion of courses as part of Stormwater Outreach Program curriculum at SUNY ESF in Syracuse, NY. Greene County SWCD is still amenable to the idea.

5. Establishing Regional Curves for NYS

USGS has led this multi-year project to develop regional hydrologic curves and regional channel-geomorphologic characteristics at bankfull discharge for streams of New York State. The curves have been developed by physiographic region and by Rosgen stream type so that future stream-channel designers can define stable reach characteristics for restoration projects in the State. Curves are completed for all Upstate regions in New York: Tug Hill/Adirondacks (Regions 1 and 2), East of Hudson (Region 3), Catskills (Regions 4 and 4a), Central NY (Region 5), Southern Tier (Region 6), and Finger Lakes (Region 7), and are available on-line. Progress is being made on the Statewide report to be presented in draft in 2008.

6. Flood Protection Community Assistance Program

More than 1,400 New York communities participate in the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP). The NYSDEC administers the State Flood Protection Community Assistance Program, to reduce flood risk to life and property, by assisting local communities in implementing NFIP regulations and maintaining State and local participation in the national program.

In November 2007, the HHM Workgroup established a subgroup to work with NYSDEC

administrators to look at opportunities for better flood response by qualified "stream team" professionals. Also, a subgroup was established to develop criteria on qualifications and experience of such stream professionals.

7. Flow Standard in 6NYCRR Part 703 Surface Water Quality Standards Regulations

New York adopted a narrative standard for the parameter "flow" as part of its ongoing triennial review water quality standards rulemaking. The NYS Environmental Board approved the regulation on November 28, 2007. The final regulations were filed with the NYSDOS on January 17, and the rule went into effect on February 16, 2008. Notices appeared in the New York State Register and Environmental Notice Bulletin, and the final rule is online at <http://www.dec.ny.gov/chemical/27985.html>

2.5 WATERSHED MANAGEMENT

The Watershed Management Program evaluates and assesses monitoring data and other information to determine the quality of water resources in the state. A key element of the program is the development of specific management plans and recommendations for priority watersheds in New York State. These plans are designed to coordinate the actions of the Division of Water, other NYSDEC divisions and state agencies, along with federal and local partners to restore and protect the designated use of New York's waters. The intent is to provide direction to the nonpoint source management program and other water programs, so that individual actions can be assessed in the context of their importance to water quality.

The primary objective of watershed management is to analyze the assimilative capacity of all water bodies to maintain their designated uses. For commonly monitored pollutants, this objective would be to quantify loads from point and nonpoint sources through a watershed-based plan or, where warranted, a more formal Total Maximum Daily Load (TMDL). Ideally, the water quality impact on all downstream water bodies could be assessed for any action that would guide regulatory and voluntary incentive-based programs. The federal government, primarily through the NRCS and EPA, is a major funding source for nonpoint source actions directed by water quality management. The state's water quality management activities establish the need for action and set priorities that address federal mandates and state objectives. Local governments help to identify water quality problems, and opportunities to protect or restore water quality while leveraging local resources to achieve broader natural resource and community benefits.

Coordination of New York's Watershed Management Program activities is achieved through several mechanisms. First, the New York Water Management Advisory Committee provides for

general coordination and communication among state, federal and local agencies, along with academic institutions, citizen and community groups and the business and private sector. Additional coordination regarding nonpoint source and watershed management activities is provided by the NPSCC. Coordination for activities for specific watersheds and basins is provided by participation in various watershed or basin commissions, coalitions and workgroups. Examples include the Delaware River Basin Commission, the Susquehanna River Basin Commission, the Great Lakes Basin Commission, the Upper Susquehanna Coalition(USC) and other groups.

The funding priority for watershed management focuses on achieving nonpoint source reductions to support the reasonable assurance provisions of TMDLs, and resolve other impairments on the 303(d) list. This priority is balanced with the state commitment to address lesser impacts or protection concerns expressed on the Priority Waterbodies List, and provide the groundwater protection and remediation directed by the Brownfields legislation. An example of a watershed based plan that has substantially addressed the nonpoint source concerns from agriculture, is the Skaneateles Lake Watershed, where the City of Syracuse has successfully leveraged its resources to protect its source of drinking water with Farm Bill and EPF funds.

Accomplishments for the Reporting Period

1. Long Island Sound

Through work with Suffolk County, the program assessed nonpoint source contributions (load allocation) and potential management measures that compliment point source reductions (waste load allocation) of the TMDL for dissolved oxygen. Worked with EPA, Connecticut and upstream states (Vermont, New Hampshire and Massachusetts) to employ the AVGWLF watershed model to assess nonpoint sources to the Sound and develop tools to identify cost effective reduction strategies. In addition, TMDLs for shellfishing waters impaired by pathogens were developed and approved by EPA.

2. Croton Reservoir (NYC Drinking Water Supply)

NYSDEC prepared a response to public comment on a draft update to the implementation plan for nonpoint source reductions needed to meet the TMDL.

3. Lake Champlain

BMPs including comprehensive nutrient management plans and erosion control have been installed on nearly 40,000 acres. Manure storage, and milkhouse wastewater treatment have been installed on over 30 basin farms, resulting in reduced phosphorus loads.

4. Hudson River

The Trees for Tribs restored riparian vegetation through 12 projects with 19 project partners employing over 225 volunteers to plant over 2,000 native trees on 7,000 ft. of stream length.

Key habitat types are mapped, including tidal wetlands, aquatic vegetation beds, and the river bottom. Detailed mapping of estuary wetlands greater than one-half acre has been completed in Geographic Information System (GIS) format and incorporated into the Department's Master Habitat Data Base. Software for non-GIS users allows the public to view this wetland information electronically.

The Hudson River Estuary Program has assisted in establishing and supporting the development of 11 watershed conservation programs on the tributaries of the Hudson. Two inter-municipal councils, comprised of local elected officials, have completed pilot watershed "agreements." Several other watershed associations supported by the Hudson River Estuary Program are developing management plans. Five watersheds have completed plan and have begun implementing projects.

5. Great Lakes

Projects that address nonpoint source pollution directly benefit the goals and objectives of Great Lakes programs including the Lake-wide Management Plans (LaMPs) and more local Remedial Action Plans (RAPs) that focus on Areas of Concern.

6. Peconic Estuary

Developed watershed and estuary model to assess Non Point Source loads and evaluate management alternatives. Developed and received EPA approval for TMDL for nitrogen to address waters impaired by low dissolved oxygen.

7. Chesapeake Bay Tributary Strategy

The completed tributary strategy, based on the USC estimates of the extent of practices derived by a group of agricultural practitioners and other experts, was submitted to EPA.

New York targets implementation based on landowner interest and high potential for nutrient and sediment reduction and habitat improvement. The USC and its partners restored 634 acres of wetlands; constructed 154 new vernal pools and initiated prescribed grazing on 4892 acres of pasture

and row crops. Grazing generates wall-to-wall buffers, reduces nutrient sources and runoff and helps sustain farms. New York also is evaluating road drainage systems as they are critical pathways for atmospheric nitrogen deposition and runoff.

The USC continued to document agricultural best management practices.

8. Cannonsville Reservoir (NYC Drinking Water Supply)

Watershed Agricultural Council and other nonpoint source actions outlined in Delaware County Action Plan that compliment point source reductions (waste load allocation) of TMDL to achieve phosphorus reductions are responsible for implementing 85 whole farm plans and remediating over 390 on-site system failures.

9. Groundwater

Completed a Needs Assessment and the Implementation Plan for a geographic information system to support a state-wide groundwater protection and remediation Strategy, and drafted Strategy. Began implementation of an environmental information management system. Undertaking design of a Groundwater Quality Data Exchange Project with EPA and the NYSDOH, that will facilitate access to water quality and source water assessment information associated with public water systems. USGS completed a contract to update aquifer maps.

10. Genesee Watershed Restoration and Protection Strategy

Developed a WRAPS for this basin, and began assessing Non Point Source loads to impaired lakes.

11. Finger Lakes

The onsite wastewater treatment system demonstration project in Skaneateles Lake Watershed, funded by EPA, is demonstrating a range of practical solutions for replacement wastewater treatment systems, using advanced technology. The City of Syracuse and the OTN are jointly promoting technical training programs and watershed tours to share the positive results of this initiative.

12. Small Lakes Nutrient Reduction Plans

Collected nonpoint source and lake water quality data to assess nonpoint source contribution to lake impairments. EPA provided contract support to calibrate AVGWLF model for NY

watersheds, and to draft TMDLs for NYSDEC proposal. Three lake TMDLs for phosphorus have been completed and approved by EPA.

13. Acid Lakes and Atmospheric Deposition

Completed a TMDL, using EPA contractor to model the impact of atmospheric deposition on acidification and to assess management strategies, which received EPA approval. In conjunction with New England Interstate Water Pollution Control Commission and six other states, submitted and received EPA approval of a Northeast Regional TMDL to reduce mercury contamination of fish which results primarily from atmospheric deposition originating from emissions in upwind states.

14. Onondaga Lake

Non Point Source projects such as streambank and AEM are funded through the Onondaga Lake Partnership. The Partnership has also funded some additional work on education and street vacuuming, aimed at pollutant reductions from this source. USGS has developed a watershed model that estimates phosphorus loads throughout the watershed, and can be used to estimate loads associated with changes in land use or installation of BMPs.

15. Long Island South Shore Estuary Waters

TMDLs for selected shellfishing waters in the South Shore Estuary impaired by pathogens were developed and approved by EPA. Through cooperation with the South Shore Estuary Program, began assessing nitrogen loads to water impaired by hypoxia or exhibiting ecosystem stress.

2.6 COASTAL NONPOINT POLLUTION CONTROL PROGRAM

New York's Coastal Nonpoint Pollution Control Program builds on existing coastal management and nonpoint source pollution control programs to protect and restore coastal water quality. The program document was jointly prepared by the Departments of State and NYSDEC pursuant to the Federal Coastal Zone Act Reauthorization Amendment, Section 6217, and was submitted to the NOAA office of Coastal Resource Management and EPA in June 1995. Rather than creating a separate program, New York's approach was to advance watershed protection by building upon existing regulatory and incentive based programs that collectively address nonpoint sources of pollution from agriculture, forestry, urban areas (construction, onsite wastewater disposal, road runoff), marinas and boating, and hydrologic modification.

New York's coastal nonpoint area is large, covering over 60 percent of New York State, including the watersheds of Lake Ontario, Lake Erie, the Finger Lakes, the St. Lawrence River, the

Hudson River, the Atlantic Ocean and Long Island Sound. Conditional approval of the program was given in November 1997. New York State provided supplemental information, describing existing strength and building capacity where needed, and New York's Coastal Nonpoint Pollution Control Program was fully approved in December 2006.

The overriding goal of New York's Coastal Nonpoint Pollution Control Program is to protect and restore coastal water quality by preventing and reducing pollution. This is advanced through the implementation of a suite of management measures known to be effective in significantly reducing and preventing pollution from sources contributing to water quality impairments or posing threats to water quality.

A key objective of the program is to enhance coordination and technical and financial assistance to municipalities in New York's many nonpoint related programs. Coordination of the different elements of the Coastal Nonpoint Pollution Control Program is accomplished primarily through regular meeting of the NPSCC and its workgroups. The Departments of State and NYSDEC communicate with other key state agencies (Agriculture and Markets, Transportation, Health), federal agencies, regional councils, and local agencies and organizations, legislative commissions and citizen groups, and academic institutions, through this forum.

Funding priorities for coastal nonpoint source pollution control efforts in New York include the support of watershed management planning, and providing technical and financial assistance to municipalities for specific projects in key watersheds to implement these plans. Watershed management planning priorities include education and outreach, technical assistance and direct financial support for the preparation of specific watershed management plans. The priorities for municipal technical assistance include assistance in planning and design for streambank stabilization, stormwater treatment system retrofits, acquisition of land, and assessment of local laws and practices related to pollution management. Funds have been provided for specific projects across the state, including the Great Lakes Basin, Long Island's South Shore Estuary, the Lake George Watershed, the Finger Lakes Watershed, and the Hudson River Basin.

Accomplishments for the Reporting Period

1. New York State Framework for Local Watershed Management Planning

The framework for the preparation of local watershed management plans developed in cooperation with the NYSDEC Division of Water in May 2003 continued to be advanced and refined as an effective means for local governments to follow when developing locally specific plans to advance local and statewide water quality goals. The framework was incorporated into the watershed

planning multi-media project described below.

2. Preparation of Waterbody and Watershed Management Plans

Technical and financial assistance, provided by the NYSDOS Division of Coastal Resources through the EPF, Local Waterfront Revitalization Program, was provided to municipalities to prepare waterbody and watershed management plans. These plans include characterization of the watershed, identification of water quality and quantity (including altered hydrology) and habitat impairments or threats, as well as known or suspected causes. These plans have identified stormwater outfalls and focus on identifying opportunities and setting priorities for protective and corrective actions to protect and improve water quality and aquatic habitats. Recommendations include capital projects to reduce point and nonpoint sources of pollution, and changes in local laws and municipal operations to be advanced through implementation strategies. The Division of Coastal Resources works with local and state agencies, local watershed groups, and other community groups to prepare and implement watershed plans.

Since 1994, the Division has awarded over \$21 million to prepare and implement waterbody and watershed management plans, with \$4 million having been awarded in 2007. In 2007, the Division assisted local municipalities and local watershed groups in the completion of the Honeoye Lake Watershed Management Plan and the Scudders Pond Subwatershed Plan. Additionally, work has begun on the Ausable River, Black River, Black Creek, Oatka Creek, and Chautauqua Lake watershed management plans.

3. Water Pollution Control Linked Deposit Program

The NYSDOS Division of Coastal Resources, in cooperation with the Environmental Facilities Corporation and the NYSDAM, is establishing the Water Pollution Control Linked Deposit Program. The Water Pollution Control Linked Deposit Program will provide reduced-interest loans to owners of residential and small business on-site wastewater treatment systems in order to prevent an increase in nutrients in waterbodies and to enhance source water or watershed protection. Reduced interest loans will also be available for agricultural nonpoint source pollution control projects to reduce, abate, control, or prevent nonpoint source pollution originating from agricultural sources.

4. Municipal Assessment of Nonpoint Programs and Practices

Technical and financial assistance from the NYSDOS Division of Coastal Resources supported the preparation of assessments of the nonpoint source pollution control practices and programs for the 31 villages on the South Shore of Long Island and municipalities in the Lake George

watershed. This effort built on the methodology prepared by the Division of Coastal Resources for the South Shore Estuary Reserve. The methodology was further refined and applied to watersheds of Conesus and Cayuga Lakes through a partnership between the Genesee-Finger lakes Regional Planning Council and the Division of Coastal Resources. The effort culminated in the preparation of a manual "*Protecting Water Resource through Local Controls and practices: An Assessment Manual for New York Municipalities*" which organizes problems, threats, and approaches by pollution categories such as agriculture and urban development. The manual contains case study descriptions, guidance for selecting practices and making changes to local laws to control nonpoint pollution and sample laws and practices. The Division and the Genesee-Finger Lakes Regional Planning Council continued to distribute the manual and present materials at conferences and workshops, including the NY Upstate Chapter of the American Planning Association's Annual Conference and the Tug Hill Local Government Day.

5. Watershed Planning and Implementation Multimedia Project

In partnership with the NYSDEC and partly through consulting services, the NYSDOS Division of Coastal Resources prepared a motivational video and guidebook on watershed planning and implementation entitled, *Watershed Plans: Protecting and Restoring Water Quality*. The materials will soon be published and posted at www.nyswaterfronts.com. Each of these educational materials is designed to stand alone and complement one another. Coordination by the Division of Coastal Resources and the NYSDEC ensured that the materials complement and advance New York's Phase II Stormwater Management Program, in addition to implementing New York's Coastal Nonpoint Program. The Division of Coastal Resources has been promoting the guidebook at various conferences and workshops throughout the State. Some of these included the Genesee-Finger Lakes Regional Planning Council's Local Government Workshop, the NY Upstate Chapter of the American Planning Association's Annual Conference, and the Paul Smith's Adirondack Watershed Institute Water Quality Conference. The Division will continue to present and distribute the multi-media project throughout the State.

3.0 WATERSHED ASSESSMENT AND NONPOINT SOURCES

New York's Watershed Assessment Program addresses water quality issues related to nonpoint sources within the context of its comprehensive Statewide Waters Monitoring and Assessment Program. This program, described in more detail in the following section, includes rotating drainage basin studies which form the basis of the analysis for this annual report, as presented in Section 3.2.

3.1 STATEWIDE WATERS MONITORING PROGRAM - BACKGROUND

The Statewide Waters Monitoring Program (SWMP) is a conglomeration of various component monitoring programs within the Division of Water. These component programs include the Division's long-running statewide ambient water quality monitoring programs for rivers (the Rotating Integrated Basin Studies, or RIBS, Sampling Program) and for lakes (the Lake Classification and Inventory), the Citizens Statewide Lake Assessment Program (CSLAP) which uses volunteers to conduct additional lake monitoring, the Stream Biomonitoring Program and Toxicity Testing Program which provide biological monitoring components, a regulatory sampling program to monitor point source compliance, and other efforts. Monitoring activities by other divisions of NYSDEC, as well as in other agencies and groups outside the department also contribute information to the evaluation and assessment of rivers, lakes, groundwater, marine waters and estuaries, and wetlands in New York State. But the foundation of the department's ambient water quality monitoring and assessment effort remains the Statewide Waters Monitoring Program.

The SWMP represents the latest iteration of a state water quality monitoring program that was established in the 1960s. The stated objectives of the program are numerous and varied. These objectives include: the comprehensive assessment of water quality of all waters of the state, including the documentation of *good* quality waters; analysis of long-term water quality trends; comprehensive and integrated multi-media sampling; the characterization of naturally occurring or background conditions; and the establishment of baseline conditions for measuring the effectiveness of site-specific restoration and protection activities.

In order to address the number and variety of monitoring objectives, component programs within the Statewide Waters Monitoring Program are designed around three separate types of monitoring networks and activities. Each of these operates concurrently, yet somewhat independently, and focuses on distinctly different objectives.

1. **Water Quality Screening** is conducted to provide a *qualitative* assessment of water quality at a large number of sampling sites with minimal resource (staff and analytic) expense. On-site biological (macroinvertebrate) sampling and visual lake surveys are examples of screening efforts.

2. **Intensive Basin Monitoring** employs more frequent as well as more comprehensive and integrated multi-media sampling (water chemistry, bottom sediment chemistry, toxicity testing, macroinvertebrates, fish, habitat assessments) to provide more detailed water quality information for a smaller number waterbodies in selected drainage basins.

3. **Routine Trend Monitoring** provides continuous (annual) sampling of water quality and conditions at fixed sites across the state. This effort is designed to monitor basic water quality characteristics, establish baseline conditions and evaluate long-term trends. The water quality data and information currently generated by the SWMP are used to support many water quality monitoring and assessment functions within the NYSDEC Division of Water. Specifically, SWMP data/information is used in the compiling of the Waterbody Inventory/Priority Waterbody List (WIPWL), the compilation of New York State's Clean Water Act Section 305(b) Water Quality Report and Section 303(d) Impaired Waters List, and the selection of locations for intensive surveys and special water quality monitoring projects.

Comprehensive Assessment Strategy

Once collected, monitoring data is reviewed to determine water quality conditions and the degree to which various waterbody uses are supported. The Clean Water Act directs states to consider not only state-generated data, but all existing and readily available water quality data and information in conducting their assessments. Given the public interest in environmental issues and the wide range of water quality monitoring activities currently being conducted at a variety of levels, consideration of such a volume of information could be an overwhelming task. In response, the NYSDEC Division of Water has adopted a continuous water quality assessment process that accommodates a wide range of participants, and various levels of water quality data and information. This process is the division's *Comprehensive Assessment Strategy*. Three key elements of this strategy are described below.

Rotating Drainage Basin Schedules

A rotating drainage basin strategy focuses monitoring and assessment activities on smaller portions of the state for a period of time and then turns attention to other parts of the state. The rotating schedule adopted by New York State calls for the initiation of coordinated efforts in two or three drainage basins each year, resulting in an assessment of the entire state within a five-year cycle. The rotating basin schedule was first used by division monitoring programs in response to diminishing resources which prevented sampling the whole state at one time. But due to the success of this approach in delivering the monitoring program, the adoption of a common basin rotation schedule has since been extended to other division assessment and

management programs as well. This coordinated schedule also facilitates the integration of monitoring, assessment and management programs and moves the division toward a more unified water program. Because of these aspects, the rotating basin schedule was adopted as the framework for the Comprehensive Assessment Strategy.

Enhanced Communication and Information Sharing

The goal of incorporating "all available data and information" into the Comprehensive Assessment Strategy requires communication with and information sharing among not only Division of Water program staff, but with water quality "partners" in other NYSDEC divisions, other state and county agencies and local groups outside the department. Realization of this goal also requires a process that actively facilitates communication and encourages the exchange of information. The schedule of Comprehensive Assessment Strategy activities (outlined below) institutionalizes interagency and public participation in the process with a series of water quality partnership meetings and workshops throughout the five-year monitoring, assessment and management cycle.

The Waterbody Inventory/Priority Waterbodies List

A third critical aspect of the Comprehensive Assessment Strategy is the linkage of all these monitoring activities with the WI/PWL, the division's inventory of water quality information for waterbodies throughout the state. The WI/PWL incorporates monitoring data and information from Division of Water programs, as well as other NYSDEC divisions and other agencies. The WI/PWL also includes a significant public participation component, incorporating input from the public through a Water Management Advisory Committee, Statewide Nonpoint Source Committee, County Water Quality Coordinating Committees, citizen advisory committees for Remedial Action Plans and Lake Management Plans, and other means.

Each year two or three major drainage basins (encompassing, on average, about 20% of the state) become the focus of new three-year Comprehensive Assessment Strategy efforts. At the conclusion of these monitoring and assessment activities, water quality management components become the focus of Years 4 and 5 (and beyond). As the cycle runs its course, new studies on 2 or 3 other basins (comprising another 20% of the state) begin each year.

Year One: Identification of Water Quality Issues and Water Quality Screening

The first year of a Comprehensive Assessment Strategy effort in a basin begins with a review of current available information – including the division's WI/PWL – to identify pertinent water quality problems and issues. Regional staff, other division and agency monitoring units and the

network of local/county Water Quality Coordinating Committees and other water quality partners are also consulted to determine where monitoring efforts in the basin should focus. In addition to the identification of water quality issues, *Year One* Statewide Waters Monitoring Program activities include Biological Screening Network sampling. This effort uses qualitative biological assessments to identify waters that support uses and waters that require further study. A similar screening effort for lake waterbodies and lake use assessments at previously unassessed lakes is also under development; as are attempts to incorporate water quality screening and problem verification efforts (fishery community and habitat assessment, facility toxicity testing, shellfish area assessment, etc.) by other NYSDEC monitoring programs at other waters in the targeted basins.

The goal of these screening activities is to conduct an evaluation of **all** river and lake waterbodies in a basin study area over a period of two sampling cycles (10 years). Such a *census* approach has distinct advantages over *targeted* monitoring designs (which are often biased toward "problem" waters and result in skewed inferences regarding statewide use support) and *random/probabilistic* monitoring (which provides a statistical evaluation of statewide water quality, but limited segment-specific information). However, targeted monitoring is a key component in the second year of monitoring (see below). Additionally, a pilot study to determine a possible role for random/probabilistic monitoring in the Statewide Waters Monitoring Program is continuing.

Year Two: Intensive/Chemical Network Monitoring

The results of the *Year One* water quality review and water quality screening are used to develop more intensive basin monitoring plans for selected waters in the target watersheds. The Intensive/Chemical Network monitoring component of the Statewide Waters Monitoring Program incorporates a wide range of water quality monitoring including chemical analyses of contaminants in water, bottom sediment, whole organisms (benthic macroinvertebrates) and fish flesh samples, as well as more detailed biological assessments and ambient toxicity evaluations. Much of this sampling is conducted by the Statewide Waters Monitoring Program staff. However, the goals of the Comprehensive Assessment Strategy have led to the incorporation of data and information from other sources into its water quality evaluations. These may include a number of other division/department activities, such as lake studies and management programs, fishery habitat and community assessment, fish tissue contaminant sampling, chemical sampling of facility effluents, groundwater quality evaluation, pollutant track-down efforts, and nonpoint source monitoring. Additional data for water quality assessments are also generated by monitoring programs conducted by many other governmental agencies and public interest groups outside NYSDEC. These monitoring programs, which may focus on large watersheds or individual waterbody segments, provide chemical constituent data and/or aquatic resource information including macroinvertebrate, plant and fish community assessments. Efforts to better incorporate other agency (USGS, USF&W, EPA, local health and planning agencies) as well as citizen volunteer (lake associations, county Water Quality Coordinating

Committees, colleges and universities) monitoring activities into the intensive monitoring plan are also being developed.

Year Three: Water Quality Evaluation/Assessment and WI/PWL Update

The third year of the Comprehensive Assessment Strategy focuses on the evaluation and assessment of results from the multi-faceted monitoring during the first two years of effort. This evaluation and assessment component uses monitoring data and information to compare against a wide range of water quality indicators to determine the level of use support in the waters of the state. The water quality evaluation and assessment culminates in an update of the WI/PWL for the basin study area. The methodology for evaluating monitoring data and information against specific indicators to determine the level of use support and an assessment of water quality is integral to Section 303(d) List development. Like the monitoring effort, the WI/PWL update process involves the solicitation of input from a wide range of water quality professionals (from both within and outside the division/department) as well as a significant public participation component. Accommodation of such a wide range of participants is managed through NYSDEC regional staff involvement and a network of local/county Water Quality Coordinating Committees.

Year Four: Watershed Restoration and Protection Strategies Development

The completion of a basin WI/PWL marks the end of the monitoring and assessment efforts within that basin. Armed with all available water quality information, the focus of division programs turns toward the management, protection and, where necessary, the restoration of water resources in the state. The primary activity in the fourth year of the cycle is the development of strategies to address restoration and protection of waters assessed in the targeted basins. These strategies strive to bring together all appropriate agencies and stakeholders to focus all available tools (grant dollars, technical assistance and other resources) to address the priority water quality and natural resource needs of a basin and identify a detailed action plan.

Year Five (and beyond): Implementation of Management Strategies

Completed strategies may include recommendations and specific commitments by water quality partners to implement various components of the strategy. The development and implementation of management/restoration strategies and activities extends through Years 4 and 5 and beyond.

3.2 UPDATED DRAINAGE BASIN STUDIES - NONPOINT SOURCE FACTORS

For the purposes of this report, the waterbody assessment contained in the updated WI/PWL

reports for selected drainage basins provide the basis for interpreting progress of the Nonpoint Source Management Program. Summary results for the waters in the most recently updated basins are presented in Tables 3-1 through 3-8.

These tables show measures of improvements, no change, or decline in water quality in waters of the targeted basin. These are summarized according to different categories of nonpoint sources and also reflect different levels of water quality impacts.

The information presented in the tables shows the number of waterbody segments in each basin which have shown improvements (change from one level of impact to a lower level of impact, such as "stressed/threatened >NKI (no known impact)"). These improved segments are associated with major sources of impacts, which are primarily nonpoint sources. The source categories are abbreviated in the tables as follows:

Ag -	agriculture
Atm -	atmospheric
Spill -	petroleum spills
Constr -	construction
Deicer -	winter deicing salts & abrasives
HHM -	hydrologic habitat modification
Sed -	contaminated sediments
Landfill -	solid waste disposal sites
OWTS -	onsite wastewater treatment systems
SBE -	streambank erosion (distinguished from contaminated sediments)
SW -	stormwater
UKN/Other -	unknown or other categories
Urban -	urban sources

The results Tables 3-1 through 3-8 only present information on waterbody segments for which data were available from earlier rounds of studies, i.e. only those segments for which a baseline assessment was available and for which some change or trend could be assessed. As each round progresses and more waters are assessed, it is expected that more detailed trend analysis can be conducted.

The specific observations from the results in each of the tables varies somewhat from basin to basin. However the primary observation from the combined results is that the assessed waterbody segments show a significant trend toward improvement, with 156 waterbody segments showing improvement, as compared with 53 showing some decline (while 122 segments showed no change). Of these 156 segments showing improvements, 83 experienced improvement that reflected the restoration of uses; while less than one-fourth as many - 20 out of 53 segments showing some decline - had loss of use. The principal categories of nonpoint source pollution associated with improvements in the basins assessed are agriculture, hydrologic habitat modification, streambank erosion, and onsite wastewater treatment systems.

The overall trend from these results is toward improvement, based on the system of defined waterbody impacts. These improvements are generally associated with the priority categories of nonpoint sources that are the emphasis of New York's Nonpoint Source Management Program. Additional rounds of rotating drainage basin studies are expected to affirm a continuation of these trends into the future.

Table 3-1: NPS Update December 2006 (from 2000 Baseline) -Allegheny

Change in Assessment		All Sources	Agr	Rex	Cons	Deice	HHM	Con Sed	Land fill	OWTS	SBE	SW	Unk/Oth	Urb	ATM*
Stressed/Threatened>NKI		6	2	3							1				
Precluded/Impaired>NKI	Restored														
Impair/Precl>Stress/Threat	Restored	3	2	1											
Stressed>Threatened															
Precluded>Impaired															
TOTAL IMPROVED		9	4	4							1				
Precluded/Impaired>No Change		5	4							1					
Stressed/Threaten>No Change		8	6								1		1		
TOTAL NO CHANGE		13	10							1	1		1		
Stress/Threat>Precl/Impair	Degraded														
Threatened>Stressed		2	1		1										
Impaired>Precluded															
TOTAL DECLINED		2	1		1										
Total Segments															

*** Table does not include 67 segments where acid rain is the source of impact/impairment. Changes in the assessment for these segments are largely the result of modifications to the assessment methodology and not reflective of improved water quality.

Table 3-2: NPS Update December 2006 (from 2000 Baseline) -Black

Change in Assessment		All Sources	Agr	Rex	Cons	Deice	HHM	Con Sed	Land fill	OWTS	SBE	SW	Unk/Oth	Urb	ATM*
Stressed/Threatened>NKI		1								1					
Precluded/Impaired>NKI	Restored														
Impair/Precl>Stress/Threat	Restored	1									1				
Stressed>Threatened		1								1					
Precluded>Impaired															
TOTAL IMPROVED		3								2	1				
Precluded/Impaired>No Change		7	1							1			5		
Stressed/Threaten>No Change		7	1				1			4			1		
TOTAL NO CHANGE		14	2				1			5			6		
Stress/Threat>Precl/Impair	Degraded	1								1					
Threatened>Stressed															
Impaired>Precluded															
TOTAL DECLINED		1								1					
Total Segments		18													

*** Table does not include 67 segments where acid rain is the source of impact/impairment. Changes in the assessment for these segments are largely the result of modifications to the assessment methodology and not reflective of improved water quality.

Table 3-3: NPS Update December 2006 (from 2000 Baseline) -Chemung

Change in Assessment		All Sources	Agr	Rex	Cons	Deice	HHM	Con Sed	Land fill	OWTS	SBE	SW	Unk/Oth	Urb	ATM*
Stressed/Threatened>NKI		4	2				1				1				
Precluded/Impaired>NKI	Restored														
Impair/Precl>Stress/Threat	Restored	11		2					1	5	2		1		
Stressed>Threatened		2	1										1		
Precluded>Impaired															
TOTAL IMPROVED		17	3	2			1		1	5	3		2		
Precluded/Impaired>No Change		1											1		
Stressed/Threaten>No Change		6	2							1	3				
TOTAL NO CHANGE		7	2							1	3		1		
Stress/Threat>Precl/Impair	Degraded														
Threatened>Stressed		1									1				
Impaired>Precluded															
TOTAL DECLINED		1									1				
Total Segments		25													

*** Table does not include 67 segments where acid rain is the source of impact/impairment. Changes in the assessment for these segments are largely the result of modifications to the assessment methodology and not reflective of improved water quality.

Table 3-4: NPS Update December 2004 (from 2000 Baseline) -Mohawk

Change in Assessment		All Sources	Agr	Spill	Cons	Deice	HHM	Con Sed	Land fill	OWTS	SBE	SW	Unk/Oth	Urb
Stressed/Threatened>NKI		14	7		1	1					2	1		2
Precluded/Impaired>NKI	Restored	3									1		2	
Impair/Precl>Stress/Threat	Restored	11	1		1		5		1		1	1		1
Stressed>Threatened		4				1	1			2				
Precluded>Impaired		0												
TOTAL IMPROVED		32	8		2	2	6		1	2	4	2	2	3
Precluded/Impaired>No Change		4	2				1							1
Stressed/Threaten>No Change		21	10				3			4	1			3
TOTAL NO CHANGE		25	12				4			4	1			4
Stress/Threat>Precl/Impair	Degraded	8	2	2	1					2				1
Threatened>Stressed		4					3				1			
Impaired>Precluded		1											1	
TOTAL DECLINED		13	2	2	1		3			2	1		1	1
Total Segments		70	22	2	3	2	13		1	8	6	2	3	8

*** Table does not include 67 segments where acid rain is the source of impact/impairment. Changes in the assessment for these segments are largely the result of modifications to the assessment methodology and not reflective of improved water quality.

Table 3-5: NPS Update December 2004 (from 2000 Baseline) -Niagara

Change in Assessment		All Sources	Agr	Spill	Cons	Deice	HHM	Con Sed	Land fill	OWTS	SBE	SW	Unk/Oth	Urb
Stressed/Threatened>NKI		9	3								6			
Precluded/Impaired>NKI	Restored	0												
Impair/Precl>Stress/Threat	Restored	3	2							1				
Stressed>Threatened		0												
Precluded>Impaired		2						2						
TOTAL IMPROVED		14	5					2		1	6			
Precluded/Impaired>No Change		8	1					2	1	1	1		2	
Stressed/Threaten>No Change		8									6			2
TOTAL NO CHANGE		16	1					2	1	1	7		2	2
Stress/Threat>Precl/Impair	Degraded	5					1	2		1			1	
Threatened>Stressed		7	3								3		1	
Impaired>Precluded		0												
TOTAL DECLINED		12	3				1	2		1	3		2	
Total Segments		42	9				1	6	1	3	16		4	2

*** Table does not include 67 segments where acid rain is the source of impact/impairment. Changes in the assessment for these segments are largely the result of modifications to the assessment methodology and not reflective of improved water quality.

Table 3-6: NPS Update December 2006 (from 2000 Baseline) - Upper Hudson

Change in Assessment		All Sources	Agr	Rex	Cons	Deice	HHM	Con Sed	Land fill	OWTS	SBE	SW	Unk/Oth	Urb	ATM*
Stressed/Threatened>NKI		10	2	1	1	4					1		1		
Precluded/Impaired>NKI	Restored	3				1		1		1					
Impair/Precl>Stress/Threat	Restored	11	1				5	1		2			2		
Stressed>Threatened		2								1			1		
Precluded>Impaired		2			1		1								
TOTAL IMPROVED		28	3	1	2	5	6	2		4	1		4		
Precluded/Impaired>No Change		2						1					1		
Stressed/Threaten>No Change		12			2	2	1		1	3	1		1	1	
TOTAL NO CHANGE		14			2	2	1	1	1	3	1		2	1	
Stress/Threat>Precl/Impair	Degraded														
Threatened>Stressed		2	1		1										
Impaired>Precluded															
TOTAL DECLINED		2	1		1										
Total Segments		44													

*** Table does not include 67 segments where acid rain is the source of impact/impairment. Changes in the assessment for these segments are largely the result of modifications to the assessment methodology and not reflective of improved water quality.

Table 3-7: NPS Update December 2007 (from 2000 Baseline) -Lake Ontario Tribs

Change in Assessment		All Sources	Agr	Rex	Cons	Deice	HHM	Con Sed	Land fill	OWTS	SBE	SW	Unk/Oth	Urb	ATM*
Stressed/Threatened>NKI		6	3				1		1				1		
Precluded/Impaired>NKI	Restored	1								1					
Impair/Precl>Stress/Threat	Restored	6	1		1				1	3					
Stressed>Threatened		1	1												
Precluded>Impaired		0													
TOTAL IMPROVED		14	5		1		1		2	4			1		
Precluded/Impaired>No Change		4						2						2	
Stressed/Threaten>No Change		12	8							2			1	1	
TOTAL NO CHANGE		16	8					2		2			1	3	
Stress/Threat>Precl/Impair	Degraded	7	1		2				1	3					
Threatened>Stressed		6	2		1		1		1	1					
Impaired>Precluded		0													
TOTAL DECLINED		13	3		3		1		2	4					
Total Segments		43	16		4		2	2	4	10			2	3	

*** Table does not include 67 segments where acid rain is the source of impact/impairment. Changes in the assessment for these segments are largely the result of modifications to the assessment methodology and not reflective of improved water quality.

Table 3-8: NPS Update December 2006 (from 2000 Baseline) -Oswego/Finger Lakes

Change in Assessment		All Sources	Agr	Rex	Cons	Deice	HHM	Con Sed	Land fill	OWTS	SBE	SW	Unk/Oth	Urb	ATM*
Stressed/Threatened>NKI		13	6	1	2				1		3				
Precluded/Impaired>NKI	Restored	5	3				1			1					
Impair/Precl>Stress/Threat	Restored	20	5					1	1	3		1	6	3	
Stressed>Threatened		1	1												
Precluded>Impaired															
TOTAL IMPROVED		39	15	1	2		1	1	2	4	3	1	6	3	
Precluded/Impaired>No Change		5		1				2		1			1		
Stressed/Threaten>No Change		12	5				2		1	1	1		1	1	
TOTAL NO CHANGE		17	5	1			2	2	1	2	1		2	1	
Stress/Threat>Precl/Impair	Degraded	4					1				1			2	
Threatened>Stressed		5	5												
Impaired>Precluded		0													
TOTAL DECLINED		9	5				1				1			2	
Total Segments		65	25	2	2		4	3	3	6	5	1	8	6	

*** Table does not include 67 segments where acid rain is the source of impact/impairment. Changes in the assessment for these segments are largely the result of modifications to the assessment methodology and not reflective of improved water quality.

*** Table does not include 67 segments where acid rain is the source of impact/impairment. Changes in the assessment for these segments are largely the result of modifications to the assessment methodology and not reflective of improved water quality.