OUTCOME 1: REDUCED NONPOINT SOURCE POLLUTION

Nonpoint source pollution, resulting principally from contaminated stormwater runoff, is the primary water quality concern in the Reserve. Elevated levels of coliform bacteria, an indicator of the potential presence of pathogens, are responsible for closures of shellfish beds and bathing beaches. Sediment and excessive nutrients have pronounced impacts on the Reserve's living resources. The nature of nonpoint source pollution necessitates a multi-faceted approach to pollution reduction that incorporates capital improvement projects, changes in local government policy, implementation of best management practices, watershed-based planning, and education and outreach.

Stormwater Infrastructure Mapping and Planning Projects

Mapping stormwater drainage infrastructure using geographic information systems (GIS) enables more accurate and objective characterization of stormwater sources of nonpoint source pollution in both quantitative and qualitative terms. Improved information about these sources and their impacts helps promote design and siting of cost effective projects and efficient programs to mitigate pollution.

- The NYS Department of State (DOS) has undertaken an inventory and assessment of the progress of New York State, individual counties, towns and villages within the Reserve in mapping their stormwater drainage infrastructure. This report will highlight successful methodologies and identify where assistance is needed to complete mapping.

- Reserve counties, towns, and the City of Long Beach have mapped stormwater drainage infrastructure under their jurisdiction. Nassau County and the Town of Southampton have also mapped stormwater drainage infrastructure under the jurisdiction of villages within their boundaries.

- The Town of Babylon completed a stormwater mitigation plan to identify stormwater discharge points in the watershed draining into Great South Bay for the Town and the Villages of Lindenhurst, Babylon and Amityville. The plan also identified potential mitigation measures to reduce non-point source pollution within the Town's Reserve jurisdiction.

Capital Stormwater Abatement Projects

Capital improvements to stormwater infrastructure prevent and treat nonpoint source pollution entering Reserve tributaries and bays. State and local governments have implemented the following stormwater abatement projects in the Reserve:

- The NYS Department of Transportation (DOT) has completed pilot stormwater abatement projects to improve water quality at Santapogue and Mud Creeks in Lindenhurst, Sampawams Creek in Babylon, Awixa and Orowoc Creeks in Islip, Connetquot River in Oakdale and Bohemia, Brightwaters Canal in Brightwaters, and Carmans River in Southhaven. These projects have incorporated reconstruction of drainage infrastructure, construction of retention basins, and installation of filtering devices.

- Additional NYS DOT stormwater improvement projects are planned for the Long Island Expressway at Carmans River in Yaphank, on Sunrise Highway at Massapequa Creek in Massapequa, and on Montauk Highway at Pennataquit Creek in Bay Shore.

- Suffolk County completed stormwater abatement projects at Terrell River, Carmans River, and Champlins Creek in the Town of Brookhaven and Santapogue Creek and Brown's Creek in the Town of Islip.

- As an implementation project of its Ketcham's Creek watershed stormwater plan, the Town of Babylon completed the Ketcham's Creek Stormwater Treatment Wetland project, creating a wetland pond system to naturally treat stormwater moving through the stream corridor.

- The Town of Islip is finalizing designs and applying for permits for stormwater mitigation projects at Candee Avenue in Sayville, Terry Street in Sayville, Brown River Road in Bayport, Roxbury Avenue in Oakdale, and Vanderbilt Avenue in Oakdale.

- The Town of Brookhaven continued installing leaching catchbasins to intercept stormwater from Town roads. Between April and September of 2005, the Town installed 152 of these catchbasins within Reserve boundaries.

- Through an effective inter-municipal partnering approach, the Town of Southampton continues to undertake road drainage improvements to reduce stormwater runoff in both the Town and its incorporated villages. Major stormwater abatement projects were completed in the watersheds of Shinnecock and Tiana Bays in 2004 and 2005. The Town is also removing portions of Town road endings at waterfront sites and restoring these areas to natural vegetation and public access areas.

A constructed wetland system on Ketcham's Creek helps remove nonpoint source pollution from stormwater runoff.

- As part of its waterfront revitalization efforts, the Village of East Rockaway installed new surface infiltration chambers at its railroad station parking lot and beneath Althouse Avenue and Dock Street adjacent to the marina.

- The Village of Freeport installed storm drain inserts on Woodcleft Avenue and at an industrial park adjacent to several tributaries and marsh areas, in order to treat stormwater runoff. Working with the Village government, Operation SPLASH secured funds from the Freeport Chamber of Commerce and Otto's Sea Grill, a local business, to install additional storm drain inserts. Also in Freeport, Rohm and Haas Electric Materials and Dante Grover's Marina have installed filters to treat runoff from a parking lot and boat maintenance practices, respectively.

Amendment of County and Local Government Codes and Regulations to Include Best Management Practices

Best Management Practices (BMPs) are operational activities that help reduce nonpoint source pollution. BMPs can be applied to construction site operations; roadway operation and maintenance; marina operation and recreational boating; activity-specific nonpoint pollution sources such as application of fertilizer, lawn and garden chemicals, disposal of pet wastes, maintenance of on-site wastewater treatment systems; and wetland protection and restoration. Reserve partners have amended codes and regulations to include BMPs as follows:

- Nassau County implemented new drainage requirements associated with the construction of subdivisions and buildings on County roads. The County also initiated a project to evaluate current ordinances, laws, rules, requirements, and practices associated with stormwater and non-stormwater discharges on County roads and drainage infrastructure, and to develop a Drainage Use Ordinance based upon the completed evaluation.

Reserve partners have implemented best management practices to reduce nonpoint source pollution that enters Reserve waterways through stormwater outfalls.

- The Town of Oyster Bay is revising Town codes to include best management practices and road maintenance control practices and is implementing a program to limit pesticide, herbicide, and fertilizer use on Town-owned lands. In addition, the Town is revising its site plan review process, to reduce the time permitted for site disturbance and include other erosion control measures.
- The Town of Oyster Bay is also implementing nonpoint source control practices identified in its Harbor Management Plan for South Oyster Bay, such as providing adequate pumpout facilities, enforcing pet waste disposal, and implementing a waterfowl feeding education program.
- The Town of Babylon developed a draft stormwater management, erosion, and sediment control ordinance to codify best management practices into Town law.
- The Town of Brookhaven completed analysis of its Town Code and initiated redrafting of site plan, subdivision, and building permit sections to improve erosion and sediment control and comply with Phase II regulations.
- The Town of Southampton enacted three new laws for nonpoint source pollution control: an amendment requiring proper disposal of pet waste; a soil and erosion control program; and a stormwater management ordinance. The Town also instituted Town stormwater management permit requirements for all commercial and residential development within Reserve boundaries that exceeds 1000 square feet in structural coverage or disturbance.

Improvement and Maintenance of Vessel Pumpout Facilities

In order to reduce pollution related to recreational boating, sufficient pumpout facilities with adequate access should be provided and maintained by Reserve partners. Reserve partners have taken the following steps to improve and maintain vessel pumpout facilities:

- Land-based pumpout facilities are operated and maintained by Fire Island National Seashore; NYS Office of Parks, Recreation, and Historic Preservation; Nassau and Suffolk counties, Reserve towns, and villages; and private sector partners.
- Mobile pumpout vessels for the south shore are operated by the Towns of Oyster Bay and Southampton. Suffolk County provided financial support for two of Southampton's pumpout vessels.
- South Bay Cruising Club formed a pumpout subcommittee to investigate the operational status and location of pumpout facilities in Great South Bay and organize advocacy activities for expansion and improvement of pumpout facilities in the Reserve.

Animal Waste Reduction Programs

Fecal material from pets and the burgeoning residential Canada goose population is a source of nonpoint source pollution, particularly pathogens. Reserve partners have taken the following steps to reduce the impacts of animal waste on water quality:

- Nassau County participated in the Geesepeace program whereby approximately 1200 eggs were oiled to prevent hatching. The County also drafted a Nassau County Goose Management Program to address the negative impacts that geese have on water quality.
- Suffolk County hired a contractor to have border collies control geese at Timber Point County Park in West Sayville.
- The Town of Oyster Bay participated in the Geesepeace program to reduce impacts of waterfowl populations on water quality. The Town purchased two border collies and a boat to control geese at Town parks, beaches, and waterways, and contracted with the Village of Massapequa Park and Massapequa School District to implement the program on their properties. Town employees and citizen volunteers participated in oiling geese eggs.
- Town of Oyster Bay has an ordinance prohibiting pets in beaches and parks. Enforcement of this ordinance was been increased in 2005. In addition, enforcement of their "pooper scooper" law continues.
- The Town of Babylon installed "pooper scooper" law signs that remind citizens to clean up after their pets.

Reserve partners have installed signs to remind citizens that they are required to clean-up after their pets.

Implementation of Agricultural Environmental Management (AEM)

The AEM Initiative is a voluntary program that calls on local soil and water conservation districts to provide technical assistance to farm operators in order to assure environmental stewardship through the use of best management practices and compliance with environmental regulations.

- The US Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) worked with land owners in the Towns of Brookhaven and Southampton on three programs: AEM; Environmental Quality Incentives Program (EQIP); and Wildlife Habitat Incentives Program (WHIP).
- The Nassau County Soil and Water Conservation District will be implementing the NYS AEM program. A 5-year AEM Strategy was submitted to and approved by the NYS Soil and Water Conservation Committee. This program will document all agriculture operations in the County, including horse farms, vineyards, and greenhouse operations.
- The Post-Morrow Foundation owns and leases 20 acres of farmland along Beaverdam Creek in Brookhaven Hamlet. It has worked with the USDA and Cornell Cooperative Extension to implement an AEM program for the farm, which was featured in the annual report of the USDA NRCS.

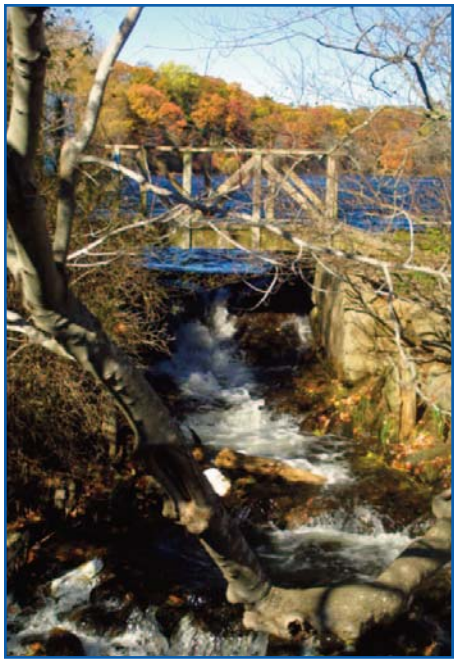
Completion of Assessments of Municipal Nonpoint Source Pollution Management Practices

Assessments of municipal nonpoint source pollution management practices have been completed for all municipalities in the Reserve (Nassau and Suffolk counties, all six towns, the City of Long Beach, and 29 villages). These assessments identified the corrective and preventive actions that remain to be taken by local governments to control nonpoint source pollution as well as the need for training about best management practices.

Development of Watershed Management Plans

Watershed management plans provide a comprehensive study of watershed resources, problems, and institutional arrangements, and identify and prioritize actions to improve and maintain estuary water quality and restore habitat in the tributary corridors.

- NYS DOS and Department of Environmental Conservation (DEC) jointly developed a *New York State Framework for Local Watershed Management Plans* that includes four components: a characterization component that describes watershed resources, infrastructure, impacts, and institutional arrangements; a preventive component that identifies actions to protect water quality and living resources; a corrective component that targets actions to restore water quality and living resources; and an implementation component that outlines a strategy for addressing recommended actions.



Reserve partners have initiated watershed-based planning efforts to protect and restore water quality in Reserve tributaries.

- Watershed management plans are under development for several Reserve tributaries, including: Massapequa Creek in the Town of Oyster Bay; Brown's River and Green's Creek in the Town of Islip; Swan River in the Town of Brookhaven; and Quantuck Creek in the Town of Southampton. These municipalities have received funding for the development of these plans through the NYS Environmental Protection Fund (EPF) Local Waterfront Revitalization Program (LWRP).

Additional watershed-based planning and restoration projects have been initiated by several Reserve partners:

- Nassau County initiated a stormwater runoff impact analysis project which will evaluate select County watersheds to calculate stormwater loads, identify cover types, locate drainage infrastructure, and identify best management practices to address nonpoint source pollution issues. The analysis will provide a baseline protocol for the evaluation of additional watersheds in the future.

- The Suffolk County Soil and Water Conservation District completed two reports to establish a stormwater remediation program for Reserve tributaries, including Santapogue Creek, Carlls River, Sampawams Creek, Orowoc Creek, Champlin Creek, Connetquot River, and the Patchogue River. The plan includes delineation of watersheds and sub-watersheds (for individual outfalls), location of all stormwater runoff points on publicly owned land, and development of prioritized recommendations.

- Ducks Unlimited and the Beaverdam Creek Task Force – a group of federal, state, and local government partners, nonprofit organizations, and academic institutions – have been working to improve water quality and restore habitat on Beaverdam Creek in Brookhaven.

- In response to concerns about declining water quality in the Forge River, the Town of Brookhaven created the Forge River Protection Task Force. The Task Force includes representatives of state, county, and local agencies, non-profit organizations, and local citizens. The Task Force is charged with inventorying existing environmental conditions, analyzing factors and activities that have led to these conditions, developing a water quality and sediment testing protocol, and developing a set of prioritized recommendations.

Implementation of Storm Water Phase II Final Rule

The US Environmental Protection Agency Storm Water Phase II Final Rule (Phase II) requires operators of Municipal Separate Storm Sewer Systems (MS4s) in urbanized areas and operators of small construction sites to implement programs and practices to control polluted stormwater runoff through a general permit under the Clean Water Act. NYS DEC has authority for implementation and enforcement of Phase II within the State under the State Pollution Discharge Elimination System (SPDES) program.

MS4 general permits require the development, implementation, and enforcement of stormwater management programs (SWMP) designed to reduce the discharge of pollutants to the maximum extent practicable by 2008. NYS DEC Region 1 (Long Island) includes 101 MS4s. Annual reports documenting progress made toward SWMP implementation are required for each MS4. General permits for stormwater discharges from construction activities are mandatory for disturbances greater than one acre and require that erosion and sediment control plans be developed. Reserve partners have made progress toward Phase II compliance as follows:

- NYS DEC Region 1 received annual reports from MS4 operators in the Reserve and prepared detailed evaluations of them. NYS DEC staff provided presentations and technical assistance to MS4 operators.

- NYS DEC Region 1 received a total of 166 Notices of Intent (NOIs) for general construction permits. NYS DEC addressed unpermitted construction sites; reviewed NOIs, Notices of Termination, and Stormwater Pollution Prevention Plans; and provided technical assistance to construction site operators.

DEVELOPMENT OF A BROWN'S RIVER/GREEN'S CREEK WATERSHED MANAGEMENT PLAN

The Town of Islip has partnered with a watershed advisory committee comprised of government agencies, non-profit organizations, and local citizens to develop a watershed management plan for the watersheds of Brown's River and Green's Creek, in the hamlets of Sayville and West Sayville.

The primary focus of the plan, which is partially funded by the NYS Environmental Protection Fund Local Waterfront Revitalization Program, is to identify stormwater contributions of nonpoint source pollution in the watershed. The Town has worked with a consultant and with the Suffolk County Soil and Water Conservation District to identify stormwater outfalls that deliver pollutants to the creeks, and to develop various recommendations, including implementation of capital projects and modifications to local code, that will help improve water quality in the watersheds and ultimately, in Great South Bay.

Recognizing the close relationship between water quality and living resources such as wetlands and fish, and the importance of public awareness to improving water quality, the watershed advisory committee has sought to address these issues. A habitat subcommittee, including non-profit organizations such as Ducks Unlimited and Trout Unlimited, and an education and outreach subcommittee, including educators from local high schools in Sayville and Bayport, were formed to develop recommendations that have since been incorporated into the Town's plan.

The Town and its partners have begun implementing recommendations of the plan. The Town has secured funds and is finalizing designs for capital stormwater infrastructure and wetland restoration projects in the Brown's River watershed; local students from Sayville High School are developing an educational brochure to distribute to Green's Creek watershed residents; and the Islip Town Environmental Council has initiated a storm drain stenciling project to discourage dumping.

Brown's River and Green's Creek Watersheds


Brown's River

- Several noteworthy partnerships have been formed among Reserve communities to address Phase II compliance. Nassau County formed the Nassau County Storm Water Coalition, which is comprised of 57 municipalities including townships, villages, and cities. As part of this effort, the County applied for and received a Clean Air/Clean Water Bond Act grant to implement its Phase II program with its coalition partners. Suffolk County is working with Cornell Cooperative Extension to implement the County's Phase II stormwater program. The Town of Southampton and its incorporated villages have instituted an intermunicipal stormwater management program.

- New York Sea Grant's Nonpoint Education for Municipal Officials (NEMO) program provides, on an ongoing basis, information and assistance to south shore municipalities regarding all aspects of their Phase II programs. NEMO delivered a workshop about pollution prevention and good housekeeping to nearly 100 municipal officials and staff from throughout Nassau County; conducted presentations for the Villages of Babylon, Massapequa Park, Amityville, and Lindenhurst about stormwater and Phase II; and created a fact sheet entitled *Reducing the Impacts of Contaminated Stormwater Through Local Authority* that describes the use of municipal authority as a tool for resource protection.

NEXT STEPS FOR REDUCED NONPOINT SOURCE POLLUTION

The Reserve Council and partners will complete an inventory and assessment of drainage infrastructure mapping efforts in the Reserve and use it to expand and coordinate GIS-based drainage system mapping efforts with the goal of having drainage infrastructure mapped throughout the Reserve in a consistent manner. System data will be available for use in planning capital improvement projects to mitigate nonpoint pollution from stormwater.

Reserve local governments will continue to work with non-government partners to develop watershed management plans utilizing the Framework for Local Watershed Management Plans for identified priority tributaries and their watersheds within their jurisdictions, and embark on intermunicipal efforts where watersheds drain multiple jurisdictions. Such efforts are eligible for State matching funds through the NYS EPF LWRP.

Reserve Council partners will review the assessments of their nonpoint source pollution control practices and continue to amend their codes and regulations to include, as appropriate, best management practices that address construction-related pollutants; roadway maintenance practices; fertilizer, herbicide and pesticide use on public lands; pet waste disposal; pollutants associated with new and/or redeveloping marinas and recreational boating; and hydromodficiations.

Reserve Council partners will continue to take the necessary steps to meet Phase II permit conditions by 2008.

Reserve Council partners will, as appropriate, establish public education and outreach programs that address proper use and maintenance of on-site wastewater treatment (septic) systems, and explore options for providing incentives for regular pumpout and inspection of such systems.