



Greater New Haven
Water Pollution Control Authority

Cost of Service Study
April 8, 2010

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I. Letter of Transmittal

April 8, 2010

Mr. Gabriel Varca
Director of Finance and Administration
Greater New Haven Water Pollution Control Authority
260 East Street
New Haven, Connecticut 06511

Dear Mr. Varca:

RSM McGladrey, Inc. is pleased to submit our cost of service study for the Greater New Haven Water Pollution Control Authority (the "Authority"). The overall objective of our study was to produce a schedule of recommended sewer user rates for customers of the Authority's system which will be sufficient to meet the anticipated costs of operating the wastewater system for the fiscal year ending June 30, 2011.

This study was initiated in accordance with the requirements set forth in Section 42 of the Authority's sewer ordinance which requires that a cost of service study be conducted annually.

The specific objectives of our study are as follows:

1. Review and evaluate the proposed expense budget for FY2010-11, and prepare cost projections for the succeeding four fiscal years based on management's cost estimates;
2. Review and evaluate the proposed revenue budget for FY2010-11, and prepare revenue projections for the succeeding four fiscal years based on management's estimates;
3. Determine the projected annual estimated revenue requirement from user rates for FY2010-11 through FY2014-15;
4. Develop a schedule of recommended rates and charges sufficient to support the annual estimated revenue requirement from user rates for FY2010-11 through FY2014-15;
5. Analyze the projected balance in the New Haven rate stabilization fund as of June 30, 2010, and prepare an analysis of the recommended application to future years;
6. Analyze the Authority's historical collection rate, including the current fiscal year and management's estimate of the collection rate for FY2010-11; and
7. Prepare and present a report documenting recommendations, assumptions and methodology.

The major project worksteps we provided are summarized below, as follows:

1. Reviewed and analyzed relevant financial and operating information including the Authority's recent audit and financial reports, current and projected operating budgets, previous cost of service studies, and related documents;

2. Evaluated the sources of revenue available to finance projected costs, including a review of interlocal agreements (North Branford and North Haven), billings, collections, and water consumption data;
3. Prepared revenue requirements for wastewater operations for a five-year period corresponding to future fiscal years including estimated operating costs, debt service, capital costs, and miscellaneous revenues;
4. Analyzed customer collection rates based on historical collections and aged accounts receivable for purposes of evaluating management's estimate of receivable management costs for FY2010-11;
5. Analyzed the projected balance in the New Haven rate stabilization fund as of June 30, 2010, and prepared an analysis of the recommended application to future years, based on estimated billable consumption for New Haven customers;
6. Developed a schedule of recommended rates and charges sufficient to support projected FY2010-11 Authority expenditures in accordance with federal, state and local governmental regulations; and
7. Prepared draft and final reports documenting assumptions and methodology used, developed rate recommendations including a printout of the computer rate model.

Recommended Rates

Based upon the methodology utilized to develop the cost projections and determine the revenue requirements for Fiscal Year 2010-2011 and future years, we recommend the following rates:

- A. A sewer user charge of \$2.84 per one hundred cubic feet of water consumption.
- B. An administrative quarterly charge of \$13.00 per bill.
- C. A minimum quarterly charge of \$55.60 (consisting of the service charge of \$13.00 and charge of \$42.60 for 15 CCF).

We have appreciated the opportunity to assist you with this important project and are available to discuss it further at your convenience.

Very truly yours,

RSM McGLADREY, INC.

Michael J. O'Neil
Director

II. Background

A. Introduction

Regional municipal wastewater collection and treatment services were provided by the Water Pollution Control Authority of the City of New Haven for many years on a retail basis to approximately 22,000 customers in the City of New Haven and, on a wholesale basis, to approximately 25,000 system users in the Towns of Hamden, East Haven and Woodbridge through interlocal agreements. The total population served by the system is approximately 200,000. (See Table 1 in Section III).

Beginning in 1996, a number of actions were undertaken to address certain issues related to the interlocal agreements. Those actions resulted in a series of cooperative efforts between the New Haven WPCA and the interlocal towns, which successfully addressed common goals associated with the provision of regional wastewater services. Included was an agreement to work cooperatively towards implementing a true regional wastewater authority.

Those efforts culminated in 2005 with approval by each of the municipalities of the creation of a new regional authority for the purpose of consolidating and streamlining services for the member municipalities, improving the overall wastewater system performance, and assuring the provision of adequate wastewater management and water pollution control services within the service area.

B. Creation of a Regional Public Utility

The Authority was created in August 2005 pursuant to §§22a-500 to 22a-519, inclusive, of the Connecticut General Statutes (herein the "Act"). Pursuant to the Act, the City of New Haven, and Towns of East Haven, Hamden and Woodbridge (the "Constituent Municipalities"), acting through their respective legislative bodies, adopted ordinances in June 2005 authorizing the creation of the regional entity to be known as the Greater New Haven Water Pollution Control Authority (the "Authority"). The Constituent Municipalities also prepared and submitted a preliminary plan of operation of the Authority for approval by the State Commissioner of Environmental Protection and the State Treasurer, by whom approval was granted on July 28, 2005. The adoption of the ordinances and the approval of the plan of operation resulted in the creation of a public body politic and corporate of the state, and a political subdivision of the state established and created for the performance of an essential public and governmental function.

The Authority was created to (a) operate the wastewater treatment plant and to (b) use, equip, re-equip, repair, maintain, supervise, manage, operate and perform any act pertinent to the collection, transportation, treatment and disposal of sewage with respect to the Constituent Municipalities. Currently, the daily flow at the treatment plant is approximately 33 million gallons per day ("MGD"). The treatment plant has an average daily design flow capacity of 40 MGD and provides primary and secondary treatment for all wastewater influent up to 60 MGD. During high flow events, all flow receives primary treatment; however, flow exceeding 60 MGD bypasses secondary treatment but receives disinfection

along with the secondary effluent prior to discharge. The treatment plant provides the following unit processes: screening and grit removal, raw waste pumping, three primary clarifiers, four aeration trains, eight secondary clarifiers, gravity thickeners and chlorine disinfection prior to discharge. Thickened sludge is delivered to the on-site sewage sludge incinerator for processing.

The operation and maintenance of the treatment plant has been performed under contract by Operations Management International, Inc. ("OMI") since 1997. This contract has been assigned to the Authority and OMI has continued with its current responsibilities. OMI is also responsible for the operation and maintenance of the regional collection system, a role it performed previously with respect to the New Haven collection system. In addition, the Authority has assumed the contract with Synagro-CT, Inc. ("Synagro") to dispose of the sludge resulting from the wastewater treatment process. Synagro has provided that service at the treatment plant since 1995.

C. Sewer Ordinance

General

The Authority's ordinance (the "Sewer Ordinance") governs the operation, maintenance and expansion of the regional wastewater system. In order to guarantee consolidated operation, maintenance and expansion of the regional wastewater system by the Authority, the Sewer Ordinance also acted to repeal similar ordinances of its Constituent Municipalities which previously served to govern operation, maintenance and expansion of their individual wastewater systems. Material provisions of the Sewer Ordinance that affect this study are as follows:

Assessment of Benefits; Benefit Charge

Pursuant to provisions contained in the Act, the Authority may levy and collect benefit assessments upon the lands and buildings within its jurisdiction, which, in its judgment, are especially benefited by a sanitary sewer, according to such rules as the Authority may adopt.

No assessment shall be made until after a public hearing before the Authority, at which time the owner of the property to be assessed shall have an opportunity to be heard concerning the proposed assessment.

Assessments, including any installment thereof, are due and payable at such time as fixed by the Authority, provided no assessment shall become due until the work, or particular portion thereof for which such assessment was levied, has been completed.

Any assessment of benefits, including any installment thereof, which is not paid within 30 days after the due date, is considered delinquent and will be subject to interest and will constitute a lien upon the property assessed and a charge upon the owner thereof.

Rates Established

Charges for sanitary sewer services furnished by the Authority for residential, commercial, industrial and institutional users are to be established and revised from time to time by the Authority.

Sewer use charges are to reflect a proportional distribution of costs among all users in accordance with the Act, §7-255 of the Connecticut General Statutes, as amended, and the United States Code.

Rates for Property Located Outside the Authority's Service Territory

The charges to be made by the Authority for sewer service to property outside the limits of the Authority's service territory are to be established on the basis of a formal contract with the Authority, the charges established in the contract to be not more than the actual costs to the Authority to provide the sewer service, and the contract is to be approved by the Authority.

No Reduced Rates or Free Service Permitted

All persons owning, renting, leasing or having management or control of property or premises that produce waste that is discharged into the regional wastewater system, including domestic waste, and subject to the provisions of the Sewer Ordinance, shall be charged the rates established by the Authority, and no reduced rates or free sanitary sewer services due to be furnished to any such person, property or premises. In all cases, the owner of property shall have final responsibility for the payment of sewer charges.

Billing and Collection

Billing for sewer services is made to the Authority's customers monthly or quarterly. All sewer user charges are due and payable in full on or before 10 calendar days of the mailing of the bill. Any charges not paid in full within 30 days of the due date are considered delinquent and bear interest from the due date at the rate provided by the Connecticut General Statutes for delinquent property taxes.

Cost of Service Study; Proposed Rates

The Executive Director of the Authority is to ensure that a cost of service study is performed at least annually. The Executive Director reviews the results of the study and shall submit the study on or before the third Monday in April to the Authority for consideration and public hearing. If the Executive Director's recommendations as to the proposed rates and charges are not disapproved, or approved with modifications by the Authority by the first day of the next fiscal year, the Executive Director's recommended rates and charges will automatically become effective until such time as they are superseded by a renewal of the above procedure. Billings for services are to be rendered as the Authority determines. In the period intervening between cost of service studies, the Authority may amend user charges so long as such charges are based upon the anticipated cost of operating the system and such charges are presented to the general public at a public hearing in accordance with the Connecticut General Statutes.

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III. Description of the Greater New Haven Water Pollution Control Authority

A. Regional System Profile

Table 1 below presents a summary of the residential population and number of customers of the Constituent Municipalities.

Table 1
 Population and Customers of the Authority

Municipality	Population ¹	/----- Active Authority Customer Accounts ² -----/				Total
		Residential	Commercial	Industrial	Public Auth.	
New Haven	123,630	20,226	2,026	70	209	22,531
Hamden	49,510	13,545	778	34	40	14,397
East Haven	25,650	9,797	267	7	22	10,093
Woodbridge	990	289	77	-	3	369
Total	199,780	43,857	3,148	111	274	47,390

(1) Based upon 2000 Census Bureau Data and the customers in each community that receive sewer service as estimated by the Authority.
 (2) Authority billing data as of March 17, 2010.

Wastewater treated by the Authority at the wastewater treatment plant is discharged into Long Island Sound and must meet both federal and state effluent quality standards. The Authority was organized to ensure the necessary professional technical and skilled personnel, specialized facilities and equipment, and financial resources are available to allow it to carry its mission: *“To provide reliable municipal wastewater services in compliance with applicable laws, in a cost efficient and effective method, and with the intent and desire to protect the environment and public health of the constituent municipalities.”* Furthermore, its operations are expected to be financially self-sufficient.

The wastewater systems of the Constituent Municipalities include any device, equipment, appurtenance, plant facility and method for receiving, collecting, transporting, reducing, treating, reclaiming, disposing, separating or discharging sewage or the residue from the treatment of sewage. The wastewater systems may also include the purchase and/or lease of real estate and improvements thereto deemed necessary or desirable by the Authority for the purpose of establishing and providing wastewater management and water pollution control services.

Table 2 presents a brief summary of the Wastewater Systems of the Authority.

Table 2
Summary of GNHWPCA Wastewater System

Service Area	53,000 acres
Treatment Plant Capacity	40 mgd
Average Daily Flow	33 mgd
Pump Stations	30
Siphons	8
Sewer Collection System	510 miles
Combined Sanitary/Storm Sewers	50 miles
Manholes	14,000
Average Age of Collection System	40 Years

Source: GNHWPCA management.

B. Organization and Management

1. Governance

The business of the Authority is managed by or under the direction of a Board of Directors, which may exercise all such powers of the Authority and perform all such lawful acts and activities as are allowed by the Connecticut General Statutes, as amended, and by its bylaws and ordinances.

According to provisions of the Sewer Ordinance and Section 2.2 of its bylaws, the Authority is to be governed by a qualified Board of Directors, comprised as follows:

The Authority has nine (9) Directors, each of whom shall have one vote. Four (4) Directors have been appointed from New Haven by the Mayor of New Haven, with the approval of the Board of Aldermen of New Haven. Two (2) Directors have been appointed from East Haven by the Mayor of East Haven, with the approval of the Town Council of East Haven. Two (2) Directors have been appointed from Hamden by the Mayor of Hamden, with the approval of the Town Council of Hamden. One Director has been appointed from Woodbridge by the First Selectman of Woodbridge, with the approval of the Board of Selectmen of Woodbridge.

The Directors are appointed for three year staggered terms as outlined in detail in the bylaws and ordinance. In any single year, no more than three (3) Directors' terms are scheduled to expire at one time, thereby designed to institutionalize a continuity of governance.

All business of the Authority is managed and directed by the Board of Directors, as allowed by Connecticut General Statutes and the Authority's bylaws.

The Authority's bylaws may be revised by the affirmative vote of no less than two-thirds of the Directors in accordance with C.G.S. § 22a-501(a) (1), as amended. However, the bylaws provide that any amendment to include new constituent municipalities shall require a unanimous affirmative vote of the Board of Directors.

The current membership of the Board is as follows:

Table 3
Current Board of Directors

<u>Name/Title</u>	<u>Appointed By</u>	<u>Term Expires</u>
Stephen A. Mongillo, Chairman	Hamden	12/31/10
Joyce Alton, Director	New Haven	12/31/10
Vikki Cooper, Director	New Haven	12/31/10
Russell N. Cyr, Director	Hamden	12/31/11
Gennaro Ruocco, Director	East Haven	12/31/11
Alphonse Paolillo, Jr., Director	New Haven	12/31/11
Samuel Giglio, Director	East Haven	12/31/12
Jeffrey Ginzberg, Director	Woodbridge	12/31/12
Stephen Perrone, Director	New Haven	12/31/12*

* - No longer a resident of New Haven, but will serve until a replacement is appointed.

According to the bylaws, a majority vote of the Directors is required to approve all business transactions of the Authority. Certain matters, such as entering into an agreement with respect to the distribution of rights and properties of the Authority upon the termination of its corporate existence, entering into or approving any sludge agreement, entering into any inter-local agreement, entering into any agreement with respect to the sale or lease of assets of the Authority which would leave the Authority without a significant continuing business activity, removal of a Director, awarding of a contract by negotiation without public bidding, amending, modifying, restating or replacing the Sewer Ordinance, and increasing the permitted processing capacity of the Authority's treatment plant, each would require a 2/3rds vote of the Directors.

The Board establishes insurance, health care, retirement, and other employee benefits as it deems necessary and convenient for the effective administration of the Authority. Key management positions are designed in each function area under the major divisions of administration, engineering and operations to address the operation, maintenance and management of the regional wastewater system by the Authority.

2. Management and Staff

The Authority is headed by an Executive Director, who is responsible for all technical and administrative operations of the Authority and the implementation of programs, policies and procedures at the direction of the Board. Key management staff members are as follows:

Sidney Holbrook, Executive Director. Mr. Holbrook is the Executive Director of the Authority. He has more than 30 years of wastewater, environmental and public management experience. He has served as Executive Director of the Authority since February 2009. His responsibilities include managing and directing all administrative, operational and financial activities and programs of the Authority.

Gabriel Varca, Treasurer/Director of Finance and Administration. Mr. Varca is the Treasurer and Director of Finance and Administration. Over the last 25 years, Mr. Varca has held various operations and management positions with the Authority and previously, the New Haven WPCA. His responsibilities include planning and directing the Authority's budgeting, accounting, auditing, investing, treasury, debt management, human resources, purchasing, risk management and information systems operations.

Gary Zrelak, Director of Operations. Mr. Zrelak is the Director of Operations. He has over 23 years of experience in wastewater operations. His responsibilities include supervising and managing the performance of the Authority's contract operator.

Thomas Sgroi, P.E., Director of Engineering. Mr. Sgroi is the Director of Engineering. He has 19 years of engineering and construction management experience. His responsibilities include completion of executive management work for the Authority's planning and engineering programs.

Employees of the private entities responsible for the operations and sludge management contracts are not employees of the Authority. Currently, the staff of the Authority consists of 37 full and part-time employees. The operation and maintenance of the treatment plant and collection system and sludge incinerator are contracted to OMI (29 employees) and Synagro (11 employees), respectively. An organization chart for the Authority is included as Exhibit V.

3. OMI and Synagro

OMI

The comprehensive agreement with OMI provides for the operation, maintenance and management by OMI of the System, including the East Shore Treatment Plant, pump stations and collection systems. This agreement establishes performance and reporting requirements for the operation and maintenance of the system. The agreement requires the implementation of a maintenance management program to include preventive, predictive, and corrective maintenance for all components of the system, including:

- Buildings, grounds, and structures
- Electrical systems and instrumentation
- Mechanical equipment
- Odor control systems
- Sewers and manholes
- Storm sewers

- Vehicles and other related rolling stock
- Laboratory, monitoring and sampling equipment
- Heating, ventilation, and air conditioning
- Communication equipment (i.e., telephones, facsimiles, etc.)
- Computer systems (software and hardware)
- Chemical feed systems
- Pumping systems
- Auxiliary power facilities
- Air pollution control devices
- Supervisory Control and Data Acquisition (SCADA) facilities
- Other facilities, equipment, and systems contained within the system
- Other specialized tools and equipment

OMI is responsible for all utility costs, with the exception of electricity which is a pass-through cost subject to a maximum utilization limit. OMI is also required to deliver biosolids to a sludge holding tank in accordance with the provisions of the Synagro contract.

Denver-based OMI is a privately owned company and an affiliate of CH2M Hill Companies, Ltd. This international company provides services to approximately 130 million customers of government and industry throughout the world.

Synagro

The Synagro contract provides for the receipt and disposal of sludge generated at the East Shore Treatment Plant. The sludge is delivered by OMI and incinerated at the on-site multiple hearth facility. In accordance with the agreement, Synagro is allowed to solicit sludge from other entities (outside sludge), in addition to the sludge delivered by OMI, to utilize the capacity of the on-site incinerator. The Agreement provides for revenue sharing from the receipt of outside sludge between the Authority and Synagro. Synagro is responsible for the disposal of all ash and by-products generated by the incinerator in compliance with applicable laws and regulations. In addition, Synagro is responsible for odor control associated with the sludge incineration facilities.

C. Powers of the Authority

The Authority has the power to set rates, bill customers and take appropriate action for collection of delinquent accounts or non-conforming users. The Authority is a regional water pollution control authority formed in accordance with C.G.S. §§22a-500 to 519, which provides powers of municipalities to the Authority. C.G.S. §22a-501 sets forth in greater detail the powers of a regional water pollution control authority, including the authority to set rates.

1. Cost Allocation

The initial goal of the Authority was to have one uniform blended rate for all Constituent Municipalities. The rates to New Haven customers have been offset during the initial years of operation using the rate

stabilization fund that the New Haven WPCA transferred to the Authority for the benefit of New Haven ratepayers. (See Section VI, Rate Stabilization). This study is being conducted to develop a schedule of recommended sewer user rates sufficient to support the estimated cost of service to all users in the regional wastewater system.

2. Procedures for Establishing Rates and Charges

The Authority is empowered to establish and impose just and equitable fees, rates, charges, and penalties and levy assessments of property benefited by the wastewater system for any services it performs. The Board of Directors is responsible for approval of all fees, rates, charges and penalties. Rates are based on metered water flow use and billed directly to the user on a quarterly basis unless otherwise specified.

Rates are determined based on the proposed budget and the annual cost of service study, to be considered by the Authority and the general public and noticed in accordance with state statutes and applicable ordinances and by-laws.

Such charges are to reflect a proportional distribution of costs among all users in accordance with C.G.S. §7-255, as amended from time to time, §204(b) of 33 USC, Section 1284(b) and the Act. No reduced rates or free service are to be permitted. Prior to the establishment of a fee, rate, charge, penalty or assessment, the Board of Directors must hold a public hearing at which all users of the wastewater system will have had an opportunity to be heard concerning any such proposed fee, rate, charge, penalty or assessment.

3. Budget Approval

In accordance with C.G.S. §§22a-500 to 519, and the Sewer Ordinance, the Authority must ensure a cost of service study is conducted at least annually. The study is to be reviewed by the Executive Director and submitted each year with a schedule of recommended rates and charges for the next fiscal year. In the period intervening cost of service studies, the Authority is authorized to amend user charges provided such charges are based upon the anticipated cost of operating the system and are presented at public hearing, properly noticed.

The annual budget of the next fiscal year's projected revenue and expenditures and recommended sewer user charges are to be submitted to the Directors and filed with the City/Town Clerks in the City of New Haven and Towns of East Haven, Hamden, and Woodbridge by the Executive Director on or before the third Monday in April and, within ten calendar days after such submission, are to be published once in a daily newspaper having circulation in the City of New Haven and Towns of East Haven, Hamden, and Woodbridge. After such publication, but no earlier than ten calendar days after public notice thereof, the Authority is to hold a public hearing on such projected revenue and expenditures and recommended sewer user charges and consider and act on such projected revenues and expenditures and recommended sewer user charges on or before the first Monday in June.

The Executive Director is required to submit one copy of the annual operating budget of the Authority to the State of Connecticut Office of Policy and Management by July 1st of each year or within thirty calendar

days after the adoption of the budget, whichever is later (C.G.S. §22a-502.). The budget and sewer use charge, if said charge is revised by the Authority, shall be filed with the City/Town Clerks and published in a daily newspaper having circulation in the City of New Haven and Towns of East Haven, Hamden, and Woodbridge no later than five calendar days after their filing.

D. Billing & Collection

All billing and collection is coordinated through the Customer Service Department of the Authority. The costs associated with the Authority's billing and collection activities and certain of its administrative and accounting costs are recovered through an administrative charge applied to each bill. The Authority estimates it will produce a total of 192,000 bills in FY11.

Billing Procedures

Customers of the Authority are classified according to the nature of their water consumption. All homes, dormitories and apartment buildings are classified as residential, all manufacturing enterprises in which water is used as part of the manufacturing process are classified as industrial, and all business and institutional enterprises other than those classified industrial are classified as commercial. The wastewater customers are billed for wastewater services based on their metered water consumption, as determined by the RWA.

In general, customers are billed on a quarterly basis. Approximately 420 large volume customers are billed on a monthly basis. The billing to the approximately 22,500 customers in New Haven takes place in October, January, April and July. The billing to the approximately 15,000 customers in Hamden and Woodbridge takes place in November, February, May and August. The billing to the approximately 10,000 customers in East Haven takes place in December, March, June and September.

Key provisions of the Authority's billing and collections policy include:

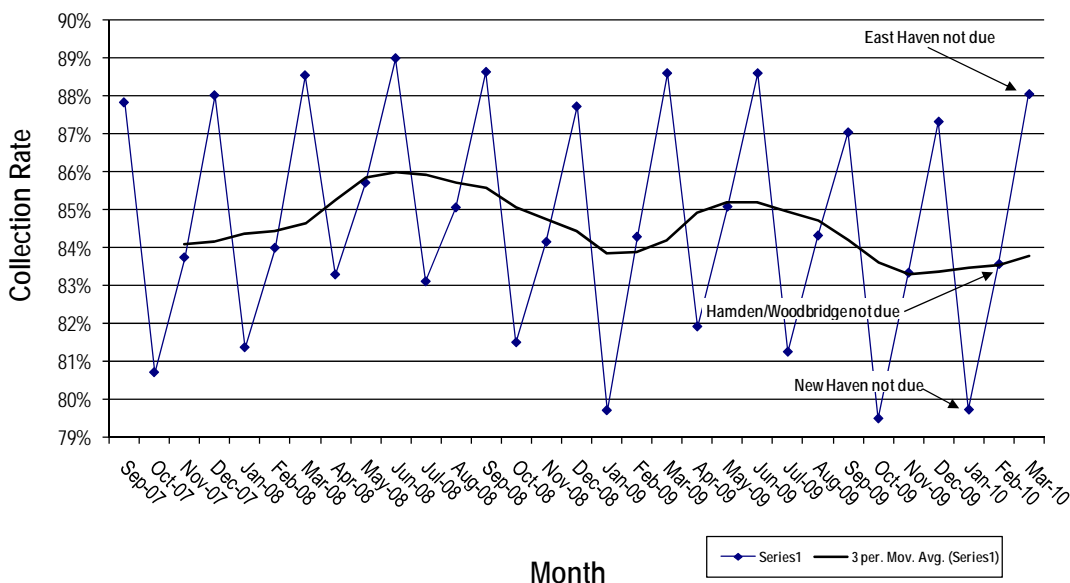
- Bills not paid within 30 days from the billing date are subject to interest at a rate of 1.5 percent per month from the dated billed.
- A delinquent account is sent to a collection agency after the amount owed is \$90 or greater than 90 days old.
- When an account is sent for collection it is tagged and the collection fee is added to the bill of the delinquent customer for reimbursement.
- Payments not received continue for further collection procedures under a tax warrant and foreclosure proceeding.

The Authority has also implemented "Check Free" payment service (i.e., Authority-staffed payment locations) with locations throughout the service area and changed to Webster Bank to provide more timely movement through the lock box process and per the Authority, generally better service at a lower cost.

Collections - Analysis

The Authority commissioned an operational review of certain aspects of its billing and collection systems and procedures in 2007. As a result of that review, RWA developed a query of the Authority's sewer billing data to measure the amount of principal billed to customers during a current one year period, and the amount collected on those billings during the same period. RWA has been providing this information since September 2007. Figure 1 below details the collection rate calculated each month since this data became available.

Figure 1
 One-Year Collection Rate
 Collections on Principal Billed¹



(1) Amounts are net of elderly credit and transfers from NH Rate Stabilization Fund.

Source: GNHWPCA management.

The principal billed amounts include the billing just prior to the end of the one-year period which was not yet due at the end of the period. Because of differences in the collection rate by town, the collection rate for the one year period fluctuates depending on which town's quarterly customers were billed immediately prior to the end of the one-year period.

As indicated by Figure 1, the collection rate varies significantly from month to month in a recurring three month pattern. This is due to the differences in the magnitude of the quarterly billing cycles for each town. Figure 1 also shows the three-month moving average which eliminates this effect.

IV. Financial Plan

In accordance with C.G.S. §§55b-111 to 112, the Authority operates as a municipality for the purpose of compliance with auditing and finance requirements. The Authority can establish eligibility to apply for financing from the Clean Water Fund under the provisions of C.G.S. §§ 22a-477 to 483. Tax-exempt bond issues serve as the primary capital funding mechanism for the Authority. The bonds are issued to fund capital improvements periodically, depending on the Authority's capital requirements. The issuance of the bonds is in accordance with the requirements and provisions of C.G.S. §22a-507.

A. Rate Covenants

At its inception, the Authority issued \$91,290,000 in revenue bonds (Series 2005A) to purchase system assets, refund existing debt and fund reserves. The rate covenant entered into in conjunction with these bonds, and the ability to raise rates are the primary factors that provide the Authority with credit strength. As is the case with most utility financing, the Authority has entered rate covenants requiring management to set rates for service that will generate net revenues sufficient to provide a defined minimum level of cash flow in excess of debt service requirements. The Indenture of Trust for the Authority's bonds (the "Indenture") requires debt service coverage of 115% (i.e., excess cash flows equal to 15% of debt service must be incorporated into sewer rates). In addition, rates must cover operating and maintenance expenses, and contributions to reserve funds for future system improvements, expansions, or replacements. Sufficient revenues, or reserves, should also be available for unexpected emergencies such as flood damage or sewer main breaks.

Pursuant to the Indenture, the Authority covenants that it will fix, charge and collect rates, charges, rents, fees and assessments, including but not limited to use and connection charges and benefit assessments, which will produce revenues which shall be sufficient in each fiscal year to provide for the following:

- ◆ A debt service coverage ratio of at least 115% of the debt service cash requirements;
- ◆ Any amount necessary to restore any account within a debt service reserve fund to its required deposit level; and
- ◆ Any amount necessary to restore any debt service reserve fund for parity indebtedness to its required deposit level.

The Authority has provided a covenant that each fiscal year, it will budget for rates, charges, rents, fees and assessments, including but not limited to use and connection charges and benefit assessments, which will produce revenues which, together with amounts capitalized from proceeds of bonds or otherwise made available and reserved and not already taken into account by reduction of the obligations which are to be paid from revenues and the amount to be withdrawn from a surplus fund other than to pay capital costs for such fiscal year, will be sufficient in each fiscal year to provide for an amount equal to 100% of the aggregate debt service for such fiscal year with respect to subordinated indebtedness.

B. Reserve Accounts

A fully funded debt service reserve account provides an additional level of security for bondholders. When an unexpected budget shortfall occurs, the reserve fund will allow the Authority time to implement necessary adjustments before bondholders are adversely affected. The usual debt service reserve requirement is equal to the least of 125% of average annual debt service, 10% of aggregate bond debt service, or maximum annual debt service. A fully funded debt service reserve has an impact on the Authority's rating and may be essential for an investment grade rating. However, it is also understood that the debt service reserve is really a liquidity source and provides only limited additional security to bondholders.

Reserve accounts totaling approximately \$14.5 million were funded by the Authority's initial bond issuance. They included a General Fund (operating reserves and funds identified to meet debt service coverage requirements), Clean Water Fund Debt Service Reserves (50% of maximum aggregate annual debt service on CWF notes) and the Debt Service Reserve Fund (100% of maximum aggregate annual debt service on revenue bonds). For utilities that consistently maintain high operating reserves and sustain high debt service coverage levels, the debt service reserve fund may be less relevant.

Consistent with prevailing credit rating criteria and its plan of operations, it is assumed that the Authority will consider the following factors when developing and managing its credit structure:

- **System Size and Assessment Base.** Since the Authority serves a diverse customer base already, it will seek expansion only when considered to be both operationally and financially appropriate.
- **Governance.** The Authority's operations are governed in accordance with its bylaws, which provides for the independent authority to establish rates, manage staff, and approve capital improvements, among other responsibilities.
- **Strategic Focus.** The Authority considers multi-year capital improvement programs that include current and anticipated capital needs that cover asset maintenance, upgrades, and system expansions.
- **Rates, Rate Structure, and Rate Making Flexibility.** The Authority will evaluate whether rates and revenues cover all financial commitments, inclusive of reserves for emergencies, and whether they are reasonable and affordable, which could affect asset maintenance and expansion of the user base.
- **Additional Considerations.**

The Authority is in the process of reviewing or adopting policies in the following activities:

- Investment management policies and practices.

- Debt management policy in order to establish guidelines for the following:
 - Appropriate levels of leverage and debt service;
 - Mix of variable rate and fixed rate debt; and
 - Use of interest rate derivatives.

The Authority is seeking to build fund balances over time to establish reliable operating reserves and fund an appropriate share of the ongoing capital improvements from operating funds.

The Authority has also retained a financial advisory firm with experience of the State's Clean Water Fund program. The Authority is intent on establishing the best credit rating it can attain in order to minimize the impact of borrowing costs.

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V. Determination of Rates

A. Scope and Methodology

In providing adequate wastewater treatment services to its customers, the Authority must receive sufficient total revenue to ensure the following objectives:

- Meet legal and contractual requirements, including the terms of the Indenture;
- Maintain current service levels;
- Meet new demands for service;
- Adequately maintain the existing collection and treatment systems; and
- Plan for future needs in an orderly manner.

Regulations established by the U.S. Environmental Protection Agency and Connecticut Department of Environmental Protection require user fee systems for pollution abatement facilities to produce revenues sufficient to support the operations, maintenance and replacement of facilities. This is the key element in the determination of the rates to be charged to users, since it is intended that the operation of such facilities should be self-supporting. The State and Federal governments have mandated that the viability of such operations should not be compromised. Accordingly, sewer user rates should be set at levels sufficient to recover all costs necessary to finance adequate wastewater treatment and disposal.

B. Cost Projections and Determination of Revenue Requirement

The first step to developing appropriate rates is to determine the costs associated with planned future operations. Based on these cost projections and any projected miscellaneous revenues (other than those that will be generated from rates), an annual revenue requirement is established. This represents the amount that must be generated from sewer user rates.

For purposes of this study, the total cost estimates used for FY2010-11 through FY2014-2015 were based upon the proposed operating budget for FY2010-11, historical and anticipated trends, and a review of individual budget line-items. The average annual growth rate of costs was developed by management based upon projected needs and historical experience. We also considered those developments in the current year that may affect cost estimates on a significant scale going forward.

This cost of service study incorporates the following cost components:

1. Operations and Maintenance Costs

Operations and maintenance costs include all costs necessary to deliver wastewater collection and treatment services. It includes not only the technical operation of the plant facilities, but also the administrative resources employed to ensure efficient operations as well as fixed administrative resources employed to administer the Authority.

2. Debt Service

In recognizing costs, cash outlay is the determinant used for cost recovery. Rather than using depreciation, the debt service requirement resulting from the purchase of assets is used. According to EPA guidelines on establishing cost recovery systems, this is an acceptable method for recognizing costs. Therefore, principal and interest payments are among the costs to be recovered by user fees. Exhibit III details the debt service costs for FY2010-11 through FY2014-2015.

3. Estimated Future Debt Service

The cost estimates include a provision for estimated debt service associated with future bond issues to finance planned capital improvements. Based on the Authority's capital improvement plan for FY2010-11 through FY2014-2015 (see Exhibit IV), we have estimated future debt service using the following assumptions:

- Management's assessment of the portion of costs to be financed by Clean Water Fund grants and notes.
- Management's assessment of the project costs that will be shared with the City of New Haven (i.e., 40% of each sewer separation project).
- Revenue bonds to be issued in the year that projects are initiated, at a rate of 5% for 30 years, and amortization with level payments.
- Projects financed with Clean Water Fund notes are financed with an Interim Funding Obligation (IFO) for two years from project initiation. IFO's convert to Permanent Loan Obligations (PLO) two years after project initiation with payment of 5% of principal outstanding and amortization of the remaining balance over 20 years at 2% with level payments. Interest accrued prior to conversion to PLO is assumed to be included in the amount borrowed under the IFO.

4. Miscellaneous Revenues

Miscellaneous revenues (i.e., revenues from all sources other than sewer user rates) are deducted from the total cost of services to determine the net revenue requirement. Miscellaneous revenues for FY2010-11 are based on management's proposed budget. The average annual growth rate of revenues was determined by management based upon projected needs and historical experience.

5. Debt Service Coverage Requirement

As detailed in Section IV.A. above, the Authority is required under the Indenture of Trust for the Series 2005A bonds to include a provision for additional revenues in its user charges equal to 15% of annual debt service. This provision does not apply, however, to the extent that management has identified and restricted existing reserves equal to all or part of this amount that are not otherwise restricted. Notwithstanding this exception, the Authority includes the full 15% requirement in its budget each year and provides for an offsetting use of reserves as applicable. We have followed the same approach for purposes of this study.

6. Use of Reserve Funds

Maintenance of reserve funds may increase or reduce the Authority's revenue requirement in any given year.

7. Receivable Management Costs

Receivable management costs are the estimated portion of billings to customers each year that are not collected during the period. As noted in Section III.D. above, the RWA has developed a query that calculates the amount of principal billed and the portion collected for a one year period. In the past, the Authority has used an estimated collection rate of 92% for purposes of budgeting and rate setting. In light of the additional information now available, the Authority budgets for receivable management costs based on the data provided by RWA, and has included a provision in miscellaneous revenues for collections on accounts receivable aged more than one year old. The 92% estimate used in past years actually represented a long-term collection rate that combined these two elements. A collection rate of 89% has been used in this study. Consistent with recent years, this is slightly higher than the available data indicates, recognizing that the data on collections on delinquent accounts remains imperfect given the capabilities of the current billing system. Management expects to have more detailed data once its new billing and customer management system is implemented and such data becomes available.

C. Development and Design of Rates and Charges

1. Objectives

The primary objective in the design of a rate structure and recommendation of rates is to establish rates that will generate sufficient revenues to meet the total revenue requirements. When the Authority was created in 2005, a rate structure and rates were used that approximated those previously in use in each of the Constituent Municipalities. Billing is based on water consumption using data provided by the RWA stated in 100 cubic foot units ("CCF's").

2. Proposed Changes to Rate Structure

In 2009, the Authority initiated a study of its current rate structure for purposes of assessing the equity of user charges and ease of administration. A proposal is currently planned for deliberation by the Board of Directors and public hearing that would replace the current methodology, which uses winter quarter consumption for all quarters for those customers with 75 CCF or less consumption during the winter quarter. The study found that this structure was benefitting a significant number of users with high consumption during the remainder of the year.

3. Rate Database

For purposes of estimating the billings that would be generated by alternate rates and rate structures, we developed a database of customers from the Constituent Municipalities and their quarterly water consumption. The database was designed to allow the following variables to be input:

- CCF rate;
- Quarterly administrative charge
- Minimum quarterly bill (in CCF's)
- Threshold for winter quarter billing (i.e., winter consumption used for all quarters to eliminate impact of water consumption that doesn't impact the sewer system, mainly residential lawn watering)
- Estimated consumption (an inflation/deflation factor applied to each quarterly consumption reading)

The RWA provided quarterly consumption data by customer for 2005. Consumption for 2003 was approximately 5% lower than consumption for 2002 due primarily to above average precipitation in the spring and summer of 2003. Estimated billable water use is presented in Table 4 below for purposes of demonstrating the trends in consumption from year to year.

Table 4
Estimated Billable Water Use
Combined Constituent Municipalities

<u>Year Ending:</u>	<u>Estimated Billable CCF</u>	<u>Change</u>
December 31, 2000	10,850,000	
December 31, 2001	10,808,000	(0.39%)
December 31, 2002	10,649,000	(1.47%)
December 31, 2003	10,081,000	(5.33%)
December 31, 2004	10,470,000	3.86%
December 31, 2005	9,507,000	(9.20%)
December 31, 2006	9,630,000	1.29%
December 31, 2007	10,001,000	3.85%
December 31, 2008	9,969,000	3.52%
December 31, 2009	9,516,000	(4.85%)

Source: Regional Water Authority.

For purposes of recommending a user rate for FY11, we have assumed billable consumption of 9,500,000 CCF which is consistent with recent years. Management expects to have more detailed data once its new billing and customer management system is implemented and such data becomes available.

4. Recommended Rates

Once the rate database was developed, varying rates and rate structures were input to determine the amount of billings that would result. Consistent with past practice, the following assumptions were used to determine the CCF rate and quarterly administrative charge necessary to meet the projected revenue requirements for FY2010-11 through FY2014-15:

- Threshold for flat rate billing: 75 CCF
- Minimum quarterly bill: 15 CCF
- A stable level of billable consumption.

As detailed further in Table 5, based upon our assessment of the cost projections for FY2010-11 through FY2014-15, we recommend a quarterly administrative charge of \$13.00 and a CCF rate of \$2.84 for FY2010-11.

Table 5
FY11 Recommended Rate
FY12 through FY15 Projected Rates

Fiscal Year	Estimated Consumption	Admin Fee	CCF Rate	% Change in CCF Rate	Estimated Billings
FY11	9,500,000	\$ 13.00	\$ 2.84	15.7%	\$ 29,435,000
FY12	9,500,000	13.00	3.10	9.3%	31,929,000
FY13	9,500,000	13.00	3.24	4.7%	33,303,000
FY14	9,500,000	13.00	3.56	9.9%	36,347,000
FY15	9,500,000	13.00	3.76	5.4%	38,175,000

5. Flat Rates for Well Users

The Authority currently has sewer customers who are not customers of the RWA (i.e., customers whose water supply is from wells), and therefore have no basis for sewer billing. We recommend that customers of the Authority, who are not customers of the RWA, continue to be billed on the basis used in previous years. Customers who are well users were asked to complete a survey that collects information about their respective dwellings and inhabitants. Based upon the results of this survey, the customer is billed a flat amount each quarter based on consumption of 15, 20 or 24 CCF's.

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VI. Rate Stabilization

According to Section 9.7 of the Asset Purchase Agreement, the New Haven reserves are to be used solely for the purposes of stabilizing rates to be charged to New Haven users. In order to mitigate the impact, the cash reserves of approximately \$8,000,000 were transferred at closing to be used specifically for stabilization of rates for New Haven ratepayers during the initial years of operation.

Rate stabilization funds are to be applied upon direction by the City. The estimated balance in the Rate Stabilization Fund as of June 30, 2010 is \$950,000. In past years, funds were applied as a subsidy to New Haven users' rates; however, due to the complexities of administering the remaining balance, the Authority is currently awaiting direction from the City concerning the manner in which the funds will be used for FY10-11.

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VII. Exhibits

EXHIBIT I

Estimated Cost of Service and Revenue Requirement
 for the fiscal years ended June 30, 2011 through 2015

	FY11	% ch.	FY12	% ch.	FY13	% ch.	FY14	% ch.	FY15
A. OPERATIONS & MAINTENANCE									
Personnel	\$ 3,876,604	4%	\$ 4,039,000	4%	\$ 4,202,000	4%	\$ 4,372,000	4%	\$ 4,552,000
Utilities	4,078,000	1%	4,104,000	1%	4,131,000	1%	4,158,000	1%	4,186,000
Contracted Operations - OMI	5,544,000	5%	5,835,000	7%	6,243,000	13%	7,055,000	5%	7,425,000
Contracted Sludge & Ash Disposal	4,673,000	5%	4,907,000	5%	5,152,000	5%	5,410,000	5%	5,681,000
Other Contracted Services	2,927,040	6%	3,102,000	6%	3,288,000	6%	3,485,000	6%	3,692,000
Payments In-lieu of Taxes (PILOT)	785,000	0%	785,000	0%	785,000	0%	785,000	0%	785,000
Equipment, Vehicles & Supplies	115,700	5%	122,000	4%	127,000	4%	132,000	5%	138,000
Contingency	250,000	0%	250,000	0%	250,000	0%	250,000	-80%	50,000
Total Operations & Maintenance Costs	22,249,344	4%	23,144,000	4%	24,178,000	6%	25,647,000	3%	26,509,000
B. DEBT SERVICE									
Revenue Bonds:									
Principal	2,266,667	10%	2,492,181	4%	2,594,707	4%	2,697,609	10%	2,956,420
Interest	5,543,896	-1%	5,468,036	-2%	5,365,280	7%	5,757,522	-2%	5,644,643
Clean Water Fund Notes:									
Principal	2,410,722	61%	3,874,392	-4%	3,705,623	25%	4,643,557	14%	5,286,798
Interest	510,435	20%	612,833	65%	1,014,001	7%	1,086,842	27%	1,383,535
CWF Notes - New Haven Reimbursement:									
Principal	(830,850)	55%	(1,284,070)	-15%	(1,094,163)	32%	(1,447,829)	15%	(1,658,841)
Interest	(167,358)	26%	(211,010)	54%	(325,885)	-7%	(303,890)	35%	(411,182)
Total Debt Service	9,733,512	13%	10,952,362	3%	11,259,562	10%	12,433,810	6%	13,201,373
TOTAL COST OF SERVICES	31,982,856	7%	34,096,362	4%	35,437,562	7%	38,080,810	4%	39,710,373
C. MISCELLANEOUS REVENUES									
Interest & Lien Fees	(795,000)	3%	(819,000)	3%	(844,000)	3%	(869,000)	3%	(895,000)
Aged Accounts Receivable	(2,400,000)	0%	(2,400,000)	0%	(2,400,000)	0%	(2,400,000)	0%	(2,400,000)
Investment Income	(300,000)	3%	(309,000)	3%	(318,000)	3%	(328,000)	3%	(338,000)
High Strength Surcharges	(900,000)	3%	(927,000)	3%	(955,000)	3%	(984,000)	3%	(1,014,000)
Grease Disposal	(300,000)	3%	(309,000)	3%	(318,000)	3%	(328,000)	3%	(338,000)
Nitrogen Credits	(270,000)	3%	(278,000)	3%	(286,000)	3%	(295,000)	3%	(304,000)
Outside Sludge	(800,000)	3%	(824,000)	3%	(849,000)	3%	(874,000)	3%	(900,000)
Interlocal Fees	(127,000)	3%	(131,000)	3%	(135,000)	3%	(139,000)	3%	(143,000)
Reimbursements - OMI/Synagro	(900,000)	3%	(927,000)	3%	(955,000)	3%	(984,000)	3%	(1,014,000)
Other Revenues	(790,000)	3%	(814,000)	3%	(838,000)	3%	(863,000)	3%	(889,000)
Total Miscellaneous Revenues	(7,582,000)	2%	(7,738,000)	2%	(7,898,000)	2%	(8,064,000)	2%	(8,235,000)
D. SOURCE/(USE) OF RESERVES									
Transfer to GF for Debt Service Coverage	1,610,000		1,867,000		1,902,000		2,128,000		2,291,000
Use of Prior Year Surplus	-		-		-		-		-
Use of Unrestricted Reserves	-		-		-		-		-
Total Source/(Use) of Reserve Funds	1,610,000		1,867,000		1,902,000		2,128,000		2,291,000
NET REVENUE REQUIREMENT	\$26,010,856	9%	\$28,225,362	4%	\$29,441,562	9%	\$32,144,810	5%	\$33,766,373
E. RECEIVABLE MANAGEMENT COSTS									
Estimated collection rate	89%		89%		89%		89%		89%
REVENUE REQUIREMENT	\$29,434,856	8%	\$31,929,362	4%	\$33,302,562	9%	\$36,346,810	5%	\$38,175,373

EXHIBIT II

Budgeted Operations & Maintenance Expenses by Department
 For the Fiscal Year ended June 30, 2011
 With Estimated Expenses for Fiscal Years 2012 through 2015

	FY11	% ch.	FY12	% ch.	FY13	% ch.	FY14	% ch.	FY15
EXECUTIVE DIRECTOR									
Personnel	\$ 330,246	4%	\$ 342,000	3%	\$ 353,000	3%	\$ 364,000	3%	\$ 376,000
Other Contracted Services	743,200	6%	788,000	6%	836,000	6%	886,000	6%	939,000
Contingency	250,000	0%	250,000	0%	250,000	0%	250,000	-80%	50,000
Total EXECUTIVE DIRECTOR	1,323,446	4%	1,380,000	4%	1,439,000	4%	1,500,000	-9%	1,365,000
FINANCE & ADMINISTRATION									
Personnel	543,000	4%	563,000	3%	582,000	3%	602,000	3%	623,000
Other Contracted Services	113,000	6%	120,000	6%	127,000	6%	135,000	6%	143,000
Total FINANCE & ADMINISTRATION	656,000	4%	683,000	4%	709,000	4%	737,000	4%	766,000
CUSTOMER SERVICE									
Personnel	603,604	4%	625,000	3%	646,000	3%	668,000	3%	691,000
Utilities	0	0%	0	0%	0	0%	0	0%	0
Other Contracted Services	730,280	6%	775,000	6%	821,000	6%	870,000	6%	922,000
Equipment, Vehicles & Supplies	6,000	0%	6,000	0%	6,000	0%	6,000	0%	6,000
Total CUSTOMER SERVICE	1,339,884	5%	1,406,000	5%	1,473,000	5%	1,544,000	5%	1,619,000
EMPLOYEE BENEFITS									
Personnel	953,000	6%	1,010,000	6%	1,070,000	6%	1,134,000	6%	1,203,000
Total EMPLOYEE BENEFITS	953,000	6%	1,010,000	6%	1,070,000	6%	1,134,000	6%	1,203,000
ENGINEERING									
Personnel	691,124	4%	716,000	3%	741,000	3%	766,000	3%	792,000
Other Contracted Services	108,000	6%	115,000	6%	122,000	6%	129,000	6%	137,000
Total ENGINEERING	799,124	4%	831,000	4%	863,000	4%	895,000	4%	929,000
OPERATIONS									
Personnel	755,630	4%	783,000	3%	810,000	3%	838,000	3%	867,000
Utilities	4,007,000	1%	4,031,000	1%	4,056,000	1%	4,081,000	1%	4,107,000
Contracted Operations - OMI	5,544,000	5%	5,835,000	7%	6,243,000	13%	7,055,000	5%	7,425,000
Contracted Sludge & Ash Disposal	4,673,000	5%	4,907,000	5%	5,152,000	5%	5,410,000	5%	5,681,000
Other Contracted Services	931,260	6%	986,000	6%	1,044,000	6%	1,106,000	6%	1,170,000
Equipment, Vehicles & Supplies	56,000	5%	59,000	5%	62,000	5%	65,000	6%	69,000
Total OPERATIONS	15,966,890	4%	16,601,000	5%	17,367,000	7%	18,555,000	4%	19,319,000
GENERAL SERVICES									
Utilities	71,000	3%	73,000	3%	75,000	3%	77,000	3%	79,000
Other Contracted Services	301,300	6%	318,000	6%	338,000	6%	359,000	6%	381,000
Payments In-lieu of Taxes (PILOT)	785,000	0%	785,000	0%	785,000	0%	785,000	0%	785,000
Equipment, Vehicles & Supplies	53,700	6%	57,000	4%	59,000	3%	61,000	3%	63,000
Total GENERAL SERVICES	1,211,000	2%	1,233,000	2%	1,257,000	2%	1,282,000	2%	1,308,000
ALL DEPARTMENTS									
Personnel	3,876,604	4%	4,039,000	4%	4,202,000	4%	4,372,000	4%	4,552,000
Utilities	4,078,000	1%	4,104,000	1%	4,131,000	1%	4,158,000	1%	4,186,000
Contracted Operations - OMI	5,544,000	5%	5,835,000	7%	6,243,000	13%	7,055,000	5%	7,425,000
Contracted Sludge & Ash Disposal	4,673,000	5%	4,907,000	5%	5,152,000	5%	5,410,000	5%	5,681,000
Other Contracted Services	2,927,040	6%	3,102,000	6%	3,288,000	6%	3,485,000	6%	3,692,000
Payments In-lieu of Taxes (PILOT)	785,000	0%	785,000	0%	785,000	0%	785,000	0%	785,000
Equipment, Vehicles & Supplies	115,700	5%	122,000	4%	127,000	4%	132,000	5%	138,000
Contingency	250,000	0%	250,000	0%	250,000	0%	250,000	-80%	50,000
Total ALL DEPARTMENTS	\$ 22,249,344	4%	\$ 23,144,000	4%	\$ 24,178,000	6%	\$ 25,647,000	3%	\$ 26,509,000

Source: Annual budget for FY10-11, GNHWPCA management.

EXHIBIT III

Scheduled and Estimated Debt Service
For the Fiscal Years Ended June 30, 2011 through 2015

	FY11	% ch.	FY12	% ch.	FY13	% ch.	FY14	% ch.	FY15
Revenue Bonds:									
2005 Series A									
Principal	\$ 1,745,000	3%	\$ 1,805,000	4%	\$ 1,885,000	4%	\$ 1,965,000	4%	\$ 2,050,000
Interest	4,149,938	-1%	4,089,994	-2%	4,011,281	-2%	3,928,541	-2%	3,841,676
2008 Series ACREBs									
Principal	521,667	3%	536,667	3%	551,667	3%	566,667	3%	581,667
Interest	893,958	-2%	878,042	-2%	861,525	-2%	844,408	-2%	826,692
Estimated Future Series									
Principal	-	0%	150,514	5%	158,040	5%	165,942	96%	324,754
Interest	500,000	0%	500,000	-2%	492,474	100%	984,572	-1%	976,275
Total Revenue Bonds									
Principal	2,266,667	10%	2,492,181	4%	2,594,707	4%	2,697,609	10%	2,956,420
Interest	5,543,896	-1%	5,468,036	-2%	5,365,280	7%	5,757,522	-2%	5,644,643
Total Debt Service - Revenue Bonds	7,810,563	2%	7,960,217	0%	7,959,987	6%	8,455,130	2%	8,601,063
Clean Water Fund Notes:									
CSO Projects									
Principal	2,077,125	0%	2,084,669	-20%	1,678,038	0%	1,674,611	-2%	1,639,221
Interest	418,394	-10%	376,898	-10%	338,881	-10%	305,235	-11%	272,238
Non-CSO Projects									
Principal	333,596	2%	340,217	1%	342,319	2%	348,279	2%	355,309
Interest	92,041	-7%	85,309	-8%	78,478	-9%	71,585	-10%	64,555
Estimated Future Notes - CSO Projects									
Principal	-	0%	1,125,505	-6%	1,057,370	84%	1,944,962	29%	2,507,881
Interest	-	0%	150,626	216%	475,832	-4%	454,490	66%	755,716
Estimated Future Notes - Non-CSO Projects									
Principal	-	0%	324,000	94%	627,896	8%	675,704	16%	784,388
Interest	-	0%	-	0%	120,810	112%	255,532	14%	291,025
Total CWF Notes									
Principal	2,410,722	61%	3,874,392	-4%	3,705,623	25%	4,643,557	14%	5,286,798
Interest	510,435	20%	612,833	65%	1,014,001	7%	1,086,842	27%	1,383,535
Total Debt Service - CWF Notes	2,921,157	54%	4,487,225	5%	4,719,624	21%	5,730,399	16%	6,670,333
City of New Haven Share of CSO Projects									
CSO Projects									
Principal	(830,850)	0%	(833,868)	-20%	(671,215)	0%	(669,845)	-2%	(655,688)
Interest	(167,358)	-10%	(150,759)	-10%	(135,552)	-10%	(122,094)	-11%	(108,895)
Estimated Future Notes - CSO Projects									
Principal	-	0%	(450,202)	-6%	(422,948)	84%	(777,985)	29%	(1,003,152)
Interest	-	0%	(60,250)	216%	(190,333)	-4%	(181,796)	66%	(302,286)
Total City Share of CSO Projects									
Principal	(830,850)	55%	(1,284,070)	-15%	(1,094,163)	32%	(1,447,829)	15%	(1,658,841)
Interest	(167,358)	26%	(211,010)	54%	(325,885)	-7%	(303,890)	35%	(411,182)
Total Debt Service - New Haven Share	(998,208)	50%	(1,495,079)	-5%	(1,420,048)	23%	(1,751,720)	18%	(2,070,022)
Total Net Debt Service									
Principal	3,846,538	32%	5,082,503	2%	5,206,166	13%	5,893,336	12%	6,584,378
Interest	5,886,974	0%	5,869,859	3%	6,053,396	8%	6,540,474	1%	6,616,996
Total Net Debt Service	\$ 9,733,512	13%	\$ 10,952,362	3%	\$ 11,259,562	10%	\$ 12,433,810	6%	\$ 13,201,373

Source: GNHWPCA management.

EXHIBIT IV

Capital Improvement Plan
For the Years Ended June 30, 2011 through 2015

	FY11	FY12	FY13	FY14	FY15	Grand Total
CSO LONG TERM CONTROL PLAN						
Wet Weather Improvements to the ESWPCF (146-185 MGD)	-	\$ 38,500,000	-	-	-	\$ 38,500,000
Wet Weather Improvements to the Boulevard Pump Station	-	-	\$ 16,000,000	-	-	16,000,000
Wet Weather Improvements to the East Street Pump Station	-	-	16,500,000	-	-	16,500,000
Wet Weather Improvements to the Union Street Pump Station	-	-	-	\$ 21,000,000	\$ 16,500,000	37,500,000
Fair Haven Sewer Separation	-	-	-	-	10,000,000	10,000,000
East Street Sewershed	-	-	-	-	-	-
Total CSO Long Term Control Plan	\$ -	\$ 38,500,000	\$ 32,500,000	\$ 21,000,000	\$ 26,500,000	\$ 118,500,000
EAST SHORE WPC FACILITY						
Low Level Nitrogen Project	\$ 11,000,000	-	-	-	-	11,000,000
Electrical System Upgrades	4,000,000	-	-	-	-	4,000,000
Gravity Thickener/Storage Tank Process Upgrades	600,000	-	-	-	-	600,000
Building Improvements including Roofs	100,000	100,000	100,000	100,000	100,000	500,000
Facility Equipment Repair & Replacement	-	325,000	375,000	250,000	150,000	1,100,000
Odor Control	-	500,000	500,000	-	-	1,000,000
Major Equipment Upgrades and Replacement	-	250,000	250,000	250,000	250,000	1,000,000
Total East Shore WPC Facility	\$ 15,700,000	\$ 1,175,000	\$ 1,225,000	\$ 600,000	\$ 500,000	\$ 19,200,000
COLLECTION SYSTEM, PUMP STATIONS & FORCE MAINS						
Sanitary Sewer Infrastructure Renewal Program	1,250,000	1,000,000	1,000,000	1,000,000	1,000,000	5,250,000
Pump Station Improvements	925,000	500,000	500,000	500,000	500,000	2,925,000
Collection System I/I Rehab. Program Section 3c	-	2,500,000	2,500,000	2,500,000	2,500,000	10,000,000
Depreciation Reserve Credit	-	100,000	100,000	100,000	100,000	400,000
Total Coll. System, Pump Stations & Force Mains	\$ 2,175,000	\$ 4,100,000	\$ 4,100,000	\$ 4,100,000	\$ 4,100,000	\$ 18,575,000
GENERAL SERVICES						
IT Master Plan Implementation	-	250,000	250,000	-	-	500,000
GIS, Aerial Photography & Mapping	-	100,000	-	-	-	100,000
Total General Services	\$ -	\$ 350,000	\$ 250,000	\$ -	\$ -	\$ 600,000
TOTAL CAPITAL IMPROVEMENT PLAN	\$ 17,875,000	\$ 44,125,000	\$ 38,075,000	\$ 25,700,000	\$ 31,100,000	\$ 156,875,000
SOURCES OF FINANCING						
Clean Water Fund - Grants	7,500,000	21,175,000	17,875,000	11,550,000	14,575,000	72,675,000
Clean Water Fund - Notes	7,500,000	19,825,000	17,125,000	11,950,000	14,425,000	70,825,000
<i>Total Clean Water Fund</i>	15,000,000	41,000,000	35,000,000	23,500,000	29,000,000	143,500,000
Revenue Bonds	2,875,000	3,125,000	3,075,000	2,200,000	2,100,000	13,375,000
Renewal & Replacement	-	-	-	-	-	-
Total Sources of Financing	\$ 17,875,000	\$ 44,125,000	\$ 38,075,000	\$ 25,700,000	\$ 31,100,000	\$ 156,875,000

Source: GNHWPCA management

EXHIBIT V

Organization Chart

