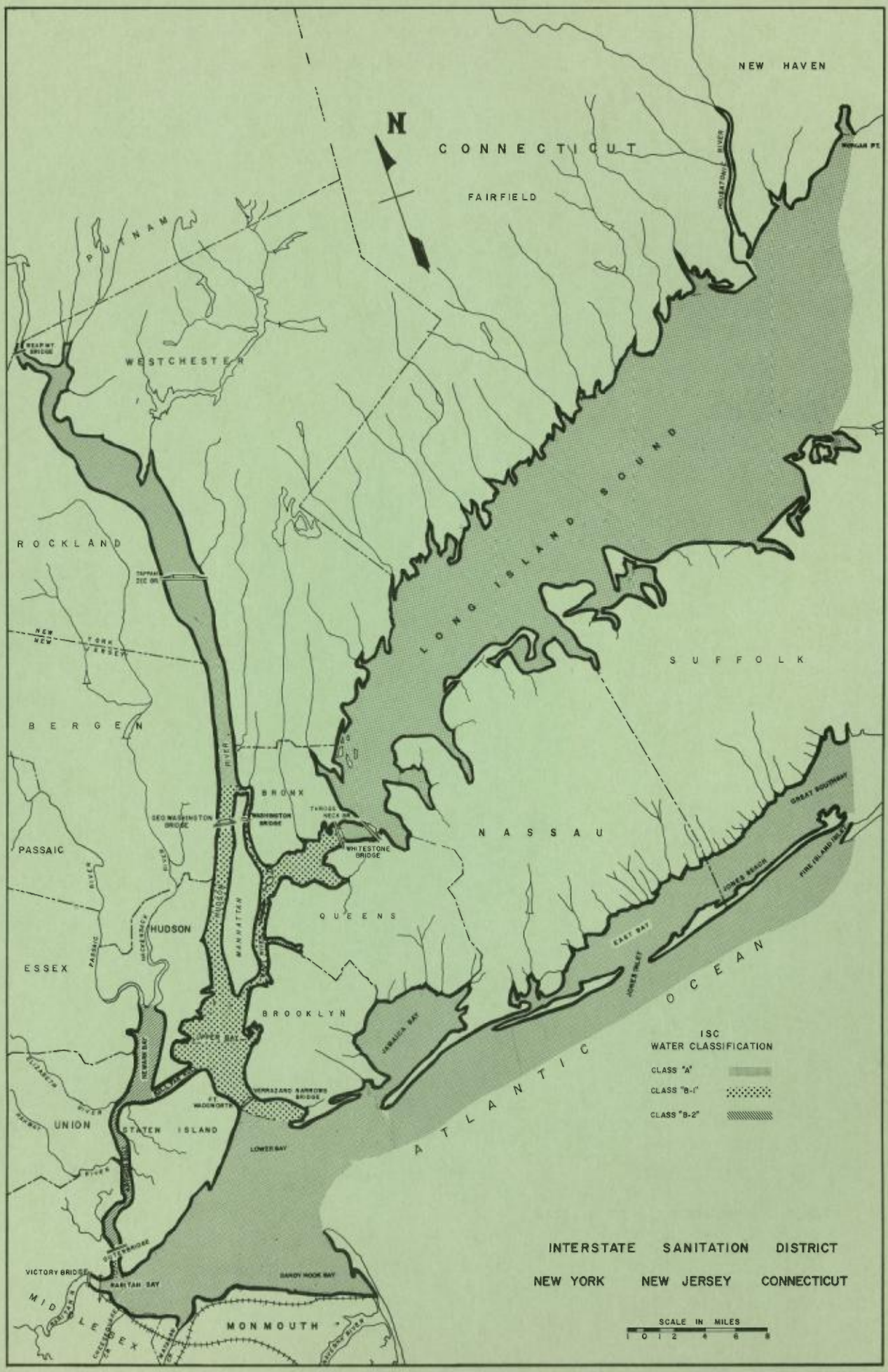
INTERSTATE SANITATION COMMISSION

A TRI-STATE ENVIRONMENTAL AGENCY

1997

ANNUAL REPORT

NEW YORK NEW JERSEY CONNECTICUT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NEW YORK NEW JERSEY CONNECTICUT
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INTERSTATE SANITATION COMMISSION

A TRI-STATE ENVIRONMENTAL AGENCY

1997

ANNUAL REPORT

OF THE

INTERSTATE SANITATION COMMISSION

ON THE

WATER POLLUTION CONTROL ACTIVITIES

AND THE

INTERSTATE AIR POLLUTION PROGRAM

INTERSTATE SANITATION COMMISSION

A TRI-STATE ENVIRONMENTAL AGENCY
311 WEST 43rd STREET • NEW YORK, N.Y. 10036
212-582-0380 FAX: (212) 581-5719

January 24, 1998

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

Your Excellencies:

The Interstate Sanitation Commission respectfully submits its report for the year 1997.

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,

Frank A. Pecci — For the State of New Jersey — Chairman

Donna B. Gerstle — For the State of New York — Vice Chair

John Atkin — For the State of Connecticut — Vice Chair

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STATEMENT OF THE CHAIRMAN
OF THE
INTERSTATE SANITATION COMMISSION

Reviewing this past year, I can state with great pride that 1997 emerges as a landmark year in one of the areas of the Interstate Sanitation Commission's greatest fields of responsibility — regulation and enforcement.

I was most gratified by the U.S. District Court's acceptance last September of the Commission's recommendations for preventing debris from the Fresh Kills Landfill from soiling Staten Island and New Jersey shorelines. In addition, just a few weeks later, I feel our authority was further strengthened by the Commission's passing a regulation requiring advance notice for planned sewage bypasses — such as the projected bypass earlier in the year that raised such a storm of protest . . . and, rightfully so, I might add.

Another source of gratification was the clear-cut success of the Fresh Kills Landfill Closure Conference which the Commission co-sponsored with The College of Staten Island. As a follow-up to this highly lauded event, we are looking forward this spring to taking on the role of sponsor for a region-wide conference on the vital matter of combined sewer overflows (CSOs) — a problem which remains as a major source of water pollution in this tri-state area. The College of Staten Island will be our co-sponsor.

I must also express my pleasure over the fact that we were able to reinstate our tradition of an annual boat inspection trip offering Commissioners from all three States, legislators from all levels of government, environmentalists and the press a firsthand look at conditions over our waterways and along our shorelines, including an examination of some environmental "hot spots." Our route passed through the Arthur Kill, the Kill Van Kull, and the Upper and Lower New York Bays. As a result, our guests came away with a greater understanding of ISC's accomplishments and the challenges we face in our responsibility to protect the integrity of our region's waterways.

In conjunction with our membership on the Long Island Sound Study's Management Committee, in which we continue to play an active role, I wanted to make note that this makes the seventh consecutive year that the ISC has conducted an intensive sampling program so that our accumulating knowledge of conditions in these waters can direct us toward the most effective strategies for upgrading and safeguarding water quality throughout the environmentally fragile Sound.

Furthermore, we have completed a second year of sampling in the Raritan and Sandy Hook Bays to gather data needed by New Jersey in order to keep shellfish areas open and

possibly open additional areas. This year, we also initiated a similar sampling program in Little Neck Bay to collect data needed by New York State to open additional areas for a shellfish transplant program.

And finally, as an extension of our public outreach programs, I envision 1998 as a year in which we will strengthen our lines of communication with our member states along with their continued cooperation in order to benefit our ever-improving environment, the economy and the quality of life throughout the entire tri-state Metropolitan region.

Frank A. Pecci
Chairman

ILLUSTRATIONS

I. EXECUTIVE SUMMARY

In the mid-1930s, when interstate conflicts began to arise regarding pollution in the waters surrounding and shared by the States of New York, New Jersey and Connecticut, 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 were 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 Commissions 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.

Although facilities for treating sanitary wastes in this region began as early as the 1880s, by the 1930s, environmental protection was still severely lacking. Two-thirds of the sanitary and industrial sewage received no treatment and the remaining one-third of the total daily flow — in those years, 1.61 billion gallons per day (BGD) — received only primary treatment. Once the ISC was established, the construction and upgrading of wastewater treatment facilities became one of the Commission's highest priorities. While much progress and great strides have been made over the years, this region faces the major challenge of controlling untreated discharges from combined sewer overflows (CSOs) and storm sewers which now account for a significant portion of current raw sewage discharges. As detailed in this report, ISC is extremely active in this area and the Commission is sponsoring a major regional CSO conference in April 1998, with The College of Staten Island as a co-sponsor. Even though the program has not yet been released, at this early date, a great deal of enthusiasm has been generated for what promises to be a stimulating, thought-provoking and most informative conference.

The Commission is proud of its programs and actions that have contributed to significant improvements in the region's waterways in the recent past, including the adoption of a Commission requirement for year-round disinfection, which was instrumental in opening thousands of acres of shellfish beds on a year-round basis as opposed to only during the few warm weather months. Also, in recent years, tri-state residents have suffered far fewer beach closings due to elevated levels of coliform bacteria or wash-ups of harmful medical debris. The Commission and others have started meeting to discuss protocols for unplanned sewage bypasses which usually occur due to infrastructure or system failures; this will continue in 1998. This year, however, ISC did address the issue of planned sewage bypasses and on October 15, 1997, the Commission adopted an amendment to its Water Quality Regulations that now requires notification to ISC of planned bypasses. Details and the text of the amendment are included in this report.

Despite continued resource limitations, the staff has been diligently fulfilling ISC's technical and administrative responsibilities. In general, the ambient and effluent water quality sampling

programs remain at a reduced level and, except for the Staten Island odor complaint answering service and limited investigations, the air pollution programs have been virtually eliminated.

All of the Commission's programs are goal-oriented to address specific environmental deficiencies 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 shellfishing, opening waters for swimming, the development of water quality and/or effluent criteria, and other needs that may arise. As changes occur throughout the Region, ISC is concerned that they are done in an environmentally sound manner.

An aggressive public involvement, education and outreach program continues to be a high priority for the Commission. In addition to ISC's regular activities with professional, civic, environmental, and citizens' organizations, the Commission regularly testifies at public hearings and meetings on various issues of concern throughout the Region. ISC also lectures at local schools and colleges on subjects dealing with coastal pollution, oceanography, habitat, sampling and data collection, and related Commission activities. During the past eight 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 five 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 1996 through November 1997. To address the environmental problems within its area of jurisdiction, the Commission has focused on technical assistance, enforcement, planning, laboratory analysis, monitoring, coordination, and public outreach.

WATER POLLUTION

The Commission's water pollution abatement programs continue to provide assistance for the effective coordination of approaches to regional problems. A long-standing ISC goal — making more areas available for swimming and shellfishing — remains a high priority for the Commission. 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 nearly $4.72 billion has been allocated by municipalities in the District for projects recently completed, in progress, and planned for the future.

During this past year, the Commission has been involved in several legal actions which are detailed in the Legal Activities section of this report and are highlighted as follows:

- continued participation as a party in the New York State Department of Environmental Conservation adjudicatory hearing on the State Pollutant Discharge Elimination System (SPDES) permits which that department issued for the 14 New York City water pollution control plants.

- continued commitment to safeguarding the waters and shorelines from debris 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.

- a final settlement with Hudson County, New Jersey, communities as to upgrading or eliminating their treatment plants to meet Commission and federal water quality standards.

- requested and was granted an adjudicatory hearing regarding the deletion of ISC's Regulations from a NJPDES permit.

- amended ISC's Water Quality Regulations to require advance notification to ISC of planned sewage bypasses.

Opening presently closed waters for swimming continues to be a high ISC priority. As a follow-up to its region-wide combined sewer overflow report in 1988, the Commission is continuing to compile information on CSO abatement progress throughout the District. The Commission is also sponsoring a major regional CSO conference in April 1998, with The College of Staten Island as a co-sponsor — a conference that will bring together lawmakers, regulators, the regulated community, technical experts, environmental groups, and citizens to discuss this important and timely subject.

For the tenth consecutive year, ISC has continued to update its region-wide inventory of development projects within the District. Among other things, this inventory contains estimates of the amount of sewage that will be generated by proposed projects. This information is 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.

The Commission continues as an active participant of the Management Committees for the Long Island Sound Study (LISS) and the New York-New Jersey Harbor Estuary Program (HEP), in addition to involvement on various work groups for these studies. In 1994, the final CCMP for the LISS was signed by the Governors of the States of New York and Connecticut, and the Administrator of the US EPA, and in 1996, the Governors of New York and Connecticut met to affirm their commitment to the actions set forth in the CCMP. The final CCMP for the HEP was

signed this year by the Governors of New York and New Jersey and the US EPA Administrator. Environmental bond acts were passed in 1996 in both New York and New Jersey. In the $1.75 billion New York State Clean Water/Clean Air Bond Act, $200 million was designated for the LISS implementation. Both the New York and New Jersey environmental bond acts earmark significant resources to the HEP for harbor pollution control — the New York act designated $25 million to implement the CCMP for the HEP and $185 million of the $300 million New Jersey act is specified for dredging-related projects in the New Jersey/New York port area.

ISC continued to monitor waste discharges from public and private treatment plants to check compliance with discharge permit limitations. Using the ISC research vessel, the R/V Natale Colosi, the Commission participated, for a seventh consecutive year, in a multi-agency intensive survey in Long Island Sound to continue to document dissolved oxygen conditions. For the second year in a row, at the request of NJ DEP, during the winter and spring of 1996-1997 the Commission collected water quality samples needed by NJ DEP to check the bacterial conditions of the shellfish waters of Raritan and Sandy Hook Bays. At the request of NYS DEC, the Commission initiated a sampling program in Little Neck Bay in an area that NYS DEC wants to designate for a shellfish transplant program. These and other sampling programs are detailed in this report.

Since 1981, 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. All stakeholders throughout the region must be included in an effort 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 workgroups were designated as the Dredged Material Management Integration Workgroup. The Commission took an active role by participating on the Mud Dump Site Workgroup.

Besides conducting its normal day-to-day operations, the ISC laboratory — located on the campus of The College of Staten Island (CSI) — will be collaborating 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-at-law, environmental and public awareness groups, government agencies across the nation, and international entities.

AIR POLLUTION

The Commission's air pollution monitoring and response programs remained drastically reduced this past year due to budgetary restrictions. Unfortunately, the ISC's Staten Island field office remains closed as has been the case since June 1989 when, due to budget cuts, the Commission was forced to lay off its entire air pollution field staff and close the Staten Island field office. The 24-hour-a-day, 7-day-a-week answering service (718-761-5677) has been maintained and the Commission investigates as many complaints as its resources will allow. ISC also forwards complaints to the appropriate enforcement and health agencies.

ISC continued its function 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 maintained its participation 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 health messages to radio and television stations, as well as to government agencies in the region.

During the 12 months from October 1996 through September 1997, the Commission received 64 air pollution complaints — a decrease of approximately 26% over the previous 12-month period. As has been the pattern, most of the calls originate from Staten Island; this year, 95% of all complaints were received from Staten Island. The Arden Heights section of Staten Island was the neighborhood that registered the most complaints. The odor categories of "garbage" and "chemical" were the most often reported — collectively representing 38.7% of the total.

II. WATER POLLUTION

GENERAL

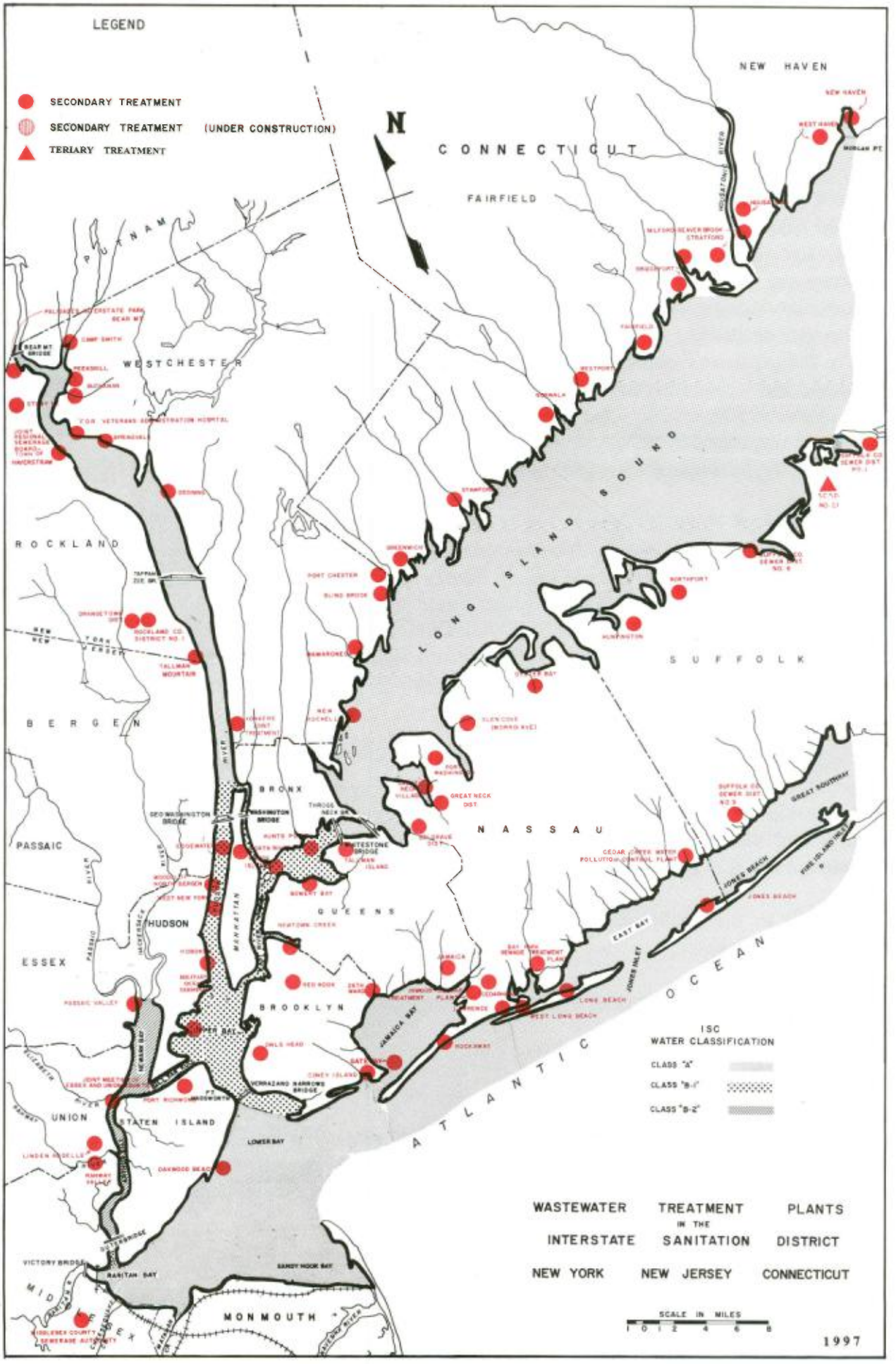
During 1997, nearly $4.72 billion was allocated for 226 water pollution control projects in the Interstate Sanitation District which were either completed, in progress, or planned for the future. These monies were allocated in the following manner: nearly $641 million for 38 completed projects, more than $2.374 billion for 106 projects in progress, and more than $1.7 billion for 82 future projects. These expenditures are being used for engineering studies 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 industries for pollution control.

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

With secondary treatment now in place, the control of combined sewer overflows in the region is necessary in order to achieve further significant water quality improvements. Communities throughout the District have ongoing CSO programs. Since no one solution is best in all situations, projects range from sewer separation to swirl concentrators to booming and skimming to in-line and off-line storage. The Commission is compiling data on the ongoing CSO programs throughout the District and, in April 1998, ISC is sponsoring a regional CSO conference with The College of Staten Island as a co-sponsor.

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 update format was designed to provide background, as well as the current status of construction, engineering studies and experiments, pilot projects and related environmental conditions. Therefore, the information in this section is that which was available and accurate through November 1997.

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 status of each plant, and the Commission's water classifications. Additional information on each plant is listed in Appendices A and B.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WATER CLASSIFICATION
CLASS "A"
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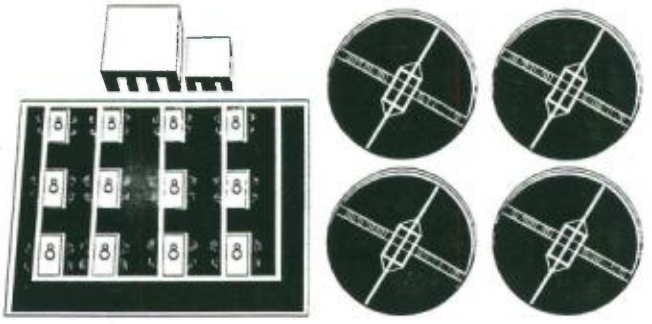
CLASS "B-2"
WASTEWATER TREATMENT PLANTS
IN THE
INTERSTATE SANITATION DISTRICT
NEW YORK NEW JERSEY CONNECTICUT
SCALE IN MILES
1997

CONNECTICUT WATER POLLUTION CONTROL PLANTS

As a means of controlling hypoxia conditions in the study area, the Long Island Sound Study Policy Committee — which consists of the Regional Administrators of US EPA - Regions I and II, and the Commissioners of the State environmental departments in New York and Connecticut — adopted a "no net increase" policy for nitrogen discharges in December 1990, in order to reduce those loadings into Long Island Sound and the Upper East River. The Study's Comprehensive Conservation and Management Plan, which was issued in 1994, adopted a phased approach to hypoxia management starting with the "no net increase" policy.



As part of Phase II, Connecticut is allocating 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. Ten of the twelve facilities discharging to the Interstate Sanitation District are incorporating interim and permanent denitrification processes. Subsequently, CT DEP will modify individual NPDES discharge permits to ensure compliance. As of May 1997, the load of nitrogen from plants in the Phase II agreement has been reduced by almost 1,000 tons per year.

During February 1997, the States of New York and Connecticut and the US EPA released a proposal entitled Phase III Actions for Hypoxia Management, including nitrogen reduction targets for eleven management zones that comprise the Connecticut and New York portions of the Long Island Sound watershed. This phase establishes specific nitrogen reduction targets for all management zones in the Sound.

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

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

Completed Projects

Construction is complete at the West Side plant. The final cost of $44.1 million was used to rehabilitate all units, as well as for installing new pumps and instrumentation at this 30 MGD secondary treatment facility. Operation of various units have been put on line during the period 1993 through November 1996.

Projects in Progress

The Bridgeport drainage basins (comprising 3,880 acres) have an ongoing multi-year CSO improvement program. Estimated to cost $30 million, this work is 60% complete. Eventually, 40 CSOs which discharge into Black Rock and Bridgeport Harbors will be eliminated. The 19 remaining CSOs will be monitored by a remote telemetering system. In addition, the Water Pollution Control Authority has 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. This work is 50% complete.

Re-estimated to cost $34 million, the proposed rehabilitation of the East Side plant is 20% complete. Agenda items include, but are not limited to, the rehabilitation of the preliminary, primary, and secondary treatment units, and modernization of the electrical/mechanical equipment, as well as pumps and associated instrumentation.

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.

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.

Fairfield, Connecticut (Fairfield County)

Completed Projects

An engineering study addressing facility upgrades was recently completed at a cost of $150,000.

At a final cost of $1 million, I/I work was completed.

Projects in Progress

Design work for rehabilitation and expansion is slated to be complete in 1998 ($2.85 million).

This facility is presently operating under a State Consent Order to install BNR equipment and eliminate I/I. Approximately $5 million will be needed in order to implement BNR capabilities. Nitrogen reduction will be accomplished by aeration tankage modifications — fine bubble diffusers with fixed film (sponge) media. This project was operational during August 1996 and completely on line during December 1996.

Future Project

Additional rehabilitation and expansion of this facility will continue over a three-year period starting in the fall of 1998. The work includes rebuilding of the existing facilities, installation of UV disinfection, converting one digester to a waste sludge holding tank, three new clarifiers, and additional aeration tankage. Estimated costs are $42 million. Additional nitrogen removal retrofits will be implemented as needed.

Greenwich (Grass Island), Connecticut (Fairfield County)

Completed Projects

Operational during June 1997, interim nitrogen reduction retrofits were completed and were 100% funded by a State grant of $410,000.

A phase II engineering study was completed which addresses a new biosolids handling facility ($90,000). Designs are to be started during January 1998 with anticipated construction the following November. Another study recently completed focuses on I/I.

Project in Progress

This facility is operating under a State Order (1995) to eliminate overflowing manholes in the Byram and Old Greenwich neighborhoods. Manhole rehabilitation and sewer lining is 70% complete ($800,000).

Future Project

At an estimated cost of $17 million, a solids handling facility will be installed. This construction is scheduled to begin during November 1998.

Milford -Housatonic, Connecticut (New Haven County)

Completed Projects

Under way since January 1996, a new pump station was completed and on line during early 1997. Concurrently, more than 8,000 linear feet of new sewer lines were installed. Final costs were estimated at $3.6 million.

GREENWICH WATER POLLUTION
CONTROL PLANT
FAIRFIELD COUNTY, CONNECTICUT
FINAL TANKS AND CHLORINE
CONTACT TANK

New Canaan, Connecticut (Fairfield County)

Projects in Progress

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 30 % complete. Anticipated to be operational during September 1998, the 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 controls. All these construction phases are re-estimated to cost $14.3 million.

Future Project

Estimated costs of $1.8 million have been proposed for this collection system in order to build three new pump stations and correct I/I.

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

Completed Projects

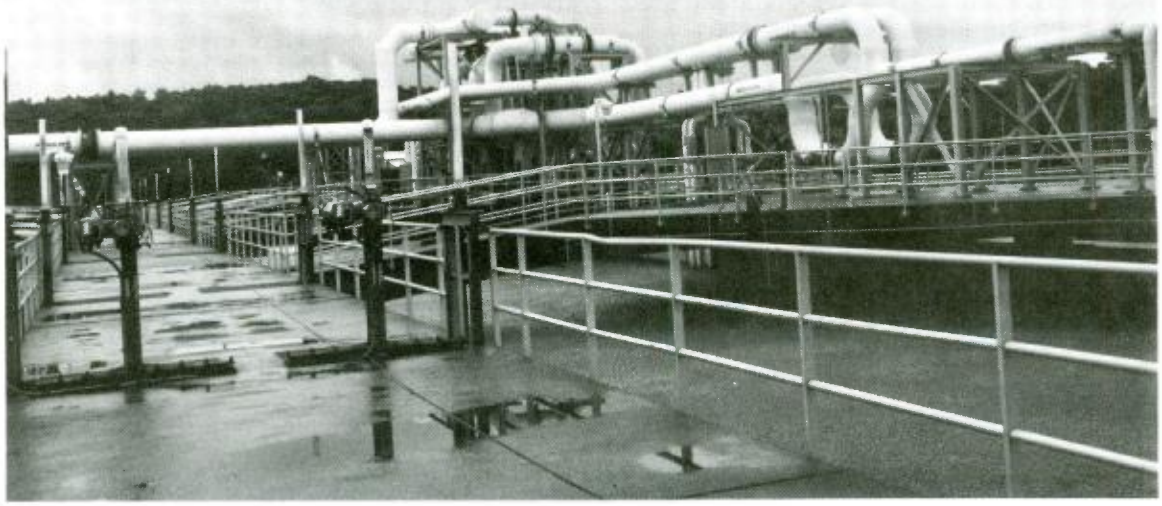
This facility is operating under a State Consent Order to address nitrogen reduction loadings. The Consent Order required an operational start-up during February 1997; all milestones have been met.

A final cost of $6.8 million was incurred for the installation of anoxic zones, mixers, and recycle pumps in the secondary aeration tanks. The conversion of a two-train secondary activated sludge process to a four-train aerobic system was also implemented. The secondary treatment facilities were modified with fine bubble diffusers to provide nitrogen removal. This work was completed and operational during August 1997.

Projects in Progress

Engineering studies are under way that are addressing odor controls (100% complete - $1.3 million) and a supervisory control and data acquisition system master plan (estimated at $76,000 and 90% complete).

Plant upgrades are recently under way and are 15% complete. Re-estimated to cost $6.68 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.



NEW HAVEN WATER POLLUTION CONTROL AUTHORITY
EAST SHORE WASTEWATER TREATMENT FACILITY
NEW HAVEN COUNTY, CONNECTICUT
NITROGEN REDUCTION PROJECT

A long term CSO control plan is under way with anticipated costs of $2 million. Sewer separation construction will continue until combined sewers discharging to New Haven Harbor are eliminated. An estimated completion date is well into the next century (2015), with costs amounting to $130 million. Approximately 35% of the work is complete.

Future Projects

Several additional engineering studies are proposed which will address alternative standby power for the main sewage pumps (FY'98), plant-wide instrumentation upgrades, and a regional septage study.

Norwalk, Connecticut (Fairfield County)

Projects in Progress

A re-estimated cost of $30 million for a three-year construction schedule has been under way since 1996 and is 25% complete. An operational start-up is planned for late 1999. The project will increase the capacity of this 15 MGD secondary facility to 20 MGD. Other

plant unit upgrades include odor controls, a new chlorination system, and new tankage for all treatment phases.

Re-estimated to cost $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

Retrofitting of the aerators with diffused air bubblers was incorporated into this treatment system in order to accomplish nitrogen loading reductions. All construction phases were completed during March 1997 at a final estimated cost of $3.1 million.

Project in Progress

An engineering study for a revised facility plan is scheduled to be complete during November 1997. The final cost estimate is $400,000.

Future Project

Upgrading and expansion of this 20 MGD secondary facility is planned to begin during 1999. The four-year construction schedule is estimated to cost $27 million.

West Haven, Connecticut (New Haven County)

Completed Projects

The Morrissey Lane and Woodycrest pumping stations were upgraded. Additionally, I/I point repairs and four sewer lining contracts were completed. These repairs and upgrades incurred costs of $2.25 million.

Projects in Progress

A plant-wide electrical upgrade is under way ($400,000) which will replace all of the existing antiquated motor controls.

The Baybrook pump station upgrade ($120,000) is under way and is anticipated to be complete by late 1997.

Future Projects

Estimated to cost between $2 and $3 million, an odor control system will be installed plant-wide and at all pump stations. The odor source buildings will be ventilated, treated and released through a bio-filter with scrubbers. This should eliminate or lessen impacts on the surrounding neighborhoods.

A phased approach to upgrade eight pumping stations city-wide was planned and began during 1996. The remaining stations ($2 million) will be renovated on an as needed basis.

Westport, Connecticut (Fairfield County)

Completed Project

Recently completed, the Evergreen Avenue sewer line was replaced at a final cost of $100,000.

Projects in Progress

This facility is presently operating under a State Infiltration/Inflow Abatement Order. An I/I evaluation is nearly complete. Repairs and corrective work are scheduled to carry on through 1998, at an estimated cost of $250,000 per year.

Currently in the design phase, the replacement of the primary digester cover is planned. The construction costs for this project are estimated at $400,000 and installation will be during the 1998 spring season.

NEW JERSEY WATER POLLUTION CONTROL PLANTS

Edgewater, New Jersey (Bergen County)

Projects in Progress

Reconstruction of Pumping Station #3 is currently under way. The associated new force main, trunk line and lateral sewer installations are planned to begin during the 1997-1998 winter season. Final costs and operational dates were not available; the expenses are being incurred by the developer of a mixed use residential complex.

Hoboken, New Jersey (Hudson County)

This plant is now under the auspices of the North Hudson Sewerage Authority (NHSA) and is called the Adams Street facility. Refer to the write-up under the NHSA - Adams Street.

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

Projects in Progress

Recently under way are several modernization projects. These include upgrades of two main sewage pumps (5% complete - $1.7 million) and the rehabilitation of the anaerobic sludge digester and sludge storage tank (5% complete - $2.5 million). These projects are anticipated to be complete by July 1998 and June 1999, respectively.

Trunk sewer rehabilitation began during May 1997 and is 95% complete ($300,000).

Future Projects

Additional rehabilitation and upgrades are planned for another sludge storage tank and the screen house facility. These proposals are scheduled to begin during late 1998. Final cost estimates for all work is approximately $2.6 million.

Kearny Municipal Utilities Authority, New Jersey (Hudson County)

Projects in Progress

During November 1990, this primary facility was converted to a pump station and diverted all flows to the PVSC regional facility for treatment. In late 1996, the Authority applied for a Department of the Army authorization to install a submarine sanitary force main

in Cedar Marsh. In addition, gravity sewers were installed. Presently under way is a new pump station (June 1998) which will convey flows to the existing South Kearny pump station and then to the PVSC facility. The new sewers will service a portion of Harrison, N.J., as well as the leachate from the Hackensack Meadowlands Development Corporation landfill. Estimated costs for the collection system improvements were about $6 million. Refer to the PVSC write-up for additional information.

Linden Roselle Sewerage Authority, New Jersey (Union County)

Completed Projects

Plant rehabilitative work was completed and includes new handrails ($100,000) and the replacement of the underground electrical cables ($120,000).

Projects in Progress

The Authority is presently operating under a State Administrative Consent Order (July 1992/Modified 1996) to investigate effluent toxicity. Engineering studies are under way to address this issue by exploring industrial pretreatment impacts. Pretreatment controls will most probably be implemented.

Future Project

The installation of four ultraviolet disinfection units is planned at an estimated cost of $2 million. The 12-month project is anticipated to be operational during August 1999.

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

Completed Project

A sludge end product storage building with associated odor control equipment and truck scales are nearly complete (98%). Scheduled to be operational during November 1997, costs are estimated at $10.4 million.

Projects in Progress

This facility is operating under a State Consent Order (May 31, 1996) to identify I/I and develop alternatives to correct the extraneous flows. As of October 1997, an instrumentation upgrade of 20 metering chambers was completed. Additional upgrades and reduction alternatives will be implemented by December 1998.

An engineering study is under way to assess the Sayreville pumping station rehabilitation needs.

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

Project in Progress

This facility is presently conducting negotiations with the New Jersey Department of Environmental Protection to upgrade the plant design flow to 3.4 MGD.

Future Project

A construction upgrade is planned for the disinfection facilities in order to meet NJPDES permit limitations for chlorine residual. The estimated operational date is August 1, 1999.

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

Completed Project

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.

Projects in Progress

An engineering study with a three-year agenda began during 1995. It will address modeling of the interceptor system and will select 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. Presently, an engineering study dealing with CSO abatement is under way.

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

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. Presently, an engineering study dealing with CSO abatement is under way.

Passaic Valley Sewerage Commissioners, New Jersey (Essex County)

Completed Project

Modifications to two final clarifiers are complete. The $2.5 million project was operational during December 1996.

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).

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

Under way is the conversion of the disinfection process from gas to hypochlorite. The nearly $2 million construction (20% complete) is anticipated to be complete during January 1998.

Future Projects

Planned to begin during 1998, a 2.5-year construction schedule will entail 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. This work is estimated to cost $27 million.

Rahway Valley Sewerage Authority, New Jersey (Union County)

Projects in Progress

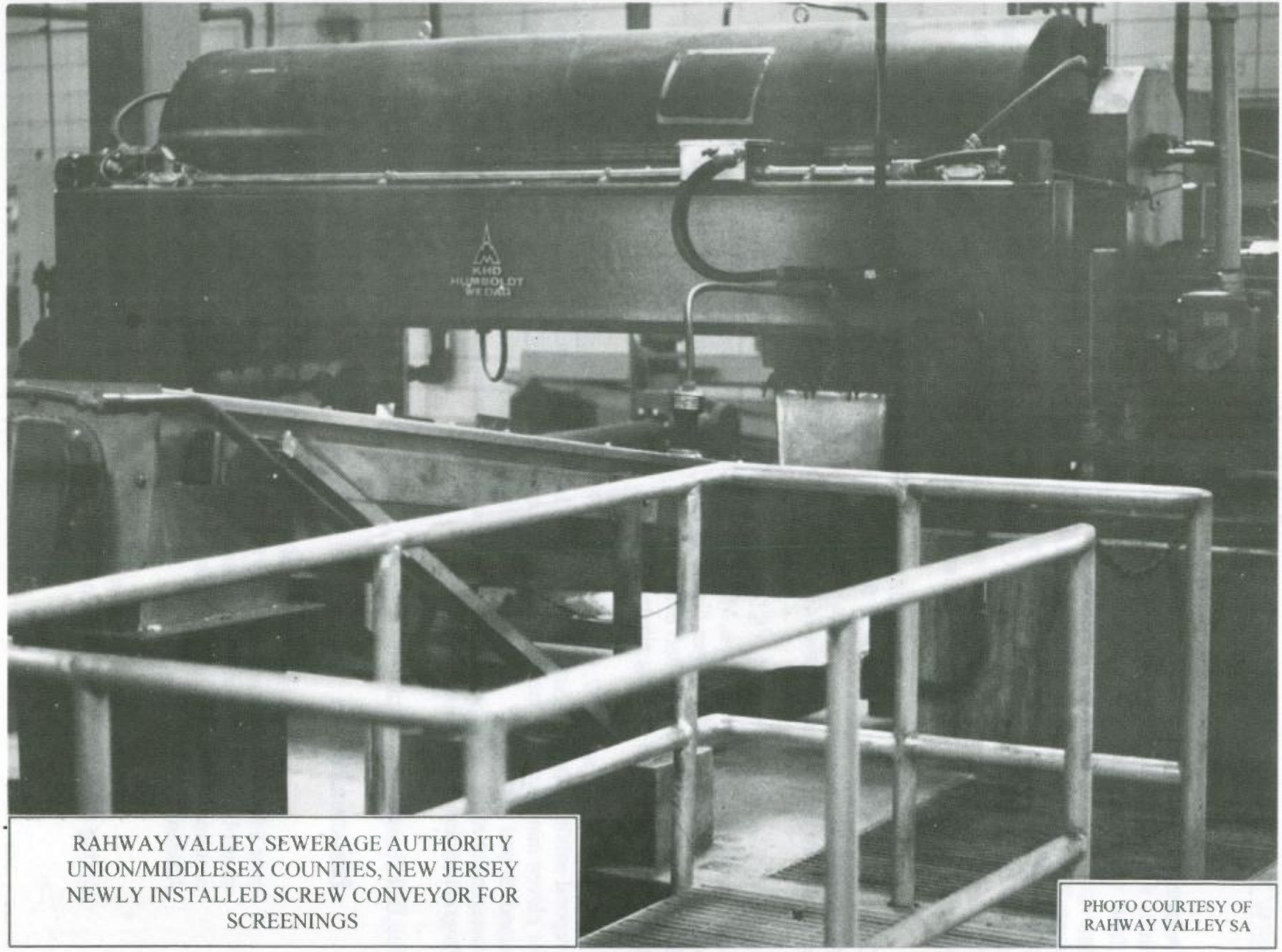
Construction of an employee facilities building and a belt thickener building are both under way. Construction of these buildings are currently at 95% complete. Within the belt thickener building, installations of the screw conveyors (primary and gravity) and sludge centrifuge are 95% complete. Total cost estimates are over $2.5 million.

Future Projects

A screening device grit chamber and a laboratory expansion have been proposed. Construction start-up dates have not been established.

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.



RAHWAY VALLEY SEWERAGE AUTHORITY
UNION/MIDDLESEX COUNTIES, NEW JERSEY
NEWLY INSTALLED SCREW CONVEYOR FOR
SCREENINGS

PHOTO COURTESY OF
RAHWAY VALLEY SA

NEW YORK WATER POLLUTION CONTROL PLANTS

As per the recommendations of the Long Island Sound Study, the New York State Department of Environmental Conservation gave local governments the option of imposing nitrogen limits for individual sewage treatment plant discharges, or creating an aggregate of limits for all plants within a given management zone. NYS DEC and NYC DEP reached full agreement on aggregate effluent limits for the four plants on the upper reach of the East River — Bowery Bay, Hunts Point, Tallman Island and Wards Island. NYC DEP also agreed to implement operational and process changes to maximize nitrogen removal, as well as to conduct pilot programs to test new processes and technologies. Six other NYC plants which discharge to the Hudson River, Lower East River and New York Harbor (refer to the map at the beginning of the Water Pollution section of this report) will incorporate nitrogen reduction controls and conduct self-monitoring programs.

NYS DEC has issued final SPDES permits to eight treatment facilities in Nassau and Suffolk Counties for aggregate limits which freeze the nitrogen loads of the dischargers based on 1990 loadings. Presently, all facilities are in compliance with the "no net increase" limits. BNR pilot proposals are being developed for Glen Cove and Kings Park (SCSD #6).

In Westchester County, NYS DEC has issued final permits to the four plants discharging to Long Island Sound — Blind Brook, Mamaroneck, New Rochelle and Port Chester. Their aggregate loading is set at the 1990 nitrogen discharge level. Voluntary reductions are being implemented through a BNR retrofit at the Blind Brook facility. The County has completed a feasibility study for nitrogen removal at all existing plants.

During February 1997, the states of New York and Connecticut and the US EPA released a proposal entitled Phase III Actions for Hypoxia Management, including nitrogen reduction targets for eleven management zones that comprise the Connecticut and New York portion of the Long Island Sound watershed. This phase establishes specific nitrogen reduction targets for all management zones in the Sound. Refer to the individual plant write-ups and the National Estuary Program section for additional information.

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

Projects in Progress

Engine emissions improvements are scheduled for completion in 1998 at costs of over $4.4 million. This project is 91% complete and encompasses 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.

Additions and modifications to the central heating facilities are to be completed during 1998 at a re-estimated cost of over $17.9 million. The main features of the project,

which is 96% complete, include new heater and chiller equipment with associated piping and auxiliary equipment to provide plant-wide heating and cooling.

There are final modifications and additions being made to the sludge digestion facilities that are 86% complete and are scheduled for completion in 1998 with costs amounting to over $23.7 million. The existing sludge digestion facilities, including both primary and secondary digesters, are being rehabilitated.

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 31% complete with costs over $14.7 million.

Additions and modifications are recently under way (6% complete) on a fifth aeration tank which replaces the fluid bed reactor system. Estimated costs are $9.6 million.

It is anticipated that this facility will accept flows for treatment from the County-owned Inwood plant in January 1999. The 2.5 MGD Inwood trickling filter plant is being phased out due to continuing operational problems. Refer to the Inwood write-up for additional details.

Belgrave, New York (Nassau County)

Future Project

BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of about $2.34 million. A construction schedule was not available.

Blind Brook, New York (Westchester County)

Completed Project

Final estimated costs of $1.4 million were incurred for a major electrical upgrade of the influent and effluent pumping equipment. An operational start-up date was during the 1997 spring season.

Projects in Progress

An ongoing engineering study is investigating alternatives for preliminary treatment equipment upgrades, including the headworks and the automatic bar screens.

Work for plant refurbishment went to contract during November, 1997. The 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 are $6 million.

Future Project

BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of about $2.73 million. A construction schedule was not available.

Bowery Bay, New York (Queens County)

Projects in Progress

There are 90 pump stations throughout the 14 drainage basins comprising the NYC collection system, including the newly constructed Canterbury Street pump station on Staten Island. Completed during 1997 at 46 pump stations City-wide were 10 major upgrades, 11 design plans for major upgrades, 14 mini-upgrades, and 11 design plans for mini-upgrades. Major upgrades are under way at eight stations, as well as three mini-upgrades. In addition, two pump stations are undergoing repairs due to storm damage. Presently, one new station is under construction and three are under design. Cost estimates of $46.267 million for FY'98 were available for 18 pump stations. Slated for FY'99 are cost estimates of $50.211 million to be incurred at seven pump stations.

Completed in 1985, the New York City Regulator Improvement Program was a study to inventory, access 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. Presently, seven regulators in three drainage basins are fully operational utilizing an 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, 42 regulators are under construction and 20 additional designs are planned to commence. Reconstruction of eight tide gates in the Bowery Bay service area during 1998 will incur costs of about $87,000.

The sludge management program consists of dewatering facilities sited at eight of the existing treatment plants. The sludge is transferred from the other six WPCPs by sea. Slated for 1998 are new docking facilities to be built on the East River (Red Hook and Wards Island) and in Jamaica Bay (26th Ward) at estimated costs of $14.155 million. A residuals building is also slated for Wards Island ($8.631 million). These projects will incur additional

fees including, but not limited to, construction management ($2.104 million), additional structures and bionutrient management services ($8.401 million).

City-wide, additional consultant fees are slated for FY'98 which address various program management services, technical inspections, concrete quality assurance and health and safety management. These fees are estimated to accrue costs of $25.3 million. These services are also slated for FY'99 and will cost $18 million.

This facility and the 13 other New York City municipal wastewater treatment plants are the subject of an ongoing hearing before a NYS DEC Administrative Law Judge. Refer to the Legal Activities section of this report for detailed information.

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 10-year CSO program which is currently in its tenth year. Structural and nonstructural solutions to the problem are being evaluated and prioritized. 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. Final design work is being prepared and construction is slated for the swirl concentrators that will service Flushing Bay. A retention tank, planned for Flushing Bay, will go to bid during 1999 and is estimated to cost $86.834 million. An in-line storage plan with a retention tank located in the Hunts Point drainage basin is at the facility design stage ($230 million).

The second geographical area addresses the needs of Jamaica Bay. Holding tanks and in-line storage are the agenda items. About $153 million is being spent for design work and construction costs are re-estimated at $260 million. Final design ($197 million) for the Paerdegat Basin retention tank is under way. The pile foundation (FY'98 - $9.783 million) for the Paerdegat influent facilities are about to begin.

The other areas that must be 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 (dredging costs of $2.563 million - FY'98) with associated force mains ($3.3 million - FY'98). Outer Harbor proposals

include maximizing flow to the WPCPs and reducing CSOs and dry weather flows in Coney Island Creek (Step II design during FY'98 - $6.133 million).

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

Future Projects

A BNR retrofit was recommended by the Long Island Sound Study. Planned modifications as delineated in NYC's Nitrogen Control Action Plan are expected to incur capital costs of about $4.8 million and begin during January 1997. Additional expenditures of $28.59 million would be needed to meet the goals of the Long Island Sound Study CCMP.

Stabilization construction is slated for FY'99 which is estimated to cost $120 million plus $12 million in construction management costs.

Buchanan, New York (Westchester County)

Project in Progress

The second phase of planned modifications for the main treatment plant began in November 1997. The three-month construction upgrade schedule will consist of replacing electrical control and instrumentation equipment, architectural improvements and laboratory equipment replacements. The total costs are estimated at $600,000.

Camp Smith, New York (Westchester County)

Completed Project

At a final cost of $1.2 million, an upgrading of the entire facility is expected to be complete during the 1997-1998 winter season. The work included repairs and upgrading of existing equipment, as well as the installation of new sewer lines and repairs to manholes. Additional new installations included, but were not limited to, emergency generators, new plastic media in the trickling filters, circulation pumps and controls, automatic influent and effluent samplers, continuous on-line chlorine analyzer and pH metering.

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

Completed Project

Costing nearly $5.4 million, the administration building/laboratory expansion was completed during the 1996 fall season.

Projects in Progress

Design work for continued phased construction is anticipated to be complete by 1998. This facility, utilizing a secondary activated sludge process, was re-rated to a flow of 72 MGD during 1995. The many construction phases include expansion of the special projects laboratory, improvements to engine emissions (clean burn and catalytic converters), central hot and chilled water systems (four new boilers and new chillers), and the rehabilitation and cleaning of two primary digesters. Additionally, eight final tanks will be demolished and be replaced by six new units and there will be an upgrade of the air distribution to the aeration tanks. These phases are 84% complete and will cost nearly $44.2 million.

Future Projects

Final phases for this facility will address several rehabilitation and improvement contracts and are planned for the period 1998-1999. These projects will affect the following treatment stages: secondary gas compressors, dissolved air floatation, sludge dewatering, aeration tank covers, plant-wide instrumentation, landscaping and punch list items. Operational start-up dates are anticipated during the 2000-2001 period with costs estimated at over $46.84 million.

Proposed work for the collection system includes the rehabilitation of seven pump stations. The stations will be updated with new pumps, controls and superstructure repairs. Start-up dates are not available, however, the estimated costs are over $8.7 million.

Cedarhurst, New York (Nassau County)

Future Project

The New York State 1997 Intended Use Plan (IUP) for the Clean Water State Revolving Fund for water pollution control projects was issued in October 1996. Municipal water quality protection projects must be included in the IUP to receive these low interest rate loans. Based upon the second quarter (May 1997) update of the IUP, the Village of Cedarhurst intends to implement facility improvements with an estimated loan of $3.725 million. This project will be ready for financing during November 1998.

Coney Island, New York (Kings County)

Completed Projects

Phased construction at this treatment facility has been under way for several years. The construction is estimated at $317.54 million and includes, but is not limited to, electrical systems, HVAC, plumbing, general plant maintenance, locker rooms, and a grit removal building. The facility upgrades were complete during 1997.

Projects in Progress

A proposed pilot project will experiment with a new velocity flow meter.

At an estimated cost of $66.37 million, a plant support facility consisting of a conglomeration of workshops has been divided into four contracts; these are ongoing.

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

Future Projects

Proposed for 1998 are structural modifications to handle additional dry and wet weather flows ($55 million).

Major plant modification contracts necessary for re-rating the flow capacity of this facility are going to bid. Additionally, bids are to go out for reconstruction of the ocean outfall ($2 million), the building of a new laboratory ($25.65 million) and a visitors center (FY'99 - $4 million).

Glen Cove, New York (Nassau County)

Future Projects

BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of about $3.43 million. A construction schedule was not available.

The New York State 1997 Intended Use Plan (IUP) for the Clean Water State Revolving Fund for water pollution control projects was issued in October 1996. Municipal water quality protection projects must be included in the IUP to receive these low interest rate loans. Based upon the second quarter (May 1997) update of the IUP, the City of Glen Cove intends to implement a facility upgrade with an estimated loan of $5.528 million. This project will be ready for financing during November 1998.

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

Projects in Progress

Recently under way are improvements to the sanitary sewers. The project cost is nearly $67,000 and includes the relining of 532 linear feet of 10-inch gravity sewer, cleaning and visual inspections of 2,935 linear feet of force main and the replacement of 55 linear feet of 8-inch gravity sewer.

During October 1997, the Strathmore pump station upgrade began. The work includes 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 project cost is approximately $246,500.

Future Projects

Engineering studies are being proposed for a five-year plan for upgrading the treatment plant by adding four new pump stations at a cost of about $100,000 per year.

BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of about $1.52 million. A construction schedule was not available.

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

Project in Progress

Pump station upgrades include new wastewater grinders and a sodium hypochlorite tank and pump. These improvements are planned to be complete by January 1998 at estimated final costs of $140,000.

Future Project

BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of about $15.7 million. A construction schedule was not available.

Huntington Sewer District, New York (Suffolk County)

Completed Project

A high level alarm indicator to the secondary digester cover was installed at a final cost of $10,000. This system was on line during December 1996.

Projects in Progress

The Huntington Sewer District is in the process of updating the sewer use ordinance for both commercial and residential areas.

Future Projects

Planned to begin during November 1997, replacement of variable frequency drives on the influent and effluent pumps will cost $168,300.

Improvements to the Huntington Farms pump station are estimated to cost $250,000. Improvements to the wastewater collection system are re-estimated to cost $327,500. Replacement of 1,000 linear feet of existing sanitary sewer as well as 1,000 linear feet of liner will be done during a six-month construction schedule beginning in January 1998.

BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of about $2.97 million. Recently, the District submitted alternatives for nitrogen removal facilities in lieu of the State and federal proposed phased nitrogen reductions.

Hunts Point, New York (Bronx County)

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 modification are Riverdale (three stations - $12.25 million); and Co-Op City, North and South ($8 million). The City Island and Marble Hill pump stations ($15 million) are slated for construction during FY'99 and the Hunts Point Market pump station is in final design ($986,000). During the 1997 summer season, emergency force main repairs were necessary and performed under Eastchester Bay. This force main that services City Island, the Bronx is being replaced at a cost of $14.952 million.

An ongoing engineering study that began during October 1996, addresses biological centrate treatment.

A BNR retrofit was recommended by the Long Island Sound Study. Planned modifications as delineated in NYC's Nitrogen Control Action Plan including a system for biological centrate treatment began during July. These projects are expected to incur capital costs of about $3.4 million. Additional expenditures of $44.73 million would be needed to meet the goals of the CCMP.

Currently under way is the replacement of the boilers for process heating ($5 million) and stabilization modifications-Step II ($22 million).

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

Inwood, New York (Nassau County)

Projects in Progress

As a result of violations of the Inwood SPDES permit limitations for BOD and TSS, this facility is operating under a Consent Order (February 22, 1995) which was negotiated between NYS DEC and Nassau County. The Order established milestones to determine the feasibility of upgrading and expanding, or converting to a pump station with subsequent treatment at another wastewater facility.

Re-estimated to cost over $7.1 million, a pump station conversion and the installation of force mains to divert flows to the Bay Park facility is under way (3% complete). An operational start-up date, as per the Consent Order, is January 18, 1999. Refer to the Bay Park write-up for additional information.

Jamaica, New York (Queens County)

Projects in Progress

Two ongoing experiments are being conducted by in-house staff and consulting engineers. The first incorporates the use of final tank baffles to reduce solids flowing over the final weir. The second involves grease containers, one and ten cubic yard volumes, with screens on the bottom to draw off water from the waste debris.

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

Future Projects

NYC DEP is posing various improvements to this facility in order to comply with SPDES limitations and requirements. Construction will be performed in two phases with milestones as contained in the Consent Order. The first phase 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 degritting and screening wing, emergency lighting and an influent screenings building extension. Estimates for Phase I are over $96.9 million.

Planned for late 1999, the stabilization modifications (alternatives to correct plant performance deficiencies) are estimated to cost $72 million ($7.2 million additional costs in construction management fees).

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

Future Project

A $200,000 construction upgrade is planned for the primary settling tanks and is to begin during December 1997.

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

Completed Project

Estimated at a final cost of $120,000, repairs were completed on the west digester. The rehabilitative work was complete during April 1997 and operational during September.

Future Projects

Repairs are planned for the grit channel and trickling filter. The manual chlorine disinfection system will be upgraded with an automated delivery system. Dates and costs were not available.

Lawrence, New York (Nassau County)

Future Project

The New York State 1997 Intended Use Plan (IUP) for the Clean Water State Revolving Fund for water pollution control projects was issued in October 1996. Municipal water quality protection projects must be included in the IUP to receive these low interest rate loans. Based upon the second quarter (May 1997) update of the IUP, the Village of Lawrence intends to implement facility improvements with an estimated loan of $2.1 million. This project will be ready for financing during November 1998.

Mamaroneck, New York (Westchester County)

Completed Project

A computer upgrade was completed and operational during September 1997. This system fully automates various plant processes including, but not limited to, sampling at several treatment stages, chlorine residual monitoring and screenings conveyance. The final cost was $300,000.

Future Project

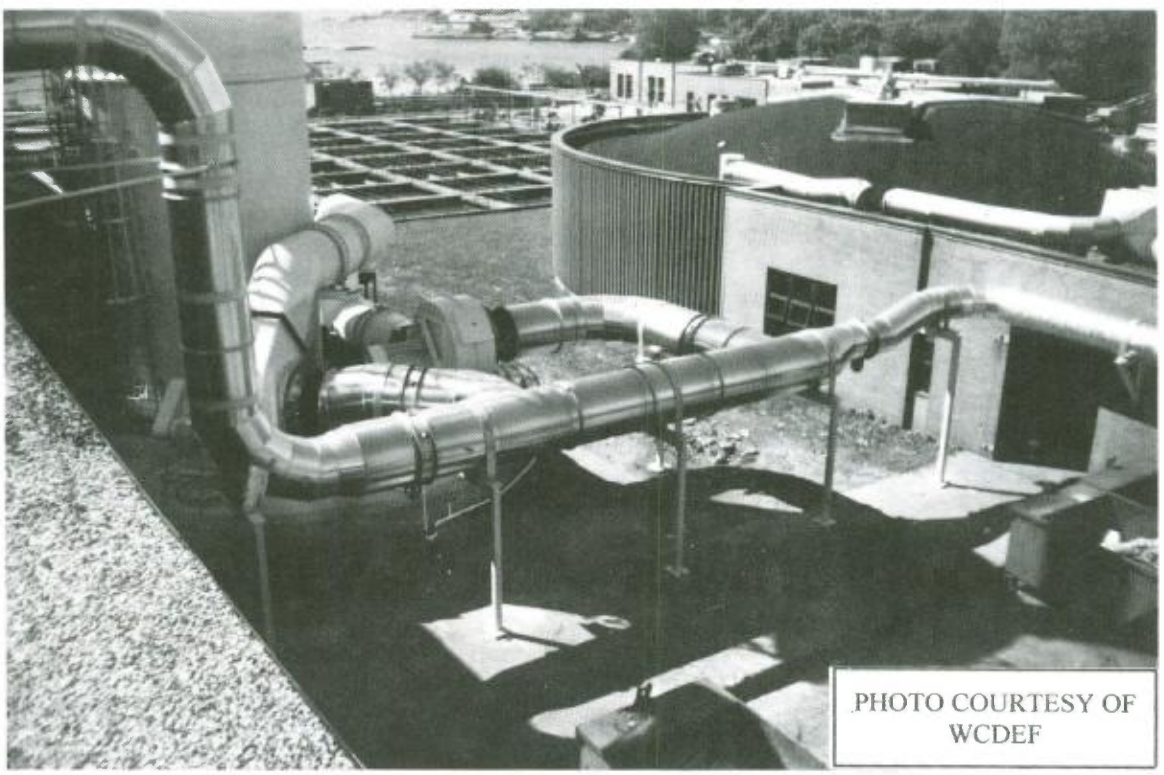
BNR retrofits have been recommended by the Long Island Sound Study. In order to

implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of about $10.3 million. A construction schedule was not available.

New Rochelle, New York (Westchester County)

Completed Project

Recently completed, Phase I of an interim upgrade of the facility — including new pumping equipment and replacement of the mechanical works in the primary, final and thickener tankage — became operational during September 1997. This $5 million project also included a new odor control system.



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NEW ROCHELLE WASTEWATER
TREATMENT FACILITY
WESTCHESTER COUNTY, NEW YORK
NEW ODOR CONTROL SYSTEM DUCTWORK AND REACTION CHAMBER

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, such as Davids Island which is located in Long Island Sound, 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. This work is expected to cost $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.

Phase II of the interim upgrade began during November 1997 and is addressing the new oxygen storage and vaporizers facilities, structural repairs to the control building and main pump drive replacements. An operational start-up is anticipated for November 1998.

Future Projects

Two modernization projects are planned for 1997. First, the upgrading of the multiple hearth furnaces with new air pollution controls is estimated to cost $8 million. Secondly, BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of about $16.7 million. A construction schedule was not available.

Newtown Creek, New York (Kings County)

Projects in Progress

Ongoing reconstruction at the Manhattan pumping station, as well as installations (electric, HVAC, plumbing, etc.) and associated force main replacements, has been re-estimated to cost more than $15 million. In order to repair two sewage pumps, a planned bypass of 500 million gallons of raw sewage was scheduled during February 1997. The work was postponed and, recently, an alternative engineering solution was found that will allow the work to be done without any bypassing. Refer to the Legal Activities section of this report for detailed information.

Upgrading and expansion construction to incorporate a secondary treatment system utilizing step aeration with a reduced contact time is under way. 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 $31.9 million were made for all design and

construction phases. However, design work, facility planning and subsequent construction for interim upgrades are estimated at $5 million. The interim upgrade work began during July 1993 and is scheduled for completion during March 1998. The major aspects 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.

Three engineering studies are under way which address modified step feed tanks, chemical additions to the treatment train and a biofilter pilot plant.

During FY'97-98, reconstruction of seven tide gates will be completed at a cost of $190,000.

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

Future Projects

Planned for FY'99 are several new additions including a south wing to the main building ($126 million), sludge handling facilities ($226 million), a sludge force main ($13 million) and plant-wide upgrading, Step II ($30 million). Construction management costs associated with these phases are $80 million. In addition, site demolition will be carried out in two stages which are estimated to cost $110 million.

BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of about $63.9 million. A construction schedule was not available.

Northport, New York (Suffolk County)

Completed Project

The grit collection equipment was replaced and went on line during November 1997 at an estimated final cost of $6,000.

Project in Progress

The State-imposed sewer hookup moratorium was allowed to expire on August 31, 1994. A study was completed and recommends capacity expansion. Extraneous flows are being eliminated before plant modifications can be implemented. Sewer lines identified with I/I problems (i.e., antiquated, misaligned, and/or root infiltration) are being cleaned, televised and relined.

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 estimated to cost more than $95.9 million. 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

Expenditures of more than $24 million are planned which will affect all support treatment equipment. These installations, inspections and repairs will affect electrical, instrumentation and control systems; HVAC; and dock storage facilities. An alternate odor abatement system ($15 million) will go to bid during FY'99.

Oakwood Beach, New York (Richmond County)

Completed Project

Recently completed, an engineering study determined the feasibility of nitrogen removal from centrate wastewater.

Projects in Progress

Reconstruction work is planned for the main facility, including the plant plumbing system. This work is scheduled to start in late 1997 at a cost of $70,000.

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

Future Project

Slated for FY'99 is stabilization, Step I modifications which are estimated to cost $5 million.

Ossining, New York (Westchester County)

Completed Projects

During the fall of 1995, construction began for the installation of two new high speed centrifuges for sludge dewatering, two new sludge belt conveyors, and a new ash enclosure building. The construction costs for all items (99% complete) was about $1.9 million. An approximate operational start-up date was November 1996. A plant-wide conversion to natural gas is ongoing.

Projects in Progress

Engineering studies addressing a furnace upgrade are 15% complete.

Approximately $1 million will be incurred for a computer upgrade (75% complete) which will fully automate various plant processes. An approximate operational start-up date is December 1997.

In order to meet new federal and state air regulations, furnace upgrades to the multiple hearth system began during September 1997 at a cost of about $1.5 million.

Owls Head, New York (Kings County)

Completed Projects

At costs re-estimated at $227.52 million (1995 quotes), construction upgrading is nearly complete. The work includes digester facilities, an engine generator, a pump and powerhouse, an outfall to Upper New York Bay, disinfection facilities, waterfront facilities for the sludge barge berthing area, and primary facilities. Construction, completed during late 1996 to mid-1997, includes reconstruction of the grit building, as well as the installation of a sluice gate and weir and upgrades to the plant electrical systems.

Projects in Progress

An engineering study involved with the addition of polymers to the thickeners is ongoing.

Currently under way are plant-wide improvements ($14 million), reconstruction of a forebay ($770,000) and screening building modifications ($10 million).

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

Future Project

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.

Oyster Bay Sewer District, New York (Nassau County)

Future Projects

The installation of standby generators at two pump stations is proposed at an estimated cost of $60,000.

BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of approximately $1.88 million. A construction schedule was not available.

The New York State 1997 Intended Use Plan (IUP) for the Clean Water State Revolving Fund for water pollution control projects was issued in October 1996. Municipal water quality protection projects must be included in the IUP to receive these low interest rate loans. Based upon the second quarter (May 1997) update of the IUP, the Town of Oyster Bay intends to implement a nonpoint source elimination strategy with an estimated loan of $7.7758 million. This project will be ready for financing during November 1997.

Peekskill, New York (Westchester County)

Project in Progress

Automation of all processes, including remote pump stations, is currently under construction (90% complete). The estimated costs are $1 million and the operational start-up is anticipated for the 1997-1998 winter season.

Future Project

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.

Port Chester, New York (Westchester County)

Completed Project

The installation of a continuous emissions monitoring system on the sludge furnace stacks is complete. The final estimated construction costs were about $215,000 with an operational start-up during August 1997.

Future Project

BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of about $5.7 million. A construction schedule was not available.

Port Richmond, New York (Richmond County)

Projects in Progress

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

Reconstruction and installations costing about $1.984 million 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. Reconstruction is planned for five tide gates at a cost of $303,000. Additionally, the installation of climber screens is proposed at a cost of $675,000.

Port Washington, New York (Nassau County)

Future Project

BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen

loadings. Planned modifications at this facility are expected to incur capital costs of about $4.54 million. A construction schedule was not available.

Prince's Bay, New York (Richmond County)

Completed Project

On May 19, 1997, this 0.16 MGD tertiary plant ceased to receive wastewater and diverted all flows to the Oakwood Beach facility. Refer to the Oakwood Beach WPCP write-up for additional information.

Red Hook, New York (Kings County)

Completed Project

An engineering study dealing with a thickener blanket analyzer was completed.

Projects in Progress

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

Future Projects

Plant modifications and additions are planned which will address electrical, HVAC, and plumbing at costs of $14.875 million.

BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of about $10.33 million. A construction schedule was not available.

Rockaway, New York (Queens County)

Completed Projects

Completed during the past year were four in-house engineering studies including an automatic sampler program, a data logger network, a decant and sludge volume reduction, and remote instrumentation system.

Projects in Progress

Modifications to various treatment units are still under way at estimated costs of $2.321 million.

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

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

Projects in Progress

Under way since August 1996, several capital improvement projects are being implemented and are 60% complete. New structures that are being built include a main pump station, a machine shop, and screening facilities. A total cost estimate of $5.7 million includes the replacement of the anaerobic digester cover and centrifuges.

Future Project

Planned to begin on November 1, 1998, $55 million will be spent to expand the collection system in the western section of Rockland County. Design and subsequent construction will include the installation of principal trunk sewers, pump stations, force mains and laterals in the Villages of Hillburn and Sloatsburg.

Staten Island University Hospital, South, New York (Richmond County)

Future Project

It is planned that this facility divert flows to the New York City DEP's Oakwood Beach WPCP for treatment via the Hylan Boulevard Interceptor; dates and costs have not yet been finalized. Refer to the Oakwood Beach write-up for additional information.

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

Projects in Progress

As of February 1996, this facility satisfied the stipulations of the State Consent Order (June 1990) to ensure secondary effluent limitations, complete the collection system renovations, and conduct a wasteload allocation study in Port Jefferson Harbor.

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. The grit removal system is being replaced (10% complete) by rotating screens. This $100,000 project is expected to be operational during May 1998.

A plant evaluation was conducted to determine the possibility of increasing the flow capacity (presently 0.85 MGD) 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 $6.65 million phased construction costs will be borne by those applying for hookups. Preliminary treatment designs propose the use of a tertiary process with a total flow capacity of 1.0 MGD.

BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of about $1.01 million. A construction schedule was not available.

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

Projects in Progress

A building is being constructed to house three units for scavenger waste pre-treatment. This project is 50% complete and the estimated costs are $500,000. Concurrently, the aeration tankage diffusers are being replaced at a cost of $3.3 million (95% complete).

A $20,000 RFP for sludge disposal options is still being finalized. In-house interceptor flow studies are continuing in order to determine if additional I/I reduction is necessary. A consulting engineer continues to compile an inventory of all air pollution sources to assure compliance with applicable regulations ($25,000). Consulting engineers are conducting an energy audit. The City College of New York, in association with the New York State Energy Research and Development Authority, is conducting an independent study involving the utilization of sludge incinerator ash for a variety of applications ($600,000). In addition, a sludge process evaluation has begun recently ($40,000).

Future Project

Equipment replacement and infrastructure repairs are in the design phase with costs estimated at $3 million. As of this writing, there are no construction start-up dates.

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

Project in Progress

In-house engineering staff continue to investigate equipment and operational changes in order to improve reliability.

Future Projects

A re-estimated $4.9 million equipment renovation is planned; however, construction remains postponed pending negotiations with NYS DEC. Safety equipment upgrades will be addressed on a priority basis.

BNR retrofits have been recommended by the Long Island Sound Study. In order to implement the CCMP, NYS DEC has established priority projects to reduce nitrogen loadings. Planned modifications at this facility are expected to incur capital costs of about $700,000. A construction schedule was not available.

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

Project in Progress

As of February 1996, this facility satisfied the stipulations of the State Consent Order (June 1990) to assure continued compliance and conduct a wasteload allocation study in Port Jefferson Harbor.

Future Project

Construction of SBRs will increase the plant capacity by 0.5 MGD. This capacity increase is being implemented so that this facility will comply with the LISS nitrogen loading requirements. Cost estimates are $7.7 million.

Tallman Island, New York (Queens County)

Projects in Progress

A BNR retrofit was recommended by the Long Island Sound Study. Planned modifications as delineated in NYC's Nitrogen Control Action Plan are expected to incur capital costs of about $4.5 million and began during January 1996. Additional expenditures of $13.61 million would be needed to meet the goals of the CCMP. An engineering study presently under way addresses biological nutrient removal and is expected to be complete by December 1998.

Current construction at this facility is for plant stabilization, Step II improvements and is estimated to cost $14.047 million.

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

26th Ward, New York (Kings County)

Completed Project

Recently completed was an engineering study that deals with CSO disinfection.

Projects in Progress

One tide gate reconstruction is under way at a cost of $40,000.

Future Projects

Stabilization, Step II construction improvements are slated for FY'99 with associated costs of $6 million.

A BNR-air stripping study is proposed for 1998.

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

Wards Island, New York (New York County)

Projects in Progress

Engineering studies costing $2.35 million are still under way to determine plant expansion logistics and to conduct an SSES. Estimated to cost $3.66 million, additional pilot studies to reduce nitrogen loadings will focus on sludge age and biological centrate treatment. These studies are slated to be complete by March 1999.

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 interim upgrade comprising three phases 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 two-year construction schedule will incur costs of about $75 million (plus $7.5 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 are expected to incur capital costs of about $3.6 million and began during July 1996. Additional expenditures of $77.21 million would be needed to meet the goals of the CCMP.

Presently, reconstruction of three tide gates is under way at an estimated cost of $240,000.

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

Future Projects

Bids will be accepted during FY '98 for additional upgrades. Estimated bids of $60 million are expected for various reconstruction and modification projects throughout the plant.

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

Future Projects

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. A construction start-up has been rescheduled for early 1998. The work will include 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 re-estimated costs are $2.5 million.

The New York State 1997 Intended Use Plan (IUP) for the Clean Water State Revolving Fund for water pollution control projects was issued in October 1996. Municipal water quality protection projects must be included in the IUP to receive these low interest rate loans. Based upon the second quarter (May 1997) update of the IUP, the Town of Hempstead intends to implement the aforementioned facility improvements with an estimated loan of $2.056 million. In addition, estimated loans of $1.375 million will be used to modernize three pump stations. These projects will be ready for financing during May 1998 and May 1999, respectively.

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

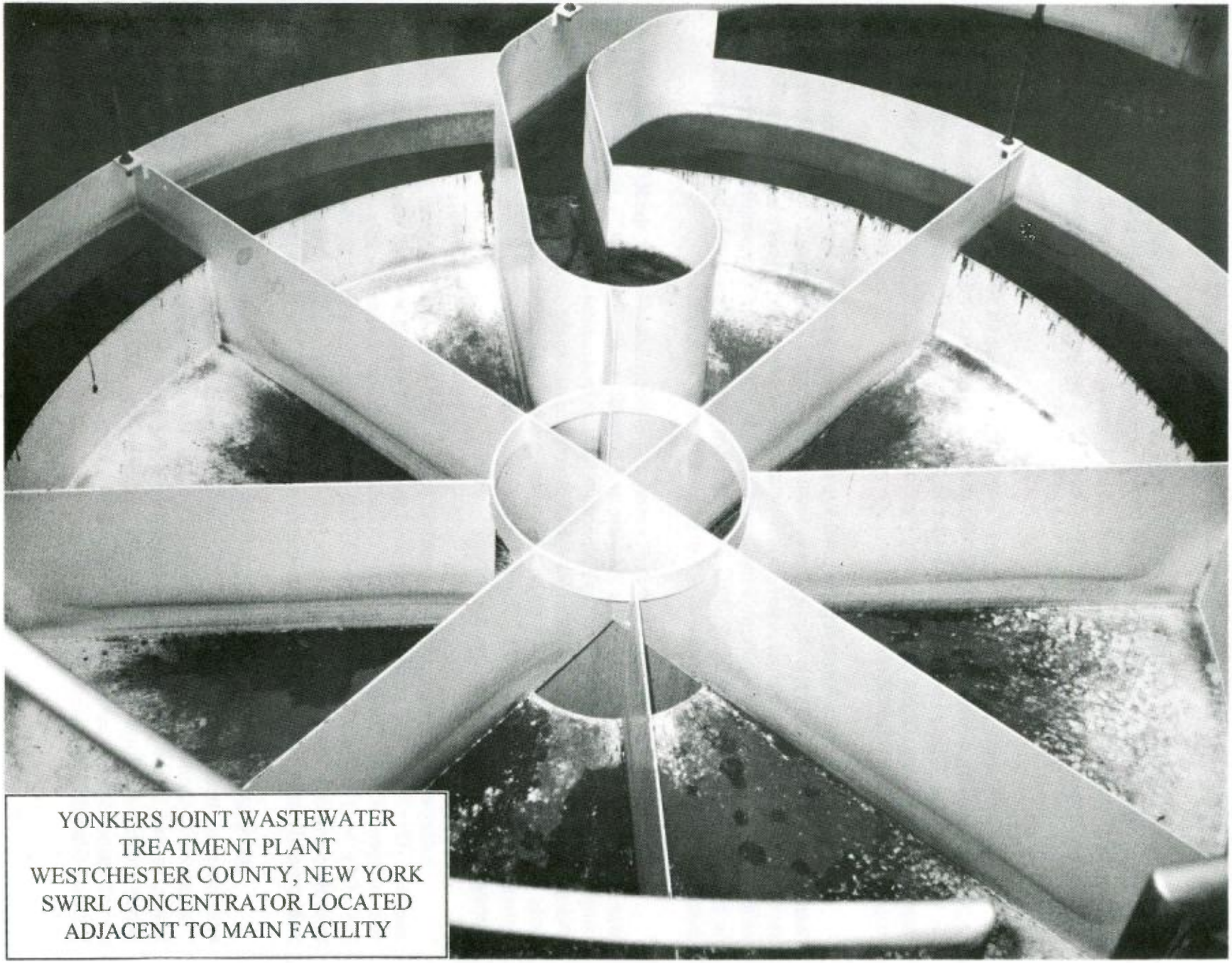
Projects in Progress

As part of the Interim Decision issued by the NYS DEC Administrative Law Judge in a 1991 adjudicatory hearing, an odor study (65% complete) is being conducted. An interim odor report was submitted to NYS DEC - Region 3 during January 1992; the final report is contingent upon increased flows to the plant.

Three upgrading projects are well under way. First, the aeration tankage is being replaced with fine pore diffusers at a cost of $3.5 million (70% complete). The second deals with the primary treatment odor controls. Estimated to cost $9.5 million and 70% complete, flat aluminum covers with mist scrubbers will be installed. Finally, Phase I of a plant automation project will fully automate the chorine residual controls and the primary scum collections. These projects are anticipated to be operational during December 1997, January 1998, and December 1997, respectively.

Future Projects

Re-estimated to cost $6 million, the dewatering facility will be expanded. Construction is scheduled to begin during September 1998 and will provide for additional truck loading bays, sludge cake hoppers, additional odor control and various equipment enhancements. Another project is for the rehabilitation of the dual-fuel engine and digester mixing equipment ($9.8 million). Additionally, plant processes will be automated (Phase II) as well as plant-wide data gathering capabilities ($3 million). These last projects are anticipated to begin during April 1999 and September 1999, respectively.



YONKERS JOINT WASTEWATER
TREATMENT PLANT
WESTCHESTER COUNTY, NEW YORK
SWIRL CONCENTRATOR LOCATED
ADJACENT TO MAIN FACILITY

EFFLUENT AND AMBIENT WATER QUALITY MONITORING

The Commission continued its monitoring programs of the District's effluent wastewater discharges and ambient waters this year. These programs remained at reduced levels due to budgetary constraints. 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.

For the seventh consecutive year, the Commission's research vessel, the R/V Natale Colosi, was used to conduct sampling necessary for documenting hypoxic (low dissolved oxygen) conditions in Western Long Island Sound and the Upper East River. This monitoring project, performed in support of the Long Island Sound Study, was conducted from July through mid-September in cooperation with several other agencies.

Concurrently with the aforementioned hypoxia sampling, a reactive survey (after rain events) was conducted in Little Neck Bay which is located in Western Long Island Sound. This 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 a request by NYS DEC Shellfisheries Bureau so they could have the necessary sampling data in order to initiate a shellfish harvesting relay program.

Shortly after completion of last year's sampling in Long Island Sound, the R/V Natale Colosi was moved to the New Jersey State Marina at Leonardo to facilitate ISC's participation 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 Raritan and Sandy Hook Bays. All samples were collected subsequent to storm events between January and May 1997. The Commission plans to conduct sampling in the bays again throughout the 1997-1998 winter and spring seasons.

A cooperative water quality assessment project with NYS DEC, Region 2, began this past summer. This NYS DEC project is being used to assess the overall health of nine lakes and ponds that are located in all five boroughs of New York City. Water column samples were collected by NYS DEC staff and then delivered to the ISC laboratory for the analysis of nutrients, heavy metals, microbacteriology, chlorophyll and other physical properties such as hardness and turbidity. Subsequently, this survey will be conducted three times per year for the next three years.

ISC's laboratory is certified by New York State and New Jersey and continues 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 conforms with all recommended procedures of 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 of the parameters specified in the facilities' discharge permits are performed in the ISC laboratory. 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 necessary, day-to-day analyses performed at the laboratory, the Commission and CSI have jointly submitted proposals for research projects whose results would benefit the environment and the citizens throughout the tri-state region.

SPECIAL INTENSIVE SURVEYS

1997 Ambient Water Quality Monitoring in Long Island Sound to Document Dissolved Oxygen Conditions

To address the continuing need for data on the hypoxic conditions in Long Island Sound, 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. To meet that need, the ISC participated in a cooperative sampling effort with other government agencies during the critical summer season. The weekly data collected by ISC for Western Long Island Sound and the Upper East River has greatly enhanced the existing data sets. The information will also be used to measure the effectiveness of management activities and programs implemented under the Comprehensive Conservation and Management Plan. The ISC has conducted similar surveys in Long Island Sound for the past six summers.

During an April 1997 meeting of the Long Island Sound Study Monitoring Work Group, all monitoring aspects — locations, parameters, methodologies, QA/QC, data sharing, etc. — were discussed. Stimulated by suggestions by the LISS Management Committee during an October 1996 meeting, an ISC proposal was accepted which would accomplish enhanced monitoring in selected near-shore embayments. The far eastern stations, C-1 and C-2, were dropped and five stations added in Little Neck and Manhasset Bays; the station coordinates were supplied by the Nassau County Department of Health. Due to budget cuts, the Nassau County Department of Health discontinued its ambient network of monitoring stations many years ago. By using established stations, data analyses for status and historic trends may be determined. During that meeting, 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 well as those collected by NYC DEP and CT DEP, were filtered, archived and frozen until shipped to an independent contract laboratory.

The survey was performed using the R/V Natale Colosi, the ISC's 25-foot diesel-powered research vessel. The sampling logistics were determined at a meeting of the Long Island Sound Study Monitoring Work Group, of which ISC is a member. A map and a listing of the station locations are on the following pages.

The 1997 survey consisted of 10 weekly sampling runs conducted from July through mid-September. Twenty-one stations were sampled weekly for temperature, salinity and dissolved oxygen. Temperature, salinity and dissolved oxygen (DO) 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 — one meter below the surface, at mid-depth, one meter above the bottom, 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. These were properly filtered, archived, and frozen at the ISC

INTERSTATE SANITATION COMMISSION

1997 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
8-405	3	40-47-33	73-45-49	Little Neck Bay
A3	25	40-50-30	73-45-18	Hewlett Point South of "29" Fl G 4 Sec
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 R "40" Fl G 4 Sec
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 "10A" Nun
DI2	6	40-53-40	73-46-00	Davids Island East of R "4" Nun
H-A3	3	40-55-24	73-43-12	Delancy Point South of C "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 "6" Bell
H-C1	11	40-53-12	73-41-42	Hempstead Harbor 2 nm East of Sands Point
H-D	7	40-50-42	73-39-36	Hempstead Harbor East of C "9"

laboratory. Subsequently, the filters were shipped overnight to a contract lab that also analyzes NYC DEP's and CT DEP's samples. 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 Connecticut DEP Bureau of Water Management; 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.

Dissolved oxygen levels are a measure of the ecological health of a waterbody. Just as people and animal life on land require atmospheric oxygen to breathe, fish and other aquatic life consume oxygen from the surrounding water. A dissolved oxygen concentration of 5 mg/l is considered to be protective of most aquatic life. According to ISC regulations, a "Class A" waterbody must have a minimum dissolved oxygen content of 5 mg/l.

The dissolved oxygen concentrations in surface waters for the 1997 survey are, for all intents and purposes, similar to those for the 1996 survey. The dissolved oxygen results are displayed in the pie chart entitled "Dissolved Oxygen Monitoring". For the categories of *Greater Than 5 mg/l*, *Between 3 and 5 mg/l*, and *Less Than 3 mg/l*, the 1997 survey results are 74.1%, 24.4%, and 1.6%, respectively. This compares nearly identically for the results of the 1996 survey which was 78.4%, 20.2%, and 1.4%, respectively. This means that in 1997, a total of 74.1% of the samples taken in surface waters met the ISC requirement for a "Class A" waterbody.

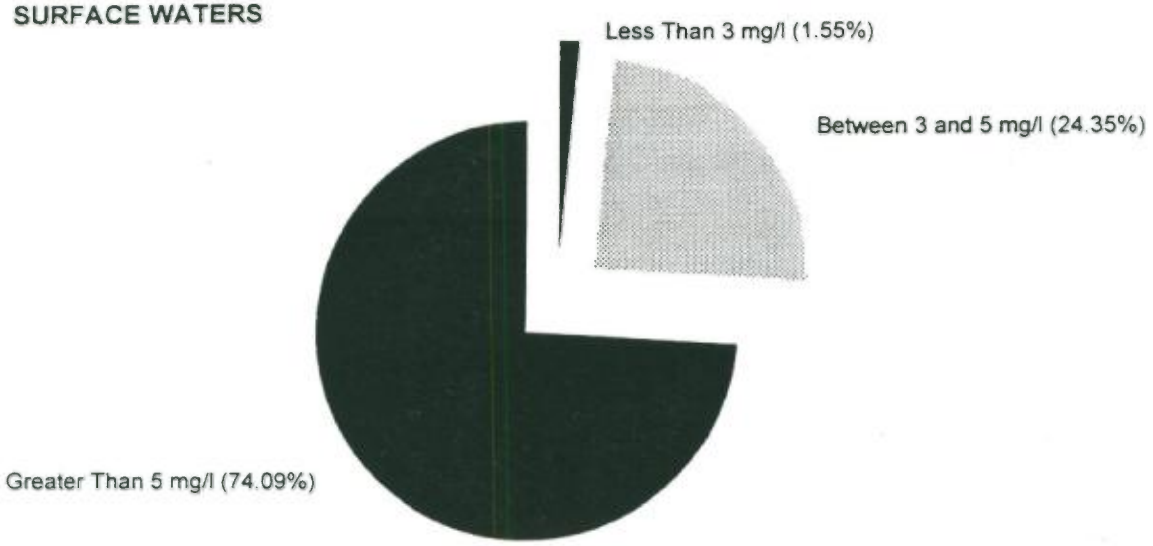
In contrast, there was a significant improvement in bottom water dissolved oxygen. The percentage of samples taken in bottom waters with dissolved oxygen greater than 5 mg/l more than doubled from the 1996 survey percentage of 21.6% to the 1997 survey percentage of 48.4%. In other words, in 1997 a total of 48.4% of the bottom water samples met the ISC requirement for a "Class A" waterbody. Most of that increase came as a result of a decrease in readings between 3 and 5 mg/l. For this category, the 1996 survey percentage was 60.6% and the 1997 survey percentage showed half that amount, registering 32.3%. For less than 3 mg/l, the 1996 and 1997 survey results were virtually identical, tallying 17.8% and 19.3%, respectively. There seems to be noticeable variability with no clear trend to bottom water dissolved oxygen from year to year. The percentage of bottom waters with dissolved oxygen greater than 5 mg/l for 1995 and 1994 were 48.8% and 34.7%, respectively. Although the increase from 1996 to 1997 may seem substantial at first look, other years' data indicate this variability may be normal or influenced greatly by many different activities (water pollution and municipal water pollution control programs, weather, changes in circulation patterns, proliferation or lack of algal blooms, etc.). In any case, there are certainly many complex mechanisms at work which influence dissolved oxygen in bottom waters which must be addressed.

Very low dissolved oxygen levels, generally 3 mg/l or less, produce a condition known as hypoxia. At these levels, very few types of fish can survive and the ecosystem can support only a few hardy species. Whereas there seems to be no definitive trend over the last couple of years, it seems hypoxic conditions in the bottom and surface waters remained the same this year as it did last

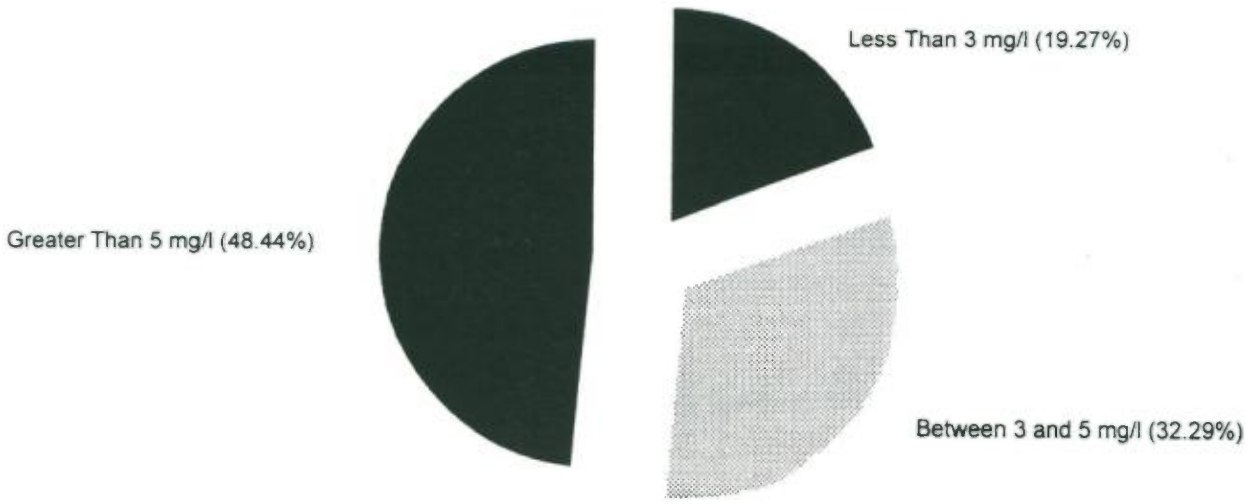
1997 LONG ISLAND SOUND STUDY

DISSOLVED OXYGEN MONITORING
SURFACE AND BOTTOM WATERS*

SURFACE WATERS



BOTTOM WATERS



* Surface waters shown as a percentage of 193 readings and bottom waters shown as a percentage of 192 readings. Readings were sampled from 21 stations.

year. As can be seen in the graph entitled "Dissolved Oxygen Monitoring", the lowest dissolved oxygen concentrations for 1997 came at the end of July and the beginning of August. Minimum bottom dissolved oxygen concentrations occurred at the end of August in 1996, which is later than that of 1997. Although the overall percentage for bottom dissolved oxygen in excess of 5 mg/l increased from last year, it can be seen in the graph for 1997 that for the vast majority of the period from July 28th to September 16th, bottom dissolved oxygen did not meet the 5 mg/l standard for ISC's "Class A" waters. In fact, July 28th data shows entirely hypoxic conditions, and August 11th data shows partially hypoxic conditions.

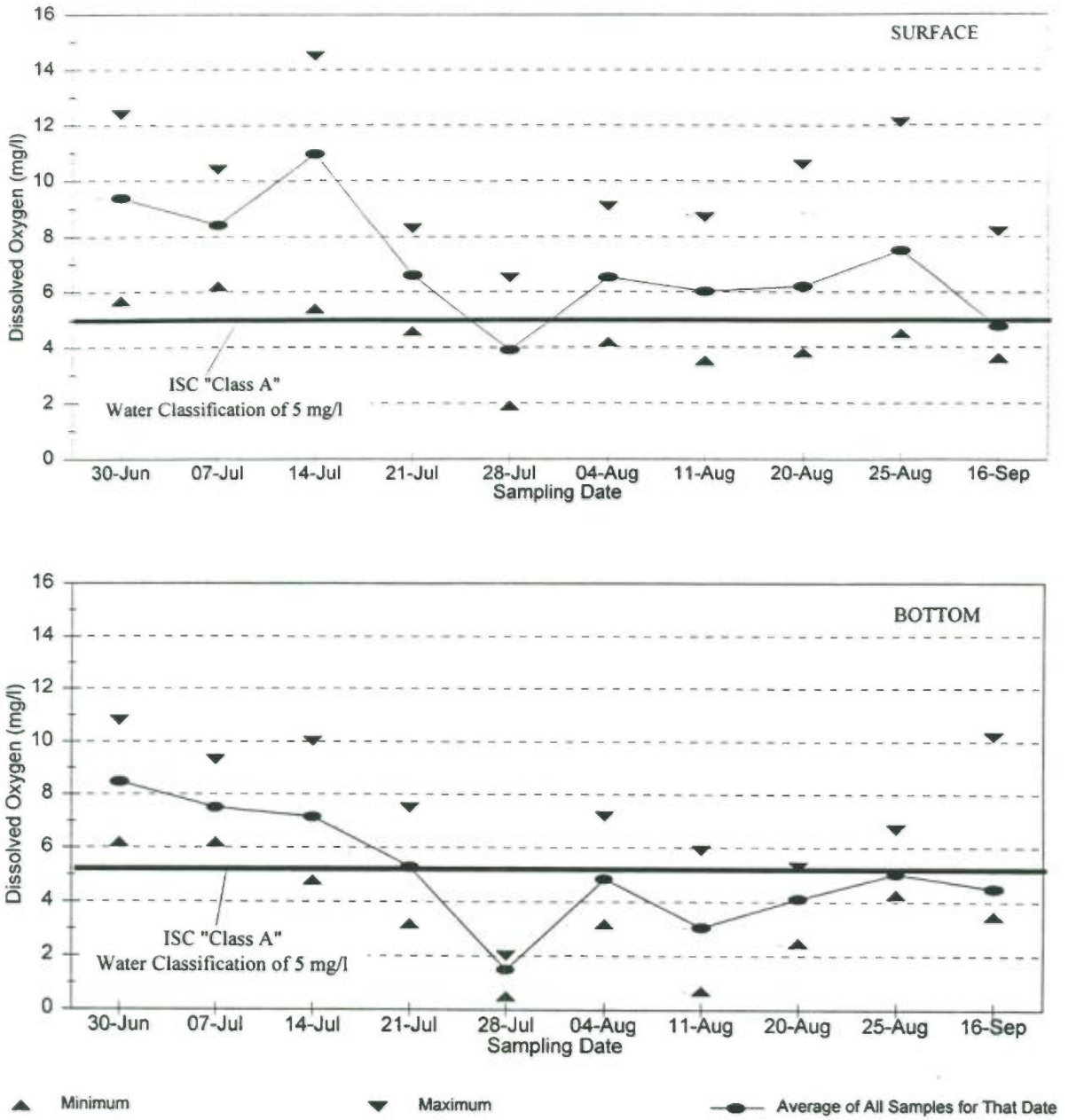
For the 1997 survey, as was true for the 1996 survey, surface dissolved oxygen levels were lowest in the western portions of the Sound and consistently increased as one moved to the east. This is illustrated in the bar graph entitled "Average Surface Dissolved Oxygen for Selected Mid-Sound Stations". The average surface dissolved oxygen concentration at Station A1, which is near the Whitestone Bridge, was 4.6 mg/l (compared to 3.8 mg/l for 1996). Stations C1 and C2 were not sampled this year, but Station B2 is placed in the graph for comparison due to its relative proximity to Stations C1 and C2. The 1997 average surface dissolved oxygen for Station B2 is 7.2 mg/l. In comparison to Station C2 from the 1996 survey, this represents an increase in the average surface dissolved oxygen concentration. Station C2 registered 5.9 mg/l average surface dissolved oxygen for the 1996 survey. Several possible explanations for this easterly increase in dissolved oxygen exist. Population density is higher in the far Western Sound, and declines to the east. Higher population density brings with it high loads of oxygen-demanding wastewater. Additionally, since aeration of open surface waters rely largely on the magnitude of the wind velocity which influences the ability to create turbulence and mix surface waters, the narrow embayments of the far Western Sound prevent higher wind velocities and allow less oxygen to be mixed into surface waters. As the Sound widens to the east allowing higher wind velocities, circulation and dissolved oxygen levels tend to improve.

This phenomena is also illustrated in the graph entitled "Open Water vs. Hempstead Harbor Average Surface Dissolved Oxygen". As one proceeds from the innermost parts of Hempstead Harbor to more open surface waters, an increase in dissolved oxygen is witnessed. Station H-D, deep inside Hempstead Harbor, has an average surface dissolved oxygen concentration of 6.5 mg/l. At Station H-C, at the mouth of Hempstead Harbor, the average surface dissolved oxygen concentration was 7.3 mg/l. The average surface DO concentration at Station H-C1, located in open waters about two miles north of Station H-C, was 7.8 mg/l. For the 1996 survey, Stations H-D and H-C showed lower readings in dissolved oxygen, being 3.7 and 5.9 mg/l, respectively. Station H-Cl was 7.6 mg/l for the open waters in the 1996 survey.

The average surface dissolved oxygen for Little Neck Bay and Manhasset Bay is displayed in the two graphs entitled "Open Water vs. Little Neck Bay" and "Open Water vs. Manhasset Bay". Note that in these two embayments dissolved oxygen increases further into these embayments, which is the opposite effect for Hempstead Harbor and wind velocity and direction certainly play a part in this phenomena. Also, these two embayments are physically over twice the width of Hempstead Harbor. Furthermore, these two embayments are much shallower, thereby removing the possibility

1997 LONG ISLAND SOUND STUDY
DISSOLVED OXYGEN MONITORING

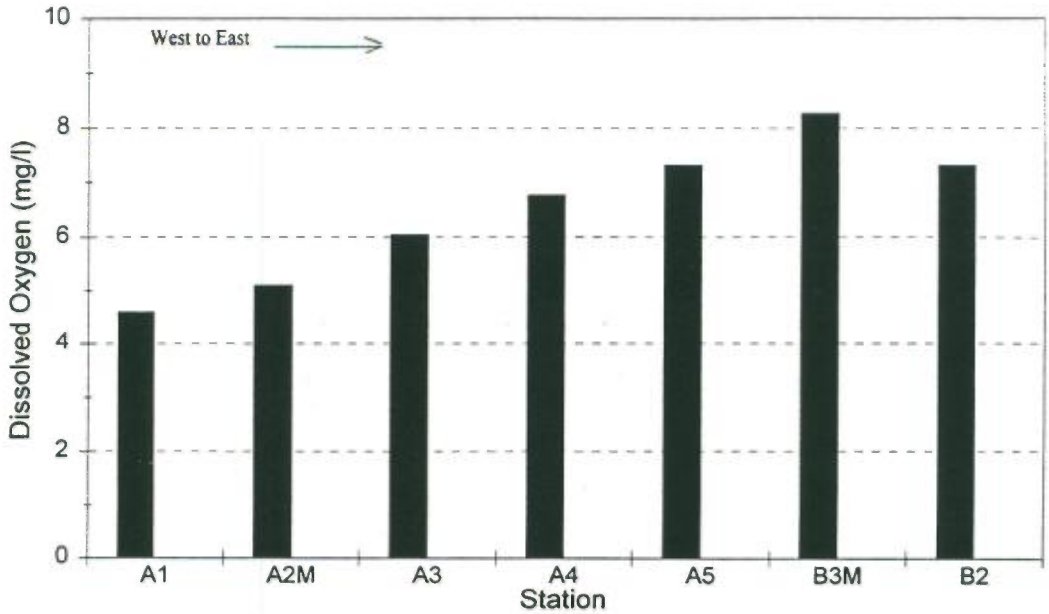
SURFACE AND BOTTOM WATERS:
AVERAGE AND RANGE OF ALL 21 ISC STATIONS*



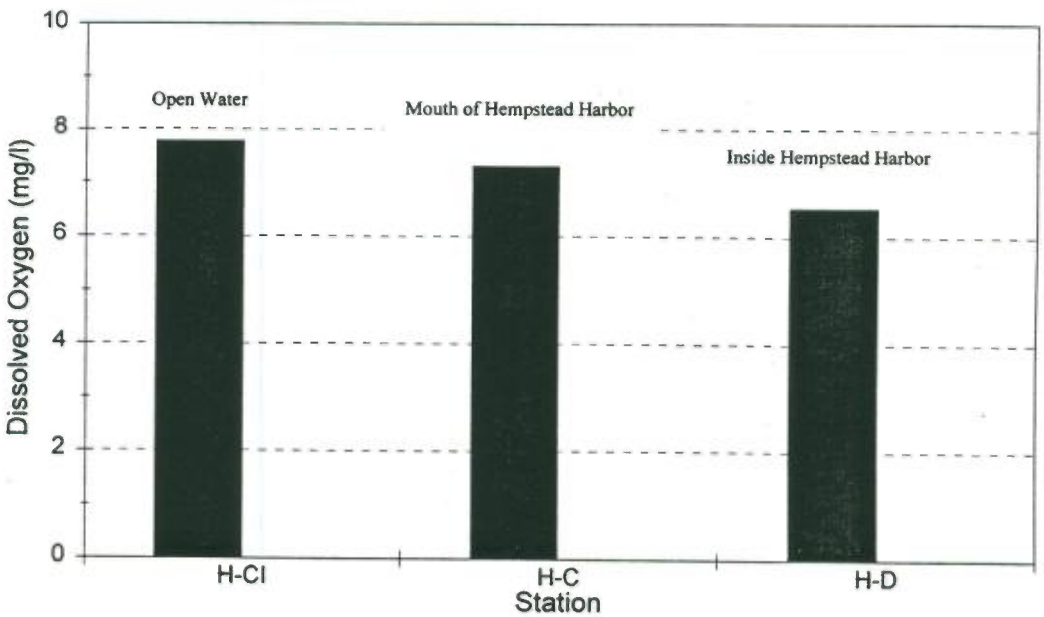
* Only 5 stations were sampled on 25 August 1997.

1997 LONG ISLAND SOUND STUDY

AVERAGE SURFACE DISSOLVED OXYGEN FOR SELECTED MID-SOUND STATIONS

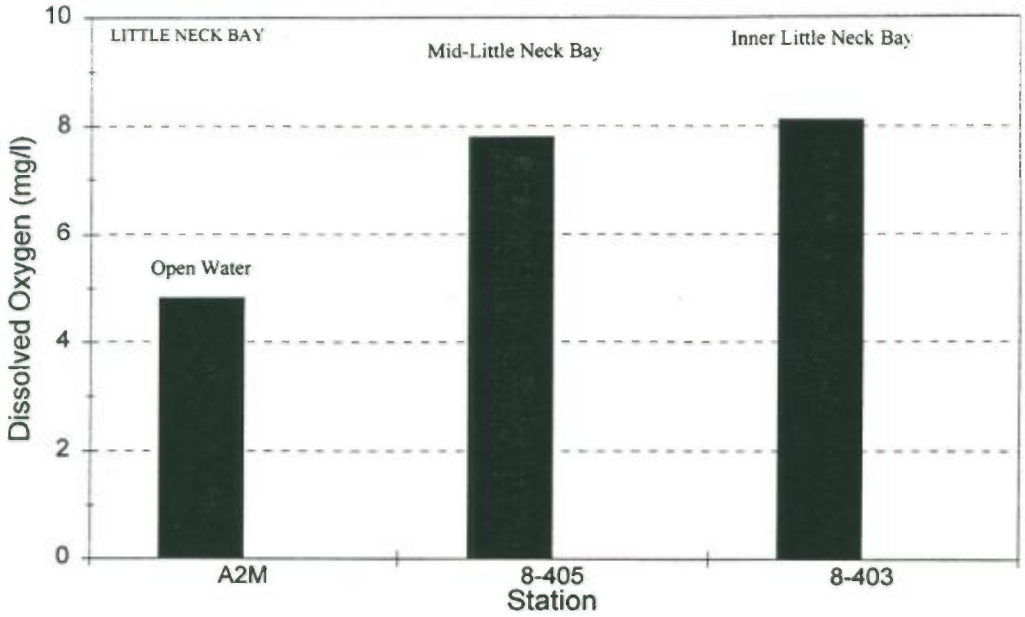


OPEN WATER VS. HEMPSTEAD HARBOR AVERAGE SURFACE DISSOLVED OXYGEN

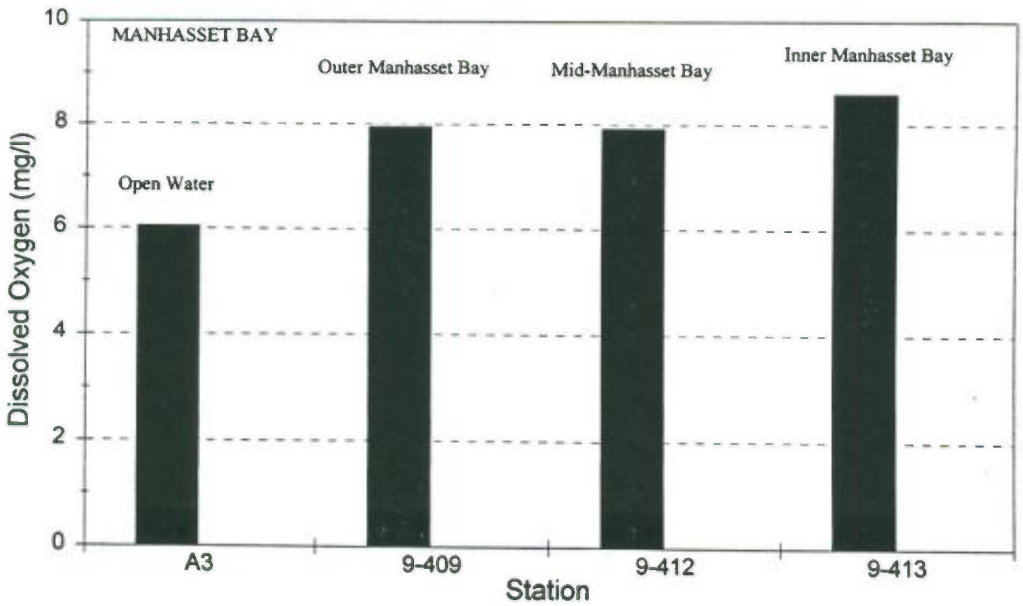


1997 LONG ISLAND SOUND STUDY

OPEN WATER VS. LITTLE NECK BAY
AVERAGE SURFACE DISSOLVED OXYGEN



OPEN WATER VS. MANHASSET BAY
AVERAGE SURFACE DISSOLVED OXYGEN



of deeper mixing of dissolved oxygen. Another factor may be the proliferation of algae in these embayments. The ISC sampled for chlorophyll a in five of the ten runs in the 1997 survey. Higher chlorophyll a is associated with greater proliferation of algae, which in turn produces greater dissolved oxygen levels. The data shows that the stations sampled within Little Neck Bay and Manhasset Bay contain much higher chlorophyll a levels than those of Hempstead Harbor. Therefore, dissolved oxygen in surface waters can be affected by a variety of mechanisms, especially in small embayments with anthropogenic sources of nutrients, treated wastewater, and storm runoff.

The Long Island Sound Study, which released its Comprehensive Conservation Management Plan in 1994, has identified human activities which may contribute to low levels of DO. Primarily, the Sound is impacted by nitrogen loadings from point and non-point discharges. This excess nitrogen acts like a fertilizer, spurring the temporary growth of algae. When the algae dies, it settles to the bottom of the waterbody, where it is degraded by oxygen-consuming bacteria.

The CCMP, signed by the Governors of both Connecticut and New York, as well as the Administrator of US EPA, seeks to remedy this situation by reducing nitrogen discharges from sewage treatment plants and other point and non-point sources. On October 31, 1996, the two governors held a "Re-Commitment Ceremony" to reiterate their commitment to the Long Island Sound Agreement.

A recent study commissioned by the Management Committee of the Long Island Sound Study concluded that a decrease in dissolved oxygen levels in the Western Sound during the 1980s took place despite no increase in discharges of nitrogen into the Sound. Clearly, more research is needed to achieve a better understanding of the hypoxic conditions in Long Island Sound.

1996-1997 Microbiological Surveys in the Shellfish Harvesting Waters of Raritan and Sandy Hook Bays

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 second consecutive year to assist in sample collection in Raritan and Sandy Hook Bays during the 1996-1997 winter and spring seasons.

In accordance with criteria established by the US Food and Drug Administration's National Shellfish Sanitation Program, sampling runs were planned in order to collect the data needed to assess the microbiological quality of the shellfish waters. The surveys were initiated by storm events with an intensity of at least 0.2 inch of rain. A window of 72 hours subsequent to the rain gave ample time to document the effects of the runoff. All samples were collected from surface waters at 36 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 laboratory located in Edison, New Jersey, for analysis of fecal and total coliform bacteria. Due to the laboratory workload, during one survey run the samples were transported by NJ DEP personnel for analysis at the BMWCA laboratory located at Leeds Point, New Jersey.

During late October 1996, the R/V Natale Colosi was moved to and berthed at the Leonardo State Marina which is operated by the NJ DEP, Division of Parks and Forestry, State Park Service. From November 1996 until mid-April 1997, three survey runs were completed. From mid-April until early June, the R/V Natale Colosi was berthed at the Monmouth Cove Marina and during that time period, four additional survey runs were conducted.

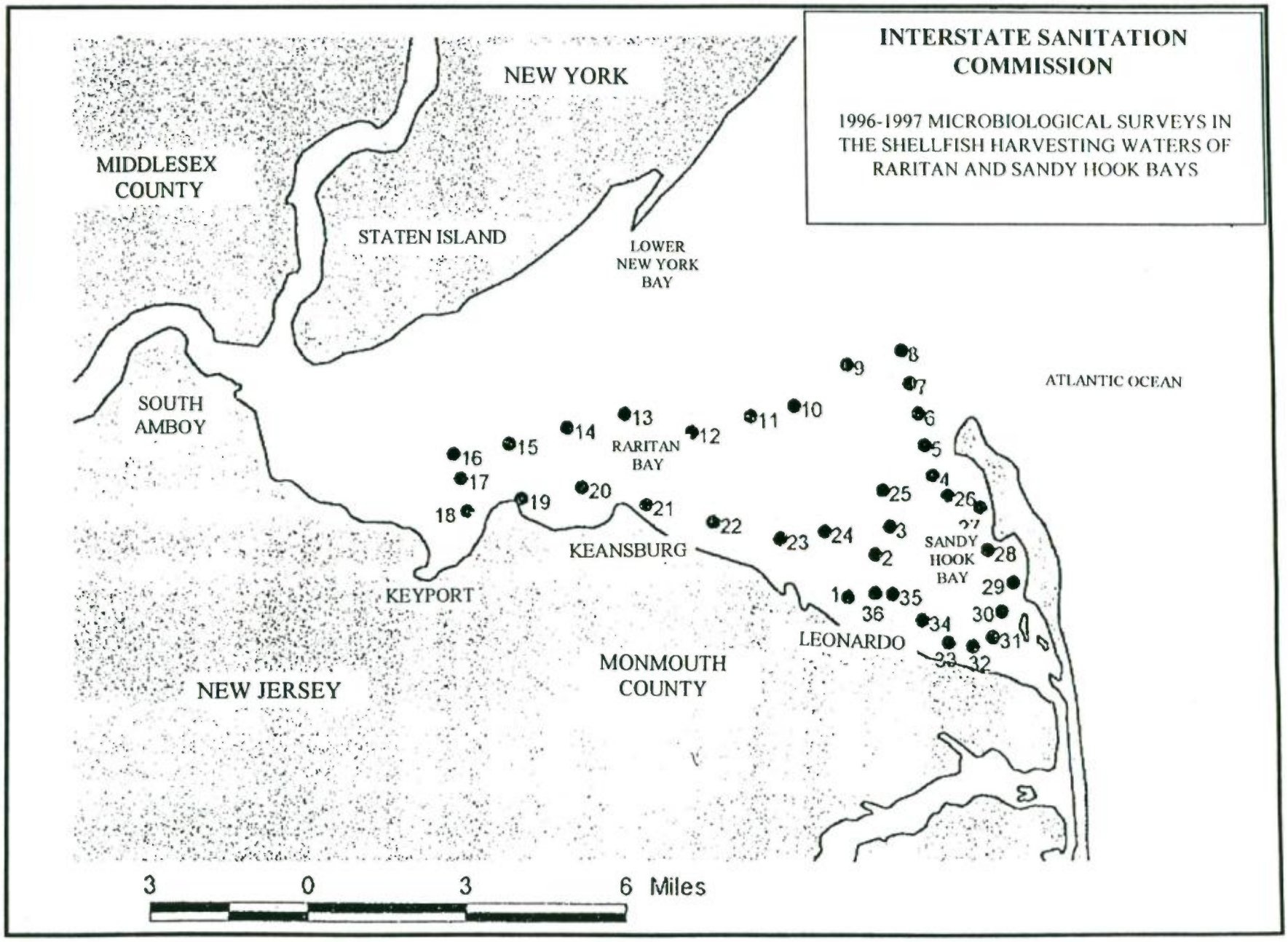
All sample collection, storage and delivery to the US EPA Edison laboratory and the NJ DEP Leeds Point laboratory adhered to chain of custody procedures and followed standard operating methods as outlined in the NJ DEP Field Sampling Procedures Manual. The Commission, at the request of BMWCA, will again conduct this survey over the 1997-1998 winter and spring seasons.

1997 Water Quality Monitoring in New York Harbor Waters in Response to a Treatment Reduction at the Newtown Creek WPCP

In late March, the NYC DEP notified NYS DEC, US EPA and ISC that necessary header and sludge return pump repairs were needed at the Newtown Creek WPCP whose outfall is located in the lower reach of the East River. This facility has an average monthly discharge of over 278 MGD. The Commission initiated a water quality survey to document conditions due to the treatment reduction in the waters of the Lower East River, Upper New York Bay, Lower New York Bay and Sandy Hook Bay. During the period of reduced treatment (April 16 to April 28), the effluent received primary treatment with disinfection. Refer to the map and list of station descriptions on the following pages.

The survey consisted of four boat runs that were conducted prior to, during and subsequent to the repair work at the plant. In situ surface measurements of temperature and dissolved oxygen were collected along with grab samples for analysis of fecal and total coliform bacteria at 10 stations. Additional observations were made including percent cloud cover, ambient weather conditions, tidal phase,sea state and the presence of floatables.

The dissolved oxygen levels ranging from 5.6 mg/l to 15 mg/l were always above the ISC water classifications for Class A and B-1 waters, and consistent with late spring conditions: cool waters (9^0C to 15^0C), high winds and cool ambient temperatures. Fecal and total coliform bacteria were high at the vicinity of the Newtown Creek outfall (station #1) and gradually dissipated the further south from this station until very low bacteria densities were observed at station #10 in Sandy Hook Bay.


INTERSTATE SANITATION COMMISSION
1996-1997 MICROBIOLOGICAL SURVEYS IN THE SHELLFISH HARVESTING WATERS OF RARITAN AND SANDY HOOK BAYS
NEW YORK
MIDDLESEX COUNTY
STATEN ISLAND
LOWER NEW YORK BAY
ATLANTIC OCEAN
SOUTH AMBOY
RARITAN BAY
KEANSBURG
KEYPORT
SANDY HOOK BAY
LEONARDO
MONMOUTH COUNTY
NEW JERSEY
1
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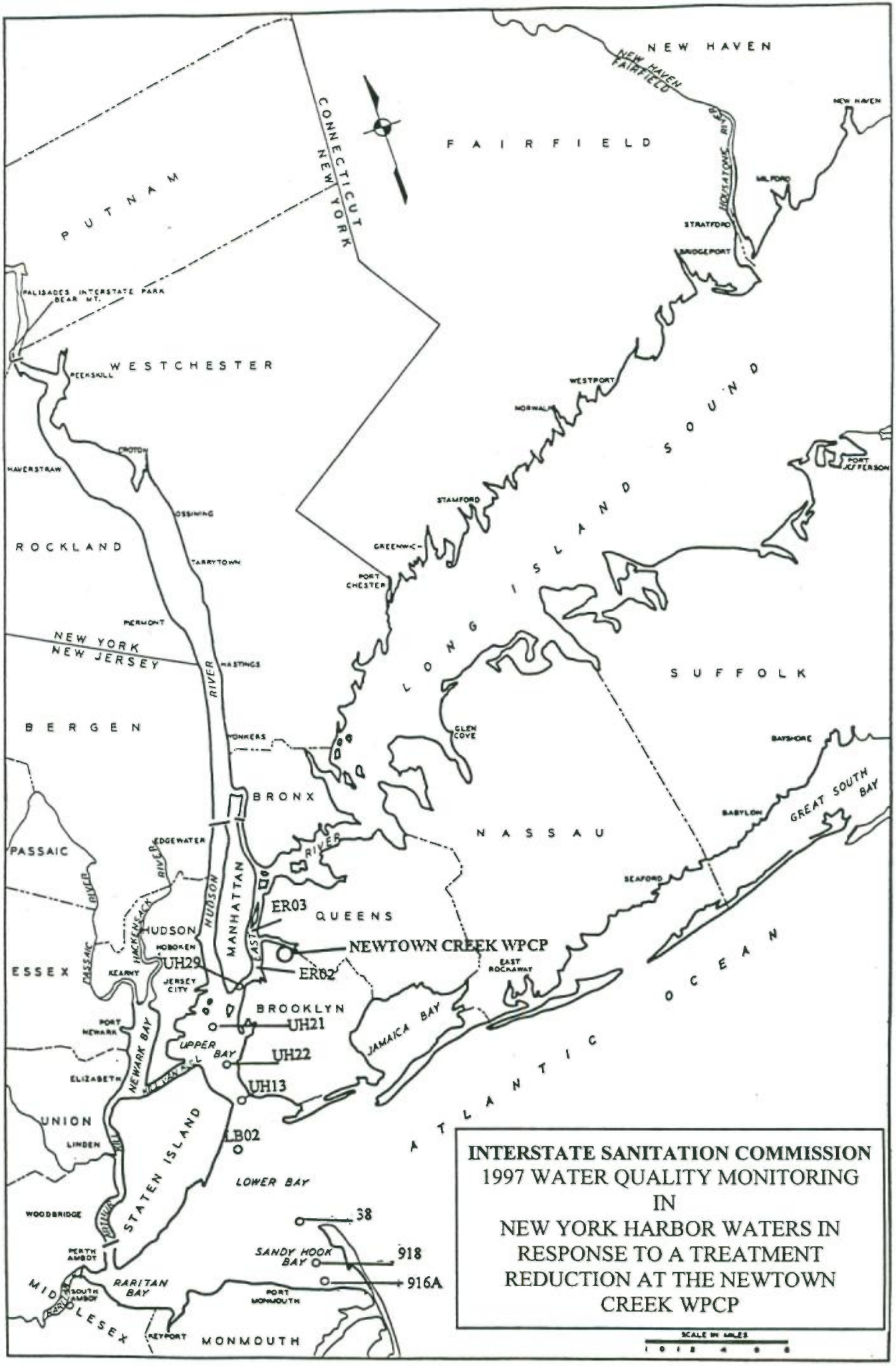
INTERSTATE SANITATION COMMISSION
1996 - 1997 SAMPLING STATION LOCATIONS FOR THE MICROBIOLOGICAL SURVEYS IN THE SHELLFISH HARVESTING WATERS OF RARITAN AND SANDY HOOK BAYS

SAMPLE NUMBER	STATION NUMBER	LATITUDE (DD MM SS)	LONGITUDE (DD MM SS)	DESCRIPTION
1	916A	40 25 49	74 03 21	Leonardo State Marina
2	916C	40 26 37	74 02 48	White/orange "C" Can
3	916D	40 27 04	74 02 29	~ 800 yards East of Earle NWS
4	93A	40 27 55	74 01 33	~ 800 yards SSW of Sandy Hook Point
5	78	40 28 25	74 01 43	~ 800 yards NNW of Sandy Hook Point
6	73	40 28 56	74 01 50	~ 0.9 nm NNW of Sandy Hook Point
7	43	40 29 26	74 02 00	~ 1.3 nm NNW of Sandy Hook Point
8	38	40 29 58	74 02 10	~ 1.85 nm NNW of Sandy Hook Point
9	36	40 29 45	74 03 21	~ 2.2 nm NW of Sandy Hook Point
10	47	40 29 05	74 04 31	~ 2.7 nm NW of Sandy Hook Point
11	49A	40 28 55	74 05 27	~ 2.65 nm N of Port Monmouth
12	50	40 28 40	74 06 44	~ 1.7 nm N of Ideal Beach
13	29A	40 28 58	74 08 11	~ 1.2 nm N of Point Comfort
14	28	40 28 45	74 09 25	NW of Point Comfort
15	26A	40 28 30	74 10 40	~ 1.0 nm N of Conaskonk Point
16	24A	40 28 20	74 11 52	Keyport Harbor
17	56	40 27 56	74 11 43	Keyport Harbor
18	61A	40 27 23	74 11 35	Keyport Harbor
19	62	40 27 35	74 10 25	~ 1.0 nm N of Conaskonk Point
20	63B	40 27 46	74 09 07	West of Point Comfort
21	86A	40 27 28	74 07 44	East of Point Comfort
22	88A	40 27 10	74 06 17	Ideal Beach
23	97B	40 26 53	74 04 51	~ 0.9 nm N of Port Monmouth
24	97A	40 27 00	74 03 53	White/orange "D" Can
25	918	40 27 41	74 02 38	~ 0.6 nm NNE of Earle NWS (east pier head)
26	914D	40 27 35	74 01 14	~ 0.7 nm W of Sandy Hook (flag pole)
27	910E	40 27 28	74 00 27	~ 0.2 nm SW of Sandy Hook (flag pole)
28	908C	40 26 40	74 00 23	Horseshoe Cove
29	906C	40 26 08	73 59 51	Horseshoe Cove
30	906B	40 25 40	74 00 06	Spermacetti Cove
31	906A	40 25 15	74 00 18	~ 0.8 nm E of Atlantic Highlands Day marker
32	907	40 25 06	74 00 44	~ 0.4 nm E of Atlantic Highlands Day marker
33	908	40 25 10	74 01 15	Atlantic Highlands Day marker
34	910A	40 25 32	74 01 48	~ 0.3 nm N of Atlantic Highlands Day marker
35	912	40 25 58	74 02 26	~ 0.9 nm N of Atlantic Highlands Day marker
36	914	40 25 59	74 02 48	~ 0.9 nm N of Leonardo


NEW HAVEN
NEW HAVEN
FAIRFIELD
FAIRFIELD
HOUSATONIC RIVER
NEW HAVEN
MILFORD
STRATFORD
BRIDGEPORT
PUTNAM
CONNECTICUT
NEW YORK
PALISADES INTERSTATE PARK
BEAR MT.
WESTCHESTER
PEEKSKILL
WESTPORT
NORWALK
LONG ISLAND SOUND
PORT JEFFERSON
HAVERSTRAW
CROTON
STAMFORD
OSSINING
ROCKLAND
GREENWICH
TARRYTOWN
PORT CHESTER
PIERMONT
NEW YORK
NEW JERSEY
HASTINGS
RIVER
SUFFOLK
BERGEN
YONKERS
GLEN COVE
BAYSHORE
BRONX
BABYLON
GREAT SOUTH BAY
NASSAU
PASSAIC
EDGEWATER
RIVER
HACKENSACK RIVER
HUDSON
MANHATTAN
EAST RIVER
ER03
QUEENS
HUDSON
HOBOKEN
NEWTOWN CREEK WPCP
UH29
ER02
ESSEX
PASSAIC RIVER
KEARNY
JERSEY CITY
EAST ROCKAWAY
BROOKLYN
UH21
PORT NEWARK
NEWARK BAY
UPPER BAY
UH22
JAMAICA BAY
ELIZABETH
UH13
UNION
LINDEN
LB02
STATEN ISLAND
LOWER BAY
WOODBRIDGE
38
SANDY HOOK BAY
918
PERTH AMBOY
916A
RARITAN BAY
SOUTH AMBOY
PORT MONMOUTH
MIDDLESEX
KEYPORT
MONMOUTH
ATLANTIC OCEAN
SEAFORD
INTERSTATE SANITATION COMMISSION
1997 WATER QUALITY MONITORING
IN
NEW YORK HARBOR WATERS IN
RESPONSE TO A TREATMENT
REDUCTION AT THE NEWTOWN
CREEK WPCP
SCALE IN MILES
1 0 1 2 4 6 8

INTERSTATE SANITATION COMMISSION

1997 SAMPLING STATION LOCATIONS FOR THE WATER QUALITY MONITORING IN NEW YORK HARBOR WATERS IN RESPONSE TO A TREATMENT REDUCTION AT THE NEWTOWN CREEK WPCP

SAMPLE No.	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1	ER03	40-44-05	73-58-05	East River-Mid channel, north of Newtown Creek
2	ER02	40-42-48	73-58-20	East River-Mid channel at Williamsburg Bridge
3	UH29	40-42-17	73-59-54	East River-Mid channel between Pier #11(Manhattan) and Pier #1(Brooklyn)
4	UH21	40-40-23	74-02-28	UNYB-Mid channel, west of Fl R Bell #28
5	UH22	40-38-25	74-02-50	UNYB-Bay Ridge Channel, north of Fl G Bell #3
6	UH13	40-36-26	74-02-45	Midspan Verrazano Narrows Bridge
7	LB02	40-33-45	74-04-20	~0.75 nm SSE from Midland Beach, SI, NY
8	38	40-29-58	74-03-21	~1.85 nm NNW of Sandy Hook Point
9	918	40-27-41	74-02-38	~0.6 nm NNE of Earle NWS (east pier head)
10	916A	40-25-49	74-03-21	Leonardo State Marina

Newtown Creek Outfall - East River 40-43-54 73-57-57

1997 Microbiological Surveys in the New York State Shellfish Harvesting Waters of Raritan Bay

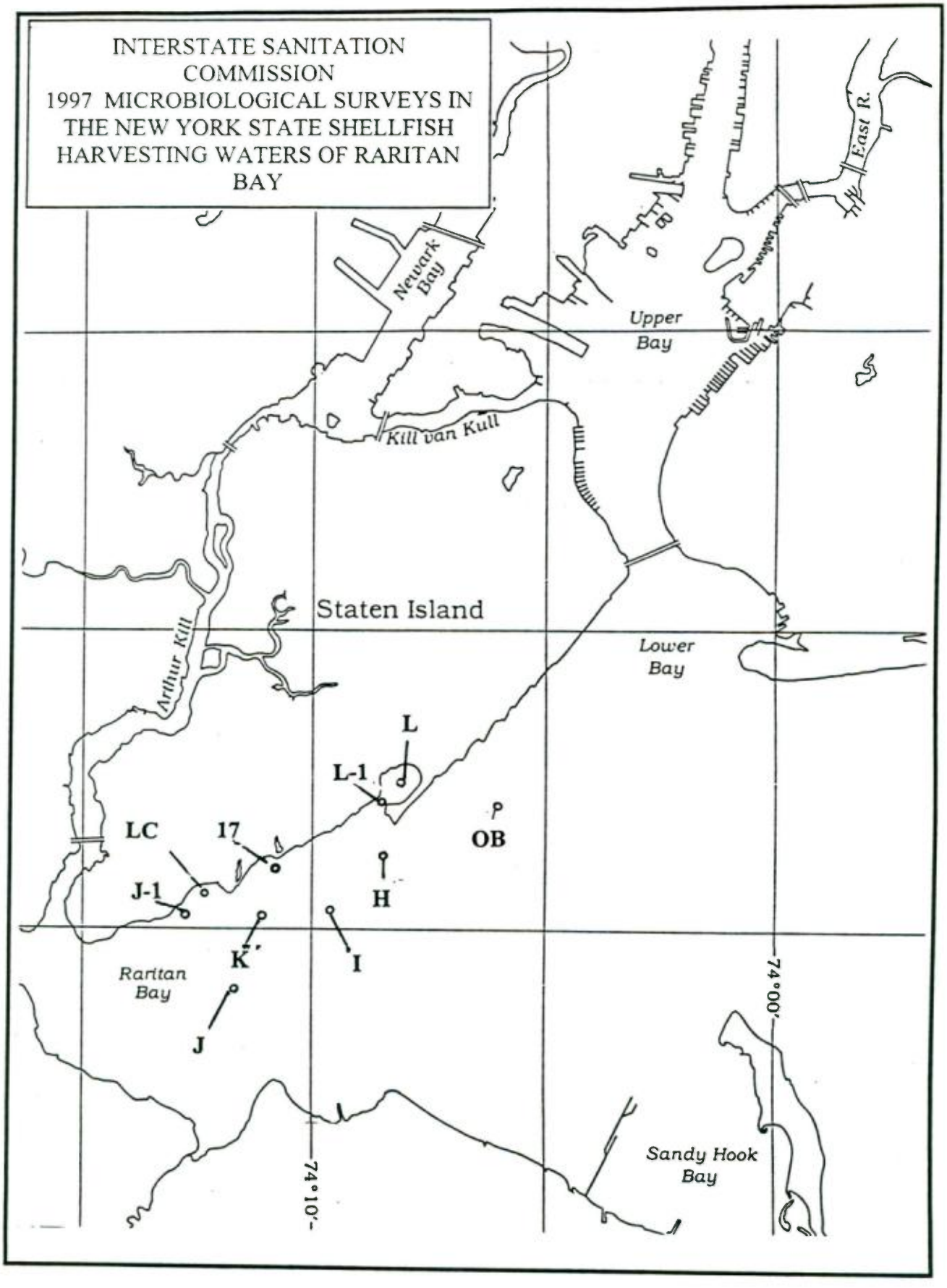
This sampling was conducted at the request of the Staten Island Borough President's Office to collect fecal and total coliform data for comparison to shellfish criteria developed by the US FDA. The request was made of ISC after an inquiry was received regarding the possibility of using certain waters for direct harvesting of shellfish. The map on the following page shows the sampling network which consists of 13 stations located off the coast of Staten Island, New York. The station locations were supplied to the Commission by NYS DEC during similar surveys conducted by the Commission in 1988 and 1990. The Commission notified the New York State Department of Environmental Conservation's Division of Marine Resources, Bureau of Shellfisheries, in order to apprise that agency of this monitoring endeavor.

Samples for fecal and total coliform determinations were taken at all stations. Two survey runs were completed during the period January 20, 1997 through March 31, 1997. The runs were conducted under worst case conditions — during ebb tide (sampling to begin approximately 2 hours after high tide at Sandy Hook, New Jersey) and after a storm event recording at least 0.25 inches of rainfall as measured at Central Park, New York. The water samples were collected three-feet below the surface of the water. The preliminary data showed that the waters did not meet the criteria for direct harvesting; thus, a complete intensive survey was not warranted at this time.

Water Quality Survey of Clove Lake Park

Clove Lake Park, located in northern Staten Island, New York, consists of 195 lushly landscaped acres with three shallow, interconnected lakes — Brooks, Richmond (Martlings) and Clove. On July 27th, a break in a sewer line adjacent to Clove Lake Park resulted in a raw sewage discharge of 0.81 MG into Richmond (Martlings) Pond. This incident was discovered when NYS DEC notified the NYC Department of Parks and Recreation (DPR) about dead fish floating in Martlings Lake — approximately 2,200 individuals representing three species. It is suspected that this sewage loading was sufficient to cause severe hypoxia. The NYC DEP Bureau of Water and Sewer Operations repaired the break on July 27th.

At the request of NYS DEC, Region 2, ISC and state staff conducted a water quality survey of all three lakes on July 29th. In situ surface measurements were made for dissolved oxygen, pH, and temperature. Water quality samples were collected for subsequent analysis of BOD at the ISC laboratory. All monitoring was conducted from a rowboat supplied by the NYC DPR. Immediate conditions of the waters were typical for mid-summer conditions: bright sun; minimal storms; high ambient (68^0-81^0 F) and water (68^0-79.7^0 F) temperatures; and light, variable winds (<3kts). The average DO in Richmond Pond was 3.2 mg/l which is below the NYS freshwater DO requirement for game fish survival of 4 mg/l.


INTERSTATE SANITATION COMMISSION
1997 MICROBIOLOGICAL SURVEYS IN THE NEW YORK STATE SHELLFISH HARVESTING WATERS OF RARITAN BAY
Newark Bay
Upper Bay
East R.
Kill van Kull
Staten Island
Arthur Kill
Lower Bay
L
L-1
LC
17
OB
J-1
H
K
I
Raritan Bay
J
74°00'
74°10'
Sandy Hook Bay

INTERSTATE SANITATION COMMISSION

1997 SAMPLING STATION LOCATIONS FOR THE MICROBIOLOGICAL SURVEYS IN THE NEW YORK STATE SHELLFISH WATERS OF RARITAN BAY

SAMPLE No.	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1	J-1	40-30-15	74-12-30	West of Qk Fl G " 35"
2	17	40-30-58	74-10-37	~ 0.2 nm east of Huguenot Beach
3	H	40-30-35	74-09-13	East of R "4" nun
4	I	40-30-18	74-09-43	East of daymarker "20" Fl 4 sec
5	J	40-29-27	74-11-28	~ 1.3 nm east of Red Bank
6	K	40-30-23	74-10-20	South of R "26" Fl R bell
7	L	40-32-29	74-08-25	Great Kills Harbor, south of R "12" nun
8	L-1	40-32-11	74-08-31	Great Kills Harbor, south of R "10" nun
9	OB	40-32-10	74-06-05	~1.0 nm south east of Oakwood Beach
10	LC	40-30-33	74-12-02	~ 200 yards south of Lemon Creek

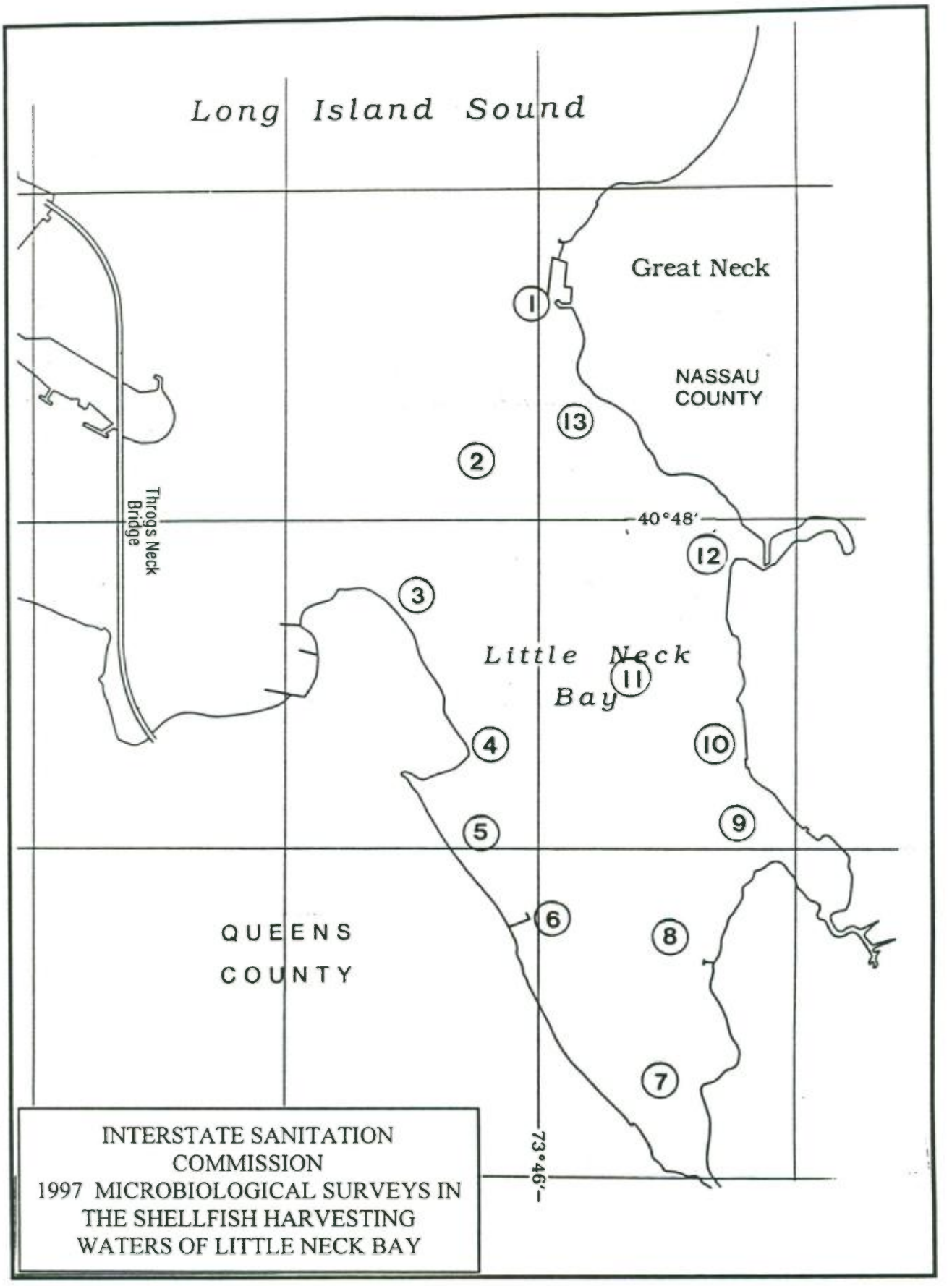
1997 Microbiological Surveys in the Shellfish Harvesting Waters of Little Neck Bay

This sampling is being conducted at the request of the New York State Department of Environmental Conservation to collect fecal and total coliform data in accordance with sampling criteria for shellfish waters developed by the US FDA. Under the auspices of the National Shellfish Sanitation Program (NSSP), the US FDA and the states combine efforts to preserve and manage natural resources for beneficial uses. It is evident that shellfish represent a valuable natural food resource; that the cultivation, harvesting, and marketing of this food resource are valuable components in the financial bases of coastal communities; that state, federal, and interstate programs are necessary to permit the safe use of the resource; and that the transmission of disease by shellfish is preventable. The beneficial uses of the estuaries is in the best public interest, and sanitary controls and monitoring are necessary to ensure safe use. As per the NYS DEC Bureau of Shellfisheries, an up-to-date sanitary survey consisting of a pollution source inventory and shoreline survey were completed for Little Neck Bay which is located in the western portion of Long Island Sound. Due to resource limitations, the ISC was asked to conduct the ambient water quality monitoring for total and fecal coliform determinations as required by the NSSP.

A map and list of station descriptions on the following pages show the sampling network which consists of 13 stations. 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; the Nassau County Department of Health; and PROBE, a local volunteer monitoring group.

Water quality samples for fecal and total coliform bacteria determinations were taken at all stations. During the period June through November 5, 1997, 10 reactive survey runs were conducted. That is, 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. Daily local weather forecasts and marine/offshore forecasts broadcast by the National Weather Service Forecast Office were monitored daily for weather and tidal information as well as the previous 24-hour period for rain data. The Commission library maintains up-to-date meteorological records for Central Park, New York as well as four additional monitoring stations in order to be aware of localized storms affecting the study area and as verification of the daily broadcasts. 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 (MPN) 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. The results of all analyses were summarized and forwarded to the



INTERSTATE SANITATION COMMISSION
1997 MICROBIOLOGICAL SURVEYS IN THE SHELLFISH HARVESTING WATERS OF LITTLE NECK BAY

INTERSTATE SANITATION COMMISSION

1997 SAMPLING STATION LOCATIONS FOR THE MICROBIOLOGICAL SURVEYS IN THE SHELLFISH HARVESTING WATERS OF LITTLE NECK BAY

SAMPLE No.	STATION	LOCATION		DESCRIPTION
		LATITUDE NORTH D M S	LONGITUDE WEST D M S	
1	1	40-48-59	73-46-30	Kings Point
2	2	40-48-37	73-46-37	Little Neck Bay - ~0.5 nm west of Kings Point
3	3	40-48-10	73-46-45	Willets Point - nun "2"
4	4	40-47-34	73-46-19	Willets Point - ~0.5 nm south of nun "2"
5	5	40-47-19	73-46-14	~0.5 nm north of Bayside Marina
6	6	40-46-59	73-46-08	Bayside Marina - head of pier assembly
7	7	40-46-31	73-45-49	Between nun "C" and Nun "D"
8	8	40-46-49	73-45-39	West of nun "A"
9	9	40-47-11	73-45-34	Nun "A"
10	10	40-47-26	73-45-31	~1.0 nm north of nun "A"
11	11	40-47-41	73-45-46	South of Udalls Mill Pond
12	12	40-47-59	73-45-41	Udall's Mill Pond
13	13	40-48-19	73-45-58	~0.5 nm southwest of Kings Point pier assembly

appropriate parties. The Commission plans to return to these waters during the 1998 spring season in order to continue this survey.

1997 BOAT INSPECTION TRIP

This past summer, after a seven-year hiatus, the Commission re-instituted its annual boat inspection trip. 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 1997 boat inspection trip was held on August 6th and covered the following a portion of the Interstate Sanitation District: Lower New York Bay, Raritan Bay, Arthur Kill/Kill Van Kull, Upper New York Bay, and the lower Hudson and East Rivers. The map on the following page shows the six-hour route which was traversed, covering nearly 60 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.

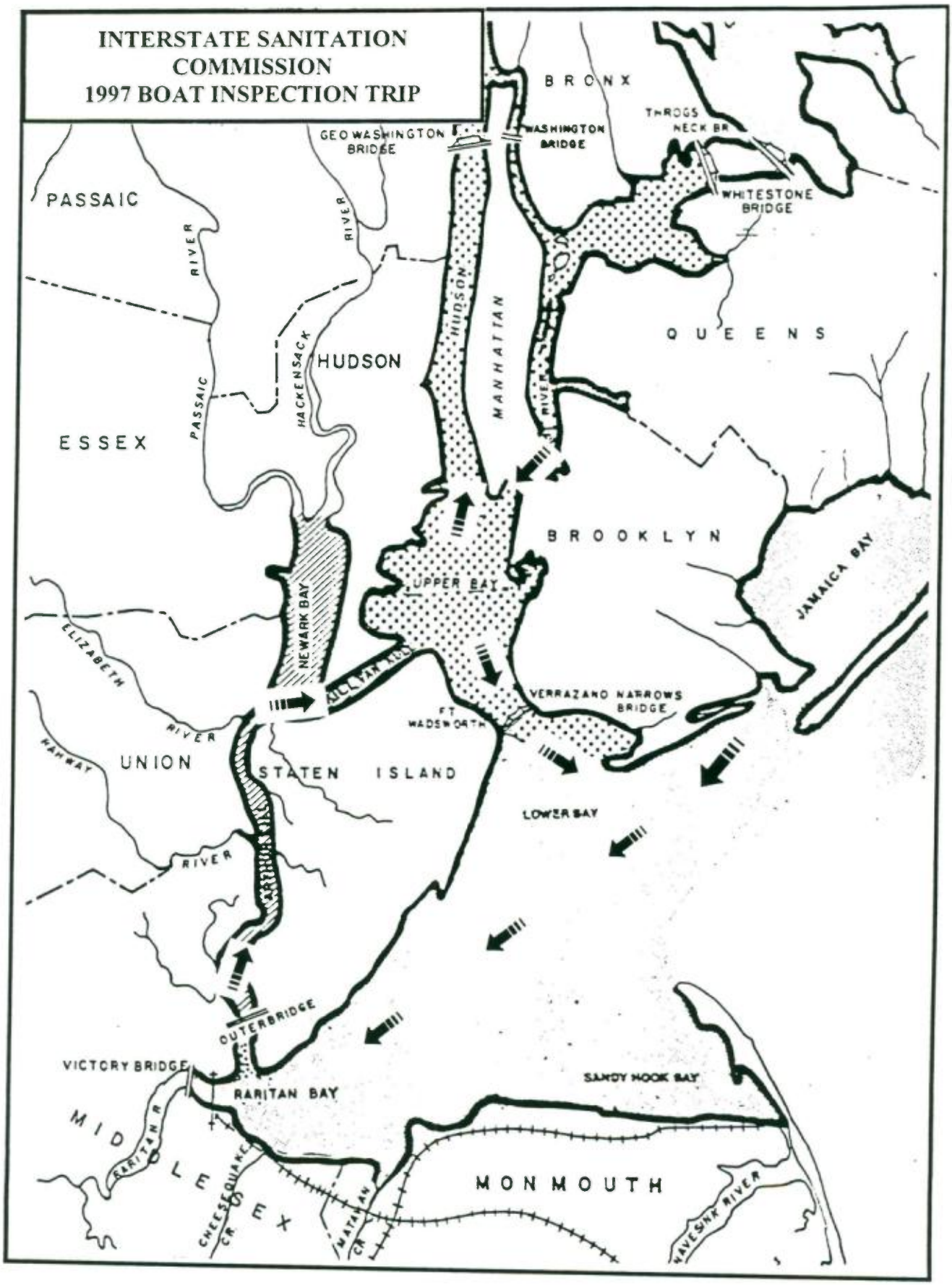
ISC Commissioners, officials from all levels of government, citizen groups, and the press viewed bathing beaches and seaside parks, commercial shellfish operations, numerous party boats and small recreational vessels, oil tankers, containerships and ferries, urban and maritime industries, historical landmarks, proposed and operating dredge sites, and waterfront development projects. A running dialogue of water quality issues, sights and points of interest was provided throughout the trip.

In Raritan Bay, recreational and party boats were observed seeking fluke, bluefish, sea bass and weakfish. While traversing Raritan Bay, commercial clammers were seen harvesting hard clams. On the Arthur Kill jet skiers jumped the ship's wake and a lobsterman was observed setting pots along miles of the Staten Island coast.

Since a series of major oil spills occurred in the Arthur Kill and Kill Van Kull several years ago, controls have been put in place. On this inspection trip, oil spill preventive operations were observed, such as containment booms and cleanup equipment, as well as restored wetlands.

Throughout the trip, debris was observed in the water and along the shorelines. In Upper New York Bay, US Army Corps of Engineers' catamarans were seen collecting floatables (wood, plastic, etc.) that are transferred to NYC DOS barges for transport the Fresh Kills Landfill.

The attendees viewed ongoing waterfront development, sewage treatment plants, electrical/steam generating stations, and the CSO outfalls in lower Manhattan that are part of the drainage basin for the 13th Street Pump Station which handles approximately 10% of the sewage generated in New York City.


INTERSTATE SANITATION COMMISSION
1997 BOAT INSPECTION TRIP
BRONX
GEO WASHINGTON BRIDGE
WASHINGTON BRIDGE
THROGS NECK BR
WHITESTONE BRIDGE
PASSAIC
RIVER
PASSAIC
RIVER
HUDSON
HACKENSACK
HUDSON
MANHATTAN
RIVER
QUEENS
ESSEX
PASSAIC
BROOKLYN
UPPER BAY
JAMAICA BAY
NEWARK BAY
KILL VAN KULL
ELIZABETH
RIVER
VERRAZANO NARROWS BRIDGE
FT WADSWORTH
HARWAY
UNION
STATEN ISLAND
LOWER BAY
RIVER
OUTERBRIDGE
VICTORY BRIDGE
RARITAN BAY
SANDY HOOK BAY
MIDDLESEX
RARITAN R
CHEESEQUAKE CR
MATAWAN CR
MONMOUTH
NAVESINK RIVER

The Fresh Kills Landfill, the world's largest landfill, was seen on the Arthur Kill shoreline of Staten Island. Boomed and fenced areas, which the Commission was instrumental in having NYC DOS install and maintain as Consent Order conditions, were observed.

Attendees had the opportunity to see several historical sites; including the Statue of Liberty Ellis Island and Liberty State Park; as well as fragile bird sanctuaries on the Isle of Meadows, Shooters Island and Pralls Island. 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.

FRESH KILLS LANDFILL CONFERENCE: CLOSURE AND BEYOND

On March 14, 1997, The College of Staten Island (CSI) sponsored a conference dealing with the closure of the Fresh Kills Landfill. The all-day conference, entitled "Fresh Kills Landfill Conference: Closure and Beyond", was co-sponsored by the Interstate Sanitation Commission and The Staten Island Advance and was held at the Center for the Arts on the campus of The College of Staten Island.

After opening remarks, the conference chairperson proceeded with introductions and statements from the sponsor and co-sponsors as well as federal, state, and local dignitaries and officials. A report by the Fresh Kills Task Force was given, including recommendations and protocols submitted to New York City, as well as the City's response. The conference agenda contained presentations that included such topics as epidemiology, health risks and assessments, recycling, solid waste management, and the use of dredged material for final cover.

The Borough Disposal Strategies presentation explained how the different boroughs in New York City would deal with their solid waste leading up to and after the closure of the landfill. Another presentation described the impacts on the environment and the population. Health, air pollution, environmental monitoring, closure procedures, and post closure procedures were all discussed during this portion of the conference. Solutions to the future handling and disposal of solid waste was discussed in great detail. Waste reduction, composting, recycling, and disposal were the main components for finding a remedy for the region's solid waste problem.

As a co-sponsor of the conference, ISC maintained an information booth which was well attended. Commission publications were available and a video documenting conditions at the Fresh Kills Landfill was shown throughout the conference day. The video was made by the ISC as part of its ongoing surveillance at the landfill.

The conference ended with informal discussions with the speakers and participants during a reception.

The conference was on a timely and important topic and was a great success. It provided meaningful information and unified support was evident among environmentalists. legislators. government officials and citizens.

NATIONAL ESTUARY PROGRAM

The National Estuary Program (NEP) was established in 1984 and provides assistance to estuaries of national significance that 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 20 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 is being carried out by the US EPA - Regions I and II. The New York-New Jersey Harbor Estuary Program is being coordinated by the US EPA-Region II.

The Commission continued its active participation as a member of the Management Committees and various work groups for the Long Island Sound Study (LISS) and the New York-New Jersey Harbor Estuary Program (HEP). The New York Bight Restoration Plan, whose preparation 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.

In September 1994, the final CCMP for the LISS was signed by the Governors of the States of New York and Connecticut, and the Administrator of the US EPA. In October 1996, the Governors of New York and Connecticut met to affirm their commitment to the actions set forth in the CCMP. The Plan details priority areas of concern including education, low dissolved oxygen, toxins, pathogens, floatables, living marine resources, land use/development and public involvement. It is essential to continually evaluate the effectiveness of management actions and programs implemented and, if necessary, refocus management decisions.

The final CCMP for the HEP was signed this year by the Governors of New York and New Jersey and the US EPA Administrator. 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/education.

During September 1996, environmental groups reached an agreement with the federal government to close the Mud Dump Site by September 1, 1997. This action set a definitive date for the cessation of ocean disposal activities and the necessity to implement all viable alternatives. Simultaneous with closure of the Mud Dump Site, the site and surrounding areas that have been used

historically as disposal sites for dredged materials was designated as the Historic Area Remediation Site (HARS). The Commission took an active role by serving on the MDS/HARS Workgroup. The final CCMP was amended to reflect the accelerated implementation schedule.

As an active member of the Management Committees and various work groups for the aforementioned studies, ISC is cognizant of the data needs that exist both for ambient waters and for point and non-point sources. Besides coordinating with these programs, which also have representation from ISC's three member States, the Commission will continue to coordinate its sampling activities and schedules with the environmental departments of these States in order that the needs of the Region are best met with the limited resources available to all agencies.

Through voter referendums in both New York and New Jersey, environmental bond acts were passed in 1996. In the $1.75 billion New York State Clean Water/Clean Air Bond Act of 1996, $200 million was designated for the LISS implementation. Both the New York and New Jersey environmental bond acts earmark significant resources to the HEP for harbor pollution control — the New York act designated $25 million to implement the CCMP for the HEP and $185 million of the $300 million New Jersey act is specified for dredging related projects in the New Jersey/New York port area.

COMBINED SEWER OVERFLOWS AND 1998 CSO CONFERENCE

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. As a follow-up to the Commission's 1988 CSO inventory report and 1989 region-wide CSO Planning Conference, this year the Commission continued its project documenting the status of CSO abatement progress. The Commission is compiling information on dates, milestones, and implementation for those entities with CSOs in the tri-state region. ISC will also be putting information into a geographic information system (GIS) that is compatible with the that of ISC's member states. After an initial compendium of the information is prepared, ISC will continuously update the data. The Commission will also be supplying the information to the HEP and LISS.

The ISC 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, 1997 a total of 44 outfalls were inspected during dry weather; none had any discharge during the ISC's inspections.

As documented in this and previous Annual Reports and other documents, ISC has been deeply involved for many years in the issue of CSOs. Because they remain as a major source of water pollution, CSOs are a timely theme as a subject for a conference to discuss the progress and problems associated with CSO control throughout the Metropolitan Area.

Since the Fresh Kills Landfill Conference at The College of Staten Island, of which ISC was a co-sponsor, was so successful, on April 24, 1998, ISC is sponsoring a regional CSO conference with The College of Staten Island as a co-sponsor. The CSI campus provides a most appropriate and attractive backdrop and has modern conference facilities.

Several planning meetings have been held and, at this writing, the program and conference details are being finalized. Commitments to participate in the conference have been made by legislators in ISC's three member states; the US EPA; the state environmental departments in New York, New Jersey and Connecticut; municipalities/operating authorities with CSOs; environmental groups; and ISC Commissioners and staff. This will be a major CSO conference that will bring together lawmakers, regulators, the regulated community, technical experts, environmental groups, and citizens. Even at this early date, a great deal of enthusiasm has been generated for the conference.

PUBLIC EDUCATION AND OUTREACH

This year, the Commission continued its active commitment to carrying out an aggressive 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 activities on a day-to-day basis, the remainder of this section outlines some of the ISC's involvement in this area.

Law Student Internships

ISC has been part of the Pro Bono Students America/New York and New Jersey (PBSA/NY & NJ) database since 1992. The database includes a network of more than 300 organizations including not-for-profits, government, courts and private firms. One of the most significant developments in recent years is the development of pro bono programs and PBSA is one of the primary groups organizing this effort. 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. Over the years, the Commission has attracted approximately a dozen students from area law schools.

The students have found their assignments rewarding and invaluable to their careers. The participants appreciate the opportunity to apply the skills which they were learning in the classroom, and the experience provided them with a perspective which greatly enhanced their understanding of the legal concepts being taught.

Our World Underwater

The ISC has enjoyed a long-standing relationship with Our World Underwater, a non-profit corporation focusing on educational opportunities for young people going into various fields of marine science, such as marine biology and oceanography. Its programs include a Scholarship Society to support a gifted student for a year to study, experience and interact with a wide range of professionals involved in and related to the field of scuba diving. In this way, a positive contribution can be made to the protection of and foster involvement in the underwater realm.

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.

Kids Water Walk-A-Thon

WaterWalk is a permanent environmental exhibit that will be installed along a four-mile stretch of bike path located along the Upper New York Bay in the Bay Ridge section of Brooklyn, New York. Essentially a waterfront park interpreting and promoting a stewardship of the aquatic resources, the project is a collaboration between the Wildlife Conservation Society's New York Aquarium, Bay Ridge Parks and Waterfront Council, the City of New York Department of Parks and Recreation, and Department of Transportation. On May 17, 1997, the Commission maintained an information and demonstration booth along the route. Exhibits of detailed charts of New York Harbor showed the Commission's involvment with the many water quality issues including shellfishing, bathing beaches, dredging and water pollution control facilities. A demonstration of water quality sample collection and analysis was performed continually.

Career Day 1997

On May 28th, approximately 450 students in grades 6 through 8 at P.S. 83 in the Bronx received an introduction to the world of work as well as life lessons from a wide variety of professionals. The many disciplines included business, entertainment, law enforcement, public service, health and the environment. A Commission staff member represented the governmental/environmental aspects of the work-a-day-world detailing historical and timely water quality issues affecting the tri-state Metropolitan area. A forum such as this contributes to a successful adulthood and gives the opportunity to young people to interact with role models that can help develop plans for their future careers.

Board of Cooperative Educational Services (BOCES)

The Environmental Studies Academy is a new type of educational experience designed for high school juniors and seniors who are interested in pursuing careers in natural or environmental

DEMONSTRATION AND INFORMATION BOOTH KIDS WATER WALK-A-THON BROOKLYN, NEW YORK

studies. Students participate in learning activities to develop an understanding and appreciation of natural systems. A large facility on the BOCES campus in Valhalla, N.Y., provides hands-on opportunities for high school seniors to work in a greenhouse and operate farm machinery for landscaping and agricultural career motivation. A staff member is involved with the BOCES of Southern Westchester and conveys the Commission's regional focus on water quality issues affecting the Hudson River and Long Island Sound. The Commission will serve on the newly formed advisory committee.

The Coalition to Save Hempstead Harbor, a citizens group in existence for about 10 years, has been conducting water quality monitoring in Hempstead Harbor for approximately five 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 two years and during June 1997, the Commission hosted the workshop.

JASON is an international project with the goal of exciting students about science and technology. In 1993, Nassau BOCES became the first JASON Primary Interactive Network Site in New York State and has since become the hub of a state-wide network. Each year, a comprehensive, interdisciplinary curriculum is prepared that is designed to meet national standards and goals, including lessons and investigations that can used by classrom teachers in grades 3 through 12. During July, a staff member made a presentation at Caumsett State Park, the Nassau BOCES facility, to discuss ISC water quality programs as well as a wide range of environmental and natural resource topics.

Conservation Career Day

During the last two summers, hundreds of high school and college students worked with the Parks Conservation Corps (of the City of New York Parks and Recreation Department) to improve its natural areas. The students were selected from a competitive pool based on their work experience, participation in extra-curricular activities, and an active interest in the environment. On August 15th, ISC participated in the second annual Conservation Career Day held at the Ballroom at City College in upper Manhattan. During the course of the day, a slide and video presentation was presented in a classroom forum in order to provide students with an informed perspective on ISC activities and water quality issues. This forum helps students when choosing educational goals and career plans, by giving them an opportunity to interact with environmental professionals.

III. AIR POLLUTION

GENERAL

The Commission has engaged in an interstate air pollution program since 1962. Over the years, the program has focused on investigations, applied research, and advocacy of regional viewpoints on environmental issues. As one of its functions in this program, the ISC continues to receive air pollution complaints. As has been the pattern in the past, almost all of the complaints came from Staten Island. For the 12-month period ending September 30, 1997, a total of 64 air pollution complaints were received, a decrease of almost 26% from the previous 12-month period.

For the tenth 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

More citizens' complaints come from Staten Island than any other area in the Commission's jurisdiction. The complaints, to a great degree, emanate from the western portion of Staten Island in the vicinity of the New York-New Jersey border and the areas near the Fresh Kills Landfill. From 1982 until 1989, when budget cuts forced its closing, the Commission operated a field office on Staten Island. The field office received hundreds of odor complaints annually. The ISC staff assigned to that office responded to and investigated citizens complaints — including nights, weekends and holidays. The necessity of reactivating ISCs air pollution response staff and the Staten Island office is clearly illustrated by the frustrations expressed to ISC by citizens. Reactivation can only occur by the full restoration of funding to the Commission.

ISC's 24-hour-a-day, 7-day-a-week answering service (718-761-5677) has been maintained 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 the appropriate enforcement agencies and health departments to perform follow-up.

For the 12-month period ending September 30, 1997, the Commission received a total of 64 complaints; this represents a decrease of 26% from the previous 12 month period. Note that there were 86 complaints in the 1995-1996 period, 140 complaints in the 1994-1995 period, and 202 complaints in the 1993-1994 period. Of the 64 complaints received this year, a total of 61 — or 95% 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.

Four Staten Island communities were the source of at least six complaints to the Commission during this period. These four communities represented approximately 45% of the total complaints. Arden Heights reported the most complaints, with a total of ten. Over the years, the majority of the complaints received by the ISC come from the same group of communities. A total of three complaints were received from other New York City boroughs and New Jersey.

Odors were classified into twelve categories. The "garbage" category was reported most frequently, representing over 23% of the total. Over the past ten years, the "garbage" category has dominated the complaints. In each of the past 10 years — except for the 1990-1991 period when the "garbage" category was second in the number of complaints received with approximately 9% of the total — this category registered the most complaints with the number of complaints ranging from 20% to 40% of the total calls received each year. Also of significance is the "chemical" odor category which received ten complaints, or almost 16% of the total.

OZONE HEALTH MESSAGE SYSTEM

For the tenth 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 EPA — serves as a central source of precautionary advice on ozone to the Region during the warm weather months (from 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.

DISTRIBUTION OF AIR POLLUTION COMPLAINTS BY COMMUNITY

FROM OCTOBER 1996 TO SEPTEMBER 1997

COMMUNITY	COMPLAINTS	
	NUMBER	% TOTAL
Arden Heights	10	15.6
Travis	7	10.9
Annandale	6	9.4
Tottenville	6	9.4
Huguenot	4	6.3
Mariner's Harbor	3	4.7
Great Kills	3	4.7
New Brighton	2	3.1
Port Richmond	2	3.1
Bull's Head	2	3.1
Graniteville	2	3.1
Other Staten Island*	14	21.9
Other Non-Staten Island**	3	4.7
Total	64	100.0

* Represents communities from which only one complaint was reported.

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

DISTRIBUTION OF AIR POLLUTION COMPLAINTS BY TYPE OF ODOR

FROM OCTOBER 1996 TO SEPTEMBER 1997

TYPE OF ODOR	COMPLAINTS	
	NUMBER	% TOTAL
Garbage	15	23.4
Chemical	10	15.6
Cat Urine/Ammonia	6	9.4
Sulfur/Egg	4	6.2
Oil/Gasoline/Fuel	3	4.7
Tar/Asphalt	2	3.1
Burning Odor	2	3.1
Burning Rubber/Plastic	1	1.6
Paint Thinner	1	1.6
Coffee Grinds	1	1.6
Dead Fish	1	1.6
Other*	18	28.1
Total	64	100.0

* Represents odors not specifically identified by complainant.

During 1997, the Commission continued to participate in this program, although still at a reduced level due to budgetary constraints. 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 three ozone advisories from the New Jersey Department of Environmental Protection — on July 14th, July 15th, and July 17th . Individual states issue their own health messages which identify specific counties where ozone levels are a special health threat. During 1997, 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

In large measure, Counsel functions for the purpose of enforcing those rights granted to the Commission. In some, but not all instances, compelling compliance could necessitate the commencement of an administrative proceeding or case or controversy. In many more instances the Commission's regulatory authority is recognized through advice to affected communities and negotiation. It warrants mention that some of the work that Counsel is called upon to do falls into a less visible, but not less significant arena — that of enforcing Commission policy in water and air pollution abatement as part of internal affairs. The bulk of this report, however, is devoted only those items of major interest — either as recurring themes or due to some unique issue that deserves special note as activities during the past year.

For a significant portion of 1997, the Commission's attention was devoted to guaranteeing that significant gains fought for and achieved in preceding years could be maintained and built upon further. Aided by the New Jersey Attorney General's Office and the Township of Woodbridge, N.J., the ISC succeeded in obtaining broad directives that will assist in ensuring that the waters in and around the New York-New Jersey Harbor will be protected from floatable debris emanating from the Fresh Kills Landfill.

This year, following public notice, debate and hearings in each of ISC's three member states, the Commission adopted amendments to its Water Quality Regulations that now require advance notice to ISC of planned bypasses of raw or partially treated sewage into the District's waters.

Discussions and negotiations ensued with the NYS DEC and NYC DEP toward achieving a much desired settlement of the administrative matter involving the New York City sewage treatment plants. To the extent that an accommodation can be reached with the North River WPCP ensuring accurate measure of flows, it could serve as a prototype for the other NYC municipal sewage treatment plants.

Efforts to add secondary treatment to wastewater systems for certain municipalities that lacked them has ultimately proved successful. The Consent Decrees entered into with Hudson County, New Jersey, municipalities — Hoboken, Jersey City, Bayonne, and the Township of North Bergen — should be terminated shortly.

The ISC is diligent in insisting that the Commission's regulations are properly included in discharge permits throughout the Interstate Sanitation District. An issue that has become the subject of some concern is a discharge permit issued in New Jersey to a publicly-owned sewage treatment plant. In this case, the Commission's request for an Adjudicatory Hearing was granted.

The Commission continued its participation in a clearinghouse to attract area law students who are interested in environmental affairs to work as legal interns, gaining course credit and/or

valuable experience in the process. This program continues to prove 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

Following the 1996 passage of laws mandating closure of the landfill by the end of the year 2001, the City let it be known that they were considering filing a motion to be relieved of their obligation to build an enclosed barge unloader. In late December 1996, the City served the plaintiffs with a motion to modify the Consent Order. The one remaining obligation under the 1993 Consent Order was the construction of a single-barge enclosed unloading facility as a long term solution to the problem of debris entering the waters in and around the Fresh Kills Landfill. In essence, the City sought to be relieved of their obligation to build any enclosed barge unloading facility.

The co-plaintiff Township of Woodbridge ("Woodbridge") and the ISC determined that in order to ensure that there would be some possibility that the Court would grant the plaintiffs some specific remedy, it would be prudent to present the Court with some positive avenue of recourse. This translated into doing more than responding with a simple opposition to the City's motion not to construct a long term solution. This approach would mean that Woodbridge and the ISC would oppose the City's motion and, if the Court were inclined to grant the City's motion, to ask for some specific affirmative relief. In the end, both Woodbridge and the ISC made cross-motions for relief.

The plaintiffs replied during February. The City's papers attempted to shift the argument away from itself and toward the State of New Jersey, making the argument that New Jersey was largely responsible for the bulk of the floatables in the Arthur Kill. Recognizing that the Court had once before given credence to the City's argument against New Jersey, one entire Commission affidavit dealt with New Jersey's enforcement policy regarding CSOs. Others dealt in greater detail with the kind and quality of garbage found on Woodbridge's beaches and at the landfill, ISC's inspections both from the water and on-site at the landfill recorded by videotape, and a historical prospective of the Commission's involvement with this case.

Woodbridge and ISC both replied that not only had the City failed to meet the test for being relieved from its responsibility under the Consent Order, but that the City must also offer, at a minimum, the same protections that the long term solution would have achieved. From the inspections and observations made by ISC field personnel, it was apparent that the City's operations continued to be erratic and that certain of the recommendations made by the independent consultant ordered by the Court in May 1996 had not be acted upon. Without close scrutiny and the threat of sanctions, plaintiffs believed that operations at the landfill would continue to be a problem for the waterways around it.

In order to accomplish the goal of protecting the waterways from floatable debris, it was suggested that the Court use the same criteria that had been used to choose a long term alternative solution. Noting the criteria that the consultant had selected in 1990, ISC argued that for as long a period of time as garbage was accepted at or shipped from the landfill and until closure, the protections promised by the single-barge enclosed unloading facility were required. Moreover, if the City failed in protecting the waterways, stipulated penalties or some set-aside would be appropriate. The set-aside would be used to implement new interim strategies and to pay for an expert to oversee operations and to make binding recommendations for improvement.

The City replied to the plaintiff's papers during April and, during that same month, the Commission filed a reply brief with three accompanying affidavits. One of the affidavits featured a detailed comparison of deficiencies noted by the independent monitor and ISC's field personnel's more recent observations of deficiencies. Another featured a time line showing the length of time that many deficiencies had lasted and the coincidental cleanup that began when the ISC served the City with an answer containing documentary evidence in the form of photographs and videotape.

The case was filed on May 1, 1997. The Court Clerk assigned a June 9th appearance date for oral argument. The Court refused to decide the case without the parties first making strenuous efforts toward settlement. Following three post hearing conferences with the City taking the position that the floatables in the Arthur Kill were really there because of New Jersey, the parties convened again in Court in August. The Court expressed dismay that the City had offered only to mend fences and to extend the perimeter fence — the fence that had been constructed in the water. The parties were ordered to compile "wish lists" for filing by the end of August. The ISC included two additional proposals: first, an interim monitoring team — comprised of a plaintiffs' representative, the current monitor and a DOS employee — to make recommendations for improvement and, secondly, the Commission also suggested that if the Court were inclined to grant the City relief from building the unloader, the Court should consider staying the effective date for construction contingent upon a review of the effectiveness of all interim remedies. The stay could be renewed annually depending upon the outcome of the annual review of the effectiveness of other measures.

In late September, the Court entered a decision in this case, allowing the City a one-year extension in building a single-barge enclosed unloader upon a showing by the City that they have complied with some ten conditions sought by the Commission. If the City fails to comply with certain enumerated conditions, they will have to build the unloader.

It was clear from the decision, that the City's offer to extend a fence and to make otherwise necessary repairs was not sufficient. Some type of oversight and some measure of monitoring will be required. The Court drew heavily upon ISC's stated requirements, granting almost all of ISC's cross-motion without exception. Those requirements included: placing $20,809,000 in an escrow fund to pay for the measures enumerated by the Court or to pay for the construction of the unloader; extending the perimeter fence with a layer of 3/4 inch mesh; obtaining a requirements contract to repair fencing when necessary; increasing the presence of the water quality monitor ("WQM"); instituting procedures to ensure that any deficiencies observed at the landfill are immediately

reported to the DOS; retaining an independent expert to make recommendations to prevent the escape of floatables; establishing an interim monitoring team ("IMT") — comprised of a representative of the DOS, a plaintiffs' representative and the current monitor — to observe, make recommendations and report to the independent expert (the IMT will be paid for by the City); all measures will be implemented within thirty days; the stay (extension of time to build the unloader) will continue only if the City's performance in preventing debris from escaping the landfill and entering the waters is successful and acceptable to all parties, otherwise the City must immediately commence construction on an expedited schedule. The City's performance is reviewable on a yearly basis.

The enclosed barge unloader 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 of 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.

LITIGATION AGAINST HUDSON COUNTY MUNICIPALITIES

As an indicator of the success of the Commission, the United States Environmental Protection Agency and the State of New Jersey, orders terminating certain Consent Decrees are under consideration. The ISC, US EPA and the State of New Jersey jointly entered into Consent Decrees with five Hudson County, New Jersey, municipalities to assure that the treatment plants complied with federal, state and interstate regulations. All have achieved full plant operation in compliance with final NPDES permit limits and ISC regulations.

In U.S., ISC v. Hoboken, et. al, Civil No. 79-2030, ISC sued in federal District Court in New Jersey to enforce ISC's Water Quality Regulations at treatment plants located in five Hudson County, New Jersey, municipalities. ISC intervened in the underlying Clean Water Act (CWA) enforcement action in 1986. The Commission sued to enforce its own Water Quality Regulations which set effluent limits for certain pollutants such as BOD, TSS and fecal coliform bacteria. ISC sought a ruling that the defendants were liable under the CWA for exceeding discharge limits imposed by the US EPA and NJ DEP acting under federal authority in the form of a National Pollutant Discharge Elimination System (NPDES) permit.

In accordance with the CWA, the Commission's regulatory standards are set forth in the NPDES permits issued by the State of New Jersey as a delegated permit authority. The inclusion of ISC's regulations in such permits make the Commissions standards enforceable NPDES restrictions and a violation of the CWA. In 1987, the court granted plaintiffs' motions for partial summary judgment on the issue of liability against defendants Bayonne, West New York, and North Bergen. The Judge held that the NPDES permits did not extend the municipalities' deadline for abiding by interim standards rather than secondary treatment limits. After lengthy negotiations with the plaintiffs, all of the defendants signed Consent Orders.

The parties involved are the United States and ISC, co-plaintiffs, and the following major defendants: the Hudson County Utilities Authority, Guttenberg, Weehawken, Union City, and the State of New Jersey, which was a necessary named defendant pursuant to the Clean Water Act.

Hoboken

The Hoboken plant and the Hoboken-Union City-Weehawken Sewage Authority (HUCWSA) agreed to undertake a construction program in order to provide compliant treatment to all sewage and wastewater flows. This included building the liquid train facility for secondary treatment. In mid-June 1994, a Stipulation and Order was prepared by ISC on behalf of all parties that amended the Consent Decree of January 1991. The Hoboken defendants originally agreed to complete the secondary treatment facilities and to reach effluent limits by January 8, 1993, but failed to meet this deadline. Amendments to the original Consent Decree established new dates for having the effluent pump station and the ultraviolet system for disinfection on-line. It was believed that the Hoboken plant would be certified as fully operational by the end of 1994. The certification, however, did not occur until 1995.

During the summer of 1995, the ISC participated in a Compliance Evaluation Inspection with the New Jersey Department of Environmental Protection. The inspection was designed to lead to a certification for the treatment plant. With the publication of the inspection, a facility that handles sewage for three municipalities has been successfully engineered toward completion.

In early 1997, the United States Attorney elicited the assistance of the Commission in terminating the Consent Decrees for Hoboken, Weehawken, Union City, Hudson County Utilities Authority, Hoboken-Union City-Weehawken Sewerage Authority ("HUCWSA", "Hoboken", "Tri-City"), Jersey City and the Jersey City Utilities Authority, Bayonne, and the Township of North Bergen and North Bergen Municipal Utilities Authority.

The necessary paperwork is underway to complete the process. All of the plants listed above have complied with the dictates of their respective Consent Orders.

NEW YORK CITY SEWAGE TREATMENT PLANT PERMIT HEARINGS

Only three of the eight issues originally certified by administrative decision remain unresolved — whole effluent toxicity, flow measurement and plant capacity (for purposes of expediency, the latter two issues are treated as one).

Background

This proceeding involves modifications to the SPDES permits for New York City's 14 sewage treatment plants. The issues which consumed most of 1997 — whole effluent toxicity, flow

measurement and plant capacity — culminated in an administrative decision that the Commission and the Hudson Riverkeeper both appealed in October 1997. The Commission appealed the flow measurement and plant capacity issue and the Hudson Riverkeeper appealed the whole effluent toxicity issue. The parties are currently awaiting a decision of the NYS DEC Commissioner. The details of ISC's administrative appeal are explained below under the section entitled flow measurement and plant capacity. Some additional history of the proceeding is also detailed below.

The ISC initiated a suit in State Supreme Court in Queens County, New York, in November 1988 (ISC v. Jorling), over the NYS DEC - Region 2's failure to hold a hearing prior to issuing SPDES permits for wastewater discharges from 14 sewage treatment plants operated by the New York City Department of Environmental Protection (NYC DEP). In a Judgment issued in April 1989, the Court held that the NYS DEC had acted arbitrarily and capriciously in not holding a hearing and ordered that an adjudicatory hearing be held. This proceeding is the hearing resulting from that Judgment. The petitioners in the state court case became intervenors in the ongoing permit proceeding. The parties involved are the ISC and co-petitioners Natural Resources Defense Council (NRDC), Hudson River Fishermen's Association (HRFA), Sierra Club and the Environmental Defense Fund (EDF), as well as the NYS DEC and the NYC DEP.

Throughout 1995, several issues were in varying stages of discussion. Nutrient removal, which had been certified as an issue in 1991, was settled during 1994. Nutrient removal became an issue following an appeal of its exclusion by the ALJ. On January 31, 1991, in the NYS DEC Commissioner's interim decision, the Commissioner decided that nitrogen and nutrient removal were proper issues for adjudication and overruled the ALJ's decision.

A 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 must make operational and process changes to maximize nitrogen removal in the existing plant units, and also conduct extensive pilot work to test new processes and technologies. The City and NYS DEC will then jointly determine the most appropriate new systems to implement in order to meet specified nitrogen reduction goals.

All 14 of the City treatment plants are included in the permits with the exception of North River 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.

Flow Measurement/Plant Capacity

Throughout the fall of 1996, the City indicated that they wished to initiate a dialog on the three remaining issues — whole effluent toxicity, flow measurement and plant capacity. Late in 1997 all potentially interested parties were contacted. The City advised the parties that NYS DEC was contacting the ALJ, who would certify the remaining issues he deemed appropriate for negotiation or adjudication. An early January 1997 conference was arranged.

During January, ISC technical staff met with NYC DEP and NYC DEP staff members, to discuss the issue of flow measurement and plant capacity for the North River WPCP. Given the Commission's credibility with all of those concerned about the unexplained drop in flow at the North River WPCP, there had been some impetus from the City to have the Commission broker an agreement that might be palatable to all involved. Following discussion, it was agreed that if NYS DEC, interested elected officials, and those community groups most interested could agree upon certain enumerated items pertaining to the North River plant, this issue could be settled for all the City sewage treatment plants. If the interested parties could find agreement, the features of the plan could be used as a model for the remaining City sewage treatment plants. The items discussed were as follows:

1. Is there an accurate measure for the flow that is currently entering the plant? An independent consultant would be paid for by the City. The choice of consultant and the scope of work would be jointly agreed upon by ISC, NYC DEP, NYS DEC, legislators and community groups. The consultant would have to determine whether to recommend that an independent contractor do periodic calibrations following a check of the entire flow measurement system and make recommendations regarding in-house calibrations between contractor calibrations.

2. In-stream monitoring of flow via use of the sensors mounted in interceptors (currently in place) to explain the relationship of those monitors to the flow meters.

3. The consultant will review NYC DEP's explanation of what caused the 24 MGD drop.

4. Any agreement will include acceptance of NYS DEC's conclusion that there has been no bypassing.

At this juncture, the City is discussing the broad outlines of the plan with representatives from NYS DEC and others from the North River drainage basin community. The Commission is awaiting the outcome.

A conference was set for late March, to discuss how to proceed with the remaining issues. The Administrative Law Judge assigned sought to have the parties certify whether or not there remained viable issues or whether double-metering had resolved everything. The Commission replied in mid-April that among the viable sub-issues remaining were: total flow vs. dry flow, the

design criteria used to determine plant capacity, initial and periodic flow verification and calibration by an independent outside consultant, a capacity assurance program, pump back to the STPs of flow collected during wet weather, and maximization of CSO flow to the STPs. The NYC DEP and NYS DEC replied to the ALJ's directive in late May. A decision in September certified only one of ISC's issues for adjudication — the method for calculating total flow vs. dry weather flow. The Commission filed an appeal in October. The NYC DEP and NYS DEC filed a reply in late November. The Hudson Riverkeeper had also maintained that issues remained with whole effluent toxicity and filed an appeal accordingly. The Hudson Riverkeeper has consistently supported the ISC in its posture on the remaining issues.

During the early fall, the City advised the Commission that they would proceed with arrangements regarding the North River plant and sought ISC's technical staff's input regarding the remaining treatment plants.

ENFORCEMENT PROCEEDING AGAINST NORTH RIVER WATER POLLUTION CONTROL PLANT

Concerns in many quarters have moderated, but have not dissipated, regarding the North River Water Pollution Control Plant. A controversy was sparked initially when the City provided explanations that did not adequately explain a precipitous drop in flow of 24 MGD that occurred in the spring of 1994. The Commission and others became aware of the drop during 1995 and have followed it assiduously since that time. Perhaps the level of intensity in scrutiny might have dissipated if the plant's permitted flow of 170 MGD had returned to levels approximating the permitted level. In fact, flow levels at the North River WPCP and other plants throughout the City have diminished since the occurrence of the 24 MGD drop.

In a responsible attempt to address this problem, the Commission supported NYS DEC's recommendation that an independent engineer become involved. That engineer's function would be to calibrate the entire flow metering system at New York City's sewage treatment plants. The Commission was of the belief that the calibration issue had not been adequately examined. Others have embraced the idea of some independent outsider examining the system, as a way of bolstering confidence in NYC DEP's management of the plant, notably State and City legislators who have recommended an independent review of North River's flow measurement system.

At the same time, NYS DEC in a reply to ISC's examination of the problem, represented that although supportive, they were still pondering the question of independent calibration of the City's treatment plants' flow meters. ISC has long espoused the position that given the City's own acknowledgments of inconsistencies in flow and the City's varying explanations — which have included faulty calibration of meters — coupled with the dramatic 24 MGD drop in flow, it is reasonable to support the use of an independent outside entity to calibrate the system. The Commission has maintained that independent calibration is required in order to ensure some indicia of reliability.

The City has indeed made a movement toward addressing the concerns of many about the drop and the questions that have been raised about the flow metering system. The Commission has met with the City and the City has agreed to share several reports of independent consultants mandated by Court Orders. Some have been received, and the ISC is awaiting others. The City has also made its Quarterly Conservation Reports available. 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 indicia of reliability is through calibration by an independent outside entity.

Lending further support to the importance of the operation at the North River sewage treatment plant, in September 1996, the United States Justice Department filed an amicus brief on behalf of a Coalition of groups. The United States adopted a position that the ISC has held for some time now — *if flow to a plant is increased beyond maximum capacity, the result will be less than optimal pollutant removal and potential violation of permit-mandated removal standards. Continued flow at levels above the flow limit could impair pollutant removal efficiency* . . . The City had argued that the federal Court had no jurisdiction since flow was not a permitted parameter.

A Coalition of groups on the west side of Manhattan — concerned about prospective development and who had brought an action against the City in federal Court (the particulars are explored herein) — commissioned a consultant to conduct an examination of the plant flow. The ISC agreed to assist the Coalition in examining any patterns to ascertain whether or not this drop was indeed a phenomenon. The actual drop in flow had occurred in the spring of 1994, but was brought to light in 1995. US EPA and NYS DEC investigated the occurrence and ISC prepared a report of the Commission's findings which was shared with NYS DEC.

The Coalition for a Livable West Side, joined by Soundwatch, Inc.; New York City Environmental Quality, Inc.; Citizens United Against Riverwalk, Inc.; and Union Square Community Coalition, Inc. filed a complaint in federal Court on December 15, 1992, against the City of New York. The Commission provided technical expertise and assistance. This action followed the NYS DEC Commissioner's decision denying ISC and the other plaintiffs party status in NYS DEC's enforcement action regarding permit violations at the City's North River water pollution control plant. The plaintiffs sought an injunction against additional hook-ups to both the North River and Wards Island treatment plant service areas until the quantity of sewage to those plants is reduced to an amount less than that stated in the SPDES permits, or until additional plant capacity is attained through construction. North River's permitted dry weather flow limit of 170 MGD had been exceeded for several months through January 1992. Similarly, the flow at Wards Island exceeded its limit of 250 MGD. The complainants argued that dry weather flow limits are effluent standards within the meaning of the Clean Water Act and must be enforced by the federal Court.

With the addition of the United States Justice Department as an interested party, several important tenets await a ruling by the federal Court. Among the more important ones are the following: (1) flow limits contained in state permits are enforceable under the citizen suit provisions

of the Clean Water Act, (2) citizen enforcement under the CWA is not limited to limitations on illegal discharges of specific pollutants, (3) flow limits are effluent standards under the CWA, and (4) violations of flow limits in North River and Wards Island are actionable in citizen suits.

The status of the lawsuit remains unchanged. The case is under advisement on the federal docket. The City is in the process of releasing an RFP to install a secondary measurement system at the North River plant. The Commission examined tests conducted by NYS DEC and in the context of commenting on the administrative hearing, raised several issues concerning accuracy and reliability. ISC is awaiting a decision from the NYS DEC Commissioner on flow measurement and plant capacity and the case on the federal docket is not yet decided.

ADJUDICATORY HEARING 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 1980's, 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 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 contained adjustments made 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 that Article which deals with controlling future pollution, abating existing pollution, and working in cooperation with the states, is not meant to be read alone. The applicable language reads, as follows:

> *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.*

The ISC Article 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.

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 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.

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 made during the late summer at which time ISC had asked that its regulations be reinserted into the PVSC permit. After analyzing all of the background and information provided to the NJ DEP, the NJ DEP Commissioner decided to grant ISC's hearing request.

The Commission was advised in May that the case is awaiting the assignment of a Deputy Attorney General in advance of the case being sent to the Office of Administrative Law, where it will be assigned to a judge.

AMENDMENTS TO ISC'S WATER QUALITY REGULATIONS TO REQUIRE NOTIFICATION TO ISC OF PLANNED SEWAGE BYPASSES

On October 15, 1997, the ISC passed a regulation to prevent any city, community, local, regional or private entity from carrying out, without adequate notice, a planned bypass of untreated or partially treated sewage into this region's waterways.

The regulation requires that notification of a planned bypass be given to the ISC far enough in advance so that relevant parties can be brought together to carefully compute the bypass' water

quality effects, and to explore alternate means of accomplishing the construction or repairs with no bypass or minimal bypassing.

The regulation is specifically designed to thwart any repetition of the situation that occurred in February 1997 when New York City scheduled a bypass of 500 million gallons of untreated sewage into the lower East and Hudson Rivers over a four-day period. Although the bypass — which would have adversely affected water quality in both New York and New Jersey waters, including New Jersey waters used for shellfish harvesting — was averted through last minute intervention, it identified a gap in the procedure for notification of such events.

The New York City Department of Environmental Protection ("NYC DEP") scheduled a bypass of 150 MGD of raw sewage from it's 13th Street Pump Station in Manhattan into the Lower East and Hudson Rivers and Upper New York Harbor over a 4-day period in mid-February. This would have dumped more than half a billion gallons of raw sewage into the water, a significant bypass by any standard. Bypassing can occur legally for different reasons, one being when improvements and upgrades to a treatment facility and the accompanying infrastructure are necessary and desired. The NYC DEP wanted to bypass the raw sewage because repairs were needed on the aging pumps within the pump station. Unfortunately, neither the ISC nor US EPA nor the NJ DEP received notification until approximately 11 hours prior to the planned raw sewage bypass. The bypass was to go forward without any significant evaluation of the intrastate or interstate impacts on the receiving waters, including shellfish areas.

The ISC, having members appointed by the Governors of the States of New York, New Jersey and Connecticut, is responsible for monitoring the water quality in the region shared by the three states. For water-based recreation and as a general health measure, the impact of a bypass depends on the degree of exposure to the water. All three of the state segments of the Interstate Sanitation District contain shellfish beds used for both commercial and recreational purposes. For the safety of shellfish and the people who consume those shellfish, knowing the exposure levels is an absolute necessity.

Unlike those of purely riverine systems, the waters of the Interstate Sanitation District are composed of interconnected estuaries, straits, sounds, bays, coastal ocean, and saline and freshwater reaches of the Hudson River. The currents and tidal oscillations that characterize the entire District result in continuous interstate flows and surges. In many places, the same waters and their pollutant loads pass back and forth from one ISC member state to another. Observations and studies for many years have shown that discharges in one state have effects on waters in one or both of the others — sometimes in an upstream-downstream sequence, but often in a cyclical or multidirectional fashion. Logically, it follows that the ISC is well positioned and well suited to receive coordinate and monitor information on planned bypasses of raw or partially treated sewage from public or private treatment facilities into the waters of the Interstate Sanitation District.

A concern was immediately evidenced over the impact of the raw sewage bypass on the shellfish beds in Raritan and Sandy Hook Bays and the Navesink River, in the State of New Jersey,

south of the CSO release points in Manhattan. The Governors of the States of New Jersey and New York intervened and the bypass was postponed until the impacts on the shellfish beds and the region's waters could be evaluated. More pointedly, the need for a better notification system was evident.

The Commission testified at hearings on the proposed raw sewage bypass — one held by the New York City Council in February and one held by the Environment, Science and Technology Committee of the New Jersey General Assembly in March. The concerns in the main were the impact of the raw sewage bypass and, of equal importance, the minimal or lack of notification to the public and government agencies. After the hearings and a series of meetings with NYC DEP and other government entities concerning the proposed bypass, NYC DEP began to look into alternative methods of repair whereby the effects of the bypass could be minimized or the bypass could be eliminated altogether. Ultimately, NYC DEP came up with an alternative solution that will allow the repair work to be accomplished at the 13th Street Pump Station without the need for any bypassing.

In the aftermath of the February 13th Street Pump Station incident, at their March meeting the Commission directed the ISC staff to prepare a draft regulation regarding notification to ISC of planned bypasses. At the ISC's June meeting, the Commission then authorized that public hearings be held. Those hearings were held in July in each of ISC's member states. Based on the hearings and recommendations by the hearing officers, along with specific suggestions from the Commissioners at the ISC's September meeting, the language of the proposed amendment was clarified to address all potential objections. The hearing record also included Resolutions adopted by the New York State Senate and the New Jersey General Assembly memorializing the Commission to develop and adopt bypass notification procedures.

It should be noted that throughout the tri-state New York-New Jersey-Connecticut area, construction and repairs at sewage treatment plants as well as other segments of the infrastructure — such as the sewer systems and pump stations — are needed on an ongoing basis. For example, there are currently a number of intrastate notification procedures for planned bypasses within each of ISC's member states, but there was no mechanism in place to provide for interstate notification to states whose waters may be affected by a bypass originating in another state. These newly adopted amendments to the Interstate Sanitation Commission's Water Quality Regulations now establish notice requirements for planned discharges of raw sewage or discharges subject to treatment reductions from both public and private sewerage facilities discharging into the waters of the Interstate Sanitation District.

In most instances, planned bypasses and treatment reductions are anticipated far in advance of the event and, in general, it is usually one to three or more years before a planned event when a facility anticipates that a bypass may be necessary. It is at this early stage in the process that the ISC will be notified. When the Commission receives such notification, ISC will bring all the affected parties together to explore alternatives and determine whether a bypass/treatment reduction can be avoided or lessened. This would include the adjacent state environmental department and the federal

government. With this participation, the potential discharger will have the benefit of information from a wide range of technical experts. In addition, because of ISC's interstate jurisdiction, the Commission can bring to light experience gained in other areas within this region from situations that may be unknown to the potential discharger. The Commission is well positioned to receive advance notification and then bring together the appropriate parties to effectuate a course of action to protect the waterbodies that might be affected by the discharge. By bringing all interested parties together, a variety of alternatives can be explored to determine whether a proposed bypass can be eliminated or, at a minimum, lessened to reduce adverse impacts.

A copy of the Amendments to the Water Quality Regulations of the Interstate Sanitation Commission adopted on October 15, 1997, are included as Appendix D of this report.

WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE SANITATION DISTRICT WATERS
1997

PLANT	ISC RECEIVING WATER CLASSIFICATION	DATE OF CONSTR.	FLOW AVG. (MGD)	FLOW DESIGN (MGD)	TYPE OF TREAT-MENT	ESTIMATED POPULATION SERVED
CONNECTICUT						
Fairfield County						
Bridgeport -East Side	B-1	1996+	8.0	10.0	Secondary(AS)	44,000
-West Side	B-1	1996+	26.1	30.0	Secondary(AS)	112,000
Fairfield	A	1982+	9.8	9.0	Secondary(AS)	42,000
Greenwich (Grass Island)	A	1994+	13.7	12.5	Secondary(AS)	35,000
Norwalk	B-1	1980+	16.7	15.0	Secondary(AS)	80,000
Stamford	B-1	1991+	23.4	20.0	Secondary(AS)	100,000
Stratford	A	1992+	9.9	11.5	Secondary(AS)	50,000
Westport	A	1975+	2.1	2.85	Secondary(AS)	14,800
New Haven County						
Milford -Beaver Brook	A	1996+	2.3	3.1	Secondary(AS)	19,000
-Housatonic	A	1996+	6.6	8.0	Secondary(AS)	21,500
New Haven -East Shore	B-1	1997+	36.9	40.0	Secondary(AS)	215,000
West Haven	B-1	1996+	8.3	12.5	Secondary(AS)	55,000
NEW JERSEY						
Bergen County						
Edgewater	B-1	1989+	3.3	6.0	Secondary(PO)	21,000
Essex County						
Passaic Valley Sewerage Commissioners	B-1	1988+	290.0	330.0	Secondary(AS)	1,300,000
Hudson County						
North Bergen M.U.A. -Woodcliff	B-1	1991+	2.7	2.9	Secondary(TF)	22,000
North Hudson Sewerage Authority						
-Adams Street (Hoboken)	B-1	1994+	12.0	24.0	Secondary(TF)	67,000
-River Road (West New York)	B-1	1992+	7.6	10.0	Secondary(TF)	38,000
Middlesex County						
Middlesex County Utilities Authority	A	1994+	126.1	147.0	Secondary(PO)	752,000
Union County						
Joint Meeting of Essex & Union Counties	B-2	1991+	67.6	85.0	Secondary(AS)	500,000
Linden Roselle Sewerage Authority	B-2	1989+	13.9	17.0	Secondary(AS)	70,000
Rahway Valley Sewerage Authority	B-2	1991+	30.7	40.0	Secondary(AS)	175,000

WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE SANITATION DISTRICT WATERS
1997

PLANT	ISC RECEIVING WATER CLASSIFICATION	DATE OF CONSTR.	FLOW AVG. (MGD)	FLOW DESIGN (MGD)	TYPE OF TREAT-MENT	ESTIMATED POPULATION SERVED
NEW YORK						
Nassau County						
Bay Park	A	1992+	54.1	70.0	Secondary(AS)	498,000
Belgrave Sewer District	A	1995+	1.4	2.0	Secondary(TF)	12,000
Cedar Creek	A	1997+	50.7	72.0	Secondary(AS)	504,000
Cedarhurst	A	1968+	0.8	1.0	Secondary(TF)	6,000
Glen Cove	A	1981+	4.0	8.0	Secondary(AS)	29,000
Great Neck Sewer District	A	1990+	2.8	3.8	Secondary(TF)	13,400
Great Neck Village	A	1995+	0.86	1.5	Secondary(TF)	9,000
Inwood	A	1989+	0.9	2.5	Secondary(TF)	7,600
Jones Beach	A	1990+	0.1	2.5	Secondary(TF)	Seasonal
Lawrence	A	1983+	1.4	1.5	Secondary(TF)	6,200
Long Beach	A	1994+	6.3	7.5	Secondary(TF)	37,500
Oyster Bay Sewer District	A	1992+	1.3	1.8	Secondary(TF)	8,500
Port Washington Sewer District	A	1991+	3.2	4.0	Secondary(TF)	33,000
West Long Beach Sewer District	A	1986+	0.54	1.5	Secondary(TF)	5,000
New York City						
Bronx County						
Hunts Point	B-1	1977+	131.8	200.0	Secondary(AS)	629,927
Kings County(Brooklyn)						
Coney Island	A	1965+	104.8	100.0	Secondary(AS)	602,097
Newtown Creek	B-1	1967+	271.8	310.0	Secondary(AS)	1,039,294
Owls Head	B-1	1991+	117.2	120.0	Secondary(AS)	761,479
Red Hook	B-1	1987	36.9	60.0	Secondary(AS)	192,215
26th Ward	A	1975+	69.8	85.0	Secondary(AS)	271,240
New York County(Manhattan)						
North River	B-1	1986	143.4	170.0	Secondary(AS)	584,192
Wards Island	B-1	1979+	226.7	250.0	Secondary(AS)	1,004,213
Queens County						
Bowery Bay	B-1	1978+	127.8	150.0	Secondary(AS)	727,117
Jamaica	A	1978+	80.6	100.0	Secondary(AS)	632,148
Rockaway	A	1978+	20.9	45.0	Secondary(AS)	94,471

WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE SANITATION DISTRICT WATERS
1997

PLANT	ISC RECEIVING WATER CLASSIFICATION	DATE OF CONSTR.	FLOW AVG. (MGD)	FLOW DESIGN (MGD)	TYPE OF TREAT-MENT	ESTIMATED POPULATION SERVED
NEW YORK (con't)						
Queens County (con't)						
Tallman Island	B-1	1979+	59.4	80.0	Secondary (AS)	388,214
Richmond County (Staten Island)						
Atlantic Village*	A	1985	-	0.075	Secondary(AS)	-
Elmwood Park Condominiums*	B-1	1974	-	2.0	Primary	20,000
IS-7	A	1964	0.005	0.021	Secondary(AS)	1,000
Mount Loretto Home-Plants #1 & #2*	A	1962	0.041	0.041	Septic Tank	1,000
Oakwood Beach	A	1979+	30.9	40.0	Secondary(AS)	151,585
Point East Condominiums*	A	1986	-	0.16	Extended Aeration w/Sand Filtration	300
Port Richmond	B-2	1979+	42.8	60.0	Secondary(AS)	172,268
Prince's Bay**	A	1987	0.13	0.16	Extended Aeration w/Sand Filtration	700
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	SepticTank with Sand Filtration	1,200
Staten Island University Hospital, South*	A	1995+	0.075	0.06	Secondary(AS)	-
TreetopVillage*	A	1985	-	0.25	Extended Aeration w/Sand Filtration	-
Rockland County						
Joint Regional Sewerage Board -Town of Haverstraw	A	1989+	5.03	8.0	Secondary(AS)	33,000
Orange & Rockland Utilities*	A	1984	0.003	0.01	Secondary(AS)	105
Orangetown Sewer District	A	1996+	9.7	12.75	Secondary(TF)	45,000
Palisades Interstate Park						
-Bear Mountain Plant	A	1967+	0.037	0.30	Secondary(TF)	20,000
-Tallman Mountain Plant	A	1968	0.01	0.006	Secondary(AS)	Seasonal
Rockland County Sewer District #1	A	1995+	23.0	26.0	Secondary(RD)	160,000
Stony Point	A	1985+	1.02	1.0	Secondary(AS)	12,000

WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE SANITATION DISTRICT WATERS
1997

PLANT	ISC RECEIVING WATER CLASSIFICATION	DATE OF CONSTR.	FLOW AVG. (MGD)	FLOW DESIGN (MGD)	TYPE OF TREAT-MENT	ESTIMATED POPULATION SERVED
NEW YORK (con't)						
Suffolk County						
Huntington Sewer District	A	1988+	2.3	2.5	Secondary(TF)	25,000
Northport	A	1972+	0.33	0.34	Secondary(AS)	2,500
Suffolk County Sewer District #1	A	1988+	0.8	0.85	Secondary(RD)	12,000
Suffolk County Sewer District #3	A	1989+	21.1	30.0	Secondary(AS)	215,000
Suffolk County Sewer District #6	A	1973+	0.41	2.0	Secondary(AS)	6,000
Suffolk County Sewer District #21	A	1989	2.1	2.5	Tertiary (OD)	20,000
Westchester County						
Blind Brook (Rye)	A	1985+	3.8	5.0	Secondary(AS)	30,000
Buchanan	A	1990+	0.24	0.5	Secondary(AS)	2,400
Coachlight Sq. Condo. Asso. Inc.*	A	1992+	0.03	0.05	Secondary(AS)	210
Mamaroneck	A	1993+	18.1	20.6	Secondary(AS)	80,000
Metro North (Harmon Shop)*	A	1985+	0.06	0.4	Physical/Chemical	500
New Rochelle	A	1997+	16.6	13.6	Secondary(AS)	80,000
Ossining	A	1981	5.8	7.0	Secondary(AS)	40,000
Peekskill	A	1980+	7.0	10.0	Secondary(AS)	35,000
Port Chester	A	1990+	4.6	6.0	Secondary(RD)	25,000
Springvale Sewerage Corporation*	B-1	1996+	0.1	0.13	Secondary(RD)	1,500
Yonkers Joint Treatment	A	1988+	94.1	92.0	Secondary(AS)	477,000
Federal and Military						
Camp Smith (Westchester County)	A	1997+	0.045	0.24	Secondary(TF)	2,400
FDR Veterans Administration Medical Center (Westchester County)	A	1982+	0.15	0.4	Secondary(TF)	Patient Count
Gateway National Recreation Area (Floyd Bennet Field, Kings County)	A	1981+	0.14	1.0	Secondary(TF)	5,000
Military Ocean Terminal (Hudson County)	B-1	1982+	0.082	0.18	Secondary(AS)	2,500

NOTES: 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
** Flow was diverted to a secondary treatment plant in 1997

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

SLUDGE PRODUCTION FROM WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE SANITATION DISTRICT WATERS

1997

PLANT	SLUDGE (1) GENERATED TONS/YEAR	SLUDGE PERCENT SOLIDS	SLUDGE DISPOSAL METHOD
CONNECTICUT			
Fairfield County			
Bridgeport -East Side	44,000	5 to 6	Incineration(2)
-West Side	90,000	4 to 6	Incineration(2)
Fairfield	5,000	20	Compost/Landfill
Greenwich	6,000	16	Compost/Landfill
Norwalk	60,000	5	Incineration(2)
Stamford	21,000	25	Landfill
Stratford	32,333	6.5	Landfill
Westport	393.4	4	Incineration(2)
New Haven County			
Milford -Beaver Brook	-	14.5	Incineration(2)
-Housatonic	2,427	17	Incineration(2)
New Haven -East Shore	33,243	21.4	Incineration(2)
West Haven	8,700	25	Incineration
NEW JERSEY			
Bergen County			
Edgewater	3,300	17.4	Beneficial Reuse (2)
Essex County			
Passaic Valley Sewerage Commissioners	76,000	55	Land Applications
Hudson County			
North Bergen M.U.A. -Woodcliff	5,298	7.78	Incineration (2)
North Hudson Sewerage Authority			
-Adams Street (Hoboken)	7,500	22	Beneficial Reuse (2)
-River Road (West New York)	29,000	4.1	Beneficial Reuse (2)
Middlesex County			
Middlesex County Utilities Authority	200,000	27	Beneficial Reuses
Joint Meeting of Essex & Union Counties	26,000	27	Landfill & Land Applications

SLUDGE PRODUCTION FROM WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE SANITATION DISTRICT WATERS

1997

PLANT	SLUDGE (1) GENERATED TONS/YEAR	SLUDGE PERCENT SOLIDS	SLUDGE DISPOSAL METHOD
NEW JERSEY (con't)			
Union County			
Linden Roselle Sewerage Authority	47.000	4.4	Compost
Rahway Valley Sewerage Authority	-	-	Landfill
NEW YORK			
Nassau County			
Bay Park	43.078	19.41	Landfill
Belgrave Sewer District	2.219	3.8	Trucked to Bay Park
Cedar Creek	50.523	19.3	Compost
Cedarhurst	-	-	Compost
Glen Cove	3.603	22	Landfill
Great Neck Sewer District	1.000	25	Landfill
Great Neck Village	+60.8	4	Landfill
Inwood	8.391	5.4	Landfill
Jones Beach	-	-	Trucked Out
Lawrence	*15	-	Compost
Long Beach	1,676.2	26	Landfill
Oyster Bay Sewer District	+34.7	4	Trucked Out
Port Washington	*553	32	Incineration
West Long Beach	780	5	Trucked to Bay Park
New York City			
Bronx County			
Hunts Point	111.353	27	Land Application/Landfill Cover
Kings County(Brooklyn)			
Coney Island	(3)		Land Application/Landfill Cover
Newtown Creek	(3)		Land Application/Landfill Cover
Owls Head	(3)		Land Application
Red Hook	4.214	27	Landfill
26th Ward	82.836.2	27	Land Application/Landfill Cover

SLUDGE PRODUCTION FROM WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE SANITATION DISTRICT WATERS

1997

PLANT	SLUDGE (1) GENERATED TONS/YEAR	SLUDGE PERCENT SOLIDS	SLUDGE DISPOSAL METHOD
NEW YORK (con't)			
New York City (con't)			
New York County (Manhattan)			
North River	(3)		Land Application/Landfill Cover
Wards Island	107,019.3	27	Land Applications
Queens County			
Bowery Bay	42,324.1	27	Land Application/Landfill Cover
Jamaica	24,719.1	27	Land Application/Landfill Cover
Rockaway	(3)		Land Applications
Tallman Island	20,497.5	27	Land Application/Landfill Cover
Richmond County (Staten Island)			
Oakwood Beach	21,890.9		Landfill
Port Richmond	(3)		Landfill
Prince's Bay	870	3 to 5	Oakwood Beach
Staten Island University Hospital, South	-	-	Oakwood Beach
Rockland County			
Joint Regional Sewerage Board - Town of Haverstraw	+1,899.2	21.2	Landfill
Orange & Rockland Utilities	-	-	-
Orangetown Sewer District	-	-	Incineration
Palisades Interstate Park			
Bear Mountain Plant	-	-	-
Tallman Mountain Plant	-	-	-
Rockland County Sewer District #1	*2,355	20	Landfill
Stony Point	733	17	Landfill
Suffolk County			
Huntington Sewer District	1,958	20.1	Landfill
Northport	+35.05	3	Incineration(2)
Suffolk County Sewer District #1	+187.76	3	Incineration(53%), Landfill(47%)

SLUDGE PRODUCTION FROM WASTEWATER TREATMENT PLANTS DISCHARGING INTO INTERSTATE SANITATION DISTRICT WATERS

1997

PLANT	SLUDGE (1) GENERATED TONS/YEAR	SLUDGE PERCENT SOLIDS	SLUDGE DISPOSAL METHOD
NEW YORK (con't)			
Suffolk County (con't)			
Suffolk County Sewer District #3	69,436	25	Incineration(53%), Landfill(47%)
Suffolk County Sewer District #6	+75.1	2.5	Incineration(53%), Landfill(47%)
Suffolk County Sewer District #21	+327	1.6	Incineration(53%), Landfill(47%)
Westchester County			
Blind Brook (Rye)	+5,758	<0.5	Pumped to Port Chester
Buchanan	+83.45	2.5	Trucked Out
Coachlight Sq. Condo. Asso. Inc.	-	-	Trucked Out
Mamaroneck	*2,700		Pumped to New Rochelle
Metro North (Harmon Shop)	-	-	-
New Rochelle	*2,800	-	Incineration
Ossining	9,000	20	Incineration
Peekskill	3,650	3	Trucked to Ossining
Port Chester	1,879	4.8	Incineration/Landfill
Springvale Sewerage Corporation	1,193	-	Trucked Out
Yonkers Joint Treatment	39,982	28	Lime Stabilization(2)
Federal and Military			
Camp Smith (Westchester County)	-	-	-
FDR Veterans Administration Medical Center (Westchester County)	-	-	Trucked Out
Gateway National Recreation Area (Floyd Bennet Field, Kings County)	-	-	Landfill
Military Ocean Terminal (Hudson County)	6,560	2.4	Landfill

NOTES: All information and data are supplied by the individual operating entities and are presented as supplied.

(-) Denotes no information.
(*) Reported as dry tons per year.
(+) Estimated volume.

(1) Except where indicated, all volumes represent wet tons per year.
(2) Disposal method occurs off-site.
(3) Transferred by sea to dewatering facility for processing.

INTERSTATE SANITATION COMMISSION
FINANCIAL STATEMENT FY 1997

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, 1996 to June 30, 1997:

CASH BOOK BALANCE AS OF JUNE 30, 1996		$1,097,714.29
RECEIPTS		
Connecticut - FY'97	$ 3,333.00	
New York - FY'97	315,000.00	
New Jersey - FY'97	315,000.00	
EPA - FY'96	72,500.00	
EPA - FY'97	217,500.00	
Interest	46,417.11	
Miscellaneous Receipts	17,140.81	
TOTAL RECEIPTS		986,890.92
	Sub-Total	$2,084,605.21
DISBURSEMENTS		
TOTAL DISBURSEMENTS		988,715.75
CASH BOOK BALANCE ON JUNE 30, 1997		$1,095,889.46

U.S. Treasury Bills	$ 899,635.88
Insured Money Market Accounts	177,037.39
Checking Accounts	19,216.19
	$ 1,095,889.46

AMENDMENTS TO THE WATER QUALITY REGULATIONS OF THE INTERSTATE SANITATION COMMISSION

(Adopted October 15, 1997)

The Interstate Sanitation Commission Water Quality Regulations are amended as follows:

1. The Interstate Sanitation Commission's Water Quality Regulations are amended by adding a new § 4. The previous § 4 and § 4.01 are to be renumbered to § 5 and § 5.01, respectively. The previous § 5, § 5.01 and § 5.02 are to be renumbered to § 6, § 6.01 and § 6.02, respectively. The previous § 6 and § 6.01 are to be renumbered to § 7 and § 7.01, respectively. There are no changes to the text in the aforementioned renumbered sections.

2. The new § 4. reads as follows:

4. Notice Requirements for Raw Sewage Bypasses and Treatment Reductions

4.01. Prior to any planned discharge of raw sewage material or partially treated sewage material from a public or private sewage treatment facility directly into the waters of the Interstate Sanitation District, the discharger shall prepare a notice designed to inform the Interstate Sanitation Commission of the location, character and amount of the planned discharge. The notice shall be in the form and contain the information specified by the Interstate Sanitation Commission, as more specifically denoted in subdivision 4.03 of this section. The notice required herein does not apply to wet weather discharges from combined sewer overflows or storm sewer overflows.

4.02. Written notice shall be provided to the Interstate Sanitation Commission by the discharger as soon as the discharger has actual knowledge of the planned action or event but in no event less than 10 days prior to the planned action or event. Oral notice is not required under this regulation, however, if the discharger chooses to provide oral notice initially, then written notice must be provided within 24 hours of the oral notification.

4.03. The contents of the notice to the Interstate Sanitation Commission shall include at least the following:

4.03(a). Date of the planned action and date of the prospective application for the discharge permit, if required, and the end of any public comment period if required by the discharger's home state;

4.03(b). Name, address and telephone number of the relevant regional and central offices of the state environmental department at which interested persons may obtain further information, when and if so filed;

4.03(c). Name and address of the prospective discharger;

4.03(d). Brief description of each prospective discharger's activities or operations which would result in the prospective discharge(s) (e.g., public or private wastewater treatment plant, sewage system);

4.03(e). Name of the waterway to which each discharge is to be made and a short description of the quality, character, location and entity responsible for each discharge described in the application, a sketch or detailed description of the location of the discharge will serve to satisfy this requirement;

4.03(f). A qualitative description of the discharge, which shall include at least the following:

4.03(f)(1). the estimated rate, duration and frequency of the proposed discharge and, if the discharge is continuous, the average daily flow in gallons per day;

4.03(f)(2). any and all pollutants to be discharged as authorized by a discharge permit, if required, and the anticipated average daily discharge or concentration of pollutants;

4.03(f)(3). the degree of treatment, disinfection and floatables collection that the flow will receive prior to the discharge.

4.04. Any powers herein granted to the Interstate Sanitation Commission shall be regarded as in aid of and supplemental to, and in no case a limitation upon, any other powers legally vested in the Interstate Sanitation Commission, its member states and the federal government.

GLOSSARY

ACOE	Army Corps of Engineers
ALJ	administrative law judge
BGD	billion gallons per day
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
COAST	Clean Ocean and Shore Trust
CSI	College of Staten Island
CSO	combined sewer overflow
CT	Connecticut
CWA	Clean Water Act
DEC	Department of Environmental Conservation
DEP	Department of Environmental Protection
DO	dissolved oxygen
DOS	Department of Sanitation
DPR	Department of Parks and Recreation
DPW	Department of Public Works
EBUF	enclosed barge unloading facility
EDF	Environmental Defense Fund
EPA	Environmental Protection Agency
FY	fiscal year
GIS	geographic information system
HEP	Harbor Estuary Program
HARS	Historic Area Remediation Site
HRFA	Hudson River Fisherman's Association
HUCWSA	Hoboken-Union City-Weehawken Sewerage Authority
HVAC	heating, ventilating and air conditioning
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
MGD	million gallons per day
NEP	National Estuary Program
NHSA	North Hudson Sewerage Authority
NJPDES	New Jersey Pollutant Discharge Elimination System
NPDES	National Pollutant Discharge Elimination System

GLOSSARY
(continued)

NRDC	Natural Resources Defense Council
N/SPDES	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
PVSC	Passaic Valley Sewerage Commissioners
QA/QC	quality control/quality assurance
R/V	research vessel
RFP	request for proposals
RRF	resource recovery facility
SBR	sequencing batch reactor
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
T/A	trading as
TSS	total suspended solids
WPCP	water pollution control plant
WQM	water quality monitor