

THE URBAN PROSPECT

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Waterworld

During the past decade water and sewer charges have become a major cost concern for property owners throughout the city. Rates have increased steadily, and the movement toward universal metering has produced a redistribution of the cost burden among classes of users. Yet, few of those paying the bills have even a general understanding of the city's water quality policies or of the environmental considerations that could cause bills to escalate in the future.

Moreover, because customers pay for water and sewer services through fees and not taxes, the spending and pricing policies of the agencies involved are largely free of legislative oversight. Nor is the system regulated, as are many other utilities, by the state Public Service Commission or other entities. As a result, it is particularly important for the public to remain informed about the city's water and sewer pricing and the environmental policies which they fund.

Capital Spending Driving Rates

Since 1987 fees collected from water and sewer customers in the city grew by over 150 percent while total real estate taxes, by comparison, increased by only 43 percent. While property tax collections still outweigh water and sewer fees by a factor of seven, the proportion is much closer for certain classes of properties. Owners of single-family homes now pay about one dollar in water and sewer fees for every four dollars paid in real estate taxes, and if not for a limited moratorium on metered billing, the ratio would be approaching one-to-one for owners of low-income multifamily-family buildings.

Between 1987 and 1992, total system collections from city customers grew at an average annual rate of over 20 percent. The rate increases eased in the following five-year period, with collections growing by only 4 percent annually. The city's Water Finance Authority is, however, projecting another acceleration in fee growth during the coming five years, with total user payments expected to grow by over 6.5 percent annually between 1997 and 2002, adding \$430 million to the service bills of property owners.

Behind the periodic rate surges are the borrowing costs of a huge capital improvement program, the burden of which has been heightened by the removal of federal and city subsidies to the system. Total capital commitments for water supply,

sewers, and water pollution control totaled \$668 million in 1993, not dramatically higher than the \$608 million committed in 1983. However, in the later year the system itself generated 97 percent of its capital funds, compared to only 48 percent a decade earlier. The city phased out its subsidy to the system after the Water Board, the entity that legally manages the system's finances, and the Water Finance Agency, its related financing arm, were created in 1984. At roughly the same time, the federal government phased out its construction grant program for pollution control facilities, replacing it with a revolving loan fund.

Between 1993 and 1997 the system's annual capital commitments grew by 77 percent to \$1.185 billion, and last year virtually all of the capital funds were self-generated. The system's capital improvement program calls for expenditures of \$8.6 billion during the next ten years, with spending peaking at \$1.34 billion in 2002. Big-ticket items within the program include completion of a third water supply tunnel and the replacement of chronically failing sewer components, treatment plant upgrading and reconstruction, and a filtration plant for the Croton water supply.

Lurking in the background is a possible federal order to filter drinking water drawn from the Catskill and Delaware watersheds, which alone could cost as much as \$8 billion. To forestall such an order, the city entered into a watershed protection agreement with the state, watershed communities, the Environmental Protection Agency (EPA), and several environmental groups, which will add about \$400 million to the city's watershed protection costs over the next ten years.

To facilitate borrowing, the Water Board has covenanted to establish rates sufficient to collect revenues in each fiscal year equal to 115 percent of its aggregate debt service payable in that year plus 100 percent of the required operating expenses and deposits. While operating expenses are projected to grow by only 2.3 percent annually, total debt service will soar from \$484 million in 1998 to \$891 million in 2003 as a result of \$6.8 billion in new bond issues during the period.

Fixing A Hole

Among the major capital improvement projects underway is an effort to rebuild the city's intricate system of water supply

mains and trunk lines, which distribute nearly 1.3 billion gallons a day to city users. About half of the system's 6,048 miles of water distribution pipe was installed before the Second World War and about 6 percent is more than 100 years old. In recent years the system has averaged about 550 water main breaks per year, and the Department of Environmental Protection receives about 5,000 leak complaints annually.

The system's ten-year capital improvement plan includes about \$650 million for the replacement of 204 miles of trunk and distribution main replacement and 116 miles of extensions. In addition, a third water tunnel connecting the city to its reservoir system is now under construction, with its first stage expected to become operable this year. The other two tunnels were completed in 1917 and 1936. The new tunnel will enhance the system's ability to supply the eastern and southern portions of the city, permit inspection and rehabilitation of the other two tunnels and ensure water delivery in the event of supply disruption in the others. The project will cost about \$850 million over the next five years.

The system's inventory of sewer pipe is slightly older than the water supply pipe, with about two-thirds having been installed before 1940. In recent years DEP has been receiving about 34,000 sewer backup complaints annually, and has been replacing about 23 miles of pipe each year. Over \$1.3 billion is budgeted to replace or extend 478 miles of sewer pipe during the coming ten years.

Trick or Treatment

The most expensive part of the system is that which is intended to control water pollution, with federal mandates continuing to accumulate while federal assistance diminishes. Over \$4 billion, or 46 percent, of the 10-year capital budget is associated with improvements or upgrades to the city's 14 municipal waste treatment plants.

Regulations concerning waste, storm and sewer water discharges stem from the Clean Water Act of 1972 (CWA). The CWA operates through three main mechanisms: a National Pollution Discharge Elimination System (NPDES), which regulates the discharge of pollutants from specific point sources; appropriations to state revolving loan funds for upgrades and construction of publicly owned treatment works; and management of non-point sources of pollution. States establish water quality standards and determine that water quality is in compliance with CWA mandates. The CWA encourages states to exercise primary enforcement authority over permitting for point source pollution. New York State has primacy for point source permits within it, including the city's 14 treatment plants.

The CWA requires that municipal sewage plants meet a technological standard known as "full secondary treatment." Effluent dischargers must also conform to "water quality-based limitations," which depend on the uses designated by the state for a particular body of water.

Originally the CWA provided construction grants for municipalities to build or upgrade treatment plants to conform

to its technology based mandates. In 1987, however, Congress replaced the construction grants program with a revolving loan fund for which the federal government provided initial capitalization. This shifted the primary financial burden for complying with CWA's mandates to states and localities.

Upgrading to full secondary treatment has been completed at 13 of the plants. The remaining facility to be upgraded, Newtown Creek, which is by far the largest in terms of design capacity and the population it serves, has proven to be the most problematic and costly for the city. The state approved an upgrade plan in 1991 but later withdrew it because it called for the same technology which had caused operational malfunctions at the North River facility. The upgrade is now slated for completion in 2007 at a cost of roughly \$1.2 billion.

The CWA's main regulatory emphasis is on controlling discharges from point sources. It also, however, requires states to plan for controlling non-point sources of pollution (for instance, coming from stormwater runoff from streets and farms, which carries chemicals and debris). Environmental groups in New York and elsewhere have determined that many states are not complying with the water quality-based standards of the CWA and that over half of the waterways in the country are still exhibiting unsafe levels of pollutants despite the fact that permit holders are, for the most part, fulfilling permit requirements. This implies that non-point sources are a primary cause of pollution and/or that NPDES pollutant limitations may not be adequate. Environmental organizations have begun a strategy of bringing lawsuits against EPA seeking to force it to order states to comply with CWA water quality standards.

The water quality standards approach has recently had an impact on the Long Island Sound. Environmental groups and EPA have determined that the water quality of the sound is not in compliance with CWA requirements for estuaries. It has found that parts of the sound are in a state of "hypoxia," where excessive nitrogen levels fuel the growth of planktonic algae, which die and fall to the bottom, consuming oxygen needed to support other life.

EPA has concluded that the excess nitrogen is a result of several causes: inadequate sewage treatment, overflow from combined sewage and stormwater treatment facilities, and non-point sources. In addition, New York State has recently brought an action against the city, charging that the city's

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treatment plants which discharge to the sound have been operating in violation of their NPDES permits. A similar suit was also initiated by the environmental group Sound Keeper, and the state of Connecticut has joined as another plaintiff. New York and Connecticut are currently entering into an agreement orchestrated by EPA to instruct localities near the sound, including the city, to make upgrades to treatment facilities to reduce nitrogen levels, to contain overflows, and to attempt new strategies to reduce non-point sources of pollution. According to EPA, the estimated cost of this agreement,

panded the number of regulated contaminants in drinking water to 83, more than three times the number of contaminants previously regulated, and required EPA to set maximum contaminant levels and goals.

The New York State Department of Health (NYSDOH), the state agency exercising the SDWA primacy, in 1992 ordered the city to construct a filtration plant for the Croton watershed by 2000 (the Croton system supplies ten percent of the city's water). The city requested an extension of this deadline but was subsequently sued by the US Department of Justice for not already providing filtration. The state then joined the action, which seeks civil damages of up to \$27,500 per day for violation of the SWTR and the SDWA. The litigation is ongoing, and the city is negotiating a modified schedule for the facility's construction. The city expects it to be in operation by 2007 at an estimated cost of \$828 million. There is significant opposition to the filtration order from some environmentalists, who advocate a watershed protection approach over filtration and oppose the plant's proposed location at the Jerome Park Reservoir. They point out that a report was not set forth by NYSDOH, EPA or DEP to explain the problems with Croton water that justify filtration. Furthermore they contend that alternative sites were not considered, nor was a full environmental impact statement provided.

Most of the city's water supply comes from the Delaware and Catskill watersheds. In 1991, the city submitted a plan for avoiding filtration of Delaware and Catskill water to NYSDOH, which gave conditional approval, only to withdraw it early in 1992 after establishing that it did not have primacy to administer the SWTR. The city's plan for avoiding filtration was then given to EPA which, in early 1993, indicated that it would approve the city's plan provided that the protection of the Catskill and Delaware systems would be ensured by limiting development near the watershed and by upgrading treatment plants which discharge into it. The price tag for filtration of the Catskill and Delaware systems, if filtration is ultimately required, is estimated at \$6 to \$8 billion.

Negotiations between the city, state, EPA, upstate counties and environmentalists ending in late 1996 eventually produced the "Watershed Agreement" which has, for now, met the criteria of the SWTR for filtration avoidance. It will cost the city approximately \$400 million over what was originally budgeted in its ten-year capital plan and includes a variety of aspects: acquisition of upstate land around the watershed, upgrading and construction of waste treatment plants (both public and private), assistance to watershed localities for non-point source control and for environmentally responsible economic development, funding for committees which oversee the Agreement, and funding for studies to monitor the watershed's status.

The costs of the Watershed Agreement are considerably lower than the costs of filtration. Recent developments, however, raise some fears that the EPA could still order filtration in the future. Environmentalists are concerned mostly

The Water System's Ten-Year Capital Improvement Plan

	1998-2002	2003-2007	Total
	(\$ millions)		
Water Supply & Distribution	2,230.1	751.8	2,981.9
Tunnel No. 3	875.9	0.0	875.9
Trunk & Main Repl.	292.5	139.4	431.9
Trunk & Main Extn.	165.1	55.0	220.1
Croton Filtration Project	328.0	500.0	828.0
Water Quality Preservation	359.2	42.3	401.5
Pollution Control	3,074.4	830.7	3,905.1
Water Quality Mandates	1,198.1	306.0	1,504.1
Plant Upgrading & Recon.	1,887.4	472.7	2,360.1
Sewers	714.9	618.0	1,332.9
Replacement	398.6	410.0	808.6
Extensions	306.3	207.9	514.2
Facilities & Equipment	204.7	75.6	280.3
Total	6,224.1	2,275.8	8,499.3

Source: NYC Municipal Water Finance Authority

called the Phase III Actions for Hypoxia Management, is \$1 billion, of which the city is responsible for \$250 million.

New York, like many other cities, operates a combined waste and stormwater sewer system. Overflows during storms have posed such a problem that the Water Authority's capital program includes \$1.4 billion for an overflow reduction project. The funds will pay for the construction of large holding cisterns to be located underground in Queens, into which stormwater can be funneled during heavy rains. Water will then be pumped to treatment plants in amounts that do not overwhelm their capacity.

A Watershed Agreement

The other federal statute driving New York's water policy is the Safe Drinking Water Act (SDWA). The SDWA was enacted by Congress in 1974 to ensure the public's safety from contaminated drinking water. Like the CWA, it is administered by EPA and regulatory primacy is delegated to the states.

In 1986 Congress made significant amendments to the SDWA, among which was the mandate of filtration for all surface water supplies that do not meet certain water quality criteria. The criteria are reflected in the Surface Water Treatment Rule (SWTR). The 1986 amendments also ex-

about the status of the Kensico reservoir in Westchester County. All water coming from the Catskill and Delaware systems passes through it, and no matter how pure at its source, water can become tainted there.

Environmentalists fear that recent development near the Kensico, including a state Department of Transportation's (DOT's) project to widen a highway nearby, could undermine watershed protection efforts. The highway expansion, according to opponents, poses two threats. First, the greater access to the area may encourage even more development. Second, the highway itself will cause an increase of runoff into the watershed. New research suggests that the deadly intestinal parasite cryptosporidium can appear in runoff from hard surfaces, like concrete, associated with development. Environmentalists, so far, have been able to successfully impede the highway expansion by contesting DOT's environmental impact statement. The state maintains, however, that the highway expansion is not in violation of the Agreement.

Environmentalists have also been critical of the city for failing to oppose the highway project and for its reluctance to initiate actions against development that may threaten the watershed. The city's land purchasing efforts around the watershed have also raised questions. The Agreement requires the city to solicit, on a fair market value basis, for the purchase of 355,000 acres of watershed lands. The 1997 solicitation requirement of 56,000 was met, but as of March 29, 1998 it had entered into contracts to purchase only 9,100 acres and closed on only 147.

The Watershed Agreement creates no new environmental enforcement mechanisms. Oversight, however, is provided by a series of committees established by the Agreement. The Watershed Protection and Partnership Council is an umbrella committee which represents a wide range of interests concerning the watershed. Perhaps the most important of its subcommittees is the Executive Committee, which will make recommendations in 2002 to the city, state and EPA concerning what modifications, if any, are needed to further the purposes of the Agreement.

The Agreement also provides for monitoring of watershed status. In 1999, as part of this monitoring effort, a report by the International Life Sciences Institute will assess the state of the watershed. Another report by the National Academy of Sciences, although not authorized by the Agreement, will also make assessments on the watershed's condition. Neither of these studies falls under EPA's authority, but some environmentalists are concerned that because the Agreement allows for EPA, in consultation with NYSDOH, to reconsider its determination of filtration avoidance before June 2002 (the next scheduled filtration avoidance determination date), negative findings could prompt EPA to issue a filtration order.

Others contend that these reports can help channel efforts toward more effective protection of the watershed by focusing attention on the areas of greatest concern, such as stormwater runoff, which provide the best hope that filtration can be

avoided beyond 2002.

Some environmentalists argue that the watershed agreement does not have the teeth needed to ensure that the city can avoid a filtration order indefinitely. It is necessary, they maintain, to view the agreement as a starting point in a process of watershed protection that must be maintained through citizen activism, litigation, and perhaps new legislation. Housing interests, of course, seek to avoid a scenario where EPA orders filtration, and water and sewer fees reflect the costs of both filtration and the watershed protection.

Mitigating Rate Impacts

The city remains committed to its universal metering goals. During the past five years, collections from customers paying on a metered basis have risen from 38 to 58 percent of revenues. Virtually all one-and two-family homes in the city are now paying on a metered basis, and about 10,000 multifamily residential properties have been metered, although many are still paying on a flat-rate basis.

Housing experts have long argued that a pricing system based entirely on consumption volume is inappropriate for New York City. Since over two-thirds of the city's residents are renters, metering has limited conservation value. Because it is infeasible to sub-meter individual apartments, renters are unaware of, and do not directly pay the cost of, the water they consume. Moreover, the metered-fee system tends to shift the cost burden to low-income properties, because the dwelling units tend to have high occupancy and tenants spend more hours at home than the affluent.

Furthermore, housing industry experts point out that much of the system's cost represents fixed plant and equipment which does not vary with a customer's volume of consumption. They have urged the city to implement a rate schedule that incorporates both fixed and variable charges, as is done in most other cities that have metered systems. While sympathetic to that argument, DEP claims that its computer and billing systems cannot be adapted to that system in the near future.

While considering the various permanent fee alternatives, the Water Board has implemented a series of temporary measures. A fee cap of \$500/unit/year has been imposed for metered multifamily properties. More crucial to the financial stability of low-income buildings has been the Board's transition program, which allows metered buildings to continue to be billed on a flat-rate basis while a permanent solution is devised. Approximately 18,000 properties participate in the transition program, which must be extended each year.

In lieu of a split variable/fixed billing system, housing interests are seeking a permanent per-unit cap, for eligible low-income buildings, that is set closer to the average than the current temporary one. In the meantime, they are emphasizing the importance of continuing the transition program. The Water Board will be holding public hearings in each borough between April 22 and 24, and vote on rates for the coming year on May 1. ■