

# Wastewater Management Program Overview

## Overview

The Wastewater Management Program (WWM) is operated, maintained, and managed within the Department of Public Works and Environmental Services (DPWES). The program currently includes the County-owned Noman M. Cole, Jr. Pollution Control Plant (67 million gallons per day (mgd) capacity), nearly 3,250 miles of sewer lines, 63 pump stations, 57 flow-metering stations, and covers approximately 234 square miles of the County's 407 square-mile area. Capacity entitlement at the other regional facilities totals 89.5 mgd. A total of 370,729 households and businesses in Fairfax County are connected to public sewer as of June 30, 2020.

In addition to providing County residents and businesses with sewer service, Fairfax County provides sewer service to other nearby entities through "Sales of Service" agreements with Arlington and Loudoun Counties, the cities of Falls Church and Fairfax, the Towns of Herndon and Vienna, and Fort Belvoir. These entities share the capital and operating costs of WWM based on actual wastewater flow and reserved treatment capacity.

Strategic planning and overall business monitoring are the responsibility of the Wastewater Management Leadership Team, whose responsibilities focus on long range planning, strategic thinking, continuous improvement processing, wastewater capacity, and financial management. This team is composed of employees from three divisions within WWM - Collections, Treatment, and Planning and Monitoring.

The Wastewater Collection Division (WCD) is responsible for the County's wastewater collection and conveyance system consisting of sewers, force mains, pumping stations, and metering stations. The WCD has a proactive sewer system maintenance program that facilitates a safe and effective wastewater collection system. In FY 2020, approximately 183 miles of sewer lines were inspected by Closed Circuit Television (CCTV) crews and approximately 478 miles of sewer lines were cleaned to ensure maximum flow carrying capacity and reduce sewer backups and overflows. Over the last six years, WCD has rehabilitated approximately 148 miles of sewer lines to protect the environment and residents of Fairfax County.

The Wastewater Treatment Division (WTD) is responsible for operating and maintaining the County's wastewater treatment facility, the Noman M. Cole, Jr. Pollution Control Plant (NCPCP). The WTD continues to produce a quality effluent to meet regulatory and permit requirements, despite major construction occurring throughout the plant site. The NCPCP has started the rehabilitation of the plant's bio-solids facilities, which includes additional air pollution control systems, and complete rehabilitation of all four incinerators, which will include energy recovery.

The Wastewater Planning and Monitoring Division (WPMD) is responsible for the agency's fiscal planning, engineering planning, and wastewater monitoring. The WPMD continues to effectively monitor the long-term needs for the Wastewater Management Program in terms of infrastructure upgrades, maintenance, and expansions. The WPMD ensures that all financial requirements are fulfilled by maintaining a rate structure to adequately recover all operating and maintenance costs, capital improvements and debt service obligations. The WPMD also plans for system capacity, both in the conveyance system and treatment facilities, by initiating expansion and improvement projects to keep pace with increased wastewater flows. The WPMD safeguards the environment by ensuring compliance with water quality standards and prevention of toxic discharges into the collection system.

WPMD is currently monitoring the Chesapeake Bay water quality program, which 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 the County's Virginia Pollutant Discharge Elimination System (VPDES) permit includes a requirement that nutrient removal be performed using "State of the Art" technology and meet a waste load allocation (cap) for the nitrogen and phosphorous

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nutrients. A phased approach was used to renovate and upgrade current plant facilities to accommodate these more stringent nutrient discharge requirements. These renovations and upgrades were completed in FY 2015. Other regional plants serving the County are at various stages of upgrade for compliance with the new requirements.

The Wastewater Management Program is primarily supported by Sewer Service Charges received from existing customers, which are used to fully recover program operation and maintenance costs, debt service payments and capital project requirements attributable to improving wastewater treatment effluent quality as mandated by state and federal agencies. The five-year sewer rate plan approved by the Board of Supervisors as part of the FY 2021 Adopted Budget Plan had proposed to increase the sewer charges by 11.0 percent in FY 2022. After a careful review, the Wastewater Management staff recommended to increase the sewer charges by 7.0 percent in FY 2022. The Sewer Service Charge will increase from \$7.28 to \$7.72 per 1,000 gallons of water consumed based on Fairfax County's winter quarter average consumption of 18,000 gallons.

The Base Charge will increase from \$32.91 per quarter to \$36.54 per quarter. The Base Charge provides for a more equitable rate structure by recovering a portion of the program's fixed costs. The industry practice for a fixed charge revenue rate is 25 percent of operating revenues. The expected fixed charge revenue percentage in FY 2022 is equal to 22.3 percent. The current system, including sewer lines, facilities, purchased capacity and equipment, is valued at approximately \$2.0 billion. Based on the age and required maintenance of the system, reinvestment must continue to be addressed. The implementation of the increases to the Base Charge will help ensure that all users of the system share in the fixed costs associated with reinvestment and operations.

The annual average customer bill will increase from \$655.80 in FY 2021 to \$702.00 in FY 2022, an annual cost increase of \$46.20 or 7.0 percent. The FY 2022 average bill in Fairfax County is one of the lowest compared to the average bill in other regional jurisdictions even with the proposed increases. The increases in the Sewer Service Charge and Base Charge from FY 2023 to FY 2026 will partially offset the increased costs associated with capital project construction, system operation and maintenance, debt service and upgrades to meet new, more stringent nitrogen discharge limitations from wastewater treatment plants.

Year	Sewer Service Charge Per 1,000 gallons of water	Base Charge Per Quarterly Bill	Sewer Charges Percentage Increase	Fixed Charge Revenue Percentage
2021	\$7.28	\$32.91	0.0%	21.9%
2022	\$7.72	\$36.54	7.0%	22.3%
2023	\$8.18	\$41.03	7.3%	22.9%
2024	\$8.47	\$45.05	4.9%	23.9%
2025	\$8.76	\$49.48	4.9%	25.0%
2026	\$9.20	\$51.95	5.0%	25.3%

The Wastewater Management Program is also supported by the Availability Charge, which is a one-time charge to new customers for initial connection to the system. The revenue from the Availability Charge is used to offset the costs of expanding conveyance and treatment plant upgrades and interjurisdictional payments that result from population growth, more stringent treatment requirements and inflation. In FY 2022, the Availability Charge will increase from \$8,340 to \$8,507 for single-family homes based on current projections of capital requirements. Rates are based on requirements associated with conveyance and treatment plant upgrades and interjurisdictional payments that result from population growth, more stringent treatment requirements and inflation.

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The FY 2022 rate is consistent with the recommendations of DPWES and the analysis included in the January 2021 Wastewater Revenue Sufficiency and Rate Analysis report. The following table displays the rates by category:

Category	FY 2021 Availability Charge	FY 2022 Availability Charge
Single Family	\$8,340	\$8,507
Townhouses and Apartments	\$6,672	\$6,806
Hotels/Motels	\$2,085	\$2,127
Nonresidential	\$417/fixture unit	\$425/fixture unit

As part of the FY 2020 Adopted Budget Plan, the Board of Supervisors approved the establishment of charges to recover a portion of the cost of disposal and treatment of hauled wastewater at the County's septage receiving facility (SRF), which is located at the NCPCP.

The County's SRF was constructed to receive and treat septage from local onsite sewage disposal systems in accordance with Code of Virginia Ann. Section 15.2-2123. In addition, the SRF receives landfill leachate, portable toilet waste, restaurant grease, and recycled carwash water. Hauled septage and wastewater used to be received and treated at no cost to pump and haul contractors to encourage proper disposal. This cost has been covered by the sewer charges paid by the customers of the County's public sewer system. The charges for hauled wastewater improve equity among customers served by the sewer system and those served by the pump and haul contractors. Also, the charges recover a portion of the costs of operation, maintenance, and upcoming necessary improvements to the SRF.

DPWES initially set the charges at a level comparable to the fees charged by the Upper Occoquan Service Authority (UOSA), the only other facility in the County that receives hauled wastewater. Since septic tank and restaurant grease waste has higher strength than portable toilet and landfill leachate waste, the charge for high strength waste will remain the same at \$27 per 1,000 gallons of the hauler's truck capacity in FY 2022. The fee for low strength waste will increase from \$7.28 to \$7.72 per 1,000 gallons of hauler truck capacity in FY 2022. This fee is based on the prevailing sewer service charge and will be modified as the sewer service charge is adjusted in the future. The projected FY 2022 revenue from charges for hauled wastewater is equal to \$275,000.

This level of revenue in FY 2022 will allow the system to meet permit conditions, meet and maintain all of the required financial targets through FY 2026, maintain competitive rates with neighboring utilities, continue to preserve its AAA bond rating, and require less debt to support capital projects.

The table on the following page reflects the Wastewater Management Program's projected fiscal health in FY 2022 and FY 2023. The financial planning process incorporates the following 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 Program's credit rating.

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Calculated Financial Indicators			
Financial Indicator	Target	FY 2022	FY 2023
Net Revenue Margin	37.0% to 65.0%	49%	53%
Days Working Capital <sup>1</sup>	150 to 200 days	182	181
Debt Coverage Senior	Min. 3.00x	3.06x	2.60x
Debt Coverage All-in <sup>2</sup>	1.80x to 2.20x	1.92x	1.85x
Affordability (% of median income spent on sewer bill)	Less than 1.2%	0.6%	0.6%
Debt to Net Plant in Service	Below 40.0% Never above 50.0%	35%	39%
Outstanding Debt per Connection	Max \$3,000	\$1,865	\$2,126
Next Sewer Bond Sale Expected in FY 2021 - \$200 million			

<sup>1</sup> The Days Working Capital financial indicator is exclusive of Availability Charges in Fund 69000, Sewer Revenue, debt expenses in the Wastewater debt related funds, Fund 69300, Sewer Construction Improvements, and Fund 69310, Sewer Bond Construction. It is calculated based on Operating Expenses and 360 days per year.

<sup>2</sup> The Debt Coverage All-in financial indicator is exclusive of Availability Charges.

It is anticipated that the rates in FY 2022 will support the County's ability to maintain high bond ratings (AAA by Fitch Investor Service and Standard and Poor's Corporation and Aaa by Moody's Investors Service, Inc.) from the rating agencies. These high credit ratings have enabled the County to sell bonds on behalf of the Program at interest rates lower than those obtained by most sewer authorities, thereby achieving savings throughout the life of the bonds. The Wastewater Management Program has issued debt to fund major expansion and upgrade projects for both its own plant and its portion at the "Treatment by Contract" facilities.

In FY 2022, the County is projected to provide for the treatment of 98.8 million gallons of wastewater per day. Approximately 39 percent of this flow is treated at the NCPCP. The flow is distributed between the NCPCP and the interjurisdictional facilities as detailed in the following table. The table below also includes the capacity utilization percentage and the available (unused) capacity for each plant.

Treatment Plant	Capacity (mgd)	FY 2022 Projected Daily Average (mgd)	Capacity Utilization (%)	Available Capacity (mgd)
DCWASA Blue Plains	31.0	28.8	92.9%	2.2
Noman M. Cole, Jr.	67.0	38.6	57.6%	28.4
Alexandria Renew Enterprises	32.4	16.6	51.2%	15.8
Arlington County	3.0	2.2	73.3%	0.8
Upper Occoquan Service Authority	22.1	12.6	57.0%	9.5
Loudoun Water	1.0	0.0	0.0%	1.0
<b>Total</b>	<b>156.5</b>	<b>98.8</b>	<b>63.1%</b>	<b>57.7</b>

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To ensure that WWM remains competitive and provides a high-performance operation including improvements to the technical and managerial capacities that will continue to enhance service quality, customer service and financial planning, WWM closely monitors the following areas:

	FY 2020 Actual	FY 2021 Adopted	FY 2022 Advertised
Sewer Service Charge, \$/1,000 gallons	\$7.28	\$7.28	\$7.72
Treatment Costs, \$/MGD	\$1,979	\$2,025	\$2,080
Number of Sewer System Overflows	10	15	15
Odor Complaints per year	22	15	15

The WWM comprises seven separate funds under a self-supporting fund structure (Enterprise Funds) consistent with the Sewer Bond Resolution adopted by the Board of Supervisors in July 1985. For more detailed information of the operational aspects of the various programs, refer to the narrative of Fund 69010, Sewer Operation and Maintenance, which follows this Overview. The following is a brief description of the seven active funds:

- **Fund 69000** - Sewer Revenue is used to credit all operating revenues of the system, as well as most of the interest on invested fund balances. Revenues recorded in this fund are transferred to the various funds to meet their operational requirements. The remaining fund balances are used to set aside funds for various reserves and future system requirements.
- **Fund 69010** - Sewer Operation and Maintenance provides funding for the three divisions responsible for the management and operation of the program supported by a transfer from Fund 69000.
- **Fund 69020** - Sewer Bond Parity Debt Service is used to record principal, interest, and fiscal agent fees for the 2012, 2014, 2016, 2017 and the new 2021 Sewer Revenue Bonds in accordance with the current Sewer Bond Resolution supported by a transfer from Fund 69000.
- **Fund 69030** - Sewer Bond Debt Reserve provides debt reserve funds for the 2012 Sewer Revenue Bonds, the 2014 Sewer Refunding Bonds, the 2016 Sewer Refunding Bonds, the 2017 Sewer Revenue Bonds, and the new 2021 Sewer Revenue Bonds in accordance with the current Sewer Bond Resolution, which are funded from the issuance of sewer revenue bonds and/or program revenues.
- **Fund 69040** - Sewer Bond Subordinate Debt Service records all debt service payments on the Upper Occoquan Service Authority (UOSA) revenue bonds and Virginia Resources Authority (VRA) loans. All future issues or refinancing of debt arising from interjurisdictional capacity rights may be treated as subordinate obligations of the system as provided by the General Bond Resolution for Sewer Revenue Bonds. Funding is supported by a transfer from Fund 69000.
- **Fund 69300** - Sewer Construction Improvements provides funding for the repair, rehabilitation and improvement requirements of the entire program's infrastructure supported by a transfer from Fund 69000.
- **Fund 69310** - Sewer Bond Construction provides for major program construction projects, which are funded from the issuance of sewer revenue bonds and/or program revenues.

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## Pandemic Response and Impact

The Wastewater Management Program of DPWES has continued to work at full capacity during the COVID-19 pandemic to fulfill the System's responsibilities to its customers. Accomplishing this task has required considerable innovation, hard work, and adaptation (e.g., additional personal protective equipment, facility cleaning, distancing measures, equipment, and new tools) that have increased the System's resource requirements.

The Wastewater Management staff worked with the System's financial advisors to project estimated impacts to revenues and developed financial management strategies. The System's 10-year financial plan has been updated to include adjustments for revenues during the pandemic and staff is closely monitoring unfolding trends throughout the year.

## Organizational Chart

