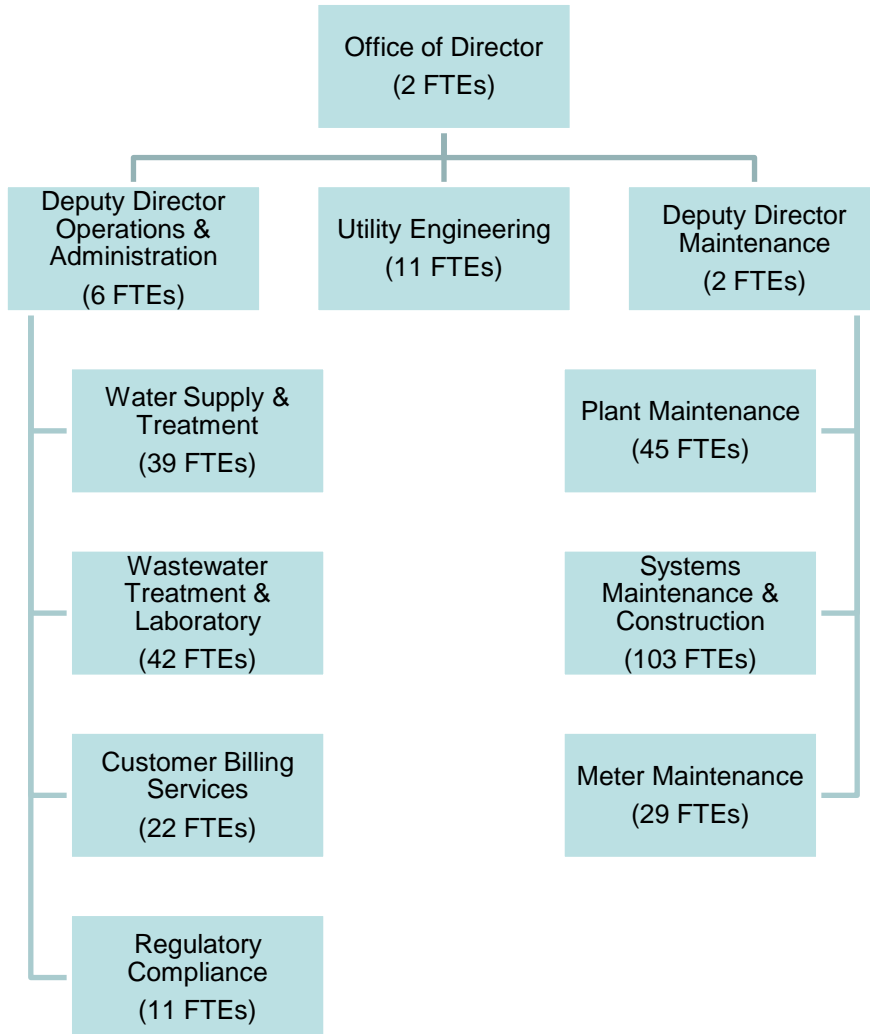




# Water Management (312 FTEs)



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## WATER MANAGEMENT

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### **Mission:**

To provide water and sewer services in full compliance with all legal and regulatory requirements consistent with the community's expectations for level of service and the community's values for economic development and fiscal accountability. The department provides for the protection of public health and safety by ensuring effective resource management, infrastructure maintenance, adequate fire flows, environmental protection and natural resource management.

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### DEPARTMENT DESCRIPTION

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The Department of Water Management provides critical, essential services necessary for public health and safety by providing water that is safe to drink and use for other key purposes, including fire protection. Additional critical functions include ensuring reliable operations and maintenance of water and wastewater facilities as well as adequate water supplies and facility capacities. Wastewater collection and treatment are core services that not only protect the public health and safety but also the environment. Through these services, the department contributes to the goals of ensuring that all Durham citizens are safe and enjoy a prosperous economy and healthy environment. System security for both water and wastewater systems is important for reliable operation and the ability to meet system demands. Attention to security continues to be an integral part of operations. In this way, the department contributes to the goal that Durham citizens enjoy sustainable, thriving neighborhoods with efficient and well-maintained infrastructure. Long range planning for expanding water resources and treatment capacities contributes to this goal as well. The department pursues self-evaluation, benchmarking opportunities and other sound business practices in an effort to remain competitive with other cities and utilities, while promoting a positive image for the City and the services provided. Support for expanded automation of plant operations continues with the goal of maximizing chemical and power efficiencies, even in an environment of more stringent regulatory requirements and escalating energy costs, while improving reliability and maximizing staff deployment. Efforts to develop new sources of revenue include initiatives such as landfill gas development and use, as well as contract and reclaimed water sales. The department is dedicated to supporting the goal that Durham citizens enjoy an efficient and accountable city government. Department personnel support efforts to reduce crime and its root causes through active participation in the City's "Eyes and Ears" program and by participating in specific City workplace development programs. Implementation of the 2005 Bond package will continue to be a focus for the next several years and supports the goal of maintaining core services with well maintained infrastructure. Staff will continue to develop appropriate tools to expand departmental financial management strategies.

### **Administrative**

#### Administration

**\$1,324,227**  
**10 FTEs**

Administration is tasked with the management, oversight and planning processes necessary for providing adequate water resources and treatment capacity as well as wastewater facilities to meet the needs of a growing community and providing the foundation for a prosperous economy. Personnel are responsible for the fiscal management of the Water and Sewer fund and administering a broad range of environmental programs in support of the goals that all citizens are safe, enjoy a prosperous economy and healthy environment, and that citizens enjoy an efficient and accountable city government. These efforts provide critical services to the citizens of Durham and are related to water quality, wastewater treatment and industrial/commercial activity.

#### Customer Billing Services

**\$1,632,586**  
**22 FTEs**

A core service area, this division is the first point of contact for most customers. Staff provide billing services for the utility, respond to customer inquiries, establish new accounts and authorize water and sewer connections and disconnections. Employees in the field services unit provide connection and disconnection services. With the implementation of the new MUNIS Utility Billing system in FY 2009-09 and Automated Meter Reading in FY 2009-10 staff will transition to providing monthly billing for all customers.

#### Regulatory Compliance

**\$1,437,333**  
**10 FTEs**

This division provides a core service by addressing regulatory compliance issues, tracking legislative issues, and administering the city's Industrial Waste Pretreatment/Fats, Oil and Grease Program that enforces the city's Sewer Use Ordinance as well as the Cross Connection Control program which further insures the protection of the potable water system. The Water Conservation Program has had increased visibility due to water shortage

issues and the development and implementation of year-round water conservation measures. Additionally, the division has oversight of specialized departmental resource management, public education/information and customer outreach programs.

## **Operations**

### Water Supply & Treatment

**\$7,131,378**  
**40 FTEs**

This core service area is responsible for providing a safe, reliable, economical and sufficient supply of water to the citizens of Durham city and county. Through optimizing treatment processes, maximizing water transfer strategies and conducting monitoring activities, staff ensures that adequate supplies of consistently high quality drinking water are available to Durham's water customers. The Water Supply and Treatment Division (WS&T) operates and maintains two conventional water treatment facilities with a combined treatment capacity of 52 million gallons per day (MGD), and two surface water reservoirs with a combined safe yield of 37 MGD. Service is provided by operating equipment and adjusting treatment technologies to optimize the physical and chemical processes important in effective water treatment and by selecting pumping scenarios that assure adequate supplies at economical costs.

### Wastewater Treatment and Laboratory

**\$9,045,350**  
**42 FTEs**

This core service area provides the citizens of Durham with cost effective wastewater treatment and residuals management. This service is accomplished by optimizing the treatment processes so that the North Durham and South Durham facilities discharge effluent of consistently high quality in compliance with State permit requirements. The North and South Durham workgroups operate and maintain state-of-the-art tertiary treatment facilities, each with a permitted capacity of 20 MGD. North Durham personnel assist with the department's monitoring activities related to landfill post closure monitoring and management of the landfill gas collection system. The Laboratory Services section of the department, which is also located at the South Durham Facility, provides lab analysis for the water, wastewater, industrial waste and stormwater programs. This ensures that citizens enjoy an efficient and accountable city government which also protects downstream users of the waters receiving Durham's discharges and others potentially affected by residual management operations. This service area also includes wastewater treatment costs for city wastewater flows to the county wastewater treatment plant.

## **Maintenance**

This core service area provides the citizens of Durham with cost effective maintenance of water and sewer infrastructure including the distribution and collection systems, raw water lake facilities, water treatment and water reclamation facilities, pump stations and elevated storage tanks.

### Systems Maintenance and Construction

**\$10,846,386**  
**133 FTEs**

The Systems Maintenance and Construction division provides routine and emergency maintenance to the city's water distribution and wastewater collection systems as well as the installation of new service lines. Typical tasks include the inspection, cleaning and repairing of water and sewer main trunk lines. This division also operates and maintains fire hydrants and water valves, as well as installing and repairing water and sewer service connections. The Meter Shop is responsible for reading water meters as well as providing routine and emergency response to water meter problems, including leaks, unusual consumption rates and water pressure concerns. This division will transition to monthly meter reading with the on-going implementation of the Automated Meter Reading program.

### Plant Maintenance

**\$3,927,460**  
**44 FTEs**

Plant Maintenance provides both major maintenance and minor construction support for water and wastewater facilities, pump stations and other facilities. This division also has responsibility for long-term maintenance of the closed landfill. Expenses for support services are apportioned to the appropriate core services of water and wastewater as they relate to performance indicators.

**Engineering**

Utility Engineering

**\$1,189,945**  
**10.5 FTEs**

Utility Engineering manages the ongoing evaluation and improvement of departmental facilities and engineering projects for water and wastewater facilities as a part of the department's Capital Improvements Program. This unit also provides water distribution and wastewater collection system monitoring and analytical support necessary for detecting inflow and infiltration problems. The program also provides for manhole rehabilitation and replacement, supplemental flow studies and major pipeline reconstruction and renewal services for both the water distribution and wastewater collection systems.

Post-Closure Monitoring

**\$203,450**  
**0.5 FTE**

This service area provides oversight for the monitoring and maintenance of the closed landfill and is supported by the Solid Waste Fund.

**RESOURCE ALLOCATION**

|                             | Actual<br>FY 2007-08 | Adopted<br>FY 2008-09 | Estimated<br>FY 2008-09 | Adopted<br>FY 2009-10 | Change      |
|-----------------------------|----------------------|-----------------------|-------------------------|-----------------------|-------------|
| <b>Appropriations</b>       |                      |                       |                         |                       |             |
| Personal Services           | \$ 15,173,167        | \$ 17,086,690         | \$ 15,731,838           | \$ 18,312,901         | 7.2%        |
| Operating                   | 14,183,828           | 16,843,693            | 18,180,828              | 18,348,214            | 8.9%        |
| Capital                     | 50,013               | 106,000               | 91,000                  | 77,000                | -27.4%      |
| <b>Total Appropriations</b> | <b>\$ 29,407,008</b> | <b>\$ 34,036,383</b>  | <b>\$ 34,003,666</b>    | <b>\$ 36,738,115</b>  | <b>7.9%</b> |
| <b>Full Time Equivalent</b> |                      |                       |                         |                       |             |
| Part Time                   | 293                  | 310                   | 310                     | 312                   | 2           |
| <b>Revenues</b>             |                      |                       |                         |                       |             |
| Water & Sewer Fund          | \$ 29,230,206        | \$ 33,735,471         | \$ 33,712,710           | \$ 36,534,665         | 8.3%        |
| Solid Waste Disposal Fund   | 176,802              | 300,912               | 290,956                 | 203,450               | -32.4%      |
| <b>Total Revenues</b>       | <b>\$ 29,407,008</b> | <b>\$ 34,036,383</b>  | <b>\$ 34,003,666</b>    | <b>\$ 36,738,115</b>  | <b>7.9%</b> |

**BUDGET ISSUES FOR FY 2009-10**

- No changes are made to levels of water and wastewater services. Deferment of infrastructure improvements may lead to increased costs, loss of system reliability, higher risk for public health and safety, and potential fines in the future. Escalating energy and chemical costs, which constitute a substantial portion of water and wastewater treatment costs, have significant impacts.
- Efforts to improve revenue for the utility will continue in an attempt to address insufficient CIP funding and the long-term financial health of the Water & Sewer Fund.
- Efforts to enhance long range plans for system reliability and water supply, both raw and treated water, will require additional CIP funding. Predicted changes in weather patterns and climate may impact the reliability of current sources.
- Funding of infrastructure rehabilitation and replacement continues to be an issue of concern for the utility.
- Increasing public education and outreach programs for water conservation and the Fats, Oils and Grease efforts; maintaining and expanding water conservation incentive programs.
- To continue to fund new operational improvements to meet new regulatory requirements.

**COMPLETED INITIATIVES FOR FY 2008-09**

- Implemented tiered water rates.

- Implemented the new utility billing (UB) system on the ERP platform.
- Expanded program for Automated Meter Reading (AMR).
- Continued participation in AWWA Benchmarking Performance Indicators Water and Wastewater Utilities Survey.
- Completed environmental permitting and started design of Teer Quarry project.
- Completed design of Aeration Tank and UV facilities at North Durham Water Reclamation Facility
- Complete wastewater treatment optimization study.
- Began construction of Water Treatment Reliability Improvement Project.
- Completed the water treatment compliance study phase and began design phase of the Water Treatment Regulatory Compliance Project.
- Completed upgrade of the SCADA systems at the North Durham and South Durham Reclamation Facilities.
- Sewer replacement/rehabilitation at numerous sites under multiple construction contracts.
- Completed Facility Paving projects at Brown and South Durham Water Treatment Plants.
- Completed designs on Raleigh and Cary interconnections.
- Began design on new elevated storage tank.
- Began design on new North Durham Sludge Pad Cover project.
- Began work of updating Emergency Action Plans at both dams.
- Began Construction of the Southern Reinforcing Main – Phase I Project.
- Completed repairs to Little River Dam.
- Began construction of water distribution improvements along Erwin Road.
- Begin Pilot Study for Enhanced Nitrogen Removal at the South Durham Reclamation Facility.

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**DEPARTMENT INITIATIVES FOR FY 2009-10**

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- Continue expansion of Automated Meter Reading (AMR) program.
- Utilize new UB and AMR initiatives to move toward monthly billing of water and sewer customers.
- Enhance and expand water conservation and efficiency public education/information program.
- Participate in AWWA Benchmarking Performance Indicators Water and Wastewater Utilities Survey.
- Implement new fees and recommendations associated with the rate study.
- Design phase of Teer Quarry project near completion.
- Begin construction of North Durham Aeration Basin and UV facilities.
- Complete construction of Water Reliability Improvement Project.
- Complete construction of Cary interconnections.
- Complete construction of Raleigh interconnections.
- Begin construction on new elevated storage tank.
- Complete construction of the Southern Reinforcing Project – Phase I Project.
- Sewer replacement/rehabilitation at numerous sites under multiple construction contracts.
- Complete construction of water distribution improvements along Erwin Road.

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**GOALS, OBJECTIVES & STRATEGIES FOR FY 2009-10**

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**GOAL:** *To provide sufficient quantities of high quality drinking water to all of Durham’s customers at the lowest possible cost.*

**OBJECTIVE:** Consistently deliver safe high quality drinking water to all customers.

**STRATEGY:** Operate and maintain the water treatment and distribution systems to minimize customer complaints and concerns regarding water quality.

| <b>MEASURE:</b>  | <b>Actual<br/>FY 2008</b> | <b>Adopted<br/>FY 2009</b> | <b>Estimated<br/>FY 2009</b> | <b>Adopted<br/>FY 2010</b> |
|--|---------------------------|----------------------------|------------------------------|----------------------------|
| Technical Quality Complaints<br>per 1000 customer accounts | 3.60                      | 3.75                       | 4.5                          | 3.75                       |

**OBJECTIVE:** To monitor annual average flows for assessment of remaining capacity as % of available capacity. Engineering of new facilities to begin when 80% of capacity is reached and construction to begin when 90% of capacity is reached.

**STRATEGY:** Monitor annual demands and project future raw water demands to meet system growth needs.

| <b>MEASURE:</b>   | <b>Actual<br/>FY 2008</b> | <b>Adopted<br/>FY 2009</b> | <b>Estimated<br/>FY 2009</b> | <b>Adopted<br/>FY 2010</b> |
|---|---------------------------|----------------------------|------------------------------|----------------------------|
| Average annual demand as a percentage of raw water capacity | 68.29%                    | <80%                       | 67.85%                       | <80%                       |

**OBJECTIVE:** To operate the water supply and treatment facilities to minimize increases in unit cost (\$/MG) as the system demand increases and the need for infrastructure improvements increase.

**STRATEGY:** Optimize the water treatment process with careful monitoring and control of chemical feed equipment. Continue to minimize costs for pumping while maintaining adequate supply by using "Time-of-Day" electric rates and water transfer by hydropower.

| <b>MEASURE:</b>   | <b>Actual<br/>FY 2008</b> | <b>Adopted<br/>FY 2009</b> | <b>Estimated<br/>FY 2009</b> | <b>Adopted<br/>FY 2010</b> |
|-------------------|---------------------------|----------------------------|------------------------------|----------------------------|
| \$ Per MG treated | \$736.74                  | \$660                      | \$857                        | \$937                      |

**GOAL:** *To provide effective wastewater treatment services so that the needs of Durham's customers can be met in a cost-effective manner.*

**OBJECTIVE:** Operate facilities in full compliance with permit requirements with zero violations.

**STRATEGY:** Optimize processes to minimize discharges of organic wastes and ammonia nitrogen beyond permit requirements. Success is measured by the percentage of monthly results that are below permit limits, with zero violations.

| <b>MEASURE:</b> | <b>Actual<br/>FY 2008</b> | <b>Adopted<br/>FY 2009</b> | <b>Estimated<br/>FY 2009</b> | <b>Adopted<br/>FY 2010</b> |
|-----------------|---------------------------|----------------------------|------------------------------|----------------------------|
| NDWRF           | 96%                       | 80%                        | 92%                          | 80%                        |
| SDWRF           | 97%                       | 80%                        | 99%                          | 80%                        |

**OBJECTIVE:** To monitor annual average flows for assessment of remaining capacity as % of available capacity to meet state rules. Engineering of new facilities to begin when 80% of capacity is reached and construction to begin when 90% of capacity is reached.

**STRATEGY:** Continue to track and analyze flows relative to system capacity. Continue efficiency improvements at both wastewater plants.

| <b>MEASURE:</b>   | <b>Actual<br/>FY 2008</b> | <b>Adopted<br/>FY 2009</b> | <b>Estimated<br/>FY 2009</b> | <b>Adopted<br/>FY 2010</b> |
|---|---------------------------|----------------------------|------------------------------|----------------------------|
| Annual average flow demand (MG) as a percentage of plant capacity | 43.32%                    | <80%                       | 47.8%                        | <80%                       |

**OBJECTIVE:** To operate the water reclamation facilities to minimize increases in unit cost (\$/MG) as the system demand increases and the need for infrastructure improvements increase.

**STRATEGY:** Optimize the water reclamation process improvements. Continue to minimize costs by efficient energy usage strategies and effective staff deployment.

| <b>MEASURE:</b>   | <b>Actual<br/>FY 2008</b> | <b>Adopted<br/>FY 2009</b> | <b>Estimated<br/>FY 2009</b> | <b>Adopted<br/>FY 2010</b> |
|-------------------|---------------------------|----------------------------|------------------------------|----------------------------|
| \$ Per MG Treated | \$1,045                   | \$1,164                    | \$1,113                      | \$1,214                    |

**GOAL:** To provide maintenance and repair of all components of the water distribution and wastewater collection systems.

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**OBJECTIVE:** To ensure that 95% of large meters (1½ inch or larger) meet AWWA accuracy and testing frequency standards.

**STRATEGY:** Test the accuracy of all large meters per AWWA standards.

| <b>MEASURE:</b>   | <b>Actual<br/>FY 2008</b> | <b>Adopted<br/>FY 2009</b> | <b>Estimated<br/>FY 2009</b> | <b>Adopted<br/>FY 2010</b> |
|---|---------------------------|----------------------------|------------------------------|----------------------------|
| % Meters tested according to AWWA recommended testing frequency | 150%                      | 98%                        | 100%                         | 98%                        |

**OBJECTIVE:** To maintain sewer collection system in good condition and meet sewer permit requirements.

**STRATEGY:** Clean a minimum of 10% of the sewer system per year.

| <b>MEASURE:</b>        | <b>Actual<br/>FY 2008</b> | <b>Adopted<br/>FY 2009</b> | <b>Estimated<br/>FY 2009</b> | <b>Adopted<br/>FY 2010</b> |
|------------------------|---------------------------|----------------------------|------------------------------|----------------------------|
| % Sewer system cleaned | 10%                       | 10%                        | 11%                          | 10%                        |

**GOAL:** To provide accurate water and sewer bills to customers, meeting effectiveness and accuracy standards.

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**OBJECTIVE:** To provide accurate bills to customers requiring minimal corrections for erroneous bills.

**STRATEGY:** Perform process reporting and monitoring of accounts in order to ensure accuracy of bills mailed.

| <b>MEASURE:</b>                               | <b>Actual<br/>FY 2008</b> | <b>Adopted<br/>FY 2009</b> | <b>Estimated<br/>FY 2009</b> | <b>Adopted<br/>FY 2010</b> |
|---|---------------------------|----------------------------|------------------------------|----------------------------|
| Billing accuracy rate per 10,000 bills mailed | 99.9%                     | 99.8%                      | 99.89%                       | 99.8%                      |