

INTERSTATE SANITATION COMMISSION

A TRI-STATE ENVIRONMENTAL AGENCY



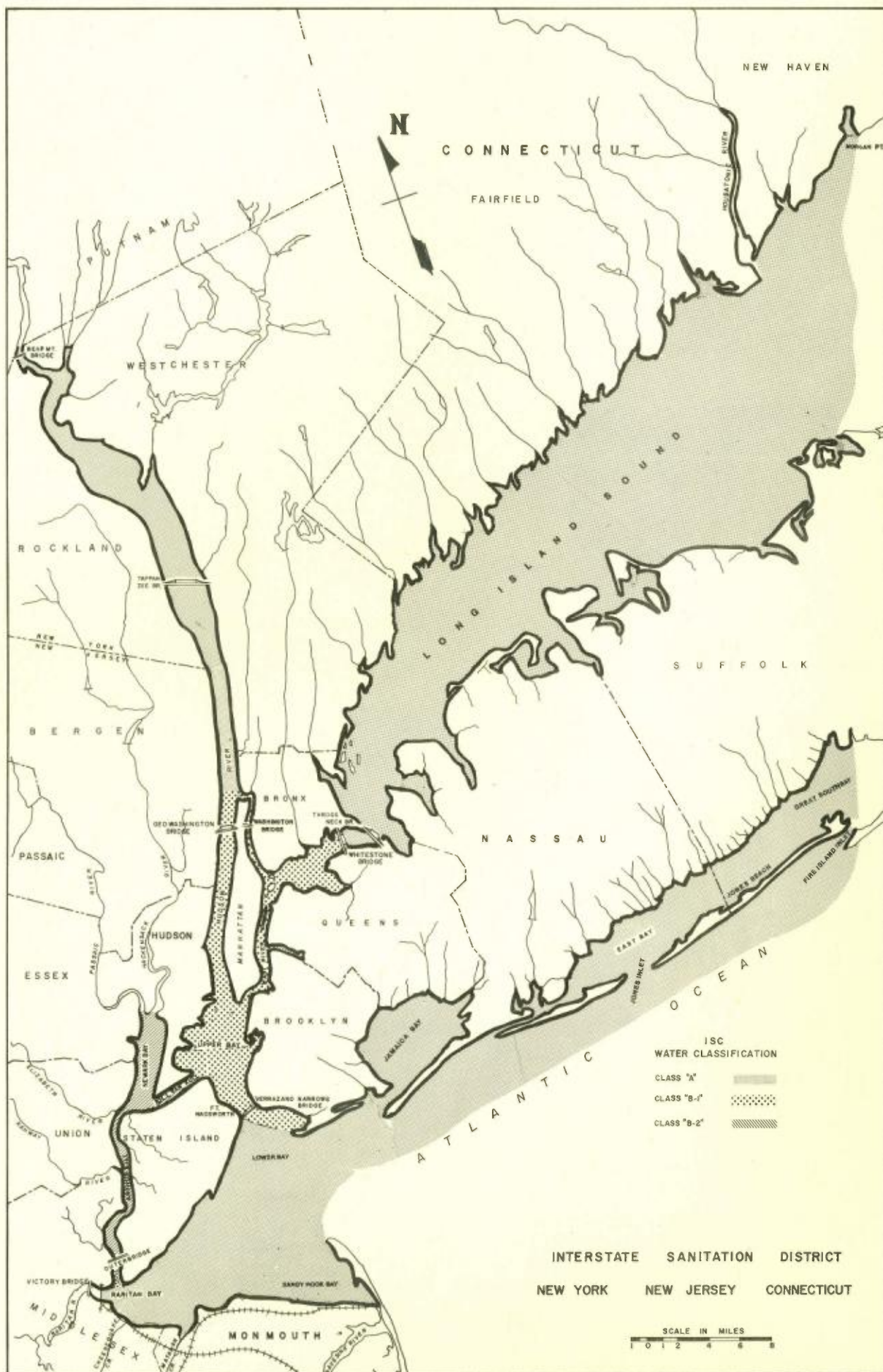
1999

ANNUAL REPORT

NEW YORK

NEW JERSEY

CONNECTICUT



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ANNUAL REPORT OF THE INTERSTATE SANITATION COMMISSION

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A TRI-STATE ENVIRONMENTAL AGENCY

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Howard Golub

January 24, 2000

To His Excellency, George E. Pataki
His Excellency, John G. Rowland
Her Excellency, Christine Todd Whitman
and the Legislatures of the States of New York, Connecticut, and
New Jersey

Your Excellencies:

The Interstate Sanitation Commission respectfully submits its report for the
year 1999.

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 York

Chairperson

For the State of Connecticut

Vice Chair

For the State of New Jersey

Vice Chair

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STATEMENT OF THE CHAIRPERSON OF THE INTERSTATE SANITATION COMMISSION

As we enter the Millennium Year, it is with a deep sense of pride that I can report that the Interstate Sanitation Commission is moving confidently forward into the 21st Century, fully in step with the times — with a broad-based agenda of regulatory and enforcement programs and sharply focused water testing, monitoring, and public education and public outreach activities. It is an agenda that is working in congress with an impressive network of multi-agency and regional partnerships concerning regional environmental matters.

My sense of pride is fueled by the many environmental accomplishments of the ISC dating back to its inception in 1936 when the need for an interstate water pollution control agency became readily apparent.

In recent times, the ISC's track record of success includes a hard won battle for region-wide disinfection of sewage effluents resulting in thousands of acres of previously polluted waters being reopened year-round for commercial shellfishing and being safer for recreational sports. Also, after more than two decades of litigation, my fellow Commissioners and I are especially proud of the acceptance by the US District Court of the Commission's recommendations for preventing debris from the Fresh Kills Landfill transfer operations from soiling Staten Island and New Jersey shorelines. In addition, we leave the 20th Century knowing that we were able to put closure on major issues that long posed a threat to the integrity of so many of the waterways within our region. These issues included more stringent discharge permits regarding pollution requirements for New York City's 14 wastewater treatment plants; the upgrading to secondary treatment and more stringent discharge requirements for the Hudson County, New Jersey, wastewater treatment plants; revising the Commission's water quality regulations to better protect our District waters, including mandatory notification to ISC of planned sewage bypasses; and securing a much needed tri-state agreement on regional notification and tracking procedures for unplanned bypasses of sewage into the waters of this region.

Looking forward into the new century, our course is firmly set. The ISC's agenda for the Year 2000 and beyond includes responsibilities and programs in such areas as air pollution, resource recovery and toxics; however, the continuing emphasis is on water quality where, under a 1936 Compact approved by our member states and concurred to by Congress, it is our obligation to exercise our regulatory and enforcement powers in an impartial and unbiased manner, on behalf of our entire region.

From this regional perspective, 1999 has been a year of ISC multi-agency


involvement on many issues throughout our District. Of particular interest are matters pertaining to the Fresh Kills Landfill and special microbiological water quality surveys to track down the source of contamination causing beach closures at Great Kills Park in Staten Island. This second project is a cooperative program that involves the ISC working with the New York State Department of Environmental Conservation, the New York City Department of Environmental Protection, the New York City Department of Health, the National Park Service, and the College of Staten Island. In addition, for the ninth consecutive year, the Commission has conducted an intensive sampling program in the Long Island Sound as well continuing our active role as members of the Management Committees and various work groups for both the Long Island Sound Study and the New York - New Jersey Harbor Estuary Program.

Furthermore, I wanted to note our participation in the Long Island Sound Water Monitoring Work Group, a networking partnership of 14 citizen organizations and government agencies working to promote closely coordinated monitoring programs on the local, state and regional levels. In this connection, I am supporting strong public education programs and campaigns to further communication and intensify public awareness of water quality and environmental issues.

I would also be remiss if I did not report on our active role coordinating the Regional Bypass Work Group which addresses the issue of unplanned bypasses of raw and partially treated sewage. We at ISC are proud that the Commission spearheaded the efforts to put a pollution prediction model and notification protocols in place and, since 1998, we serve as the recipient and clearing center for calls regarding unplanned spills within our region.

Finally, I am happy to note that, at long last, procedural matters seem to be cleared away so that we may change the ISC name to the Interstate Environmental Commission to better reflect the nature of our mission.

On a personal note, as a Citizen Commissioner of the ISC for 12 years representing New York, and now, as I complete my first year as Chairperson, the dedication and support I have enjoyed from my fellow Commissioners, ISC staff, governmental officials and legislators, as well as from volunteer environmental groups throughout our region, has been most gratifying. For me and my family, the achievements and accomplishments of the ISC remain a source of the utmost satisfaction.



Donna B. Gerstle
Chairperson

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I. EXECUTIVE SUMMARY

First published in the Commission's 1937 Annual Report, the photos interspersed throughout the text depict a time when quite literally areas of the Interstate Sanitation District were "truly navigable sewers". The effect of pollution can be considered from three ways, namely aesthetic, health and economic. The aesthetic effect of pollution in the form of deleterious odors, decaying waterfront buildings, piers and derelict vessels, and the presence of floatables from a variety of sources has an immediate revolting response. It was quite poignant to note that in 1937 "that when pollution ... has been treated to meet the standards of the Compact, that even within Class "B" waters, one will not be offended by unpleasant odors or sights."

Luckily, returning to the water is a national focus. The Commission is gratified to report about the great improvements in water quality throughout the Region where the majority of the waters are fishable and swimmable. However, the region still faces problems which are not local, but global. Hypoxia, sediment contamination, pathogens, habitat loss, combined sewer overflows, atmospheric deposition, impacts on living marine resources, land use issues and public education have all been identified as priority areas of concern.

Just over 100 years ago, the metropolitan waterways were in a deplorable state. Water quality was at an extreme low due to industrial pollution and raw sewage. The worlds most productive oyster and clam beds were condemned, finfish stocks depleted and tasted like "oil", health agencies inundated with patients suffering from dozens of different types of waterbourne diseases from using recreational waters — many never to reopen in the 20th century — and the air clogged with coal dust. This was a time when interstate conflicts arose regarding the sanitary conditions of the waters surrounding and shared by the States of New York, New Jersey and Connecticut.

In the 1920s, the Tri-State Treaty Commission recommended the establishment of a body to control and abate water pollution. Following their recommendation, the Tri-State Compact establishing the Interstate Sanitation District and the Interstate Sanitation Commission was enacted in 1936, with the Consent of Congress. The ISC initially consisted of the States of New York and New Jersey; the State of Connecticut joined the Commission in 1941. Originally dealing only with matters concerning water pollution, air pollution was added to the scope of the Commission's activities in 1962. In 1970, the Commission was designated as the official planning and coordinating agency for the New Jersey-New York-Connecticut Air Quality Control Region.

Construction and upgrading of wastewater treatment facilities was one of the Commission's most important original priorities. In fact, a great majority of the treatment plants in this region were originally constructed due to Orders obtained by the Commission. Sixty-three years later, significant improvements have been and continues to be made, due to the efforts and actions of ISC. The Commission's 1983 refusal to allow less than secondary treatment occur at 26 treatment plants was followed by ISC's requirement for universal year-round disinfection starting in 1986. In spite of the

great strides made to date, much remains to be done. The Region must now control untreated discharges from combined sewer overflows (CSOs) and storm sewers in order to make further significant reductions in pollutants for the waters to achieve their intended uses.

The Commission's outstanding record speaks for itself. ISC's programs and actions have contributed to the great improvements in the region's waterways in the recent past. The Commission's year-round disinfection requirement which took effect in 1986 was instrumental in opening thousands of acres of shellfish beds on a year-round basis. For the past several summer seasons, tri-state residents and tourists have suffered far fewer beach closings from elevated levels of coliform bacteria or wash-ups of harmful medical debris. In another effort to promote cleaner waters, the Commission adopted an amendment to its Water Quality Regulations on October 15, 1997, requiring mandatory notification to ISC of planned sewage bypasses. Taking this issue one step further, the Commission — in conjunction with its three states' environmental and health departments, US EPA and NYC DEP — 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 and have proved to be effective. This is truly a regional success story.

During 1999, the Commission developed a mission statement along with a series of goals and roles/functions that will address the issues facing the region in the 21st Century. The ISC is in a unique position to take the lead on regional issues because, as an interstate agency, the Commission views the region as a whole and can cross state boundaries in an impartial and unbiased manner.

The mission of the ISC is to protect and enhance environmental quality through cooperation, regulation, coordination, and mutual dialogue between government and citizens in the tri-state region.

The goals of the ISC are to abate and control water pollution in the Interstate Sanitation District and engage in the coordination of interstate air pollution problems in order to achieve a healthy environment and a productive ecosystem. The ISC will implement the goals by:

- coordinating interstate and region-wide programs and enforcing the ISC's Water Quality Regulations,
- providing technical assistance and support to its member States,
- taking the lead on region-wide issues, and
- enhancing public and legislative awareness, and disseminating information.

In order to achieve its mission and its goals, the ISC has programs that lead to opening and/or keeping open waters for swimming, shellfishing and fishing. It is proactive in enforcement of the

ISC's Water Quality Regulations by sampling, laboratory analyses, research, legal activities and coordination of these with the ISC's member states and the United States Environmental Protection Agency.

The staff continues to fulfill ISC's technical and administrative responsibilities within the limitations imposed by the current resources. While somewhat increased, the ambient and effluent water quality sampling programs remain at reduced levels and, except for the Staten Island odor complaint answering service and limited investigations, the air pollution programs are at a minimum level.

The objectives of the the Commission's programs are 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, and other needs that may arise.

Public involvement, education and outreach programs remain a high Commission priority. Besides its normal day-to-day activities, the Commission regularly testifies at public hearings and meetings on various issues of concern. ISC also lectures at local schools and colleges on subjects dealing with coastal pollution, oceanography, habitat, living marine resources, sampling and data collection, and related Commission activities. During the past ten years, the Commission has been a sponsor for Our World Underwater which gives young scholars the opportunity to get nationwide exposure to diverse organizations involved with the marine environment. Over the past seven years, law student internships have been awarded in conjunction with Pro Bono Students America/New York and New Jersey.

This report provides a record of the water and air pollution activities of the Interstate Sanitation Commission for the period December 1998 through November 1999. To address the environmental problems within its area of jurisdiction, the Commission has focused on technical assistance, enforcement, engineering, planning, laboratory analysis, monitoring, statistical analysis, coordination, and public outreach.

WATER POLLUTION

The Commission's water pollution abatement programs continue to focus on the effective coordination of approaches to regional problems. Improving water quality so more areas can be used for swimming and shellfishing remains a high priority. The ISC's programs include enforcement, minimization of the effects of combined sewers, participation in the National Estuary Program, 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 ISC's District waters. It is estimated that over \$4.76 billion has been allocated by municipalities and bond act dispersements in the District for projects recently completed, in progress, and planned for the future.

For the second year, the Commission took the lead and coordinated the efforts of the Regional Bypass Work Group which is comprised of 16 federal, interstate, state, county and local agencies. The Work Group established and 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 past two years, 179 raw sewage, sludge and chemical bypasses occurred, some of which resulted in closures.

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:

- participated as an amicus curiae (friend of court) in a New York State case alleging that the City of New York violated its permit when it exceeded parameters for nitrogen discharges,
- continued involvement and oversight of the Consent Orders designed to prevent debris from escaping from the Fresh Kills Landfill located on Staten Island,
- involvement in an enforcement proceeding against New York City's North River treatment plant on various issues of environmental concern,
- filed a summary decision motion in an adjudicatory hearing granted to the Commission regarding the deletion of ISC's Regulations from a NJPDES permit, and
- final closure with one permittee whose planned bypass fell under ISC's 1997 Water Quality Regulation requiring advance notification to ISC of planned sewage bypasses.

The Commission remains deeply committed and deeply involved with the Long Island Sound Study (LISS) and the New York-New Jersey Harbor Estuary Program (HEP). ISC continued to actively participate on the Management Committees for both of these National Estuary Programs and on various work groups for these studies. The final Comprehensive Conservation and Management Plans (CCMPs) for the LISS and the HEP were signed in 1994 and 1997, respectively. Several work groups dealing with nutrients, toxics and pathogens were reactivated recently and ISC is taking an active role as well as hosting and coordinating several meetings. The implementation processes under way are due, in part, to both the New York and New Jersey environmental bond acts which have earmarked significant resources to the HEP and LISS for a variety of pollution control and abatement projects, habitat creation and research.

ISC has an ongoing project to continually update its region-wide inventory of development projects within the District; this effort is presently in its twelfth year. Among other things, this inventory contains estimates of the amount of sewage that will be generated by proposed projects. This information has been invaluable in determining whether the infrastructure — the sewage treatment plants and the sewer systems — has the capacity to accept additional wastewater from the construction of residential and mixed-use buildings, as well as hotels, marinas and recreational facilities.

As a means of monitoring compliance with discharge permit limitations for treatment plants and industries, ISC continued to regularly sample waste discharges from permittees throughout the District. Using the ISC 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 ISC's ninth consecutive year as a participant in this important project. The Long Island Sound surveys were enhanced with additional collection of water quality samples that allowed the Nassau County Health Department to identify phytoplankton species. For the fourth year in a row, at the request of NJ DEP, during the winter and spring of 1998-1999 the Commission collected water quality samples needed by NJ DEP to check the sanitary conditions of the shellfish waters of western Raritan Bay. At the request of NYS DEC, the Commission continued a sampling program in selected Westchester County harbors in Long Island Sound, an area that NYS DEC wants to designate for a shellfish transplant program. These and other sampling programs are detailed in this report.

The Commission has been involved with the US Army Corps of Engineers' Dredged Material Disposal Management Plan for the Port of New York and New Jersey since 1981. The effort must include all interests throughout the region in order to be able to develop solutions that balance dredging requirements of the Port of New York and New Jersey with sound environmental and economic disposal alternatives. By consensus of its organizers, the Dredged Materials Forum has been incorporated into the HEP. The chairpersons of the Forum's work groups were designated as the Dredged Material Management Integration Work Group. The Commission took an active role by participating on the Mud Dump Site Work Group.

In addition to the day-to-day operations performed by the ISC laboratory which has been located on the campus of the College of Staten Island (CSI) since late 1993, the laboratory personnel continue to collaborate with CSI on environmental projects of mutual concern. The ISC laboratory is certified by New York State and New Jersey, and has continued to participate in the US EPA's Water Pollution Laboratory Evaluation Program and Water Supply Microbiology Performance Evaluation Study. The ISC laboratory also conforms with the recommended procedures of the US Food and Drug Administration.

ISC's library holdings 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.

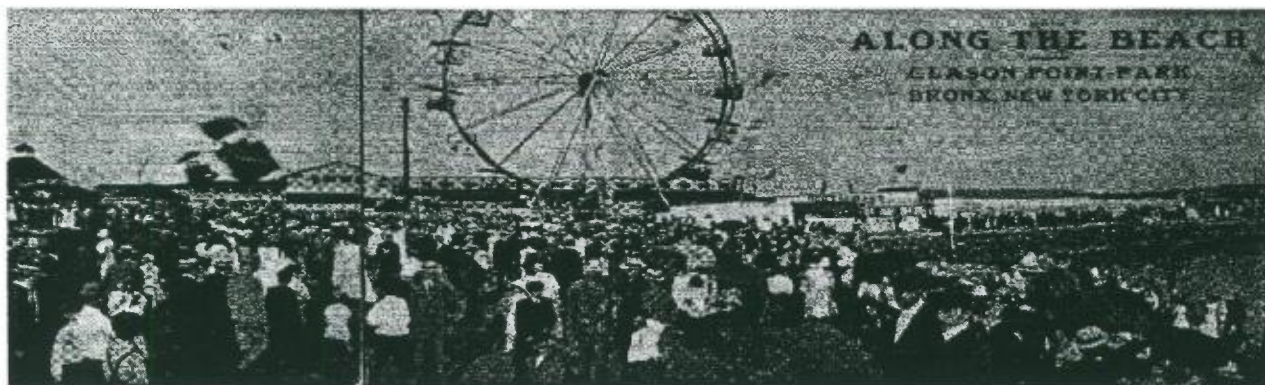
AIR POLLUTION

Budgetary restrictions continue to keep the Commission's air pollution monitoring and response programs at a reduced level, including ISC's Staten Island field office remaining closed as has been the case since mid-1989. The Commission's 24-hour-a-day, 7-day-a-week answering service (718-761-5677) remains active and ISC personnel investigate as many complaints as its resources will allow. ISC also forwards complaints to the appropriate enforcement and health agencies.

During the 12-month period from October 1998 through September 1999, the Commission received 26 air pollution complaints — a decrease of 45% over the previous 12 months. As has been the pattern, most of the calls originate from Staten Island; this year over 96% of the complaints emanated from that Borough. No one neighborhood on Staten Island was grossly impacted by odors during the reporting period. 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.

ISC 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 38 health messages — an increase of almost 50% over the previous 12-month period — between June 4th and September 13th to the appropriate government environmental and health agencies throughout the region.



Clason Point Park on the Upper East River, Bronx, New York, circa 1910
Photo from ISC archives

II. WATER POLLUTION

GENERAL

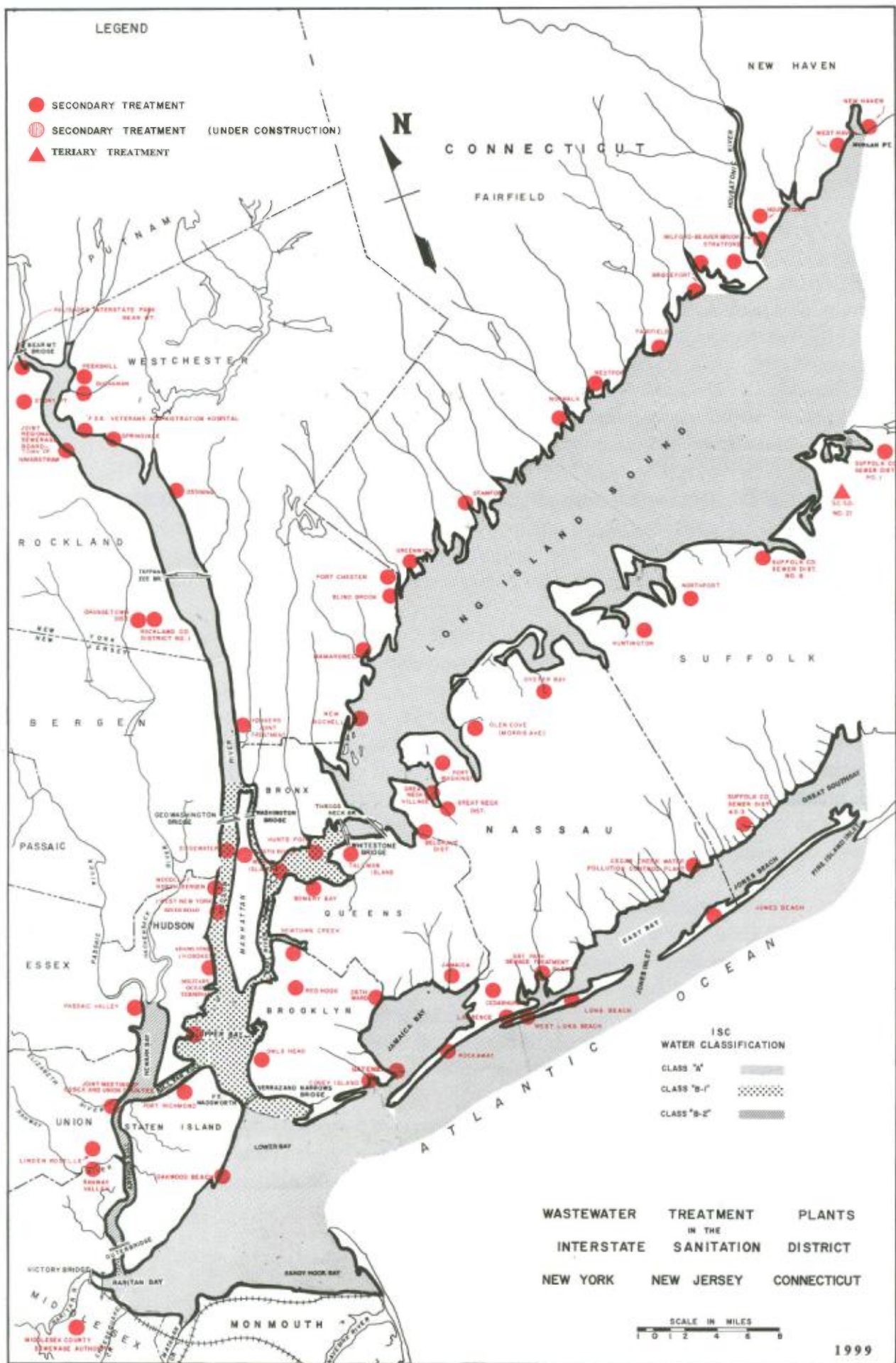
During 1999, approximately \$4.76 billion was allocated for 523 water pollution control projects in the Interstate Sanitation District which were either completed, in progress, or planned for the future. These monies were allocated in the following manner: over \$100.14 million for 176 completed projects, more than \$2.756 billion for 245 projects in progress, and more than \$1.9 billion for 102 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 now in place throughout the Interstate Sanitation District, control of the region's combined sewer overflows 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 sources namely, hypoxia, 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. The information in this section is that which was available and accurate through November 1999.

A map of the Interstate Sanitation 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 classifications. Additional information on each plant is listed in Appendix A.



CONNECTICUT WATER POLLUTION CONTROL PLANTS

The Long Island Sound Study is a partnership involving 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 Sanitation District. In December 1990, the LISS Policy Committee adopted a "no net increase" policy for nitrogen discharges from wastewater treatment plants in order to reduce those loadings into Long Island Sound.



As part of Phase II, Connecticut allocated approximately \$18.1 million to reduce its aggregate, annual nitrogen load by 900 tons from the 1990 baseline. The Connecticut Department of Environmental Protection issued Consent Orders requiring nitrogen reduction assessments and implementation of retrofits at selected plants based on cost and feasibility. All 12 Connecticut facilities discharging to the Interstate Sanitation District are incorporating interim and permanent denitrification processes.

On February 5, 1998, after a year of public review, comment and revision, the LISS Policy Committee adopted the Phase III Actions for Hypoxia Management which establishes a 58.5% reduction in nitrogen loadings over the next 15 years for 11 management zones that comprise the Connecticut and New York portions of the Long Island Sound watershed. Presently, nitrogen removal facilities are under construction in Fairfield and Norwalk. Nitrogen removal design work is under way in Stamford, while facility planning is being conducted in Bridgeport, Stratford and Westport. Ten Connecticut plants in the District are operating with interim retrofits and will make additional modifications to reach target nitrogen effluent limits. There are 23 facilities outside the District that are implementing BNR technologies.

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)

Projects in Progress

Since 1991, a phased construction multi-year CSO improvement program has been ongoing in the Bridgeport drainage basins which consist of 3,880 acres. This work is 75%

complete at an estimated cost of \$27 million. During this program, which is planned for completion in 2002, 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. 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.

An engineering study is under way to assess process modifications required for nutrient removal at both facilities. An BNR pilot program is under way. This assessment is estimated to cost \$350,000.

The complete rehabilitation of all unit processes at the East Side plant is 85% complete at a re-estimated cost of over \$37.2 million. Agenda items include, but are not limited to, the overhaul of the preliminary, primary, and secondary treatment units, and modernization of the electrical/mechanical equipment, as well as pumps and associated instrumentation. All treatment units are expected to be on line during May 2000.

Future Projects

Both treatment facilities are operating under State Consent Orders to improve plant performance and attain secondary treatment capabilities. The Authority negotiated new compliance dates with the City of Bridgeport during 1994 which was modified December 12, 1996.

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 under Bridgeport Harbor, will convey sludge from the West Side plant to the East Side plant. A construction schedule has yet to be released.

Fairfield, Connecticut (Fairfield County)

Project in Progress

This facility is operating under a State Consent Order that requires plant upgrades. The Order requires operational levels of treatment by November 2002. Design work for rehabilitation and expansion of this 9 MGD secondary facility is nearly complete (\$2.85 million). Recently under way (5% complete), plant modifications include rebuilding the existing facilities, installation of UV disinfection, converting one digester to a waste sludge holding tank, three new clarifiers, and additional aeration tankage. The cost has been re-estimated at \$32 million. Additional nitrogen removal retrofits will be implemented as needed.

Greenwich (Grass Island), Connecticut (Fairfield County)

Completed Projects

A phase II engineering study which details a new biosolids handling facility was completed during late 1997; designs were recently completed. The new facility is anticipated to be operational during March 2002.

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. Manhole rehabilitation and sewer lining was completed during March 1999 at a final cost of \$800,000.

Future Projects

Anticipated to begin construction in March 2001, a biosolids handling facility will be installed at a re-estimated cost of \$13.0 million. The proposal has an one-year construction schedule.

New Canaan, Connecticut (Fairfield County)

Completed Projects

Although this 1.5 MGD secondary facility is located outside the Interstate Sanitation 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 is 100% operational as of March 1999. This modernization project includes a new pretreatment building; two new secondary clarifiers; a new control building; administrative offices; and new facilities for dewatering, UV disinfection, and odor control. All these construction phases have an estimated final cost of \$14.3 million.

Collection system upgrades included the building of three new pump stations at an estimated final cost of \$1.8 million. Additional I/I corrections are under way (50% complete) with costs estimated at \$100,000.

New Haven - East Shore, Connecticut (New Haven County)

Projects in Progress

On January 4, 1999, the City of New Haven Water Pollution Control Authority entered into a 15-year contract operations agreement with a consultant. The on-site regional firm will assume responsibility for the operation, maintenance and management of this facility.

NEW CANAAN WPCP
NEW CANAAN, FAIRFIELD COUNTY, CONNECTICUT

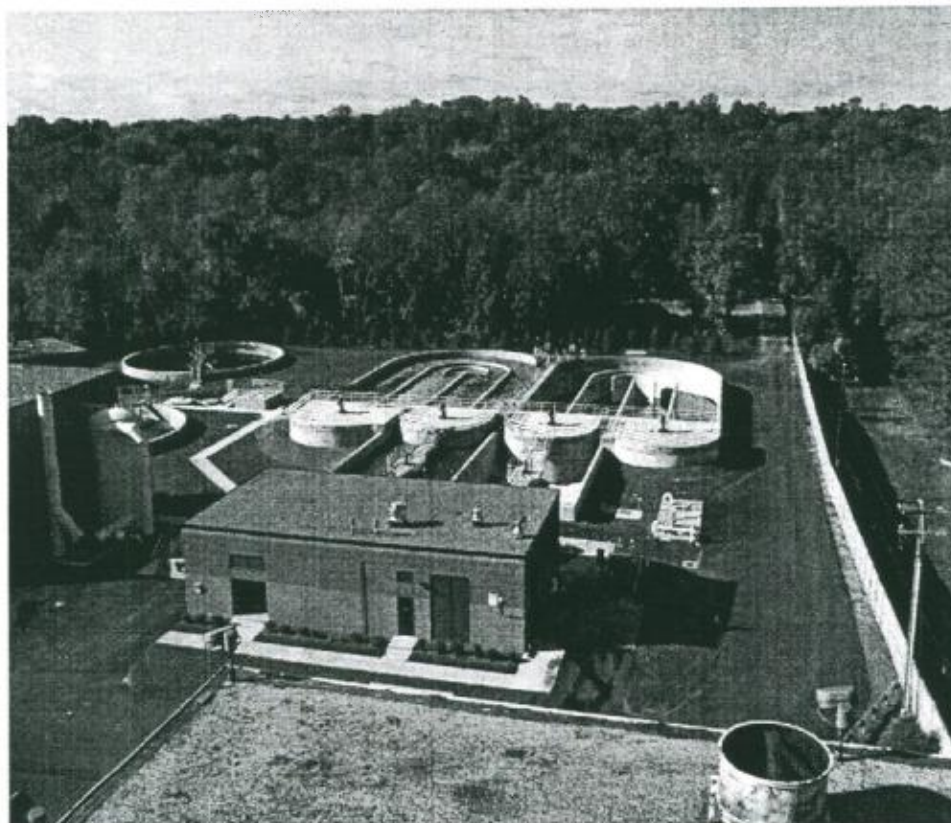


PHOTO COURTESY OF EARTH TECH, INC.

NEW 1.5 MGD SECONDARY FACILITY WITH
PRETREATMENT AND UV CAPABILITIES

Currently under way (80% complete) a nitrification inhibition study (\$236,000) is planned to be complete, during May 2000.

Plant upgrades are 95% complete with an operational start-up expected during December 1999. Re-estimated to cost \$6.8 million, the upgrades are addressing the primary treatment phase including the conversion of a monorake system to a 3-separate chain and flight sludge collection process, the replacement of all of the existing antiquated motor control centers, and the installation of covers on the primary tankage for odor control.

An ongoing long-term CSO control plan is 80% complete with project costs estimated at \$2 million. 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 \$225 million. The work is approximately 40% complete.

EAST SHORE WATER POLLUTION ABATEMENT FACILITY
NEW HAVEN, NEW HAVEN COUNTY, CONNECTICUT

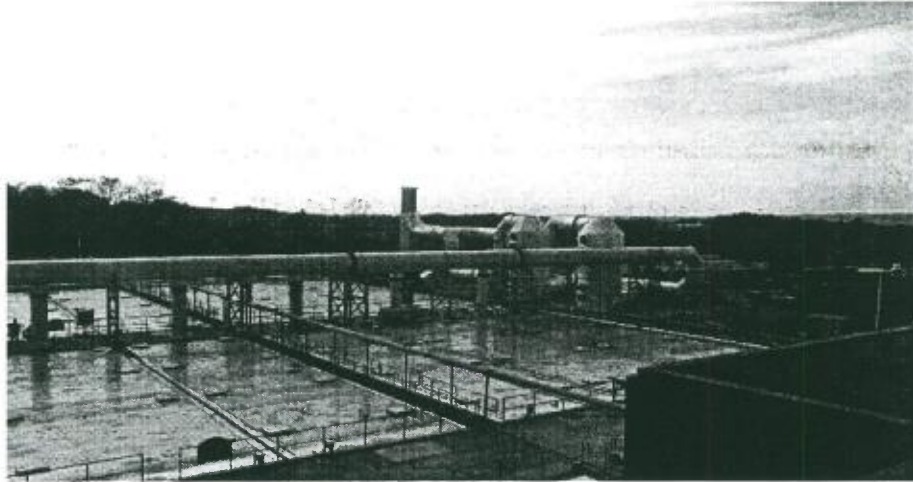


PHOTO COURTESY OF OMI

NEWLY INSTALLED PRIMARY CLARIFIER COVERS, SCRUBBING
TOWERS AND EXHAUST STACK

Future Projects

An engineering design study planned to begin during March 2000 will assess the capacity needs for the Quinnipiac Avenue pump station. Estimated to cost \$3.5 million, a new pump station will replace the antiquated Barnes Avenue facility with an approximate operational start-up of September 2002.

Two additional engineering studies are proposed which will address alternative standby power for the main sewage pumps and a regional septage study which is anticipated to start in mid-2000.

Norwalk, Connecticut (Fairfield County)

Projects in Progress

A multi-year phased construction schedule, under way since 1996, is 90% complete and has a re-estimated cost of \$41 million. An operational start-up is planned for 2000 in which the treatment capacity will be increased from 15 MGD to 20 MGD. Other plant unit upgrades include odor controls, a new chlorination system, and new tankage for all treatment phases.

At a re-estimated cost of \$1 million, collection system improvements and rehabilitation, as well as sewer separation work, have temporarily been postponed. However, the project is approximately 75% complete.

Stamford, Connecticut (Fairfield County)

Completed Project

At an estimated final cost of \$2.5 million, design work for the facility upgrade was completed during November 1999.

Future Project

This facility is operating under a State Consent Order to upgrade and implement nitrogen removal capabilities. Upgrading and expansion of this 20 MGD secondary facility has been rescheduled to begin during March 2000. This three-year construction program was also re-estimated to cost \$70 million. The plant renovation and upgrade will include high efficiency BNR technology and sludge processing equipment.

Stratford, Connecticut (Fairfield County)

Project in Progress

Recently under way, an engineering consultant is preparing a facility plan which is anticipated to be complete in early 2000.

West Haven, Connecticut (New Haven County)

Projects in Progress

Presently under design, \$1.2 million will be incurred to prepare for this facility's main pump station wet well upgrade. The modernization includes new automatic bar screens and odor controls; and it is anticipated that the work will be complete in December 1999. Additional design plans are being drawn for I/I lining and repairs (\$4 million). Presently, I/I lining and pointing repairs to the brickwork are under way.

A phased approach to upgrade four existing pumping stations city-wide is 65% complete. Anticipated to be operational during the spring of 2000, this work is re-estimated to cost \$7.2 million.

Future Projects

An odor control system will be installed plant-wide and at all pump stations at an estimated cost of \$4 million. The odor source buildings will be ventilated, treated and released through a bio-filter with scrubbers for the purpose of eliminating or lessening impacts on the surrounding neighborhoods. The one-year construction agenda is planned to start during March 2000.

Westport, Connecticut (Fairfield County)

Projects in Progress

This facility is presently operating under a State Infiltration/Inflow Abatement Order. At an estimated cost of \$250,000, the Church Street sewer will be replaced during the summer season of 2000. In addition, a State Consent Order was issued on April 3, 1998, to address and implement odor abatement corrective measures.

Future Projects

It has been re-estimated to cost \$622,000 to implement the odor abatement alternatives identified in the recently completed study. An approximate construction start-up is anticipated during the summer of 2000. The work will include a VOC collection system, a blower building and a biofilter. Another summer project that is planned involves the replacement of the secondary digester cover at an estimated cost of \$300,000.



Raw sewage plume in East River at confluence with Harlem River, circa 1947

Photo from ISC archives

NEW JERSEY WATER POLLUTION CONTROL PLANTS

Bayonne Municipal Utilities Authority, New Jersey (Hudson County)

Project in Progress

The Bayonne primary facility 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 will receive a \$5.3 million low interest loan for CSO abatement and sewer system upgrades from the New Jersey Environmental Infrastructure Trust.

The recently closed Military Ocean Terminal treatment plant is now under the auspices of the Bayonne MUA. See the Military Ocean Terminal write-up for additional information.

Edgewater, New Jersey (Bergen County)

Completed Project

During 1999, a gravity belt thickener was installed at this 6.0 MGD secondary plant. Final costs were not available.

Projects in Progress

The Edgewater drainage basin began to implement a combined sewer overflow abatement and sewer separation project during mid-1998. The first contract involved the elimination of three regulators and associated outfalls discharging to the Hudson River. This contract was estimated to cost \$565,000. The second phase, which is recently under way, will incorporate floatables controls (in-line netting) at six regulator outfalls. The third phase proposes sewer separation in order to eliminate four additional regulators.

Hoboken, New Jersey (Hudson County)

Since November 1996, this facility has been under the jurisdiction of the North Hudson Sewerage Authority (NHSA) and is called the Adams Street facility. Refer to the write-up under the NHSA - Adams Street.

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 will receive a \$20 million low interest loan for CSO abatement from the New Jersey Environmental Infrastructure Trust.

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

Completed Projects

Several modernization projects were completed during December 1998. First, the anaerobic sludge digester and sludge storage tank (\$1.9 million) were rehabilitated and operational during June 1999. Secondly, the chlorination controls and dispersion equipment (\$500,000) were upgraded and operational during the early summer season. The upgrading of two main sewage pumps at a cost of \$1.6 million was completed during September 1999.

Project in Progress

Trunk sewer rehabilitation began during May 1997 and is ongoing with a phased construction agenda.

Future Projects

Additional rehabilitation, installations and upgrades are planned for the influent screen house facility, sludge thickening and the dechlorination facilities. These proposed projects are not yet scheduled and the final cost estimates have yet to be determined.

Kearny Municipal Utilities Authority, New Jersey (Hudson County)

Future Project

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. The Authority has identified several process modifications that would improve operations and/or decrease costs. Portions of the existing equipment have become outdated and are in need of replacement due to either excessive wear, environmental degradation, Y2K incompatibility, or a combination of these factors. A phased construction schedule costing about \$5.6 million will address necessary immediate upgrades and be followed by a long-term planning and financing program. The

first phase will address equipment upgrades, repairs and installations. The second phase will involve sanitary and stormwater sewer separation and sewer extensions. Refer to the PVSC write-up for additional information.

Linden Roselle Sewerage Authority, New Jersey (Union County)

Projects in Progress

The Authority is presently operating under a State Administrative Consent Order (July 1992/modified May 1996) to investigate effluent toxicity. Ongoing engineering studies are addressing this issue by exploring industrial pretreatment impacts; pretreatment controls will most probably be implemented. The facility is in compliance with all Order dates and anticipates operational levels by May 2000.

The installation of four ultraviolet disinfection units is under way (40% complete) at an estimated cost of \$2.5 million. The 12-month project is anticipated to be operational during March 2000.

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

Projects in Progress

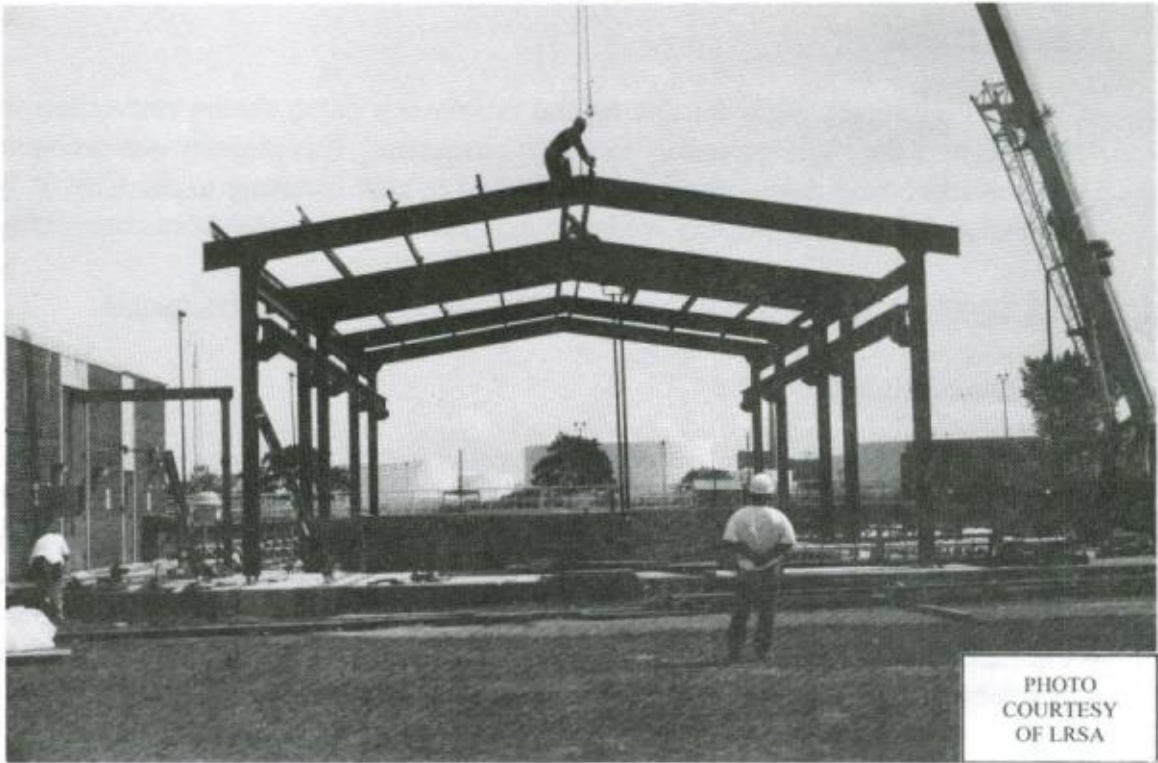
This facility is operating under a State Consent Order (last modified May 1998) to identify I/I and develop alternatives to correct the extraneous flows. Several studies are in progress which address water quality impacts on the Raritan River (\$50,000), effluent reuse or replacement service water (\$1.5 million), and land-based sludge management improvements (\$10 million).

A 16-megawatt power generation facility, fueled by methane gas recovered from a landfill, is 5% complete and is estimated to cost \$15 million. This new facility is located across the Raritan River in New Brunswick, New Jersey, and will supply electricity and steam via subaqueous piping for various treatment processes.

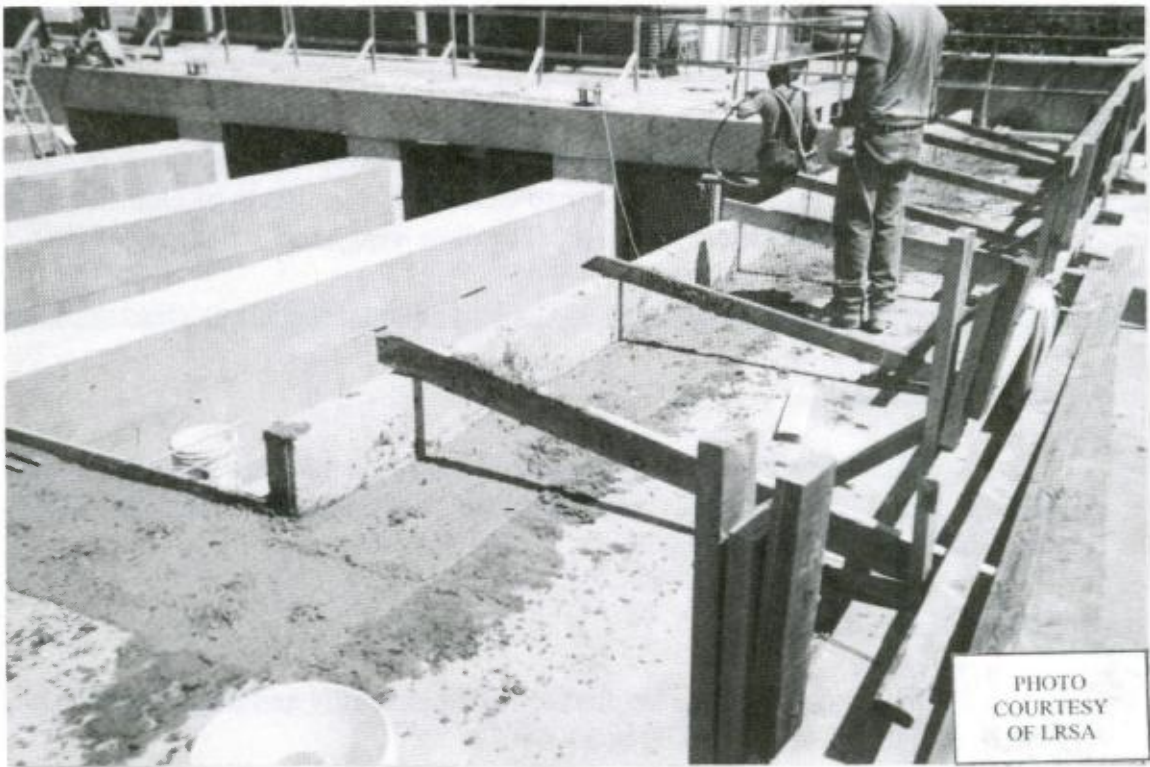
Future Project

A new cryogenic oxygen plant for secondary aeration is being planned. A three-month construction agenda will be needed to build a 250 ton-per-day facility. This \$10 million undertaking is anticipated to be operational in early 2000.

LINDEN ROSELLE SEWERAGE AUTHORITY
UNION COUNTY, NEW JERSEY



OPEN AIR STRUCTURE FOR DISINFECTION FACILITIES



FLOOR SUPPORTS AND WATER CHANNELS FOR UV IRRADIATION

Military Ocean Terminal, New Jersey (Hudson County)

Future Project

Preliminary plans for this federal facility is a pump station conversion with flow diversions to the PVSC secondary facility for treatment. This property was decommissioned as a military base during the fall of 1998 and is now reverting to the City of Bayonne. Potential uses for this property are being explored by a redevelopment commission.

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

Completed Project

This authority receives secondary treated wastewater from two customer sewerage authorities, Bayshore Regional and Township of Middletown, for discharge outside the Interstate Sanitation District into the Atlantic Ocean. These flows are generated from municipalities that originally discharged to the Interstate Sanitation District. During necessary repairs to the ocean outfall and manholes that took place between January and February 1999, flows were discharged to Raritan Bay which is within the Interstate Sanitation District. These repairs were completed at a final cost of over \$545,000.

Projects in Progress

Under way since the 1998-1999 winter season, pump station modifications (over \$2.4 million) are 56% complete. Refer to the Legal Activities section of this report for additional information.

An engineering study, which began during July 1998, includes a dynamic mixing zone analysis and a biological survey to determine the effects of chlorinated municipal wastewater on the marine environment. The three-year study will cost \$26,250.

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

Completed Project

A construction upgrade was completed for the disinfection facilities in order to meet NJPDES permit limitations for chlorine residual. The operational date was August 1, 1999, at a construction cost of \$450,000.

Projects in Progress

There are ongoing negotiations between this facility and the NJ DEP to upgrade the plant design flow from 2.9 MGD to 3.4 MGD.

The elimination of CSO outfalls and/or the installation of floatables capture devices is 65% complete for the Authority's drainage basin. An operational startup is planned for December 15, 1999. An estimated final cost of \$1 million will be incurred.

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

Completed Projects

During the early 1990s, this facility was operated and maintained under the auspices of the Hoboken-Union City-Weehawken Sewerage Authority (HUCWSA). During 1995, this entity was renamed the Tri-City Sewerage Authority. As of November 1, 1996, this entity was again renamed the North Hudson Sewerage Authority and now maintains a second WPCP under its jurisdiction. Both facilities have been renamed — Adams Street, formerly Hoboken, and River Road, formerly West New York. Refer to the NHSA - River Road write-up for additional information.

Operational during March 1999, the Authority completed installation of a new UV disinfection system at a final cost of \$900,000.

Projects in Progress

An engineering study with a three-year agenda began during 1995. It involves modeling of the interceptor system and will identify alternatives, both structural and nonstructural, for the ultimate control of solids and floatables discharged to the Hudson River.

In light of the new management of this facility, all proposed plant modifications and collection system rehabilitative work that had been previously reported are being reconsidered. This facility is operating under a State Administrative Consent Order (May 22, 1995) to eliminate the effects of CSOs. Presently, the facility is meeting all Order dates and is conducting an engineering study dealing with CSO abatement.

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

Completed Project

As of November 1, 1996, the North Hudson Sewerage Authority became the official entity to operate and maintain this facility which was formerly known as West New York. The Adams Street facility (formerly named Hoboken) is also under the auspices of the Authority.

Refer to the North Hudson Sewerage Authority - Adams Street write-up for additional information.

Project in Progress

Because this facility is under new management, all proposed plant modifications and collection system rehabilitative work that had been previously reported are being reconsidered. This facility is operating under two State Administrative Consent Orders to eliminate the effects of CSOs (September 30, 1993) and toxicity and plant performance (May 19, 1995). Presently, this facility is meeting all Order dates.

Old Bridge Municipal Utilities Authority, New Jersey (Middlesex County)

Project in Progress

The Old Bridge primary facility was converted to a pump station and diverted flows for treatment at the Middlesex County Utilities Authority on August 2, 1990. This authority will receive a \$2.3 million low interest loan for the relining of sanitary sewers and manholes from the New Jersey Environmental Infrastructure Trust.

Passaic Valley Sewerage Commissioners, New Jersey (Essex County)

Completed Projects

Completed during the 1998-1999 winter season, a conversion of the disinfection process was made from gas to hypochlorite. The final cost was \$2.1 million.

Projects in Progress

This facility is operating under federal and State Consent Orders to address alternatives for beneficial reuse of bio-solids (September 1989) and to comply with effluent limitations (August 1995). This facility is the subject of an Adjudicatory Hearing requested by ISC regarding the omission of the Commission's Water Quality Regulations in the NJPDES permit issued to PVSC. Refer to the Legal Activities section of this report for additional details.

An engineering study is under way to evaluate necessary modifications to the secondary processes.

Sixty percent of a construction upgrade is complete and entails 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. The latest cost estimate for this work is over \$20.8 million and is anticipated to be operational during June 2000.

Currently under way (38% complete) is a sewer rehabilitation which is estimated to cost \$4.73 million.

PVSC will receive a \$29.2 million low interest loan for improvements to the sludge handling facilities from the New Jersey Environmental Infrastructure Trust.

Rahway Valley Sewerage Authority, New Jersey (Union County)

Completed Projects

Completed during the 1998-99 winter season, the existing motors, drives and controls for the main lift pumps, intermediate pumps, return activated sludge pumps and waste activated sludge pumps were replaced at a final cost estimated at \$700,000. The upgrades are high efficiency motors and variable frequency drive equipment.

On line during December 1998, new wastewater flow meters were installed at a final cost of \$50,500. The process flow meters were replaced at a final cost of nearly \$178,000. This equipment was operational during May 1999. Repairs and modifications were made to the service building chimney as well as the lighting in the pump/blower building during June 1999. This work was completed at a cost of over \$91,000.

Projects in Progress

An engineering study (\$305,000) to assess effluent impacts on the Rahway River is 90% complete.

There are currently two plant upgrades under way. The first entails the reconstruction of the service building main lift pumps (75% complete/\$38,600) and the second addresses the diesel engine exhaust stack (50% complete/\$40,700).

Future Projects

A laboratory expansion has been proposed. Construction start-up has been postponed.

Three upgrades of treatment units are planned for the period between November 1999 and March 2000. Replacement of the sodium hypochlorite tanks, valves at the sludge storage tanks, and modifications to the sludge pump house are estimated to cost nearly \$375,000.

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

Projects in Progress

Engineering studies are addressing I/I with a focus on two pump stations (\$100,000) and the Leonardo/Navesink interceptor lines (\$200,000).

Completed Projects

At the main facility, a new belt filter press was installed at final cost of \$500,000.

Expansion and upgrade construction to this 10.8 MGD secondary activated plant was completed in 1986. At that time, the Boroughs of Atlantic Highlands and Highlands, which are located on Sandy Hook Bay, diverted flows to this facility for treatment and began discharging treated effluent outside of the Interstate Sanitation District. However, during necessary repairs to the ocean outfall and manholes over a 30-day period which started during January 1999, flows were discharged via an alternate outfall to Raritan Bay which is within the Interstate Sanitation District. For additional information, refer to the write-up on the Monmouth County Bayshore Outfall Authority.

West New York, New Jersey (Hudson County)

This plant is now under the auspices of the North Hudson Sewerage Authority and is called the River Road facility. Refer to the write-up under the NHSA - River Road.

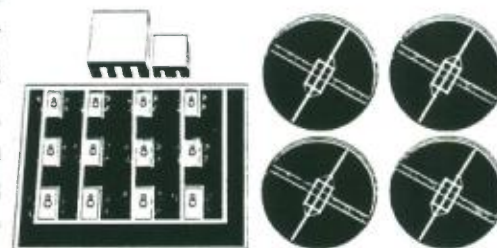


Bloomer's Beach on the New Jersey side of the Hudson River
north of the George Washington Bridge, circa 1950

Photo from ISC archives

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. The types of water quality improvement projects considered for funding include wastewater treatment, agricultural and nonagricultural nonpoint source abatement and control, aquatic habitat restoration, and pollution prevention. Within the Interstate Sanitation District, management plans receiving implementation funds include the Hudson River Estuary, Long Island Sound and South Shore Estuaries. Forty-nine projects in the District are receiving funds and are highlighted under specific municipal treatment plant write-ups.



The Clean Water State Revolving Fund (CWSRF) provides interest-free short-term, and low interest rate long-term loans to municipalities to finance planning, design, and construction of water quality protection projects. The New York State 2000 Intended Use Plan (IUP), effective October 1, 1999, lists annual and multi-year priority project applications. Within the District, eight municipalities applied for 145 project grants and 16 municipalities applied for 370 projects under the multi-year requests.

The Clean Water/Clean Air Bond Act's Clean Water Programs are administered by the New York State Department of Environmental Conservation; the Office of Parks and Recreation, and Historical Preservation; the Environmental Facilities Corporation; the Department of State and the Department of Agriculture and Markets. These agencies represent the interagency Bond Act implementation group which integrates administrative responsibilities under the Bond Act and coordinate related projects.

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

Completed Projects

Although operational since May 1996, engine emissions improvements were finally complete during March 1999; final costs incurred were over \$4.48 million. This work included the addition of emission control devices to the plant's dual-fuel engine generators in order to comply with the requirements of applicable laws and regulations promulgated by the Clean Air Act Amendments.

This facility began to accept flows for treatment from the County-owned Inwood plant in April 1999. The 2.5 MGD Inwood trickling filter plant was converted to a pump

station. Refer to the Inwood write-up for additional details.

Projects in Progress

At an estimated cost of over \$17.9 million, additions and modifications to the central heating facilities are 98% complete. The principal features of the project include new boilers and the installation of chiller equipment with associated piping and auxiliary equipment to provide plant-wide heating and cooling.

Ninety-seven percent of the modifications and additions to the sludge digestion facilities are complete. The re-estimated cost of over \$24.94 million provides for rehabilitation of both primary and secondary digesters. These modifications to the existing tankage are being made to enhance the performance of various process units.

An administration center is being constructed within the existing main building, in addition to new shops for the facility's electrical and HVAC units, along with lavatory and lunchroom areas for plant personnel. Construction is 92% complete with re-estimated costs of over \$15.17 million.

Ongoing additions and modifications are 82% complete on a fifth aeration tank which replaces the fluid bed reactor system. Costs are re-estimated at over \$10.97 million.

Future Project

Aeration tank covers will be installed in conjunction with the installation of an odor/exhaust treatment system. The project is currently in the pre-bid phase.

Blind Brook, New York (Westchester County)

Project in Progress

An ongoing engineering study is assessing alternatives for preliminary treatment equipment upgrades which include the headworks and the automatic bar screens.

Future Projects

Necessary plant refurbishments have been postponed. The estimated two-year agenda will include replacement of primary tank sludge collection mechanisms, updating influent headworks, and automation of appropriate portions of the facility. Cost estimates and construction start-up dates are still to be announced.

Bowery Bay, New York (Queens County)

Projects in Progress

There are 90 pump stations throughout the 14 drainage basins comprising the New York City collection system. Completed during 1999 at 37 pump stations City-wide were eight major upgrades, 15 design plans for major upgrades, eight minor upgrades including the City Island subaqueous force main, and nine design plans for minor upgrades. Major upgrades are under way at 15 stations, as well as nine minor upgrades. Additionally, the bid process is under way for one major and four minor upgrades. Cost estimates for these collection system improvements were not available.

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. Presently, seven regulators in three drainage basins are fully operational utilizing a hydraulic modulating system. Nine regulators in two drainage basins are utilizing the hydraulic modulating system, but are manually operated. Vortex valves have been installed at two regulators in different drainage basins. City-wide, construction upgrades were completed at 17 regulators, 47 regulators are under construction and 38 additional designs are planned to commence. The status of City-wide tide gate reconstruction includes 20 completed rehabilitations, three gates under construction, six being designed (nine designs were completed), and three additional designs planned to commence.

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 WPCPs by sea. Ongoing improvements and modifications include new docking facilities to be built on the East River (Red Hook and Wards Island) and in Jamaica Bay (26th Ward), cake storage facilities and emergency generators. Costs are estimated at over \$211.27 million at the eight dewatering facilities. A residuals building is also scheduled for Wards Island (\$8.631 million). These projects will incur additional fees including, but not limited to, construction management (\$86.168 million), additional structures and bionutrient management services (\$8.401 million). Future work includes completion of the docking facilities (\$15.942 million) and, during the year 2000, all outstanding aspects (\$50 million) are to be completed.

Due to the vast number of ongoing treatment plant and collection system projects, numerous consultants and contractors are involved and receive construction management fees estimated at over \$147.865 million. City-wide, additional consultant fees are slated for FY'01 which address various program management services, technical inspections, concrete quality assurance, environmental conservation, and health and safety management. These

fees are estimated at \$33.486 million. Beyond the year 2000, additional consultant fees have been re-estimated to cost \$150.14 million.

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.

A total of \$1.5 billion has been committed by New York City for a CSO program which is currently in its twelfth year. Structural and nonstructural solutions are being evaluated and prioritized. Final implementation is scheduled between 2001 and 2006. 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. The swirl concentrators and a retention tank that will service Flushing Bay are under construction at an estimated cost of \$272 million. An in-line storage plan with a retention tank located in the Hunts Point drainage basin is at the final facility design stage (\$230 million). To address floatables control at its source, City-wide catch basin hood replacements are re-estimated at \$158 million. The collection system improvements are at the facility planning and construction phase.

The second geographical area addresses the needs of Jamaica Bay. Holding tanks and in-line storage are the agenda items. Approximately \$153 million is being spent for design work and construction costs are now estimated at \$260 million. Final design (\$197 million) for the Paerdegat Basin retention tank is 95% complete. The pile foundation for the Paerdegat influent facilities, as well as various modifications, are about to begin at a re-estimated cost of \$16.645 million. In addition, water quality facility planning is under way for several Jamaica Bay tributaries.

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. Subsequent to dredging and force main installations, the tunnel was activated during May 1999. Facility planning (90% complete) is under way for regulator improvements. 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. These projects are anticipated to accrue \$96.205 million in construction management fees. Facility planning is under way for

regulator improvements. Additional fees of \$10 million are estimated to determine designated use and the attainment of state standards in the receiving marine waters.

Ongoing engineering studies and experiments at the Bowery Bay facility are assessing biological nutrient removal technologies, biological centrate treatment, and sludge thickening with polymer treatment.

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

Future Projects

Awarded under the Clean Water/Clean Air Bond Act, several projects will receive funding which are consistent with the LISS CCMP priorities. The Bowery Bay WPCP will implement nitrogen removal alternatives by installing a ferric chloride feed system (\$191,250 approved) and a new diffuser system (\$148,750 approved).

Stabilization construction is slated for FY'00 at a re-estimated cost of \$170 million plus \$13.7 million in construction management costs.

Buchanan, New York (Westchester County)

Completed Project

The second phase of planned modifications for the main treatment plant began in November 1997 and was completed during the 1998-1999 winter season. The construction upgrade consisted of replacing electrical control and instrumentation equipment, architectural improvements and laboratory equipment replacements. The work incurred estimated final costs of \$600,000.

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

Completed Projects

This facility, utilizing a secondary activated sludge process, was re-rated to a flow of 72 MGD during 1995. Since that time, a phased construction program has been under way and was completed this past year. The improvements and modifications included expansion of the special projects laboratory, updated engine emissions conversion (clean burn and catalytic converters), central hot and chilled water systems (four new boilers and four new chillers), and the rehabilitation and cleaning of two primary digesters. Additionally, eight final tanks were demolished and replaced with six new units. An upgrade of the air distribution system in the aeration tanks was also completed. These phases incurred a final cost of nearly \$44.2 million.

Projects in Progress

Necessary work for the collection system includes the rehabilitation of seven pump stations. The stations will be updated with new pumps, controls and superstructure repairs. As of August 1998, four pump station upgrades have begun. The estimated costs are over \$8.7 million and the work is 50% complete.

Recently under way at the main plant are several installations including aluminum covers for the aeration tanks, new effluent channels and a new odor control building. These items are estimated to cost \$14.5 million.

Future Projects

Final phases for this facility will address several rehabilitation and improvement contracts and are planned for the period of 2000-2003. These projects will affect the following treatment stages: secondary gas compressors, dissolved air floatation, sludge dewatering, plant-wide instrumentation, landscaping and punch list items. Operational start-up dates are anticipated during the 2000-2002 period with costs estimated at over \$32.34 million.

Coney Island, New York (Kings County)

Projects in Progress

At an estimated cost of \$66.37 million, a plant support facility consisting of a conglomeration of workshops has been divided into four contracts and is substantially complete. Re-estimated to cost over \$42.559 million are plant-wide modifications for re-rating of the design flow. Construction management fees are estimated at over \$54.16 million.

Two ongoing in-house engineering studies dealing with plant processes are addressing the efficiency of the chlorine mixing pump and polymer addition to the thickeners.

Future Projects

Structural modifications to handle additional dry and wet weather flows (\$55 million) are being planned.

Additional projects at this facility include the reconstruction of the ocean outfall (FY'00 - \$2 million), and the building of a new laboratory and a visitors center (FY'00 - \$33 million).

Glen Cove, New York (Nassau County)

Projects in Progress

This facility is operating under a State Consent Order, effective February 4, 1999, to address whole effluent toxicity and heavy metals limitations.

Future Projects

BNR retrofits are planned for this facility as per the Long Island Sound Study. Planned modifications at this facility will be accomplished during a phased construction schedule. Phase I engineering plans were completed during August 1998; construction is expected to incur capital costs of about \$1.4925 million and be operational by November 2000. It is hoped that Phase I work achieves nearly 50% nitrogen removal and improves operations at the existing plant. Phase II is estimated to cost \$2.4825 million. Awarded under the auspices of the Clean Water/Clean Air Bond Act, \$500,000 will be used for this nitrogen reduction project. In addition, the CW/CA Bond Act will fund \$100,000 for the installation of retention basins and plantings to reduce stormwater runoff impacts to Hempstead Harbor.

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

Completed Project

Completed during the late 1998 fall season, the Strathmore pump station upgrade included the replacement of pumps, pump controls, ventilation, new access to the wet well, and the addition of a new generator in a noise attenuating enclosure. The final project cost was \$234,000.

Future Projects

Engineering studies are being proposed with a five-year plan for upgrading the treatment plant by adding four new pump stations as well as BNR retrofits at a cost of about \$100,000 per year. Planned to begin during the fall 1999 season at a re-estimated cost of \$460,000, are two lift station upgrades with backup generators and soundproofing.

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

Completed Project

Cleaning and repairs were completed on the secondary anaerobic digester. These improvements were complete during December 1998 at a final cost of \$120,000.

Project in Progress

A flow diversion study is under way. This engineering study is an information gathering project to determine the long-term needs for expansion and upgrading at the plant.

Huntington Sewer District, New York (Suffolk County)

Future Projects

Additional improvements to the wastewater collection system are planned for the Cobblestone Estates development which includes the installation of 6,400 linear feet of eight-inch diameter (8"Ø) gravity sewer lines. 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.

BNR retrofits have been recommended by the Long Island Sound Study. Nearly complete, the District is preparing facility plans for phased nitrogen reductions retrofits. An operational start-up is anticipated for June 2002. Construction costs are estimated at \$10.5 million.

The Town of Huntington has approved funding (\$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. In addition, Suffolk County has approved funds of \$320,000 for the remediation of highway stormwater discharge to Huntington Harbor. Funding for both projects are being provided by the Clean Water/Clean Air Bond Act. Both objectives are consistent with the priorities identified in the CCMP for the LISS.

Hunts Point, New York (Bronx County)

Completed Project

During the 1997 summer season, emergency force main repairs were necessary and performed subaqueously beneath Eastchester Bay in western Long Island Sound. The permanent force main (8,600 linear feet) that services City Island, the Bronx, was replaced at an estimated cost of \$14.952 million. The series of work buoys across the bay which restricted navigation were removed by early June 1999.

Projects in Progress

Collection system improvements, rehabilitation and renovations include work on several pump stations throughout the drainage basin. Design and ongoing construction vary from 0% to 99% degrees of completeness. Pump stations currently under design

modification are Riverdale (three stations - \$12.25 million); and Co-Op City, North and South (\$8 million). Although under construction, the City Island and Marble Hill Pump Stations (\$15 million) are in operation as well as the Hunts Point Market Pump Station.

Ongoing engineering studies that began during October 1996 address biological centrate treatment and biological nutrient removal. Step II stabilization is in the final design phase.

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

Future Projects

The replacement of the boilers for process heating, re-estimated at over \$2.8 million, slipped from the schedule and is now planned for FY'00. CSO abatement projects in the tributaries are slated for FY'00.

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

Inwood, New York (Nassau County)

Completed Project

On April 26, 1999 this facility diverted all flows to the 70 MGD secondary facility at Nassau County's Bay Park WPCP. At a final estimated cost of \$6.639 million, the Inwood plant which was built in 1961, was converted to a pump station. In order to convey all flows, 2.5 linear miles of 14-inch diameter (14"Ø) force main was installed. Refer to the Bay Park write-up for additional information.

Jamaica, New York (Queens County)

Completed Projects

Engineering studies recently completed dealt with the secondary screening facilities, a rotary drum thickener, and aerobic scum digesters.

Projects in Progress

Two in-house experiments are being conducted by staff and consulting engineers. These studies involve the heat exchanger and scum dewatering.

Plant-wide interim expansions are ongoing in order to comply with SPDES limitations and requirements. This work is re-estimated to cost over \$117 million plus over \$5.04 million in construction management fees. Performed in two construction phases, the first phase (about 75% complete) will entail new installations of the following treatment units: a primary tank splitter box, a primary tank, a primary force main, a return activated sludge and waste activated sludge pump station, a chlorine contact tank, odor controls, and an electrical substation. The second phase will include the new installations of various units such as a sludge thickener tank, odor controls, a maintenance building, a sludge dewatering and screening wing, emergency lighting and an influent screenings building extension. Phase II preliminary design is under review.

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

Future Projects

Stabilization modifications, which are alternatives to correct plant performance deficiencies, will be implemented as part of Phase II during 2000. These modifications are estimated to cost \$72 million with \$7.2 million additional costs in construction management fees. In addition, aeration tank modifications are planned for 2001.

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

Future Project

Originally planned to begin during February 1999, a sewer trunk line will be relocated with a start date of January 2000. The four-month construction agenda is estimated to cost \$500,000.

Jones Beach State Park Water Pollution Control Plant (Nassau County)

Completed Projects

At a final cost of \$100,000, repairs were completed on the grit channel that includes gears, motors, railings and masonry. Under the same contract, the chlorine contact chamber was modified and refurbished with new baffles and masonry.

Under way in early 1999, the trickling filter was repaired, overhauled and refurbished with new plastic media, walkways, under drains and masonry. Final cost estimates were between \$85,000 and \$120,000. During the extent of this rehabilitation, the work was able to be completed without a treatment reduction or any raw discharge to the Sloop Channel located in the Great South Bay. Refer to the Legal Activities section of this report for additional information.

Lawrence, New York (Nassau County)

Projects in Progress

Phase I plant improvements are in the design stage (75% complete). A collection system I/I study was recently completed and, beginning in early 2000, problems identified in the study will be addressed. Remediation costs are estimated at \$600,000.

Long Beach, New York (Nassau County)

Future Project

Estimated to cost \$1.5 million, rehabilitation of several treatment units are planned. The work will address the digesters, trickling filters and the hypochlorite tanks. A construction schedule has not been established.

Mamaroneck, New York (Westchester County)

Future Projects

Planned to begin during January 2000, this facility will be retrofitted for a two-year BNR pilot project. The estimated \$3.5 million undertaking will be partially funded by the Clean Water/Clean Air Bond Act of 1996.

A \$50,000 grant awarded by NYS DEC will be used by a shoreline community council (11 members) to investigate stormwater capture and treatment prior to discharge to Long Island Sound.

Metro-North Railroad (Harmon Shop), New York (Westchester County)

Completed Project

This 0.144 MGD secondary facility is operating under a State Consent Order to cease discharge to the Hudson River and divert all flows to the Westchester County Ossining WPCP by July 1998; the Order was extended to November 1998. Flows were being accepted at Ossining during August 1999. Financial arrangements require Metro-North to pay Westchester County a one-time \$175,000 hookup charge and a yearly \$15,000 service fee for 15 years. In addition, the railroad will pay \$50,000 to the Ossining Sewer District. This facility will continue to perform preliminary and primary treatment on the waste flow and then pump via force main to the existing Ossining collection system. Refer to the write-up for the Ossining treatment plant.

New Rochelle, New York (Westchester County)

Completed Project

Phase II of the interim upgrade began during November 1997 and is essentially complete. The plant upgrade includes new facilities for oxygen storage and vaporizers, structural repairs to the control building and main pump drive replacements. The actual completion date was January 1999. The final cost was \$1.5 million.

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. An SSES and an I/I reduction study are ongoing at a cost of \$500,000.

This facility is operating under a State Consent Order to accomplish collection system rehabilitation and eliminate two sewer overflows. The New Rochelle Sewer District — which is comprised of Larchmont, a small section of Mamaroneck, New Rochelle, and Pelham Manor — anticipates a cost of \$1 million for all construction phases.

Future Projects

Phase II of an automation upgrade (\$400,000) is planned for late 1999. The upgrading of the multiple hearth furnaces with new air pollution controls is estimated to cost \$8 million. Planned to begin during June 2000, improvements will be made to several treatment units including the sludge processing and dewatering facilities, installations of new effluent pumps and new mixing equipment for the secondary process units. This 18-month construction agenda will incur costs of about \$3 million.

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.

Newtown Creek, New York (Kings County)

Projects in Progress

Upgrading and expansion construction to incorporate a secondary treatment system utilizing step aeration with a reduced contact time is continuing with Phase VI. These interim measures are necessary so that the facility can operate until a new facility plan is

implemented. With a 12-year construction schedule, estimates of over \$264 million were made for all design and construction phases; this includes disinfection, demolition and remediation, and a biofilter demonstration plant. The interim upgrade work began during July 1993. The major items include modifications to the engine generator stack heights, miscellaneous building and equipment system upgrades (i.e., odor control, tankage covers, digester cleaning and piping, various tank reconstructions, etc.), water main and drainage improvements, and landscaping.

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

Future Projects

Several new additions are planned including a south wing to the main building (\$130 million), a support and disinfection building (\$237 million), sludge handling facilities (over \$452 million), a sludge force main/docking facility (\$33 million) and aeration upgrades (\$3.7 million). Construction management costs associated with these phases are \$120 million.

Northport, New York (Suffolk County)

Completed Projects

A study was completed and recommends capacity expansion as well as the elimination of extraneous flows before plant modifications can be implemented. This facility, which also provides treatment for the Centerport Sewer District, has received \$977,500 in CW/CA Bond Act funds for capacity expansion to a design flow of 0.45 MGD.

Sewer lines identified with I/I problems (antiquated, misaligned, and/or root infiltration) were cleaned, televised and relined at a final cost of \$20,000.

North River, New York (New York County)

Projects in Progress

This facility is operating under a State Consent Order (July 1, 1992) to address issues of capacity, odor, and air emissions. Plant modifications and engineering studies are still under way to address odor control problems. Reconstruction of the primary and final settling tanks, rehabilitation of the digesters, aeration tank covers, odor control equipment and construction management are the main agenda items. Modifications that affect all support treatment equipment are presently ongoing at a cost of over \$32.24 million, which includes construction management fees. These installations, inspections and repairs will address electrical, instrumentation and control systems; HVAC; and dock storage facilities. Additional installations of various instrumentation and controls, odor controls, and a natural

gas system are under way. RFPs have been received for all interim upgrades. Refer to the Legal Activities section of this report for additional information.

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

Future Projects

An alternate odor abatement system, re-estimated to cost \$22 million, slipped from the schedule and is now planned for FY'00.

Oakwood Beach, New York (Richmond County)

Future Project

RFPs for interim upgrades have been received. Reconstruction work is planned for the main facility, including the plant plumbing system. These improvements will be considered as one Staten Island-wide project including the Port Richmond drainage basin. Refer to the Port Richmond writeup for additional information.

Orangetown, New York (Rockland County)

Completed Project

An engineering study has identified the needs of the Nyack, New York, trunk sewer.

Future Project

Repairs will be made to the Nyack trunk sewer at an estimated cost of \$750,000. A construction start-up is scheduled for April 2000.

Ossining, New York (Westchester County)

Completed Projects

At a final cost of \$600,000, Automation Phase I, a computer upgrade to automate various plant processes, is complete. This phase was operational during April 1999.

Work is complete at the Metro-North Railroad, Harmon Shops, to divert its flows to the Ossining collection system. As required by a State Consent Order, the wastewater was accepted for secondary treatment during August 1999. Refer to the Metro-North Railroad, Harmon Shops, write-up for further details.

Projects in Progress

Ongoing engineering studies are focusing on a furnace upgrade (packed tower odor scrubber) and the conversion of the disinfection facilities from gaseous chlorine to liquid sodium hypochlorite.

A five-month construction agenda is anticipated for converting the disinfection storage facilities from gaseous chlorine to sodium hypochlorite. The estimated \$500,000 project is 45% complete and will be operational during late 1999. Odor abatement modifications will also be completed during this period.

In order to meet new federal and state air regulations, furnace upgrades to the multiple hearth system began during September 1997; however, this project has been postponed.

Future Projects

In order to increase remote monitoring of plant processes, Automation Phase II is anticipated to begin during April 2000. This phase will increase operator control via a Supervisory Control and Data Acquisition (SCADA) telemetry controls system. Estimates for this phase are \$600,000.

Owls Head, New York (Kings County)

Projects in Progress

Engineering studies are ongoing to assess automatic thickened sludge control pumps and the oxidation reduction potential instrumentation testing for chlorination control.

Various plant-wide upgrades are under way with costs estimated at over \$3.1 million.

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

Future Projects

Future contracts, both construction and consultation/construction management, are being evaluated for punch list items and landscaping. Estimated costs for these projects are \$15.88 million. Plans have slipped from FY'99 to FY'00 for plant-wide improvements (\$14 million), reconstruction of a forebay (\$770,000) and screening building modifications (\$10 million).

Oyster Bay Sewer District, New York (Nassau County)

Completed Project

At a final cost \$135,000, the replacement of trickling filter recirculation pumps and sludge pumps was completed during August 1999.

Future Projects

Planned to begin during March 2000, improvements will be made on the Highwood Road pump station (\$110,000). Planned for the main facility is the replacement of the grit chamber chains and buckets (\$40,000). The installation of standby generators at two pump stations is proposed at an estimated cost of \$60,000.

Under the auspices of the NYS Clean Water/Clean Air Bond Act, the Oyster Bay Sewer District will receive funding for several projects: over \$3.75 million for biological nutrient removal retrofits; \$850,000 for wetland creation and restoration at the western Oyster Bay waterfront; and \$23,600 to install four leaching wells to divert stormwater and filter pathogens prior to discharge to Oyster Bay Harbor.

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

Completed Project

During August 1999, 570 linear feet of 14-inch diameter (14"Ø) PVC piping was replaced as a trunk line. The work incurred costs of \$125,000.

Palisades Interstate Park Commission, Tallman Mountain, New York (Westchester County)

Completed Project

During July 1999, this 0.01 MGD secondary plant shut down and diverted all flows to the Orangetown Sewer District in Orangeburg, New York. Originally built in 1968, the Park Commission installed 2,500 linear feet of two-inch diameter (2"Ø) force main. Final costs for the conversion and piping amounted to \$200,000.

Peekskill, New York (Westchester County) -

Completed Project

Automation of several plant processes, including remote pump station sensors, was completed during April 1999. The final costs were \$600,000.

Future Projects

In order to address wastewater flows that impact potable water supplies in the Croton watershed, proposals have been made to expand this facility to 20 MGD.

In order to increase remote monitoring of plant processes, Automation Phase II is anticipated to begin during April 2000. This phase will increase operator control via a Supervisory Control and Data Acquisition (SCADA) telemetry controls system.

A construction agenda with a completion date of May 2000 is anticipated for converting the disinfection storage facilities from gaseous chlorine to sodium hypochlorite. The re-estimated \$300,000 project is planned to begin during late October 1999.

Port Richmond, New York (Richmond County)

Projects in Progress

Ongoing I/I work is being done with \$1.28 million of allocated funds. Various pump station improvements are being implemented.

At a cost of approximately \$1.984 million, reconstruction and installations are ongoing and involve the final treatment phases including digester storage transfer pumps, the digester pump mixing system, various sludge pumps, hypochlorination monitoring, and rooftop heating systems.

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

Future Projects

Modifications and improvements to the existing plant remain postponed. Planned expenditures of approximately \$1.171 million would address the replacement of degritter pumps and reconstruction of primary tanks. Also proposed is the installation of climber screens at a cost of \$675,000. RFPs for these interim upgrades have been received based on a Staten Island-wide approach which includes the Oakwood Beach drainage basin. Refer to the Oakwood Beach write-up for more information.

Port Washington, New York (Nassau County)

Completed Projects

Various upgrades and rehabilitation projects were completed at several pump stations. The work included new comminutors, wet/dry well separation and ventilation, fuel oil system improvements, the addition of new chlorine residual controls, a new remote alarm

system and central station monitoring equipment. The estimated final cost for all items was \$1.1 million.

Projects in Progress

Estimated to cost \$400,000, a pump upgrade is 70% complete. This work is being performed at two pump stations in order to provide variable speed operation.

Future Project

Planned to begin in February 2000, a pilot plant will be installed to determine the feasibility of nitrogen reduction by using the activated sludge process as a tertiary step. Cost estimates are \$500,000.

Red Hook, New York (Kings County)

Projects in Progress

An engineering study dealing with a thickener blanket analyzer is ongoing. Biological nutrient removal is the subject of another in-house experiment.

Various plant modifications and additions are being conducted by in-house staff with estimated costs of over \$5.02 million. An interceptor sewer costing over \$1.28 million is 99% complete.

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

Rockaway, New York (Queens County)

Project in Progress

Reconstruction of the heating and ventilation system, estimated at \$1.548 million, is at the bid stage. RFPs have been received for stabilization.

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 capital improvement projects that started in August 1996 are complete. New structures that were built include a main pump station, a machine shop, and screening facilities. Equipment installation in the machine shop is being completed during the 1999-

2000 winter season. The \$5.7 million estimated cost also includes the replacement of the anaerobic digester cover and centrifuges.

Projects in Progress

An estimated final cost of \$2.7 million (80% complete) is being spent to expand the collection system in the western section of Rockland County, New York. Phased construction of gravity sewer lines, force mains and pump stations will provide service to sections of the Village of Pomona and the Town of Ramapo. Planning is under way for additional designs and subsequent construction for the installation of principal trunk sewers, pump stations, force mains and laterals in the Villages of Hillburn and Sloatsburg.

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

Completed Project

Completed during February 1999, rotating screens were installed at a final cost of \$100,000.

Projects in Progress

An in-house water quality assessment of Port Jefferson Harbor is ongoing. Preliminary engineering work is under way in anticipation of a plant upgrade and expansion in order to address the LISS Phase III nitrogen reduction targets.

The replacement of various gravity sewer lines throughout the collection system is ongoing. The estimated cost of \$300,000 will address installations to eliminate I/I problems and to expand and rehabilitate the existing infrastructure.

A plant evaluation was conducted to determine the possibility of increasing the present 0.85 MGD flow capacity while maintaining all permit limitations and requirements. This work is being reviewed by NYS DEC.

Future Projects

If approved by NYS DEC, additional treatment units will be added to accommodate any additional flow requests from commercial and residential developments. The re-estimated \$9.9 million phased construction costs will be borne by those applying for hookups. Preliminary treatment designs propose the use of a tertiary process with a flow capacity of 1.0 MGD.

Suffolk County Sewer District #3, Bergen Point, New York (Suffolk County)

Projects in Progress

A building is being constructed to house three units for pre-treatment of scavenger waste. This project is 50% complete at an estimated cost of \$500,000. Concurrently, the aeration tankage diffusers are being replaced at a cost of \$3.3 million and are 95% complete. In-house interceptor flow studies are under way in order to assess I/I.

Future Projects

Three engineering studies are planned which will assess ultraviolet disinfection, sludge dewatering and extraneous flow reduction.

Equipment replacement and infrastructure repairs will be addressed under a phased agenda. The costs are re-estimated at \$7.5 million. Construction start-up dates were not available.

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

Project in Progress

Granted under the Clean Water/Clean Air Bond Act of 1996, \$3.1 million was awarded to Suffolk County 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. A construction schedule has not been finalized.

Future Projects

Pending negotiations with NYS DEC, construction remains postponed on a planned re-estimated \$6.4 million equipment renovation. Safety equipment upgrades will be addressed on a priority basis.

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

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 flow study is under way in order to determine future capacity needs.

Future Project

Construction of sequencing batch reactors will increase the plant capacity by 0.5 MGD. The capacity expansion will enable this facility to comply with the LISS nitrogen loading requirements; cost estimates are \$9.1 million.

Tallman Island, New York (Queens County)

Project in Progress

At an estimated cost of \$14.047 million, current construction at this facility is for plant Step II stabilization (final design) improvements.

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

Future Projects

Pumps and instrumentation upgrades are planned for FY'00 at estimated costs of \$3.387 million.

Awarded under the Clean Water/Clean Air Bond Act, a BNR alternative will receive funding and is consistent with the CCMP priorities of the LISS. A ferric chloride feed system (\$115,600 approved) will be installed.

26th Ward, New York (Kings County)

Completed Projects

Step II stabilization construction improvements were completed at re-estimated costs of \$14 million.

Projects in Progress

Three engineering studies are ongoing and are addressing biological nutrient removal, centrate nitrogen removal, and disinfection.

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

Future Project

Docking facilities are planned at costs amounting to over \$4.6 million.

Wards Island, New York (New York County)

Projects in Progress

Engineering studies costing \$2.35 million remain ongoing to determine plant expansion logistics and to conduct an SSER. Additional pilot studies to reduce nitrogen loadings will focus on sludge age, polymer additions, froth control and biological centrate treatment and are estimated to cost \$3.66 million.

An interim plant upgrade and capacity expansion to 275 MGD began during FY'95. These interim measures are necessary so that the facility can maintain permit compliance and improve operating conditions for a variety of processes. All of the activities will take place on the existing plant site and at the Manhattan and Bronx grit chambers.

The major aspects of the three-phase interim upgrade include modifications to the chlorine contact tank, replacement of the disinfection system, upgrading of the plant electrical system, headworks replacement, elimination of two stormwater discharges, a skimmings handling facility, a primary sludge pumping facility, main sewage pump headworks, renovation of the process air system, solids handling, and new metering systems. The grit chambers will be renovated with automated equipment, flow metering and odor controls. Phase 3 will address the plant heating system, new influent gates, final sedimentation tank upgrades, and personnel and administration building upgrades. The cost for the two-year construction schedule is approximately \$105 million plus \$10 million for construction management. An ultimate capacity expansion to a flow of 330 to 350 MGD will follow the interim phase sometime in the next century.

Planned modifications, as delineated in NYC's Nitrogen Control Action Plan, include increased sludge age and biological centrate treatment. These projects began during July 1996 and are expected to incur capital costs of about \$3.6 million.

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

Future Projects

A residuals handling facility (\$7.716 million) and docking facilities (\$12.5 million) are planned to be operational within two years.

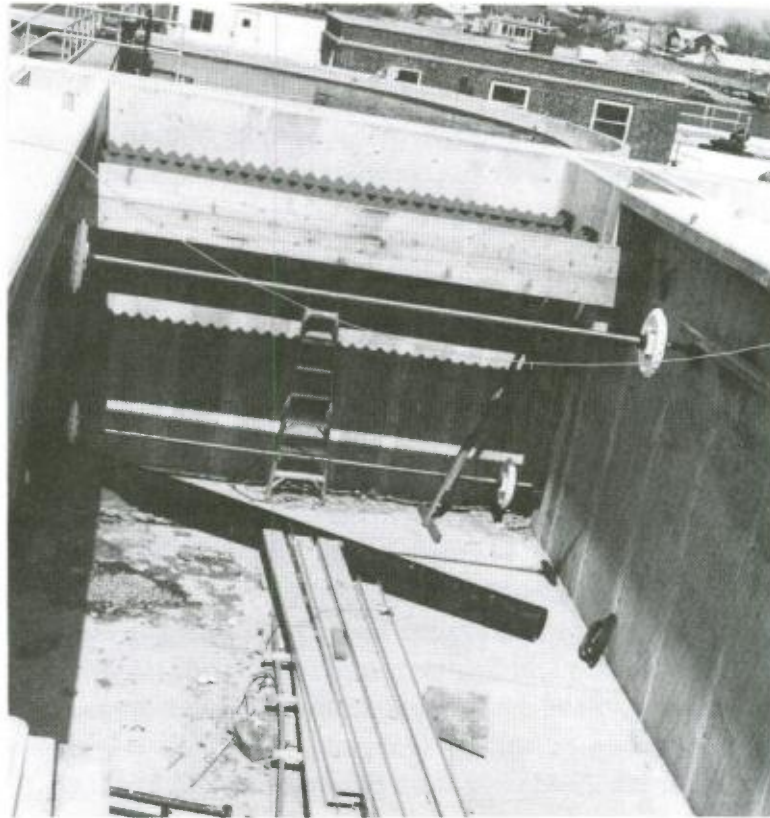
West Long Beach Sewer District, New York (Nassau County)

Projects in Progress

An engineering study was completed during 1996 which determined the cost and feasibility of adding a second trickling filter to this 1.5 MGD secondary plant. Construction

is 85% complete and is scheduled to be on-line late in 1999. The work includes the installation of three new primary clarifiers, a new trickling filter, a distribution box, a new distributor arm for the existing trickling filter, conversion of the existing primary clarifier to a secondary clarifier, modification to the final lift pump station, a new recirculation station for the converted primary clarifier, and sludge return systems for both secondary clarifiers. The additional tankage will enable the facility to have a totally redundant system. Total estimated costs are \$2.5 million.

WEST LONG BEACH SEWER DISTRICT
NASSAU COUNTY, NEW YORK



ONE OF THREE NEW PRIMARY CLARIFIERS UNDER CONSTRUCTION

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

Completed Projects

Phase I of a plant automation project which fully automates the chlorine residual controls and the primary scum collections was operational during February 1999. This system, which also remotely gathers plant-wide data, incurred costs amounting to \$1.5 million.

Two engineering studies were completed recently which address an entire plant survey (\$284,000) and a disinfection system evaluation (\$100,000).

A fuel-cell system has been operational for nearly two years. This system, which cost \$1.3 million, was able to capture about 20 tons per year of waste gases and generate 200 kilowatts per year of electricity for plant processes.

Projects in Progress

This facility is operating under a State Consent Order to implement the findings of the 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.

Recently under way at an estimated cost of \$588,000, the waste gas burners will be replaced with automatic igniters and supporting instrumentation.

Future Projects

Awarded under the New York State Clean Water/Clean Air Bond Act, Westchester County will receive \$3.4 million to improve water quality in the Hudson River, redevelop the Yonkers waterfront, improve public access to the Hudson River, and expand municipal recycling programs.

Beginning as soon as June 2000, five major rehabilitation/upgrades are planned with a total cost of \$21.775 million. The dewatering facility will be expanded with additional truck loading bays, sludge cake hoppers, odor controls and various equipment enhancements. The rehabilitation of the dual-fuel engine and digester mixing equipment has a two-year agenda. Phase II automation will finalize remote plant-wide data gathering capabilities and plant process monitoring. Final settling and aeration tankage upgrades and a rehabilitation of the grit handling facilities will be completed by 2002. A proposed I/I program is scheduled to begin during 2000 with costs estimated at \$22.1 million.



EFFLUENT AND AMBIENT WATER QUALITY MONITORING

The Commission continued its monitoring programs of the District's effluent wastewater discharges and ambient waters throughout the year. These programs remained at reduced levels due to resource limitations. ISC's laboratory performs analyses on samples collected at municipal, private and industrial wastewater treatment facilities, as well as on samples from ambient water quality surveys.



The summer of 1999 marked the ninth consecutive year 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 ISC's research vessel, the R/V Natale Colosi. This monitoring project, performed in support of the Long Island Sound Study, was conducted from June through mid-September in cooperation with several other agencies. During the weekly cruises, additional samples were collected and analyses were performed to support two cooperative studies. The first study involved collection and delivery of surface water quality samples to the Nassau County Health Department for phytoplankton identification. Concurrently, during three survey runs, additional water quality samples were collected for NYS DEC, Division of Marine Resources, in order to detect the presence of a toxic dinoflagellate, *Pfiesteria piscicidia*.

While berthed in Eastchester Bay for the Long Island Sound hypoxia sampling, the R/V Natale Colosi was used to conduct a reactive survey (after rain events) in western Long Island Sound. The survey involved the collection and analyses of surface water quality samples to assess the sanitary condition of the shellfish beds under worst case conditions following rainstorms. The sampling was conducted in response to requests by the NYS DEC Shellfisheries Bureau so they could have the necessary sampling data in order to initiate shellfish harvesting relay programs. The area of interest was the Westchester County coastline from New Rochelle to Mamaroneck.

The R/V Natale Colosi was moved to the New Jersey State Marina at Leonardo during the fall of 1998 so ISC could again participate in a cooperative effort with the New Jersey Department of Environmental Protection and US EPA. In this survey, surface water quality samples were collected to assess the sanitary condition of shellfish beds in western Raritan Bay. All samples were collected subsequent to storm events between January and March 1999. The Commission plans to conduct sampling in western Raritan Bay throughout the 1999-2000 winter and spring seasons.

ISC's laboratory is certified by New York State and New Jersey and continued to participate in the US EPA Water Pollution Laboratory Evaluation Program and Water Supply Microbiology Performance Evaluation Study, as well as the New York State Department of Health Non-Potable Water Bacteriology Proficiency Test. The ISC laboratory also participates in the US Food and Drug Administration's National Shellfish Sanitation Program.

Investigations of private and municipal facilities involve a six-hour period of sampling 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' discharge permits. The data generated from these investigations are used to determine compliance with ISC's Water Quality Regulations and with each facility's N/SPDES discharge permit.

The Commission's laboratory has been located on the campus of the College of Staten Island since late 1993. In addition to the day-to-day analyses performed at the laboratory, the Commission and the Center for Environmental Science at CSI have jointly been submitting proposals for research projects whose results would benefit the environment and the citizens throughout the tri-state region. Laboratory staff have submitted research papers for publication in several environmental forums and have been involved with students enrolled in the CES Masters Degree program.



Coney Island Beach at Stillwell Avenue, Brooklyn, New York, circa 1938

Photo from ISC archives

SPECIAL INTENSIVE SURVEYS

1999 Ambient Water Quality Monitoring in Long Island Sound to Document Dissolved Oxygen Conditions

There is an ongoing need to document the hypoxic conditions in Long Island Sound. To address that need, the US EPA - Region II again requested that the Commission conduct an intensive ambient water quality survey in support of the Long Island Sound Study. The ISC — for the ninth consecutive year — 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 ISC for western Long Island Sound 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.

All aspects of the monitoring program — station locations, parameters, methodologies, QA/QC, data sharing, etc. — were determined and agreed to by the Long Island Sound Study Monitoring Work Group and includes recommendations made by the Commission. A map and a listing of the 1999 station locations are on the following pages.

During this year's Long Island Sound sampling, ISC again worked cooperatively with the Nassau County Health Department, as well as the NYS DEC, Division of Marine Resources. Because of a lack of resources, Nassau County had to discontinue the ambient water quality monitoring program several years ago. For the second consecutive year, ISC collected samples for the Nassau County Health Department at three water quality stations. Nassau County Health Department personnel met the ISC research vessel in Hempstead Harbor to collect the samples and they performed phytoplankton identification on the samples; this is data that they hadn't been able to obtain since 1991.

Common responses to low dissolved oxygen conditions are fish kills. Too little oxygen can be fatal to marine life if levels remain persistent and drop below the organisms' threshold to survive. Fish kills can also occur due to predation and toxic phytoplankton. The Commission has always communicated from the field with local environmental and health agencies to pass on current information about unique events during the weekly cruises. Additional monitoring in response to fish kills and beach closures have 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 has asked the Commission to assist and respond to fish kills. In addition, the Commission took part in a multi-agency water quality collection effort to determine the presence of the toxic dinoflagellate, *Pfiesteria piscicidia*.

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 ISC, as

INTERSTATE SANITATION COMMISSION

1999 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"

well as those collected by NYC DEP and CT DEP, were filtered, archived and frozen until shipped to an independent contract laboratory.

The 1999 survey consisted of 12 weekly sampling runs conducted from June through mid-September. Twenty-one stations were sampled weekly for temperature, salinity and dissolved oxygen (DO). Temperature, salinity and dissolved oxygen were determined 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.

Samples for chlorophyll a, an indicator of algal production, were collected one meter below the surface on alternate runs at all stations. These were properly filtered, archived, and frozen at the ISC laboratory. Subsequently, the filters were shipped by overnight to a contract lab 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 II's Long Island Sound Office; the CT DEP, Bureau of Water Management; the Nassau County Health Department; the NYS DEC, Division of Marine Resources; the NYC DEP, Marine Science Section; and the Coalition To Save Hempstead Harbor, a volunteer monitoring group. The data are available from the Commission office. Prior to this year, all Commission ambient water quality data can be retrieved from the US EPA's national data base, STORET. For 1999, the data is being reformatted for inclusion in the Modernized STORET, Version 1.1.

Dissolved oxygen levels are 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 ISC regulations, a waterbody classified as "Class A", as are all the stations included in this ISC survey, must have a minimum dissolved oxygen content of 5 mg/l at all times.

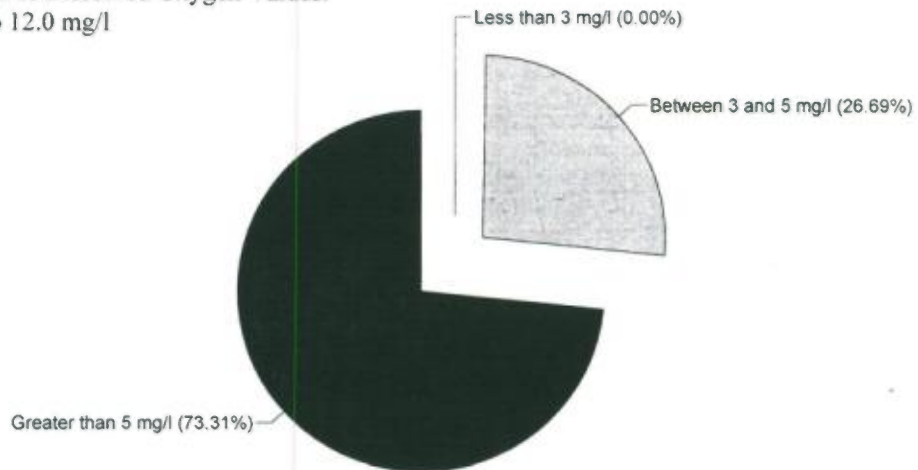
A statistical representation of the dissolved oxygen data acquired during the 1999 ambient water quality monitoring in Long Island Sound is shown on the pie chart entitled "1999 Dissolved Oxygen Monitoring". Measurements of dissolved oxygen concentration in both surface and bottom waters are separated and grouped in three categories. The first category contains dissolved oxygen concentration values that are less than three mg/l (<3.0 mg/l); it reflects hypoxic conditions. Under such conditions, very few types of fish can survive, many fishes will avoid or leave the area and those organisms not free to move about will die. The second category includes 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). The third category consists of dissolved oxygen concentrations of at least five mg/l (≥ 5.0 mg/l). All waters monitored during the 1999 Long Island Sound Study are designated as ISC "Class A". Waters of this type are suitable for primary contact recreation, fish propagation and, in designated areas, shellfish harvesting.

INTERSTATE SANITATION COMMISSION
LONG ISLAND SOUND STUDY

1999 DISSOLVED OXYGEN MONITORING
SURFACE AND BOTTOM WATERS

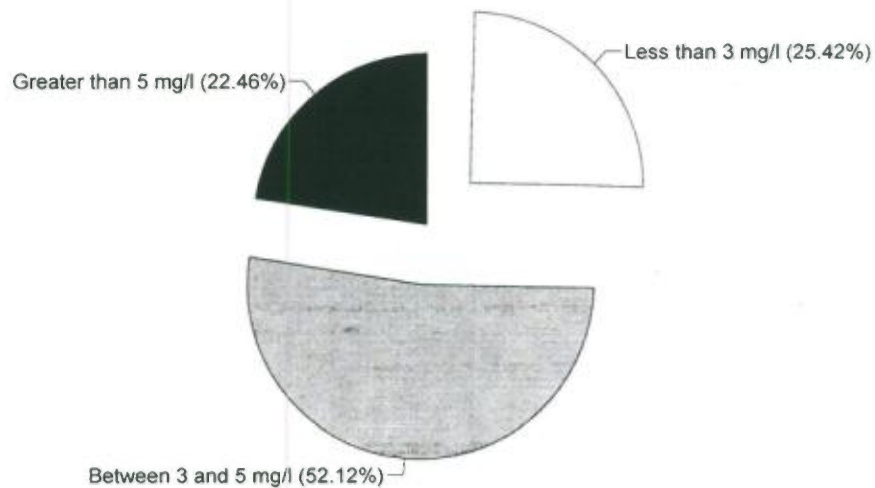
SURFACE WATERS

Range of Dissolved Oxygen Values:
3.0 to 12.0 mg/l



BOTTOM WATERS

Range of Dissolved Oxygen Values:
0.5 to 8.0 mg/l

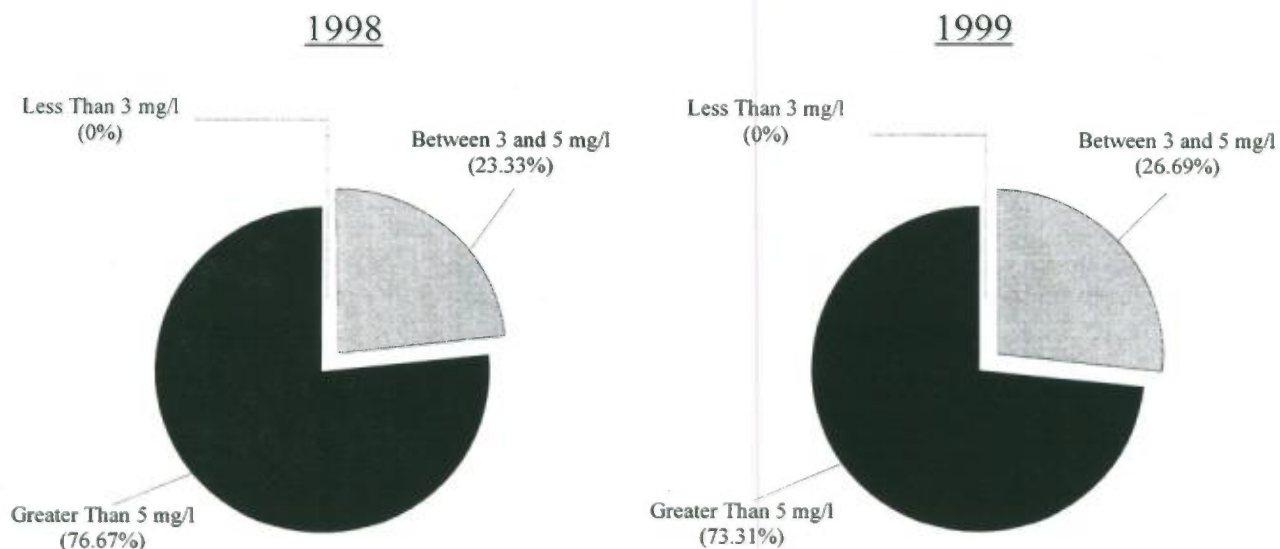


NOTE: Surface and bottom waters are shown as a percentage of 236 readings.
Twenty-one stations were sampled.

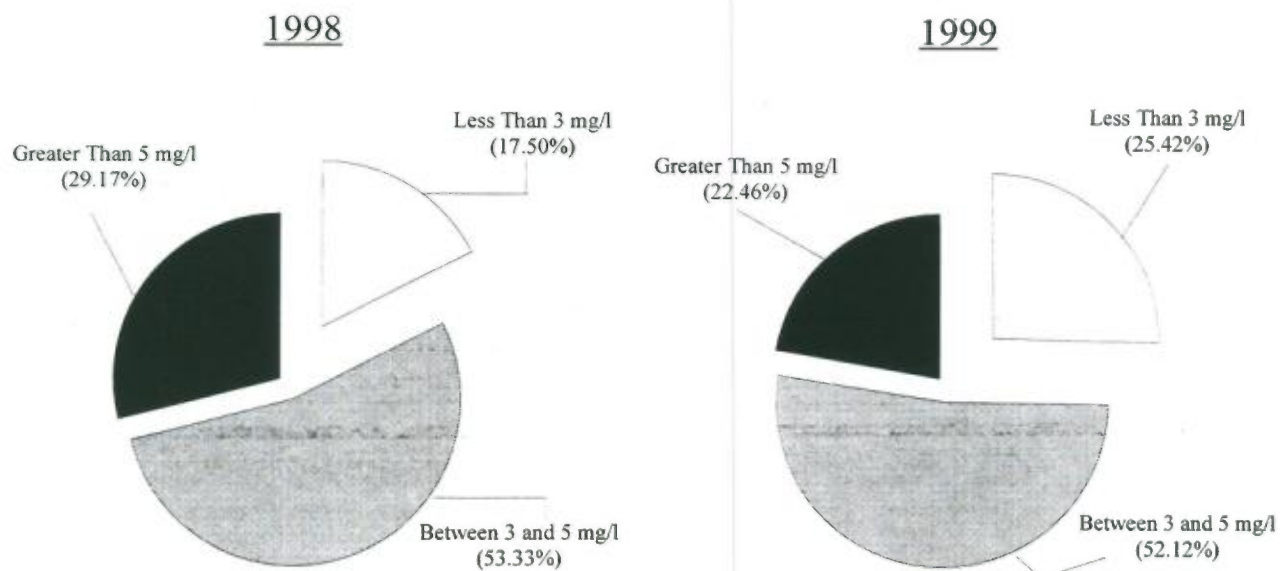
INTERSTATE SANITATION COMMISSION
LONG ISLAND SOUND STUDY

1998-1999 DISSOLVED OXYGEN MONITORING
SURFACE AND BOTTOM WATERS

SURFACE WATERS



BOTTOM WATERS



Note: Twenty-one (21) stations were sampled in both years.

As shown on the pie charts depicting 1998 and 1999 monitoring data, in general, the condition of the surface waters was essentially the same in both years. The 1999 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 73.3%, 26.7% and 0.0%, respectively. In the same category order, the results of the 1998 survey were 76.7%, 23.3% and 0.0%, respectively. According to the measurements of the 1999 survey, 73% of the values measured in the surface waters met the ISC requirement for a "Class A" waterbody. The weather patterns for both years were similar: mild winters with very dry near drought-like spring seasons followed very hot summers with late season torrential rainstorms.

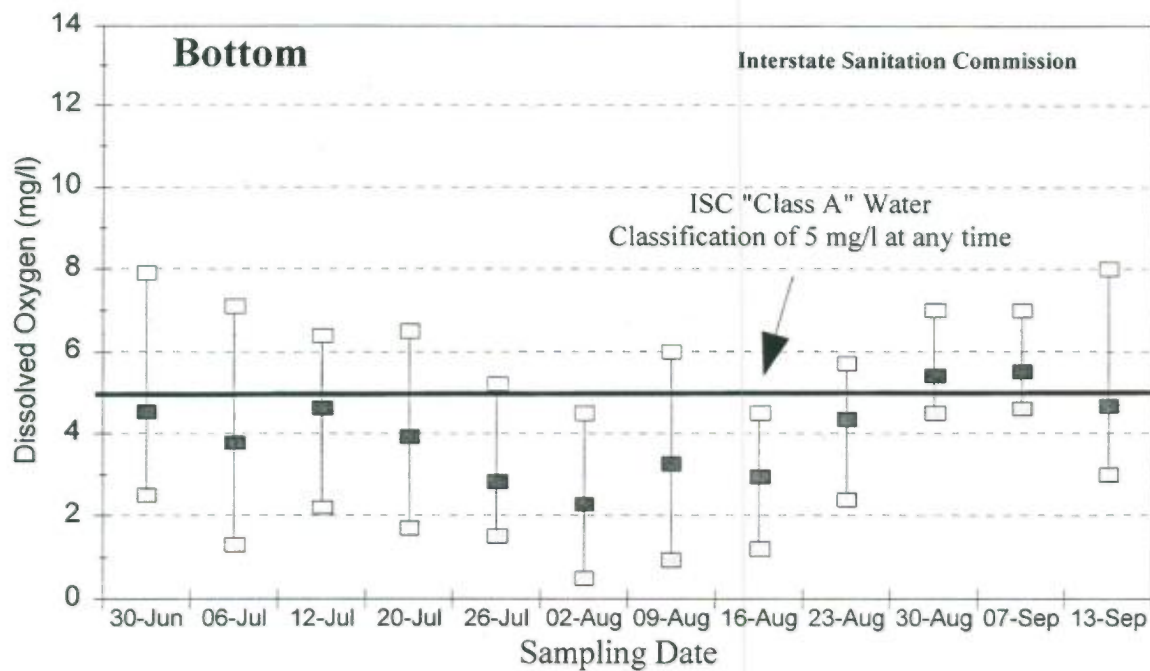
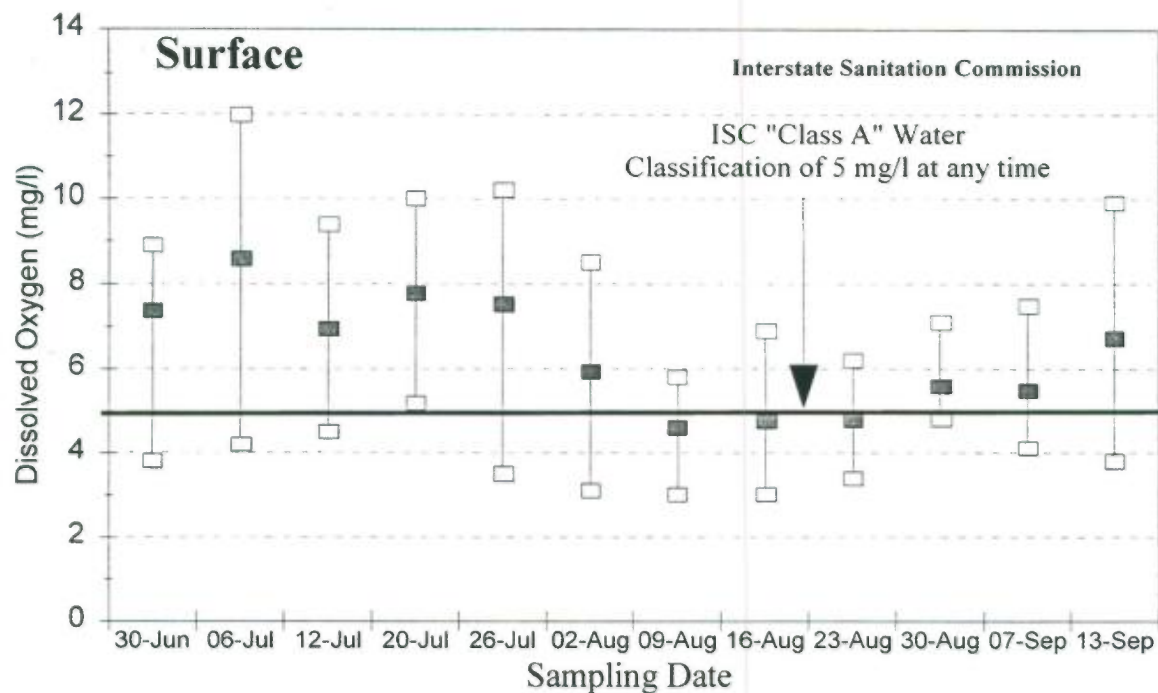
There was quite a different picture for the bottom waters of the Sound. The variations in surface and bottom waters during the summer are predominantly caused by insufficient vertical mixing within the water column. This is primarily a result of water temperature and, to a lesser extent, salinity. During typical northeastern winters, surface waters are cooled by the atmosphere and strong winds. Cold waters are denser and heavier than warm waters. Thus, surface waters tend to sink when they become colder than bottom waters. This circulation pattern continues throughout the winter, promoting vertical mixing within the water column. In contrast, during the summer, surface waters remain warmer than bottom waters because of the sun's radiation. Therefore, circulation does not take place and mixing is only induced by winds or tidal currents. As was previously mentioned, the 1998 and 1999 winter seasons were three to five degrees warmer on the average, resulting in stratification.

As displayed in the bottom half of the pie chart entitled "1998 and 1999 Dissolved Oxygen Monitoring", the 1999 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 22.5%, 52.1% and 25.4%, respectively. In the same category order, the bottom water results of the 1998 survey were 29.2%, 53.3% and 17.5%. It is interesting to note that hypoxic levels in bottom waters remained similar from 1995 to 1999, after a considerable improvement from 1994 (33.3% of the values <3 mg/l) to 1995 (21.1% of the values <3 mg/l). Variations from 1998 to 1999 in the three categories are negligible. 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 1999, 22.5% of the values measured in the bottom waters throughout the study area (including the turbulent East River and the open waters of the Sound and its embayments) met the ISC requirement of 5 mg/l for a "Class A" waterbody.

One of the objectives of the Long Island Sound Study is to be able to approximate the time period in which hypoxic conditions occur in surface and bottom waters. The graph entitled "Surface and Bottom Waters: Average and Range of All Stations Sampled", displays the variation of the average dissolved oxygen concentration at all stations between weekly sampling dates. Surface and bottom waters are represented separately. Along with the averages, maximum and minimum values of each run are also displayed. The graph indicates that hypoxic conditions were not observed in surface waters during the 1999 sampling. Average concentrations did not drop below 3.0 mg/l; furthermore, there were no individual minimum measurements below 3.0 mg/l. However, it can be seen that the minimum and maximum surface water dissolved oxygen concentration reached its

LONG ISLAND SOUND STUDY
1999 DISSOLVED OXYGEN MONITORING

SURFACE AND BOTTOM WATERS:
AVERAGE AND RANGE OF ALL STATIONS SAMPLED



□ Maximum □ Minimum ■ Average

lowest on August 9th. A week later, on August 16th, a fish kill was observed in Manhasset Bay. All observations were immediately transmitted to NYS DEC via shipboard communications. Throughout the District, about ten fish kills occurred which were isolated to very small tributaries with excessively heated water (>80°F) and to back bay areas. While these kills, in general, were accompanied by low DO situations, the majority were caused by predation. July 20th was the only date when the minimum dissolved oxygen concentration of the surface waters at all stations met the ISC requirement for a "Class A" waterbody. Surprisingly, this one condition occurred after weeks of blistering 90 to 101°F temperatures.

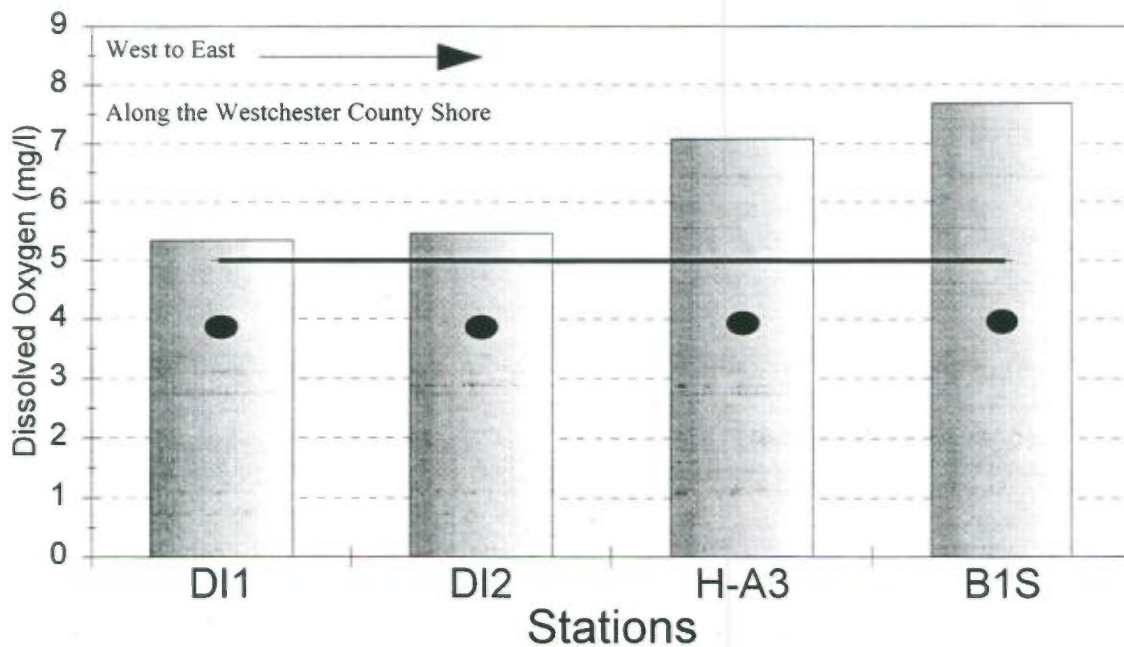
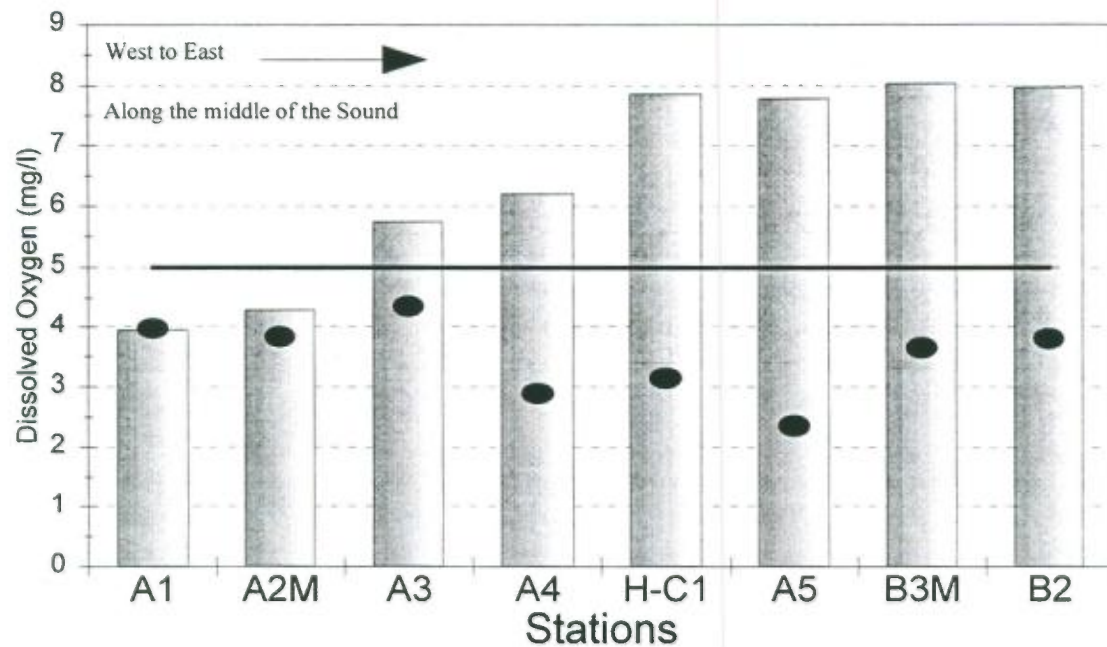
The bottom water dissolved oxygen concentration reached its lowest value on August 2nd, a week earlier than the surface. This value definitely reflects hypoxic conditions. A trend in the average dissolved oxygen concentration of bottom waters can also be observed: average DO values decrease from the initial sampling date to August 2nd and then the average DO values slowly increase. In 1999, the bottom waters of the Sound were oxygen depleted from the end of June to the end of August; at no time did any of the stations have DO values meeting the standard of 5.0 mg/l at all times. Moreover, in accordance with the results of ambient water quality monitoring in Long Island Sound from 1995 to 1998, critical conditions transpired during the same time period. Therefore, for the majority of the western Long Island Sound and its embayments, normal development of aquatic life is especially unfavorable from the end of July until late August.




For the 1999 survey, as was true for the previous three surveys, surface water dissolved oxygen levels were lowest in the western portions of the Sound and consistently increased as one moved to the east. This is illustrated on the graph entitled "Average Surface and Bottom Dissolved Oxygen Concentration for Selected Stations Along the Mid-Sound and the Westchester County Shorelines". In 1999, the average surface dissolved oxygen concentration values at stations A1 (east of the Whitestone Bridge) and A2M (east of the Throgs Neck Bridge) were 4.0 and 4.2 mg/l, respectively. The difference between western and eastern portions of the mid-Sound becomes obvious when the surface water concentration values of A1 and A2M are compared with that of station B2, which is located about 10 nautical miles east of the Throgs Neck Bridge. The average values are increasing as one moves to the east, reaching a maximum of 8.0 mg/l at station B2. In 1998, the surface water concentration values for stations A1, A2M and B2 were 4.5, 5.4 and 7.5 mg/l, respectively. The same phenomenon is observed in surface waters at stations along the Westchester County shoreline, going from west to east. This is depicted in the bottom half of the same graph. At stations D11 (west) and B1S (east), the average surface dissolved oxygen concentrations in 1999 were 5.2 and 7.8 mg/l, respectively. These data show nearly identical DO concentrations for 1998 and 1999.

The average bottom dissolved oxygen concentration at selected stations is also illustrated on this graph. The bottom dissolved oxygen concentrations showed a different trend than surface waters. Moving from west to east, the concentration of oxygen decreased for mid-Sound stations (top half of the graph), while stations along the Westchester County shoreline (bottom half of the graph) showed relatively constant bottom DO.

LONG ISLAND SOUND STUDY
1999 DISSOLVED OXYGEN MONITORING

AVERAGE SURFACE AND BOTTOM DISSOLVED OXYGEN CONCENTRATION
FOR SELECTED STATIONS ALONG THE MID-SOUND
AND THE WESTCHESTER COUNTY SHORELINES



-  SURFACE WATERS (1 m below surface)
-  BOTTOM WATERS (1 m above the bottom)
-  ISC "Class A" Waterbody Standard of 5 mg/l at any time

Several possible explanations exist for this easterly increase of dissolved oxygen in surface waters and decrease in bottom waters. Vertical mixing together with atmospheric reaeration (oxygen transfer from the air to the water) are the most important factors contributing to this trend. The degree of vertical mixing is elevated in the western Sound. During tidal excursions, the same amount of water passes through the narrow openings of the western Sound and the wide regions of the eastern Sound. Therefore, greater velocities and turbulence, which promote mixing, are observed in the western portion of the Sound. ISC dissolved oxygen data from 1991 to 1999 suggest that vertical mixing is enhanced in the western portions of the Sound, since average surface and bottom dissolved oxygen concentrations are nearly identical.

This can be observed on the graph entitled "Average Surface and Bottom Dissolved Oxygen Concentration for Selected Stations Along the Mid-Sound and the Westchester County Shorelines". Differences between average surface and average bottom dissolved oxygen concentrations, referred to as concentration gradients, are greater in the waters of the eastern Sound. Further analysis of the 1999 data shows that at station A1 (representing western Sound), 92% of the surface and 83% of the bottom readings were under five mg/l. The nearly identical percentages reveal the similarity of surface and bottom waters. However, at station B2 (representing eastern Sound), 0% of the surface and 80% of the bottom readings in 1999 were under five mg/l. Minimal mixing in the eastern Sound appears to cause reaeration of only surface waters for the extent of the summer season.

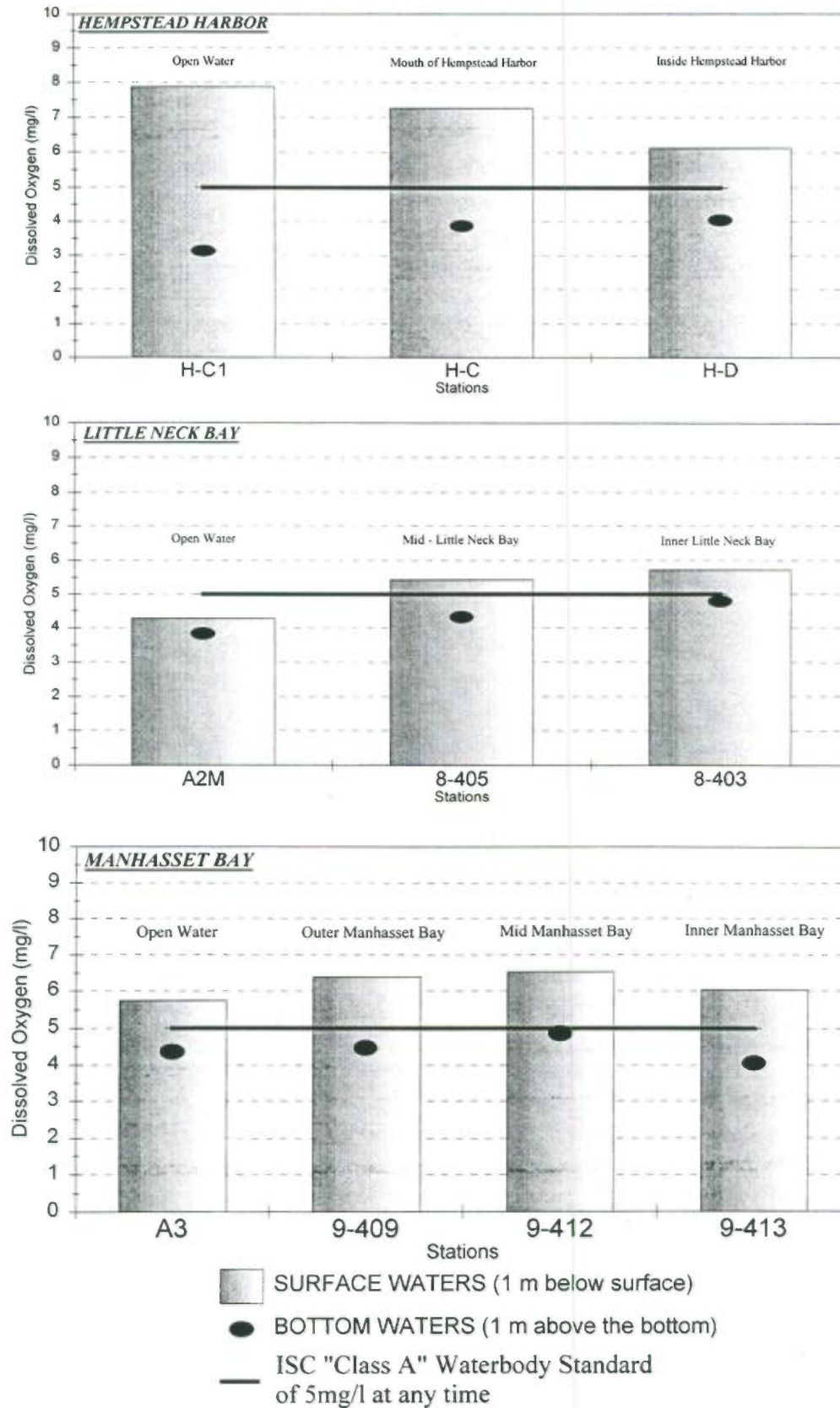
The data shows that high oxygen levels are manifested in surface waters of the eastern Sound and low in bottom waters. In contrast, mixing is improved in the western portion of the Sound. As a result, the bottom waters of the western Sound are slightly "healthier" than those of the eastern Sound. Nevertheless, oxygen concentrations remain low. This could be attributed to higher population densities in the western Sound, which decline to the east. Higher loads of oxygen demanding wastewater accompany high population densities. Also, the narrow embayments of the far western Sound can prevent higher wind velocities and allow less oxygen to diffuse into surface waters.

The average surface and bottom dissolved oxygen concentrations for Hempstead Harbor, Little Neck Bay and Manhasset Bay are displayed in the graph entitled "Average Dissolved Oxygen Concentration of Open Waters Versus Embayments". The graphs illustrate the values at different points within each embayment as well as in the open waters adjacent to the embayments.

In 1999, the ISC sampled for chlorophyll a during six of the 12 survey runs. High chlorophyll a concentrations are associated with greater proliferation of floating aquatic plants, such as algae and phytoplankton. Floating plants produce oxygen on the surface waters by photosynthesis. However, during 1999, concentrations were very low. This is substantiated by normal amounts and distribution of phytoplankton species and few blooms.

**LONG ISLAND SOUND STUDY
1999 DISSOLVED OXYGEN MONITORING**

**AVERAGE DISSOLVED OXYGEN CONCENTRATION OF
OPEN WATER VERSUS EMBAYMENTS**



Ambient Water Quality Cooperative Studies

Excessive phytoplankton caused by nutrient enrichment in Long Island Sound can contribute to the Sound's hypoxic conditions. The Commission entered into a cooperative agreement with Nassau County Health Department in order for the NCHD to be able to characterize normal and excessive phytoplankton conditions in three embayments of western Long Island Sound.

For the second consecutive year, during each of ISC's 12 weekly Long Island Sound sampling surveys, additional water quality samples were collected, preserved and kept on ice until delivery by sea to NCHD. The NCHD subsequently carried out phytoplankton species identification — dominant, most prevalent and nuisance species. The water quality samples for phytoplankton identification were collected at one established station in each of the three western Long Island Sound embayments: Little Neck Bay, Manhasset Bay and Hempstead Harbor. It was planned that additional samples would be collected if an algal bloom was encountered during the weekly cruises; that situation did not occur.

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. Current advice from scientists suggest that conditions in the Metropolitan Area are not favorable to toxic outbreaks in which water temperatures are rarely above 80°F with salinity below 15 ‰.

The Commission is involved with the NYS DEC, Division of Marine Resources and area health departments — Nassau, Suffolk, Rockland and Westchester Counties and New York City — to collect samples to verify the presence of *Pfiesteria* in New York marine surface waters, systematically characterize its distribution, and develop a contingency plan for responding to possible toxic *Pfiesteria* outbreaks.

During the Commission's weekly Long Island Sound water quality monitoring surveys, additional grab samples were collected during August and September for the special DNA-probe analysis. Samples were filtered and archived at room temperature until mailed to the NYS DEC contractor. The funding for this specialized analysis is being provided by US EPA. Additional water quality data — dissolved oxygen, temperature and salinity — was recorded as well as other general observations at the time of collection.

1998-1999 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 750,000 acres of 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 ISC, for the fourth consecutive year, to assist in sample collection in western Raritan Bay during the 1998-1999 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 inch 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 ISC field personnel to the US EPA's Edison, NJ, laboratory for analysis of fecal and total coliform bacteria.

During late November 1998, the R/V Natale Colosi was moved to and berthed at the Leonardo State Marina which is operated by the NJ DEP. From January 1999 until mid-April 1999, five survey runs were completed.

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 1999-2000 winter and spring seasons.

1999 Microbiological Surveys in the Shellfish Harvesting Waters of Selected Westchester County Harbors

Under the auspices of the National Shellfish Sanitation Program, the US FDA and the states combine efforts to preserve and manage natural shellfish harvesting throughout the country. Shellfish are a valuable natural food resource and they represent an important part of the economy of coastal communities. Sanitary controls and monitoring are necessary to ensure safe use of shellfish and to prevent the transmission of disease.



Due to resource limitations, the ISC was requested by the New York State Department of Environmental Conservation to conduct ambient water quality monitoring for total and fecal coliform determinations in accordance with sampling criteria for shellfish waters developed by the US FDA. As per the NYS DEC Bureau of Shellfisheries, an up-to-date sanitary survey consisting

INTERSTATE SANITATION COMMISSION

1999 AMBIENT WATER QUALITY MONITORING **IN WESTERN RARITAN BAY** **FOR FECAL AND TOTAL COLIFORMS**

SAMPLE No./ ISC 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

of a pollution source inventory and shoreline survey were completed for the open waters of the Sound and the harbors from New Rochelle eastward to Mamaroneck, New York.

A map and list of station descriptions on the following pages show the sampling network which consists of 15 stations. The stations are located in Milton Harbor, Mamaroneck Harbor, Larchmont Harbor, Echo Bay in New Rochelle, and the open waters of Long Island Sound which include stations in the vicinity of two WPCP submerged outfalls. The station locations were supplied to the Commission by NYS DEC, Division of Marine Sources, Bureau of Shellfisheries. The subsequent bacteriological analysis of the collected water samples was conducted by the ISC laboratory. All final data — including field observations, meteorological and tidal information — were transmitted to NYS DEC, Shellfisheries Section, and the County of Westchester, Department of Health, Bureau of Public Health Protection.

Water quality samples for fecal and total coliform determinations were taken at all stations. During the period of April through early August, four reactive surveys were conducted. The sampling was conducted under worst case conditions — during ebb tide (sampling to begin approximately 2 hours after high tide at Willets Point, New York) and after a storm event recording at least 0.25 inches of rainfall as measured at Central Park, New York. A window of 96 hours after a rain event with a maximum of two survey runs per event were the response criteria.

All samples were preserved on ice and delivered to the ISC laboratory on Staten Island, New York. The fecal and total coliform analyses were determined using the multiple tube fermentation methodology. To be consistent with other coliform data used by NYS DEC to determine the sanitary conditions of shellfish beds, analyses were performed using a 3-tube, 3-dilution test. The decimal dilutions used to yield the range of values required (MPN values from <30 to >24,000) were 1.0 ml, 0.1 ml, and 0.01 ml.

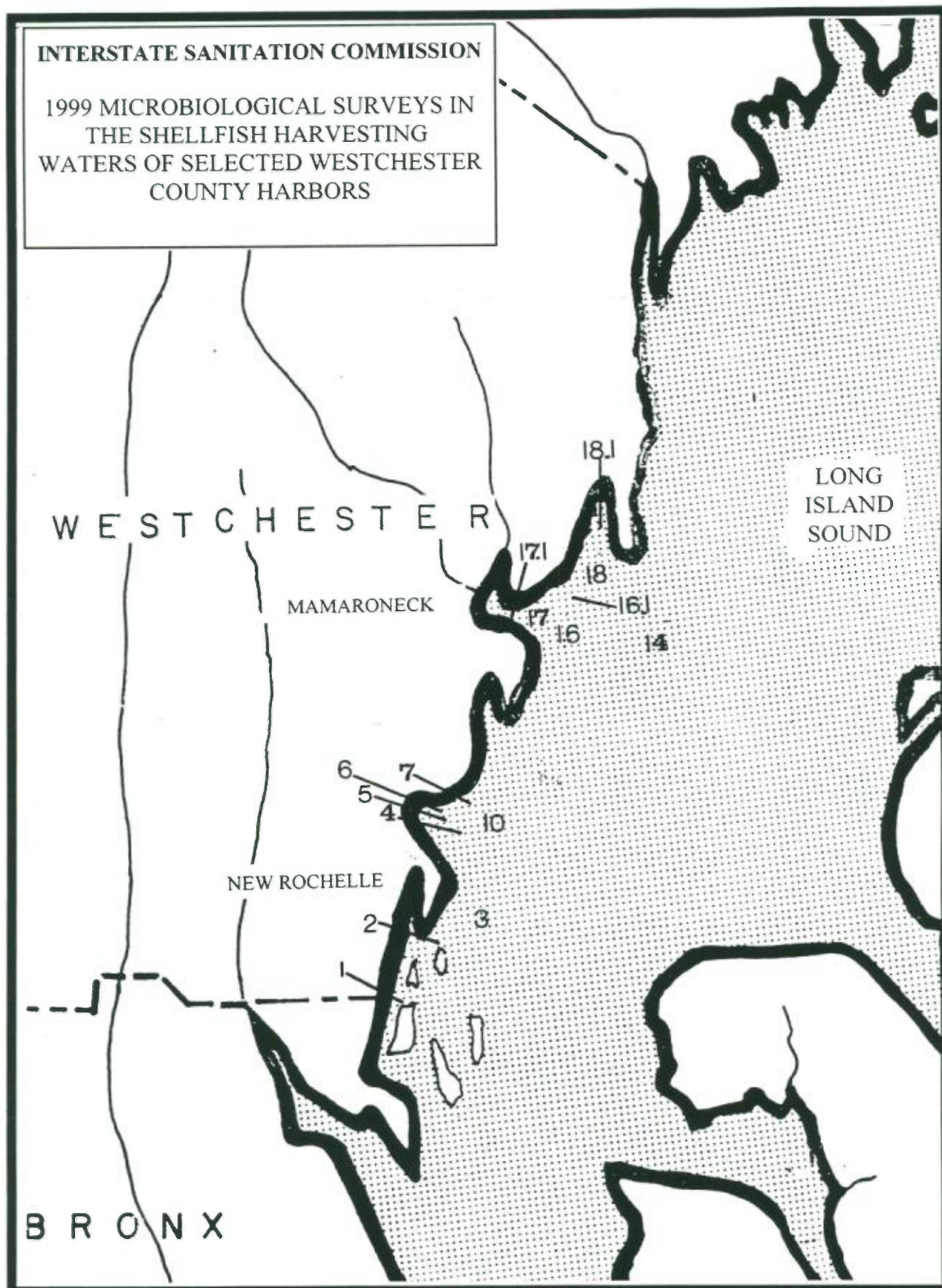
Great Kills Park Microbiological Survey

Great Kills Park, part of the Gateway National Recreation Area, is located on the eastern shore of Staten Island, New York, on Raritan Bay. The 1,455-acre park is maintained under the auspices of the National Park Service (NPS). In late August 1998, the NPS measured high levels of coliform bacteria and subsequently closed the bathing beach from August 15th to 24th and from August 28th to 29th. This triggered an extensive investigation of the area by NYC DEP; however, the source of the bacteria could not be determined. The suspected sources include but are not limited to the avian population; other local fauna and domestic pets; nonpoint sources; Fox Creek, which is a tributary of Raritan Bay; and local septic systems not connected to the Oakwood Beach WPCP collection system. As of April 1999, NYC DEP determined that the Oakwood Beach neighborhood that is north of Great Kills Harbor has 500 homes connected to the sanitary sewer, 142 homes with no connection records, and 35 homes that are not connected.

Several meetings were conducted prior to the 1999 bathing beach season in order to create a sampling program to locate the source of the bacteria. With staff restrictions/commitments and

INTERSTATE SANITATION COMMISSION

1999 MICROBIOLOGICAL SURVEYS IN
THE SHELLFISH HARVESTING
WATERS OF SELECTED WESTCHESTER
COUNTY HARBORS



INTERSTATE SANITATION COMMISSION

1999 AMBIENT WATER QUALITY MONITORING

IN SELECTED

WESTCHESTER COUNTY HARBORS

IN WESTERN LONG ISLAND SOUND

FOR FECAL AND TOTAL COLIFORMS

SAMPLE No./ ISC WP	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1/80	1	40-53-33	73-46-24	Davids Island - Nun "10A"
2/81	2	40-53-32	73-45-17	Huckleberry Island - fl R "2"
3/82	3	40-53-40	73-44-34	New Rochelle WPCP outfall
4/83	14	40-55-14	73-42-05	Mamaroneck WPCP outfall-fl R Bell R"42"
5/84	18	40-56-19	73-42-16	Milton Harbor- South of Can 3
6/85	18.1	40-56-40	73-41-58	Milton Harbor -Mid channel: Can 5/Nun 6
7/86	16	40-56-24	73-42-56	Mamaroneck Harbor- West of Nun 8
8/87	16.1	40-56-28	73-42-55	Mamaroneck Harbor -North of Hen Island
9/88	17	40-56-34	73-43-16	Mamaroneck Harbor -Mid channel Can 7
10/89	17.1	40-56-38	73-43-32	Mamaroneck Harbor - Mid channel Nun 12
11/90	10	40-55-07	73-44-09	Larchmont Harbor - Can 3
12/91	4	40-54-22	73-45-08	Hicks Ledge - Can "HL"
13/92	5	40-54-24	73-45-41	Echo Bay - fl G Buoy "3BR"
14/93	7	40-54-32	73-45-47	Echo Bay - Nun "4"
15/94	6	40-54-39	73-46-01	Echo Bay - Nun "8"

laboratory capacity limitations, a cooperative water quality sampling and analysis program was devised. Those entities participating in the project are ISC, NYS DEC - Region 2, NYC DEP, NYC DOH, NPS, and the College of Staten Island (CSI). A sampling network of 12 stations — six near the shoreline and six 100 feet offshore — was established and is displayed on the map on the following page.

A phased sampling program was proposed. Phase One entailed sampling every two hours throughout a complete tidal cycle. NYS DEC personnel collected samples at the near shore stations by wading into the surf; the off-shore stations were sampled simultaneously by NYC DEP using a shallow draft boat. NYS DEC personnel rendezvoused with NYC DEP inside Great Kills Harbor for sample transfer. In order to meet holding time limitations for microbacterial analyses, NYS DEC delivered samples to the ISC laboratory every four hours. The ISC lab analyzed for fecal and total coliforms, fecal streptococcus and enterococcus. In addition, the sampling teams collected additional samples for a NYC DEP contract lab to perform coliphage determinations. Prior to the first sample, NYC DEP established a steady state dye concentration release in Fox Creek prior to its confluence with Raritan Bay, and subsequently collected dye samples along with the bacteriological samples. The dye samples were analyzed at the NYC DEP lab at Wards Island in order to determine a concentration gradient.

Phase One sampling was done under dry weather conditions (no significant rain during the previous 48-hour period) and conducted prior to the bathing season on May 11th (the 1999 beach opening was May 29th on Memorial Day weekend). Observations of the bird population (number, species, roosting, in-water and near-water presence) was conducted by the NPS staff. Observations were made at sunset the night before and sunrise on the day of the survey at Station #1 through Station #6, approximately 50 yards north and south of each station. Subsequently, observations were made every two hours to coincide with the sample collection. ISC provided all chain of custody forms, bacteriological sample bottles and coolers for preservation until delivery.

Under this sampling regime, a total of 192 samples were collected for bacteriological analyses at the ISC laboratory. To insure sufficient capacity for all the analyses, ISC purchased an additional dry incubator and borrowed three water baths from NYC DEP. ISC's laboratory staff worked from 7:00 AM until midnight over a several day period to process the samples. This effort required ISC's laboratory to prepare 3,600 tubes and 900 plates in order to do all of the analyses for fecal coliform, total coliform, fecal streptococcus, and enterococcus. It was a tremendous effort in a short period of time.

Because the need existed and ISC geared up to meet that need, the Commission's laboratory has become the only agency laboratory in the region that is capable to do the four aforementioned bacterial analyses on a regular basis.

On July 24th, NPS closed Great Kills Beach due to high coliform readings on the previous three days. The beach was reopened on Sunday, July 25th, after analysis showed compliance with bathing beach criteria. Subsequent to conference calls amongst the agencies, Phase Two was

initiated. This phase entailed daily sampling of all twelve stations for eight days: July 27th to 29th, and August 2nd to 6th. NYS DEC and NYC DEP personnel collected samples as in Phase One; ISC performed the analyses for fecal and total coliforms, fecal streptococcus and enterococcus; and CSI assisted with the display and analysis of the results. All bird population observations were conducted by NPS staff.

ISC coordinated weekly conference calls with all agencies to discuss sampling logistics, laboratory results and possible sources of the bacteria. The Commission summarized and disseminated the results to the participants in a timely fashion and the data, as well as information supplied by the other participants, was used as a basis for discussion during the conference calls.

While Station #5, the Fox Creek in-shore location, showed the highest concentrations of bacteria on both the ebb and flood tides, the results, in general, were inconclusive and the source(s) of the bacteria that was causing contravention of bathing beach criteria remains unknown. In addition to these field collections, vast amounts of manpower on behalf of NYS DEC and NYC DEP were expended for field observations to hopefully identify a source or combination of the following: raw discharge, dry weather flow, illegal sanitary hookups from residential or commercial buildings, avian sources, or boat discharges.

Based upon the weekly water quality beach monitoring conducted routinely by NPS, Great Kills Beach was again closed on August 27th, 28th, 29th and September 2nd through September 6th, which encompassed the Labor Day Weekend. The agencies agreed to initiate a Phase Three program which would entail on-shore water quality sampling of Station #1 to Station #6 every Monday for four weeks. The stations would be sampled by NYS DEC staff and delivered to the ISC laboratory for analysis.

The results of Phase Three were inconclusive, although the Fox Creek Station #5 showed consistently high concentrations. A detailed data analysis is being conducted by CSI. The data is being correlated with tidal phase, climatic conditions and near shore current patterns. Additional data sets from NYC DOH's 1999 beach monitoring program on Staten Island are being reviewed. These two beaches, located north of Great Kills, were not closed during the 1999 bathing season.

While the source(s) of the bacterial contamination causing the beach closures at Great Kills Park remains undetermined, the participants are committed to continuing their investigation. This project can be used as a model of multi-agency cooperation bringing together various disciplines for a common purpose.

1999 BOAT INSPECTION TRIP

This past summer, the Commission's boat inspection trip focused on the New York Harbor Complex and the Hudson River. The 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 1999 Boat Inspection Trip was held on August 4th and covered the Lower

and Upper New York Harbor, the Kills and about 18 miles of the Hudson River from the Battery to Spuyten Duyvil. 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 recreational powerboating and sailing; the use of canoes, kayaks and sculls; and a major sea-lane for the eastern seaboard. Other primary contact activities supported by these waters include commercial and recreational fishing, shellfishing, crabbing and lobstering; scuba diving; swimming; jet skiing; parasailing; water skiing; and wind surfing.

ISC Commissioners, officials from all levels of government, and citizen groups viewed bathing beaches and seaside parks, commercial shellfish and lobster operations, numerous party boats and small recreational vessels, sailing clubs comprised of dozens of vessels, tug and barge transports, 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, embattlements and shipwrecks were 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 Freshkills Landfill, restoration efforts due to oil spills and erosion, wooden bulkheads under repair due to marine borers and CSO outfalls in the Kills and Hudson River.

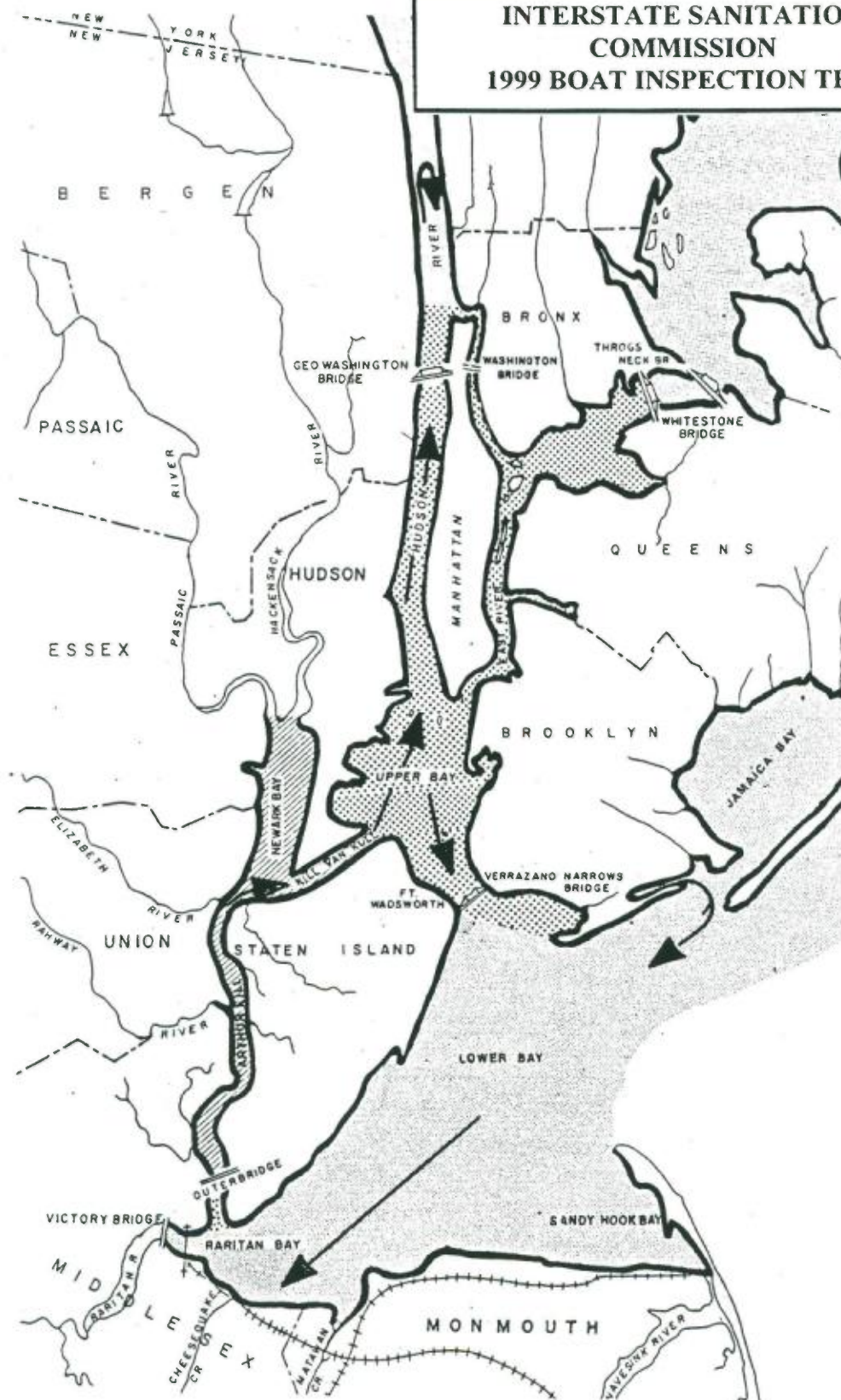
Attendees had the opportunity to see unobstructed views of the New York City and Hudson County, New Jersey, skylines; the historical embattlements that have protected New York Harbor; over 20 national monuments; and fragile bird sanctuaries on the Isle of Meadows, Pralls and Shooters Islands in the Kills. 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 WORK GROUP

In order 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 Regional Bypass Work Group was formed. The RBWG has members from the three states' environmental and health departments, ISC, US EPA, US FDA, NYC DEP, and county health officials. The Work Group was able to fund a contractor to develop a 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.

For the first two calendar years that the model and notification protocols were in place, 1998 and 1999, the Commission received 94 and 85 phone calls and/or E-mail messages, respectively, with regards to unplanned spills within the Interstate Sanitation District. The breakdown is as follows:

INTERSTATE SANITATION
COMMISSION
1999 BOAT INSPECTION TRIP



	<u>Calls in 1998</u>	<u>% of total</u>	<u>Calls in 1999</u>	<u>% of total</u>
Connecticut	5	5%	1	1%
New Jersey	7	8%	8	9%
New York	82	87%	76	90%

The majority of the spills were raw and/or chlorinated sewage. During the extent of the 1998 reporting period, there were five events of sludge spills (usually on the grounds of the WPCP) and three chemical spills which were contained on the facility grounds and dealt with hypochlorite. These eight events were less than 500 gallons in each case. In 1998 and 1999, there were 76 and 68 spill events, respectively, in New York State-Region 2, which is comprised of the five New York City boroughs. The majority of the 76 events were pump station and regulator related problems. The sewage releases were primarily caused by blockages or power failures.

All notifications were timely and accurately conveyed to ISC personnel by the appropriate agency contacts either at the office, through the established hot-lines, or at home during evenings and/or weekends. If data gaps existed when originally reported, the incident was subsequently updated with the missing information, corrective actions and final bypass volume.

Most significantly, during the period May 25 through September 7, 1998, which represents the "official" bathing season (Memorial Day to Labor Day) 57 releases or 61% of the total occurred. Two releases resulted in beach closures on the Hudson River, Westchester County (NYS DEC-Region 3) and one in the New Jersey portion of Raritan Bay. Although the Raritan Bay release was secondarily treated and disinfected, the shellfish beds were closed by NJ DEP, Bureau of Marine Water Classification and Analysis. The release by the Bayshore Regional Sewerage Authority was through an alternate outfall to Raritan Bay; the primary outfall is located in the Atlantic Ocean south of Sandy Hook, New Jersey.

During the 1999 "official" bathing season, 30 releases or 35% of the total occurred — a significant drop from the previous year. As in 1998, the majority of the 68 events in New York State-Region 2, were pump station and regulator related problems. The sewage releases were primarily caused by regulator blockages or power failures. During this reporting period, four shellfish bed closures were necessary in New Jersey and one in Connecticut, while three beach closures were required in New York. Planned for the pre-2000 bathing season, a general meeting will be hosted by the Commission to update protocols.

During 1998 and 1999, closures at Great Kills Park on Staten Island, New York, were caused by elevated levels of coliform bacteria. The statistics already mentioned do not include these incursions or notifications. During 1999, an extensive multi-agency microbiological survey was conducted in three phases over several months.

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 ISC 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 Sanitation District which adds to the extensive coverage necessary for 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; georeferencing 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 ISC is providing 305(b) reports as an annual electronic report accompanied in even years, by an abbreviated narrative report. The abbreviated narrative report, as required by law, contains only the information that has changed from the last report, and a simple reference to that report. The following table summarizes the individual supporting uses of the ISC's nearly 797 square miles of estuarine waters. The Commission is presently preparing the 1999 electronic 305(b) report. The assessment is based on the Commission's data collected from its ambient and effluent monitoring programs and supplemented with information from member States' environmental and health departments dealing with, but not limited to, water quality data, health advisories, fish kills, shellfish closure areas and beach closings.

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 (CCMP) for designated estuaries. Presently, more than 28 estuaries located along the Atlantic, Pacific and Gulf of Mexico coastlines, as well as in Puerto Rico, are developing or implementing CCMPs. Within the Interstate Sanitation 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 (LISS) is being done by the US EPA - Regions I and II. The New York-New Jersey Harbor Estuary Program (HEP) is being coordinated by the US EPA - Region II.

1998 INDIVIDUAL USE SUPPORT IN THE INTERSTATE SANITATION DISTRICT

Designated Use		Percent				
		Good (Fully Supporting)	Good (Threatened)	Fair (Partially Supporting)	Poor (Not Supporting)	Poor (Not Attainable)
ESTUARIES (Total Square Miles = 797.55)						
	Total Square Miles Surveyed					
AQUATIC LIFE	<u>387.04*</u>	35.55 	28.82 	14.04 	21.59 	0.00 
FISH CONSUMPTION	<u>797.55</u>	16.94 	0.00 	79.21 	3.85 	0.00 
SHELLFISH CONSUMPTION	<u>72.33**</u>	0.00 	0.00 	26.12 	73.88 	0.00 
PRIMARY CONTACT	<u>797.55</u>	63.04 	0.00 	4.76 	23.93 	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 Sanitation District.
 ** New Jersey waters of the Interstate Sanitation District.

During 1999, the Commission continued its active participation as a member of the Management Committees and various work groups for the Long Island Sound Study and New York-New Jersey Harbor Estuary Program. 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 the States of New York and Connecticut and the Administrator of the US EPA signed the final CCMP for the LISS in September 1994, and in October 1996, the Governors of New York and Connecticut met to re-affirm their commitment to the actions set forth in the CCMP. The Plan details priority areas of concern including low dissolved oxygen, toxins, pathogens, floatables, living marine resources, land use/development, education and public involvement. It is essential to continually evaluate the effectiveness of management actions and programs implemented and, if necessary, refocus management decisions.

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

During 1999, ISC became a member of the newly established HEP Management Committee Work Group (MCWG). The primary purpose of the Work Group is to facilitate the actions of the Management and Policy Committees with the charge of developing agendas, work plans, and budgets, as well as to interact with other estuary programs. Major issues addressed by the MCWG included establishment of a HEP office, status of individual work groups, data management, stakeholder level of involvement, interaction between agencies, scheduling issues, financial need, document development, and the level of public involvement and education.

The Nutrient Work Group, in concert with the Model Evaluation Group (MEG), focused on assessing the comparative structures, strengths and apparent weaknesses of the Long Island Sound model (Version 3.0), the Harbor Eutrophication Model (HEM) and the Systemwide Eutrophication Model (SWEM) as tools for addressing the water quality issues of the HEP. Meetings held with modeling consultants addressed comparative adequacies of the ambient water quality sampling, data input, hydrodynamics and water quality elements of the models. This group addressed total maximum daily loads (TMDLs), which are a focus of Section 303(d) of the Clean Water Act, and are designed to restore and protect the physical, chemical, and biological integrity of the nation's waters on a watershed basis.

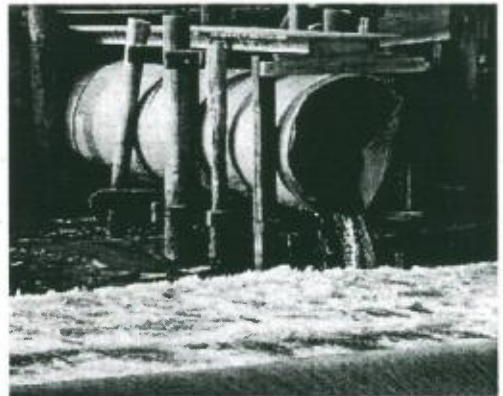
The Pathogens Work Group is undertaking a thorough investigation of existing water quality models for use in the TMDL assessment process. Several contractors made presentations to the Work Group, which is comprised of representatives of ISC, NYS DEC, NJ DEP, ACOE and NYC DEP. A work plan, schedule and budget are collectively being developed to enhance the model of choice. The work plan will identify model needs, additional water quality sampling requirements, and assessment of existing data sets with regards to shellfish and bathing beach criteria.

The charge of the Toxics Work Group is to review currently enforceable standards for metals, polychlorinated biphenyls (PCBs), pesticides and other toxic substances that negatively affect the well being of the ecological community. Those standards will then be compared with measured concentrations of each toxicant throughout the New York-New Jersey Harbor Estuary. Subsequently, the Work Group will re-evaluate and revise, as necessary, the CCMP list of chemicals of concern in three different mediums: water column, biota and sediment. The list identifies substances for track down and abatement, including consideration for establishment of TMDLs and Wasteload Allocations. The Commission continues as an active participant on each of the aforementioned work groups.

COMBINED SEWER OVERFLOWS

The Commission continues to take an active role in CSO control with in-house programs as well as through its participation in the National Estuary Programs in the region. In 1999, 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 their action. 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, 1999, a total of 42 outfalls were inspected during dry weather; none had any discharge during the ISC's inspections.



ISC has been deeply involved for many years in the issue of CSOs. Because they remain a major source of water pollution that must be controlled in order to achieve significant improvements in water quality, ISC is committed to an active involvement with the elimination of the adverse effects of CSOs.

PUBLIC EDUCATION AND OUTREACH

The Commission remains committed to participating in an active public involvement, education and outreach program. ISC continues to lecture at local schools and colleges on a variety of environmental topics and Commission activities. In addition to the Commission's day-to-day activities, the remainder of this section outlines some of the ISC's involvement in this area.

Law Student Internships

ISC remains a part of the Pro Bono Students America/New York and New Jersey (PBSA/NY & NJ) database which is a program that the Commission has been involved with since 1992. The database 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 ISC is also listed with area law school career placement offices through which students seek paid part-time employment. The opportunity to work with PBSA has proven mutually beneficial to both the ISC and the student participants. This year, recent graduates and placements from law firms sought positions with the Commission. Over the years, the Commission has attracted approximately a dozen students from area law schools. For the fall 1999/spring 2000 period, a third year law student from Hofstra University is serving an internship with the Commission. The student participants appreciate the opportunity to apply the skills which they were learning in the classroom, and the experience provides them with a perspective which greatly enhances their understanding of the legal concepts being taught.

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 ISC 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.

Board of Cooperative Educational Services (BOCES)

The Environmental Studies Academy is an educational program for high school juniors and seniors who are 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. A Commission staff member is involved with the BOCES of Southern

Westchester and stresses ISC's regional focus on water quality issues affecting the Hudson River and Long Island Sound. The Commission serves on the advisory committee.

The Coalition to Save Hempstead Harbor is a citizens group that has been conducting water quality monitoring in Hempstead Harbor for approximately six years. A workshop on water quality monitoring was organized under the auspices of BOCES of Nassau County. The intent is for the workshop to create a broader picture of water quality conditions and events in Long Island Sound, promote data sharing through better communication and software links, and establish a network to inform each other of conditions in Long Island Sound during the monitoring season. ISC staff has been involved with this forum over the last four years.

The River Project

The River Project is a non-profit environmental group located on the Hudson River in New York City. As part of their activities, they do studies on the Hudson River and have a program for college and high school interns. ISC hosted a high school student who collected some samples and came to the ISC laboratory to analyze them. The ISC staff gave hands-on instructions on how to run different bacterial tests. Both the ISC Executive Director and Laboratory Director agreed to be science mentors for this entity.



Fishing and crabbing in the East River
at 132nd Street in New York City, New York, circa 1938
Photo from ISC archives

III. AIR POLLUTION

GENERAL

The Commission's interstate air pollution program began in 1962 and has focused on field investigations, applied research, and advocacy of regional viewpoints on environmental issues. For the last several years, this program involves the ISC receiving air pollution complaints. As has been the pattern in the past, almost all of the complaints recorded have come from Staten Island. For the 12-month period ending September 30, 1999, a total of 26 air pollution complaints were received; this represents a decrease of 45% from the previous 12-month period.

This year's distribution of odor complaints showed a more typical distribution as compared to previous years. The "garbage" odor category was replaced as the number one nuisance for only the sixth time since 1982 (this odor was number two in 1986 and 1991). The most prevalent odor during this reporting period was the catch-all category of "chemical". While the data base is smaller than in previous years, this is the first time in 18 years that this category was the most frequent odor identified by citizen callers.

For the twelfth consecutive year, the Commission participated in the regional Ozone Health Message System that is activated during the summer months. Health advisories were issued within the Region, primarily by the New Jersey Department of Environmental Protection. The public is informed of the health advisories through communications from wire services and radio and television stations. ISC also sent the advisories it received to the environmental and health agencies of all member States.

Pollutant values and meteorological conditions did not warrant activation of the High Air Pollution Alert and Warning System in the New Jersey-New York-Connecticut Air Quality Control Region, which ISC has coordinated since 1970.

AIR POLLUTION COMPLAINTS

Staten Island remains as the source of more citizens' complaints than any other area in the Interstate Sanitation District. 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. Since 1989, budget cuts necessitated the closure of ISC's Staten Island field office from which Commission staff responded to and conducted field investigations of citizens' complaints — including nights, weekends and holidays. The field office received hundreds of odor complaints annually; peaking in 1986 with nearly 3,500 complaints. The closing of the Staten Island field office still generates expressions of frustration to the Commission by concerned citizens.

The Commission still maintains an answering service (718-761-5677) to receive complaints. The answering service operates 24-hours-a-day, 7-days-a-week, and complainants are contacted during regular office hours. When available, ISC personnel are dispatched to investigate ongoing complaints and, when warranted, Commission personnel are contacted during non-office hours. The ISC also contacts and works closely with the appropriate enforcement agencies and health departments to perform follow-up.

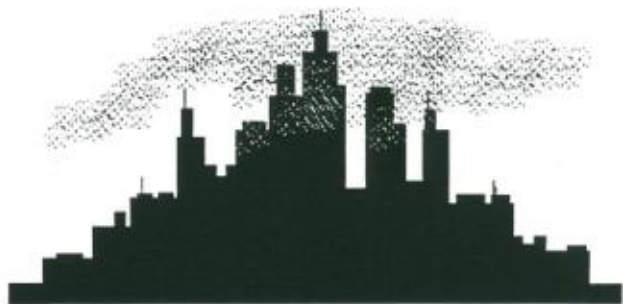
For the 12-month period ending September 30, 1999, the Commission received a total of 26 complaints; this represents a decrease of 45% from the previous 12-month period. Note that there were 48 complaints in the 1997-1998 period, 64 complaints in the 1996-1997 period, 86 complaints in the 1995-1996 period, 140 complaints in the 1994-1995 period, and 202 complaints in the 1993-1994 period. This pattern shows a significant yearly decrease in complaints. It should also be observed that the total number of complaints for this six-year period was dwarfed by the thousands of odor complaints registered between 1982 and 1988. Of the 26 complaints received this year, a total of 25 — or over 96% of the complaints — originated from Staten Island. The accompanying tables enumerate the complaints categorized by the community from which they originated and by the type of odor.

Five Staten Island communities were the source of at least two complaints to the Commission during the reporting period. These neighborhoods represented approximately 38.5% of the total complaints received. Fifteen communities throughout the Island reported one complaint each. Over the years, the majority of the complaints received by the ISC come from the same group of neighborhoods. The one complaint not from Staten Island was received from another New York City borough.

Odors were classified into six categories. The “chemical” category was reported most frequently, representing over 19% of the total. This is the first time this type of nuisance odor was reported the most by citizens since the ISC began statistical analysis of odor types in 1983. 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.

OZONE HEALTH MESSAGE SYSTEM

For the twelfth 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 — 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



DISTRIBUTION OF AIR POLLUTION COMPLAINTS BY TYPE OF ODOR
FROM STATEN ISLAND COMMUNITIES
FROM OCTOBER 1998 TO SEPTEMBER 1999

TYPE OF ODOR	COMPLAINTS	
	NUMBER	% TOTAL
Chemical	5	19.2
Garbage	4	15.4
Cat Urine	2	7.8
Gas	1	3.8
Antifreeze	1	3.8
Burning Rubber/Plastic	1	3.8
Other*	12	46.2
TOTAL	26	100.0

* Represents odors not specifically identified by the complainant.

**DISTRIBUTION OF AIR POLLUTION COMPLAINTS BY
COMMUNITY ON STATEN ISLAND
FROM OCTOBER 1998 TO SEPTEMBER 1999**

COMMUNITY	COMPLAINTS	
	NUMBER	% TOTAL
Huguenot	2	7.7
Rossville	2	7.7
Travis	2	7.7
Arden Heights	2	7.7
Westerleigh	2	7.7
Other Staten Island*	15	57.6
Other Non-Staten Island**	1	3.9
TOTAL	26	100.0

* Represents communities from which only one complaint was reported.

** Represents complaints received from other New York City boroughs and New Jersey.

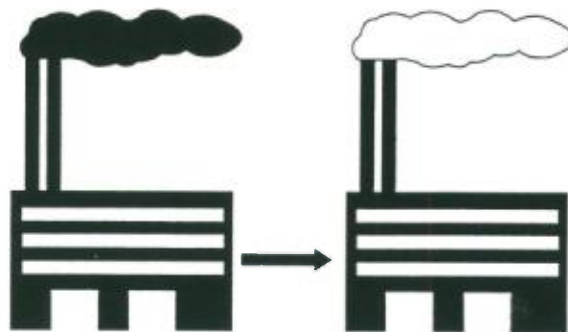
EPA — serves as a central source of precautionary advice on ozone to the Region during the warm weather months (May to September) when higher concentrations of ozone occur.

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 1999, the Commission continued to participate in this program, although still at a reduced level due to resource limitations. ISC took an active role in alerting the public to unhealthful conditions. During the warm weather months, when elevated levels of ozone existed in parts of the Metropolitan Area, the ISC relayed "health advisory" messages to the appropriate government environmental and health agencies. The ISC received 38 ozone advisories from the New Jersey Department of Environmental Protection between June 4th and September 1st. Individual states issue their own health messages which identify specific counties where ozone levels are a special health threat. During 1999, it was not necessary for ISC to issue a region-wide Ozone Health Message.

REGIONAL AIR POLLUTION WARNING SYSTEM

The Interstate Sanitation Commission 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 Commission's Counsel provides legal advice in all dimensions of legal matters. The Counsel's function could encompass those duties necessary to the trial or management of a case in court or an administrative proceeding. In these instances, the Counsel manages both the mechanical parts of a suit and attends to the pleadings and the cause at trial. At times, the Commission may decide to act as a friend of the court, and do an amicus filing in those instances. Other aspects of Counsel's function include giving advice to communities affected by the Commission's regulatory authority. This report deals with areas of major concern as recurring themes or because of some unique issue may deserve special note.

Significant portions of 1999 were devoted to substantiating the significant gains fought for and achieved in preceding years. Aided by the New Jersey Attorney General's Office and the Township of Woodbridge, the ISC continued to work toward the implementation of broad initiatives that will assist in ensuring that the waters in and around the New York-New Jersey Harbor Complex, a portion of the Commission's District, will be protected from floatable debris emanating from the Fresh Kills Landfill. Several field trips were arranged to provide firsthand knowledge of conditions at the landfill.

Discussions and negotiations with the NYS DEC and the NYC DEP achieved a much-desired settlement of the administrative permit matter involving the New York City sewage treatment plants in 1998. However, an issue first identified in that matter — nitrogen control — became a closely watched issue in 1999, and the subject of cases in both federal and state court arenas. The Commission filed an amicus brief in the state court suit.

It should be noted that sustained efforts and a significant portion of resources were devoted to a matter involving the discharge permit for the Passaic Valley Sewage Commissioners. The ISC is working diligently to ensure that gains achieved in the early 1980s, and even before, are not eroded. The Commission is awaiting a decision on a summary decision motion.

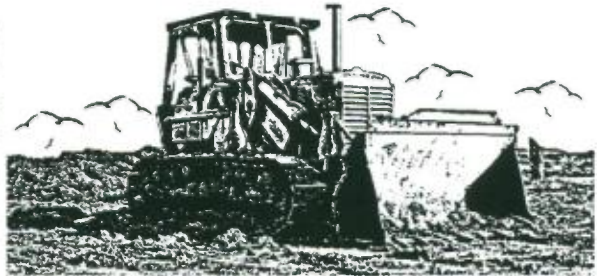
A Consent Decree entered into in 1981 on behalf of the US Environmental Protection Agency (EPA); the City of Hoboken; the Hoboken, Union City and Weehawken Sewerage Authority (HUCWSA); and the Hudson County Utilities Authority (HCUA), was terminated in 1998. With compliance with all applicable provisions having been achieved, this case was removed from EPA's active docket this year.

The Commission continued its participation in a clearinghouse to attract area law students who are interested in public benefit work as legal interns to gain course credit and/or valuable experience in the process. An intern from Hofstra University Law School joined the Commission for the Fall 1999-Spring 2000 semesters. This program has proven successful in that the interns gain valuable experience and the Commission gets assistance for its legal counsel.

LITIGATION AGAINST NEW YORK CITY'S OPERATION OF THE FRESH KILLS LANDFILL

A federal Court Order of 1997 directed the hire of an independent expert (IE) and a plaintiffs' representative on an interim monitoring team (IMT). The activities of both entities are calculated to further evaluate compliance at the landfill and recommend improvements. The IMT is comprised of the initial court-appointed independent monitor, a voice for the City (the Water Quality Monitor), and a plaintiffs' representative. In point of fact, the IE and IMT were both fully established with the hire of consultants agreeable to all parties by the fall of 1998, although a representative from the ISC had acted as the plaintiffs' representative to the IMT prior to the hiring of a consultant. However, it was during 1999 that both have established themselves with the City and with the parties. The parties have sought to satisfy the Court Order with varying degrees of success and with some limitations. These newly hired consultants, representatives from the City (Water Quality Monitors), the initial court-appointed independent monitor, and legal representatives of the parties were all members of a field team who twice visited the landfill which is scheduled to stop accepting garbage for on-site disposal by the end of 2001.

At the end of 1997, the Court had relieved the City of its obligation to build a single-barge enclosed unloader as a long term-solution for preventing garbage from escaping from the landfill, contingent upon the City's implementing certain measures. The failure to implement those measures could result in an immediate return to Court and 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. Thus, the 1997 Court Order contemplated an annual review to the Court.



Since the entry of the Federal Court Order in September 1997, the parties have not returned to court. However, there has been constant action to tackle the dictates of the Order with mixed success. For example, the Order called for the implementation of certain measures within a 30-day period, and further called for the annual report referenced above. During the second quarter of 1999, the IMT completed the First IMT Report and the independent expert completed the First Report of the IE. In the main, the IE Report gave the impression that the City was alone responsible for most, if not all, of the individual methodologies that have improved landfill operations. In fact, the methodologies now in use came about following the instant litigation. The Commission went on record with the IE that the Report lacked objectivity and did not strike the proper balance, as on the surface it appeared to side heavily with the City. In other areas, the Report adopted some of the IMT's housekeeping suggestions, among which are increasing monitoring to 60 four-hour trips from 30 eight-hour trips per annum, developing a new reporting format, and switching to a quarterly report from a monthly report.

During the third quarter of 1999, the Second IE Report and a draft of the Third IE Report, which would go to the Court, were presented to the parties. The Second IMT Report to the parties

was also completed. The single most significant item to come to light, through the Second IE Report, was the information that the City's contracts for fence repair had limitations. The impact on the landfill was that portions of fences were often down, allowing an avenue for debris to escape into the waters around the landfill. Until the Second IE Report, the plaintiffs were not aware that some of the fence contracts were limited by the volume (the amount of fencing that could be repaired) or limited by the fiscal year (a limit on the amount of funds had been allocated to do a certain amount of work within a restricted time period). The ISC advised the City and the IE that both limitations were violations of the Court Order which had provided that fence repairs be done as soon as the damage is identified. More significantly for fence issues, the City and IE have recommended that one of the items ordered by the Court — the extension of the marine fence in the water — is no longer necessary. Both have presented evidence that suggests that shoreline clean-up and the addition of more feet of fence on land could result in the same preventative measure in preventing debris from escaping into the waters around the landfill and into the Arthur Kill. The Third IE Report is currently undergoing scrutiny, and will be forwarded to the Court, along with the plaintiffs' comments, by the end of 1999. Collectively, with all the reporting on monitoring, there continues to be no set schedule that the City has agreed upon to implement recommendations.

The City continues to do timely reports on closure. However, the City's plan as it now stands has run afoul of opposition from concerned citizens in Brooklyn. A temporary restraining order has prevented the City from utilizing the contractor it had signed with to remove 2,400 tons-a-day of garbage from Brooklyn. Garbage from the Bronx has been diverted from the landfill and transported out of state since July 1997.

The City has decided to use marine transfer stations (MTSs) as its approach for a long-term waste export system. Evaluation of proposals for the use of MTSs is currently under way and selected vendors were to be announced in the fall of 1998. Because this alternative entails a long development timetable (36 months from when the vendors are selected), the City is pursuing a transitional export program. Accordingly, the City has solicited bids for short-term contracts (the transitional export program) for the export of garbage from the Boroughs of Brooklyn and Queens. The City expected to award contracts to transport waste from existing private land-based transfer stations (which are subject to fewer restrictions than public stations) located in Brooklyn and Queens, but not in Manhattan, by October 1998. Some of the contracts were awarded, most notably, one outside of the City in Elizabeth, New Jersey. The City of Elizabeth has initiated a lawsuit against the City of New York, which will be heard at the end of January 2000. The outcry from organized groups both within and outside of the City is grounded in community opposition to the trucking of garbage through neighborhood streets with the attendant problems related to odor, and concerns about air pollution from the volume of trucking required. This so-called transitional program will entail the use of truck-to-truck and truck-to-rail transfer facilities located throughout many communities, with the attendant traffic, air pollution and garbage spillage problems.

An enclosed single-barge unloader system was originally the alternative to the land-based proposals. It had been selected by the City and agreed upon among all the parties as the permanent solution for keeping floatable debris from entering the waterways in and around the landfill. 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 originally stated by the City for the enclosed barge unloader. The Commission is committed to ensuring that floatable debris is prevented from entering the waterways around the landfill. The background that leads up to the most recent events is presented below.

This suit (Township of Woodbridge v. City of New York, Civil No. 79-1060) relates to the waterborne debris that enters the District's waters as a result of the garbage unloading operations at the Fresh Kills Landfill. 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 is transported to the Fresh Kills Landfill by barge.

In 1986, the ISC 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 ISC'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 ISC's Water Quality Regulations. ISC 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 recommendations for 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 ISC 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. The foregoing details the aftermath of the City's filing.

NEW YORK CITY SEWAGE TREATMENT PLANT PERMIT ISSUES

With the resolution of the final three remaining issues — whole effluent toxicity, flow measurement and plant capacity — from a case which began in 1988, and was followed by a lengthy administrative proceeding, all is settled.

The problem of nitrogen control, an issue that was part of the lengthy administrative process and was generally thought of as resolved, surfaced again in the guise of two cases — one federal and one state.

Nitrogen Limits

An early decision by the NYS DEC Commissioner in April 1994 approved the nitrogen permit conditions for incorporation into the SPDES permits and ordered that certain conditions take effect immediately. 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 to 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.

Thirteen of the City's 14 treatment plants are included in the permits. The exception is the North River plant because this facility is the subject of a federal lawsuit in which capacity, among other things, is at issue.

At those plants outside of the East River and Jamaica Bay, there will be monthly data collection programs initiated. The monthly sampling sites will include influent, primary effluent, final effluent and side streams. In the long-term, the Nitrogen Control Feasibility Plan will comprehensively analyze additional methods to meet much greater levels of nitrogen reduction for future discharges.

On March 12, 1998, the Soundkeeper and others filed an action against the City in the Eastern District of Federal Court, which is in Brooklyn, New York. They selected that venue because most of the plants alleged to have been in violation are located in that federal district. Later that same day, the State of New York, represented by the NYS DEC, filed an action against the City in state court. These filings followed the filing of a 60-day Notice of Intent under the federal Clean Water Act against the State and EPA on behalf of the Long Island Soundkeeper, Inc.; the

Riverkeeper, Inc.; John Cronin, the Hudson Riverkeeper; the American Littoral Society; Andrew Willner, the Baykeeper; and other private citizens, alleging that for every month since January 1996, when nitrogen limits were imposed (using aggregates), the City has consistently been in violation of those limits. This represented an example of true interstate concern, as demonstrated by Connecticut intervening in the lawsuit. The 60-day notice and the federal and state complaints allege that these violations of the nitrogen loading limits contribute to the severe hypoxic conditions in Long Island Sound and Jamaica Bay, causing damage to those ecosystems. The proximate location of these plants, which discharge pollutants into the East River and Jamaica Bay in violation of the permitted effluent limits of the SPDES permits, and the likely impact of the East River plants on Long Island Sound, accounts for the concern on the part of the State of Connecticut.

During July 1998, a federal court judge heard oral argument on the City's motion to stay the federal court case. The City reasoned that since that state had acted expeditiously, there was no need for citizens to be concerned. The judge questioned the City's approach, given the stated statutory right of citizens to question environmental violations under the Clean Water Act. The judge also expressed concern about any rights the State of Connecticut might have to intervene in a state court action. He further raised questions about the differences in penalty schedules in federal and state court and the lack of provision for attorneys' fees in state court. Ultimately, he opined about the possibility of granting a qualified stay, which would enable the parties to go forward in the state case, albeit without Connecticut. Such a decision would allow the federal case to remain on hold without any prejudice to the rights of any of the parties to revisit the federal case, and to proceed as though nothing had occurred, assuming the outcome in the state case was not to anyone's liking. In a ruling in late November, the federal court judge denied the City's motion for dismissal or for a stay of the federal court case; hence the federal court case will proceed.

During April 1999, the Commission assisted the Pace University Law Clinic, who represents the Hudson Riverkeeper, with its early documentation of ISC's and NYC DEP's position on dry weather flow versus total flow. Much of the documentation focused on the Long Island Sound Study's no net increase policy and a comparison of the Connecticut permits (which use dry weather flow). Discovery is ongoing.

The Commission is not participating in either case as a party. NYS DEC was supportive of an amicus curiae filing in the state case. The Commission filed an amicus curiae (friend of court) brief in the case pending in New York State Court in January 1999, and participated in oral argument in February. In May, the Court sought the City's stipulation on certain admitted violations, and asked all the parties to certify their papers. In June, the City filed a Stipulation conceding certain violations. The Court issued a decision in July, finding the City liable for violating state environmental regulations in discharging waste into the upper East River and Jamaica Bay that exceeded the limits set in the SPDES permits. It found that the City had filed shoddy reports with state environmental regulators. According to the Court, for numerous months in 1996 and 1998, the East River and Jamaica Bay plants exceeded their limits for the discharge of nitrogen and other pollutants. In 1996 and 1997, the City filed inaccurate reports about discharges to state environmental regulators. The Court rejected arguments by the City that the SPDES permits were

unclear as to acceptable levels of nitrogen discharges and vague as to what actions would be considered a real violation, as opposed to a technical violation. The Court also turned aside the City's claims that the State's negligence in issuing violation citations amounted to an assent to the excess pollution levels. The Court clearly found that a permit holder cannot rely on any governmental inaction in not enforcing the law to create a waiver. Finally, the Court took note of the damage wrought by elevated levels of nitrogen in Long Island Sound and Jamaica Bay, noting that those bodies of water suffer from hypoxia with dire effects for marine life. This decision may be the first state court opinion to find a permit holder strictly liable for exceeding permit limits.

The parties appeared before the Court in August and again in September, at first to attempt to settle and later to establish discovery schedules. Discovery is now ongoing in this case. It should be noted that the Commission continues to monitor nitrogen parameters, and has found that they are being met in the East River, but not in Jamaica Bay.

ENFORCEMENT PROCEEDING AGAINST NORTH RIVER WATER POLLUTION CONTROL PLANT

The City has indeed made a movement toward addressing the concerns of many about the precipitous 24 MGD drop in flow that occurred at the North River WPCP in April 1994. They have made progress as well with questions that have been raised about the flow metering system. When the Commission became aware of the drop in 1995, it met with the City and the City agreed to share several reports of independent consultants mandated by Court Orders. These Court Orders followed complaints filed in federal Court by a coalition of groups on the west side of Manhattan, in which the ISC provided technical expertise. At the same time, NYS DEC brought an enforcement action against the City for permit violations at the North River plant. The ISC's motion to intervene in that action was denied. It has been acknowledged that many of the conservation measures adopted were not in place at the time of the 24 MGD drop. NYS DEC continues to reassess its position on independent calibration. Despite the City's efforts, deep concerns still persist that the only way to ensure some indication of reliability is through calibration by an independent, outside entity.

The Court found that the plaintiffs properly brought the action as a citizen suit under the CWA. The Court, having found this, did not consider the question of whether flow limits are effluent limitations under the CWA. The Court, more importantly, denied permanent injunctive relief to the plaintiffs from hook-ups, noting that the plaintiffs could not demonstrate a threat to the integrity of the waters surrounding the Wards Island or North River plants, nor could the plaintiffs demonstrate irreparable harm. The Court cited material that the City provided showing that the dry weather flows had been in compliance with the permit authorizations. Without more explanation than that, the Court found that there was no record to support the appointment of a special master and the Court denied such an appointment.

The plaintiffs made an application for attorneys fees early in 1999. The Court found that the plaintiffs had not sufficiently prevailed and denied the attorneys fees.

ADJUDICATORY PROCESS CONCERNING THE DELETION OF ISC'S REGULATIONS FROM THE PASSAIC VALLEY SEWERAGE COMMISSIONERS' DISCHARGE PERMIT

During the middle of 1996, the Commission filed a Notice of Intent to Request an Adjudicatory Hearing with the NJ DEP. The ISC is contesting the deletion of ISC's Regulations from the discharge permit issued for the treatment plant of the Passaic Valley Sewerage Commissioners (PVSC). Since the early 1980s, when NJ DEP specifically insisted that the Commission's regulations be included in the permit, they have always been part of the PVSC permits. The draft permit, issued in January 1996, contained references to the ISC Water Quality Regulations and included them under "Special Conditions". The June 27, 1996, final permit issued to PVSC deleted any reference to provisions of the ISC, citing Article XII of the ISC's "Tristate Compact for Pollution Abatement" as authority for the removal of the Commission's Regulations. The final permit was adjusted to accommodate comments made by consultants for PVSC during the draft permit process. All ISC parameters were removed, as were references to ISC in four other sections.

The language of Article XII which deals with controlling future pollution, abating existing pollution, and working in cooperation with the states, is not meant to be read alone. Article XII's real value is to set forth general governing precepts for the ISC. The reference to PVSC is found at the end of the Article and merely recognized that in 1935, when the Commission was charged with the responsibility to make plans to abate sewerage pollution, a plan already existed for PVSC. The applicable language reads as follows:

ARTICLE XII

1. In order that future pollution be controlled and existing pollution be abated with the greatest possible economy and efficiency, the commission shall co-operate and advise with the respective State and district authorities having jurisdiction over stream pollution, with a view to co-ordinating their activities and securing the most satisfactory results at lower cost. For such purpose the commission may prepare a general plan of the most practicable and economical method of securing conformity with the standards herein set forth, having in view the future growth and development of the district. Such plan when completed shall be submitted to the Governor and the Legislature of each State and to the State agency or agencies or district agencies in charge of sewage problems.

The provisions of this act shall not affect the discharge from the outfall pipes of the Passaic Valley sewerage system into the water of New York harbor; provided, however, that said discharge shall be in accordance with the terms and provisions of the stipulation entered into on April fourteenth, one thousand nine hundred and ten, between the United States of America and Passaic Valley Sewerage Commissioners.

ISC's Article XII is meant to be read in conjunction with the Stipulation. The Stipulation does not in any manner whatsoever suggest that PVSC does not come under the jurisdiction of the ISC, nor does it suggest that PVSC is not subject to ISC's Regulations.

Concerns about discharges from the area around Passaic Valley surfaced as early as 1896, when a series of commissions were appointed by the Governor and the Legislature of New Jersey to study the problem created by the drainage of 84 percent of the Passaic River's polluted water into Upper New York Bay. The reports of these commissions resulted in the creation of the Passaic Valley sewerage district and the PVSC, with a directive to cease disposing of sewage into the Passaic River and to prepare plans and specifications for the construction of a trunk sewer to dispose of sewage. The act authorizing the construction provided for further study to ascertain whether or not the discharge polluted the waters of New York State so as to create a nuisance. New Jersey's study found that the discharge did not pollute so as to create a nuisance; a New York study found that the discharge did pollute so as to create a nuisance. The failure to reach a compromise resulted in the lawsuit filed by New York against New Jersey, which was dismissed, without prejudice, after the Stipulation was filed. The United States government entered the lawsuit believing that PVSC's plans were so indefinite and inadequate that navigation would be obstructed and waters would be unhealthy. The intervention of the federal government resulted in a more thorough and comprehensive method of treatment that was ultimately adopted in the Stipulation.

In 1903, PVSC recommended to the Legislature an intercepting sewer along the west bank of the Passaic River from the Great Falls at Paterson to a pumping station on the Newark meadows. The sewage was to be pumped through a steel main under Newark Bay into a main sewer across Bayonne to an outfall in New York Bay near Robbins Reef Light. Following a thorough investigation in 1905 and 1906, the New York Bay Pollution Commission reported upon this adversely. When the report suggesting the discharge of the sewage from this large and rapidly growing district into New York Bay was made public, there was criticism concerning the discharge of the sewage in its raw form into the harbor. PVSC applied to the War Department for permission to construct the outlet sewer into the harbor. New York State sought an injunction to prevent the discharge of the Passaic Valley sewage into the harbor. The United States government intervened in the suit as co-plaintiff. The War Department granted PVSC permission to discharge sewage into the harbor providing certain terms were met to protect fish life. That agreement did not terminate the suit between the State of New York and PVSC. In fact, the United States government took the position that they were not essentially interested in the pollution of the waters as affecting health conditions surrounding the City of New York. Its interest in the matter concerned the health of the troops and government employees. The interest of the City of New York in the effects of harbor pollution were and remain vastly greater than those of the United States government.

At the time that the Commission filed a Notice of Intent to Request an Adjudicatory Hearing in 1996, ISC made it clear to NJ DEP that there would not be a need to proceed with an adjudicatory hearing if the Commission's Regulations were reinserted into the permit.

On March 31, 1997, the Commission received an administrative decision regarding the hearing request. After analyzing all of the background and information provided to the NJ DEP, the NJ DEP Commissioner decided to grant ISC's hearing request.

On May 3, 1999, ISC received a Notice of Plenary Hearing setting hearing dates of November 29 through and including December 3, 1999. A prehearing conference was heard during July and an ALJ entered an Order identifying issues for resolution. The parties were urged to resolve the matter and, failing that, to file summary decision motions by September 30, 1999. PVSC, NJ DEP and the ISC filed briefs. The ISC alone filed a summary decision motion. Subsequently, PVSC requested permission to intervene as a party respondent and the ALJ granted them permission to do so. PVSC sought this leave because the New Jersey Attorney General, who represents NJ DEP, had not made a summary decision motion and had not supported their own decision to remove ISC's Regulations from the permit. Replies to the initial submissions were made on November 15th, and ISC's rebuttal was filed on November 22nd. The hearing dates were adjourned for the present. The parties are awaiting new hearing dates, a decision on whether the ALJ requires oral argument, and a decision on the summary decision motion.

NOTICE OF VIOLATION OF INTERSTATE SANITATION COMMISSION REGULATION ON PLANNED SEWAGE BYPASSES

During late October 1998, the Commission learned for the first time that the Jones Beach State Park Water Pollution Control Plant had scheduled a treatment reduction for the winter of 1998-1999. The Commission immediately contacted NYS DEC - Region 1, in order to ascertain whether the State was informed of Jones Beach's proposed action and whether that action would be compliant with their SPDES permit. NYS DEC informed the Commission that NYS DEC was aware of the proposed action and that NYS DEC had advised Jones Beach to inform both the Commission and US EPA of the proposed treatment reduction.

In early November 1998, ISC notified Jones Beach that their failure to advise ISC of a scheduled treatment reduction constituted a violation of ISC's Water Quality Regulations. The Jones Beach facility was further advised that ISC's records established that Jones Beach had been notified of the amendments to the Commission's regulations by a Memorandum on October 31, 1997. A copy of the new regulation was included in the package transmitted to all treatment facilities within the Interstate Sanitation District.

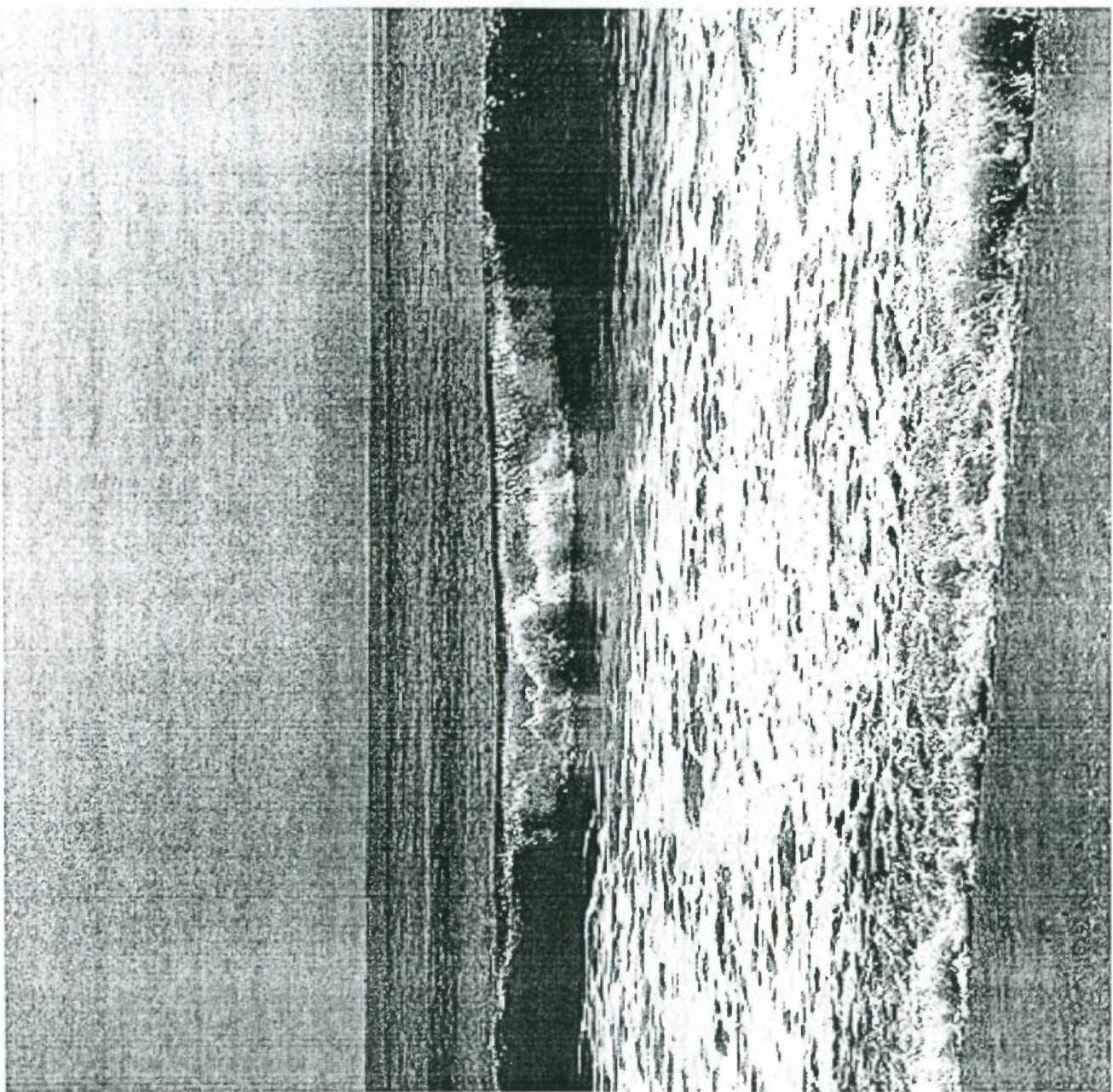
Jones Beach contacted ISC, and subsequently, several meetings took place from early December 1998 through February 1999. These meetings were attended by the permittee, ISC, NYS DEC, and the permittee's contractors. Subsequently, the facility's 2.5 MGD trickling filter was overhauled and refurbished and operational during March 1999. An actual completion date was reached during April. All the work was completed without a treatment reduction or discharge of raw sewage to the New York State Sloop Channel in the Great South Bay.

STATE ADMINISTRATIVE CONSENT ORDER ENTERED ON BEHALF OF MONMOUTH COUNTY BAYSHORE OUTFALL AUTHORITY

The Monmouth County Bay Shore Outfall Authority (MCBOA) receives secondary treated wastewater from two customer sewerage authorities, Bayshore Regional and Township of Middletown, for discharge outside the Interstate Sanitation District into the Atlantic Ocean. In recent years, MCBOA has had to bypass treated effluent into western Raritan Bay, a part of the Interstate Sanitation District, due to failing infrastructure. While the effluent is of a very high quality, the shellfish harvest areas in Raritan Bay are automatically closed by the State of New Jersey in accordance with the criteria of the National Shellfish Sanitation Program.

In late October 1998, the Commission was notified by NJ DEP that an Administrative Order and Civil Penalty Assessment had been settled by the entry of an Administrative Order on Consent (ACO) against the Monmouth County Bayshore Outfall Authority. ISC actively took part in discussions among MCBOA, NJ DEP, and US EPA to determine whether the discharges to the bay during construction were necessary and, if so, whether the length of time for those discharges could be shortened.

As part of the ACO, MCBOA was required to construct and maintain pipeline and pump stations according to a set schedule so as to eliminate unpermitted discharges; submit progress reports; and pay fines and stipulated penalties. The work was scheduled to take place in January 1999, the time of year when the baymen least go out to gather the resource in the bay. An "Emergency Closure" was issued by NJ DEP when work began on January 11th. The Commission was notified as per the Regional Bypass notification system. In order to check the sanitary conditions of Raritan Bay, ISC collected water quality samples during wet and dry weather conditions. All samples were analyzed at the US EPA laboratory in Edison, New Jersey. The work was completed on February 8th. The NJ DEP issued a "Notice to Resume Harvest" on February 15, 1999.



WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE SANITATION DISTRICT WATERS

1999

PLANT	ISC 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
CONNECTICUT									
<u>Fairfield County</u>									
Bridgeport - East Side	B-1	1972+	7.00	10.0	Secondary (AS)	35,000	4 to 6	Incineration at East Shore	44,000
- West Side	B-1	1996+	20.00	30.0	Secondary (AS)	90,000	4 to 6	Incineration at East Shore WPAF	112,000
Fairfield	A	1996+	7.90	9.0	Secondary (AS)	5,000	18	Compost/Landfill	42,000
Greenwich (Grass Island)	A	1993+	8.60	12.5	Secondary (AS)	6,500	14	Landfill	16,000
Norwalk	B-1	1980+	14.10	15.0	Secondary (AS)	56,000	5	Incineration (2)	80,000
Stamford	B-1	1991+	17.70	20.0	Secondary (AS)	4,500	25	Landfill Out of State	103,000
Stratford	A	1992+	6.10	11.5	Secondary (AS)	32,333	6.5	Landfill	50,000
Westport	A	1975+	1.70	2.9	Secondary (AS)	380 (5)	3 to 4	Incineration (2)	14,800
<u>New Haven County</u>									
Milford - Beaver Brook	A	1996+	1.80	3.1	Secondary (AS)	818	14.3	Incineration (2)	19,000
- Housatonic	A	1996+	6.00	8.0	Secondary (AS)	2,482	17	Incineration	22,500
New Haven - East Shore	B-1	1997+	29.40	40.0	Secondary (AS)	47,686	22.16	Incineration	200,000
West Haven	B-1	1996+	6.90	12.5	Secondary (AS)	-	-	Incineration	55,000
NEW JERSEY									
<u>Bergen County</u>									
Edgewater	B-1	1989+	3.40	6.0	Secondary (PO)	2,842 6,129	16.91 3.65	Beneficial Reuse (2) Landfill	16,000
<u>Essex County</u>									
Passaic Valley Sewerage Commissioners	B-1	1988+	261.30	330.0	Secondary (AS)	81,000	55	Land Applications	1,300,000
<u>Hudson County</u>									
North Bergen M.U.A. - Woodcliff	B-1	1991+	2.72	2.9	Secondary (TF)	6,198	9	Incineration (2)	22,500
North Hudson Sewerage Authority									
- Adams Street (Hoboken)	B-1	1994+	10.30	24.0	Secondary (TF)	5,800	23	Beneficial Reuse (2)	67,000
- River Road (West New York)	B-1	1992+	7.30	10.0	Secondary (TF)	500	8	Beneficial Reuse (2)	56,000
<u>Middlesex County</u>									
Middlesex County Utilities Authority	A	1996+	107.10	147.0	Secondary (AS)	231,743	25	Beneficial Reuses	750,000
<u>Union County</u>									
Joint Meeting of Essex & Union Counties	B-2	1999+	58.20	85.0	Secondary (AS)	32,700	31.6	Land Application	500,000
Linden Roselle Sewerage Authority	B-2	1989+	12.30	17.0	Secondary (AS)	40,000	5	Beneficial Reuse	70,000
Rahway Valley Sewerage Authority	B-2	1991+	27.10	40.0	Secondary (AS)	17,666	21	Land Application/Composting	175,000

WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE SANITATION DISTRICT WATERS

1999

PLANT	ISC 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
NEW YORK									
<u>Nassau County</u>									
Bay Park	A	1992+	50.13	70.0	Secondary (AS)	39,155	18.96	Compost	498,000
Belgrave Sewer District	A	1995+	1.36	2.0	Secondary (TF)	2,948	3.4	Trucked out to Bay Park	12,000
Cedar Creek	A	1997+	52.50	72.0	Secondary (AS)	44,711	18.39	Compost	504,000
Cedarhurst	A	1968+	0.72	1.0	Secondary (TF)	-	-	Compost	6,000
Glen Cove	A	1981+	4.20	8.0	Secondary (AS)	391	18.6	Landfill	29,000
Great Neck Sewer District	A	1990+	2.43	3.8	Secondary (TF)	200 (4)	23	Landfill	13,400
Great Neck Village	A	1996+	0.80	1.5	Secondary (TF)	58 (5)	4	Landfill	9,000
Inwood **	A	1999	-	2.5	Secondary (TF)	-	-	Landfill	7,600
Jones Beach	A	1990+	0.11	2.5	Secondary (TF)	-	-	Trucked Out	Seasonal
Lawrence	A	1983+	1.20	1.5	Secondary (TF)	22 (4)	-	Compost	5,500
Long Beach	A	1994+	5.50	7.5	Secondary (TF)	1,703	3.5	Landfill	37,500
Oyster Bay Sewer District	A	1992+	0.95	1.8	Secondary (TF)	35 (5)	4	Trucked Out	8,500
Port Washington Sewer District	A	1991+	2.70	4.0	Secondary (TF)	556	32	Incineration	33,000
West Long Beach Sewer District	A	1986+	0.49	1.5	Secondary (TF)	780	5	Trucked to Bay Park	5,000
<u>New York City</u>									
<u>Bronx County</u>									
Hunts Point	B-1	1977+	118.00	200.0	Secondary (AS)	97,923	27.3	Land Application/Landfill Cover	629,927
<u>Kings County (Brooklyn)</u>									
Coney Island	A	1994+	97.00	100.0	Secondary (AS)	(3)		Land Application/Landfill Cover	602,097
Newtown Creek	B-1	1967+	236.00	310.0	Secondary (AS)	(3)		Land Application/Landfill Cover	1,039,294
Owls Head	B-1	1996+	111.00	120.0	Secondary (AS)	(3)		Land Application	761,479
Red Hook	B-1	1987	34.00	60.0	Secondary (AS)	6,926	27	Landfill	192,215
26th Ward	A	1975+	64.00	85.0	Secondary (AS)	85,557	25.2	Land Application/Landfill Cover	271,240
<u>New York County (Manhattan)</u>									
North River	B-1	1986	142.00	170.0	Secondary (AS)	(3)		Land Application/Landfill Cover	584,192
Wards Island	B-1	1979+	202.00	250.0	Secondary (AS)	119,482	26.6	Land Application	1,004,213
<u>Queens County</u>									
Bowery Bay	B-1	1978+	111.00	150.0	Secondary (AS)	44,699	25.4	Land Application/Landfill Cover	727,117
Jamaica	A	1978+	79.00	100.0	Secondary (AS)	28,414	27	Land Application/Landfill Cover	632,148
Rockaway	A	1978+	20.00	45.0	Secondary (AS)	(3)		Land Application	94,471
Tallman Island	B-1	1979+	55.00	80.0	Secondary (AS)	23,823	23.5	Land Application/Landfill Cover	388,214

WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE SANITATION DISTRICT WATERS

1999

PLANT	ISC 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
NEW YORK (con't)									
<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+	26.00	40.0	Secondary (AS)	24,921	25.8	Landfill	151,585
Point East Condominiums*	A	1986	-	0.16	Extended Aeration w/ Sand Filtration	-	-	-	300
Port Richmond	B-2	1979+	35.00	60.0	Secondary (AS)	(3)	-	Landfill	172,268
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	-	0.02	Septic Tank with Sand Filtration	-	-	-	1,200
Staten Island University Hospital, South*	A	1995+	0.05	0.06	Secondary (AS)	-	-	Oakwood Beach	-
Treetop Village*	A	1985	-	0.25	Extended Aeration w/ Sand Filtration	-	-	-	-
<u>Rockland County</u>									
Joint Regional Sewerage Board	A	1998+	4.90	8.0	Secondary (AS)	1,428 (5)	20.6	Landfill	33,000
- Town of Haverstraw						2,443	17.9	Landfill	
Orangetown Sewer District	A	1996+	8.70	12.75	Secondary (TF)	9,346	25	Landfill	50,000
Palisades Interstate Park									
- Bear Mountain Plant	A	1967+	0.04	0.3	Secondary (TF)	-	-	-	20,000
- Tallman Mountain Plant **	A	1968	-	0.01	Secondary (AS)	-	-	-	Seasonal
Rockland County Sewer District # 1	A	1995+	18.70	26.0	Secondary (RD)	2,568 (4)	20	Landfill	160,000
Stony Point	A	1985+	0.88	1.0	Secondary (AS)	1,129	17	Composting	12,000
<u>Suffolk County</u>									
Huntington Sewer District	A	1988+	1.80	2.5	Secondary (TF)	2,152	18.3	Offsite Landfill	25,000
Northport	A	1972+	0.30	0.34	Secondary (AS)	31 (5)	2.5 to 3	Incineration (2)	3,500
Suffolk County Sewer District # 1	A	1988+	0.70	0.8	Secondary (RD)	241 (5)	2.7	Incineration (33%), Landfill (67%)	12,000
Suffolk County Sewer District # 3	A	1989+	20.60	30.0	Secondary (AS)	60,718	24	Incineration (33%), Landfill (67%)	280,000
Suffolk County Sewer District # 6	A	1973+	0.30	2.0	Secondary (AS)	65 (5)	1.3	Incineration (33%), Landfill (67%)	6,000
Suffolk County Sewer District # 21	A	1989	2.20	2.5	Tertiary (OD)	319 (5)	1.7	Incineration (33%), Landfill (67%)	20,000

WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE SANITATION DISTRICT WATERS

1999

PLANT	ISC 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
NEW YORK (con't)									
<u>Westchester County</u>									
Blind Brook (Rye)	A	1985+	2.90	5.0	Secondary (AS)	12,134 (5)	2.5	Pumped to Port Chester	30,000
Buchanan	A	1990+	0.21	0.5	Secondary (AS)	2,086 (5)	50	Trucked Out	2,000
Coachlight Sq. Condo. Asso. Inc.*	A	1992+	0.03	0.05	Secondary (AS)	-	-	Trucked Out	210
Mamaroneck	A	1993+	14.90	20.6	Secondary (AS)	2,700 (4)	-	Pumped to New Rochelle	80,000
Metro North (Harmon Shop)***	A	1998+	0.05	0.144	Primary	250	3	-	500
New Rochelle	A	1997+	13.10	13.6	Secondary (AS)	2,800 (4)	-	Landfill	80,000
Ossining	A	1981	4.70	7.0	Secondary (AS)	9,000	25	Incineration	40,000
Peekskill	A	1980	5.90	10.0	Secondary (AS)	3,650	3	Incineration at Ossining	35,000
Port Chester	A	1990+	4.70	6.0	Secondary (RD)	1,744	4.7	Incineration/Landfill	25,000
Springvale Sewerage Corporation*	B-1	1996+	0.10	0.13	Secondary (RD)	0	-	Trucked Out	1,650
Yonkers Joint Treatment	A	1988+	95.10	92.0	Secondary (AS)	37,603	27	Lime Stabilization (2)	477,000
Federal and Military									
Camp Smith (Westchester County)	A	1997+	0.04	0.24	Secondary (TF)	-	-	-	2,400
FDR Veterans Administration Medical Center (Westchester County)	A	1982+	0.10	0.4	Secondary (TF)	-	-	Trucked Out	Patient Count
Gateway National Recreation Area (Floyd Bennet Field, Kings County)	A	1981+	0.07	1.0	Secondary (TF)	-	-	Landfill	5,000
Military Ocean Terminal (Hudson County)	B-1	1982+	0.12	0.18	Secondary (AS)	6,117	0.74	Landfill	2,500

NOTE: Except for the ISC 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.

(**) Facility converted to pump station and diverted flow to secondary treatment plant during 1999.

(***) Facility ceased discharge to Hudson River and directed flows for secondary treatment at Ossining.

(-) 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.

(AS) Activated Sludge
(PO) Pure Oxygen

(BO) Biochemical Oxidation
(RD) Rotating Disc

(OD) Oxidation Ditch
(TF) Trickling Filter

**INTERSTATE SANITATION COMMISSION
FINANCIAL STATEMENT FY 1999**

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, 1998 to June 30, 1999:

CASH BOOK BALANCE AS OF JUNE 30, 1998	\$1,237,596.68
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RECEIPTS

Connecticut - FY'99	\$ 3,333.00
New York - FY'99	291,000.00
New Jersey - FY'99	388,000.00
EPA - FY'98	146,897.00
EPA - FY'99	279,282.00
NJ - Bypass Model Runs	6,000.00
Interest	51,005.88
Miscellaneous Receipts	<u>6,613.47</u>

TOTAL RECEIPTS	<u>1,172,131.35</u>
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Sub-Total	\$2,409,728.03
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DISBURSEMENTS

TOTAL DISBURSEMENTS	<u>1,254,278.29</u>
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CASH BOOK BALANCE ON JUNE 30, 1999	\$1,155,449.74 =====
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U.S. Treasury Bills	\$ 949,043.93
Insured Money Market Accounts	196,782.76
Checking Accounts	<u>9,623.05</u>
	<u>\$ 1,155,449.74</u> =====

GLOSSARY

ACO	Administrative Order on Consent
ACOE	Army Corps of Engineers
ALJ	administrative law judge
BMWCA	Bureau of Marine Water Classification and Analysis
BNR	biological nutrient removal
BOCES	Board of Cooperative Educational Services
BOD	biochemical oxygen demand
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
CWSRF	Clean Water State Revolving Fund
DEC	Department of Environmental Conservation
DEP	Department of Environmental Protection
DO	dissolved oxygen
DOH	Department of Health
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
FY	fiscal year
HARS	Historic Area Remediation Site
HCUA	Hudson County Utilities Authority
HEM	harbor eutrophication model
HEP	Harbor Estuary Program
HUCWSA	Hoboken-Union City-Weehawken Sewerage Authority
HVAC	heating, ventilating and air conditioning
IE	Independent Expert
IMT	interim monitoring team
I/I	infiltration/inflow
ISC	Interstate Sanitation Commission
ISD	Interstate Sanitation District
IUP	intended use plan
LISS	Long Island Sound Study
MCBOA	Monmouth County Bayshore Outfall Authority
MCWG	Management Committee Work Group
MDS	Mud Dump Site
MEG	Model Evaluation Group

GLOSSARY

(continued)

MGD	million gallons per day
MPN	most probable number
MTS	marine transfer station
MUA	Municipal Utilities Authority
NCHD	Nassau County Health Department
NEP	National Estuary Program
NHSA	North Hudson Sewerage Authority
NJPDES	New Jersey Pollutant Discharge Elimination System
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPS	National Parks Service
N/PDES	National/State Pollutant Discharge Elimination System
NSSP	National Shellfish Sanitation Program
NYC	New York City
NYS	New York State
PBSA/NY & NJ	Pro Bono Students America/New York & New Jersey
PCB	polychlorinated biphenyl
POTW	publicly owned treatment works
PVC	polyvinyl chloride
PVSC	Passaic Valley Sewerage Commissioners
QA/QC	quality control/quality assurance
RBWG	Regional Bypass Work Group
RFP	request for proposals
R/V	research vessel
SCADA	Supervisory Control and Data Acquisition
SCSD	Suffolk County Sewer District
SPDES	State Pollutant Discharge Elimination System
SSES	sewer system evaluation survey
STP	sewage treatment plant
SUNY	State University of New York
SWEM	systemwide eutrophication model
TMDL	total maximum daily load
TSS	total suspended solids
UV	ultraviolet
VOC	volatile organic carbon
WPCA	Water Pollution Control Authority
WPCP	water pollution control plant