

# **Operating Highlights**

**Water Pollution Control Authority for the  
City of Norwalk**

**July 2010**

## **INTRODUCTION**

The Water Pollution Control Authority for the City of Norwalk, Connecticut (WPCA) was established in 2002 to “construct, reconstruct, operate and maintain the Sewerage System for the City of Norwalk” (Chapter 113, Code of the City of Norwalk).

A nine member - largely citizen-based - volunteer Board of Directors, governs the WPCA. The current membership is as follows:

The Honorable Richard Moccia, Mayor  
Darren Oustafine, Chairman  
Lewis Clark, Vice Chairman  
John Atkin  
Frederika Bikakis-Hajian  
Andrew Conroy, Public Works Committee Chair  
Douglas Hempstead, Common Council President  
Laurel Lindstrom  
Friedrich Wilms, Board of Estimation & Taxation

In addition, the Director of Public Works, Harold Alvord, and the Director of Finance, Tom Hamilton, serve as ex officio members of the Board without the right to vote. Dilene Byrd serves as the Board’s Recording Secretary, and elected position as required by the WPCA bylaws.

The WPCA provides regional municipal wastewater collection and treatment services on a retail basis to approximately 23,000 customers in the City of Norwalk and on a wholesale basis to the Town of Wilton through an Interlocal Agreement. Additional retail accounts are served in Westport. The WPCA intends to pursue a formal interlocal agreement with Westport in the future; thus far they have not expressed interest in working with the WPCA on this issue. The Wilton Interlocal Agreement expired on December 31, 2008 and the WPCA is close to executing a subsequent agreement.

The WPCA oversees the operation and maintenance of an extensive sewer system that includes 180 miles of pipeline, 22 pumping stations, and an 18 million gallon per day (MGD) advanced secondary wastewater treatment plant. Wastewater treated by the WPCA at its South Smith Street facility is discharged into the Norwalk River and must meet both Federal and State effluent quality standards. The WPCA continues being organized to ensure the necessary professional, technical and skilled personnel, specialized facilities and equipment, and financial resources are available to allow it to comply with federal and state regulations. Furthermore, as an enterprise fund of the City of Norwalk its operations are expected to be financially self-sufficient. The WPCA currently employs three full-time staff members. Other services and staff are provided by the City of Norwalk and reimbursed to the City through indirect charges.

## **OPERATING BUDGET HIGHLIGHTS**

In its annual budget process, the WPCA continues to seek out efficiencies that will allow it to hold down the costs to its customers while meeting its shared obligation to minimize the effects of wastewater collection, treatment and disposal on the region's environment.

In spite of efforts to hold the line on operating costs, there are several factors putting upward pressure on sewer rates, including costs for debt service related to the 1990's nitrogen removal improvements made to the South Smith Street treatment plant to improve the water quality of Long Island Sound; renewal of the vast network of pipes that comprise the WPCA's wastewater collection system; allocation of support services costs associated with management and operation of the WPCA; and implementation of a capital program to invest in the WPCA's assets on an on-going basis.

As a result, the approved budget for Fiscal Year 2010-11 includes total expenditures of \$14,494,840 versus \$13,746,135 approved for the FY 2009-10 budget, an increase of \$748,705 or 5.4%. Therefore, an increase in the Norwalk residential sewer rate from the current \$235 to \$250 is called for, funding the Replacement Reserve at \$1,633,089. The WPCA continues to be in a strong financial position with a fund balance projected to be close to \$8M at the close of FY 2010-11. The sewer use fee revenue projections were based on 2008 water consumption data provided by the First and Second Water Districts; however, actual 2009 data used for billing purposes indicates revenues will be short around \$500,000 this fiscal year because water consumption is down about 7 to 8%. This shortfall will be offset by the Replacement Reserve.

Other revenues (those not generated through the sewer use rate) are expected to decrease from the current year budget of \$1,395,005 to \$1,083,185 – about 22% or \$311,820. Other revenues are decreasing because the WPCA did not adopt an Industrial Pretreatment Program surcharge that was budgeted in FY 2009-10 for commercial entities discharging higher than normal waste load characteristics into the sanitary sewer system. In addition, the wastewater plant process did not meet nitrogen removal goals set for the facility under the State's General Permit resulting in purchase of nitrogen trading credits. Despite the decrease in other revenue streams, the WPCA continues to favorably control residential sewer rates through adoption and refinement of user fees and aggressive collection of unrealized revenues through its special billing process.

In 2002, the WPCA adopted a flat fee sewer use charge for residential, commercial and mixed use customers who used less than 110,000 gallons per year. Commercial customers and mixed use properties that use more than 110,000 gallons per year are charged based on water consumption plus a flat fee. A comparison of last year's and this year's sewer rates are as follows:

	Approved Rate 2009-10	Normalized Rate <sup>1</sup> 2009-10 (\$/CCF)	Approved Rate 2010-11	Normalized Rate <sup>1</sup> 2010-11 (\$/CCF)
Residential Rate	\$235	\$2.45	\$250	\$2.60
Commercial & Mixed Use Rate	\$340	\$2.31	\$365	\$2.48
Consumption Rate <sup>2</sup>	\$6.10/ 1,000 gallons	\$4.56	\$6.50/ 1,000 gallons	\$4.86

<sup>1</sup> Typical single family water consumption 96 CCF (CCF = 100 cubic feet) per year

<sup>2</sup> Commercial and mixed use accounts using over 110,000 gallons

The approved FY 2009-10 residential sewer rate was for the most part lower than fees charged by other municipalities surveyed in Connecticut and we expect the trend to continue into FY 2010-11.

	2009-10 Residential Bill <sup>1</sup>
Darien	\$384 <sup>2</sup>
Bridgeport	\$402 <sup>2</sup>
Westport	\$357
Stamford	\$328 <sup>2</sup>
Waterbury	\$325 <sup>2</sup>
New Haven	\$303 <sup>2</sup>
<b>Norwalk</b>	<b>\$235</b>

<sup>1</sup> Calculated based on consumption of 96 ccf

<sup>2</sup> Municipality charges on water consumption basis

June 2010 marked completion of the tenth full year of contract operations under Operations Management International (OMI). The WPCA has a 20-year agreement with OMI for the contract operation of its collection, pumping and treatment facilities as a means to hold down operating costs, stabilize sewer rates, and provide ready access to state-of-the-art wastewater technology and operation and maintenance practices. In addition to providing a cost effective and efficient means to operate, maintain and manage its wastewater facilities, contract operation provides the potential for building a stronger and more effective organization as the WPCA moves forward in meeting its important mission to provide reliable municipal wastewater service in compliance with regulations and in the most cost effective manner possible. The contract with OMI also provides for sewage sludge processing and disposal. In FY 2008-09, the WPCA executed a third amendment OMI's agreement to address asset protection issues and other contract inconsistencies. A fourth amendment is planned for FY 2010-11 addressing contract conclusion issues related to asset condition assessment at the end of

the 20 year contract period as well as changes required to operations resulting from capital upgrades.

Norwalk's South Smith Street Wastewater Treatment Plant discharges into the Norwalk River and ultimately the Long Island Sound. As a result, the facility is being impacted by implementation of certain recommendations made in the Long Island Sound Study (LISS) related to the release of nutrients, specifically nitrogen, in the treated effluent from wastewater treatment plants and their impact on the water quality of the Sound. The Comprehensive Conservation and Management Plan (CMMP) for Long Island Sound calls for reduction of the sources of nitrogen. Since 84 municipal wastewater treatment plants represent the primary point sources of nitrogen discharges in Connecticut, those facilities must meet requirements established in Connecticut Department of Environmental Protection's (CTDEP's) Nitrogen Reduction Program. The WPCA completed an upgrade of its wastewater plant in the late 1990s to meet these nitrogen reduction requirements. Phase III of the CTDEP's Program set specific nitrogen reduction levels through establishment of Total Maximum Daily Loadings (TMDL), which specify how much nitrogen sewage treatment plants will be allowed to discharge. The CTDEP is in jeopardy of not achieving its 2014 TMDL goal. Norwalk, as one of the top three dischargers of nitrogen into Long Island Sound, is being looked to further reduce its nitrogen discharge by the CTDEP to aid in attaining the State's water quality goals.

CTDEP implemented a Nitrogen Credit Trading Program (NCTCP) as a means to reduce the overall costs for municipal wastewater treatment systems to control nitrogen. The NCTCP allows plants that achieve a greater effluent nitrogen reduction than required to sell credits to plants that do not achieve their nitrogen reduction requirements. The future of this program beyond 2014 is unknown. In 2009, the WPCA's South Smith Street Plant did not achieve nitrogen reduction levels and will pay approximately \$60,000 to the State in nitrogen credits. In previous years the South Smith Street Plant has been in both a credit buying and selling position. Nitrogen removal is a significant issue that will affect the WPCA's long-term capital improvement program, operating costs, and sewer rates. In FY 2006-07, the WPCA approved a capital project to investigate low-level nitrogen removal options. The WPCA selected the firm of Camp, Dresser & McKee (CDM) to conduct this study. A Facility Plan was completed in June 2008 which, with the guidance of a WPCA steering committee, selected Membrane Biological Reactor (MBR) technology for nitrogen removal. While this technology provides superior water quality and the capital cost is within the same order of magnitude as other technologies evaluated, the energy usage is quite high. Additionally, the WPCA retained Malcolm Pirnie to investigate on-going nitrogen performance issues and provide comments on improving interim removal as well as review reasons for continuing problems with solids losses from the secondary clarifiers. The WPCA furthered this investigation this year by retaining CPE Services to perform more thorough analysis and field studies on the clarifiers. The WPCA with OMI are planning some modifications to the clarifiers this coming year as a result of the studies.

The WPCA will continue to need to invest in upgrading and replacing its infrastructure. The South Smith Street Plant, although retrofit in the past 10 years for interim nitrogen reduction improvements, still has some other unit processes that are approximately 30 to 40 years old and showing signs of age. Two areas of particular concern are the plant's headworks system (grit, screenings, and pumping) and wet weather treatment system - both of which may be affecting the facility's capacity. In FY 2005-06 the WPCA retained CDM to assess these systems and prepare concept designs for their rehabilitation or replacement. The WPCA combined these two projects in FY 2006-07 to maximize Clean Water Fund opportunities and water quality impacts.

Phase 1 of the treatment plant upgrade - replacing the entire headworks facility - is under construction. An opinion of probable cost prepared by the engineer estimates the entire three-phase project cost at greater than \$140M. The WPCA is proceeding forward with Phase 1 is scheduled for completion in November 2011. Gilbane Building Company was selected as the Construction Manager. The total estimated cost of Phase 1 is just under \$40M and the DEP has allocated Clean Water Funds loans and grants design and construction of this project. The availability of Clean Water Funds to construct future phases of this project is critical to proceeding forward. In June 2010, the WPCA selected CDM to continue with the Phase 2 design. Costs for constructing the MBR system should be available in September 2010, although preliminary estimates are around \$70M. The WPCA has also prepared a comprehensive financial model to predict rate increases based on operating budget projections and capital requirements. The model - prepared by an independent consultant (Malcolm Pirnie) and reviewed by the Finance and Comptroller Departments - projects an annual rate increases to afford this upgrade.

The collection system (the 22 pumping stations, approximately 180 miles of sewer pipelines and associated manholes, and appurtenant facilities) has been an area of increased focus by the WPCA over recent years, and will continue to be so throughout 2010-11 and beyond. Under the contract operation arrangement, the operation and maintenance of the collection system is carried out by OMI. OMI also was required to complete a closed-circuit television inspection of all sewer lines. About 7 years ago OMI identified some \$18M in required collection system rehabilitation and repair. Efforts by the WPCA to develop and implement long-term repair/rehabilitation and capital improvement programs for the collection system will continue - the WPCA retained Malcolm Pirnie in FY 2005-06 to prepare a 20-year sanitary sewer collections system master plan which identified \$25M in sewer repair costs. Rehabilitation projects to date have included a critical 4,700 feet of sanitary sewer - the Seaview/Cove Interceptor - at a cost of approximately \$1M; the 7-mile Westport Avenue Sewershed with capacity issues of about \$2M; and the Norwalk River Interceptor - about one mile of early 1900's-era 48-inch sewer which was near collapse and if not repaired could have had a catastrophic environmental impact - at cost of about \$4M; South Smith Street 36-inch pipe replacement (\$350,000); and the Keeler Brook sewershed inflow and infiltration reduction project (\$450,000). Additionally, the sewer was extended along Highland Avenue at a cost of just under \$300,000. At this point essentially the entire backbone of the collection system has been addressed. Projects planned for 2010-11 include

rehabilitation of the Beacon Avenue interceptor and repair of the Ely Avenue sewershed. In addition to pipe repair work, the WPCA completed interim improvements to the Fort Point Pump Station (circa 1929) at a cost about \$500,000. A complete rebuild of the station is planned for in the future. The Ann Street siphon chamber was also rehabilitated and instrumentation installed through an approximately \$200,000 investment.

As part of OMI's scope of services, a computerized maintenance management system (CMMS) has been implemented for the plant and pump stations. In accordance with the operating agreement, OMI is also using a CMMS for the collection system (Cityworks) that the City is using for its Customer Service Center. Implementation of the Cityworks software package will require the WPCA and OMI to continue to build and expand upon the existing Geographic Information System (GIS). The sewer system GIS included mapping and an extensive inventory and database of all main line sewers. Cityworks and the GIS have been linked together for asset management. The next step will be to link the hydraulic model and the sewer pipe inspection reports/videos to comprehensively and cost-effectively plan capital improvements to the system.

Other projects underway in FY 2009-10 that will continue into FY 2010-11 included: upgrades to the instrumentation and control systems at the plant and pump stations; implementation of a comprehensive fats, oils and grease program; alternative energy evaluation; and various pump station upgrades.

### **PROGRESS ON GOALS FOR 2009-10**

The following short- and long-term goals were planned for initiation and/or completion in FY 2009-10. Progress is discussed below:

- Construct Phase 1 of the wastewater treatment plant upgrade. *Under construction.*
- Initiate design of Phase 2 upgrades – low level nitrogen reduction improvements. *Under design and \$42M in Clean Water Funds allocated to this project by the State.*
- Complete alternative energy evaluation. *Under evaluation and working on negotiating an alternative rate structure for electrical purchases from Third Taxing District.*
- Continue development of a comprehensive fats, oils and grease and industrial pretreatment program. Evaluate possibility of being a regional resource for fats, oils and grease recycling. *Comprehensive program established and study underway for being a regional handling facility.*

- Improve public outreach through participation with various civic groups and professional organizations. *The website has been completed and plant tours continue.*

### **GOALS FOR 2010-11**

The following goals will be continued or initiated in FY 2010-11:

- Continue construction of the Phase 1 upgrade.
- Complete design and bidding of the Phase 2 upgrade. Secure funding for project and complete affordability analysis.
- Negotiate power purchase agreement with Third Taxing District.
- Complete alternative energy evaluation.
- Complete the regional fats, oils and grease study.
- Complete modifications to secondary clarifiers as recommended by CPE Services.
- Install IP camera security system throughout the treatment plant site.