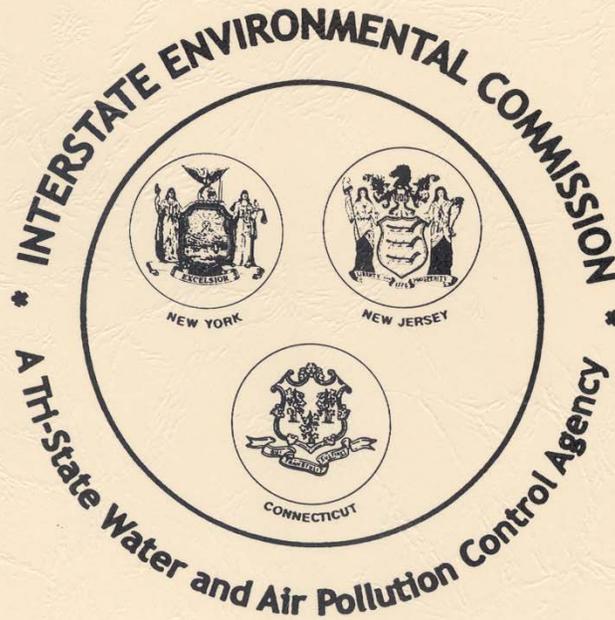


INTERSTATE ENVIRONMENTAL COMMISSION

A TRI-STATE WATER AND AIR POLLUTION CONTROL AGENCY

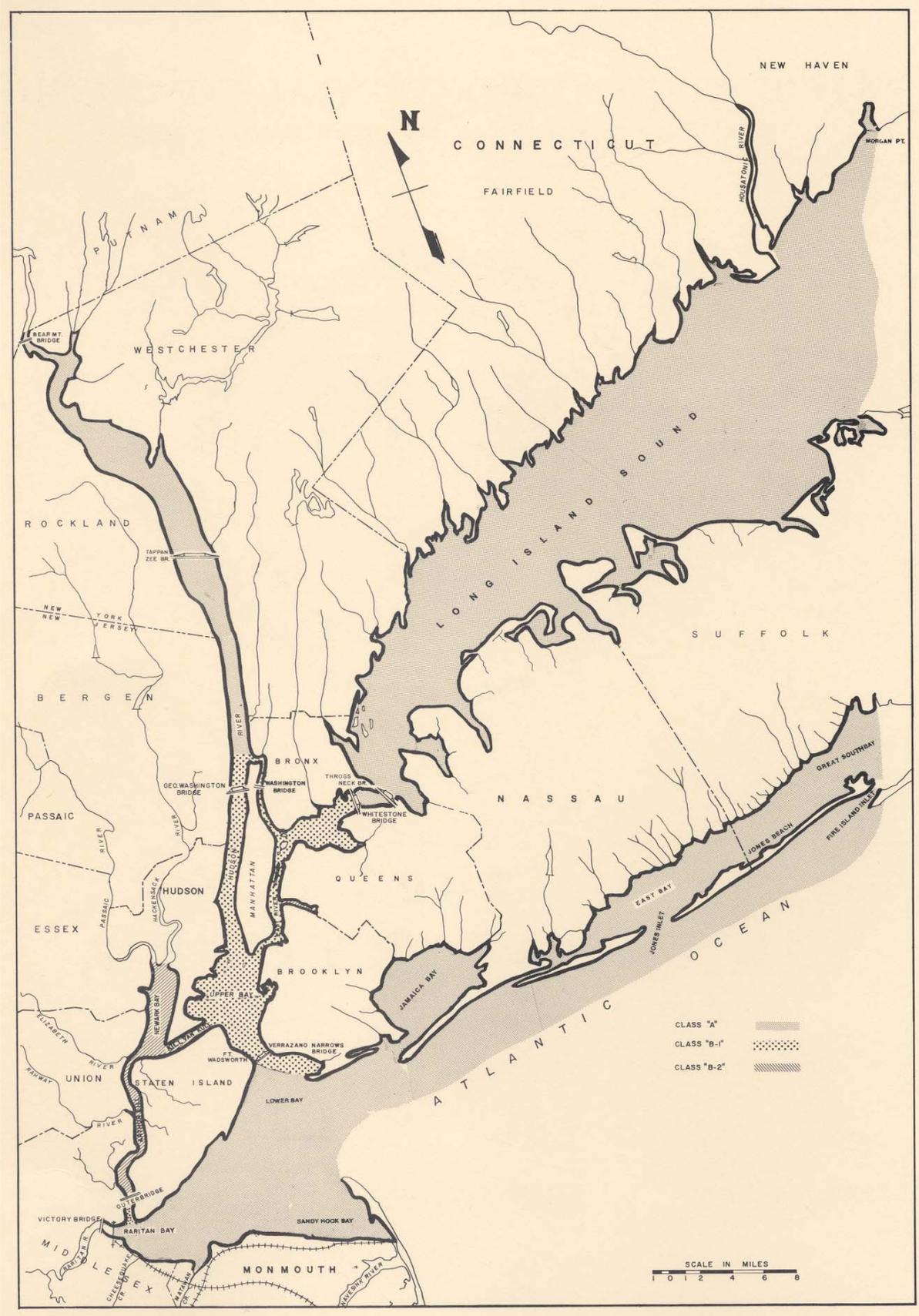


2003 ANNUAL REPORT

NEW YORK

NEW JERSEY

CONNECTICUT



INTERSTATE ENVIRONMENTAL COMMISSION

A TRI-STATE WATER AND AIR POLLUTION CONTROL AGENCY



2003

ANNUAL REPORT

OF THE

INTERSTATE ENVIRONMENTAL COMMISSION

Formerly the
INTERSTATE SANITATION COMMISSION

INTERSTATE ENVIRONMENTAL COMMISSION

A TRI-STATE WATER AND AIR POLLUTION CONTROL AGENCY

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January 24, 2004

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The Honorable George E. Pataki

The Honorable John G. Rowland

and the Legislatures of the States of

New Jersey, New York, and Connecticut

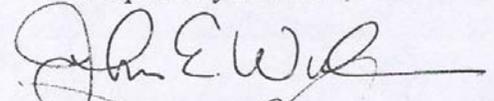
Dear Governors:

The Interstate Environmental Commission respectfully submits its report for the year 2003.

The members of the Commission are confident that with the continued support of the Governors and the members of the Legislatures, the Commission will maintain active and effective water and air pollution abatement programs.

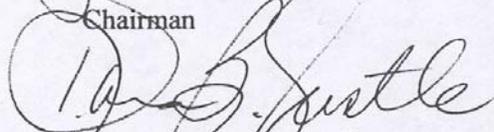
Respectfully submitted,

For the State of New Jersey



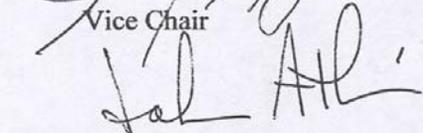
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**STATEMENT OF THE CHAIRMAN
OF THE
INTERSTATE ENVIRONMENTAL COMMISSION**

As I complete my first term as Chairman of the IEC, I am both proud and gratified to be able to report that the Interstate Environmental Commission is most assuredly moving forward with a broad-based agenda that continues to focus on interstate coordination, water testing and monitoring, response to emergencies, regulation and enforcement, and a full slate of activities to address public education and public outreach. IEC is an integral part of a network of regional and multi-agency partnerships addressing regional environmental matters.

As Chairman of the sole interstate environmental agency in the tri-state area with both regulatory and enforcement powers, it is important to reaffirm the Commission's awareness of its responsibility to encourage and promote interstate environmental cooperation, and to remain fully informed on all matters and issues concerning the quality of our interstate waters.

I am happy to report that the Commission participated in the first World Water Monitoring Day which grew out of last year's first National Water Monitoring Day in which we also participated. During the period between September 18th and October 18th, the Commission joined with thousands of people around the world to collect water quality data and we input our data to a world data bank. It is essential that we have participation at all levels — starting at the grassroots — to care for the natural resources that benefit us locally. This is why the national and international monitoring partnership of the public; interstate, state and local governments; federal agencies and countries throughout the world is so important.

We have continued our active involvement with the Long Island Sound Study and the New York-New Jersey Harbor Estuary Program, including special intensive surveys in support of these programs. We just completed our 13th year of monitoring in Long Island Sound to document dissolved oxygen conditions. Other surveys focused on monitoring for pathogens in the New York-New Jersey Harbor Complex, sampling shellfish harvesting waters in Raritan and Sandy Hook Bays, and ambient and point source sampling to determine the causes of bacterial contamination in the Byram River. In conjunction with our work with the estuary programs, I would also like to underscore that we continue to work with the states' environmental departments and the U.S. Environmental Protection Agency to assist those agencies with their development of total maximum daily loads, especially for interstate waters.

I am also pleased to note that our annual boat inspection trip covering areas of environmental concern attracted a record number of participants including legislators,

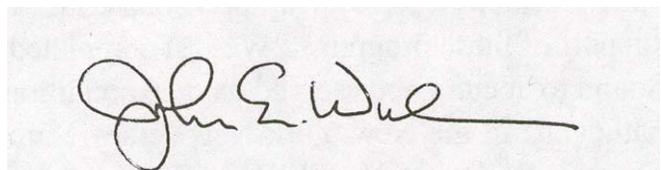
environmental officials, members of the press and concerned citizens. This year's trip covered Raritan Bay, the Arthur Kill and Fresh Kills Landfill, the lower portion of the Hudson River, and New York Harbor including Lower Manhattan and the Hudson County and Brooklyn shorelines.

This year, the staff was called upon to respond to several environmental emergencies and did so in an exemplary manner. As soon as the Commission learned of an emergency, IEC offered its services to the appropriate federal, state and local agencies. The Commission's assistance included sampling in the shellfish harvesting waters of Raritan and Sandy Hook Bays after a major sewage pipe break in Sayerville, New Jersey, and after the major blackout that occurred on August 14th which caused the bypassing of raw sewage into our waters.

This Annual Report outlines the Commission's broad range of programs and activities that includes litigation against major entities, student internship programs and community outreach. In this connection, I am fully supportive of IEC's strong public education programs and campaigns to further communication and intensify public awareness of water quality and environmental issues.

Space does not allow me to review the full scope of our activities and accomplishments, but I hope you can share my well-grounded expectations for a bright future for the environment in our tri-state metropolitan area and beyond. I also invite you to visit our website, www.iec-nynjct.org, for reports and information on our activities. The website already contains several Annual Reports, and this year's Report will be available on our website in short order.

On a personal note, I want to sincerely thank my fellow Commissioners for affording me the opportunity to chair this vibrant agency that is so important to our region's environment. I also want to express my gratitude to the Commission's staff for their support and for carrying out our mission and responsibilities in a most professional manner.

A handwritten signature in black ink on a light-colored background. The signature is cursive and reads "John E. Walsh".

John E. Walsh
Chairman

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I. EXECUTIVE SUMMARY

During these times of adversity, extraordinary circumstances put a huge demand on the lives of millions of citizens throughout the world. Political upheaval, global warming, economic uncertainty and homeland security are day-to-day challenges to everyone. This past year was no different. In spite of this, IEC and others must continually strive to maintain and improve the environmental integrity of the tri-state New York-New Jersey-Connecticut Region. Two major infrastructure failures in the region caused the release of over 1 billion gallons of raw sewage to receiving waterways closing beaches for days, closing productive shellfish beds for weeks, forcing many communities to cope without any modern-day conveniences, and requiring all levels of government to respond and assess the impacts. As soon as the Commission learned about these emergencies, IEC offered its field and laboratory services, while maintaining many other ambient and effluent monitoring programs throughout the District. As always, one must adapt to adverse conditions, but rely on good science and sound engineering as an integral part of the decision-making process. The Metropolitan Area is truly a water world containing a world class harbor that is able to support a wide spectrum of commercial and recreational industries and activities.

In October 2000, the name of this agency was officially changed from the Interstate Sanitation Commission to the *Interstate Environmental Commission (IEC)*. The new name more accurately reflects the Commission's mandates, mission and responsibilities that embrace a broad range of programs and activities that include air pollution, public involvement and education, and regulatory compliance. However, the IEC's continuing emphasis is on water quality — an area in which the Commission is a regulatory and enforcement agency. The Commission's website — www.iec-nynjct.org — contains information on the IEC, including recent annual reports and other reports, and useful links to other appropriate websites. This annual report will also soon be available on the Commission's website.

Following the recommendation of the Tri-State Treaty Commission, the Tri-State Compact establishing the District and the Commission was enacted in 1936, with the Consent of Congress. The Commission has an overall responsibility of protecting the environment by viewing the District from a regional, impartial and unbiased perspective. Whereas each state deals with issues within its own borders, the Commission can and does cross state lines. The Commission strives to harmonize water quality standards, regulations and requirements throughout its District.

The Commission's environmental programs and actions have greatly contributed to the many significant improvements in the region's waters. IEC's adoption of the year-round disinfection requirements in 1986 was instrumental in opening thousands of acres of shellfish beds year-round rather than only in the summer months, and has led to previously closed shellfish beds now being available for harvesting. There have been fewer beach closings during the summer bathing seasons due to elevated levels of coliform bacteria. During the four year period, 2000-2003, there were no beach closure days caused by floatables or medical debris. In 1997, the Commission amended its regulations to require mandatory notification to the IEC of planned sewage bypasses. This was done

as an effort to eliminate or, at a minimum, lessen the impacts from planned sewage bypasses. Additionally, in conjunction with its three states' environmental and health departments, US EPA and NYC DEP, the Commission coordinated and spearheaded the effort to have a computer model developed to predict the impacts of unplanned sewage bypasses on area beaches and shellfish beds. As part of this effort, regional notification protocols were developed and have been in place since the 1998 bathing season. This program has proved to be extremely effective and is an excellent example of regional cooperation and coordination among many agencies. To address the need for comprehensive monitoring throughout the New York-New Jersey Harbor and its tributaries, IEC has taken a leadership role in compiling and listing all agencies' monitoring programs in an effort to uncover and address data gaps and share water quality data.

The IEC's mission is to protect and enhance environmental quality through cooperation, regulation, coordination, and mutual dialogue between government and citizens in the tri-state Region. The IEC is in a unique position to take the lead on regional issues because, as an interstate agency, the Commission views the Region as an environmental entity. IEC can and does cross state boundaries in an impartial and unbiased manner. By interacting with other agencies and interstate commissions, challenges and successes are being shared to better address specific mandates. The staff continues to fulfill IEC's technical and administrative responsibilities within the limitations of the current resources.

The Commission's programs are geared to address specific environmental deficiencies and/or to assure compliance with the Tri-State Compact and the Commission's Water Quality Regulations. The programs are designed for gathering the information necessary for enforcement actions, opening waters for commercial and recreational shellfishing, opening waters for swimming, developing water quality and/or effluent criteria, determine immediate environmental conditions, responding to environmental emergencies, and other needs that may arise.

The Commission continues to put great emphasis and a high priority on public involvement, education and outreach activities. This includes testifying at public hearings and meetings on various issues of concern; lecturing at local schools, colleges and to community groups on subjects of environmental concern and Commission activities; and participating in seminars and forums involving environmental professionals and the general public. For several years, Commission staff has had hands on interactions with volunteer citizen water quality monitoring groups. IEC maintains its programs of environmental and legal internships.

This report provides a record of the water and air pollution activities of the Interstate Environmental Commission for the period December 2002 through November 2003. To address the environmental problems within its area of jurisdiction, the Commission has focused on technical assistance, enforcement, engineering, planning, laboratory analysis, ambient and effluent water quality monitoring, statistical analysis, coordination, oversight and public outreach and education.

WATER POLLUTION

The Commission's water pollution abatement programs continue to focus on the effective coordination of approaches to regional problems. Opening additional areas for swimming and shellfishing remains a high Commission priority. The IEC's programs include enforcement; minimization of the effects of combined sewers, storm sewers, and municipal separate storm sewer systems; participation in the National Estuary Program; public involvement, education and outreach; control of floatables; compliance monitoring; pretreatment of industrial wastes; toxics contamination; sludge disposal; dredged material disposal; and monitoring the ambient waters — especially with regard to opening new areas for swimming and shellfishing.

Throughout the District, planning and construction is under way to provide water pollution control and abatement from municipal and industrial wastewaters discharging into the IEC's District waters. It is estimated that over \$8.048 billion has been allocated by municipalities and bond act dispersements in the District for 283 projects recently completed, in progress, and planned for the future.

For the sixth consecutive year, the Commission took the lead and coordinated the efforts of the Regional Bypass Workgroup which is comprised of 16 federal, interstate, state, county and local agencies. The Workgroup maintained notification protocols to inform each other of unplanned bypasses and, based upon modeling software especially developed to predict the effects of those bypasses, determined if area beaches and shellfish beds should be closed to protect the health of the public. During the 12-month period ending December 4th, a combination of 99 raw sewage bypasses, illegal connections, treatment reductions, and fuel spills occurred. Two major events — a sewage pipe break in Sayreville, New Jersey, and the August 14th blackout — caused beach and shellfish bed closures; the Commission responded to both of these events.

The Commission's involvement in several legal actions continued this past year. Those actions are detailed in the Legal Activities section of this report and are highlighted as follows:

- intervened seeking party status as an *amicus curiae* (friend of court) in an administrative proceeding initiated by the New York City Department of Environmental Protection against the New York State Department of Environmental Conservation, following NYS DEC's issuance of modified permits for the 14 New York City water pollution control plants,
- continued involvement and oversight of the Consent Orders designed to prevent debris from escaping from the Fresh Kills Landfill located on Staten Island.

The Commission remains actively involved with the Long Island Sound Study and the New York-New Jersey Harbor Estuary Program. IEC participated on the Management Committees for both of these National Estuary Programs and on various workgroups for these studies. With the Comprehensive Conservation and Management Plans for the LISS and the HEP in place, IEC

remains involved with the workgroups that are dealing with total maximum daily loads for nutrients, toxics and pathogens. The Commission remains an active participant in the process for public involvement events and products, such as volunteer monitoring workshops, newsletters and fact sheets. The Commission has been involved with implementation teams, research proposal committees, science and technical advisory committees and interactions with citizen advisory committees throughout the District. In this regard, IEC is a member of the newly-formed New Jersey Water Monitoring Coordination Council and New Jersey's Watershed Watch Network Advisory Committee.

IEC coordinates its compliance monitoring program with its three member states' environmental departments, as well as with US EPA. This program consists of the Commission regularly sampling waste discharges from municipal and industrial permittees throughout the District. Using the IEC research vessel, the R/V Natale Colosi, the Commission again participated in a multi-agency intensive survey in Long Island Sound to continue to document dissolved oxygen conditions. This was IEC's 13th consecutive year as a participant in this important project. The Long Island Sound surveys also include the collection of water quality samples for the identification of phytoplankton species. Concurrently, a two-year research study by the University of Connecticut was completed; IEC collected water quality samples for the subsequent analysis for a toxic dinoflagellate, *Pfiesteria piscicida*. For the eighth year in a row, at the request of NJ DEP, during the winter and spring of 2002-2003, the Commission collected water quality samples needed by NJ DEP to check the sanitary conditions of the shellfish waters of western Raritan Bay. In support of the HEP Pathogens Workgroup, IEC completed a third year of ambient water quality surveys of the entire New York-New Jersey Harbor Complex. This survey was expanded to collect pathogen data in the Newark Bay Complex. These and other sampling programs are detailed in this report.

As an outgrowth of the successful first National Water Monitoring Day in 2002, the Commission took an active role in the first World Water Monitoring Day. For logistical purposes, water quality monitoring took place in a coordinated effort around the globe between September 18th and October 18th. The Commission joined thousands of volunteers, agencies and countries around the world to sample area waterways and report their findings. Aboard the IEC research vessel, R/V Natale Colosi, nine sampling stations were monitored for a variety of parameters in the East River and Long Island Sound; the results were input to an international data base.

The IEC laboratory has been located on the campus of the College of Staten Island since late 1993. In addition to its day-to-day operations, IEC's laboratory personnel continue to collaborate with CSI on environmental projects of mutual concern. The IEC laboratory is certified by NJ DEP and NYS DOH and also follows US FDA procedures for sampling in shellfish waters. In January 2001, the Commission's laboratory also received certification under the National Environmental Laboratory Accreditation Program.

IEC's library holdings and archives continue to be updated and provide an accessible regional depository of water and air quality related subjects. The Commission's current and historical holdings have been sought and made available to the academic community, consulting engineering

firms, attorneys, environmental and public awareness groups, government agencies across the nation, and international entities.



DAYMARKER IN RARITAN BAY
TAKEN ON IEC'S 2003 BOAT INSPECTION TRIP
Photo by A. Lochner, IEC

AIR POLLUTION

The Commission's air pollution monitoring and response programs remain in place. IEC's 24-hour-a-day, 7-day-a-week answering service (718-761-5677) remains active and IEC personnel investigate as many complaints as its resources will allow. IEC also forwards complaints to the appropriate enforcement and health agencies.

During the 12-month period from October 2002 through September 2003, the Commission received a minimal number of air pollution complaints. As has been the pattern, all of the calls originated from Staten Island, New York. Citizen complaints have proven to be an invaluable source of firsthand information about poor air quality. Accurate odor descriptions could lead to the discovery of the emissions sources.

IEC continued its role as coordinator of the High Air Pollution Alert and Warning System for the New Jersey-New York-Connecticut Air Quality Control Region; conditions during the past year did not warrant activation of the system.

The Commission again participated in the Ozone Health Message System to alert the public of unhealthy ambient air conditions. Based on information received from its member states, the Commission disseminated 24 health messages — 14 for ozone and 10 for fine particulates — between June 19th and August 14th to the appropriate government environmental and health agencies throughout the region.

II. WATER POLLUTION

GENERAL

During 2003, in the Interstate Environmental District, approximately \$8.048 billion was allocated for 283 water pollution control projects which were either completed, in progress, or planned for the future. These monies were allocated in the following manner: over \$149.8 million for 74 completed projects, more than \$3.3958 billion for 118 projects in progress, and more than \$4.5022 billion for 91 future projects. These expenditures are being used for engineering studies, pilot projects and experiments; CSO abatement projects; land-based alternatives for sewage sludge disposal; construction of new facilities; and upgrading and/or expanding existing facilities in order to provide adequately treated wastewater for discharge into District waterways. These figures do not include the monies spent by and committed to pollution control by industries.

The Commission has long advocated adequate infrastructure as a necessity for maintaining and improving receiving water quality, as well as for minimizing use impairments. These tremendous expenditures on the infrastructure have resulted in significant water quality improvements throughout the District these past years; however, much remains to be done.

With secondary treatment virtually in place since 1994 throughout the Interstate Environmental District, control of the region's combined sewer overflows, stormwater runoff, and municipal separate storm sewer systems is necessary in order to achieve further significant water quality improvements. Communities throughout the District have ongoing CSO control programs and projects that range from sewer separation to swirl concentrators to booming and skimming to in-line and off-line storage. The National Estuary Programs in the District have identified major problems affecting water quality which are exacerbated by anthropogenic impacts, namely, nutrient enrichment, historic sediment contamination, pathogens, habitat loss and floatables. These issues must be addressed in order to maintain and improve commercial and recreational maritime activities, living marine resources, land use, and wetland creation/remediation.

The Commission obtained the information on water pollution control projects presented in this section from officials in the representative state and local governmental agencies, sewerage authorities, consulting engineering firms, and national depositories of water quality data and industrial/municipal effluent data. The format used in this report is designed to provide background, as well as the current status of construction, engineering studies and experiments, pilot projects and experiments, and related environmental conditions within the associated drainage basins. The information in this section is that which was available and accurate through November 2003.

A map of the Interstate Environmental District on the following page shows the locations of wastewater treatment plants which discharge into District waterways, the type of treatment and upgrade status of each plant, and the Commission's water quality classifications. Additional information on each plant is listed in Appendix A. During 2003, 26 municipal and industrial package plants ceased or diverted flows for treatment; these are listed in Appendix B.



CONNECTICUT WATER POLLUTION CONTROL PLANTS

The Long Island Sound Study (LISS) — part of the National Estuary Program — is a partnership of federal, state, interstate, and local agencies, universities, environmental groups, industry and the public in a program to protect and restore the health of Long Island Sound. The main focus has been controlling hypoxia, or low dissolved oxygen concentrations, that are typical during summer seasons. Southwest coastal Connecticut is entirely within the study area and represents the Connecticut portion of the Interstate Environmental District.



SHEFFIELD ISLAND - NORWALK, CT
Photo by P. Sattler, IEC

On December 4, 2002, the LISS Policy Committee signed a new 2003 Long Island Sound Agreement. The vision for this Agreement is a Long Island Sound restored to ecological health by 2014. The 2003 Agreement delineates targets, goals and dates of accomplishments. The major areas of concern address hypoxia, pathogens, toxic substances, living resources and their habitats, open space and public access, watershed management, public outreach and community involvement and partnerships. These concerns have 30 goals associated with them which will improve and maintain this waterbody of national significance.

Refer to the individual plant write-ups and the National Estuary Program section for additional information.

Bridgeport - East Side and West Side Plants, Connecticut (Fairfield County)

Completed Projects

A nitrogen reduction facility report was completed during November 2003. Biological nutrient reduction retrofits were completed and operational at both plants during September 2003. Final estimated costs of \$5 million were incurred.

Projects in Progress

A phased construction multi-year CSO improvement program has been ongoing since 1991 in the 3,880 acres that comprise the Bridgeport drainage basins. This is a dual-phase improvement program. Phase I is nearly complete with estimated costs of \$32 million. Phase II design work is estimated to cost \$80 million with a completion date of all construction by 2013. During the extent of this program, 40 CSOs which discharge into Black Rock and Bridgeport Harbors will be eliminated and the 19 remaining CSOs will be monitored by a remote telemetering system. In addition, the Water Pollution Control Authority has also allocated about \$1.5 million per year for sewer system rehabilitation in both drainage basins; this agenda is ongoing.

Future Projects

It is proposed that both plants share sludge disposal facilities which are estimated to cost \$27.3 million. A sludge incinerator will be sited at the East Side plant. Force mains, which are to be installed on land and subaqueously beneath Bridgeport Harbor, will convey sludge from the West Side plant to the East Side plant. A construction schedule has yet to be released.

Expected to begin during the 2004 summer season, chemical dechlorination facilities will be installed at the West Side plant. Costs associated with this nine-month agenda were not available.

Fairfield, Connecticut (Fairfield County)

Completed Project

This facility has met the requirements of a State Consent Order mandating upgrades and attainment of secondary treatment operational levels by November 2002. Plant modifications included rebuilding the existing facilities, installation of UV disinfection, converting one digester to a waste sludge holding tank, three new clarifiers, additional aeration tankage, and an expanded biofilter for odor control. The final cost was \$40 million. The actual completion date was November 2002.

Greenwich (Grass Island), Connecticut (Fairfield County)

Completed Projects

A biosolids handling facility was complete during October 2002 at a final cost of \$7.8 million. This construction schedule included a new belt press, odor controls, truck bay, thickener retrofits, and the elimination of two digesters.

Several collection system rehabilitation projects were completed during the past 12 months. A new force main (~1,600 LF of 20"Ø) was installed subaqueously beneath the Mianus River which discharges to Cos Cob Harbor in Long Island Sound. The force main installation accrued a final cost of \$6 million. All rehabilitation work (\$4 million) and pump upgrades were completed on the Chapel Lane, Cos Cob and Ivy Street pump stations (\$2 million). Design plans for the Oneida pump station were recently completed and went to bid during late 2003.

Projects in Progress

This 12.5 MGD secondary activated sludge plant is operating under a 1995 State Order to eliminate overflowing manholes in the Byram and Old Greenwich neighborhoods,

as well as to complete the Phase II biosolids improvements. The Order requires substantial completion by March 2003.

Pump station rehabilitations are under way at the Old Greenwich and South Water Street locations (~\$3 million). The Old Greenwich pump station is being converted to a wet well with submersible pumps. Completion is scheduled during 2004.

Future Projects

New gravity sewers are planned for the Millbrook (\$5 million) and North Mianus (\$16.5 million) neighborhoods.

Scheduled to begin during 2005, a new disinfection system will be installed based on the findings of a current engineering study (\$55,000). Estimates of \$1.8 million will be accrued.

Milford- Beaverbrook, Connecticut (New Haven County)

Completed Project

A facilities plan was completed and approved by CT DEP. The plan identifies facility-wide upgrades for both the Beaverbrook and Housatonic plants. The final cost was \$1.3 million.

Future Project

Refer to the Milford-Housatonic facility write-up for additional information.

Milford- Housatonic, Connecticut (New Haven County)

Future Projects

This facility is operating under a State Consent Order to reduce nitrogen loadings and attain permitted effluent limitations and requirements. Anticipated to begin construction during 2004, both the Housatonic and Beaverbrook facilities will be upgraded. Total costs are estimated at \$61 million; an approximate operational start-up date is anticipated for 2007. Pump station upgrades with associated gravity sewers and force mains will incur additional costs of about \$3 million.

New Canaan, Connecticut (Fairfield County)

Completed Project

Although this 1.5 MGD secondary facility is located outside the Interstate Environmental District, the discharge waterway, Five Mile River, has a confluence with Long Island Sound. A plant expansion and upgrade with associated force main and gravity sewer lines was completed and operational during March 1999. The US EPA - Region 1, recognized this facility this past year with an Operations and Maintenance Excellence Award.

New Haven Water Pollution Control Authority (East Shore Water Pollution Abatement Facility), Connecticut (New Haven County)

Completed Projects

Several engineering studies were completed which will lead to the modernization of many parts of the collection system. The Barnes/Quinnipiac Sewershed System Evaluation Study (\$250,000) has identified \$600,000 worth of pump station rehabilitation work. The Morris Cove Pressure Sewer Replacement Project, Phase 2 (\$330,000), evaluated rehabilitation methods with construction estimates of \$1.75 million. A geotechnical report (\$10,000) was completed for the Dean Street Sewer Rehabilitation; design details are 90% complete and costs are estimated at \$1 million. Feasibility and Design (\$75,000) for automating the chlorination system will entail expenditures of \$300,000 for construction and instrumentation installations.

Inspection of the facility outfall (\$40,000) was completed during January 2003. Interstate 95/Utility relocation projects entail sewer relocation designs which are in different stages of completion (5% to 100% complete). The collection system work includes installation of a temporary subaqueous 42-inch diameter (42"Ø) force main below the Quinnipiac River and Interstate 91/Interstate 95 interchange and the West River Bridge sewer relocation. Total design costs for all of these projects are \$800,000.

Pump station improvements include main sewage pump replacements. The pumps are operating and accrued construction costs amounted to \$1.5 million. The Boulevard and East pump stations' instrumentation and controls improvements were completed during the spring of 2003 (\$800,000). The Morris Cove Pressure Sewer Emergency Replacement Project, Phase 1, was completed during September 2003 and accrued costs of \$650,000.

Estimated to cost \$1.5 million, the East Shore main sewage pumps were replaced with smaller, more efficient pumps to better match flow conditions and reduce energy costs.

Projects in Progress

A preliminary SSES is 90% complete. The re-estimated \$500,000 study is anticipated to be complete during December 2002. Recently under way, a low level nitrogen removal assessment study is estimated to cost \$159,000.

Sewer separation construction will continue until combined sewers discharging to New Haven Harbor are eliminated. This work will not be completed until approximately 2015 at a re-estimated cost of \$300 million. Overall, the work is approximately 25% complete and will commence based on the recommendations of the SSES. The Truman School CSO storage tank is under construction. Anticipated to be complete during September 2004, this work is estimated to accrue costs of over \$15 million.

Recently under way, the Barnes Avenue and Quinnipiac Avenue pump stations replacements have a one-year agenda. Costs are estimated at \$3 million. The Morris Cove pump station modernization is under design (65% complete/\$1.2 million) with anticipated construction costs of \$4.5 million.

Future Projects

An engineering design study has determined the capacity needs for the Barnes Avenue and Quinnipiac Avenue pump stations. Re-estimated to cost \$3 million, the existing Quinnipiac Avenue pump station will be rehabilitated and the antiquated Barnes Avenue facility and force main will be replaced. This work will have an approximate operational start-up of September 2004.

Rescheduled to begin during January 2004, a regional septage receiving and handling facility will be built. The estimated cost to complete this project is \$3.5 million.

Norwalk, Connecticut (Fairfield County)

Future Project

Approximately 5% of the Norwalk drainage basin is served by combined sewers. No construction agenda is scheduled, but sewer separation work (~\$100,000) is being considered.

Stamford Water Pollution Control Authority, Connecticut (Fairfield County)

Projects in Progress

This facility is operating under a State Consent Order to upgrade, expand and implement nitrogen removal capabilities. Consent Order compliance dates require

substantial completion by early 2005. Upgrading and expansion of this 20 MGD secondary facility is 60% complete. This four-year construction program is estimated to cost \$105 million. The plant renovation and upgrade will address all plant processes including high efficiency BNR technology, sludge processing equipment and a conversion from chlorine to UV disinfection. The UV system is an additional Consent Order requirement and was on-line during May 2003.

STAMFORD WATER POLLUTION
CONTROL AUTHORITY
FAIRFIELD COUNTY, CONNECTICUT



AERATION TANK
UNDER CONSTRUCTION
Photo courtesy of Stamford WPCA

Stratford, Connecticut (Fairfield County)

Future Project

A proposal for capacity expansion in conjunction with a facility-wide upgrade were approved by the Town of Stratford and CT DEP during 2002. Meetings are under way to discuss and implement the design phase. Total costs to complete all construction phases were estimated to be \$52 million.

West Haven, Connecticut (New Haven County)

Completed Projects

Recently submitted, contractors completed facility plans for treatment plant upgrades and collection system rehabilitation and expansion.

Complete and operational on June 14, 2003, an incinerator upgrade incurred costs

of \$1.5 million.

Projects in Progress

This facility is operating under a 1990 (amended in 1992) Stipulated Judgement which requires collection system, pump station and main facility upgrades. This facility is in compliance with Consent Order compliance dates.

WEST HAVEN
WATER POLLUTION CONTROL COMMISSION
NEW HAVEN COUNTY, CONNECTICUT



INTERIOR BRICKWORK IN NEW INCINERATOR
Photo courtesy of West Haven WPCC

Westport, Connecticut (Fairfield County)

Projects in Progress

Estimated to cost as much as \$35 million, a complete facility upgrade with nitrogen reduction capabilities is under design.

Future Projects

At an estimated cost of \$250,000, the Church Street sewer replacement is now scheduled for the summer of 2004.

Estimated to cost as much as \$35 million, a complete facility upgrade is planned to start construction during late 2004; bids are anticipated to be received during the 2004 summer season. This modernization has a two-year agenda.

NEW JERSEY WATER POLLUTION CONTROL PLANTS

The New Jersey Department of Environmental Protection developed a CSO Strategy in 1990 which was approved by US EPA on July 9, 1996. To address the “Nine Minimum Controls”, NJ DEP issued a CSO General Permit in 1995 to 19 NJPDES permittees state-wide with 244 CSO outfalls. Individual permits were also issued to 10 permittees with 36 CSO outfalls. Specifically, the General Permit prohibits dry weather overflows and requires planning, design and construction of facilities that will capture and remove solids and floatables which cannot pass through a bar screen having a spacing of 0.5 inches. All communities have completed the planning of these projects; most are in the design phase or have completed the design, and some are already in the construction phase. NJ DEP revised the CSO General Permit during 2003 and the revised permit is presently out for public review and comment.



LEONARDO STATE MARINA
LEONARDO, NEW JERSEY
Photo by P. Sattler, IEC

The New Jersey Stormwater Management Rules were proposed on January 6, 2003. The Regulations are designed to protect public safety and the environment. A six-prong strategy will address prevention of polluted stormwater runoff; groundwater recharge to help prevent conditions of drought, flooding and water quality degradation; reduce the volume of runoff from development; ensure continued reduction of runoff; protect fresh water streams; and develop municipal and regional stormwater management plans.

Bayonne Municipal Utilities Authority, New Jersey (Hudson County)

Project in Progress

The Bayonne primary facility which discharged to the Kill Van Kull was converted to a pump station and diverted flows for treatment at the Passaic Valley Sewerage Commissioners’ (PVSC) secondary plant on March 31, 1990. This authority received a \$3.6 million (eligible project cost) low interest loan in 2002 for the installation of an additional two miles of gravity sewer, as well as surveying and relining of applicable existing sewers from the New Jersey Environmental Infrastructure Trust. The Trust works in partnership with NJ DEP to provide low interest loans for the construction of a wide variety of clean water and drinking water projects.

The treatment plant at the closed Military Ocean Terminal (renamed the Peninsula at Bayonne Harbor) is now under the auspices of the Bayonne MUA. Refer to the Peninsula at Bayonne Harbor write-up for additional information.

Jersey City Municipal Utilities Authority, New Jersey (Hudson County)

Project in Progress

The Jersey City primary facilities were converted to pump stations and diverted flows for treatment at PVSC during late September 1989. This authority received over a \$3.7 million (eligible project cost) low interest loan for CSO abatement from the New Jersey Environmental Infrastructure Trust. The Trust works in partnership with NJ DEP to provide low interest loans for the construction of a wide variety of clean water and drinking water projects. During 2001, the Environmental Infrastructure Financing Program sold Trust bonds in the amount of \$15.82 million for combined sewer overflow abatement consisting of construction of in-line and end-of-pipe netting facilities and tide gates to capture solids and floatables, and rehabilitate one CSO regulator.

Presently, six floatables capture devices have been installed. The Jersey City drainage basin, located on the southern Hudson County peninsula, discharges to New York Harbor, the Hudson River, Newark Bay and the Hackensack River and its tributaries. The remaining outfall capture facilities are planned to be complete by late 2004.

Joint Meeting of Essex and Union Counties (Edward P. Decher Wastewater Treatment Facility), New Jersey (Union County)

Completed Projects

Final clarifier upgrades of four existing units were complete and operational by November 2002. Final costs incurred amounted to \$900,000. The work included the installation of peripheral density current baffles, new walkways with a bridge truss system, scum collection equipment, new motorized operators for the sluice gates, and final paint. Additional building rehabilitations costing \$1.75 million were completed by January 2004.

JOINT MEETING OF ESSEX AND UNION COUNTIES
UNION COUNTY, NEW JERSEY



NEW BRIDGE AND SCUM BAFFLE
Photo courtesy of Joint Meeting

Projects in Progress

The City of Elizabeth, a customer municipality serviced by this facility, received low interest loans from the New Jersey Environmental Infrastructure Trust's Environmental Infrastructure Financing Program in the amount of \$7.621 million. The sale of these bonds will provide for combined sewer overflow abatement consisting of the construction of solids/floatables control facilities and/or sewer separation in the vicinity of the City's 19 CSOs. The CSO outfalls are located on the Arthur Kill and Elizabeth River. During 2002, an additional \$3.72 million was received by the City representing its share of the cost associated with upgrades at the Joint Meeting facility. The Trust works in partnership with NJ DEP to provide low interest loans for the construction of a wide variety of clean water and drinking water projects.

The disinfection system is undergoing a \$1 million hypochlorite conversion with an anticipated operational date of November 2003. The project is 85% complete and includes the removal of 90-ton railcar facilities, installation of hypochlorite storage tanks, pumps, piping and controls.

JOINT MEETING OF ESSEX AND UNION COUNTIES UNION COUNTY, NEW JERSEY



HYPOCHLORITE BUILDING UNDER CONSTRUCTION
Photo courtesy of Joint Meeting

Future Projects

Several major upgrades are planned throughout the facility starting as early as January 2004, with an anticipated end date of June 2005. Sludge thickener upgrades, rehabilitation of a digester and the screen house/primary building will commence concurrently. Finally, a SCADA telemetry control system will be installed with an anticipated operational date of June 2005. Collectively, these projects will incur estimated costs of \$7.8 million.

Kearny Municipal Utilities Authority, New Jersey (Hudson County)

Projects in Progress

Engineering designs are under way for two new pump stations with associated force mains. The installations will be made in order to capture landfill leachate and municipal wastewater.

Future Projects

During November 1990, this primary facility was converted to a pump station and diverted all flows to the PVSC regional facility for treatment. Completed during November 1998, the Harrison Avenue pump station went on-line to convey flows to the existing South Kearny pump station and then to the PVSC facility. Proposed for a March 2005 construction start-up, two new pump stations with approximately 8,000 linear feet of force main will convey Meadowlands leachate and municipal wastewater to PVSC for treatment. This one-year project is estimated to cost \$2.5 million. Refer to the PVSC write-up for additional information.

Additional expansions to the KMUA collection system will involve a new stormwater system to eliminate discharges from the existing CSO system. Planned to be under way during March 2004, the six-month agenda is estimated to cost \$1 million.

Linden Roselle Sewerage Authority, New Jersey (Union County)

Completed Projects

Rehabilitation of the main building was completed during this past summer season. A final cost of \$360,000 was expended to replace all electrical boxes, as well as various building restoration upgrades.

Future Project

The Authority was awarded two construction grants totaling over \$13.1 million by the New Jersey Environmental Infrastructure Financing Program and the Clean Water Fund which is administered by NJ DEP. The sludge handling facilities upgrade project will begin at the end of 2003 and has an 18-month schedule.

Middlesex County Utilities Authority (Edward J. Patton Water Reclamation Facility), New Jersey (Middlesex County)

Completed Projects

This facility was operating under a State Consent Order (last modified May 1998) to identify I/I and develop alternatives to correct the extraneous flows. Completed engineering studies to address these issues involved water quality impacts on the Raritan River (re-estimated at \$283,000) and land-based sludge management improvements.

Over the course of nine days ending on March 11, 2003, emergency repairs were made to a 102-inch diameter (102"Ø) relief force main located in Sayreville, New Jersey. Final costs accrued were \$100,000. During this period, approximately 570 MG of raw sewage were discharged to the Raritan River negatively impacting Raritan and Sandy Hook Bays which required NJ DEP to close the active shellfish harvest beds in the bays. Precautionary closures of New York State shellfish harvest beds were in effect as far east as Nassau County, New York. Refer to the Ambient and Effluent Water Quality Monitoring section of this Report for more details.

Projects in Progress

Recently under way (10% complete), MCUA is building five indirect dryers and installing lime mixers with ancillary equipment to reduce the volume and operating costs of the sludge end product. Anticipated to be operational during November 2004, this project is re-estimated to cost \$40.4 million.

Middletown Sewerage Authority, Township of, New Jersey (Monmouth County)

Completed Project

New digester gas and natural gas burning boilers were installed. Operational since March 2003, the final cost was \$100,000.

Projects in Progress

Two dissolved air floatation sludge thickeners with gravity belt thickeners are being replaced (90% complete). The total re-estimated cost is \$500,000. An engineering study under way this winter addresses a fine bubble aeration system.

Future Project

Planned to begin during October 2003, the bar screens will be replaced and automated screenings removal equipment will be installed. The estimated cost is \$1.1

million. Additionally, an I/I study for the North Middletown area was postponed due to the 2002 drought conditions. This study is estimated to cost \$100,000 and, weather permitting, will be undertaken during the new fiscal year.

Monmouth County Bayshore Outfall Authority, New Jersey (Monmouth County)

Completed Projects

At a final cost of \$18,800 the roof was replaced at the Union Beach pump station during January 2003. Nearly complete, lightening rod installations (\$10,300) were made at both the Belford and Union Beach pump stations.

Future Projects

This Authority, which maintains the infrastructure for two customer authorities, received a low interest loan from the New Jersey Environmental Infrastructure Trust's Environmental Infrastructure Financing Program in the amount of \$970,000. The monies will be used for upgrading an existing effluent retention basin located at the Union Beach pump station. Replacement of the liner will commence during the 2004 spring season.

Planned to begin during the 2004 winter season, repairs will be made on the Atlantic Ocean outfall pipe (\$77,600).

North Bergen Municipal Utilities Authority - Woodcliff Plant, New Jersey (Hudson County)

Project in Progress

Since 1995, there have been ongoing negotiations between this Authority and the NJ DEP to upgrade the plant design flow from 2.9 MGD to 3.4 MGD. During 2003, this secondary facility discharged a monthly average 3.1 MGD to the Hudson River.

North Hudson Sewerage Authority - Adams Street (formerly Hoboken), New Jersey (Hudson County)

Projects in Progress

Ongoing since October 2002, CSO abatement facilities are being installed along the Hudson River in Weehawken, New Jersey. A collection system comprised of a total of 19 regulators and 14 outfalls will be enhanced with screening modules in order to eliminate solids and floatables greater than one inch in diameter (1"Ø). As of late 2003, three modules have been installed. Anticipated to be operational during 2005, re-estimated expenditures will amount to \$7.15 million.

Collection system upgrades are under way and are 40% complete. The contracts include repair of catch basins, manholes and sewer lines. Anticipated to be complete during mid-2004, 1,600 linear feet of brick and VCP are being replaced with new 36-inch diameter (36"Ø) and 42-inch diameter (42"Ø) pipe. At the 5th Street pump station, retrofits of the pumps and piping are nearly complete.

Future Project

Throughout 2004, four solids and floatables screening modules will be installed at CSO outfalls which discharge to the Hudson River. A cost estimate for this work is \$13 million.

North Hudson Sewerage Authority - River Road (formerly West New York), New Jersey (Hudson County)

Projects in Progress

Repairs of catch basins, manholes and sewer lines are 2% complete and are will be ongoing through late 2004. In addition, one solids and floatables screening module will be installed on Hillside Avenue. Total estimated costs for these collection system upgrades are \$5.8 million.

Passaic Valley Sewerage Commissioners, New Jersey (Essex County)

Completed Projects

This facility was involved in legal actions regarding the omission of the IEC's Water Quality Regulations in the NJPDES permit issued to this sewerage authority. Refer to the Legal Activities section of this report for details.

Final clarifier modifications were completed during January 2003. This work was estimated to cost \$3.787 million.

Projects in Progress

An ongoing sewer rehabilitation project is estimated to cost \$3.9471.

Presently on hold, a plant-wide upgrade includes the replacement of existing mixers and gas recirculation compressors with new surface aerators, a new electric distribution system for the oxygenation tanks, and the installation of the oxygenation tankage instrumentation and controls. Collectively, the work is 60% complete and is awaiting contractor efficacy testing. The latest cost estimate for this work is over \$20.8 million.

Future Project

Planned to be under way this winter, sludge degritting and screening system improvements are estimated to incur costs of \$7.682 million.

Peninsula at Bayonne Harbor (formerly Military Ocean Terminal), New Jersey (Hudson County)

Future Project

This property was decommissioned as a military base during the fall of 1998 and has now reverted to the City of Bayonne. The Bayonne Local Redevelopment Authority (BLRA) has proposed a \$32 billion plan to develop 18 million square feet of commercial and residential space. In December 2002, the complete and total transfer to the BLRA was finalized and the property was renamed The Peninsula at Bayonne Harbor. The 437-acre site is located in Upper New York Harbor. The proposal includes a port facility, townhouses, office space, movie production facilities, a marina, and a retail complex.

As is the case with the rest of Bayonne, the sewage from this site will be treated at the PVSC treatment plant.

Rahway Valley Sewerage Authority, New Jersey (Union County)

Completed Projects

Completed during April 2003, over \$299,000 was incurred to modify a 66-inch diameter (66"Ø) CSO chamber. The work included a new sluice gate, hydraulic operator, and electrical and instrumentation telemetry. The limitation and control of discharges to the Rahway River was in accordance with the requirements of a Judicial Consent Order between NJ DEP, RVSA and the American Littoral Society. During this past June, new service water pumps and one foam spray pump with VFD monitoring and controls were installed at a final cost of over \$523,000. Energy recovery units costing over \$462,500, along with associated duct and electrical work, were installed at the sludge dewatering facility.

Projects in Progress

As of October 12, 2001, this facility is operating under a State Consent Order to expand the capacity of the existing plant in order to accommodate additional wet weather flows from diverted CSOs.

Rehabilitation of a digester with new mixing and pumping systems, as well as cleaning, removal of antiquated systems, lime silo and contents, piping, associated electrical and instrumentation installations is 87% complete. An approximate operational start-up is planned for January, 2004. Estimated costs are over \$2 million.

Future Projects

Planned to begin during February 2004, a cogeneration sludge drying facility is estimated to cost \$16 million. This facility will house three engine generator sets totaling 4.6 megawatts. Eventually, prime electrical power will be provided to all treatment plant expansions.

Expected to begin during February 2005, expansion of the existing plant (40MGD) will be needed to accommodate wet weather flows due to the elimination of CSOs. The re-estimated \$75 million undertaking will include new headworks, new aerated grit chambers, a new primary settling tank, two new final clarifiers, filtration, UV disinfection and effluent pumping. Influent and effluent piping modifications, as well as site facility construction is planned. Additional collection system modifications include the installation of about 7,100 linear feet of 42-inch diameter (42"Ø) relief sewer beneath Routes 1/9, as well as a subaqueous drilling beneath the Rahway River.

PERTH AMBOY WATERFRONT MIDDLESEX COUNTY, NEW JERSEY



TAKEN ON IEC'S 2003 BOAT INSPECTION TRIP

Photo by P. Sattler, IEC

NEW YORK WATER POLLUTION CONTROL PLANTS

The Clean Water/Clean Air Bond Act was passed by voter referendum in 1996. Statewide, the \$1.75 billion bond act provides \$790 million for water quality projects, \$355 million to protect potable water supplies, \$175 million for recycling and landfill closures, \$200 million for brownfields reclamation, and \$230 million for clean air projects. Other funding programs in New York State include the Environmental Protection Fund, the Performance Partnership Grant, the Safe Drinking Water Act, and the Long Island Sound Restoration Act.

NYS funding sources available during FY 2003 in the Interstate Environmental District amount to nearly \$20 million for a variety water pollution control projects. The budget enacted by the Legislature includes \$10.1 million in Environmental Protection Fund (EPF) funding for both agricultural and non-agricultural nonpoint source abatement and control projects. An additional \$1 million will be available from the federal Performance Partnership Grant fund. The \$3.4 million that was set aside from previous years' EPF funding is now available to assist regulated municipal separate storm sewer systems in implementing Stormwater Phase II General Permits. More set aside funds, \$2 million from the EPF, now provide for the development of Phase I Long Term Control Plans for CSOs in the Hudson River Estuary. Approximately \$1.8 million from the Long Island Sound Restoration Act will be used for sewage treatment plant retrofits, nonpoint source and aquatic habitat restoration projects consistent with the LISS CCMP.



THROGS NECK BRIDGE
Photo by P. Sattler, IEC

Bay Park Sewage Treatment Plant - Disposal District No. 2, New York (Nassau County)

Completed Projects

Operational during May 2003, aluminum covers were installed atop the facility's five aeration tanks. A counter-current wet scrubber odor control system was built concurrently. This system treats the exhaust air drawn from the newly covered tankage. Final costs incurred amounted to over \$16.87 million.

Future Project

Several engineering studies are proposed which will address improvements to the chemical bulk storage facilities, plant-wide lighting and influent pumping upgrades.

Belgrave, New York (Nassau County)

Future Project

Estimated to cost \$3.5 million, denitrification and UV disinfection facilities will be installed. Construction and installations will take 18 months and is planned to begin during 2004. Currently under design, the BNR upgrade will use a denitrification filter. Early this past year, the District was selected to receive a \$2.9 million grant for the BNR upgrade from the 1996 Clean Water/Clean Air Bond Act.

Blind Brook, New York (Westchester County)

Completed Project

Phase II Automation installations were completed during August and are in the final testing phase. This upgrade increases operator control via a Supervisory Control and Data Acquisition (SCADA) telemetry control system. All construction and installations accrued a final cost of \$1.5 million.

Project in Progress

New influent headworks and clarifier improvements are recently under way (5% complete). Re-estimated at \$1.2 million, this upgrade will include replacement of the influent/effluent pumps with modifications to the VFDs, a new grit removal system, a submersible pumping system in the primary clarifier scum transfer, full radius scum skimmers, and troughs for the secondary clarifiers. In addition, structural building improvements will involve roof and wall updates.

Bowery Bay, New York (Queens County)

Projects in Progress

The Bowery Bay WPCP upgrade is a multi-phase modernization intended to improve process efficiency, reduce manpower requirements and improve reliability. Subsequent to the project's initiation, the City entered into the NYS SPDES Administrative Consent Order-Nitrogen Reduction Agreement. Required under this Agreement, the Bowery Bay WPCP will be retrofitted to reduce nitrogen loadings into the East River and Long Island Sound. This facility is located on the upper East River south of Rikers Island.

Phase I includes replacement of much of the process equipment as well as complete replacement of the electrical distribution and HVAC systems throughout the plant. Process upgrades include new raw sewage pumps and drives, new preliminary scum collection and pumping equipment, replacement of return sludge and mixed sludge pumping systems and

replacement of the disinfection system. A centralized residuals handling building will be constructed to provide for collection and concentration of screenings and grit. A complete new plant instrumentation and control system is also being installed. The electrical distribution system improvements involve replacement of all distribution switchgear, construction of new unit substations and motor control centers. The substations and motor control centers will be sized for the eventual conversion of all plant equipment from 208V to 480V power supply. All new equipment will be 480V, all existing equipment to remain will be powered from the existing 208V motor control centers. A complete new boiler plant will be installed in a new addition to the main building. Heating hot water distribution piping and air handling equipment throughout the plant will be replaced. Upgraded personnel, laboratory and storage facilities are also being constructed.

The New York City Department of Environmental Protection (NYC DEP) maintains a vast infrastructure comprised of 14 drainage basins. The 14 treatment facilities are sited throughout the City's five boroughs and range in capacity from 40 MGD to 310 MGD. Under way since July 2001, all 14 plants are being evaluated in regards to meeting proposed total chlorine residual permit limits. The sludge management program consists of dewatering facilities sited at eight of the existing 14 treatment plants. The sludge is transferred from the other six plants by sea.

The 14 New York City drainage basins are serviced by a combined sewer system which has approximately 500 outfalls. Completed in 1985, the New York City Regulator Improvement Program was a study to inventory, assess and determine required improvements to the regulators, interceptors and tide gates. These elements control the amount of combined sewer flow captured for treatment, convey it to the treatment plants and prevent tidal inflow from entering the system. City-wide, there are 382 regulators with tide gates.

A City-wide CSO abatement program is under way. The objective is to eliminate or ameliorate the effects of untreated sewage which is bypassed during storm events. The first phase identified the extent to which CSOs result in the contravention of water quality standards. The second phase consists of facility plans involving the entire area of New York City, which has been divided into four major geographical areas of concern. The ultimate goals of the program are the removal of floatable and settleable materials, and the achievement of New York State standards for dissolved oxygen and coliform bacteria. These programs are being conducted in accordance with SPDES permit and/or Consent Order requirements.

Due to budgetary constraints, the prioritizing of wastewater pollution control projects and watershed supply and enhancement projects is paramount. A new 10-year capital budget is being proposed. The New York City CSO capital improvement program, which is currently in its fifteenth year, is being renegotiated with NYS DEC. Many projects previously reported here throughout the 14 drainage basins are being eliminated, postponed

or scaled down. Structural and nonstructural solutions are being evaluated and prioritized. Projects under way in the upper East River drainage basins are moving ahead. The East River proposals include floatables capture, holding tanks, disinfection, in-line storage and swirl concentrators. Tributaries of the East River will also have holding tanks and in-line storage. Refer to the Hunts Point and Tallman Island WPCP write-ups for additional information.

Holding tanks and in-line storage are the selected CSO abatement alternatives for the Jamaica Bay geographical area. The Spring Creek Auxiliary Water Pollution Control Plant (AWPCP) is an existing CSO detention facility with a storage volume of approximately 13 MG — 10 MG basin storage and 3 MG influent barrel storage. The Spring Creek AWPCP is located on Spring Creek, a tributary of Jamaica Bay. Refer to the Jamaica and 26th Ward write-ups for information on additional CSO projects.

The other areas that are being addressed are the Inner New York Harbor and Outer New York Harbor. The plan for the Inner Harbor includes maximizing flow to the WPCPs and activation of the flushing tunnel in the Gowanus Canal (completed May 1999). Facility planning is under way for regulator improvements (\$20 million). In-line storage is planned for Newtown Creek at an estimated cost of \$100 million; facility planning is under way.

Outer Harbor proposals include maximizing flow to the WPCPs and reducing CSOs and dry weather flows in Coney Island Creek. Preliminary design is under way for regulator improvements. Additional fees of \$10 million are estimated to determine designated use and the attainment of New York State standards in the receiving marine waters.

The NYC DEP is conducting 26 studies over a four-year period on waterbodies throughout the New York Harbor Complex to address compliance with water quality standards and designated uses. The Use and Standards Attainment (USA) Project began in March 2000. The Waterbody/Watershed Stakeholder Teams, a Government Committee of which IEC is a member, and the NYC Citizens Advisory Committee are active participants in this undertaking. The goals of the project are to (1) define specific and long-term beneficial uses for each waterbody, as well as water quality goals; (2) develop technical, economic, public and regulatory support for prioritizing and expediting implementation of projects and actions needed to attain goals; and (3) provide the technical, scientific and economic bases to support the regulatory process needed to define water quality standards for the highest reasonably attainable use, and to allow water quality standards to be attained upon implementation of recommended projects. Data collection and analyses are under way in Jamaica Bay and its tributaries, Bronx River, Hutchinson River, New York Harbor and the East River.

Refer to the Legal Activities section of this report for additional information.

Future Projects

Phase II of the Bowery Bay WPCP upgrade addresses immediate necessary improvements to the Solids Handling Facilities. The work includes the replacement of the existing gravity thickener mechanisms. The existing plunger type sludge pumps are obsolete and will be replaced with progressive cavity type units. Grinders will be provided to minimize the possibility of clogging the new sludge heaters that will be installed downstream. Deteriorated concrete walls and walkways shall be repaired and existing hand railing replaced with railings conforming to current codes. The existing sludge digester domes were damaged during a process upset which caused them to lift off their supports. Repairs are necessary to ensure the domes will remain gas tight until replaced under a later phase of work. The existing sludge heaters will be replaced with new sludge heaters equipped with controls that will allow individual temperature adjustment. New digester gas flares will be provided and connected to the digesters with a piping system that is completely external to the building. The cost of Phase II is estimated at \$25 million and is scheduled for Fiscal Year 2004.

Phase III details the BNR improvements required to bring the plant into compliance with the nitrogen loading reduction Consent Order. Additional work included in this phase will relate to additional stabilization needs. The cost for this work is estimated at \$95 million and is scheduled for Fiscal Year 2005.

The Corona Avenue Vortex Facility (CAVF), which was completed in 2000, was conceived and designed as a pilot facility to evaluate the use of swirl concentrator or vortex-type technology to remove floatables from CSOs that discharge to Flushing Bay and the East River. The initial period of operation of the CAVF has indicated that several design enhancements are required in order to reduce maintenance, prevent flooding, eliminate odors and improve operator safety. Corrective measures include the replacement of four slide gates with sluice gates; the replacement of four manual bar racks with mechanical bar screens in the influent channel; and the supply and installation of a new SCADA system. Corrective measures at the 108th Street pump station include improving the alignment of the suction and discharge pipes to reduce vibration of the pumps; the supply and installation of a sluice gate, and mechanical bar screen; and the supply and installation of a new SCADA system.

In addition, construction of a dry weather flow diversion structure will be located below grade next to the CSO, as well as reconfiguring of a regulator. The dry weather flow diversion structure requires a 24-inch diameter (24"Ø) plug valve with an electrical actuator and a 24-inch sluice gate with a manual operator. The current cost estimate is \$7 million. When complete, odor sampling will be performed. If the results of the sampling program indicate that the odor emissions from the facility are still above the regulatory limits, additional odor controls will be implemented.

Cedar Creek Water Pollution Control Plant - Disposal District No. 3, New York (Nassau County)

Projects in Progress

Operational since February 2001, main plant upgrades include aluminum covers for the aeration tanks and new effluent channels. Concurrently, a counter-current scrubber odor control system is being installed to treat the exhaust air drawn from the aeration tanks. These items are estimated to cost \$14.5 million. Due to contractual delays, these projects are still 95% complete.

A compressor facility is being constructed (42% complete) so as to upgrade the existing conditions and allow digester gas to be used for the plant's boilers. A cost estimate for this work is \$7 million. An approximate operational start-up date is anticipated for November 2003.

Future Project

Construction is planned to begin during late 2003 on a sludge dewatering facility with new belt filter dewatering equipment and ancillary systems. The estimated cost is \$32.344 million and the approximate operational start-up date is anticipated during 2005.

See the Great Neck Water Pollution Control District write-up for more information.

Cedarhurst, New York (Nassau County)

Completed Project

Operational during June and completed in September 2003, several plant improvements were completed. The new treatment units include an influent screening station, influent pumps and controls, and primary digester tank covers. This modernization also addressed pump station upgrades, as well as other miscellaneous improvements. Phase I facility upgrades incurred final costs of \$1.5 million.

CEDARHURST WPCP
NASSAU COUNTY, NEW YORK



DIGESTER COVER INSTALLATION

Photo courtesy of Cedarhurst

Coney Island, New York (Kings County)

Projects in Progress

The Paerdegat Basin CSO facility Phase II involves the construction of foundations for above-grade structures and four below-grade retention tanks. These tanks will interface with the new influent channels constructed under Phase I. Construction began during June 2002 and includes additional dredging at the mouth of the basin located at the confluence with Jamaica Bay. Additional dredging will be done along the CSO tank interface. This phase is scheduled to be ongoing through December 2005.

On August 5th, a fire caused damage to a portion of the plant's odor control system which treats air from the primary settling tanks. Initial clean up, damage assessment, and short term repairs enabled two wet scrubbers to be placed into service at a reduced flow rate by early September. Demolition, removal and clean up of damaged equipment is anticipated to be complete by early December. The long term design was completed and sets forth a construction schedule through January 2006. The schedule will include all equipment replacements, fire detection systems upgrade and all structural building repairs. The construction cost is estimated at \$7 million.

Future Projects

The Coney Island WPCP upgrade is a multi-phase project intended to improve process efficiency and improve reliability. These measures will ensure compliance with all applicable permit SPDES requirements and Consent Orders.

All phases of construction, including Consent Order mandated items, have been completed except for Phase 5b - Knapp Street laboratory and visitors' center, Phase 5c - reconstruction of the 72-inch diameter (72"Ø) ocean outfall, and Phase 5d - miscellaneous punch list items. The Coney Island upgrade Phase 5c includes abandoning an existing ocean outfall structure in Rockaway Inlet, constructing a new section of outfall with diffusers adjacent to the existing diffusers to be abandoned, and repairing the outfall pipes that remain. These phases are being postponed due to budgetary constraints.

The Paerdegat Basin CSO facility Phase III involves the construction of above-grade structures consisting of a screenings building, odor control and HVAC building, a CSO pump back building, and a collections building with an adjacent Community Board No. 18 meeting room. Construction is scheduled to begin September 2004 and is estimated to cost over \$140.39 million. Construction of the Bergen Avenue sewer modifications, from Avenue K to Ralph Avenue, consist of roadway pavement, concrete sidewalks and curbs, underground utilities, street lighting and trees. The contract also includes modifications to an existing storm sewer on Avenue K which redirects the flow to a new stormwater outfall into Paerdegat Basin. This work consists of installation of new sewer piping and drainage

structures. Scheduled to start during July 2006, cost estimates are \$4.65 million.

Phase IV is the construction and restoration of lands surrounding Paerdegat Basin including decorative fences, lighting and development of an Ecology Park (4.5 acres) adjoining the 28-acre Natural Area Park. Construction is scheduled to begin during September 2006; cost estimates are \$12.8 million.

The Neptune Avenue pumping station is a new construction project to be located at the intersection of West 23rd Street and Neptune Avenue. The pumping station will be designed to convey 45 MGD through two 30-inch diameter (30"Ø) force mains and connect to the Coney Island Interceptor at Stillwell and Neptune Avenues. This project is in a conceptual design phase. Construction of this unmanned pumping station and installation of mechanical equipment including six submersible pumps, four grinders, a bridge crane, monorail, pipes, sluice gates, valves, and appurtenances; electrical room and switchgear, standby engine generators; HVAC system; plumbing; and landscaping. Work is anticipated to begin during January 2005 with cost estimates of \$20 million.

Glen Cove, New York (Nassau County)

Projects in Progress

The City of Glen Cove's wastewater treatment plant is one of 12 point sources in Nassau and Suffolk Counties that are required to reduce nitrogen loading into Long Island Sound. It is also the largest nitrogen contributor of those point sources.

New York State awarded four separate grants totaling \$4,598,750 to the City since 1998. Under the 1996 Clean Water/Clean Air Bond Act, two awards (1998 and 1999) totaling \$3,378,750 for construction were awarded to the City for nitrogen removal upgrade and facility improvements. The third award, a \$200,000 Environmental Protection Fund grant, was awarded in 1999 to the City for the costs associated with the design, bidding and construction observation and oversights of the upgrade. The fourth award was announced in 2003 and is a \$1.02 million Bond Act grant to help the City in reducing the discharge of chlorine by converting the current chlorine disinfection system to one that utilizes ultra violet (UV).

Construction of the biological nitrogen removal project began in March of 2001 and is now substantially done (98% complete). On October 21, 2003, the biological nitrogen removal project officially began operation. The City of Glen Cove is the first of the 12 dischargers on Long Island to bring new nitrogen removal on-line.

In addition, the CW/CA Bond Act funded \$100,000 for the creation of a constructed wetlands stormwater treatment system. This system is comprised of retention basins and plantings to reduce stormwater runoff impacts to Cedar Swamp Creek which drains to

Hempstead Harbor; this work is ongoing.

Future Project

A cost re-estimate of \$500,000 was made in order to put the facility's chemical and fuel storage tanks in compliance with State and federal regulations. A construction and compliance schedule are under negotiation.

The UV disinfection system is currently being designed and construction will likely begin in 2004.

Greater Atlantic Beach Water Reclamation District (formerly West Long Beach Sewer District), New York (Nassau County)

Future Project

The West Long Beach Sewer District changed its name to the Greater Atlantic Beach Water Reclamation District during March 2002. Rescheduled for a 6-month construction agenda starting during early 2004, additional upgrades at this facility will include replacement of both secondary clarifier drives, walkways and railings, isolation gates on the new primary clarifiers, motorized valve operators, and a redundant primary sludge station. The estimated cost for this work is \$500,000.

Great Neck, Village of, New York (Nassau County)

Project in Progress

Under way since September (5% complete), collection system upgrades involve installing a liner in the Steamboat Road force main, as well as inspection and subsequent replacement of gravity sewer, as necessary. Estimated expenditures are approximately \$240,000.

Future Project

An engineering study is being proposed with a five-year plan for upgrading the treatment plant by adding four new pump stations and BNR retrofits at a cost of about \$100,000 per year. Other feasible alternatives involve combining flows with the Great Neck Water Pollution Control District and/or convert both plants to pump stations and divert all flows for treatment at a regional facility located on the south shore of Nassau County. Refer to the Cedar Creek and Great Neck Water Pollution Control District write-ups for additional information.

Great Neck Water Pollution Control District, New York (Nassau County)

Project in Progress

An I/I study is ongoing (50% complete) in certain areas of the collection system to evaluate hydraulic capacity and eliminate extraneous flows.

Future Projects

It is estimated that over \$16 million will be spent to retrofit or build new tankage for nitrogen reduction at this facility. The nutrient reduction requirement is mandated by the LISS Phase III nitrogen reduction plan. An engineering study is under way to evaluate the feasibility of upgrading or diverting to a another plant.

The Feasibility Diversion Study, funded with \$36,000 of Bond Act grants, was completed about two years ago and concluded that the diversion of the entire effluent from this plant and the Village of Great Neck to a regional plant on the south shore is technically feasible. Early this past year, the District and the Village of Great Neck were selected to receive a \$18.7 CW/CA Bond Act Grant for the diversion project. Both parties are currently working together to confirm that the diversionary concept is cost-effective by initiating a detailed design and cost analysis.

Huntington Sewer District, New York (Suffolk County)

Completed Projects

A primary digester was cleaned and the interior of the floating roof was painted during September 2003 at a cost of \$170,000. Collection system expansion work completed during June 2003 (\$91,395) involved the installation of 760 linear feet of 8-inch diameter (8"Ø) gravity sewer in Sterling Court.

Suffolk County has approved funds of \$320,000 for the remediation of highway stormwater discharge to Huntington Harbor. The County has completed the design for the project and construction is tentatively scheduled to start in 2004.

The Village of Huntington Bay has received three Bond Act grants since 1999 to install structures to collect and dispose of stormwater runoff. Those projects will reduce pollutant loading to the wetlands, Huntington Bay and Huntington Harbor. The Wincoma Drainage Area "C" project was awarded \$241,391 and the project is substantially completed. The Bay Crest Willow Pond Drainage Basin "G" project was awarded \$321,751. The Bay Hills Drainage Basin Area "L" was awarded \$237,038. Both projects are in final design stage and construction is slated to start in 2004.

Projects in Progress

Awarded more than \$8.8 million under the auspices of the Clean Water/Clean Air Bond Act for the nitrogen reduction upgrade, the Town of Huntington will be completing the final design in late 2003 with construction to start in 2004. The biological nitrogen removal system selected by the Town will incorporate sequencing batch reactors (SBRs). An operational start-up is anticipated in late 2005. A total project estimate is \$10.5 million.

Additional upgrades under way include the installation of a chemical containment structure (\$33,700) at the transfer station, and a new digester gas flow meter (\$14,000).

In addition to the biological nitrogen removal upgrade, the Town was awarded a CW/CA Bond Act grant of \$366,000 in early 2003 to convert the existing chlorine disinfection system to one that utilizes UV. The UV system is currently being designed.

The Town of Huntington has approved funding for three projects to address pollutants from stormwater runoff. One project was approved for funding of \$40,000 to address the West Shore Road shoreline stabilization and stormwater management plan. Under this plan, stormwater control devices, such as catch basins and outfall pipes, will be installed to reduce pathogens prior to discharge to Huntington Bay. However, because of litigation concerning land ownership, the project is on hold indefinitely and the Town has released its award.

The other two projects are the Fleets Cove/Knollwood Beach Stormwater Mitigation (\$300,000) and the Centerport Harbor Stormwater Runoff Mitigation (\$250,000). The Fleets Cove project design is complete with construction to start in 2004. The project entails installation of new drainage pipes, leaching basins and catch basins to treat stormwater runoff. The design for the Centerport Harbor Stormwater Runoff Mitigation Project is being finalized and the project entails improvements to the existing stormwater drainage system.

Future Projects

Planned for the 2004 summer season, improvements to the wastewater collection system for the Cobblestone Estates development includes the installation of 6,400 linear feet of eight-inch diameter (8"Ø) gravity sewer lines. An additional 1,300 linear feet of eight-inch diameter (8"Ø) gravity sewer lines will be installed for the Huntington Glen subdivision. Improvements to the Huntington Farms pump station have been postponed for several years in anticipation of this residential sewer expansion. Capacity upgrades will be assessed as necessary.

Hunts Point, New York (Bronx County)

Projects in Progress

The upgrade to the Hunts Point WPCP is a multi-phase project intended to improve process efficiency, reduce manpower requirements, improve reliability and maintain compliance with all applicable permit requirements and Consent Orders. Subsequent to the project's initiation, the City entered into the NYS SPDES Administrative Consent Order-Nitrogen Reduction Agreement. Required under this Order, this facility will be retrofitted to reduce nitrogen loadings into the East River and Long Island Sound.

Phase I is a \$203 million, 3½-year construction phase which was bid in July 2001. This phase includes Consent Order mandates for hydraulic improvements to allow treatment of twice design dry weather flow (200 MGD) by October 29, 2004, as well as upgrades to most of the wet stream processes. This modernization includes forebay gate chamber improvements, screen chamber modifications, raw sewage conduit modifications, personnel facility additions, aeration tank froth and foam control, and a RAS system upgrade. The chlorine building and contact tank also need modifications. A new combined residuals handling facility to handle grit, screenings, and scum under one roof will be built on site.

Phase II is currently under construction and has been re-estimated to cost \$192 million. This 3½-year construction phase involves BNR enhancement. In order to comply with nitrogen reduction requirements, this phase will also include a new blower building, air headers, diffusers, polymer and alkalinity addition. The BNR work in this phase is also under Consent Order and must be constructed and operational by June 30, 2007.

Phase III is currently under design and has been re-estimated to cost \$146 million. This 3½ year construction phase includes work associated with solids handling. This includes mechanical, structural, instrumentation and controls and electrical work related to the replacement of digesters, thickeners and sludge storage tanks.

The objective of the East River CSO facilities is to improve the water quality of several rivers and creeks tributary to and including the East River by substantially reducing combined sewer overflows during rainstorms. The upper East River is bounded by the NYC boroughs of the Bronx on the north shore and Queens on the south. The combined sewer outfalls are located along the river and its tributaries: Bronx River, Westchester Creek, and Hutchinson River.

The Hutchinson River CSO Project was to be an in-line storage conduit proposed to be constructed along Loop Road, Tillotson Avenue, Conner Street and adjacent to Co-op City Boulevard. This 7-million gallon storage conduit is designed to capture 90% of the potential wet weather storm discharge and will store the CSO until it can be treated at the Hunt's Point WPCP. After the project had reached the preliminary design stage, the

community requested that the project be reformulated. The project was returned to facility planning and several alternate layouts are being considered that will provide an equivalent environmental benefit with reduced disruption to the community. Until the design progresses further, no cost or schedule information is available.

See the Bowery Bay write-up for information on the City-wide projects.

Future Projects

The Bronx River CSO Facility will consist of a storage conduit, pumping station and outfall. The current cost estimate is \$40 million and is expected to begin construction in 2007.

The Westchester Creek CSO Facility will be constructed in two phases. Phase I will be for site preparation (\$2 million) and a comfort station for the community. This phase is expected to begin in the middle of 2004. Phase II includes the CSO tank, sewers, and all required mechanical equipment. This phase is estimated to cost \$160 million, will be advertised in 2007, and will take four years to construct.

A BNR alternative will receive Clean Water/Clean Air Bond Act funding and is consistent with the CCMP priorities of the LISS. A froth control facility (\$328,461 approved) will be installed.

Jamaica, New York (Queens County)

Projects in Progress

In order to comply with SPDES limitations and requirements, plant-wide interim expansions are ongoing. This work has been re-estimated to cost over \$260 million plus over \$48 million in engineering and design construction management fees. To be performed in two construction phases, Phase I will entail new installations of treatment units such as a primary tank splitter box, a primary tank, a primary force main, the main sewage pumps driven by VFDs, return activated sludge pump stations, waste activated sludge pump stations, a chlorine contact tank, odor controls, and an electrical substation. Phase II will include new secondary screenings building, main building alterations, a residuals handling building, an administrative and maintenance building, new covers for existing sludge storage tanks, rehabilitation of the existing air blowers, new process air piping and new fine bubble diffusers in the aeration tanks, odor controls, emergency lighting and a boiler plant. Final design for second phase is 90% complete as of September 2003.

CSO abatement projects in this drainage basin include the placement of a retention tank in Fresh Creek; the preliminary design is under way. For additional information on other CSO control projects in the Jamaica Bay tributaries see the Coney Island and 26th

Ward write-ups.

See the Bowery Bay write-up for information on City-wide projects.

Joint Regional Sewerage Board-Town of Haverstraw (Rockland County)

Future Project

Rescheduled to begin during March 2004, it is estimated that \$2.5 million will be spent in order to upgrade the aeration system.

Lawrence, New York (Nassau County)

Future Project

Phase II plant improvements are in the planning stage with no definite construction startup date as yet. Various plant-wide equipment upgrades and replacements will be done as needed. Remediation costs are estimated at \$700,000.

Long Beach, New York (Nassau County)

Completed Projects

This facility has met all State Consent Order requirements which address compliance with SPDES discharge limitations.

Rehabilitation of several treatment units were complete on November 1, 2003, and incurred final costs of \$2 million. The work included the replacement of the trickling filters and the hypochlorite system. The project also included necessary repairs and cleaning of the digesters, as well as the installation of new mechanical bar screens.

Future Project

At an estimated cost of \$4 million, several additional facility-wide improvements are planned. Scheduled to begin during February 2004, upgrades to several treatment units will address sludge dewatering, plant water and electrical systems, as well as automation of other operational processes.

Mamaroneck, New York (Westchester County)

Completed Project

Construction of a BNR demonstration pilot project was completed during 2002. The

Clean Water/Clean Air Bond Act award of over \$3.83 million required monitoring of the system until 2004. The nitrogen reduction technology of choice proved ineffective; WCDEF stopped all operation and monitoring in June 2003. The State is awaiting a final report with recommendations of alternative technologies before closing out this project.

Projects in Progress

Phase II Automation installation is more than 60% complete. The estimated \$850,000 modernization will increase operator control via a Supervisory Control and Data Acquisition (SCADA) telemetry control system. Additionally, VFD replacement for five main effluent pumps will be done by in-house staff.

The Glen Oaks pump station rehabilitation is still at the design phase (\$300,000).

New Rochelle, New York (Westchester County)

Completed Project

Automation Phase II installations were completed and operational during this past November. This system enables remote monitoring of plant processes. This phase increases operator control via a Supervisory Control and Data Acquisition (SCADA) telemetry control system. Final costs were estimated at \$750,000.

Projects in Progress

On December 12, 1986, NYS DEC imposed a sewer extension moratorium on the New Rochelle Sewer District; this ban is still in effect. This plant is operating at or above its permitted flow capacity. With anticipated development, there is concern of insufficient plant capacity, as well as the ability to meet effluent requirements. Completed SSES and I/I reduction studies with associated construction is 90% complete.

This facility is operating under a State Consent Order to accomplish collection system rehabilitation (I/I) and eliminate two storm sewer overflows (SSOs). The New Rochelle Sewer District — which is comprised of Larchmont, a small section of Mamaroneck, New Rochelle, and Pelham Manor — anticipates a cost of \$35 million for all construction phases; construction is under way. Awarded during October 1998 under the Clean Water/Clean Air Bond Act, Westchester County will receive over \$3.3 million to build overflow retention basins in the New Rochelle drainage basin to capture and treat stormwater runoff in order to reduce negative impacts on Long Island Sound. The scope of construction necessary to eliminate the SSOs has increased so greatly that the CW/CA Bond Act award has increased to about \$8 million; construction began during mid-November 2002 and is 25% complete. Other collection system work includes the Sutton Manor pump station rehabilitation (design phase - 60% complete) and a sludge force main assessment.

Newtown Creek, New York (Kings County)

Projects in Progress

The Consent Decree goal of this upgrade was to achieve effluent quality standards at a prescribed influent flow dictated by SPDES permit limitations. The existing Newtown Creek facilities required expansion and modifications to provide full secondary treatment. The plant upgrade's first construction contract began in July of 1998 with a demolition/site remediation contract. Construction contracts for a new Construction Management Building and reconstruction of Kingsland Avenue began in 1999, followed by contracts for solids handling facilities, disinfection facilities with a support building, and the south addition to the main building, which started in 2000. The total design and construction cost of the active plant upgrade was re-estimated to cost \$1.094 billion and was approximately 22% complete at the end of 2002. Due budgetary constraints, negotiations are under way with NYS DEC to amend the Consent Order.

A "Long Outfall Alternatives" contract began in November of 2000 to assess the aquatic environment in proximity to existing and potential WPCP outfalls. This study is also evaluating the potential for siting new outfall locations.

CSO abatement measures include in-line storage in Newtown Creek (facility planning), a tributary of the East River, and regulator improvements (final design).

See the Bowery Bay write-up for information on City-wide projects.

Future Projects

Future construction contracts under Track 3 include a sludge force main and East River loading dock modifications (\$38 million), north and north-central batteries of aeration and final tanks (\$460 million), modifications to main building-north (\$100 million), modifications to the Manhattan pump station (\$154 million), central residuals facilities (\$209 million), reconstruction of Kingsland Avenue - Stage 2 (\$1 million), south-central and south batteries of aeration and final tanks (\$302 million), and final site work (\$20 million). The estimated total design and construction cost of these phases is \$1.543 billion. These projects are being postponed due to budgetary considerations.

Northport, New York (Suffolk County)

Project in Progress

Under way since the 2003 fall season, this facility, which also provides treatment for the Centerport Sewer District, is upgrading and expanding its capacity to a design flow of 0.45 MGD. The project includes an equalization tank, baffling, fine bubble diffusers,

increased generator capacity and UV disinfection. The final estimated cost is \$1.8 million which includes CW/CA Bond Act funds of \$977,500 for the nitrogen and facility expansion and \$155,000 for the UV disinfection system.

Future Project

The Stormwater Runoff Control Project for Northport Harbor received CW/CA Bond Act funds of \$178,000. The project includes the installation of a network of catch basins and leaching pools to mitigate stormwater runoff and improve shellfishing and primary contact recreation in Northport Harbor. The Bond Act grant contract was executed in July 2002. The design is complete and the construction is anticipated to start in late 2003 or early 2004.

North River, New York (New York County)

Projects in Progress

Engineering studies dealing with interim plant upgrades and miscellaneous process control experiments are continuing.

Subsequent to inspections and cleaning of the digester tanks, one tank had damage to the mechanical piping and support systems. The scope of work to repair the digester tank includes the internal inspection of six digester tanks; developing the required repairs to the digester piping, pipe support systems, steel liner, and concrete surfaces subsequent to the inspection. Final testing of each digester tank for leaks after the repairs have been completed are scheduled. Costs for all repairs and inspections are estimated at \$5 million.

Future Projects

This facility, located on the Hudson River south of the George Washington Bridge, is operating under a State Consent Order (July 1, 1992) to address issues of capacity, odor, and air emissions. Odor emissions are a particularly sensitive issue for the North River WPCP since it is located in a heavily populated section of Manhattan with Riverbank State Park constructed on its rooftop. The Post Odor Construction Survey, which was mandated by Consent Order, was to identify and recommend solutions to odor control. The findings of this study were published in the Post Construction Odor Study, which also include the results of an independent study as part of a settlement with the Natural Resources Defense Council (NRDC), West Harlem Environmental Action (WHEACT) and the City. Both studies focus on identifying odors and recommend remedial measures to further control odor emissions, as necessary.

This facility currently has three odor control systems in operation. These include the systems dedicated to the north and south portions of the plant, and a third system dedicated to the covered primary tanks. All three systems control odors by using a two-stage treatment

system. The first stage pulls odorous air through packed bed wet chemical scrubbers. The second, polishing stage, pushes the wet scrubber effluent through activated carbon absorbers. The final settling tanks are the only major plant operational process that is not odor controlled.

The scope of work required to meet the odor minimization goal includes digester gas holder odor control modifications, digester overflow box odor control, thickener room ventilation modifications, cover and odor control openings in chlorine contact tanks, remove restrictions in the secondary bypass and modulate based upon plant flow. Improvements to the laboratory odor control system includes the addition of six carbon adsorbers and two wet scrubbers in the south sector, cover final settling tank effluent launders, addition of two carbon adsorbers in the north sector, replacement of headwork ventilation ductwork, new process air blower and parallel discharge header, remote alarm system, and mixed liquor channel ventilation. Expenditures are estimated at \$60 million. This project has no anticipated start-up date.

The scope of work required with miscellaneous process and odor control improvements includes rehabilitation of existing scrubbers and absorbers including the removal of the carbon absorbers bypass, modifying existing carbon bed supports and replacing carbon; replacing chemical metering pumps, pH and orthophosphate controls; replacing and motorizing dampers; and relocating of the scrubbers' fans outside of a partially treated air plenum. Hypochlorite will be added to the skimming system and aeration tanks. Baffle wall height additions in the aeration tanks will be installed to prevent back mixing between the passes. The addition of observation points on the aeration tanks will allow visual monitoring of the process. Other replacements and upgrades include the aeration tank dump valves, modification of the dissolved oxygen control system, new operators on the final settling tanks' sluice gate weirs, and a new diffuser system in the aeration tanks. Other goals are to provide additional capacity to the plant's waste sludge system; reduce the amount of odors which are released into the air as the water falls over the weirs; and modify the primary settling tank adsorbed fans to reduce vibration signature. Expenditures are estimated at over \$42.96 million. This project has no anticipated start-up date.

See the Bowery Bay write-up for information on City-wide projects.

Oakwood Beach, New York (Richmond County)

Completed Projects

Engineering studies completed during last winter include the integrity of thickener blankets and remote dissolved oxygen metering.

Long-term facility planning includes the identification and design of priority rehabilitation needs. Approximately \$7 million of priority rehabilitation work at Oakwood

Beach has been identified to date, and design of these improvements is under way. Included among these priorities are disinfection system improvements, skimmings removal improvements, rehabilitation of gas piping, and upgraded personnel facilities. Projected changes in influent flows, loads and potential future treatment requirements, as well as full upgrade and modernization needs will be addressed as part of facility plan development. Facility plan completion was accomplished during March 2003.

Projects in Progress

A joint facility planning effort for the Oakwood Beach and Port Richmond plants is under way as part of the Staten Island Wastewater Facilities Improvement Project that was initiated in 2001. Area-wide facility planning will address the needs of both Richmond County treatment plants, as well as pumping station and collection system issues. Refer to the Port Richmond write-up for additional information.

See the Bowery Bay and Port Richmond write-ups for information on City-wide and borough-wide projects.

Ossining, New York (Westchester County)

Projects in Progress

Facility-wide performance maintenance Phase I (\$3.5 million), an O & M procedure to maintain and extend the life of existing treatment units, is 80% complete. Phase II (\$2.2 million) Automation is under way.

In order to increase remote monitoring of plant processes, Automation Phase II design is complete. Construction and installation began during 2002. This phase will increase operator control via a Supervisory Control and Data Acquisition (SCADA) telemetry control system. Costs for this phase are estimated at \$1.05 million.

Estimated to cost \$8 million, a new final clarifier is being constructed. In addition, a feasibility study is under way to replace the aeration tank mixers. These projects started in mid-2002.

Owls Head, New York (Kings County)

Projects in Progress

CSO abatement strategies for this drainage basin include regulator improvements which are at the preliminary design stage. All engineering studies updated here in previous Reports have been postponed.

See the Bowery Bay write-up for information on City-wide projects.

Future Projects

The Avenue V pumping station has a 30 MGD capacity. The objectives in reconstructing the pumping station and force mains are to: reduce the potential for sanitary sewer surcharge conditions upstream of the station; improve the Coney Island Creek water quality by increasing the wet weather (CSO) pumping capacity; and upgrade the station and automate for unmanned operation. The station's wet weather flow capacity will be increased to a nominal 80 MGD to pump the sum of peak sewage flow of 34.6 MGD and necessary CSO flow of 42 MGD.

The pumping station upgrade includes construction of a wet well extension for temporary pumping, sequential demolition and construction of the wet well lowered by 3.5 feet, demolition of un-needed structures, replacement of tide gates, force mains, removal of old equipment, installation of six wet pit submersible pumps with VFDs and new electrical and HVAC equipment. Having historic and architectural significance, the main building's restoration will be done with the approval of the New York City Landmarks Preservation Commission and the New York State Office of Parks, Recreation and Historic Preservation.

The total cost for this project has been re-estimated at \$100.6 million (\$33 million for the station and \$67.6 million for the force mains) and will be bid as two contracts. First, the reconstruction and upgrading of the station for automated operation and expanding the pumping capacity for wet weather flow. Construction is scheduled to begin during August 2005. Secondly, construction of two new force mains: a 42-inch diameter (42"Ø) pipe (18,500 linear feet) dedicated to dry weather flow and a 48-inch diameter (48"Ø) pipe (13,100 linear feet) dedicated to wet weather flow. Construction is scheduled to begin July 2007.

Oyster Bay Sewer District, New York (Nassau County)

Completed Projects

Collection system maintenance was completed during 2003. At a final cost of \$10,500, 1,859 linear feet of eight-inch diameter (8"Ø) gravity sewer was inspected and cleaned. Under the same contract, 4,738 linear feet of eight-inch diameter (8"Ø) gravity sewer was cleaned. Additionally, emergency force main connections and automatic dial alarms were installed at the Landing Road and Steamboat Landing Road pump stations. Final expenditures amounted to \$95,495.

Future Projects

Planned for the 2004 winter season, a total of \$220,000 has been allocated to relocate

digester gas piping and install automatic dial alarms at the Highwood pump station.

The District's engineer has completed the design for the BNR upgrade using sequencing batch reactors (SBRs). The District is currently working on bonding the local share of the project and construction of the upgrade is expected to begin in 2004. The District has been awarded about \$6.7 million of funding from the 1996 Clean Water/Clean Air Bond Act for the BNR upgrade. Based on results of effluent quality, the plant is currently meeting the August 2004 nitrogen loading limit.

Palisades Interstate Park Commission, Bear Mountain, New York (Rockland County)

Future Project

This facility is operating under a State Consent Order (October 7, 2002) to upgrade and attain SPDES effluent limitations. A facility-wide evaluation report was completed in December 2002. Estimated to cost \$1.5 million, a two-year phased construction schedule is anticipated to get under way during the 2004 summer season. The modernization will address disinfection and pH controls, installation of a sludge holding tank, sludge bed and trickling filter improvements, rehabilitation of the final settling tank and cover, and electrical and equalization upgrades.

Peekskill, New York (Westchester County)

Projects in Progress

The installation of Automation Phase II plans have been under way since early 2002. This phase will increase operator control via a SCADA telemetry control system. Ongoing construction and installations are estimated to cost \$1.25 million. Performance maintenance (\$1.8 million), an O & M procedure to maintain and extend the life of existing treatment units, is continuing.

Future Project

In order to address wastewater flows that impact potable water supplies in the Croton watershed in upstate New York, preliminary studies have determined that this facility could be expanded to 15 MGD. The facility expansion would require extensive tankage to properly treat additional flows; facility grounds are available for these additional units. The diversion of waste flows (~2 MGD) would originate from the towns of New Castle and Yorktown. Final plans and alternatives, i.e., upgrading the existing antiquated facilities, have yet to be determined.

Port Chester, New York (Westchester County)

Completed Project

Operational during November 2003, Automation Phase II installations were completed. Final costs were estimated at \$1.4 million. This phase increases operator control via a SCADA telemetry control system.

Projects in Progress

Facility-wide performance maintenance to maintain and extend the life of existing treatment units, as well as to replace outdated equipment, is under way. Phase I addresses headworks, primary settling tanks, secondary clarifiers, and odor controls. Concurrently, the variable frequency drives for the influent and effluent pumps are being installed. Phase II (\$4.5 million) construction is 80% complete.

Port Richmond, New York (Richmond County)

Future Project

The Port Richmond WPCP, together with the Oakwood Beach WPCP, is the subject of a joint facility planning effort initiated in 2001. As part of this effort, approximately \$6 million in priority rehabilitation needs have been identified in advance of completion of the long-term facility plan. Priority improvements will include plans for the upgrade of the two Richmond County facilities and their pump stations within the context of system-wide planning, while addressing excessive infiltration and inflow in the sewer drainage areas, personnel facilities, structures, storage requirements, communication and personnel safety issues. The option of flow tipping from one drainage area or plant to another will also be addressed and investigated in the plan.

See the Bowery Bay and Oakwood Beach write-ups for information on City-wide and borough-wide projects.

Port Washington, New York (Nassau County)

Project in Progress

The Port Washington Water Pollution Control District is undertaking a nitrogen removal demonstration project by utilizing existing tankage to create separate nitrification/denitrification zones to demonstrate nitrogen removal. The construction of the pilot project was completed and has been denitrifying about 1 MGD of the plant's wastewater since 2002. In early 2003, the District was selected to receive an \$11 million grant from the 1996 Clean Water/Clean Air Bond Act for the BNR upgrade. Based on the

results of effluent quality, the plant is currently meeting the August 2004 nitrogen loading limit.

Future Projects

Rescheduled to begin during the spring season of 2004, refurbishing of two pump stations and plant-wide repairs and preventive maintenance, such as roofing and various architectural replacements, will be addressed. Costs are re-estimated at \$2 million. During the same season, additional collection system upgrades will include the installation of 4,000 linear feet of six-inch diameter (6"Ø) force main from one of the aforementioned pump stations. This work is estimated to cost \$500,000.

Red Hook, New York (Kings County)

Completed Project

An ambient and effluent assessment of toxics was completed during late 2002. A characterization of loadings from various source categories to the East River and Upper New York Harbor was performed by NYS DEC.

Projects in Progress

Continuing experiments include the incorporation of a degritting machine in the solids handling facility and fuel cell efficiency.

See the Bowery Bay write-up for information on City-wide projects.

Rockaway, New York (Queens County)

Completed Projects

Reconstruction of the heating and ventilation system, estimated at \$1.548 million, is essentially complete. A stabilization facility plan for interim upgrades is also nearly complete.

See the Bowery Bay write-up for information on City-wide projects.

Rockland County Sewer District No. 1, New York (Rockland County)

Completed Projects

Several engineering studies were completed for the Western Ramapo Extension Project including a siting evaluation, conceptual design, value engineering and an effluent

reuse determination. These studies are in preparation for the proposed 1.5 MGD advanced wastewater treatment plant. An additional access road was completed during April 2003 at a final cost of \$132,882. The new plant will utilize the final effluent to recharge the Ramapo River Aquifer. By diverting flow from the Mahwah Service Area of the Rockland County Sewer District, the Western Ramapo area could see a net benefit of an additional 2.0 to 3.0 MGD for recharging the aquifer.

Projects in Progress

Design and construction work is under way for the installation of principal trunk sewers, pump stations, force mains, and laterals in the Villages of Hillburn and Sloatsburg and the unincorporated portion of western Ramapo. Construction is re-estimated to cost \$52 million.

Under way since November 2002, sanitary sewer extensions and repairs are being performed in the towns of Clarkstown and Ramapo, as well as the Villages of New Square and Spring Valley. An estimate of \$12.5 million was made for all infrastructure improvements. Additional sewer rehabilitation involving cleaning, televising, sealing and grouting will accrue costs of over \$499,000.

The replacement of 30 RBCs with new units and the rehabilitation of 60 RBCs is 95% complete (over \$3.55 million). At an estimated cost of \$676,600, an old motor control center is being replaced and upgraded with electrical tie feeders (15% complete).

ROCKLAND COUNTY SEWER DISTRICT NO. 1
ROCKLAND COUNTY, NEW YORK



ROTATING BIOLOGICAL CONTACTOR INSTALLATION

Photo courtesy of RCSD No. 1

Future Projects

Anticipated to begin upgrading construction during April 2004, the modernization of this 28.9 MGD secondary facility will include replacement of debilitated treatment units and a new SCADA system. Estimated costs will be \$5 million. Planned to begin during June 2005, construction of a new advanced treatment facility to serve western Ramapo will incur costs of \$47.7 million.

Suffolk County Sewer District #1, Port Jefferson, New York (Suffolk County)

Completed Project

Improvements to remote pump stations were completed during a 12-month agenda and accrued costs of \$130,000.

Projects in Progress

An in-house water quality assessment of Port Jefferson Harbor is ongoing. An engineering report for reconstruction of the plant was approved by NYS DEC. The plans and specifications have been sent to NYS DEC for final approval. This expansion will address the LISS Phase III nitrogen reduction targets. NYS CA/CW Bond Act grants now total \$12.2 million.

The replacement of various gravity sewer lines throughout the collection system is ongoing. Installations of these new sewers will eliminate I/I problems. This work will also expand and rehabilitate the existing infrastructure. In addition, improvements are being made to several remote pump stations (\$130,000/20% complete).

Future Projects

Already approved by NYS DEC, additional treatment units will be added to accommodate any additional flow requests from commercial and residential developments. Preliminary treatment designs propose the use of a tertiary process with a flow capacity of 1.0 MGD.

Rescheduled to begin during 2004 with a two-year schedule, sequencing batch reactors (SBRs) will be constructed in conjunction with the existing rotating biological contactors (RBC). These treatment units will enable the facility to meet LISS Phase III nitrogen reduction targets. The re-estimated \$17 million project will incorporate UV disinfection and has been awarded a grant of 85% of the eligible construction cost from the NYS CW/CA Bond Act.

Suffolk County Sewer District #3, Southwest, New York (Suffolk County)

Completed Projects

Several engineering studies, design projects and contracts were completed or awarded during 2003. First, a contract for grit handling improvements was awarded (\$900,000). A security improvement design report was completed. An outfall pipe evaluation is under way. RFPs are being sent out for the design of a fire suppression system. The facility's roof was replaced at a final cost of \$1 million.

Projects in Progress

Equipment replacements, a laboratory expansion, new influent screens (\$600,000/100% complete), and infrastructure repairs (\$300,000) are being addressed under a phased agenda at re-estimated costs of \$50 million. The inflated costs also include rehabilitation of the electrical/mechanical system, improvements to the sludge, odor, and grit handling facilities. The grit handling improvements will include a building to house units for scavenger waste pretreatment.

Suffolk County Sewer District #6, Kings Park, New York (Suffolk County)

Project in Progress

Suffolk County has secured \$7.8 million from the Clean Water/Clean Air Bond Act of 1996 in order to build a 1.2 MGD facility by modifying existing treatment units. The primary settling, aeration, and final settling tankage, as well as the anaerobic digesters, will be converted into equalization tanks, sludge and disinfection facilities. Phase I construction of the SBR tanks is 50% complete. Operations are anticipated to be on-line during 2004.

SUFFOLK COUNTY SEWER DISTRICT #6, KINGS PARK
SUFFOLK COUNTY, NEW YORK



NEW SEQUENCING BATCH
REACTOR TANKS
Photo courtesy of Suffolk County DPW

Future Project

Additional construction is anticipated to begin during 2004 on an \$8 million equipment renovation. Phase II will include the installation and construction of the UV disinfection and sludge thickening systems. Safety equipment upgrades will be addressed on a priority basis.

Suffolk County Sewer District #21, SUNY, New York (Suffolk County)

Completed Project

Operational during December 2002, the effluent pump station controls and pumps and the emergency generator were upgraded. Final costs accrued amounted to \$150,000.

Project in Progress

Preliminary engineering work has been under way since 1997 to assess BNR alternatives for the LISS Phase III nitrogen reduction requirements. A CW/CA Bond Act grant was awarded for \$12 million. Effluent disposal options are being studied.

Future Project

Construction of sequencing batch reactors is planned and will increase the plant capacity by 0.5 MGD to a total design of 3 MGD. This expansion will enable this facility to comply with the LISS nitrogen loading requirements. Although no construction start-up date has been set, estimates for the work will be \$15.6 million.

Tallman Island, New York (Queens County)

Projects in Progress

The Tallman Island upgrading is a multi-phase project intended to improve process efficiency, reduce manpower requirements, improve reliability and maintain compliance with all applicable permit requirements and Consent Orders. Subsequent to the project's initiation, the City entered into the NYS DEC SPDES Administrative Consent Order-Nitrogen Reduction Agreement. This Order requires this facility to be retrofitted to reduce nitrogen loadings into the East River and Long Island Sound.

Phase I is the only phase with a defined scope of work. This phase will consist of high priority repairs and implementation of low-level BNR. The major stabilization improvements in this phase include the replacement of the main sewage pumps, process air blowers, and engines. BNR improvements such as increased blower capacity, mixers, baffles, and increased RAS capacity will also be implemented. The estimated cost of this

phase is \$125 million and is budgeted for FY 2005.

Several engineering experiments are under way which are investigating the benefits of polymer addition for sludge thickening enhancement, surface washing of aeration tanks to eliminate froth buildup, chemical addition to the digesters for struvite (a mineral deposit) prevention, in situ ammonia metering and the evaluation of the effects of nitrification on chlorine demand.

The objective of the Flushing Bay CSO facility is to improve the water quality of Flushing Creek and Bay by substantially reducing combined sewer overflows during rainstorms. These waters have a confluence with the East River. A 28-million gallon underground reinforced concrete storage tank will achieve this objective by capturing and storing combined sewage during rain events. The captured flow will be screened before entering the tank. After storms, the combined sewage will be pumped out of the tank into a nearby interceptor for treatment at the Tallman Island WPCP.

The location of the storage tank and its associated facilities is within Flushing Meadow-Corona Park. The tank will be completely underground. At the north end of the site, there will be an above-ground New York City Department of Parks & Recreation (NYC DPR) and NYC DEP building. Pumps, air treatment equipment and other auxiliary equipment required for the operation of the storage facility will be located in the basement of this building. The total cost for this project is \$250 million. This CSO facility will be constructed in five phases.

The facility site at the Avery Avenue Ballfields in Flushing Meadow-Corona Park in Queens, New York, originally had three ballfields and a parking lot. Three new ballfields were designed and constructed during Phase I at a location remote from the facility site to serve the community during construction. The effluent channel will be used as a replacement sewer until the completion of the entire project. Phase II involves the effluent channel which has been constructed and, after the completion of the facility, will serve as the overflow channel for the storage facility. Construction of the underground CSO storage facility is Phase III. An existing combined sewer located in the middle of the facility site (Park Drive East Storm Sewer) was demolished and the storage tank will include 15 storage cells, mechanical equipment areas and a wet well. Construction of the diversion chambers and conduits; the above ground building at the north end of the site; and the construction of mechanical support facilities (pump stations, air treatment systems, screening facilities, etc.) represent Phase IV. Construction of three tide gates is Phase V. Construction started in March 2002 and is scheduled to be complete in July 2005.

See the Bowery Bay write-up for information on City-wide projects.

Future Projects

Phase II of the Tallman Island upgrade includes BNR enhancement work including methanol, alkalinity and polymer addition, and centrate treatment. Other major items include new main sewage pumps and engine, digester improvements, and plant-wide instrumentation. In order to avoid a bypass event while replacing the main sewage pumps and suction piping, a \$6 million pump-around-system will be constructed. This three-year construction phase will commence in 2005 and, mandated by Consent Order, must be constructed and operational by December 31, 2009. This phase is estimated to cost \$233 million.

Phase III includes BNR enhancement work including methanol addition and centrate treatment. This phase is estimated to cost \$23 million and will take three years to construct. At the present time, construction is scheduled to commence in 2006.

The Alley Creek CSO Project has combined the CSO issue with control of a flooding problem in the local community of Douglaston. Alley Creek is located at the head of Little Neck Bay, an embayment of western Long Island Sound. Phase I-Stage I will include most of the major work, including construction of new sewers parallel to existing sewers, a retention tank, minor restoration of the existing outfall, and construction of an outfall on Alley Creek. This phase was bid in early 2002 at a cost of \$93 million. Phase I-Stage II (\$10 million) will include the activation of the CSO facility including the SCADA system. Upgrading the New Douglaston pumping station will ensure the pumping capacity to convey the stormwater to Tallman Island.

The Alley Creek Ecological Restoration will be bid separately, as Stage III. After the CSO facility is on-line, the Department will remediate and augment the nearby wetlands that were affected by the construction of the CSO facility. Alley Creek remediation will be bid in 2005 at an anticipated cost of \$10 million. The Oakland Ravine work, which will control wet weather flow that enters the ravine, is currently on hold.

26th Ward, New York (Kings County)

Projects in Progress

The 26th Ward WPCP upgrade is a multi-phase project to improve process efficiency, reduce manpower requirements, and improve reliability. This modernization will ensure compliance with all applicable SPDES permit requirements and Consent Orders. The Hendrix Street Canal bulkhead will be reconstructed to provide a stable grade and prevent loss of fill from the areas of the plant adjacent to Hendrix Creek, a tributary of Jamaica Bay. The bid price for this phase is \$6.23 million. This phase includes installation of new steel sheeting directly in front of the existing sheeting for the entire 1,800 linear feet of existing bulkhead, and construction of a new concrete cap. In addition, replacement of the existing

floatables collection boom is necessary, as well as a new floating barge for floatables removal and a new hoisting system to load the container onto disposal trucks.

Several engineering studies are ongoing which address biological nutrient removal, centrate nitrogen removal, polymer addition for sludge thickening enhancement, and determining the feasibility of remote probes to monitor a variety of parameters including chlorine residual, the nitrogen series and the sludge thickener blanket.

Spring Creek AWPCP was originally constructed and placed into service in the early 1970s. Its function is to capture CSO from tributary drainage areas in Brooklyn and Queens. The plant, with a capacity of 13 MG, provides for stormwater detention, solids settling and disinfection contact time. A stabilization study was performed in the early 1990s and design was completed by the end of 1999. Spring Creek AWPCP will be upgraded and will consist of demolishing the existing facilities, rehabilitation of various areas and equipment, and construction of new facilities. The areas to be upgraded include the overall site, pump building, basin building, and construction of a new odor control building. Construction started in February 2003, and is anticipated to be complete during March 2006. The total construction cost is \$82 million.

See the Bowery Bay write-up for information on City-wide projects.

Future Projects

Phase II involves the replacement of the main sewage pumping station force main. Other collection system installations include a new force main and flow meter on the plant site, installation of a new header within the existing pump station, connection of each pump to the new force main and temporary pumping while the connections are made. In addition, construction of the new force main will require relocation of the existing fuel oil storage tanks. The existing tanks are aging and will be replaced with temporary, above-ground tanks. Phase II, estimated at \$10 million, is expected to be advertised for construction in January 2004.

Phase III will concentrate on BNR installations and other improvements at the plant. The scope of work for this phase includes replacement of the rotating assemblies of the main pumps, preliminary settling tank mechanical equipment (sludge pumps and piping), blower motors and control systems, aeration tank diffusers, return sludge pumps, thickener mechanisms, and various electrical and HVAC elements. Refurbishment of the existing process air blowers; miscellaneous improvements to the final settling tanks; and construction of a new chlorine storage building are the final agenda items for this phase. The estimate for this phase is \$75 million and is expected to be advertised in mid to late 2004 for registration in FY'05.

Wards Island, New York (New York County)

Completed Project

The Wards Island upgrading is a multi-phase project to improve process efficiency, reduce manpower requirements, and improve reliability. These necessary steps will ensure compliance with all applicable permit SPDES requirements and Consent Orders. Phase I began construction in 1996 and is in the close-out phase. Under these contracts, the existing disinfection system was demolished and replaced with a new system. The modernized disinfection facility improves the control of the sodium hypochlorite feed with automated chlorine residual monitoring and controls. The cost of this phase was \$35 million.

Projects in Progress

Engineering studies and experiments under way since 1998 focus on aeration tankage evaluations, sludge age, polymer additions, froth control and biological centrate treatment.

The construction work included in Phase II commenced during September 2002. This phase includes the rehabilitation of the Manhattan and Bronx Grit Chambers. In addition to providing an architectural renovation for each facility, the grit handling process will be automated. In addition, the electrical system, including the emergency generators, will be upgraded and equipment replaced as needed. Lastly, this phase will include odor control systems to treat the odorous off-gasses from the channel surfaces. The bid price for this work was \$91 million.

Future Projects

Phase III previously included all work necessary to provide 20 years of reliable service for the solids handling facility. Due to budget constraints, this work has been deferred until 2010. As an interim measure, a \$40 million phase will be designed to stabilize the solids handling facility. Improvements to the digester domes, gas handling system, and gas holder will be accomplished. It is anticipated that construction on these improvements will commence in 2004 and require four years to complete.

BNR related improvements, as well as other stabilization improvements, will be implemented under Phase IV. BNR improvements include new process air blowers, separate centrate treatment, chemical addition systems, aeration tank improvements, and new RAS pumps. This phase will also address process improvements such as skimmings collection, gate replacement, settling tank mechanical equipment, and concrete repairs. This phase is estimated at \$150 million and is expected to start in 2005. Existing Consent Order requirements mandate BNR completion and operation by December 31, 2009.

See the Bowery Bay write-up for information on City-wide projects.

Yonkers Joint Wastewater Treatment Plant, New York (Westchester County)

Completed Project

Westchester County received \$3.4 million from the New York State Clean Water/Clean Air Bond Act to improve water quality in the Hudson River, redevelop the Yonkers waterfront, improve public access to the Hudson River, and expand municipal recycling programs. Installation of sewer lines to the waterfront neighborhood is complete.

Projects in Progress

This facility is operating under a State Consent Order to implement the findings of an SSES and the final settling tank dye study, as well as to upgrade treatment units throughout the facility. The Order required a study of the plant's effluent mixing zone in the Hudson River; this study was completed in August 1997.

Facility-wide, construction upgrades and equipment installations are under way. Modernization improvements include dewatering facilities, fire suppression alarm and security system, primary boiler system additions, and replacement of sludge collection and process equipment. Phase II Automation will finalize the remote plant-wide data gathering capabilities and plant process monitoring. Improvements will be made to the primary gravity thickeners, grit removal facilities and odor controls for sludge storage. Collectively, these projects have been re-estimated to cost \$20 million and are 75% complete.

A collection system rehabilitation program has been ongoing since 2000. This \$40 million renovation is 80% complete.

Future Project

Anticipated to begin construction during 2004, a new maintenance and storage building with a fire suppression system will be installed. Estimated to cost \$10 million, the project has a 12-month agenda.

AMBIENT AND EFFLUENT WATER QUALITY MONITORING

Throughout 2003, the Commission conducted an extensive monitoring program of municipal and industrial wastewater discharges, as well as ambient water quality surveys in its tri-state District. IEC's laboratory performs analyses on samples collected at these wastewater treatment facilities in addition to samples from many waterways comprising a network of nearly 100 stations. IEC conducted scheduled and reactive sample collection programs in response to regulatory compliance, major infrastructure failures, wet weather conditions, and the need for information on dissolved oxygen and pathogens. Field inspections of CSOs, SSOs and MS4s were conducted during dry weather to discover any illegal discharges and take steps to have them remediated.



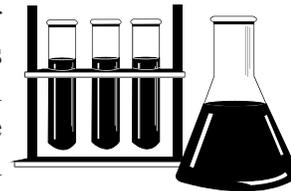
The summer of 2003 was the 13th consecutive summer season that the Commission conducted weekly sampling to document hypoxic (low dissolved oxygen) conditions in western Long Island Sound and the upper East River; this survey was performed aboard the IEC's research vessel, the R/V Natale Colosi. This monitoring is performed in support of the Long Island Sound Study and was conducted from July through mid-September in cooperation with several other agencies. During these summer surveys, additional samples were collected, as well as in situ water quality data, to support other cooperative studies. Through agreements with CT DEP, the collection and delivery of surface water quality samples to the University of Connecticut (UCONN) for phytoplankton identification and chlorophyll a analysis was accomplished. During August, the Commission completed a two-year cooperative program of water quality collection with the University of Connecticut to determine the possible presence of *Pfiesteria piscicida* and *Pfiesteria shumwayae* in the East River.

The Commission participated in the first World Water Monitoring Day which grew out of last year's first National Water Monitoring Day in which IEC also participated. Aboard the R/V Natale Colosi, in situ measurements of dissolved oxygen, salinity, temperature, and water clarity were made at nine established water quality stations in the upper East River and Long Island Sound. These waterways are within the IED, as well as the core areas of two National Estuary Programs. All of the data were submitted to an international data bank which can be accessed by connecting to www.worldwatermonitoringday.org.

During March, in response to a force main break in Sayreville, NJ, IEC's field staff collected samples in Raritan and Sandy Hook Bays to assist NJ DEP with their assessment of the impacted shellfish beds. In April, IEC participated for the eighth consecutive winter-spring season in a cooperative effort with the NJ DEP and US EPA; IEC field staff collected surface water quality samples for the assessment of the sanitary condition of shellfish beds in western Raritan Bay. In August, Commission staff again responded to assess the sanitary condition of the shellfish beds in Raritan and Sandy Hook Bays due to raw sewage discharges resulting from the August 14th blackout in the northeast United States. The Commission plans to continue emergency response and scheduled sampling in western Raritan Bay during the 2003-2004 winter and spring seasons.

The Commission continued to support a data need of the HEP's Pathogens Workgroup. IEC completed a series of 28 ambient water quality monitoring surveys between October 2002 and June 2003, at a network of 46 stations throughout the New York-New Jersey Harbor Complex. These surveys were done under wet weather conditions. In situ measurements of temperature and salinity were taken, and samples were collected for analysis by the IEC laboratory for fecal coliforms, total coliforms, fecal streptococcus and enterococcus. This unique data set represents information on intrastate and interstate waterways. It will be used for state and interstate water quality assessments, model calibrations, and TMDL development. This ambient network was expanded by 15 stations to include the Newark Bay Complex. Between August and September 2003, six water quality surveys were completed; 50% of the samplings were conducted after rain events. In addition, this data set was enhanced by analyses of municipal effluent wastewater for enterococcus in all three member states.

All analyses performed by the Commission's laboratory are in accordance with IEC's Laboratory Quality Control Manual, Quality Assurance Project Plans, and Quality Management Plan, all of which are approved by US EPA. IEC's laboratory is certified by NJ DEP and NYS DOH and also follows US FDA procedures for sampling in shellfish waters. In January 2001, the Commission's laboratory also received certification under the National Environmental Laboratory Accreditation Program (NELAP) from both the NJ DEP and the NYS DOH. NELAP, under the auspices of the National Environmental Laboratory Accreditation Conference (NELAC), is sponsored by the US EPA. The purpose of NELAC is to foster the generation of environmental laboratory data of known and documented quality through the development of national performance standards.



Investigations of private and municipal facilities involve a six-hour sampling period and an inspection of processes, equipment, and plant records. Investigations of industrial facilities generally involve a 24-hour period or a full day's production. Analyses are performed for the parameters specified in the facilities' National Pollutant Discharge Elimination System (NPDES) permits which contain the Commission's requirements. The data generated from these investigations are used to determine compliance with IEC's Water Quality Regulations and with each facility's NPDES discharge permit. The Commission coordinates the industrial compliance monitoring of major dischargers with the environmental departments of its member states and with US EPA.

The Commission's laboratory has been located on the campus of the College of Staten Island (CSI) since December 1993. In addition to the day-to-day analyses performed at the laboratory, the Commission, both on its own and in conjunction with the Center for Environmental Science (CES) at CSI, submits proposals for research projects whose results would benefit the environment and the citizens throughout the tri-state region. The laboratory director and staff continually have research papers and articles published in prestigious environmental forums and have been involved with students enrolled in the CES Masters Degree program.

SPECIAL INTENSIVE SURVEYS

2003 Ambient Water Quality Monitoring in Long Island Sound to Document Dissolved Oxygen Conditions

With an ongoing need to document the hypoxic conditions in Long Island Sound and its embayments where the majority of primary recreational activities take place, US EPA - Region 2 again requested that the Commission conduct an intensive ambient water quality survey in support of the Long Island Sound Study during 2003. For the 13th consecutive year, the IEC participated in a cooperative sampling effort with other government agencies during the critical summer season. The existing data sets have been significantly enhanced by the weekly data collected by IEC for western Long Island Sound and its embayments and the upper East River. The information will also be used to measure the effectiveness of management activities and programs implemented under the Comprehensive Conservation and Management Plan. The Commission disseminates its data on a weekly basis to give cooperating agencies and volunteer monitoring groups an immediate picture of environmental conditions, as well as a basis for comparison with historic and ongoing monitoring programs.

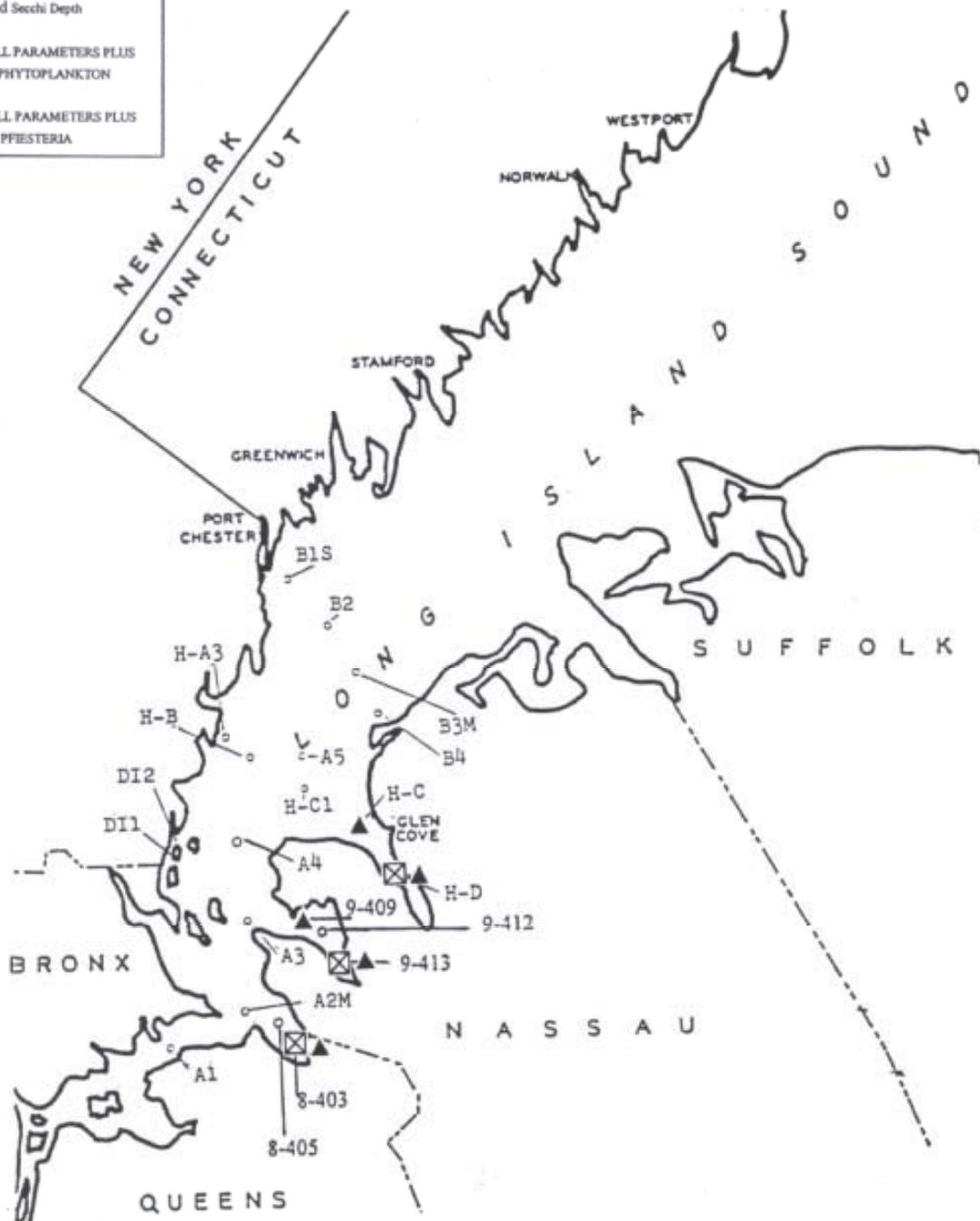
The Commission is an active participant on the Long Island Sound Study Monitoring Workgroup. It is this Workgroup that determined and agreed to station locations, parameters, methodologies, QA/QC, data sharing, etc. A map and a listing of the 2003 station locations are on the following pages. A subset of these ambient water quality stations (those marked with an asterisk) were monitored on September 22nd for the World Water Monitoring Day data set.

As part of the LISS cooperative effort, CT DEP volunteered to have all chlorophyll a analyses performed and to bear the cost for these analyses. The samples collected by the IEC; as well as those collected by NYC DEP and CT DEP; were filtered, archived and frozen until shipped to the Environmental Research Institute at the University of Connecticut. Under agreements between CT DEP and US EPA's Long Island Sound Office (LISO), the analysis for chlorophyll a and phytoplankton species identifications were conducted by the University of Connecticut (UCONN).

The lack of oxygen can be fatal to aquatic life if levels remain persistent and drop below the organisms' threshold to survive. Fish kills can also occur due to predation and toxic phytoplankton. During its weekly sampling cruises, the Commission has always communicated from the field with local environmental and health agencies to pass on current information about unique events. Additional monitoring in response to fish kills and beach closures has taken place in past years. Because the Commission's research vessel is available and accessible to typical western Long Island Sound trouble spots, the NYS DEC, Division of Marine Resources, requested the Commission to assist and respond to fish kills. During the 2003 summer season, there were no reported fish kills in Long Island Sound.

The 2003 survey consisted of 12 weekly sampling runs conducted from July through late September. The ambient network of 21 stations were sampled weekly for temperature, salinity and

- T, S, σ_t , DO, Chlorophyll a, and Secchi Depth
- ⊠ ALL PARAMETERS PLUS PHYTOPLANKTON
- ▲ ALL PARAMETERS PLUS PFIESTERIA



**INTERSTATE ENVIRONMENTAL
 COMMISSION**
 2003
 LONG ISLAND SOUND STUDY
 AMBIENT WATER QUALITY
 SAMPLING STATIONS

INTERSTATE ENVIRONMENTAL COMMISSION

2003 LONG ISLAND SOUND STUDY SAMPLING STATIONS

STATION	WATER COLUMN DEPTH (meters)	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
A1 *	26	40-48-12	73-49-36	East of Whitestone Bridge
A2M *	35	40-48-06	73-47-00	East of Throgs Neck Bridge
8-403	3	40-46-38	73-45-38	Little Neck Bay - ~0.2 nm W of yellow nun "B"
8-405	3	40-47-33	73-45-49	Little Neck Bay - ~0.15 nm North of LNB mid- channel buoy
A3 *	25	40-50-30	73-45-18	Hewlett Point South of Fl G 4 Sec "29"
9-409	4	40-49-44	73-43-05	Manhasset Bay
9-412	4	40-49-20	73-42-45	Manhasset Bay
9-413	3	40-48-26	73-42-49	Manhasset Bay
A4 *	35	40-52-35	73-44-06	East of Sands Point, mid-channel
A5 *	13	40-53-54	73-41-12	~2.6 nm East of Execution Lighthouse
B1S	15	40-56-42	73-40-00	Porgy Shoal South of Fl G 4 Sec R "40"
B2	20	40-56-06	73-39-12	Matinecock Point 1.6 nm North of Gong "21"
B3M *	19	40-55-12	73-38-42	Matinecock Point 0.7 nm North of Gong "21"
B4	15	40-54-24	73-38-06	Matinecock Point South of Gong "21"
DI1	10	40-53-33	73-46-24	Davids Island North of Nun "10A"
DI2	6	40-53-40	73-46-00	Davids Island East of Nun "4"
H-A3 *	3	40-55-24	73-43-12	Delancy Point South of Can "1"
H-B *	12	40-54-48	73-42-54	0.7 nm Southeast of Daymarker Fl R 4 Sec
H-C	8	40-51-54	73-40-30	Hempstead Harbor East of R Bell "6"
H-C1 *	11	40-53-12	73-41-42	Hempstead Harbor~ 2.0 nm East of Sands Point
H-D	7	40-50-42	73-39-36	Hempstead Harbor East of Can "9"

* In situ measurements of dissolved oxygen, salinity, temperature and water clarity conducted for World Water Monitoring Day, October 18, 2003.

dissolved oxygen (DO); these parameters were measured in situ. Measurements were taken one meter below the surface, at mid-depth, and one meter above the bottom. For stations deeper than 15 meters, measurements were taken at five depths — the two additional depths being one equidistant between the surface and mid-depth samples, and one equidistant between the mid-depth and bottom samples. For the second consecutive year, the measurement of water clarity or Secchi depth was collected. Secchi depth measurements ranged from 0.5 to 2.7 meters. In general, measurements in the embayments were less than 1 meter while open water stations had better clarity with values greater than 2 meters.

Samples for chlorophyll a, an indicator of algal production, were collected one meter below the surface on alternate runs at all stations. These were filtered, archived, frozen and subsequently shipped by overnight mail to the Environmental Research Institute at UCONN that also analyzed the samples collected by NYC DEP and CT DEP; this was done to ensure consistency amongst the agencies. All sampling, sample preservation and analyses were done according to procedures accepted by the US EPA. All field measurements were summarized and forwarded weekly to US EPA - Region 2's LISO, the CT DEP's Bureau of Water Management, the Nassau County Health Department, the NYS DEC Division of Marine Resources, the NYC DEP Marine Sciences Section, EPA's modeling contractor, and to several volunteer monitoring groups. The data are available from the Commission office. The Long Island Sound data, as well as all Commission ambient water quality data, can be retrieved from STORET, the US EPA's national data base.

Dissolved oxygen is a measure of the ecological health of a waterbody. A dissolved oxygen concentration of 5 mg/l is considered to be protective of most aquatic life. According to IEC Water Quality Regulations, a waterbody classified as "Class A", as are all the stations included in this IEC survey, must have a minimum dissolved oxygen content of 5 mg/l at all times. Waters of this type are suitable for primary contact recreation, fish propagation and, in designated areas, shellfish harvesting. During 2001, CT DEP adopted revised DO criteria in some of the Long Island Sound waters in Connecticut. NYS DEC is also addressing this issue in Long Island Sound and other New York waters, but has not yet issued its proposed ambient standard revisions. To date, NJ DEP has not proposed any revisions to their DO criteria in the New Jersey waters of the NY-NJ Harbor Complex, which also encompasses the IED. Since the interstate waters in Connecticut, New York and New Jersey are also IEC waters, whatever is done by IEC's member states in those waters is going to affect IEC and the course of action the Commission might have to take regarding its DO regulations.

A statistical representation of the dissolved oxygen data acquired during the 2003 ambient water quality monitoring in Long Island Sound is shown on the pie chart entitled "2003 Dissolved Oxygen Monitoring". Measurements of dissolved oxygen concentration in both surface and bottom waters are separated and grouped in three categories. Dissolved oxygen concentration values that are less than three mg/l (<3.0 mg/l) reflect hypoxic conditions; under these conditions, very few types of juvenile fish can survive, many adult fishes will avoid or leave the area and those organisms not free to move (sessile) will die. For dissolved oxygen concentration values which are greater than or equal to three mg/l (≥ 3.0 mg/l) and less than five mg/l (<5.0 mg/l), marine resources surviving

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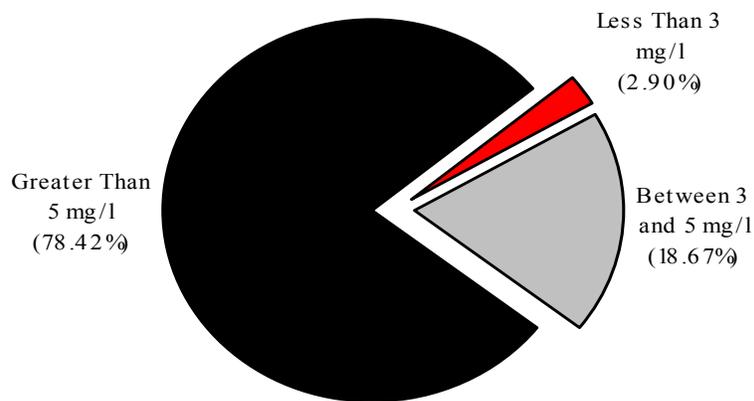
LONG ISLAND SOUND STUDY

2003 DISSOLVED OXYGEN MONITORING

SURFACE AND BOTTOM WATERS

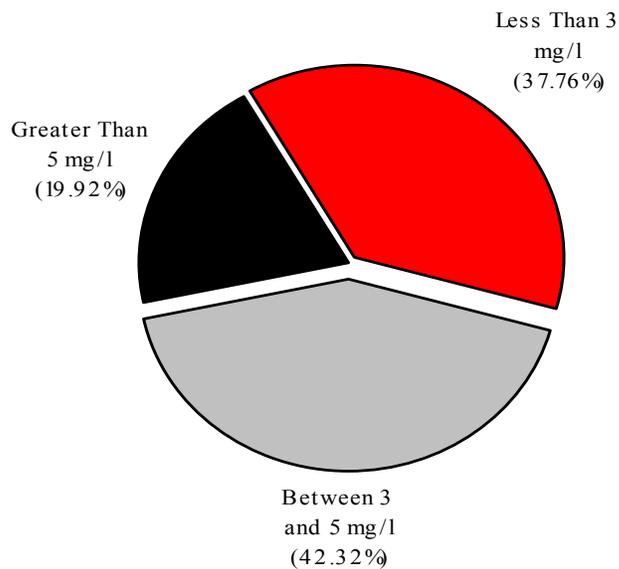
SURFACE WATERS

Range of Dissolved Oxygen Values: 1.6 to 14.0 mg/l



BOTTOM WATERS

Range of Dissolved Oxygen Values: 0.1 to 9.1 mg/l



in this range are at threshold levels for reduced growth and abundance. The impact to marine organisms is dependent on the duration and spatial extent of hypoxia, as well as the water temperature, salinity and the distribution and behavioral patterns of resident species. Dissolved oxygen concentrations of at least five mg/l (5.0 mg/l) are considered to be protective of most aquatic life. While there were hypoxic conditions in the surface waters of the Sound in 1997, there were none in 1998, 1999 or 2000. This summer, 2003, marks the third consecutive year since the 1997 summer season that hypoxic conditions were measured in the surface waters of the Sound; the extent was the least during 2003. For all stations, the surface range of dissolved oxygen was 1.6 to 14.0 mg/l. The waters of western LIS which tend to be stratified, were well mixed, but hypoxic. This surface low was recorded on July 21st; three weeks earlier than the recorded surface low during 2002, and remained below 4 mg/l through early September. Bottom waters ranged from 0.1 to 9.1 mg/l. These extremely low values were recorded all summer long. Interestingly, there were no fish kills; possibly a total avoidance of the hypoxic waters. However, recreational fishing in western Long Island Sound was excellent for fluke, black seabass, bluefish, porgy, striped bass, and weakfish.

The 2003 monitoring season proved to be another unique year. The 2002-2003 winter season was extreme. Strong winds accompanied by heavy rains ended drought emergency measures. Sustained freezing temperatures and nearly 50" of snow in the Metropolitan Area made for challenging ambient monitoring. Heavy ice floes kept fishing fleets in port along the entire eastern seaboard of the United States. Ferry service in the New York-New Jersey Harbor Complex was hampered and/or suspended by ice. After a two-year drought, rainfalls were five inches above average by summer's end.

As shown on the pie charts depicting 2002 and 2003 monitoring data, the condition of the surface waters were about the same for both years. The 2003 surface water results for the categories of *Greater Than 5 mg/l*, *Between 3 and 5 mg/l*, and *Less Than 3 mg/l* are 78.4%, 18.6% and 2.9%, respectively. In the same category order, the results of the 2002 survey were 73.6%, 21.3% and 5.3%, respectively. The weather patterns for 2003 were more harsh than typical: a very cold, wet winter followed by a wet, cool spring season and continued with a wet, humid summer.

Based on the percentage of hypoxic readings, the bottom waters of the Sound in 2003 as compared to 2002 were essentially the same. As displayed in the bottom half of the pie chart entitled "2002 and 2003 Dissolved Oxygen Monitoring," the 2003 bottom water results for the categories of *Greater Than 5 mg/l*, *Between 3 and 5 mg/l* and *Less Than 3 mg/l* are 19.9%, 37.8% and 42.3%, respectively. In the same category order, the bottom water results of the 2002 survey were 24.1%, 32.1% and 43.8. Many different natural and anthropogenic factors (water pollution, municipal water pollution control programs, weather, circulation pattern changes, proliferation or lack of algal blooms, etc.) contribute to hypoxia and year-to-year variability. For 2003, 62% of the values measured in the bottom waters throughout the entire study area met the IEC requirement of 5 mg/l for a "Class A" waterbody.

It is important to know the time period in which hypoxic conditions occur in surface and

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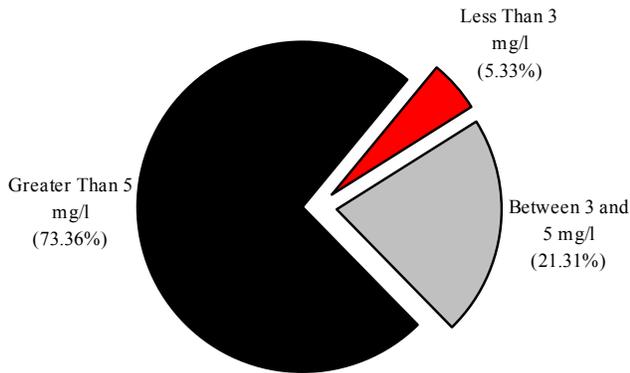
LONG ISLAND SOUND STUDY

2002-2003 DISSOLVED OXYGEN MONITORING

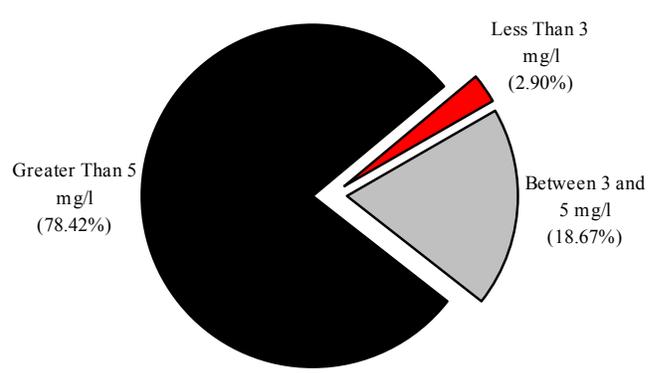
SURFACE AND BOTTOM WATERS

SURFACE WATERS

2002

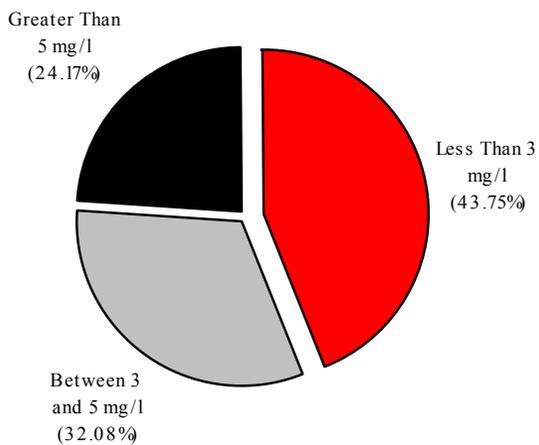


2003

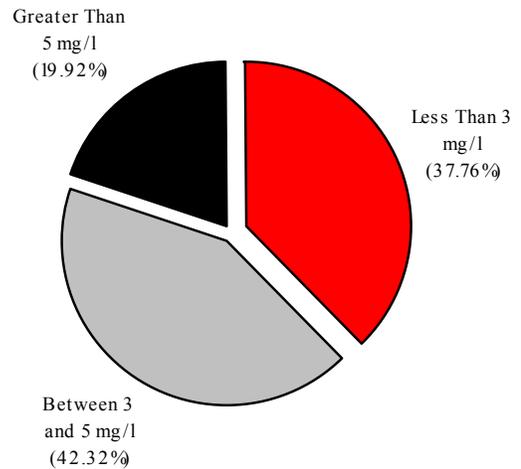


BOTTOM WATERS

2002



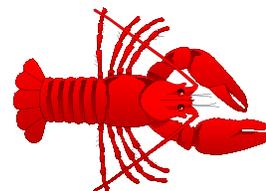
2003



bottom waters. A display of the variation of the average dissolved oxygen concentration at all stations between weekly sampling dates is shown on the graph entitled “Surface and Bottom Waters: Average and Range of All Stations Sampled”. The averages, maximum and minimum values of surface and bottom waters for each run are displayed and represented separately. The graph indicates that hypoxic conditions were observed in surface waters during the 2003 sampling; this is the third year in a row that these conditions were observed in surface waters. Prior to 2001, the last observation by IEC of hypoxic conditions in the surface waters was in 1997. During 2003, hypoxic conditions were also observed in bottom waters throughout the summer season.

The bottom water dissolved oxygen concentration remained low from June 30th to its lowest value of 0.1 mg/l on August 18th and 25th. These values reflect extreme hypoxic conditions. Bottom water DO concentrations rebounded with the high winds associated with an early September nor'easter followed by Hurricane Isabel. During 2003, depressed conditions were observed in Little Neck Bay, Manhasset Bay and Hempstead Harbor. Poor DO concentrations were observed in Little Neck and Manhasset Bays through mid-July and then there were rare incursions below 3 mg/l for the remainder of the summer. The worst conditions were observed in Hempstead Harbor where the bottom values were below 2 mg/l through early September.

A slow recovery of lobster in western Long Island Sound was observed this year. Lobster has been a major cash crop for this area; prior to 1999, it was the third largest producer behind Maine and Massachusetts. Dead lobsters were reported in traps in late November 1998 and by late August 1999, catches in western Long Island Sound were nearly zero. The 2003 commercial and recreational harvest in the western and central portions of the Sound started to recover, especially compared to 2000 when the dockside landings were almost nonexistent. Although a parameoba may be one cause of lobster mortality, there are other contributing stress factors including, but not limited to, climate, water temperature, hypoxia, predation and commercial fishing impacts. In July 2000, Congress approved an emergency appropriation of \$13.9 million for economic assistance. Of this amount, \$7.3 million was authorized for financial assistance to fishers, and \$6.6 million was authorized for the National Oceanic and Atmospheric Administration, to be administered by the National Marine Fisheries Service, New York and Connecticut Sea Grant. Additional funds were made available, including \$1 million from the Connecticut Bond Commission; the New York State Legislature provided funds to establish a Long Island Marine Disease and Pathology Research Consortium; \$250,000 to the Atlantic States Marine Fisheries Commission; \$125,000 EPA Regional Applied Research Effort grant; EPA Coastal 2000 grants of \$300,000 each to New York and Connecticut for chemical, physical and biological monitoring; and \$100,000 to the University of Connecticut from LISS to assess the health of lobsters.



Ambient Water Quality Cooperative Studies

For the fifth consecutive year, during each of IEC's 12 weekly Long Island Sound sampling surveys, additional water quality samples were collected, preserved and kept on ice until transferred

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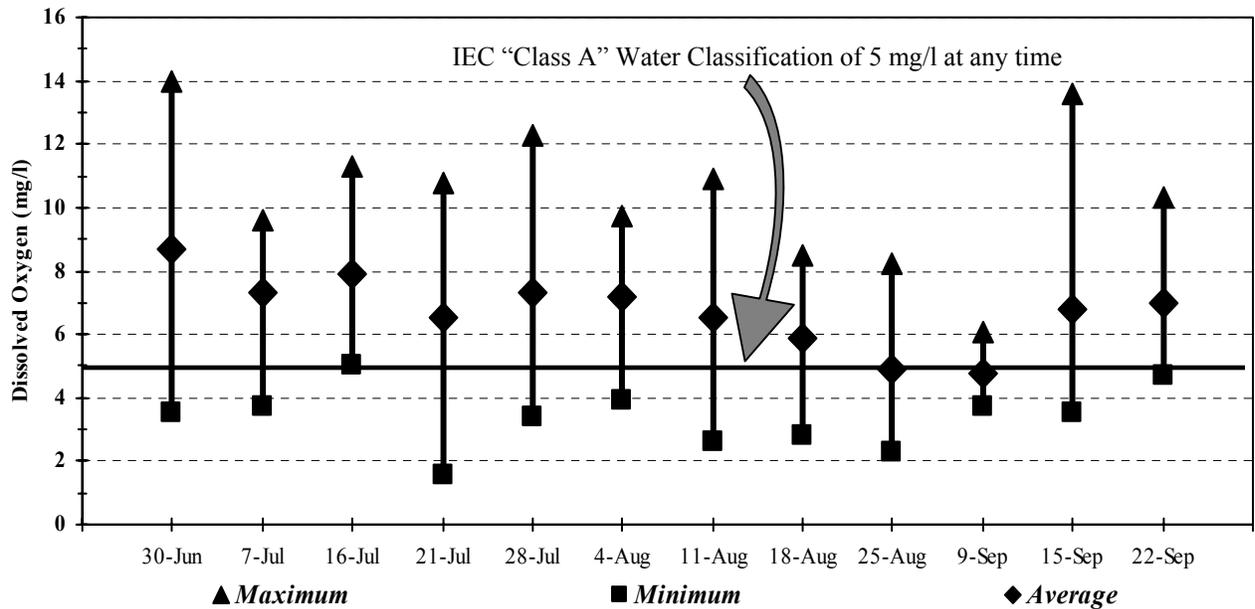
LONG ISLAND SOUND STUDY

2003 DISSOLVED OXYGEN MONITORING

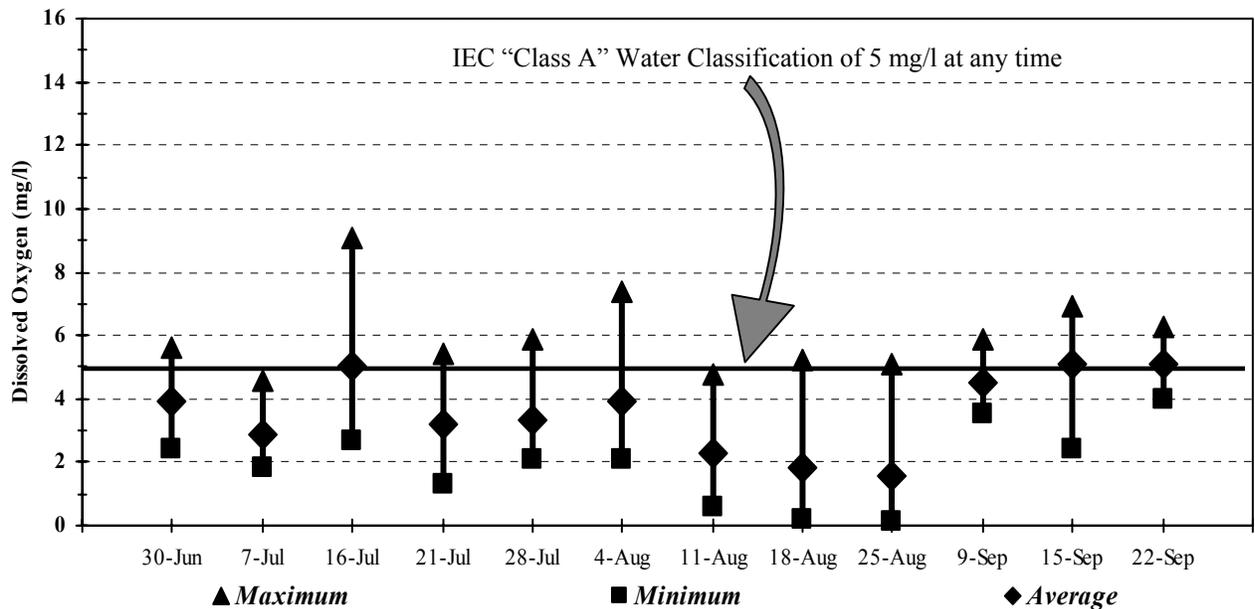
SURFACE AND BOTTOM WATERS:

AVERAGE AND RANGE OF ALL STATIONS SAMPLED

SURFACE WATERS



BOTTOM WATERS



to the IEC lab. Under a 2003 agreement between CT DEP and US EPA's Long Island Sound Office, the analysis of the phytoplankton samples is being conducted by the University of Connecticut. During 2003, the UCONN contractor supplied all sample bottles and preservatives to IEC. The sample transfer by Chain of Custody procedures to UCONN was completed during September. Analyses to determine phytoplankton species — dominant, most prevalent and nuisance species — is ongoing. Preliminary results show that the phytoplankton community is mainly comprised of flagellates, diatoms and several dinoflagellate species. The flagellates and an unknown small centric diatom were most abundant. The water quality samples were collected at one established station in each of the three western Long Island Sound embayments: Little Neck Bay, Manhasset Bay and Hempstead Harbor.

Pfiesteria piscicida is a toxic dinoflagellate that has been associated with fish lesions and fish kills in coastal waters from Delaware to North Carolina. Dinoflagellates are a natural part of the marine environment; they are microscopic, free swimming, single-celled organisms, usually classified as a type of alga. The most abundant organisms included in the phytoplankton are diatoms, dinoflagellates and coccolithophores. The vast majority of dinoflagellates are not toxic. Although many dinoflagellates are plant-like, others are more animal-like and acquire some or all of their energy by eating other organisms.

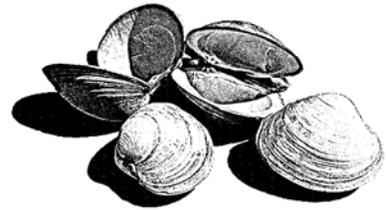
Discovered in 1988 by researchers at the University of North Carolina, *Pfiesteria* has a highly complex life cycle with 24 reported forms, a few of which can produce toxins. During 1998, a new DNA-probe technique for the detection of *Pfiesteria* was performed on water quality samples from coastal waters in a number of Atlantic states; *Pfiesteria* was identified in Suffolk County, New York. Current advice from scientists suggest that conditions in the Metropolitan Area are not favorable to toxic outbreaks in which water temperatures are rarely above 80⁰ F with salinity below 15⁰/₀₀.

In conjunction with the UCONN's department of Marine Sciences at Avery Point, Connecticut, IEC entered into a two-year cooperative water quality collection program. The main objectives include the development of gene probes for specifically identifying and quantifying *Pfiesteria piscicida* and *Pfiesteria shumwayae*. A sampling schedule and protocol of sample collection and preservation was supplied to the Commission. Aboard the R/V *Natale Colosi*, bi-weekly samples were collected during the summer and early fall seasons, and bi-monthly samples in late fall and winter. Water quality samples were collected from two meters below the surface at two East River stations, A1 and A2M, and kept at 4⁰ C in darkness until transferred to UCONN. All bottles and preservatives are supplied by UCONN. While on station, additional water quality measurements were made including dissolved oxygen, salinity and temperature, as well as observations of ambient weather and sea conditions. Samples were collected and shipped overnight for the period September 2002 through August 2003. No *Pfiesteria piscicida* cells were detected during the winter and early spring. Low cell numbers were detected three times at station A2M and twice at A1 during the late spring and summer. These low level detections are being re-examined using different methods of verification.

2002-2003 Microbiological Surveys in the Shellfish Harvesting Waters of Western Raritan Bay

The New Jersey Department of Environmental Protection, Bureau of Marine Water Classification and Analysis (BMWCA), regularly conducts ambient water quality monitoring of the State's shellfish harvesting beds. In order to meet the increasing demands for sampling that the shellfish industry has requested, accompanied by a shortfall in staffing, the BMWCA requested the IEC, for the eighth consecutive year, to assist in sample collection in western Raritan Bay during the 2002-2003 winter and spring seasons.

Following the criteria established by the US Food and Drug Administration's National Shellfish Sanitation Program, sampling runs were planned for the purpose of collecting the data needed to assess the microbiological quality of the shellfish waters. The surveys were triggered by storm events with an intensity of at least 0.2 inches of rain. A window of 48-hours subsequent to the rain gave ample time to document the effects of the runoff. All samples were collected from surface waters at 18 sampling stations. A map and a listing of the sampling stations are on the following pages. In conjunction with the New Jersey Department of Environmental Protection/US EPA Performance Partnership Agreement, all samples were transported by IEC field personnel to the US EPA's Edison, New Jersey, laboratory for analysis of fecal and total coliform bacteria.



Due to the extreme winter conditions of 2002-2003, the R/V Natale Colosi was frozen in port as was the entire eastern seaboard of the United States. One survey run was completed on April 24, 2003. All sample collection, storage and delivery to the US EPA Edison laboratory adhered to chain of custody procedures and followed standard operating methods as outlined in the NJ DEP Field Sampling Procedures Manual. The Commission, at the request of BMWCA, will again conduct this survey over the 2003-2004 winter and spring seasons.

Emergency Monitoring in Raritan and Sandy Hook Bays Due to Infrastructure Failure

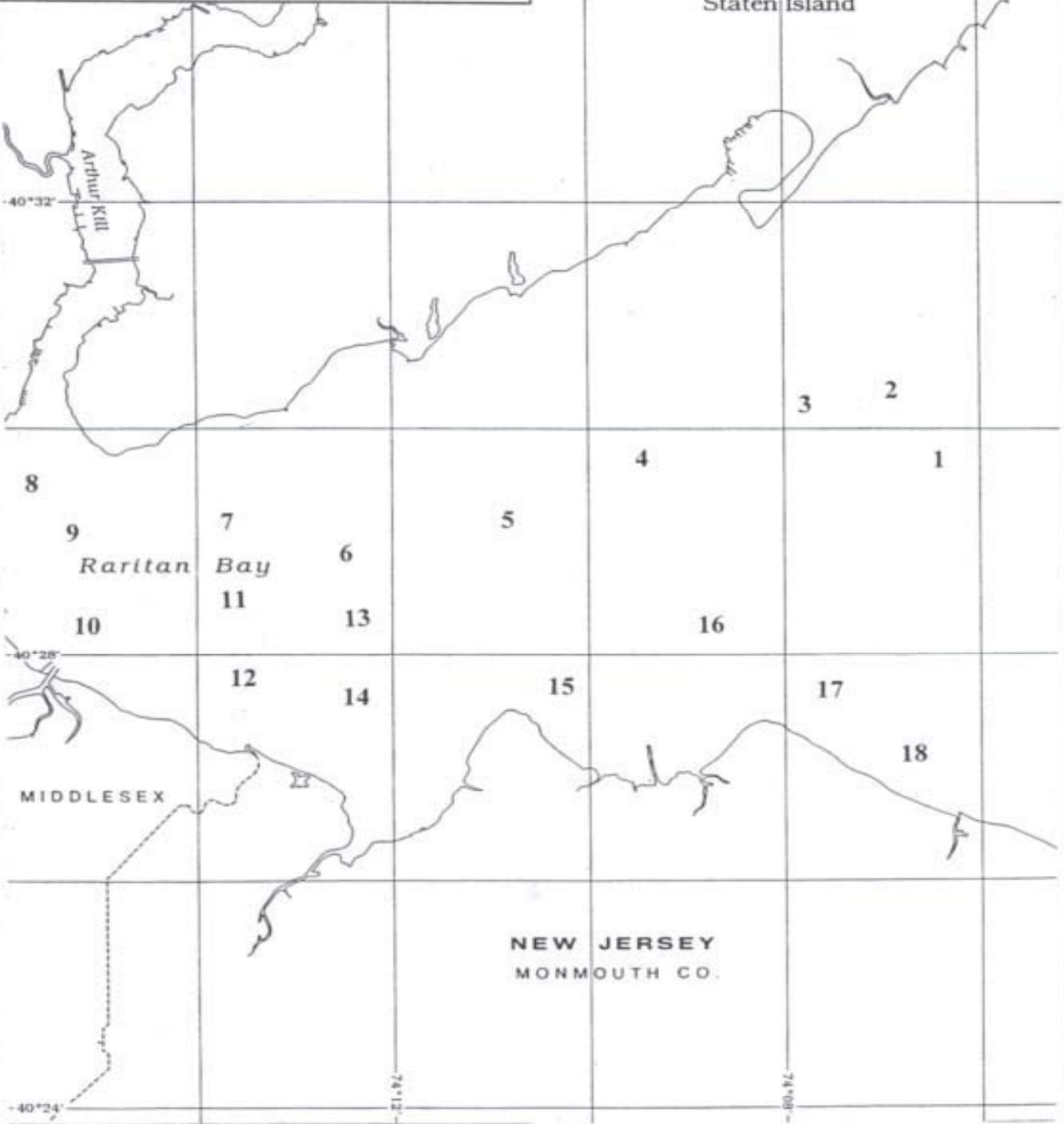
On March 2, 2003, a 108-inch diameter (108"Ø) force main which conveys sewage to the Middlesex County Utilities Authority's regional plant ruptured in Sayreville, New Jersey. For the nine-day period ending March 11th when the pipe repairs were completed, a total of 570 MG was bypassed into the Raritan River. The total volume was greatly reduced because a portion of the flow was transferred to a parallel 72-inch diameter (72"Ø) pipe. All shellfish harvest beds were closed in Raritan and Sandy Hook Bays of New Jersey and as an emergency precaution, beds were closed as far east as Nassau County, New York. The tables on the following page details the 29 stations where samples were collected by the Commission on March 22nd for the subsequent analysis of fecal and total coliforms. NJ DEP staff met the IEC personnel for sample transfer at the Leonardo State Marina in Leonardo, New Jersey. The 14,800 acres of New York shellfish harvest waters in the Atlantic Ocean were reopened on March 18th. The New Jersey shellfish beds were reopened on April 17, 2003.

**INTERSTATE ENVIRONMENTAL
COMMISSION**

2002-2003 SAMPLING STATIONS FOR
MICROBIOLOGICAL SURVEYS IN THE
SHELLFISH HARVESTING WATERS OF
WESTERN RARITAN BAY

**NEW YORK
RICHMOND CO**

Staten Island



INTERSTATE ENVIRONMENTAL COMMISSION

2002-2003 AMBIENT WATER QUALITY MONITORING
STATION LOCATIONS
IN THE NEW JERSEY STATE
SHELLFISH WATERS OF WESTERN RARITAN BAY

SAMPLE No./ IEC WP	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1/67	50	40-28-40	74-06-42	~0.7 nm south of Can "9"
2/68	10	40-29-23	74-06-58	~0.5 nm west of Can "9"
3/69	29A	40-28-58	74-08-09	~0.5 nm west of Buoy "I"
4/70	28	40-28-45	74-09-23	~1.8 nm north of Union Beach
5/71	26A	40-28-30	74-10-38	~1.1 nm north of Conaskonk Point
6/72	24A	40-28-20	74-11-50	~1.25 nm north of Buoy "7"
7/73	18	40-28-33	74-13-26	~1.0 nm east of Ward Point Daymarker
8/74	20A	40-28-53	74-14-53	~0.4 nm south of Ward Point Daymarker
9/75	20	40-28-20	74-14-45	Cheesequake Creek
10/76	21	40-27-54	74-14-38	Cheesequake Creek
11/77	23	40-28-02	74-13-18	Seidler Beach
12/78	58	40-27-35	74-13-09	Seidler Beach
13/79	56	40-27-56	74-11-41	Keyport Harbor
14/27	61A	40-27-23	74-11-33	Keyport Harbor
15/28	62	40-27-35	74-10-23	Conaskonk Point
16/29	63B	40-27-46	74-09-05	Keansburg
17/30	86A	40-27-28	74-07-42	Point Comfort
18/31	88A	40-27-10	74-06-15	Ideal Beach

INTERSTATE ENVIRONMENTAL COMMISSION

**2003 EMERGENCY MONITORING SAMPLING STATIONS
IN WESTERN RARITAN AND SANDY HOOK BAYS
DUE TO INFRASTRUCTURE FAILURE**

DATE SAMPLED	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
08-22-03	50	40-28-40	74-06-42	~0.7 nm south of Can "9"
08-22-03	10	40-29-23	74-06-58	~0.5 nm west of Can "9"
08-22-03	29A	40-28-58	74-08-09	~0.5 nm west of Buoy "I"
08-22-03	28	40-28-45	74-09-23	~1.8 nm north of Union Beach
08-22-03	26A	40-28-30	74-10-38	~1.1 nm north of Conaskonk Point
08-22-03	24A	40-28-20	74-11-50	~1.25 nm north of Buoy "7"
08-22-03	56	40-27-56	74-11-41	Keyport Harbor
08-22-03	63B	40-27-46	74-09-05	Keansburg
03-22-03 08-22-03	88A	40-27-10	74-06-15	Ideal Beach
03-22-03 08-22-03	910A	40-25-32	74-01-48	~ 0.3 nm N of Atlantic Highlands Day marker
03-22-03 08-22-03	912	40-25-58	74-02-26	~ 0.9 nm N of Atlantic Highlands Day marker
03-22-03 08-22-03	918	40-27-41	74-02-38	~ 0.6 nm NNE of Earle NWS (east pier head)
03-22-03 08-22-03	49A	40-28-55	74-05-27	~ 2.65 nm N of Port Monmouth
03-22-03 08-22-03	33A	40-29-24	74-05-37	Raritan Bay
03-22-03 08-22-03	7	40-29-58	74-04-48	Raritan Bay
03-22-03 08-22-03	5	40-30-11	74-30-34	Raritan Bay
03-22-03 08-22-03	38	40-29-58	74-02-10	~ 1.85 nm NNW of Sandy Hook Point

INTERSTATE ENVIRONMENTAL COMMISSION

2003 EMERGENCY MONITORING SAMPLING STATIONS
IN WESTERN RARITAN AND SANDY HOOK BAYS
DUE TO INFRASTRUCTURE FAILURE
(CONTINUED)

03-22-03 08-22-03	43	40-29-26	74-02-00	~ 1.3 nm NNW of Sandy Hook Point
03-22-03 08-22-03	73	40-28-56	74-01-50	~ 0.9 nm NNW of Sandy Hook Point
03-22-03 08-22-03	78	40-28-25	74-01-43	~ 800 yards NNW of Sandy Hook Point
03-22-03 08-22-03	93A	40-27-55	74-01-33	~ 800 yards SSW of Sandy Hook Point
03-22-03 08-22-03	914D	40-27-35	74-01-14	~0.7 nm W of Sandy Hook
03-22-03 08-22-03	906B	40-25-40	74-00-06	Spermacetti Cove
03-22-03 08-22-03	906A	40-25-15	74-00-18	~ 0.8 nm E of Atlantic Highlands Day marker
03-22-03 08-22-03	907	40-25-06	74-00-44	~ 0.4 nm E of Atlantic Highlands Day marker
03-22-03 08-22-03	908	40-25-10	74-01-15	Atlantic Highlands Day marker
08-22-03	69	40-28-40	74-03-44	Flynn's Knoll
03-22-03	911A	40-25-06	74-02-18	Sandy Hook Bay
03-22-03	911	40-25-13	74-02-53	Sandy Hook Bay
03-22-03	914	40-25-59	74-02-48	~0.9 nm N of Leonardo
03-22-03	916C	40-24-49	74-03-21	Leonardo State Marina
03-22-03	916D	40-26-37	74-02-48	White/Orange "C" Can
03-22-03	97A	40-27-04	74-02-29	~800 yards E of Earle NWS
03-22-03	98A	40-27-00	74-03-53	White/Orange "D" Can
03-22-03	98	40-26-14	74-04-23	Raritan Bay
03-22-03	97B	40-26-53	74-04-51	Raritan Bay
03-22-03	36	40-29-45	74-03-21	~0.9nm N of Port Monmouth
03-22-03	910E	40-27-28	74-00-27	Raritan Bay

The Raritan Bay waters off the eastern shore of Staten Island, New York, represents nearly 45% of New York State's hard clam industry. During 2002, a shortened shellfish season limited the harvest to 48,102 bushels from these waters. The economic hardship of the shortened season was compounded on March 13, 2003, when the NYS DEC, Marine Resource Division, closed the harvest for 2003 due to quahog parasite unknown (QPX). QPX is a protozoan parasite (slime mold) that infects the soft tissue of the clam. This parasite is not harmful to humans, does not represent a public health threat, but is fatal to hard clams. In order to eliminate the spread of the parasite, the transfer program to cleaner, eastern waters of the District was stopped as a precautionary measure. There is no known treatment or cure for QPX.

On August 14, 2003, there was a major blackout that resulted in the bypassing of 507 MG of raw sewage into IEC's District waters. As soon as the Commission learned of the emergency, IEC offered its services to the appropriate federal, state and local agencies. The majority of the flows originated from New York City (490 MG) and impacted the East and Hudson Rivers, Lower and Upper New York Harbor and Raritan and Sandy Hook Bays. The New Jersey bypass into the Upper New York Harbor amounted to 2 MG. All NYC and NPS beaches were closed on August 15th and reopened on August 20th; no New Jersey beaches were impacted. The New Jersey shellfish harvest waters in Raritan and Sandy Hook Bays were closed on August 17th. In response to a request from the BMWCA of NJ DEP, the IEC collected water quality samples at 26 stations in the bays on August 22nd and delivered the samples to US EPA in Edison, New Jersey, for analysis. A list of the sample stations are on the aforementioned emergency response tables of station descriptions. The shellfish beds were reopened on September 4, 2003. IEC became the focal point of gathering blackout information from all the other agencies (state, county and local) on closures, bypasses, etc. This information was sent out to everybody in the region so everyone was kept abreast of what was going on, not only in their area, but throughout the region.

2003 Ambient Water Quality Monitoring for Pathogens in the New York-New Jersey Harbor Complex

This sampling was conducted at the request of the US Environmental Protection Agency (EPA) - Region 2, in support of the Harbor Estuary Program's (HEP) Pathogens Workgroup. The pathogens of concern are fecal and total coliform and enterococcus. This sampling was performed as a continuation of the 2001-2002 ambient water quality monitoring program. The results were supplied and presented to contract modelers and the members of the Pathogens Workgroup for refinement of the water quality model for pathogen predictions. Subsequently, this unique data base will be used for the development of total maximum daily loads (TMDLs). In addition, the data will be used to further calibrate and verify the model.

Due to the drought-like conditions of 2001 and 2002, the majority of the data was collected under dry weather conditions. At the request of the HEP Pathogens Workgroup and the modeler, IEC adjusted the project plan and conducted seven survey runs under wet weather conditions. The ambient water quality monitoring was reactive — that is, all sampling was conducted within 48 hours of a wet weather event of at least 0.25 inches as recorded at Central Park, New York. The

survey runs were completed between October 17, 2002 and June 6, 2003.

The sampling network consists of 42 stations throughout the New York-New Jersey Harbor Complex. During 2003, four additional stations were added to the Hudson River run for a network total of 46. These extra stations form two east-west transects across the river in order to determine and verify that mid-river sampling is representative of both States. The sampling stations are those recommended by the HEP modeling contractor. There is an historic data base at these established stations. To better represent the interstate characteristics of the waterways, a subset of the NYC DEP Harbor Survey stations have been moved to mid-river. In order to comply with required holding times for pathogen collection and initial laboratory inoculation, the Complex has been divided into four geographical collection areas: East River, Hudson River and Upper New York Harbor, Arthur Kill/Kill Van Kull and tributaries (Elizabeth River, Rahway River and Raritan River), and Raritan and Sandy Hook Bays. The map on the following page shows the sampling network and the four accompanying tables detail the station locations and descriptions. The station locations were supplied to the Commission by NYC DEP and NJ DEP's Bureau of Marine Water Classification and Analysis.

Samples for fecal and total coliforms, fecal streptococcus and enterococcus were taken at all stations. In addition, temperature and salinity measurements were made in situ. IEC field personnel conducted all sample collection and performed all in situ measurements aboard contract vessels. As recommended by the HEP modeling contractor, the water samples were collected from a depth of three feet, or one meter, below the surface of the water. This sample depth is comparable with previously collected data.

All samples were preserved on ice and delivered to the IEC laboratory where the bacteriological analyses were conducted. Fecal and total coliform, as well as enterococcus analyses were performed according to the multiple tube fermentation technique to yield results in terms of the Most Probable Number (MPN). In order to attain the range of values requested by the HEP modeling contractor, analyses were performed using a 3-tube, 4-dilution test, which yielded the range of values required (MPN values from <3 to >24,000).

To further characterize the enterococcus values, this parameter was also measured by IEC at discharges from municipal treatment facilities as part of the Commission's municipal compliance effluent sampling program. For the period December 2002 through June 2003, 21 analyses were performed on municipal discharges located throughout the District in all three member States.

To address an additional data gap of pathogens data, the HEP Pathogens Workgroup requested additional water quality monitoring in the Newark Bay Complex consisting of Newark Bay, the Passaic River and the Hackensack River. It was determined that 15 sampling stations were needed: three in Newark Bay, and six each in the Passaic and Hackensack Rivers. A map and table listing the station locations and descriptions are on the following pages. These runs presented the unique challenge of sampling on tributaries with limited access, i.e., fixed and swing bridges with minimal vertical clearance in an urban and suburban setting. The tributaries, although navigable,

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2003 SAMPLING STATION LOCATIONS
AMBIENT WATER QUALITY MONITORING FOR PATHOGENS
IN THE
NEW YORK-NEW JERSEY HARBOR COMPLEX

EAST RIVER

SAMPLE No.	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1	E-1	40-42-01	74-00-11	PIER 10: Mid river on a line between Pier 10, Manhattan and Pier 3, Brooklyn
2	E-2	40-44-03	73-58-04	EAST 23 RD STREET: Mid river off E. 23 rd Street, Manhattan
3	E-3	40-44-51	73-57-58	EAST 42 ND STREET: Mid river off E. 42 nd Street, Manhattan
4	E-4	40-46-57	73-55-19	HELL GATE: Mid river under Conrail Railroad Bridge
5	E-5	40-48-03	73-51-10	BARRETTO POINT: Mid river on a line between Barretto Point to the dock on Rikers Island
6	E-6	40-47-08	73-51-39	FLUSHING BAY: Mid river west of the College Point ferry slip
7	E-14	40-48-03	73-51-52	BRONX RIVER: Main channel near buoy "N2"
8	E-13	40-48-22	73-50-28	Westchester Creek: Main channel near buoy "N2"
9	E-7	40-48-18	73-49-14	WHITESTONE: Mid river on a line from Whitestone Point and the Bronx shore
10	E-8	40-47-58	73-47-13	THROGS NECK: Midway between the two forts

INTERSTATE ENVIRONMENTAL COMMISSION

2003 SAMPLING STATION LOCATIONS AMBIENT WATER QUALITY MONITORING FOR PATHOGENS IN THE NEW YORK-NEW JERSEY HARBOR COMPLEX HUDSON RIVER

SAMPLE No.	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1	N-1	40-54-52	73-54-58	MT. ST VINCENT: Mid river on a line from New York shore at Mt. St. Vincent Academy to the New Jersey shore.
2	N-2	40-52-46	73-55-49	SPUYTEN DUYVIL: Mid river on a line from the center pier of the Conrail Bridge over Spuyten Duyvil Creek to the New Jersey shore.
3	N-3	40-50-11	73-57-31	155 th STREET: Mid river on a line from the Manhattan shore at West 155 th Street to the New Jersey shore.
4	N-3B	40-49-15	73-58-17	125 th STREET: Mid river on a line from the Manhattan shore at West 125 th Street to the New Jersey shore.
5	N-3B-E	40-49-15	73-58-05	125 th STREET: Transect station east of N-3B
6	N-3B-W	40-49-15	73-58-19	125 th STREET: Transect station west of N-3B
7	N-3A	40-47-00	73-59-40	72 nd STREET: Mid river on a line from the Manhattan shore at West 72 nd Street to the New Jersey shore.
8	N-4	40-45-22	74-00-30	42 nd STREET: Mid river on a line from the Manhattan shore at West 42 nd Street to the New Jersey shore.
9	N-4-E	40-45-22	74-00-14	42 nd STREET: Transect station east of N-4
10	N-4-W	40-45-22	74-00-47	42 nd STREET: Transect station west of N-4
11	N-5	40-42-16	74-01-36	PIER A-THE BATTERY: Mid river on a line from the Manhattan shore to the Conrail Terminal on the New Jersey shore.
12	N-6	40-39-54	74-03-10	BELL BUOY "1G"- Gong buoy "27"
13	N-7	40-38-38	74-03-14	ROBBINS REEF: Channel buoy "24"; ~1900 yards SE of Robbins Reef
14	N-8	40-36-22	74-02-44	VERRAZANO NARROWS: Midspan under the Verrazano Narrows Bridge

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2003 SAMPLING STATION LOCATIONS AMBIENT WATER QUALITY MONITORING FOR PATHOGENS IN THE NEW YORK-NEW JERSEY HARBOR COMPLEX

THE KILLS

SAMPLE No.	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1	K-5A	40-29-04	74-14-45	RARITAN RIVER: Fl Buoy "5"; ~800 yards NE of Middlesex County outfall.
2	RR-1	40-29-30	74-16-00	Mouth of the Raritan River.
3	RR-2	40-29-30	74-16-30	~1.0 nm upstream from mouth of Raritan River.
4	K-5	40-30-22	74-15-32	TOTTENVILLE: Midstream at the former Tottenville ferry slip at Perth Amboy.
5	RAH-1	40-35-36	74-12-30	Mouth of the Rahway River.
6	RAH-2	40-36-19	74-13-09	~1.0 nm upstream from mouth of the Rahway River.
7	K-4	40-34-01	74-12-42	FRESH KILLS: Midstream at the US Metals Refining dock in New Jersey to the middle of the southerly mouth of Fresh Kills.
8	K-3	40-38-15	74-11-45	B&O RAILROAD BRIDGE: Midstream under the B&O Railroad Bridge.
9	ER-1	40-38-36	74-11-30	Mouth of the Elizabeth River.
10	ER-2	40-38-36	74-12-03	~1.0 nm upstream from mouth of the Elizabeth River.
11	K-2	40-38-26	74-09-30	SHOOTERS ISLAND: Midstream at the former ferry slip pilings on Shooters Island to the Staten Island shore.
12	K-1	40-39-04	74-04-55	B&O COAL DOCK: Midstream at the former B&O coal dock pilings, New Brighton to the New Jersey shore.

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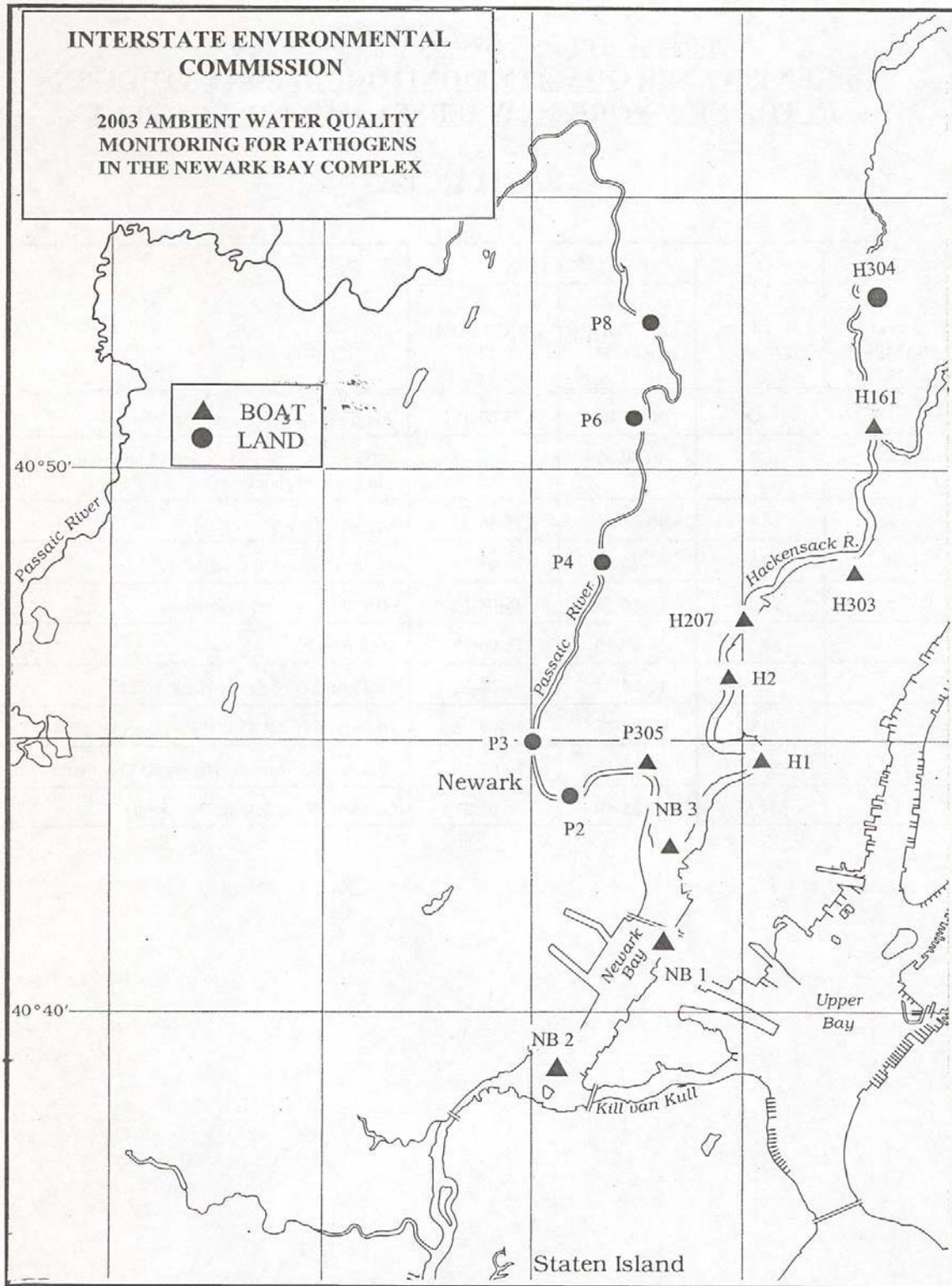
2003 SAMPLING STATION LOCATIONS
AMBIENT WATER QUALITY MONITORING FOR PATHOGENS
IN THE NEW YORK-NEW JERSEY HARBOR COMPLEX

RARITAN BAY

SAMPLE No.	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1	N-8A	40-35-06	74-03-18	South Beach: ~1200 yards offshore
2	K-6	40-30-37	74-06-03	~200 yards from Old Orchard Light in line with Old Orchard shoal
3	24A	40-28-20	74-11-52	Keyport Harbor
4	29A	40-28-58	74-08-11	~1.2nm n of Point Comfort
5	97B	40-26-53	74-04-51	~0.9 nm N of Port Monmouth
6	88A	40-27-10	74-06-17	Ideal Beach
7	47	40-29-05	74-04-31	~2.7 nm NW of Sandy Hook Point
8	918	40-27-41	74-02-38	~0.6nm NNE EARLE NWS (east pier head)
9	906A	40-25-15	74-00-18	~0.8 nm E of Atlantic Highlands Day marker
10	916A	40-25-49	74-03-21	Leonardo State Marina breakwater

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COMMISSION

2003 AMBIENT WATER QUALITY
MONITORING FOR PATHOGENS
IN THE NEWARK BAY COMPLEX



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2003 SAMPLING STATION LOCATIONS
AMBIENT WATER QUALITY MONITORING FOR PATHOGENS
IN THE NEWARK BAY COMPLEX

ACCESS	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
BOAT	NB-1	40-39-24	74-08-49	Newark Bay - Mid-channel of Outer Reach and S. Elizabeth Channel
BOAT	NB-2	40-41-38	74-07-20	Newark Bay - North Reach at Daymarker 22
BOAT	NB-3	40-42-22	74-07-15	Newark Bay -Turning basin south of Q Fl Daymarker
BOAT	P305	40-44-24	74-07-19	Passaic River -Harrison Reach swing bridge
LAND	P2	40-44-02	74-09-34	Passaic River -Jackson Street Bridge
LAND	P3	40-45-04	74-09-55	Passaic River - Clay Street
LAND	P4	40-47-10	74-08-50	Passaic River - Rutgers Street
LAND	P6	40-50-23	74-07-28	Passaic River - Union Avenue
LAND	P8	40-52-46	74-07-14	Passaic River - Dundee Dam
BOAT	H1	40-43-10	74-06-10	Hackensack River - Droyer's Point Reach, ~0.4 nm south of lift bridge
BOAT	H2	40-44-01	74-04-55	Hackensack River - Marion Reach, north of lift bridge
BOAT	H207	40-47-16	74-05-04	Hackensack River - Berry's Creek
BOAT	H303	40-48-33	74-02-30	Hackensack River - Cromakill Creek
BOAT	H161	40-50-48	74-01-55	Hackensack River - Overpeck Creek
LAND	H304	40-53-28	74-02-12	Hackensack River - Anderson Street fixed bridge

have extensive shoal areas. After a reconnaissance field trip with assistance from Passaic Valley Sewerage Commissioners' staff, IEC established a monitoring plan that consisted of six land-based sampling stations and nine ambient mid-stream stations. From August 11th to September 22, 2003, IEC field staff performed a total of six survey runs. The ambient water quality monitoring was reactive when feasible — that is, all sampling was scheduled, but adjusted to respond within 48 hours of a wet weather event of at least 0.25 inches as measured at Newark Liberty International Airport, New Jersey. During these surveys, three wet weather events were sampled. All analyses were performed by the IEC laboratory for the same aforementioned pathogens as were for the New York Harbor Complex.



JACKSON STREET BRIDGE
PASSAIC RIVER
Photo by C. Nichols, IEC

World Water Monitoring Day

Inspired by the success of the first National Water Monitoring Day in the United States in 2002, America's Clean Water Foundation and the International Water Association coordinated the first global monitoring event. During 2002, 75,000 volunteers participated in monitoring over 5,100 sites nationwide including the District of Columbia and Puerto Rico. To promote water quality awareness around the globe, World Water Monitoring Day was held on October 18, 2003, with sampling to take place between September 18th and October 18th. In 2002, IEC participated in the first National Water Monitoring Day

The IEC joined thousands of volunteers to sample the water quality and report their results. While comprehensive monitoring goes on throughout the year, IEC conducted in situ testing of water quality parameters at nine sites in the upper East River and western Long Island Sound, covering a distance of about 29 nautical miles aboard the R/V Natale Colosi. These are the same sites monitored by IEC in 2002 during National Water Monitoring Day. The ambient water quality stations represent a subset of the LISS sampling network (see the 2003 LISS Sampling Stations for specific locations). In addition to meteorological and tidal conditions, parameters collected include dissolved oxygen, salinity, temperature, and water clarity. All IEC data has been submitted to the World Water Monitoring Day website, www.worldwatermonitoringday.org



IEC RESEARCH VESSEL
R/V NATALE COLOSI
Photo by P. Sattler, IEC

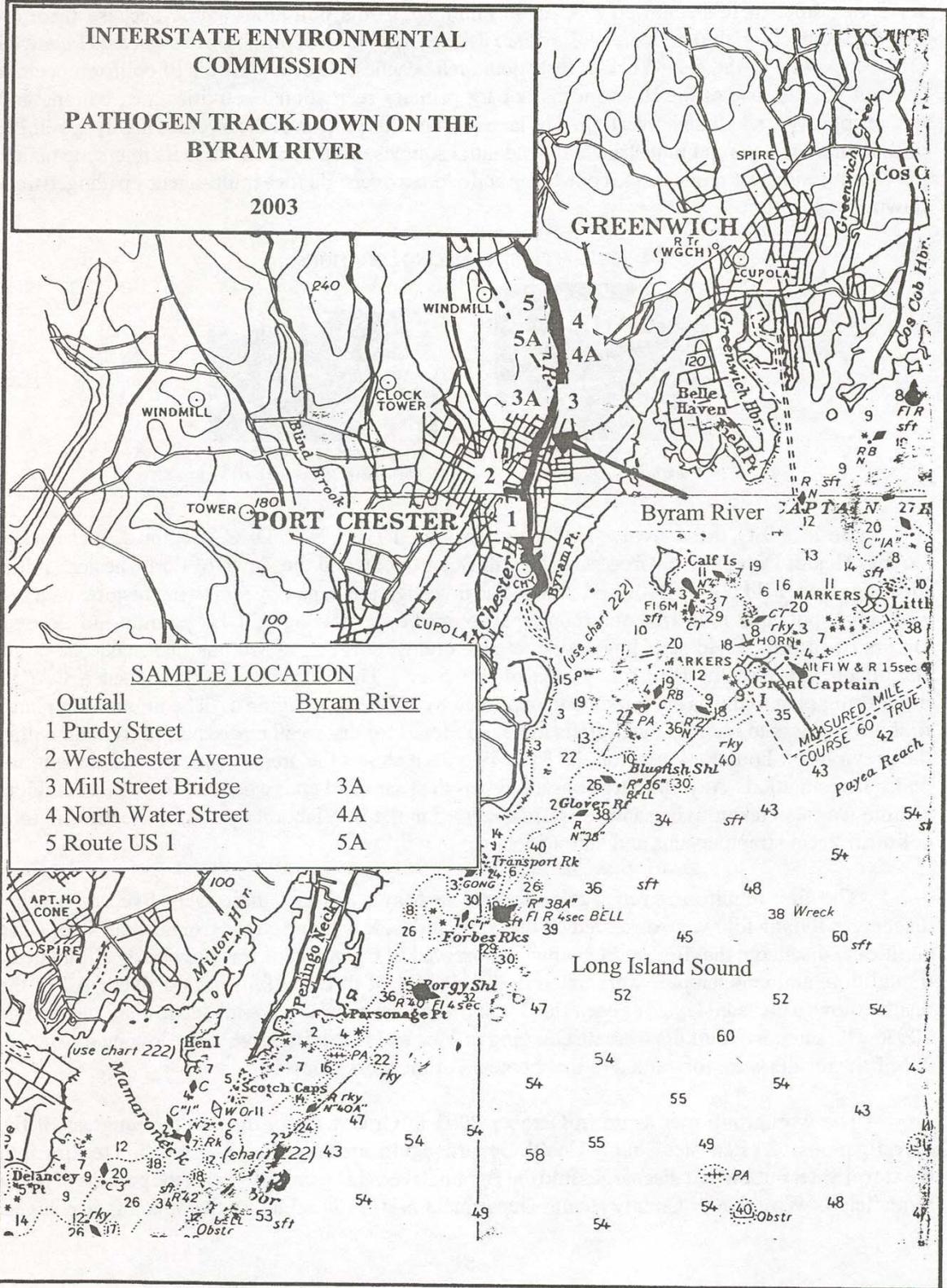
Pathogen Track Down on the Byram River

The Byram River is an interstate waterway about 13 miles long. It runs south between New York and Connecticut, with Port Chester, Westchester County on the west bank and Greenwich, Fairfield County on the east. The river mouth empties into Port Chester Harbor and has a confluence with Long Island Sound. While a bacterial contamination problem in the Byram River has existed

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COMMISSION

PATHOGEN TRACK DOWN ON THE
BYRAM RIVER

2003



SAMPLE LOCATION

Outfall	Byram River
1 Purdy Street	
2 Westchester Avenue	
3 Mill Street Bridge	3A
4 North Water Street	4A
5 Route US 1	5A

for some time, there's renewed interest in eliminating this pollution source because there are negative impacts on the shellfish beds that are used for recreational purposes in adjacent Greenwich Harbor, as well as the New York-Connecticut area beaches. Elevated levels of coliform bacteria prevent the safe use of the river and harbor for primary recreational activities, i.e., bathing and, where approved, shellfish harvesting. The areas around this portion of the river are highly developed with numerous potential industrial and residential sources of bacteria. Due to its interstate nature, the Commission was requested to coordinate and address oversight for a multi-agency pathogen track down investigation.

BYRAM RIVER SAMPLING LOCATIONS



NORTH WATER STREET

Photo by W. McCormack, IEC



WESTCHESTER AVENUE

Photo by W. McCormack, IEC

Besides IEC, those involved in the project are CT DEP, NYS DEC - Region 3, Westchester County Health Department, Greenwich Health Department, and the Town of Port Chester. Initial meetings were held during 2002 and 2003. The investigation began by reviewing historic data and examining potential industrial and municipal sources by reviewing NPDES permits and Consent Orders of record. Field staff have conducted shoreline surveys, as well as inspected one pump station on the Westchester County side of the river. The Commission developed a QA/QC monitoring plan that was submitted and approved by US EPA - Region 1. The monitoring plan's first priority was to identify the outfalls to be monitored for dry weather discharges (no rain within the previous 48-hours). A map on the following page shows the area of concern and the outfalls under investigation. Any discharge observed was then sampled and, where accessible, an ambient sample was also taken. The samples were analyzed at the IEC laboratory for fecal coliform, total coliform, fecal streptococcus and enterococcus.

The first monitoring run was performed in May 2003 and there were five dry weather discharges found: four were observed on the New York side and one on the Connecticut side. (One additional discharge that IEC and Greenwich observed in Connecticut was previously eliminated.) In addition, ambient samples were taken in the vicinity of three outfalls at mid-river. All of the results showed elevated levels of bacteria. Monitoring runs were also completed in June and August 2003. The same five outfalls were discharging in June and four of the five were flowing in August. All of the results were forwarded to the members of the workgroup.

The workgroup met again in October 2003 in Greenwich to discuss the progress of the investigations. Westchester County Health Department located one illegal connection leaking into the stormwater outfall that discharges into the Byram River; this connection is in the process of being remediated. Westchester County Health Department is still investigating the ongoing discharges.

The Greenwich Health Department is investigating the discharge on the Connecticut side of the river. IEC is performing monthly sampling of any dry weather discharges and as of the end of December, completed six field investigations. All of the results from these samplings have shown elevated levels of bacterial contamination. Continued surveillance, laboratory analysis and data sharing will be maintained throughout 2004. The Commission is working with the New York and Connecticut authorities to have all the illegal discharges eliminated.

Pathogen Track Down at Gerritsen Beach in Brooklyn, New York

IEC was made aware of a bacterial problem at Gerritsen Beach in Brooklyn, New York, where there are pre-emptive beach closures because of rain. An IEC field inspector visited the site with local people who know the area. During that inspection, the Commission found an illegal discharge of raw sewage. IEC immediately contacted NYS DEC - Region 2 who, in turn, contacted the NYC DEP. The NYC DEP issued a NOV (notice of violation) and issued a cease and desist order. Within a few days the problem was corrected and the flow stopped.

Harbor-wide Water Quality Monitoring Activities in the New York-New Jersey Harbor Complex

As part of and in cooperation with the NY-NJ HEP, the Interstate Environmental Commission is chairing an Ad Hoc Committee to develop a harbor-wide water quality monitoring survey to be fashioned after the NYC DEP Harbor Survey. This conceptual monitoring survey would address the entire New York-New Jersey Harbor Complex which includes state and interstate waters, as well as tributaries. The committee includes IEC, US EPA - Region 2, NYS DEC, NJ DEP, NYC DEP, and PVSC. All of the aforementioned agencies have existing water quality monitoring programs within the HEP core study area. The conceptual plan is to be consistent with the existing New York City Harbor Survey so as to allow for a harbor-wide assessment of water quality.

The committee is looking at all aspects of the current and future sampling data collection programs, including the parameters of concern, waterways, monitoring scenarios, methodologies, laboratory capabilities and capacities, QA/QC and final products. This committee is seeking input from all of the HEP workgroups to identify needs.

The final products of the sampling efforts will be to create a comprehensive report fashioned after the NYC DEP Harbor Survey document which would, at the very least, discuss results, status and trends, and immediate environmental conditions. Based upon the vast amount of resources necessary to monitor the entire NY-NJ Harbor Complex, a cooperative effort amongst the agencies is necessary. This Ad Hoc Committee identified the New Jersey waters of the Harbor, including tributaries for which water quality data is limited or nonexistent.

Under way in late 2003, the New Jersey Harbor Dischargers Group, with an initial grant from the HEP, established an ambient water quality monitoring program consisting of 33 stations. Sixteen parameters of concern including DO, nutrients and pathogens are to be collected and analyzed. Adding this network to the already established monitoring programs is bringing the capability of a

true harbor-wide assessment to fruition. NYC DEP, Marine Sciences Section, is in the process of developing an interactive website to portray all of the monitoring in the harbor.

2003 BOAT INSPECTION TRIP

The Commission's 2003 boat inspection trip focused on the southern extent of the Interstate Environmental District; that is the New York-New Jersey Harbor Complex. The annual inspection trip provides an excellent opportunity for public officials and other parties interested in protecting the environment to view and discuss water quality issues affecting the Region. The waters viewed this year were impacted by an extreme winter season, infrastructure failure, dredging and naturally occurring parasites.

The 2003 Boat Inspection Trip was held on August 6th and covered the Lower and Upper New York Harbor; New York and New Jersey waters of Raritan Bay and the Kills; and the lower Hudson River from the Battery to 42nd Street on the New York shoreline, and from Jersey City to Weehawken on the New Jersey shoreline. The map on the following page shows the six-hour route which was traversed, covering nearly 100 nautical miles. The waters inspected during the trip provide for a variety of recreational activities such as powerboating and sailing; the use of canoes, kayaks and sculls; fishing, shellfishing, lobstering and crabbing; and swimming, jet skiing, scuba diving, parasailing, water skiing and wind surfing. On a grand scale, the New York Harbor Complex supports a vast maritime industry including shipping, dry docks, transportation (ferries, water taxis and ocean liners), container ports, tank farms and commercial harvest of crustaceans, finfish and shellfish.



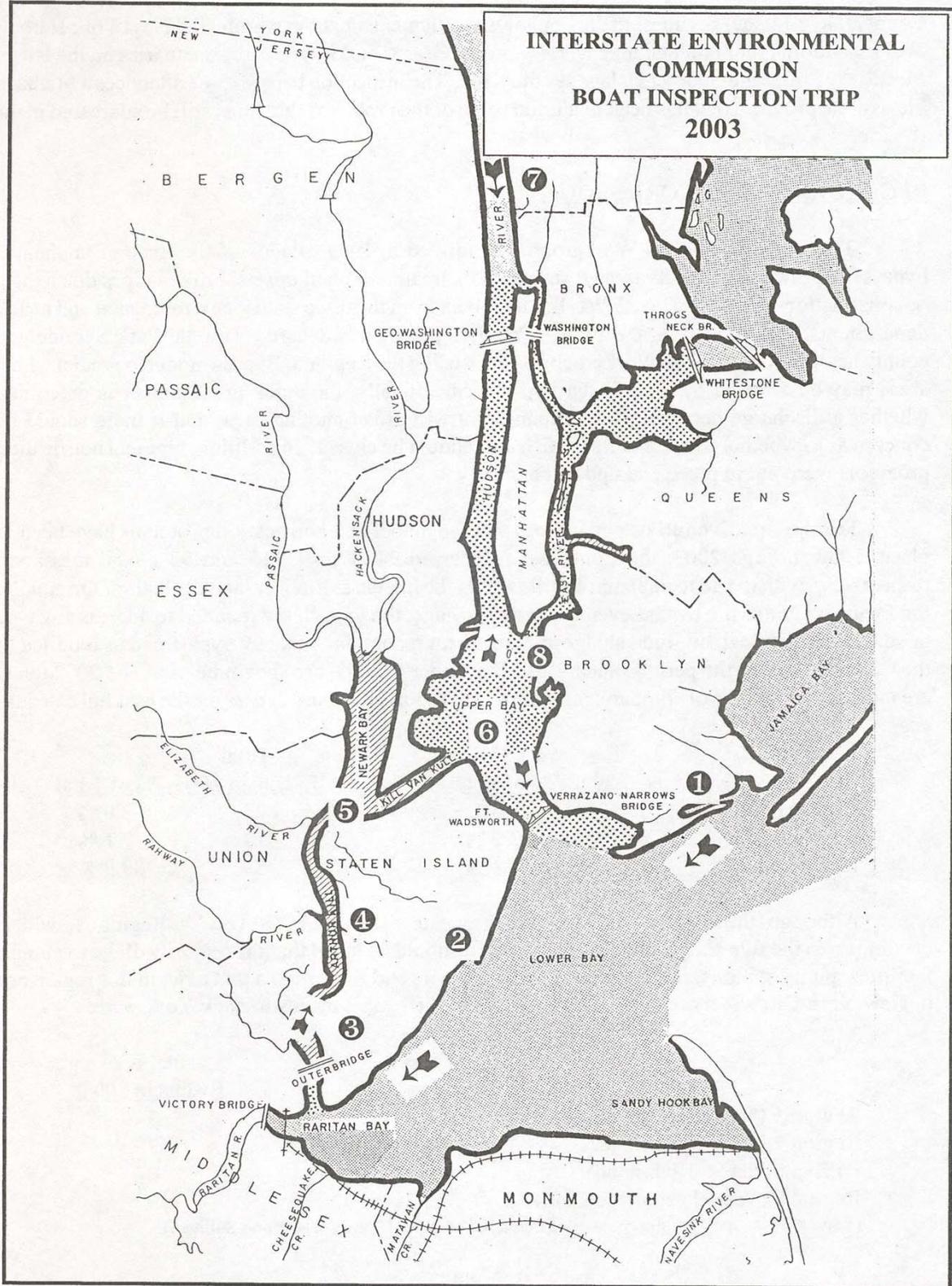
BAYONNE BRIDGE
TAKEN ON IEC'S 2003 BOAT INSPECTION TRIP
Photo by A. Lochner, IEC

IEC Commissioners, legislators, officials from all levels of government, interstate agencies, citizen groups and the press viewed bathing beaches and seaside parks, commercial shellfish operations, numerous party boats and small recreational vessels, tug and barge transports, dredge operations, dry docks, urban and maritime industries, historical landmarks, and waterfront development projects. A running dialogue of water quality issues, sights and points of interest, recommended fishing and scuba diving sites, as well as local lore dealing with lighthouses, bridges, and embattlements was provided throughout the trip.

The attendees viewed ongoing waterfront development, sewage treatment plants, areas that the Commission has been monitoring to determine the sanitary conditions for shellfish harvest and bathing, electrical/steam generating stations, the Fresh Kills Landfill, restoration efforts due to oil spills and erosion, wooden bulkheads under repair due to marine borers, and six major dredge contracts under way in the Kill Van Kull and Newark Bay.

Attendees had the opportunity to see unobstructed views of the New York City and Hudson

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COMMISSION
BOAT INSPECTION TRIP
2003



County, New Jersey, skylines; the historical embattlements that have protected New York Harbor; over 20 national monuments; nine world famous bridges; and fragile bird sanctuaries on the Isle of Meadows, Pralls and Shooters Islands in the Kills. The inspection trip gave the attendees a firsthand view of the progress that has been made and some of the problems that must still be addressed in the Region.

REGIONAL BYPASS WORKGROUP

The Regional Bypass Workgroup was formed in 1997 to address the issue of unplanned bypasses of raw and partially treated sewage, i.e., treatment plant upsets, broken pipes due to age, or construction mishaps. The RBWG has members from the three states' environmental and health departments, IEC, US EPA, US FDA, NYC DEP, US Coast Guard, National Park Service and county health officials. The Workgroup has been using the Regional Bypass model to predict which areas may be affected by a particular bypass. Specifically, the quick predictions can determine whether a discharge occurring at a certain point will affect another area, and if there should be concern as to whether a beach or a shellfish area should be closed. In addition, regional notification protocols were put in place and updated annually.

For the first five full calendar years that the model and notification protocols have been in place, 1998 through 2002, the Commission received 94, 97, 99, 115 and 93 e-mail messages, respectively, with regard to unplanned spills within the Interstate Environmental District. Originally, the focus of identifying bypass events was raw sewage; the focus has expanded to address any type of spill, i.e., chemical, oil, fuel, sludge and treatment reductions. The 99 bypass events reported to the Commission for the period January 1 to December 4, 2003, are shown below. The 2002 totals are included for a basis of comparison, as well as to report all bypass events for the past full calendar year.

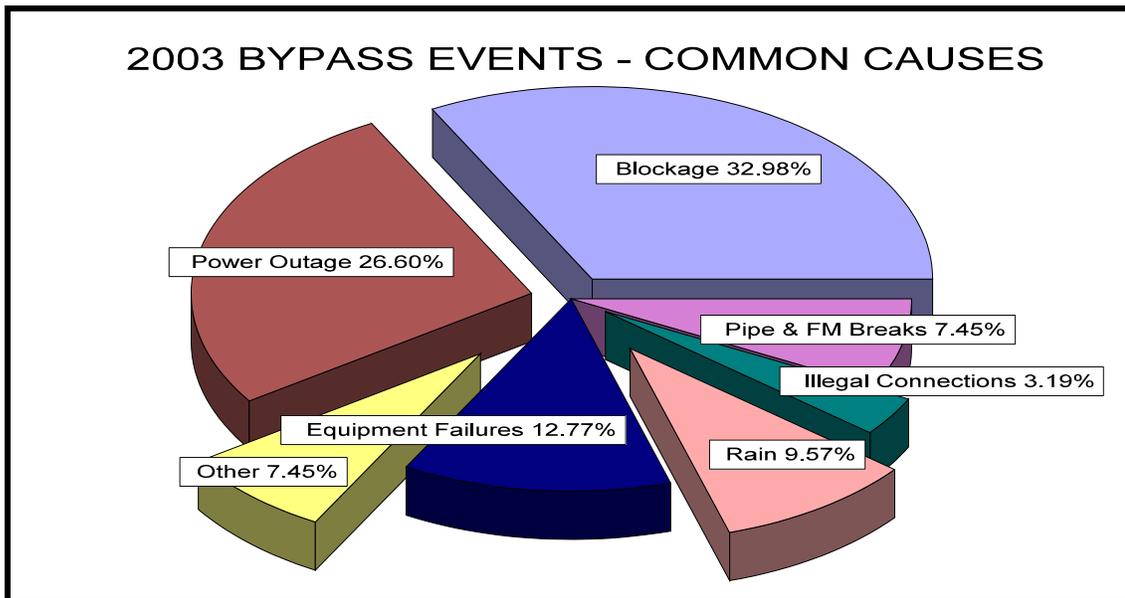
	<u>Total</u>		<u>Total</u>	
	<u>Events in 2002</u>	<u>% of Total</u>	<u>Events in 2003</u>	<u>% of Total</u>
Connecticut	10	8.6 %	3	3.0 %
New Jersey	7	2.2 %	7	7.1 %
New York	83	89.2 %	89	89.9 %

Although the majority of the bypass events occur in NYS DEC - Region 2, which encompasses the five New York City boroughs, it should be noted that the majority of the treatment facilities, pump stations, regulators and gravity sewers and force mains that exist in this region are in New York City. A more detailed breakdown of the bypass events in New York were:

	<u>Total NY</u>	<u>Total NY</u>
	<u>Events in 2002</u>	<u>Events in 2003</u>
Region 1 (Nassau/Suffolk)	2	3
Region 2 (5 NYC Boroughs)	66	67
Private Plants (Richmond)	0	0
Region 3 (Westchester/Rockland)	15	19

(Region 3 also includes the counties of Putnam, Dutchess, Orange, Ulster and Sullivan)

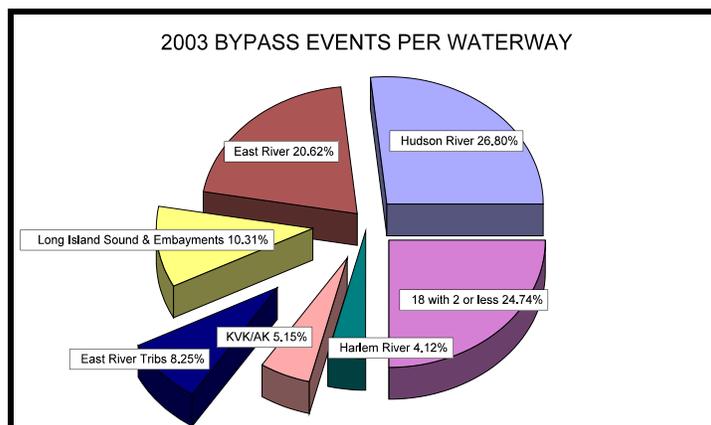
During the reporting period, all bypass event details were disseminated in a timely fashion by e-mail. For the most part, any missing data from the event was reported subsequent to repairs by conventional mail. Minor events or ongoing investigations of illegal discharges were reported by mail. Volumes bypassed ranged from as little as 5 gallons of sewage lasting a few minutes to 570 MG lasting nine days. During 2003, the common causes for bypass events were blockages (31), power outages (25), equipment failures (12), rain (9), force main and sewer pipe breaks (7), illegal connections (3), and 12 different cause events including human error; this breakdown is displayed on the pie chart below. The majority of the 99 bypass events were comprised of raw sewage (92). Five other bypass types registered one or two events each: primary treatment only, secondary treatment with no disinfection, gasoline, #2 fuel oil and stagnant water.



Two major infrastructure failures causing shellfish bed and beach closures occurred during March and August. Discussed earlier in this report under emergency response monitoring, 570 MG of raw sewage was bypassed from a ruptured force main in Sayreville, New Jersey. The New Jersey shellfish beds of Raritan and Sandy Hook Bays were closed from March 2nd until April 17, 2003. The 14,800 acres of New York shellfish harvest waters in the Atlantic Ocean off the Rockaways east to Nassau County, were closed as a precaution between March 2nd and March 18, 2003. The August 14th blackout that affected the northeastern United States caused extensive beach closures in New York City and Westchester County, as well as shellfish bed closures in the New Jersey waters of the Navesink River, Raritan Bay and Sandy Hook Bay. New York City area beaches were closed from August 15th through August 20th, except for the Rockaway beaches which opened on August 17th and Orchard Beach which opened on August 19th. Westchester County beaches reopened on August 17th. The New Jersey shellfish beds reopened on September 4th.

Other bypass events that had the potential to impact primary recreational waters occurred

during the period May 24 through September 1, 2003, which represents the “official” bathing season (Memorial Day weekend to Labor Day). There were 37 releases or 37.4 % of the total during this period; this is comparable to previous bathing seasons. During 2003, the waterways impacted by bypass events are shown below:



CLEAN WATER ACT SECTION 305(b) WATER QUALITY ASSESSMENT

Under Section 305(b) of the federal Clean Water Act, States, Territories, the District of Columbia, Interstate Water Commissions, and participating American Indian Tribes assess and report on the quality of their waters. The results of a 305(b) assessment are not raw data, but rather statements of the degree to which each waterbody supports the uses designated by water quality standards. The IEC has made submissions since the inception of this reporting format which began in 1984. Each State and Tribe aggregates these assessments and extensive programmatic information in a 305(b) report which is a comprehensive document, usually involving information from multiple agencies. US EPA then uses these individual 305(b) reports to prepare a biennial National Water Quality Inventory Report to Congress.

The goals for 305(b) reporting include comprehensive coverage characterizing all waters in the Interstate Environmental District which adds to the extensive national coverage; reducing paperwork while increasing the amount of assessed waters; annual electronic updates of key information for all assessed waters during the previous year; geo-referencing 305(b) information to identify and map specific waterbodies, including whether they meet water quality standards, and to enable long-term tracking of trends; and more rapid, real-time public availability of water quality information.

Since 1998, the IEC has been providing 305(b) reports both as an annual electronic report and an abbreviated narrative report. The abbreviated narrative report contains only the information that has changed from the last report, and a simple reference to that report. IEC reporting format conforms to the US EPA guidelines. The following table summarizes the individual supporting uses

**2002 INDIVIDUAL USE SUPPORT IN THE
INTERSTATE ENVIRONMENTAL DISTRICT**

Designated Use	Total Square Miles Surveyed	Percent				
		Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Poor (Not Attainable)
ESTUARIES (Total Square Miles = 797.55)						
AQUATIC LIFE	<u>387.04</u>	44.99	16.56	26.56	11.89	0.00
FISH CONSUMPTION	<u>797.55</u>	16.93	0.00	80.35	2.72	0.00
SHELLFISH CONSUMPTION	<u>797.55</u>	37.45	0.00	20.91	41.64	0.00
PRIMARY CONTACT	<u>797.5</u>	86.71	0.00	2.62	2.40	8.27
SECONDARY CONTACT	<u>797.55</u>	100.00	0.00	0.00	0.00	0.00

* Long Island Sound and upper East River waters of the Interstate Environmental District.

of the IEC's nearly 797 square miles of estuarine waters. The Commission is presently preparing the 2003 electronic 305(b) report. The assessment is based on the Commission's data collected from its ambient and effluent monitoring programs. It is supplemented with information from the Commission's member states' environmental and health departments dealing with information on water quality, health advisories, fish kills, shellfish closure areas, and beach closings.

STORET

Throughout its history, the Commission has amassed a huge data base of ambient and effluent water quality data. These data have been collected for a variety of reasons which have been highlighted throughout this report, previous Annual Reports, and in special reports. The Commission has been a depository and advocate of water quality data collection, analysis and dissemination for the tri-state region. Originally under the auspices of the Public Health Service, the US EPA has the responsibility for the computerized National Water STOrage and RETrieval (STORET) data base for housing and managing data and metadata on air, sediment, soils and water. The water matrix contains end-of-pipe water quality, groundwater, saline and freshwater quality data. The system promotes data sharing among federal, state, interstate, and local agencies, as well as the private sector. Commission data as far back as 1970 and as recent as 2002 exists in the STORET system. The 2003 data set is being prepared for input.

The original data base underwent a modernization and overhaul between 1991 and 1998. The Commission is currently preparing its 2003 water quality data in the latest STORET format, 2.0. The Commission's input to the modernized STORET is represented by over 40,000 parametric recordings, which include dissolved oxygen, temperature, salinity, chlorophyll a, and fecal and total coliform bacteria. The modernized version of STORET has been enhanced to contain ancillary information such as climatological and tidal data, type of monitoring instrumentation, personnel expertise and visual observations.

PROPOSED REVISIONS TO DISSOLVED OXYGEN SURFACE WATER QUALITY STANDARDS FOR MARINE WATERS

In November 2000, US EPA issued the final guidance document *Ambient Aquatic Life Water Quality Criteria for Dissolved Oxygen (Saltwater): Cape Cod to Cape Hatteras*. This document recommended guidelines for revising water quality criteria for dissolved oxygen(DO). As a result of the release of this document, all three member States of the Commission, as well as the Commission, have or are considering revisions to current DO standards. In May 2001, US EPA - Region 1, approved Connecticut's proposed revisions and Connecticut adopted revised dissolved oxygen requirements in certain portions of Long Island Sound.

As of November 2003, New York State is finalizing proposed revisions as a planned approach for marine DO standards. Since the proposal is only in draft form and has not been approved for release, specific details are not yet available. It is anticipated that a public comment period will be established once the proposal is released as a Notice of Proposed Rulemaking. The

Commission is closely monitoring these activities in its three member states to determine a course of action for the IEC.

NATIONAL ESTUARY PROGRAM

The National Estuary Program was established in 1984 and provides assistance to estuaries of national significance which are threatened by pollution, development or overuse. The NEP provides federal assistance to develop a Comprehensive Conservation and Management Plan for designated estuaries. There are 28 estuaries located along the Atlantic, Pacific and Gulf of Mexico coastlines, as well as in Puerto Rico, that are developing or implementing CCMPs. Within the Interstate Environmental District, Long Island Sound and the New York-New Jersey Harbor Estuary have been receiving funding under this program since 1985 and 1988, respectively. The overall coordination for the Long Island Sound Study is being done by the US EPA - Regions 1 and 2. The New York-New Jersey Harbor Estuary Program is being coordinated by the US EPA - Region 2.

During 2003, the Commission continued its active participation as a member of the Management Committees and various workgroups for the LISS and the NY-NJ HEP. The New York Bight Restoration Plan, which was required by Congress in 1987, was incorporated into the HEP because the two systems are linked within the larger ecosystem. The Dredged Material Management Plan has also been incorporated into the HEP. The Commission has been involved with these plans since their inception.

The Governors of New York and Connecticut and the Administrator of the US EPA signed the final CCMP for the LISS in September 1994. In October 1996, the Governors of New York and Connecticut met to re-affirm their commitment to the actions set forth in the CCMP. In September 2000, the LISS Policy Committee convened to make a commitment to develop a Long Island Sound Agreement which would update the previous agreement. The LISS 2001 Agreement more clearly defines desired outcomes of the CCMP actions in measurable, trackable terms, proposes a better link between monitoring/research and environmental indicators to established goals and results, promotes implementation, and addresses new issues. It affirms targets for nitrogen reduction and habitat restoration. In addition, schedules are being set for other major CCMP actions such as Phase IV nitrogen reductions from out-of-basin sources, pathogens, toxics, watershed protection, living marine resources, open space and access, public education and involvement and partnership agreements. The Agreement was finalized on December 4, 2002, by the Regional Administrators of US EPA - Regions 1 and 2, and the Commissioners of CT DEP and NYS DEC.

The Governors of New York and New Jersey and the US EPA Administrator signed the final CCMP for the HEP in August 1997. The plan addresses habitat and living resources, toxic contamination, dredged material, pathogen contamination, floatable debris, nutrients and organic enrichment, rainfall-induced discharges, and public involvement and education. Simultaneous with the 1997 closure of the Mud Dump Site in the Atlantic Ocean, the site and surrounding areas that have been used historically as disposal sites for dredged materials was designated as the Historic Area Remediation Site (HARS). The Commission took an active role by serving on the MDS/HARS

Workgroup. The final CCMP was amended to reflect the accelerated implementation schedule.

The nutrients, pathogens and toxics workgroups are addressing the modeling and water quality issues with the intent of ultimately developing total maximum daily loads. Schedules for developing and implementing TMDLs are in place. IEC has been involved with these meetings and will assist in the process, especially for the interstate waters within IEC's jurisdiction. Refer to the water quality surveys for pathogens that is detailed in this report.

Following the example of the Chesapeake Bay Program, the HEP Policy Committee has charged each of the workgroups with developing targets and goals that can be incorporated into a multi-year work plan. The purpose of the targets and goals is to better focus the future efforts of the HEP. These goals will be reviewed yearly to gauge their progress. IEC is a member of the committees that are developing these targets and goals which address the CCMP implementation issues of fishing and swimming, habitat and ecological health, public access, clean sediment and dredging, and stewardship.

COMBINED SEWER OVERFLOWS AND MUNICIPAL SEPARATE STORM SEWER SYSTEMS

Since the passage of the CWA and the implementation of secondary treatment, the quality of the region's waters has improved dramatically. However, waterbodies are still negatively impacted by urban and suburban stormwater runoff. Combined sewer overflows (CSOs) and municipal separate storm sewer systems (MS4s) are major sources of pollution and are allowed to discharge only during wet weather.

The Commission's continuing activities with combined sewer overflows include in-house programs, as well as its participation in the National Estuary Programs in the region. In 2003, the Commission maintained an active dialogue with its member states, US EPA and POTWs to keep abreast of the status of CSO abatement activities in the District.

The Commission has an ongoing program of inspecting CSOs to determine whether they are discharging during dry weather. When dry weather discharges are discovered, the incident is reported to the appropriate State environmental department for remediation. The Commission then works with that department to determine the most expeditious manner to alleviate the violation. During the 12-month period ending September 30, 2003, a total of 58 outfalls were inspected during dry weather; none had any discharge during the IEC's inspections.

During the current year, interest in the operation and control of municipal separate storm sewer systems has intensified. Phase I of the US EPA's stormwater program (1990), administered as NPDES permit requirements, addresses medium and large municipal separate storm sewer systems, construction activities, and industrial activities. Phase II is an effort to preserve, protect, and improve the nation's water resources by implementing programs and practices to control polluted stormwater runoff. According to draft permits, all New York regulated entities

(communities with stormwater discharges from MS4s and construction activities) are required to apply for coverage by SPDES permits by March 10, 2003. Communities with MS4s are then required to proceed with preventing pollution using appropriate technologies and management practices outlined in the permit. The permittees are then expected to report annually to the NYS DEC and fully implement their proposed program by March 2008.

The Commission has been asked by US EPA - Region 2 to investigate the feasibility of locating dry weather MS4s in the District, somewhat like the ongoing CSO program described above. IEC received some information on MS4s, i.e., locations, sizes, and waterways; and subsequently, started to conduct outfall inspections in Nassau County, New York. For the period January 1 through September 30, 2003, 42 inspections were completed. The field inspections revealed three outfalls flowing under dry weather conditions. All observations were referred to NYS DEC - Region 1 for appropriate action. This program will be continued during 2004.

CONFERENCES

New York Water Environment Association's Legislative Forum

For the third consecutive year, the Commission and its interstate counterparts with New York membership co-sponsored the New York Water Environment Association's Legislative/Regulatory Forum in Albany, New York. Meeting in New York's capitol last May gave the six interstate commissions the opportunity to emphasize to the New York Legislature the scope of the combined agencies' efforts being undertaken to promote water pollution control and carry out water pollution abatement activities.

Collectively, the Delaware River Basin Commission, the Great Lakes Commission, the Interstate Environmental Commission, the New England Interstate Water Pollution Control Commission, the Ohio River Valley Water Sanitation Commission, and the Susquehanna River Basin Commission represent 20 states, the federal government and the Canadian provinces of Ontario and Quebec. The 2003 Forum topics of interest included SPDES regulations and permitting; wet weather permitting; and current legal decisions affecting water pollution control and abatement. An evening program hosted by the interstate agencies was very well attended by the forum participants as well as by many members of the State Legislature.

PUBLIC EDUCATION AND OUTREACH

The Commission continues its commitment to participating in an active public involvement, education and outreach program. IEC continues to lecture at local schools and colleges on a variety of environmental topics and Commission activities. Many of the Commission's staff members participate in this effort.

This year, the Commission's public education and outreach program encompassed a variety of topics and venues. IEC personnel have been called upon to participate in various seminars and

forums in various roles such as a moderator, speaker, panelist, chairperson and/or a faculty member. The Commission is a member of various engineering, legal and professional organizations and takes an active role on those organization's committees, boards, etc. The technical staff is involved with ASIWPCA, ICWP, WEF, NY WEA and other professional organizations and activities. Counsel is actively involved with the New York City Bar Association and its Committee on Environmental Law. Commission personnel have published articles on a variety of environmental topics, including interstate compacts, laboratory research and water pollution control. Activities such as these enhance the Commission's visibility and make IEC and its functions known to a broad audience. The remainder of this section outlines some of IEC's involvement in this area.

Long Island Sound Water Monitoring Workgroup

The Long Island Sound Water Monitoring Workgroup is a networking partnership of citizen organizations and government agencies working to increase coordination between water quality monitoring programs in Long Island Sound on the local, state and regional levels. An established data base exists with 12 entities, sampling sites and water quality data. The data set includes physical, chemical and biological water quality parameters, as well as meteorological and tidal information.

Board of Cooperative Educational Services (BOCES)

The Environmental Studies Academy is an educational program for high school juniors and seniors interested in pursuing careers in natural or environmental studies. Students participate in learning activities to develop an understanding and appreciation of natural systems. A large facility on the BOCES campus in Valhalla, NY, provides hands on opportunities for high school seniors to work in a greenhouse and operate farm machinery for landscaping and agricultural career motivation. The Commission is involved with the BOCES of Southern Westchester and stresses IEC's regional focus on water quality issues affecting the Hudson River and Long Island Sound. The Commission serves on the advisory committee.

Law Student Internships

IEC remains a part of the Pro Bono Students America/New York and New Jersey (PBSA/NY & NJ) data base which is a program that the Commission has been involved with since 1992. The data base includes a network of more than 300 organizations including not-for-profits, government, courts and private firms. PBSA is one of the primary groups organizing the development of pro bono programs. The IEC is also listed with area law school career placement offices and has drawn on that resource over the years attracting well over a dozen students. Law students appreciate the opportunity to apply the skills which they learn in the classroom with the real legal experience they are offered at the Commission.

Our World Underwater

Our World Underwater is a non-profit corporation focusing on educational opportunities for young people going into various fields of marine science, such as marine biology and oceanography. The Commission has a long involvement with this group, including its Scholarship Society program to support a gifted student for a year to study, experience, and interact with a wide range of professionals. Since the Commission began its relationship with Our World Underwater in 1989, all scholarship recipients have enjoyed a hands-on experience. Since none of the recipients hosted by IEC have been from this region, their experience is compounded by this being their first visit to the Northeast, as well as by them also being afforded the opportunity to view this urban environment from the water.



COMMUTER FERRY ON THE HUDSON RIVER
TAKEN ON IEC'S 2003 BOAT INSPECTION TRIP

Photo by A. Lochner, IEC

III. AIR POLLUTION

GENERAL

Originally dealing only with matters concerning water pollution, in the late 1950s the Commission published a report called *Smoke and Air Pollution*, and a supplement that identified the problems of the region regarding interstate air pollution. As a result, in 1962, after passage of supplemental statutes in New York and New Jersey, the Commission's air program was initiated. In 1969, Connecticut passed legislation mirroring that of New York and New Jersey, extending the IEC's air investigation and study authority.

The first Air Pollution Warning System was put into operation in 1964 and, through coordination by the Commission with its member states, has been periodically updated and strengthened as new information regarding air pollution abatement practices became available. In April 1970, the Commission was designated as the coordinating agency for the New Jersey-New York-Connecticut Air Quality Control Region under the federal Air Quality Act. Pollutant values and meteorological conditions did not warrant activation of the High Air Pollution Alert and Warning System during 2003.

The Commission has maintained round-the-clock response for air pollution complaints since the late 1960s. New York City's Borough of Staten Island remains as the source of more citizens' complaints than any other area in the Interstate Environmental District. To better serve the needs of the public by faster response to complainants, a field office was established on Staten Island in 1982 and remained in operation until 1986 when odor complaints reported to the Commission peaked at nearly 3,500 complaints affecting 63 different neighborhoods throughout Staten Island. The number of complaints received by the IEC has significantly declined over the years and no garbage odors were reported to the Commission for the fourth consecutive year.

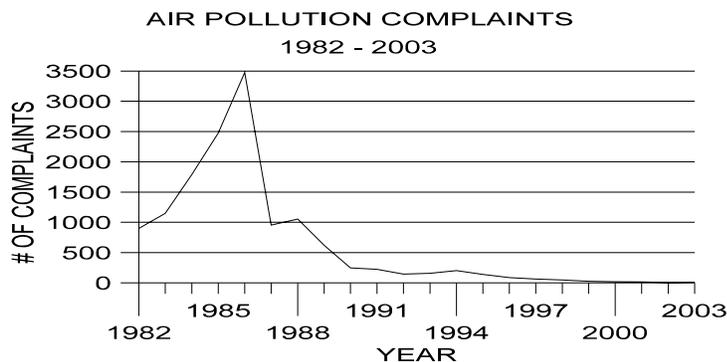
AIR POLLUTION COMPLAINTS

Within the Interstate Environmental District, Staten Island remains as the source of more citizens' complaints than any other area in the Commission's jurisdiction. Historically, many of the complaints come from the western portion of Staten Island in the vicinity of the New York-New Jersey border and from the neighborhoods closest to the Fresh Kills Landfill. However, during the 2003 reporting period, complaints were minimal and were received from only five different neighborhoods.

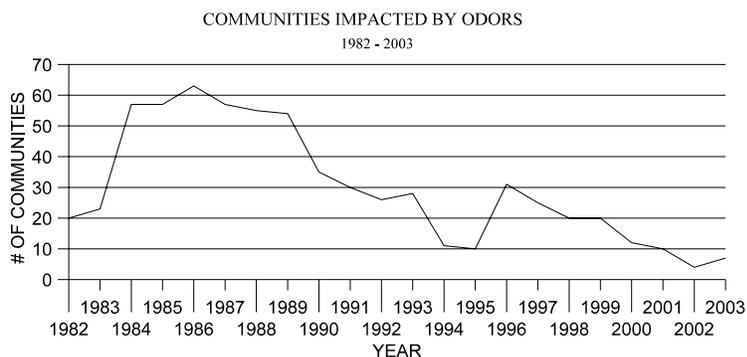
Since budget cuts in 1989 necessitated the closure of IEC's Staten Island field office, the Commission still maintains a 24-hour-a-day, 7-day-a-week answering service (718-761-5677) to receive complaints. Complainants are contacted during regular office hours by IEC staff and, when available, IEC personnel are dispatched to investigate ongoing complaints. When warranted, Commission personnel are contacted during non-office hours. The IEC also contacts and works

closely with the appropriate enforcement agencies and health departments in New York and New Jersey to perform follow-up.

For the 12-month period ending September 30, 2003, the Commission received a total of nine complaints — all from Staten Island. This continues the pattern of a decreasing number of complaints since the 1986 peak of nearly 3,500 complaints from 63 different Staten Island neighborhoods



Only seven Staten Island communities were the source of these nine complaints. It should be noted that this is the least amount of neighborhoods reporting odor complaints since detailed records have been kept; 63 communities were impacted in 1986. Over the years, the majority of the complaints received by the IEC tend to come from the same group of neighborhoods. This year, the reporting neighborhoods were throughout Staten Island.



This year, the odors were identified as chemical/gasoline (1), ammonia (1), diesel (1) and other (6). The “other” category reflects those “nonspecific” descriptions, i.e., bad or awful or nauseating. Citizen complaints are the most frequent source of firsthand information about poor air quality. The odors are usually detected by persons who do not have special knowledge or training in identifying problem emissions; it is their accurate odor descriptions that could lead to the sources of odors. This is the fourth consecutive year that the nuisance odor category of “garbage” was not registered.

OZONE HEALTH MESSAGE SYSTEM

For the sixteenth consecutive year, the Ozone Health Message System was activated to alert the public of unhealthy levels of ozone in the atmosphere of the Metropolitan Region. The system was developed as a cooperative effort by the Commission and environmental and health representatives from the States of New Jersey, New York and Connecticut; New York City; and the US EPA. It serves as a central source of precautionary advice on ozone to the Region during the warm weather months (May to October) when higher concentrations of ozone occur. Ozone irritates the respiratory system and may cause decreased lung function. Adverse effects may include shortness of breath, chest pain, throat and eye irritation, and wheezing. It especially affects the elderly and those with pre-existing lung disease. Healthy adults and children may feel these effects during high ozone days. Whenever ozone reaches unhealthy levels, the public is advised against strenuous outdoor activities and physical exertion such as jogging, ball playing, and running.



During 2003, the Commission continued to participate in this program. IEC took an active role in alerting the public to unhealthy conditions. During the warm weather months, when elevated levels of ozone existed in parts of the Metropolitan Area, the IEC relayed “health advisory” messages to the appropriate government environmental and health agencies. The IEC received 14 ozone and 10 fine particulate (soot and dust) advisories from the New Jersey Department of Environmental Protection between June 19th and August 14th. This period of poor air quality was considerably shorter than previous years; there were 22 fewer alert days than occurred during 2002. Individual states issue their own health messages which identify specific counties where ozone levels are a special health threat. During 2003, it was not necessary for IEC to issue a region-wide Ozone Health Message.

REGIONAL AIR POLLUTION WARNING SYSTEM

The IEC is the coordinator of the New Jersey-New York-Connecticut Air Quality Control Region’s High Air Pollution Alert and Warning System. Based on high pollutant concentrations or stagnation advisory reports, the Commission may activate this system. The pollutant levels and stagnation advisory reports did not warrant activation of the system during this past year.

IV. LEGAL ACTIVITIES

The Office of Legal Counsel must be vigilant in assessing when and where it is appropriate to give advice, intervene, take affirmative action or simply observe. This requires staying abreast of water quality legislative initiatives, litigated matters and other matters that may be in contention or that simply need to be observed to avoid problems that could arise later. On some occasions, it is appropriate to make the Commission's position known directly. On other occasions, it is simply necessary to observe, comment and report. Water quality issues that affect IEC's three member states, interstate waters and the federal government's role in adapting the federal Clean Water Act (CWA) legislation take top priority on Legal's agenda. Attention to good governance, advice to the Commissioners as public officers, contractual arrangements with vendors and suppliers, insurance indemnity and liability issues are all included in the legal landscape.

Legal carries out numerous functions of which ensuring compliance with those statutory responsibilities granted to the Commission is the most compelling. In some instances, but notably fewer than are anticipated, ensuring statutory compliance could necessitate the commencement of administrative proceedings or court cases. In significantly more instances, the Commission's regulatory authority is recognized through negotiation and comment accepted by the regulated community. At times, informing the public about the Commission's function has the benefit of answering questions before they are asked. Some of the work that Counsel is called upon to do falls into a less visible but not less significant arena. That is the enforcement of Commission policy in water and air pollution abatement as part of general housekeeping. An example of this type of work is Counsel's role, albeit behind the scenes, to provide information, background and history to advocacy groups and to those conducting public hearings.

As is the case with other of the Commission's roles, Legal's activities provide other benefits, especially in the area of public education and public outreach. Refer to the "Public Education and Outreach" section of this report for more details.

The summary of topics that follows is by no means meant to be all inclusive, but rather highlights significant legal activities.

The 11-month re-opening of the Fresh Kills Landfill to accept debris from the site of what had been the World Trade Center, known as "Ground Zero", ended in May 2002. Access to the landfill was restricted, as it was deemed a crime scene. Nonetheless, several issues that pre-dated the landfill's re-opening continued to require resolution. One of those issues was the completion of a retaining wall to stabilize the sloping shoreline and prevent debris from escaping from the landfill. The retaining wall was finally completed this year and a final inspection tour took place.

New York City's ability to meet nitrogen limits established by SPDES permits continued to be an issue and resulted in the City requesting an administrative hearing after modified permits required them to meet nitrogen limits more stringent than those established by an administrative

order. The administrative order in question had settled litigation in both state and federal court. Five parties, including the Commission, intervened in the administrative proceeding.

The Commission prevailed in securing “taxed costs”, New Jersey’s version of attorney’s fees, after successfully establishing in New Jersey’s highest court, the Supreme Court, that the Passaic Valley Sewerage Commissioners (PVSC) is subject to the Commission’s jurisdiction and regulation. The Commission has since inspected and sampled at the PVSC facility as part of its regular sampling program and will continue to include PVSC on the IEC sampling schedule.

LITIGATION TO MITIGATE NEGATIVE EFFECTS OF NEW YORK CITY’S OPERATION OF THE FRESH KILLS LANDFILL

A final landfill site inspection tour took place in October 2003. This final visit followed site visits during August and September of 2002, when the Independent Expert (IE) determined that two shoreline areas required stabilization. Representatives from the Commission; the Township of Woodbridge, New Jersey; the New York City Department of Sanitation; and the Independent Expert and his staff were all present. The visit was timed to coincide with the completion of construction for shoreline stabilization, which occurred in September. From all appearances, it seems that this will be the last opportunity to inspect the landfill in the context of the current litigation. This final visit was an excellent opportunity for all the parties to examine the results of the construction, which was held up until the New York State Department of Environmental Conservation could issue a permit for construction to stabilize the shoreline. Once the permit was issued in the late spring, construction began and was completed at the end of September. Concerns on the part of the NYS DEC wetlands personnel required that the permit protect certain species of grasses native to the landfill. It mandated that those grasses be transplanted to internal roadways for protection and that they be monitored so that for every transplant that dies, it is replaced by four similar plants during a year long monitoring period. The next step following the transplanting was to place rock filled gabion baskets and filter fabric along the shoreline area. The filter fabric was placed below the water level (beneath the gabion baskets), and then extended above the water level to prevent settlement of the structure and the movement of soil particles from the shoreline into the waterway. All of this has been completed, along with the final stabilization of the shoreline matting.



Since May 2002 when the landfill ceased to accept debris from Ground Zero, the old World Trade Center site, negotiations have been ongoing to finalize steps for debris control measures. All the parties to the litigation had agreed that a stabilizing wall needed to be constructed to ensure against debris escaping from the landfill generally, and more particularly during heavy rainfall events. Historical evidence has demonstrated that given the natural sloping, when normal erosion occurred debris could potentially escape from the landfill.

The Commission continues to have concerns regarding debris control measures due, in part, to the current construction of a transfer station at the landfill. It is understood that this transfer station will handle debris generated from the borough of Staten Island. The Independent Expert has represented to the parties that it is believed that once completed, garbage will be transported to a fully enclosed unloader where it will be entirely containerized prior to its departure to points in New Jersey and then to Pennsylvania and Virginia via barge. The Commission has some concern about the continued use of the landfill, albeit for debris whose final destination is elsewhere, since the process has similarities to the one previously used. Some potential remains for debris to escape in a similar fashion to when debris was being deposited upon the landfill as a final destination. The landfill will continue to be used in a process that is not without complications and has potential for debris escaping into water — the initial impetus for IEC's entry into the litigation. Most importantly, no information on the City adopting a final plan for garbage disposal has been forthcoming. The City continues to rely on short term plans which are periodically renewed.

All parties must agree upon several remaining debris control measures that will continue in some fashion or be severely cut back. Among those items are the skimmer boats, the booms, marine fencing, and a composting operation. The Commission's position on each issue is noted below.

There is currently one skimmer boat operating in Fresh Kills Landfill on a daily basis with a 12-hour schedule, four days-a-week and a limited schedule one day-per-week. There continue to be two booms in operation — a range boom that is open only on an incoming tide as much as is deemed necessary, and the Outer Boom, the last line of defense before leaving the landfill which is also open on an incoming tide. It is the Commission's position that the Outer Boom remain in place permanently. Without the Outer Boom, floatable debris will have the potential to enter the Arthur Kill and be deposited along the shoreline. The IE concurs with that position. With regard to the marine fence, the IE's draft final report recommends that if the marine fence is removed, a skimmer boat or some other means of controlling floatable debris should be present at all times during fence removal and that care be taken to minimize disturbing the bottom sediment layer. The IE has recommended that the land-based fence, having served its purpose, should be moved or removed, as necessary, to allow for completion of final grading and capping of the landfill. The land-based fence should be moved back following final capping as both a protection from debris escaping and as a deterrent. The continued operation of a composting facility under private contract should not pose any significant potential for debris to escape unless current budget constraints change and allow for renewed collection of residential grass clippings and leaves typically collected in plastic bags. It is the plastic bags that present a potential for concern, as it was the plastic bags that tended to become loosened and to escape from Fresh Kills.

The plaintiffs continue to be concerned about the lack of any long-term closure plan. The City announced a plan for waste disposal, which involves each of the five boroughs in retrofitting transfer stations in order to enable garbage to be barged using containerization. There are eight marine transfer stations in the City, three of which are located in Manhattan. One is in the vicinity of Gracie Mansion, the Mayor's official residence. Predictably, residents have already begun to

voice complaints about the prospect of having to condemn space for retrofitting transfer stations and about the number of trucks that could be found idling in their neighborhoods, an unfortunate by-product of using transfer stations. Destinations for the City's garbage could include venues as far as the Caribbean. The plan has not specified final drop-off points for garbage.

The earlier references herein to the IE are found in a September 1997 Court Order mandating the hire. While the IE presumably works for the parties, an independent monitoring team (IMT) is composed of one member from NYC DOS, one member from the original independent monitoring consultant, and one member hired by the plaintiffs, but compensated by the City. Both were fully operational in 1999; however, in accordance with Court Orders, the IE was charged with making a determination as to what debris control measures were required and what, if any, monitoring functions should continue. In 2002, the IE concluded that there was no longer a need for the IMT. At the end of 1997, when the Court had relieved the City of its obligation to build a single-barge enclosed unloader contingent upon the City's implementing certain measures, among the requirements was establishing an IMT and the IE. The failure on the part of the City to implement certain measures could have resulted in an immediate return to court and the rendering of a judgement that the City begin construction on the single-barge enclosed unloader immediately. In any event, the long-term solution could be revisited on an annual basis.

The genesis of this landfill case was a 1979 lawsuit relating to the waterborne debris that enters the District's waters as a result of the garbage unloading operations at the Fresh Kills Landfill (Township of Woodbridge v. City of New York, Civil No. 79-1060). Located on the Arthur Kill shoreline in the western portion of Staten Island, New York, the majority of New York City's municipal solid waste was transported to the Fresh Kills Landfill by barge.

In 1986, the IEC intervened in an action in New Jersey federal District Court which was initiated in 1979 by the Township of Woodbridge, New Jersey. Approximately 13 Court Orders were issued in the intervening years prior to IEC's cross-motion for contempt in September 1987. After investigations were conducted by Commission field inspectors, it was determined that, in spite of the Orders issued and the steps taken by the City, the problem of debris from the landfill operations entering adjacent waterways persisted in contravention of the IEC's Water Quality Regulations. IEC sought and succeeded in obtaining a Contempt Citation.

In order to find a solution to the Region's waterborne garbage problems, the parties to the suit entered into a Consent Order. That Consent Order required the City of New York to implement water cleanliness procedures; the installation of interim remedial equipment, including the superboom; and the hiring of an independent monitor. The Order also provided for an Independent Consultant to evaluate the effectiveness of the interim equipment and procedures, and to recommend alternative long-term measures by January 1, 1990. Reports issued by the Independent Consultant in 1990 recommended containerization and a single-barge enclosed unloading system as alternatives. The City concluded that of the final alternatives reviewed, the single-barge enclosed unloading facility presented the most effective and practical method to comply with the Consent Decree and proposed to implement it. The IEC submitted a revised Consent Decree to the parties in January 1991. During 1992, the Commission's request for assurances that there are monies set aside and

dedicated solely to the design and construction of the single-barge enclosed unloading system were met. With only a minor adjustment in compliance dates, a draft Consent Decree was accepted by the parties in the spring of 1993. A final Consent Decree was filed in the United States District Court on June 15, 1993, and a fully executed copy was received by the Commission on June 28, 1993. Although the City was seemingly compliant after the 1993 revised Consent Decree was entered, 1995 saw the disbursement of technical assistance funds held by the Court. Litigation resumed during 1996 when Woodbridge initiated an action seeking relief from medical waste washing up on its shores. Ultimately, a monitor determined that while debris, including medical waste, escaped from the landfill, evidence was insufficient to establish the landfill as the sole source. During 1996, the City let it be known that following the passage of laws mandating closure of the landfill by the year 2001, they were considering filing a motion to be relieved of their obligation to build an enclosed barge unloader. When the City sought relief from building the enclosed unloader subsequent to the 1996 passage of laws mandating that no garbage be brought to the landfill for disposal after the end of 2001, the Commission was willing to consider appropriate alternative solutions that offer the same safeguards as those of the enclosed barge unloader. The Commission was committed in 1996, and remains committed today, to ensuring that floatable debris is prevented from entering the waterways around the landfill.

What remains is for all parties to agree upon a negotiated settlement taking into account the remaining issues cited in the IE's draft report. The Commission's position on each of those issues — the skimmer boats, the booms, marine fencing and a composting operation — is fully detailed herein, and the parties are poised to meet and negotiate toward closure of this case once a final IE report is issued.



SHORELINE STABILIZATION AT FRESH KILLS LANDFILL - 2003
Photo by W. McCormack, IEC

ADDRESSING NITROGEN IMPACTS OF SOME NEW YORK CITY SEWAGE TREATMENT PLANTS

In October 2003, the Commission intervened in an administrative proceeding initiated by the New York City Department of Environmental Protection against the New York State Department of Environmental Conservation, following NYS DEC's issuance of modified permits for the 14 NYC water pollution control plants (WPCPs). The Commission intervened when the City contested that the proposed modified permits conflicted with other enforceable Orders on Consent regarding certain nitrogen related provisions. The IEC supported NYS DEC's view that through the permit process, NYS DEC regulates what is allowed to be discharged and the amount of the discharge. Four other parties, the Natural Resources Defense Council (NRDC), Save the Sound, Pace Environmental Litigation Clinic, and the State of Connecticut also intervened in the proceeding in support of NYS DEC.

The administrative proceeding followed NYS DEC's February 2003 issuance of modified permits that were to become effective in April 2003. These permits had previously been modified by draft permit on June 26, 2002. The June date began a public notice period that was extended through August 2002 at the request of NYC DEP. The IEC participated during that comment period by providing NYS DEC with extensive written comments. Throughout the early part of 2003, NYC DEP and NYS DEC attempted to resolve their differences to no avail. In late March, NYC DEP requested a hearing and an administrative law judge was assigned to determine whether or not NYC DEP was entitled to a hearing.

NYC DEP contested three main issues: 1) certain nitrogen related provisions; 2) that the proposed modified permits conflicted with other enforceable Orders on Consent; and 3) that errors and omissions in the proposed permits must be remedied. In essence, the City argued that since April 2002, when both the City and State signed an Administrative Order on Consent, they had been required to meet certain nitrogen control limits and that the permit conditions required that NYC DEP meet more stringent nitrogen limits. An Administrative Consent Order (ACO) of April 2002 had settled two separate court actions against the City for exceeding the limits for nitrogen discharges that affected the water quality of Long Island Sound. The ACO was the culmination of two matters — one commenced with a citizen suit against the City in federal Court and the other with the State of New York suing the City in state Court.

The Commission had not participated as a party in either case, but did file an *amicus curiae*, friend of court, brief in the state case in 1999 and participated in the oral argument. Immediately following the filing in federal Court, the Commission was asked to provide guidance to the State of Connecticut when they intervened in the lawsuit filed by the Hudson Riverkeeper and others. Throughout, the Commission has maintained a presence in both matters; aiding with providing historical data, data on the Long Island Sound Study's "no net increase policy", making available the comprehensive records kept by the Commission, and comparing Connecticut's permits to those in New York.

The permits in contention require that NYC DEP's WPCPs meet the limits established by the Long Island Sound Study (LISS). IEC has long been a key player on the Management Committee responsible for the nitrogen control limits and has participated in the discussions that led to finalizing the total maximum daily load (TMDL) limits set by the LISS and adopted by the United States Environmental Protection Agency as minimal requirements for the states.

The Clean Water Act, from which the New York State SPDES system flows, requires the states to promulgate, and EPA to approve, TMDLs for wasteload allocations (WLAs) for waterbodies for which the effluent limits promulgated pursuant to CWA are not stringent enough for a waterbody to comply with applicable water quality standards (WQS). States were required to identify those waterbodies that do not meet water quality standards after applying the technology-based effluent limitations that are required by the CWA. The CWA also established lists of impaired waterbodies identified by the states.

New York and Connecticut identified Long Island Sound as "water quality limited" due to hypoxia, mainly caused by nitrogen discharges, and made it a priority for the development of TMDLs. TMDLs establish wasteload allocations for individual pollutants, applicable to all discharges to a waterbody to ensure that the combined effect of the discharges does not result in violations of the applicable WQS. By definition, a TMDL specifies the allowable pollutant load from all contributing sources (e.g., point sources, non-point sources and natural background) that will attain a water quality standard that applies to that waterbody, taking into account seasonal variations and including a margin of safety. The margin of safety takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. In essence, a TMDL defines the capacity of the water to absorb and digest a pollutant and still meet water quality standards. In April 2001, EPA approved TMDLs for Long Island Sound developed jointly by NYS DEC and the Connecticut Department of Environmental Protection. When the discussions and approvals for the adoption of final TMDLs were taking place, NYS DEC, NYC DEP, CT DEP and IEC were prominent among the participants on the LISS Management Committee.

In February of 1998, the LISS Management Conference adopted a three-phase plan for hypoxia management by nitrogen reduction. Phase III Action Limits set an overall 58.5% reduction target for any discharges to Long Island Sound (not just those discharges from NYC DEP's WPCPs), from the 1990 baseline for Long Island Sound nitrogen loads. Data on nitrogen loads were fully quantified for 1990, which is why that year was established as the baseline.

The ACO provided for limits which are clearly superceded by the TMDLs established by the SPDES permits issued by NYS DEC that are the subject of the administrative proceeding. NYC DEP made a request for an administrative hearing, arguing for the primacy of the ACO governing nitrogen limits over the SPDES permit limits. Especially critical to the success of achieving the TMDL limits is the cooperation and coordination of all parties involved, and specifically, the willingness of nitrogen dischargers from New York and Connecticut to abide by the LISS TMDL limits. IEC, as an interstate body with regulatory authority over the waters of both New York and Connecticut which lie within the Interstate Environmental District, has a particular interest in

ensuring adherence to the LISS TMDL limits. Critical to achieving nitrogen reduction is having all those who contribute to the nitrogen load achieve TMDL limits established by the LISS. Based upon recent estimates, the WPCPs owned and operated by NYC DEP are responsible for at least 50% of the nitrogen load to Long Island Sound.

IEC takes the position that an administrative order, as a stand-alone document, is not a permit and may not be used in lieu of a permit. In addition, NYS DEC has jurisdiction to administer a program permitting discharges under certain prescribed conditions. A discharger's ability to discharge flows from a permit rather than from an administrative order. The effluent limits in the newly issued permits for the 14 WPCPs in contention can be amended, modified or changed by the NYS DEC to add more stringent limits than those required in the previously issued ACO. In addition to the updated water quality standards, this can be driven by a number of other processes such as updated regulatory requirements, latest watershed-based modeling analysis and realization of harmful impact of the particular pollutant on water quality. In the case of the newly developed TMDLs put into effect by EPA, NYSDEC has the full right to amend the effluent limitations to include more stringent TMDL-based nitrogen limits into the permits.

The permit conditions set aggregate effluent limits for nitrogen discharges for two groups of four plants discharging into the upper reach of the East River and into Jamaica Bay, respectively. Before these limits were to take effect in 1996 and 1997, the City was required to make operational and process changes to maximize nitrogen removal in the existing plant units, and also conduct extensive pilot work to test new processes and technologies. The City and NYS DEC were then to jointly determine the most appropriate new systems to implement in order to meet specified nitrogen reduction goals. In the long-term, a Nitrogen Control Feasibility Plan would have comprehensively analyzed additional methods to meet much greater levels of nitrogen reduction for future discharges. It was because neither the limits nor the Nitrogen Control Feasibility Plan were implemented that the litigation ensued which ended with the ACO.

This proceeding is of concern to many because violations of the nitrogen loading limits contribute to the severe hypoxic conditions in Long Island Sound and Jamaica Bay, and cause damage to those ecosystems. The proximate location of these plants which had discharged pollutants into the East River and Jamaica Bay in violation of the permitted effluent limit of the SPDES permits, and the likely impact on Long Island Sound, accounts for the concern on the part of the State of Connecticut. Three of the five parties, the IEC, Pace Environmental Litigation Clinic and NRDC are seeking party status on a second issue in addition to nitrogen — combined sewer overflows. IEC has argued that long-term controls for combined sewer overflows should be finalized, and if the final plan is incorporated into the CSO Abatement Order and in turn incorporated into the permit, that would suffice. The Commission, as an interstate agency, is uniquely situated as a participant in this matter. All parties are currently awaiting a written decision from the administrative law judge assigned to this matter.

**WASTEWATER TREATMENT PLANTS DISCHARGING
INTO INTERSTATE ENVIRONMENTAL DISTRICT WATERS**

2003

PLANT	IEC RECEIVING WATER CLASSIFICATION	DATE OF CONSTR.	FLOW AVG. (MGD)	FLOW DESIGN (MGD)	TYPE OF TREATMENT	SLUDGE (1) GENERATED (TONS/YEAR)	SLUDGE (PERCENT SOLIDS)	SLUDGE DISPOSAL METHOD	ESTIMATED POPULATION SERVED
<u>CONNECTICUT</u>									
<u>Fairfield County</u>									
Bridgeport - East Side	B-1	2002+	8.2	10.0	Secondary (AS)	1,000 (4)	-	Incineration	44,750
- West Side	B-1	2002+	28.0	30.0	Secondary (AS)	3,000 (4)	-	Incineration	112,500
Fairfield	A	2002+	8.8	9.0	Secondary (AS)	5,000	20	Compost	43,000
Greenwich (Grass Island)	A	2003+	10.0	12.5	Secondary (AS)	6,000	25	Landfill	38,000
Norwalk	B-1	2002+	14.3	20.0	Secondary (AS)	2,280	25	Compost	80,000
Stamford	B-1	1991+	17.5	20.0	Secondary (AS)	15,600	22	Landfill	100,000
Stratford	A	1992+	9.6	11.5	Secondary (AS)	39,560	6.3	Incineration	49,390
Westport	A	1975+	2.0	2.9	Secondary (AS)	159	3 to 6	Incineration (2)	14,800
<u>New Haven County</u>									
Milford - Beaver Brook	A	1996+	2.3	3.1	Secondary (AS)	577	13.8	Incineration (2)	18,000
- Housatonic	A	1996+	7.0	8.0	Secondary (AS)	4,345	16.5	Incineration	56,000
New Haven - East Shore	B-1	2000+	33.9	40.0	Secondary (AS)	52,126	22.9	Incineration	200,000
West Haven	B-1	2000+	7.9	12.5	Secondary (AS)	8,700	27	Incineration	53,000
<u>NEW JERSEY</u>									
<u>Bergen County</u>									
Edgewater	B-1	1989+	3.3	6.0	Secondary (PO)	12,373.64	6.6	Beneficial Reuse (2)	16,000
<u>Essex County</u>									
Passaic Valley Sewerage Commissioners	B-1	1988+	286.5	330.0	Secondary (AS)	90,416	51.3	Landfill	1,400,000
<u>Hudson County</u>									
North Bergen M.U.A. - Woodcliff	B-1	1991+	3.1	2.9	Secondary (TF)	8,150	8	Incineration (2)	22,500
North Hudson Sewerage Authority	B-1	1993+	12.0	24.0	Secondary (TF)	32,115.28	8.8	Incineration	119,200
- Adams Street (Hoboken)	B-1	1993+	7.8	10.0	Secondary (TF)	15,073.42	7.9	Incineration (2)	45,800
- River Road (West New York)	B-1	1993+	7.8	10.0	Secondary (TF)	15,073.42	7.9	Incineration (2)	45,800
<u>Middlesex County</u>									
Middlesex County Utilities Authority	A	2001+	142.3	147.0	Secondary (AS)	221,741	23.5	Beneficial Reuse	750,000
<u>Union County</u>									
Joint Meeting of Essex & Union Counties	B-2	2001+	73.0	85.0	Secondary (AS)	27,124	32.2	Land Application	500,000
Linden Roselle Sewerage Authority	B-2	1989+	13.7	17.0	Secondary (AS)	1,120	92.1	Beneficial Reuse	65,000
Rahway Valley Sewerage Authority	B-2	1991+	33.3	40.0	Secondary (AS)	45,000	4.9	Trucked Out	300,000
						16,710	20.1		

A-1

**WASTEWATER TREATMENT PLANTS DISCHARGING
INTO INTERSTATE ENVIRONMENTAL DISTRICT WATERS**

2003

PLANT	IEC RECEIVING WATER CLASSIFICATION	DATE OF CONSTR.	FLOW AVG. (MGD)	FLOW DESIGN (MGD)	TYPE OF TREATMENT	SLUDGE (1) GENERATED (TONS/YEAR)	SLUDGE (PERCENT SOLIDS)	SLUDGE DISPOSAL METHOD	ESTIMATED POPULATION SERVED
<u>NEW YORK</u>									
<u>Nassau County</u>									
Bay Park	A	2003+	54.2	70.0	Secondary (AS)	35,640	21.5	Landfill	524,092
Belgrave Sewer District	A	1995+	1.7	2.0	Secondary (TF)	1,788	3.9	Trucked out to Bay Park	12,000
Cedar Creek	A	1997+	54.8	72.0	Secondary (AS)	48,300	18.2	Landfill	550,000
Cedarhurst	A	2003+	0.9	1.0	Secondary (TF)	25 (4)	4.0	Trucked Out	6,000
Glen Cove	A	2003+	3.8	5.5	Secondary (AS)	3,860	23.1	Landfill	28,000
Greater Atlantic Beach Water Reclamation District (Formerly - West Long Beach Sewer District)	A	2001+	0.6	1.5	Secondary (TF)	44 (6)	4.2	Trucked to Bay Park	5,000
Great Neck Sewer District	A	1990+	2.9	3.8	Secondary (AS)	560	22 to 30	Landfill	13,400
Great Neck Village	A	1996+	0.8	1.5	Secondary (TF)	92.93	6.4	Trucked Out	9,000
Jones Beach	A	1990+	0.5	2.5	Secondary (TF)	-	-	Trucked Out	Seasonal
Lawrence	A	2002+	1.6	1.5	Secondary (TF)	27 (6)	-	Compost(30%)/Trucked Out(70%)	5,500
Long Beach	A	2003+	6.0	7.5	Secondary (TF)	881.94 (4)	26	Landfill	37,000
Oyster Bay Sewer District	A	1992+	1.2	1.8	Secondary (TF)	35 (5)	4	Trucked Out	8,500
Port Washington Sewer District	A	1991+	3.0	4.0	Secondary (TF)	550 (4)	30	Incineration	35,000
<u>New York City</u>									
<u>Bronx County</u>									
Hunts Point	B-1	1977+	115.4	200.0	Secondary (AS)	106,550	27.7	Land Application/Landfill Cover	630,000
<u>Kings County (Brooklyn)</u>									
Coney Island	A	1995+	96.3	110.0	Secondary (AS)	(3)	-	Land Application/Landfill Cover	602,100
Newtown Creek	B-1	1967	238.2	310.0	Secondary (AS)	(3)	-	Land Application/Landfill Cover	1,039,300
Owls Head	B-1	1996+	104.9	120.0	Secondary (AS)	(3)	-	Land Application	761,500
Red Hook	B-1	1987	32.2	60.0	Secondary (AS)	10,715	24.4	Landfill	192,200
26th Ward	A	1975+	64.9	85.0	Secondary (AS)	70,300	23.8	Land Application/Landfill Cover	271,240
<u>New York County (Manhattan)</u>									
North River	B-1	1986	131.8	170.0	Secondary (AS)	(3)	-	Land Application/Landfill Cover	584,190
Wards Island	B-1	1979+	195.2	275.0	Secondary (AS)	134,500	26.9	Land Application	1,004,200
<u>Queens County</u>									
Bowery Bay	B-1	1978+	112.2	150.0	Secondary (AS)	44,740	25.4	Landfill	727,100
Jamaica	A	1978+	86.4	100.0	Secondary (AS)	18,790	26.7	Land Application/Landfill Cover	632,150
Rockaway	A	1978+	19.9	45.0	Secondary (AS)	(3)	-	Land Application	94,500
Tallman Island	B-1	1979+	58.5	80.0	Secondary (AS)	24,840	23.5	Landfill	388,200

**WASTEWATER TREATMENT PLANTS DISCHARGING
INTO INTERSTATE ENVIRONMENTAL DISTRICT WATERS**

2003

PLANT	IEC RECEIVING WATER CLASSIFICATION	DATE OF CONSTR.	FLOW AVG. (MGD)	FLOW DESIGN (MGD)	TYPE OF TREATMENT	SLUDGE (1) GENERATED (TONS/YEAR)	SLUDGE (PERCENT SOLIDS)	SLUDGE DISPOSAL METHOD	ESTIMATED POPULATION SERVED
<u>NEW YORK (con't)</u>									
<u>Richmond County</u>									
<u>(Staten Island)</u>									
Atlantic Village*	A	1985	-	0.075	Secondary (AS)	-	-	-	-
Elmwood Park Condominiums*	B-1	1974	-	2.0	Primary	-	-	-	20,000
IS-7	A	1964	0.01	0.021	Secondary (AS)	-	-	-	1,000
Mount Loretto Home-Plants #1 & #2*	A	1962	0.04	0.041	Septic Tank	-	-	-	1,000
Oakwood Beach	A	1979+	32.5	40.0	Secondary (AS)	24,644	26.3	Landfill	151,600
Point East Condominiums*	A	1986	-	0.16	Extended Aeration w/ Sand Filtration	-	-	-	300
Port Richmond	B-2	1978+	40.1	60.0	Secondary (AS)	(3)	-	Landfill	172,300
PS-3	A	1969	-	0.004	Extended Aeration	-	-	-	1,000
PS-42**	B-2	1967	-	0.002	Secondary (AS)	-	-	-	1,100
Saint Joseph's School**	A	1963	0.04	0.02	Septic Tank with Sand Filtration	-	-	-	1,200
Treetop Village**	A	1985	-	0.25	Extended Aeration w/ Sand Filtration	-	-	-	-
<u>Rockland County</u>									
Joint Regional Sewerage Board - Town of Haverstraw	A	2002	4.8	8.0	Secondary (AS)	4,110	18.9	Compost/Incineration	35,000
Orangetown Sewer District	A	1996+	-	12.75	Secondary (TF)	-	-	-	50,000
Palisades Interstate Park - Bear Mountain Plant	A	1967+	0.1	0.3	Secondary (TF)	-	-	-	20,000
Rockland County Sewer District # 1	A	1995+	22.6	28.9	Secondary (RBC)	2,467.0 (4)	26	Composting	200,000
Stony Point	A	1985+	1.0	1.0	Secondary (AS)	922.9	15	Composting	12,000
<u>Suffolk County</u>									
Huntington Sewer District	A	1988+	1.9	2.5	Secondary (TF)	2,808.0	18	Landfill	25,000
Northport	A	1972+	0.3	0.34	Secondary (AS)	31.3 (5)	2.5 to 3	Incineration (2)	3,500
Suffolk County Sewer District # 1	A	1988+	0.8	0.85	Secondary (RBC)	174.4	2.2	Landfill	12,000
Suffolk County Sewer District # 3	A	1989+	23.5	30.0	Secondary (AS)	66,302.0	22.5	Landfill	280,000
Suffolk County Sewer District # 6	A	1973+	0.3	0.6	Secondary (AS)	174.4	1.1	Landfill	6,000
Suffolk County Sewer District # 21	A	1989	1.8	2.5	Tertiary	383.0	1.7	Landfill	20,000

**WASTEWATER TREATMENT PLANTS DISCHARGING
INTO INTERSTATE ENVIRONMENTAL DISTRICT WATERS**

2003

PLANT	IEC RECEIVING WATER CLASSIFICATION	DATE OF CONSTR.	FLOW AVG. (MGD)	FLOW DESIGN (MGD)	TYPE OF TREATMENT	SLUDGE (1) GENERATED (TONS/YEAR)	SLUDGE (PERCENT SOLIDS)	SLUDGE DISPOSAL METHOD	ESTIMATED POPULATION SERVED
<u>PLANT</u>									
<u>NEW YORK (con't)</u>									
<u>Westchester County</u>									
Blind Brook (Rye)	A	2000+	4.0	5.0	Secondary (AS)	538.9 (6)	0.12	Pumped to Port Chester	25,000
Buchanan	A	1999+	0.3	0.5	Secondary (AS)	3,200.0	30	Trucked Out	2,100
Coachlight Sq. Condo. Asso. Inc.*	A	1992+	0.03	0.05	Secondary (AS)	-	25	Trucked Out	210
Mamaroneck	A	1993+	16.7	20.6	Secondary (AS)	7,641.8 (5)	< 0.5	Pumped to New Rochelle	80,000
New Rochelle	A	1997+	16.3	13.6	Secondary (AS)	12,500.0	21.2	Landfill	80,000
Ossining	A	1981	6.2	7.0	Secondary (AS)	27,900.0	3.9	Trucked Out	36,000
Peekskill	A	1980	7.0	10.0	Secondary (AS)	30,912.0	2.1	Trucked to Landfill	32,500
Port Chester	A	1990+	5.5	6.0	Secondary (RBC)	1,670.0	4.25	Trucked Out	25,000
Springvale Sewerage Corporation*	B-1	1992+	0.1	0.13	Secondary (RBC)	35.6 (5)	3	Trucked Out	1,700
Yonkers Joint Treatment	A	2002+	97.8	120.0	Secondary (AS)	34,531.0	28	Landfill	500,000
<u>Federal and Military</u>									
Camp Smith (Westchester County)	A	1997+	0.05	0.24	Secondary (TF)	0.88 (5)	3	Trucked Out	2,400
Veterans Administration Hudson Valley Healthcare System (Westchester County)	A	1982+	-	0.4	Secondary (TF)	-	-	Trucked Out	Patient Count
Gateway National Recreation Area** (Floyd Bennet Field, Kings County)	A	1981+	-	1.0	Secondary (TF)	-	-	Landfill	5,000

NOTE: Except for the IEC Receiving Water Classification, all information and data are supplied by the operating entities and are published as supplied.

- (+) Year of major additions or reconstruction.
- (*) Private or institutional sewage treatment plant.
- (-) Denotes no information.
- (1) Except where indicated, all volumes represent wet tons per year rounded to the nearest ton.
- (2) Disposal method occurs off-site.
- (3) Transferred by sea to dewatering facility for processing.
- (4) Reported as dry tons per year.
- (5) Estimated volume.
- (6) Metric dry tons.
- (**) Facility diverted flow for treatment to municipal sewer system during 2003.

(AS) Activated Sludge (BO) Biochemical Oxidation (OD) Oxidation Ditch
(RBC) Rotating Biological Contractor (PO) Pure Oxygen (RD) Rotating Disc (TF) Trickling Filter

**INTERSTATE ENVIRONMENTAL COMMISSION
DISCONTINUANCE OF SANITARY FLOW**

NAME	SPDES #	COUNTY	DATE (1)	CEASE FLOW	DRAINAGE BASIN	DIVERT TO MUNICIPAL SYSTEM
HSBC Bank	NY0073563	Richmond	03-04-03		Port Richmond	X
New York Skyports	NY0201332	New York	03-05-03	X	Newtown Creek	
USA Waste Services of NY, Inc.	NY0201103	Kings	01-15-03	X	Newtown Creek	
S&S Water Company	NY0201065	Kings	01-15-03	X	Oakwood Beach	
Yeshiva of Staten Island	NY0200913	Richmond	01-15-03		Oakwood Beach	X
Torrone Paint Store	NY0200760	Richmond	01-15-03		Oakwood Beach	X
Burger King Restaurant	NY0200662	Richmond	01-15-03		Port Richmond	X
Anthony Lee, Inc.	NY0200638	Richmond	01-15-03		Oakwood Beach	X
South Shore Country Club	NY0200492	Richmond	01-15-03		Oakwood Beach	X
Surfside Village STP	NY0200310	Richmond	01-15-03		Oakwood Beach	X
Staten Island University Hospital	NY0200255	Richmond	01-15-03		Oakwood Beach	X
Arbutus Willows STP	NY0140856	Richmond	01-15-03		Oakwood Beach	X
Fireboat House	NY0140791	New York	01-15-03	X	Wards Island	
Staten Island Medical Center	NY0140775	Richmond	01-15-03		Oakwood Beach	X
Tree Top STP	NY0140660	Richmond	01-15-03	X	Oakwood Beach	
Woodale Village STP	NY0100439	Richmond	01-15-03		Oakwood Beach	X
International House of Pancakes	NY0089699	Queens	01-15-03		Jamaica	X
Verizon NY (Office)	NY0076554	Richmond	01-15-03		Port Richmond	X
Verizon NY (Garage)	NY0075990	Richmond	01-15-03		Oakwood Beach	X
P.S. 42, NYC Board of Ed.	NY0036935	Richmond	01-15-03		Oakwood Beach	X
Phelps Dodge Inc.	NY0034908	Queens	01-15-03	X	Bowery Bay	
Floyd Bennett Field STP	NY0024911	Kings	01-15-03		26 th Ward	X
Revere Sugar Corp.	NY0007404	Kings	01-15-03	X	Red Hook	
Proctor & Gamble MFG Co	NY0005771	Richmond	01-15-03	X	Port Richmond	
Exxon Bulk Products Terminal	NY0005339	Kings	01-15-03	X	Newtown Creek	
St. Joseph's by the Sea HS	NY0036960	Richmond	08-20-03		Oakwood Beach	X

(1) Official notice of action.

**INTERSTATE ENVIRONMENTAL COMMISSION
FINANCIAL STATEMENT FY 2003**

The Commission's accounting records are maintained on a cash basis and are audited annually. The following is a statement of cash receipts and disbursements for fiscal year July 1, 2002 to June 30, 2003:

CASH BOOK BALANCE AS OF JUNE 30, 2002 \$1,270,609.11

RECEIPTS

Connecticut - FY'03	\$ 84,956.00
New York - FY'03	388,000.00
New Jersey - FY'03	388,000.00
EPA - FY'02	246,900.00
EPA - FY'03	495,000.00
Interest	18,412.82
Miscellaneous Receipts	<u>5,726.17</u>

TOTAL RECEIPTS 1,626,994.99

Sub-Total \$2,897,604.10

DISBURSEMENTS

TOTAL DISBURSEMENTS 1,537,115.42

CASH BOOK BALANCE ON JUNE 30, 2003 \$1,360,488.68

U.S. Treasury Bills	\$ 1,067,102.08
Insured Money Market Accounts	281,296.91
Checking Accounts	<u>12,089.69</u>
	<u>\$ 1,360,488.68</u>

GLOSSARY

ACO	administrative consent order
ASIWPCA	Association of State and Interstate Water Pollution Control Administrators
AWPCP	auxiliary water pollution control plant
BLRA	Bayonne Local Redevelopment Authority
BMWCA	Bureau of Marine Water Classification and Analysis
BNR	biological nutrient removal
BOCES	Board of Cooperative Educational Services
CAVF	Corona Avenue vortex facility
CCMP	Comprehensive Conservation and Management Plan
CES	Center for Environmental Science
CSI	College of Staten Island
CSO	combined sewer overflow
CT	Connecticut
CWA	Clean Water Act
CW/CA	Clean Water/Clean Air Bond Act
DEC	Department of Environmental Conservation
DEP	Department of Environmental Protection
DPR	Department of Parks and Recreation
DO	dissolved oxygen
DOH	Department of Health
DOS	Department of Sanitation
EPA	Environmental Protection Agency
EPF	Environmental Protection Fund
FDA	Food and Drug Administration
FY	fiscal year
HARS	Historic Area Remediation Site
HEP	Harbor Estuary Program
HVAC	heating, ventilating and air conditioning
ICWP	Interstate Council on Water Policy
IE	Independent Expert
IEC	Interstate Environmental Commission
IED	Interstate Environmental District
IMT	interim monitoring team
I/I	infiltration/inflow
ISC	Interstate Sanitation Commission
KMUA	Kearny Municipal Utilities Authority
LIS	Long Island Sound
LISO	Long Island Sound Office
LISS	Long Island Sound Study
MCUA	Middlesex County Utilities Authority
MG	million gallons
MGD	million gallons per day
MPN	most probable number
MUA	Municipal Utilities Authority
NCHD	Nassau County Health Department

GLOSSARY (continued)

NELAC	National Environmental Laboratory Accreditation Conference
NELAP	National Environmental Laboratory Accreditation Program
NEP	National Estuary Program
NHSA	North Hudson Sewerage Authority
NJPDES	New Jersey Pollutant Discharge Elimination System
NPDES	National Pollutant Discharge Elimination System
NOV	notice of violation
NPS	National Parks Service
N/PDES	National/State Pollutant Discharge Elimination System
NRDC	Natural Resources Defense Council
NYC	New York City
NYS	New York State
O & M	operation and maintenance
PBSA/NY & NJ	Pro Bono Students America/New York & New Jersey
POTW	publicly owned treatment works
PVSC	Passaic Valley Sewerage Commissioners
QA/QC	quality control/quality assurance
QPX	quahog parasite unknown
RAS	return activated sludge
RBC	rotating biological contactor
RBWG	Regional Bypass Work Group
R/V	research vessel
SBR	sequencing batch reactors
SCADA	supervisory control and data acquisition system
SCSD	Suffolk County Sewer District
SOP	standard operating procedure
SPDES	State Pollutant Discharge Elimination System
SSES	sewer system evaluation survey
SSO	sanitary sewer overflows
STORET	<u>STO</u> re and <u>RE</u> trieve, EPA's national water quality data base
STP	sewage treatment plant
SUNY	State University of New York
TMDL	total maximum daily load
UCONN	University of Connecticut
USA	Use and Standards Attainment Project
USCG	United States Coast Guard
UV	ultraviolet
VCP	vitriified clay pipe
VFD	variable frequency drive
VOC	volatile organic carbon
WLA	waste load allocation
WCDEF	Westchester County Department of Environmental Facilities
WEA	Water Environment Association
WEF	Water Environment Federation
WPCA	Water Pollution Control Authority
WPCP	water pollution control plant