

Fund 401

Sewer Operation and Maintenance



Mission

To safely collect and treat wastewater in compliance with all regulatory requirements using state-of-the-art technology in the most cost-effective manner in order to improve the environment and enhance the quality of life in Fairfax County.

Focus

The Wastewater Management Program includes wastewater collection and conveyance, wastewater treatment, and planning and monitoring program areas. The primary functions are to strategically plan, efficiently operate and effectively maintain the wastewater system in the best interest of the County and its customers. Funding for sewer operations and maintenance are financed by a transfer from Fund 400, Sewer Revenue, which is used to credit all system revenues collected, including availability fees and sewer service charges associated with the program.

This program operates and maintains nearly 3,390 miles of sewer, 65 pump stations and 59 flow-metering stations. Treatment of wastewater generated is provided primarily through five regional wastewater collection and treatment plants. The regional treatment approach takes advantage of economies of scale in wastewater treatment and ensures the economical and efficient operation and management of the program.



Photo of the Noman M. Cole Jr. Pollution Control Plant

One of the five regional plants is the County's owned and operated Noman M. Cole, Jr. Pollution Control Plant (NCPCP), which is currently permitted to treat 67 million gallons per day (mgd) of flow. Other regional facilities where the County has purchased treatment capacity include the District of Columbia Water and Sewer Authority's Blue Plains Treatment Plant with 31 mgd capacity; Alexandria Sanitation Authority's Treatment Plant with 32.4 mgd capacity; Upper Occoquan Service Authority's Treatment Plant with 22.6 mgd capacity; Arlington County's Treatment Plant with 3 mgd capacity; and Loudoun Water's Broad Run Plant with 1.0 mgd. Fairfax County utilizes all of these facilities to accommodate a total capacity of 157 mgd.

Fund 401

Sewer Operation and Maintenance

The Wastewater Management Program is funded by revenues generated by the customers of the sanitary sewer system and recorded in Fund 400, Sewer Revenue. Sewer service charges support system operation and maintenance costs, debt service payments, and capital projects attributable to supporting and improving wastewater treatment services for existing customers. Availability fees support a proportional share of system costs and capital projects attributable to growth of the system required to support new customers. Existing customers are defined as those who have paid an availability fee for access to the system and receive wastewater treatment services. New customers are those who have not paid the availability fee. Upon payment of the availability fee and connection to the system, a new customer becomes an existing customer. The County allocates expenses, interest income, bond proceeds, debt service payments, capital improvement project costs and funding, and operating costs between existing and new users of the system. In accordance with the County's "Growth Pays for Growth Policy," both existing and new customers must pay for their share of the system's total annual revenue requirements.

A number of trends that may influence the operation and maintenance of the sanitary sewer system over the next two to five years include the following:

Chesapeake Bay Water Quality Program Requirements - The Chesapeake Bay water quality program requires reductions in the amount of nutrient pollutants discharged from wastewater treatment facilities. In December 2004, the state notified the County that the renewal of County's National Pollutant Discharge Elimination System (NPDES) permit includes a requirement that nutrient removal be performed using "State of the Art" technology and meet a waste load allocation (cap) for the nutrients nitrogen and phosphorous. A phased approach has been under way to renovate and upgrade current plant facilities to accommodate these more stringent nutrient discharge requirements. Until the "State of the Art" technology is installed, the County has a nitrogen discharge requirement of 7.0 milligrams per liter.

Capacity, Maintenance, Operation, and Management (CMOM) - The United States Environmental Protection Agency (USEPA) has implemented sanitary sewer overflow (SSO) regulations, which would require municipalities to develop and implement a CMOM program to eliminate any sewer overflows and back-ups from the wastewater collection systems. The County has implemented the CMOM program and can be found at http://www.epa.gov/npdespub/pubs/sso_casestudy_fairfax.pdf.

Capital Improvements - Reinvestment in the sewer system infrastructure ensures optimum operation of all wastewater facilities. This initiative, closely related to CMOM endeavors, emphasizes capital improvements to wastewater collection and treatment facilities to meet requirements of the future sanitary sewer overflow regulations by the USEPA. The program continues to take a proactive stance toward infrastructure rehabilitation; however, CMOM regulations could greatly affect operations.

Fund 401

Sewer Operation and Maintenance

Integration of Information Technology - The Geographic Information System (GIS), the Supervisory Control and Data Acquisition (SCADA) system and the Infrastructure Computerized Maintenance Management System (ICMMS) require integration for optimal use. Computing and information technology are an integral part of every aspect of the Wastewater Management Program operations. Today's high customer expectations and increasing reliance on consistent 24-hour services, lead to an increasing dependence on stable and reliable integrated information technologies that infuse the business process. Presently, the Enterprise Asset Management system (EAM) has successfully integrated with GIS and ICMMS system which provide reports for the SCADA system. The EAM system and SCADA system are not yet integrated. Future customer service needs will require a full enterprise integration of the critical information technology systems to reduce total cost of ownership, increase availability of critical business data in the right format, and improve the quality and delivery of services to sewer customers.

Asset Management Program - As a result of evaluating the program's financial management strategies, an Asset Management Program was developed. The first phase aligned the program's capital asset policies and procedures with the County's fixed asset policies and developed a process in which to evaluate the program's infrastructure. The second phase developed criteria to identify the program's critical assets. After the criteria were tested and accepted they were applied to all program assets. Phase three will be the condition assessment of all assets beginning with the most critical assets.

Based on these operational requirements and trends, the Sewer Service Charge rate included in the 5-year plan approved by the Board of Supervisors as part of the FY 2012 Adopted Budget Plan was proposed to increase 14 percent. The Sewer Service Charge rate was proposed to increase from \$6.01 to \$6.85 per 1,000 gallons of water consumption in FY 2013, resulting in an anticipated increase in the annual cost to the typical household of \$63.84. Wastewater Management staff in consultation with Public Resources Management Group (PRMG) has proposed a more modest increase for FY 2013 due to identified operating efficiencies within the Program. Operational savings are anticipated for consumables which include chemical savings in the treatment of wastewater, energy consumption savings due to replacing fix drive pumps with variable drive pumps, lower than anticipated utility requirements and other operational efficiencies throughout the program.

Therefore, in FY 2013, the Sewer Service Charge rate is proposed to increase from \$6.01 to \$6.55 per 1,000 gallons of water consumption. This equates to an approximate increase of 9.0 percent in Sewer Service Charges. This level of rate increase would allow the system to meet all of the required financial targets by FY 2014, remain competitive with neighboring utilities, continue to preserve credit rating at current levels and require less debt to support capital projects. This increase is a more balanced rate implementation program with annual sewer service charge increases of 8.0 percent and 6.0 percent being considered for FY 2014 and FY 2015. In addition, the base charge will increase from \$5.00 per quarter or \$20 per year to \$5.50 per quarter or \$22.00 per year. The base charge recovers 100 percent of the cost of billing as charged by the Fairfax County Water Authority. The combined effect of the sewer service charge increase as well as the base charge equate to an anticipated increase in the annual cost to the typical household of \$43.04 or \$3.59 per month.

Fund 401

Sewer Operation and Maintenance

The chart below reflects the Wastewater Management Program's projected fiscal health in FY 2013 and FY 2014. The financial planning process incorporates these indicators that are interrelated and structured to identify the adequacy of rates from a cash flow, business, and compliance standpoint. These indicators are used by the rating agencies to determine the System's credit rating.

FY 2013 Calculated Financial Indicators Comparison

Financial Indicator	Target	FY 2013 Rate (9% Increase with \$5.50 Base Charge)		
		Achieved	FY 2013	FY 2014
Net Revenue Margin	Min. 45.0%	Yes	46.0%	48.1%
Days Working Capital [1]	90 to 120	Yes	166	204
Debt Coverage Senior	Min. 3.00x	Yes	3.33x	3.75x
Debt Coverage All-in	Min 1.75x	Yes	1.84x	2.00x
Net Capital Funds Available Ratio	Min 3.0%	Yes	2.5%	3.2%
Debt to Net Plant in Service	Max 50.0%	Yes	49.1%	47.0%
Outstanding Debt per Connection	Max \$3,000	Yes	\$2,545	\$2,457
Anticipated Sewer Bond Sales Through FY 2018				\$200.1 M

[1] Exclusive of Availability Fees in Fund 402, Extension and Improvement Fund. Calculated based on Operating Expenses and 360 days.

In FY 2012, a Sewer Revenue Bond sale in the amount of \$110 million is planned to support capital projects including enhanced nutrient removal upgrades at the Noman M. Cole, Jr. Pollution Control Plant and treatment by contract wastewater treatment facilities. An original bond amount of \$150 million was proposed but reduced to \$110 million due to the sale of 2.0 mgd of capacity to Prince William County which was approved by the Board of Supervisors on January 25, 2011, providing approximately \$40 million in revenues for the system. It is anticipated that the Wastewater Management Program will continue to maintain high bond ratings (AAA by Fitch Investor Service and Standard and Poor's Corporation and Aa1 by Moody's Investors Service, Inc.) from rating agencies. These high credit ratings have enabled the County to sell bonds on behalf of the System at interest rates lower than those obtained by most sewer authorities, thereby achieving savings throughout the life of the bonds.

Budget and Staff Resources

Agency Summary				
Category	FY 2011 Actual	FY 2012 Adopted Budget Plan	FY 2012 Revised Budget Plan	FY 2013 Advertised Budget Plan
Authorized Positions/Staff Years				
Regular	321 / 320.5	321 / 320.5	321 / 320.5	321 / 320.5
Expenditures:				
Personnel Services	\$24,383,084	\$25,430,945	\$25,706,916	\$26,231,019
Operating Expenses	60,663,621	66,819,252	64,440,261	66,819,252
Capital Equipment	228,990	1,724,974	2,093,437	1,325,074
Subtotal	\$85,275,695	\$93,975,171	\$92,240,614	\$94,375,345
Less:				
Recovered Costs	(\$629,037)	(\$687,567)	(\$687,567)	(\$687,567)
Total Expenditures	\$84,646,658	\$93,287,604	\$91,553,047	\$93,687,778

Fund 401

Sewer Operation and Maintenance

FY 2013 Funding Adjustments

The following funding adjustments from the FY 2012 Adopted Budget Plan are necessary to support the FY 2013 program:

- ◆ **Employee Compensation** **\$402,049**
An increase of \$402,049 in Personnel Services reflects a 2.18 percent market rate adjustment (MRA) in FY 2013.

- ◆ **Full Year Impact of FY 2012 Market Rate Adjustment** **\$361,622**
As part of the *FY 2011 Carryover Review*, the Board of Supervisors approved an increase of \$361,622 in Personnel Services for a 2.0 percent market rate adjustment (MRA), effective September 24, 2011.

- ◆ **Other Post-Employment Benefits** **\$36,403**
An increase of \$36,403 in Personnel Services reflects required adjustments associated with providing Other Post-Employment Benefits (OPEBs) to retirees, including the Retiree Health Benefits Subsidy. Before FY 2011, costs related to these benefits were paid solely by the General Fund; however, these costs are now spread across funds in order to more appropriately reflect benefit-related expenses for the employees within each fund. For more information on Other Post-Employment Benefits, please refer to Fund 603, OPEB Trust Fund, in Volume 2 of the FY 2013 Advertised Budget Plan.

- ◆ **Capital Equipment** **\$1,325,074**
Capital Equipment funding of \$1,325,074 is included primarily for requirements associated with replacement equipment that has outlived its useful life and is not cost effective to repair. This equipment includes: \$215,702 for five replacement vehicles and one new vehicle to provide transportation for crews and their equipment; \$177,881 for a Septic Tank Truck for the pump and haul systems in Clifton and Gunston communities as well as emergency situations; \$357,500 for a Sewer flusher/vacuum truck for routine cleaning and maintenance of the sewer lines; and \$231,000 for a Track Excavator to excavate emergency sewer line breaks. In addition, an amount of \$342,991 is required for the replacement of critical laboratory and computer equipment at the Noman M. Cole, Jr. Pollution Control Plant.

Changes to FY 2012 Adopted Budget Plan

The following funding adjustments reflect all approved changes in the FY 2012 Revised Budget Plan since passage of the FY 2012 Adopted Budget Plan. Included are all adjustments made as part of the FY 2011 Carryover Review, and all other approved changes through December 31, 2011:

- ◆ **Carryover Adjustments** **(\$1,734,557)**
As part of the *FY 2011 Carryover Review*, the Board of Supervisors approved a net decrease of \$1,734,557. A decrease of \$2,378,991 was primarily due to savings resulting from a reduction in the unit price for chemicals used in the treatment of wastewater which included sodium hydroxide, sodium bisulfate and lime, utility savings at the Noman M. Cole, Jr. Pollution Control Plant, lower than anticipated professional consultant and contractual services requirements, as well as other repair and maintenance requirements. These reduced operating costs were based on actual usage and invoices. This decrease was partially offset by an increase of \$368,463 in projected capital equipment costs and funding of \$275,971 in Personnel Services for a 2.0 percent market rate adjustment, effective September 24, 2011.

Fund 401

Sewer Operation and Maintenance

Wastewater Collection

Agency Summary				
Category	FY 2011 Actual	FY 2012 Adopted Budget Plan	FY 2012 Revised Budget Plan	FY 2013 Advertised Budget Plan
Authorized Positions/Staff Years				
Regular	140 / 140	140 / 140	140 / 140	138 / 138
Total Expenditures	\$12,573,305	\$15,473,974	\$15,651,103	\$14,984,594

Position Summary		
Collection Program	Gravity Sewers	Pumping Stations
1 Director	1 Public Works Env. Services Manager	1 Public Works Env. Services Manager
1 Human Resources Generalist III	1 Maintenance Superintendent	1 Engineer III
1 Safety Analyst	4 Senior Maintenance Supervisors	1 Industrial Electrician Supervisor
1 Inventory Manager	2 Public Works Env. Services Specialists	1 Instrumentation Supervisor
1 Material Mgmt. Specialist III	7 Engineering Technicians II	1 Plant Maintenance Supervisor
1 Admin. Assistant IV	1 Engineer V	2 Industrial Electricians III
1 Admin. Assistant III	16 Engineering Technicians I	4 Instrumentation Technicians III
2 Admin. Assistants II	2 Heavy Equipment Operators	4 Industrial Electricians II
1 Material Mgmt. Specialist I	16 Maintenance Crew Chiefs	6 Plant Mechanics III
1 Material Mgmt. Assistant	3 Motor Equipment Operators	3 Instrumentation Technicians II
	2 Truck Drivers	8 Plant Mechanics II
	12 Senior Maintenance Workers	1 Instrumentation Technician I
	19 Maintenance Workers	1 Engineering Technician III
	1 Engineer III	
	5 Environmental Services Sups.	
	1 Map Drafter	
TOTAL POSITIONS		
138 Positions / 138.0 Staff Years		

Goal

To operate, maintain, and repair the County's wastewater collection system in a manner that protects Fairfax County citizens and the environment.

Wastewater Treatment

Agency Summary				
Category	FY 2011 Actual	FY 2012 Adopted Budget Plan	FY 2012 Revised Budget Plan	FY 2013 Advertised Budget Plan
Authorized Positions/Staff Years				
Regular	135 / 135	135 / 135	135 / 135	137 / 137
Total Expenditures	\$17,478,751	\$19,720,785	\$18,971,059	\$19,992,242

Fund 401

Sewer Operation and Maintenance

Position Summary		
<u>Norman M. Cole, Jr., Pollution Control Plant</u>		
1 Director	1 Engineer V	2 Industrial Electricians III
1 Public Works Env. Svcs. Spec.	2 Engineers III	3 Instrumentation Technicians III
1 Engineer IV	1 Plant Operations Superintendent	6 Instrumentation Technicians II
1 Info. Tech. Prog. Manager I	6 Plant Operations Supervisors	1 Senior Maintenance Supervisor
1 Database Administrator I	10 Plant Operators III	4 Industrial Electricians II
2 Material Mgmt. Specialists I	20 Plant Operators II	7 Plant Mechanics III
3 Network/Telecomm. Analysts II	19 Plant Operators I	2 Welders II
1 Safety Analyst	2 Engineering Technicians III	8 Plant Mechanics II
2 Network/Telecomm. Analysts I	1 Engineering Technician II	2 Painters I
1 Inventory Manager	<u>Maintenance</u>	
1 Heavy Equipment Supervisor	2 Public Works Env. Svcs. Mgrs.	4 Maintenance Workers
1 Info. Technology Technician II	2 Industrial Electrician Supervisors	
1 Administrative Assistant IV	1 Instrumentation Supervisor	
2 Heavy Equipment Operators	1 Plant Maintenance Supervisor	
3 Administrative Assistants III	2 Painters II	
1 Material Mgmt. Driver	1 Industrial Electrician I	
1 Data Analyst I	2 Senior Maintenance Workers	
	1 Chief Building Maintenance	
TOTAL POSITIONS		
137 Positions / 137.0 Staff Years		

Goal

To ensure efficient and effective operation and maintenance of the County's wastewater treatment facilities within the laws and standards established by the Congress of the United States in Public Law 92-500 which designates regulatory powers to the USEPA and the Virginia Department of Environmental Quality.

Wastewater Planning and Monitoring

Agency Summary				
	FY 2011	FY 2012	FY 2012	FY 2013
Category	Actual	Adopted Budget Plan	Revised Budget Plan	Advertised Budget Plan
Authorized Positions/Staff Years				
Regular	46 / 45.5	46 / 45.5	46 / 45.5	46 / 45.5
Total Expenditures	\$54,594,602	\$58,092,845	\$56,930,885	\$58,710,942

Position Summary		
<u>Financial Management and Planning</u>	<u>Engineering Planning and Analysis</u>	<u>Environmental Monitoring</u>
1 Deputy Director Public Works	1 Engineer V	1 Environmental Services Director
1 Director	1 Engineer IV	2 Asst. Environmental Services Directors
1 Management Analyst IV	1 Geog. Info. Spatial Analyst III	4 Environmental Health Specs. II
1 Financial Specialist IV	1 Geog. Info. Spatial Analyst II	2 Environmental Technologists III
1 Financial Specialist III	1 Geog. Info. Spatial Analyst I	3 Environmental Technologists II
1 Programmer Analyst III	2 Engineering Technicians III	7 Environmental Technologists I
1 Financial Specialist II	4 Engineers III	1 Management Analyst II
1 Env. Services Technical Specialist		
2 Administrative Assistants IV		
1 Administrative Assistant III, PT		
1 Administrative Assistant II		
1 Management Analyst I		
2 Engineering Technicians II		
TOTAL POSITIONS		
46 Positions / 45.5 Staff Years		PT Denotes Part-Time Position

Fund 401

Sewer Operation and Maintenance

Goal

To manage sewer revenue collection; to monitor and report County sewage flows treated at non-County facilities; to plan for growth and development in the County's public sewer system; and to environmentally monitor County treatment facilities, other publicly and privately-owned treatment facilities in the program and nearby embayments.

Key Performance Measures

Objectives

- ◆ To comply with Title V air permit and state water quality permit requirements 100 percent of the time in order to contribute to a pure and natural state of air and water in Fairfax County.
- ◆ To maintain sewer infrastructure effectively in order to experience no more than 15 sewer back-ups, which is higher than the current 5-year rolling annual average of 13.
- ◆ To ensure efficient wastewater collection and treatment services by providing service to customers at rates that are one of the lowest in the area.
- ◆ To provide excellent financial and asset management by ensuring a debt coverage ratio of 1.25 or greater.

Indicator	Prior Year Actuals			Current Estimate
	FY 2009 Actual	FY 2010 Actual	FY 2011 Estimate/Actual	FY 2012
Output:				
Total average daily wastewater flow treated (million gallons)	100.5	107.7	112.0 / 100.3	103.0
Emergency repair work orders processed	457	160	250 / 138	150
Service trouble calls received	1,038	1,092	1,100 / 831	1,100
Operating Reserve maintained (millions)	\$26.0	\$45.0	\$35.0 / \$45.0	\$45.0
Efficiency:				
Percent of treatment capacity available for growth	36%	32%	33% / 36%	34%
Emergency repairs, as a percent of total work orders	0.9%	0.3%	1.0% / 0.2%	0.5%
Sewer Service Billing Rate, \$/1,000 gallons	\$4.10	\$4.50	\$5.27 / \$5.27	\$6.01
Service Quality:				
Sanitary sewer overflows (SSOs) per year (FY 2011, 5-yr. avg. = 15)	14	10	15 / 19	15
Percent of customers responded to within 24 hours	100%	100%	100% / 100%	100%
Percentage of sewage back-ups responded to within 2 hours	100%	100%	100% / 100%	100%
Odor complaints per year (FY 2011, 5-yr. avg. = 18)	17	16	20 / 16	20
Percent of Pay as you go Capital Improvement Program funded	100%	100%	100% / 100%	100%

Fund 401 Sewer Operation and Maintenance

Indicator	Prior Year Actuals			Current Estimate
	FY 2009 Actual	FY 2010 Actual	FY 2011 Estimate/Actual	FY 2012
Outcome:				
Compliance with Title V air permit and State water quality permit	100%	100%	100% / 100%	100%
Blockages causing sewer back-ups per year (FY 2011, 5-yr. avg. = 13)	11	11	15 / 15	15
Average household sewer bill compared to other providers in the area	Lower	One of the lowest	One of the lowest / One of the lowest	One of the lowest
Debt Coverage Ratio: (Revenue - Operating Cost/Debt)	1.25	1.28	1.25 / 1.44	1.25

Performance Measurement Results

The Wastewater Management Program continues to comply with Title V air permit and State water quality permit requirements to maintain 100 percent compliance. Sanitary sewage blockages increased in FY 2011 due to increased deterioration of aging sewer lines. Blockages are expected to increase in both FY 2012 and FY 2013 due to the continual deterioration of aging sewer lines, tree and large shrub root infiltration and accumulation of fats, oils and grease in the sewer lines. All of these issues contribute to increased sewer line clogs, collapses and maintenance costs.

When comparing average annual sewer service billings for the regional jurisdictions, Fairfax County has a lower average annual sewer service billing at \$421. Other regional jurisdictions range from \$417 to \$647 (as of January 1, 2011). The average sewer service billings for the other regional jurisdictions have been developed by applying each jurisdiction's sewer service rate to appropriate Single Family Residence Equivalent (SFRE) water usage determined from an analysis of Fairfax Water's historical average water usage records for SFREs. Based on the latest rate comparison, Fairfax County had one of the lower annual sewer service charges. The program is able to maintain its competitive rates while providing quality service to its customers, protecting the environment, and maintaining sufficient financial resources to fully fund the program's initiatives.

Fund 401

Sewer Operation and Maintenance

FUND STATEMENT

Fund Type G40, Enterprise Funds

Fund 401, Sewer Operation and Maintenance

	FY 2011 Actual	FY 2012 Adopted Budget Plan	FY 2012 Revised Budget Plan	FY 2013 Advertised Budget Plan
Beginning Balance	\$16,887,651	\$459,079	\$5,640,993	\$87,946
Transfer In:				
Sewer Revenue (400) ¹	\$73,400,000	\$78,000,000	\$86,000,000	\$93,750,000
Total Transfer In	\$73,400,000	\$78,000,000	\$86,000,000	\$93,750,000
Total Available	\$90,287,651	\$78,459,079	\$91,640,993	\$93,837,946
Expenditures:				
Personnel Services	\$24,383,084	\$25,430,945	\$25,706,916	\$26,231,019
Operating Expenses	60,663,621	66,819,252	64,440,261	66,819,252
Recovered Costs	(629,037)	(687,567)	(687,567)	(687,567)
Capital Equipment	228,990	1,724,974	2,093,437	1,325,074
Total Expenditures	\$84,646,658	\$93,287,604	\$91,553,047	\$93,687,778
Total Disbursements	\$84,646,658	\$93,287,604	\$91,553,047	\$93,687,778
Ending Balance^{1,2}	\$5,640,993	(\$14,828,525)	\$87,946	\$150,168

¹ In response to fluctuations in expenditure requirements, adjustments were made in FY 2011. These adjustments coupled with the use of one-time balances in FY 2011 resulted in additional transfer requirements in FY 2012 which will stabilize this fund.

² The Wastewater Management Program maintains fund balances at adequate levels relative to projected operation and maintenance expenses. These costs change annually; therefore, funding for sewer operations and maintenance is carried forward each fiscal year, and ending balances fluctuate, reflecting the carryover of these funds.