

Wastewater Management Program



Wastewater Management Program

Overview

The Wastewater Management Program is one of five Business Areas within the Department of Public Works and Environmental Services and is responsible for the administration and management of the County's wastewater system. With oversight through a Deputy Public Works Director, the Wastewater Management Program consists of three divisions: the Wastewater Planning and Monitoring Division, the Wastewater Collection Division and the Wastewater Treatment Division.

The system consists of approximately 3,412 miles of sewer lines ranging in size from 8 inches to 72 inches in diameter; 63 wastewater pump stations ranging in capacity from 0.1 to 37 million gallons per day (mgd); and 54 metering stations. Approximately 100 mgd of wastewater are generated in the County. Almost 40 percent of the wastewater flow is treated at the County's Noman M. Cole, Jr., Pollution Control Plant (NMCPCP) near Lorton, Virginia. The rest of the flow is distributed between one privately owned and operated plant and six other treatment facilities operated and maintained by neighboring jurisdictions and/or Authorities pursuant to contract agreements with the County.

- Utilities, Inc. (Colchester/Harborview subdivision)
- Arlington County
- DC Water (Blue Plains)
- Alexandria Renew Enterprises (ARenew)
- Upper Occoquan Service Authority (UOSA)
- Loudoun Water's Broad Run Water Reclamation Facility
- Prince William County Service Authority (PWCSA)

NMCPCP, the County's treatment plant, has a capacity of 67 mgd. Capacity entitlement at the other treatment facilities totals 90 mgd for a grand total of 157 mgd capacity for the County.

Approximately 84 percent of the 398,773 households and virtually all businesses in the County are connected to the sewer system. The sewer service area covers approximately 234 square miles, nearly 60 percent of the County's 407 square mile land mass. Under separate service agreements, the County provides sewer service to the following jurisdictions: Arlington County, Loudoun County, Fort Belvoir, Fairfax City, the City of Falls Church, the Town of Herndon, and the Town of Vienna.

It should be noted that this consolidated presentation includes a portion of Agency 87, Unclassified Administrative Expenses – Public Works Programs in the General Fund, as well as Fund 69000, Sewer Revenue, Fund 69010, Sewer Operation and Maintenance, Fund 69020, Sewer Bond Parity Debt Service, Fund 69030, Sewer Bond Debt Reserve, Fund 69040, Sewer Bond Subordinate Debt Service, Fund 69300, Sewer Construction Improvements, and Fund 69310, Sewer Bond Construction.

Wastewater Management Program

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
FUNDING			
Expenditures:			
Compensation	\$17,912,610	\$17,838,002	\$20,395,584
Benefits	8,015,712	8,035,227	8,773,795
Operating Expenses	64,123,446	66,568,211	66,371,146
Work Performed for Others	(597,579)	(713,878)	(345,468)
Capital Equipment	775,148	2,324,677	1,233,615
Bond Expenses	47,169,669	45,820,906	47,225,170
Capital Projects	120,011,186	90,125,917	99,389,000
Total Expenditures	\$257,410,192	\$229,999,062	\$243,042,842
General Fund Expenditures	\$145,600	\$145,600	\$145,600
Transfers Out:			
Transfer Out to General Fund	\$1,800,000	\$1,800,000	\$2,850,000
Total Transfers Out	\$1,800,000	\$1,800,000	\$2,850,000
Revenues:			
Other Revenue	\$213,378,378	\$210,862,965	\$222,332,902
Total Revenue	\$213,378,378	\$210,862,965	\$222,332,902
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
Positions:			
Regular	315 / 315	315 / 315	315 / 315
Total Positions	315 / 315	315 / 315	315 / 315

Lines of Business Summary

LOB #	LOB Title	FY 2016 Adopted	
		Disbursements	Positions
385	Wastewater Treatment	\$23,302,862	130
386	Wastewater Collections	18,965,714	132
387	Wastewater Planning and Monitoring	56,864,496	53
388	Debt Management	47,225,170	0
389	Capital Improvement Program	99,389,000	0
390	Wastewater (General Fund)	145,600	0
Total		\$245,892,842	315

Wastewater Management Program

Lines of Business

LOB #385:

WASTEWATER TREATMENT

Purpose

In order to comply with Federal and State water quality regulations, the Wastewater Treatment Division includes a variety of activities to support the advanced treatment of wastewater which includes regulatory requirements associated with the Chesapeake Bay, Clean Water Act and other environmental standards. The NMCPCP also provides enhanced odor control services, water and energy management, and water reuse.

Description

The Wastewater Treatment Division (WTD) operates and maintains the NMCPCP. The agency has an exemplary record of producing a high-quality effluent, which surpasses regulatory requirements at a low unit cost relative to other advanced wastewater treatment plants in the region. Construction of facilities for the Enhanced Nutrient Removal upgrades at the plant continues to be a main focus for WTD. The capacity of this facility is 67 mgd, with an average flow of 40 mgd. For 16 years in a row, the NMCPCP earned a Platinum Peak Performance Award, and this year's award makes it 17 years of consecutive 100 percent permit compliance with the National Pollutant Discharge Elimination System. This is a prestigious honor from the National Association of Clean Water Agencies (NACWA).

Benefits

The Wastewater Treatment line of business protects public health, aquatic life and the environment within Fairfax County. The Wastewater Treatment line of business implements several vision elements in the 2015 Strategic Plan to Facilitate the Economic Success of Fairfax County, as noted below. The primary correlation to County Vision Elements to include:

- **Maintaining Safe and Caring Communities** - One key element to maintaining a safe community is providing the infrastructure for a growing and diverse community to be able to travel, whether it's through roads, pedestrian walkways, or public transportation. The wastewater treatment line of business provides wastewater treatment to the homes and commercial buildings people are traveling to and from.
- **Building Livable Spaces** - Wastewater treatment allows for building livable spaces by ensuring the wastewater capacity is available.
- **Maintaining Healthy Economies** - Wastewater treatment is a key element in providing community infrastructure through County funded public projects to support a diverse and thriving economy.
- **Practicing Environmental Stewardship** – Wastewater treatment by providing the highest quality of treatment available ensures the County's natural environment and open spaces are protected from pollution.

Wastewater Management Program

Mandates

Laws that govern wastewater treatment facilities include:

- Clean Water Act PL 92-500
- Clean Air Act
- 33USC 1251
- Code of Virginia §62.1-44.19.32.1
- State Water Control Board VR680-14-01
- State Water Control Board VR680-14-02
- State Water Control Board VR680-14-03

Trends and Challenges

There are a number of challenges/trends in wastewater treatment. The most immediate is the aging infrastructure. The NMCPCP was brought on line in 1971 and has been expanded and upgraded numerous times since then. The value of the NMCPCP is approximately \$700 million. Wastewater Treatment Facilities have a useful life of 25 years due to corrosion, obsolescence, wear and tear. At present, the dollar weighted average age of the Plant's facilities is 22 years. As the facilities reach their useful age, it is more difficult to maintain the needed level of service (permit compliance) without significant emergency repair work. At the same time, the staff required to make the emergency repairs is less experienced. In the past two years, the experience level of Wastewater Treatment staff has been reduced by 25 percent (1,400 years of total experience to 1,042 years of total experience for the 110 plant workers).

Trends include difficulties in recruiting qualified personnel; continuation of improving water quality; focus on environmental stewardship; and more use of "green" technologies.

Challenges include aging infrastructure, staff turnover, tighter air pollution regulations, possible bio-solids application litigation, slower capital project delivery, climate change risk (flooding, power outages) and more safety regulations.

Wastewater Management Program

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #385: Wastewater Treatment			
FUNDING			
Expenditures:			
Compensation	\$7,398,212	\$7,337,017	\$8,322,557
Benefits	2,965,776	3,107,194	3,021,968
Operating Expenses	9,571,470	9,312,718	11,712,337
Capital Equipment	169,385	275,672	246,000
Total Expenditures	\$20,104,843	\$20,032,601	\$23,302,862
Total Revenue	\$20,104,843	\$20,032,601	\$23,302,862
POSITIONS			
<i>Authorized Positions/Full-Time Equivalents (FTEs)</i>			
Positions:			
Regular	129 / 129	129 / 129	130 / 130
Total Positions	129 / 129	129 / 129	130 / 130

Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Total Average Daily Wastewater Flow Treated (million gallons)	98.1	104.2	97.7	103.6	104.4
Percent of Treatment Capacity available for growth and redevelopment	37%	34%	38%	35%	34%
Compliance with Title V air permit and State water quality permit	100%	100%	100%	100%	100%
Odor Complaints per year	17	6	13.2	15	15

Wastewater Treatment uses metrics to improve performance and ensure regulatory compliance. The four metrics used for this line of business (LOB) demonstrates the commitment to maintaining the highest quality of work, regulatory compliance, and award winning operation.

- **Total Average Daily Wastewater Flow** - Flows can fluctuate from year to year base on the number of wet weather events. Flows for FY 2015 were down to 97.7 mgd from 104.2 mgd in FY 2014.
- **Percent of Treatment Capacity available for growth and redevelopment** - Once the wastewater program has 25 percent capacity left, planning the expansion of NMCPCP will begin. Currently available capacity is 38 percent or 59.6 mgd.
- **Compliance with Title V air permit and State water quality permit** - Beginning in March 2016 new stricter air quality regulations will go into effect. The new equipment being installed currently and the scheduled improvements will allow the plant to maintain its 100 percent compliance.
- **Odor Complaints per year** - Due to the amount of construction activity at the plant, there was a noticeable rise in odor complaints in FY 2015.

Wastewater Management Program

LOB #386:

WASTEWATER COLLECTIONS

Purpose

In order to comply with Federal and State water quality regulations the wastewater conveyance system must be maintained to prevent sanitary sewer overflows, backups, and spills. The Wastewater Collection line of business has adopted a framework of sewer maintenance and management techniques, called Capacity, Management, Operation, and Maintenance (CMOM). CMOM aims to help localities eliminate sewer backups and overflows, extend the life of its sewer system assets, increase customer satisfaction, and improve system rehabilitation and diagnostic methods. In accordance with CMOM, the County implemented new operations and maintenance procedures aimed at rehabilitation projects focused on trunk lines, sewer mains, manholes, and pumping stations.

Description

The Wastewater Collection Division (WCD) is responsible for the operation and maintenance of the collection system which includes the physical inspection of sewer lines, performance of preventive maintenance, the rehabilitation of aging and deteriorated sewer lines, and pumping stations; raising manholes, sewer line location and marking for the Miss Utility Program. The division also responds to emergency repair of sewer lines and provides a 24-hour hotline and service response to homeowners in the County. The system consists of the following components:

- Approximately 3,412 miles of gravity sewers and force mains
- 63 sewer pump stations
- 54 flow metering stations
- 11 rain gauge stations
- 135 grinder pumps and associated pressure sewer systems
- Robert P. McMath Facility (Operations and Maintenance Headquarters)

WCD had 132 permanent staff positions for FY 2015 with no change projected for FY 2016. All WCD employees work out of the McMath Facility in Burke, Virginia. The organizational structure of the WCD includes the Director's Office and three branches: Gravity Sewers, Pumping Stations and Projects and Assets.

Wastewater Management Program

Benefits

The Wastewater Collection LOB provides sewer service, and protects public health, aquatic life and the environment within Fairfax County. The Wastewater Collection LOB implements several vision elements in the 2015 Strategic Plan to Facilitate the Economic Success of Fairfax County, as noted below. Primary Correlation to County Vision Elements to include:

- **Maintaining Safe and Caring Communities** - One key element to maintaining a safe community is providing the infrastructure for a growing and diverse community to be able to travel, whether it's through roads, pedestrian walkways, or public transportation. The wastewater collection LOB provides wastewater conveyance from the homes and commercial buildings people are traveling to and from.
- **Building Livable Spaces** - Wastewater collection allows for building livable spaces by ensuring the wastewater can be safely conveyed from the homes and businesses to the treatment facilities.
- **Maintaining Healthy Economies** - Wastewater collection is a key element in providing community infrastructure through County funded public projects to support a diverse and thriving economy.
- **Practicing Environmental Stewardship** - Wastewater collection ensures the County's natural environment and open spaces are protected from pollution by providing the highest quality conveyance system and treatment facilities.

Mandates

Laws that govern wastewater conveyance systems include:

- Clean Water Act PL 92-500
- Code of Virginia §62.1-44

Trends and Challenges

There are a number of challenges and trends in wastewater collection. The most immediate is aging infrastructure. The following table lists the collection system components and their service life.

Estimated Amortized Asset Replacement			
Asset Category	Programmed Service Life	Average Service Life	Remaining Service Life
Gravity Line	60	34	26
Pump Station	30	28	2
Force Main	60	17	43
Other	30	12	18

At present, the dollar weighted average age of the collection system facilities is 23 years. As the facilities reach their useful age, it is more difficult to maintain the needed level of service (permit compliance). When lines fail and an emergency by-pass operation has to be implemented, it is very costly. An emergency repair/replacement can be two to three times more costly than a planned repair/replacement. It is very important that as the collection system assets age, a progressive asset management program is being employed.

Trends include difficulties in recruiting qualified personnel; improvements in Asset Management Program support; focus on environmental stewardship; and stricter regulations.

Challenges include aging infrastructure; staff turnover; slower capital project delivery; climate change risk (flooding, power outages); more safety regulations; and sewer line capacity.

Wastewater Management Program

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #386: Wastewater Collections			
FUNDING			
<u>Expenditures:</u>			
Compensation	\$6,893,914	\$6,800,274	\$7,940,010
Benefits	2,762,585	2,837,401	3,226,341
Operating Expenses	4,043,247	3,920,448	4,176,510
Work Performed for Others	(419,164)	(530,035)	(164,868)
Capital Equipment	558,297	2,049,005	937,721
Total Expenditures	\$13,838,879	\$15,077,093	\$16,115,714
<u>Transfers Out:</u>			
Transfer Out to General Fund	\$1,800,000	\$1,800,000	\$2,850,000
Total Transfers Out	\$1,800,000	\$1,800,000	\$2,850,000
Total Revenue	\$15,638,879	\$16,877,093	\$18,965,714
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	132 / 132	132 / 132	132 / 132
Total Positions	132 / 132	132 / 132	132 / 132

Wastewater Management Program

Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Sanitary sewer overflows	16	21	12	15	15
Percent of sewage back-ups responded to within 2 hours	100%	100%	100%	100%	100%
Blockages causing sewer back-ups	16	15	16	15	15
Service trouble calls received	921	1,058	882	1,000	1,000

The Wastewater Collection uses metrics to improve performance and ensure regulatory compliance. The four metrics used for this LOB demonstrate the commitment to maintaining the highest quality of work, regulatory compliance, and efficient operation.

- Sanitary sewer overflows - As the system reaches full capacity, an increase in overflows may occur more frequently in wet weather events. The number of overflows went down to 12 in FY 2015 from 21 in FY 2014. The County's overflows are well below the national average of 4.3 overflows per 100 miles of sewer.
- Percent of sewage back-ups responded to within 2 hours – Wastewater collection crews were able to respond to all calls within 2 hours in FY 2015.
- Blockages causing sewer back-ups - As the system ages, an increase in back-ups may occur more frequently as more blockages occur in older systems. Even with the aging system, the collection crews were able to maintain an average of 16 back-ups in FY 2015, which is well below the national average of 4.3 overflows per 100 miles of sewer.
- Service trouble calls received - The 882 service trouble calls received in FY 2015 were all responded to in less than 2 hours. This number is down from FY 2014 of 1,058 calls.

Wastewater Management Program

LOB #387:

WASTEWATER PLANNING AND MONITORING

Purpose

The Wastewater Planning and Monitoring Division assesses and monitors long-term planning needs for the Wastewater Management Program and conducts environmental monitoring for regulatory compliance and for protection of the wastewater system and the environment. The staff reviews development plans and determines and plans for infrastructure expansion requirements. Also, the staff determines and plans for financial demands of the entire wastewater system.

Description

The Wastewater Planning and Monitoring Division performs a number of technical, administrative, and financial functions for the Wastewater Management Program. These functions include:

- Determines and plans for system expansion and additional treatment capacity needs for future growth in the County.
- Reviews and approves development plans for the construction of new sewer lines.
- Maintains an inventory of the system in GIS and develops GIS applications for efficient operation and maintenance of the system.
- Administers and manages the system's billing and procurement operations.
- Manages the Wastewater Management Program's finances.
- Forecasts financial needs of the Program and recommends sewer rates and fees accordingly.
- Administers the contract capacity at regional treatment plants providing wastewater treatment for the County.
- Manages the environmental monitoring of the County's collection system and treatment facility by analyzing samples for operational efficiency and permit compliance.
- Administers the industrial waste pretreatment program for compliance with permit requirements and to protect the system, the treatment process and the employees.

Benefits

The Wastewater Planning and Monitoring LOB protects public health, aquatic life and the environment within Fairfax County. This LOB implements several vision elements in the 2015 Strategic Plan to Facilitate the Economic Success of Fairfax County, as noted below. The primary correlation to County vision elements includes:

- **Building Livable Spaces** - wastewater planning and monitoring allows for building livable spaces by ensuring sufficient capacity in the wastewater conveyance system and treatment facilities in order to allow for economic development and redevelopment.
- **Maintaining Healthy Economies** - wastewater planning and monitoring is a key element in providing economically priced wastewater services.
- **Exercising Corporate Stewardship** - wastewater planning and monitoring by maintaining the highest level of accountability provides quality wastewater services at one of the lowest cost in the region.

Wastewater Management Program

Mandates

This LOB complies with the following laws and mandates:

- Clean Water Act PL 92-500
- Clean Air Act
- 33USC 1251
- Code of Virginia §15.1-160, 15.1-166, and 15.1-167
- Code of Virginia §32.1-164
- Code of Virginia §62.1-44.19.32.1
- State Water Control Board VR355-17-02
- State Water Control Board VR680-14-01
- State Water Control Board VR680-14-02
- State Water Control Board VR680-14-03

Trends and Challenges

The Wastewater Planning and Monitoring LOB is made up of three branches and each branch has its own set of unique trends and challenges.

Trends associated with the Financial Branch include debt coverage ratios, bond ratings, reserves and sewer rates. Financing the future expansion of sewer lines for Tysons Corner when needed, financing repair and replacement of aging infrastructure, and maintaining bond ratings are challenges for the Financial Branch.

Trends associated with the Engineering Branch include increases in zoning reports reviewed, plans reviewed and wastewater flows. The challenges include keeping up with zoning reports and plan reviews as part of the Land Development Services' revamp of the review process and anticipated activity in the Tysons area, and monitoring and the need for expansion of sewer lines to handle future flows from Tysons redevelopment.

Trends associated with the Environmental Monitoring Branch include the number of samples analyzed per year, required lab certifications, and industrial waste facilities permit compliance. The challenges include maintaining lab certifications, potential increased sample analyses from Stormwater, implementation of a fats, oils and grease control and pharmaceutical disposal minimization program, and expansion of outreach efforts such as the Sewer Science program related to primary and middle schools.

Wastewater Management Program

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #387: Wastewater Planning and Monitoring			
FUNDING			
<u>Expenditures:</u>			
Compensation	\$3,620,484	\$3,700,711	\$4,133,017
Benefits	2,287,351	2,090,632	2,525,486
Operating Expenses	50,363,129	53,189,445	50,336,699
Work Performed for Others	(178,415)	(183,843)	(180,600)
Capital Equipment	47,466	0	49,894
Total Expenditures	\$56,140,015	\$58,796,945	\$56,864,496
Total Revenue	\$56,140,015	\$58,796,945	\$56,864,496
POSITIONS			
<i>Authorized Positions/Full-Time Equivalents (FTEs)</i>			
<u>Positions:</u>			
Regular	54 / 54	54 / 54	53 / 53
Total Positions	54 / 54	54 / 54	53 / 53

Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Average household sewer bill compared to other providers in the area	2nd lowest out of 7				
Debt Coverage Ratio without Availability Fees	2.00	2.03	2.05	1.84	1.92
Debt to Net Plant in Service (Equity)	44.0%	43.7%	40.2%	48.5%	49.5%

The Wastewater Planning and Monitoring uses metrics to improve performance and ensure regulatory compliance. The three metrics used for this LOB demonstrate the commitment to maintaining the highest quality of work, regulatory compliance, and efficient operation.

Wastewater Management Program

LOB #388:

DEBT MANAGEMENT

Purpose

The Wastewater Management Program is an enterprise fund and therefore can and does sell Sewer Revenue Bonds to pay for a portion of the Capital Improvement Program. The FY 2016-FY 2020 Adopted Capital Improvement Program totaled \$616.5 million with an additional \$494.2 million for FY 2021-FY 2025 for a total of \$1.1 billion. This program is funded solely by Wastewater Management Program revenues and the sale of Sewer Revenue Bonds. The Wastewater Debt Management assesses and monitors long-term financial needs for the Wastewater Management Program and conducts financial reviews to maintain a balanced Capital Improvement Program between debt-funded capital projects and cash-funded capital projects.

Description

The Wastewater Debt Management LOB is critical in the management of the financial health of the Wastewater Management Program. Several financial measures are used to determine the size of the Wastewater Management debt portfolio. These measures include:

- Debt Service Coverage as set by the County's General Bond Resolution.
- Net Revenue Ratio is a measure of the program's ability to meet its other financial obligations after all of the program's operating expenses have been met, i.e. funds available to reinvest into the infrastructure of the program.
- Available Working Capital and Cash Balances is a measure of the program's ability to withstand an unforeseen market change or to recover from a natural disaster.
- Available Cash to Depreciation ratio is a measure of funds available for capital funding or for other program purposes after paying operating expenses, annual debt service and other required deposits or funding needs.
- Net Outstanding Debt per Customer is a measure of the net principal amount of outstanding debt per customer (the higher the net customer debt burden the greater the financial risk to the program).
- Debt to Net Plant (Equity) ratio is a measure of net equity of the program's investment and provides an indication of the reliance on debt to fund existing assets as well as funding future capital assets and overall rate stability (the smaller the Debt to Net Plant ratio, the higher the flexibility for funding existing and future needs of the program).

There are several other financial measures available to measure the financial health of the Program. The Wastewater Management Program based on the use of these measures by the rating agencies (S&P, Moody's and Fitch) when reviewing the bond rating of the Wastewater Management Program. Currently, the Bond Rating is AAA from S&P and Fitch and AA1 with a positive outlook from Moody's.

Wastewater Management Program

The total outstanding debt as of June 30, 2015 for the Wastewater Management Program is shown in the table below.

OUTSTANDING DEBT SERVICE			
Bond Series	Principal	Interest	Total
2009	\$139,415,000	\$101,896,200	\$241,311,200
2012	87,795,000	67,786,250	155,581,250
2014	61,755,000	19,322,450	81,077,450
VRA*	37,440,694	3,191,170	40,631,864
UOSA**	265,680,629	124,352,552	390,033,181
Total	\$592,086,323	\$316,548,622	\$908,634,945

*Virginia Resource Authority – This debt is considered subordinate to the County Debt

** Upper Occoquan Service Authority – This debt is considered subordinate to the County Debt

Benefits

The Wastewater Debt Management line of business protects public health, aquatic life and the environment within Fairfax County. The Wastewater Debt Management LOB implements several vision elements in the 2015 Strategic Plan to Facilitate the Economic Success of Fairfax County, as noted below. The primary correlation to County Vision Elements to include:

- **Building Livable Spaces** - Wastewater Debt Management allows for building livable spaces by ensuring sufficient capacity in the wastewater conveyance system and treatment facilities in order to allow for economic development and redevelopment.
- **Maintaining Healthy Economies** - Wastewater Debt Management is a key element in providing economically priced wastewater services.
- **Exercising Corporate Stewardship** - Wastewater Debt Management provides corporate stewardship by maintaining the highest level of accountability in quality wastewater services at one of the lowest costs in the region.

Mandates

This LOB complies with the following laws and mandates:

- Clean Water Act PL 92-500
- Clean Air Act
- 33USC 1251
- Code of Virginia §15.1-160, 15.1-166, and 15.1-167
- Code of Virginia §32.1-164
- Code of Virginia §62.1-44.19.32.1
- State Water Control Board VR355-17-02
- State Water Control Board VR680-14-01
- State Water Control Board VR680-14-02
- State Water Control Board VR680-14-03

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Trends and Challenges

The Wastewater Debt Management LOB trends and challenges are similar to the trends and challenges of the Wastewater Capital Project LOB. The aging infrastructure is projected to place a financial burden on the Wastewater Management Program. Funding a \$1.1 billion CIP while maintaining competitive rates will be a difficult task. The trends include the program's Triple A and Double bond A rating; good responses to bond sales; very competitive interest rates; and maintaining sound financial planning. The challenges include maintaining Triple A and Double A bond ratings; following changes in tax laws, eliminating tax exempt municipal bonds; and rising interest rates.

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #388: Debt Management			
FUNDING			
<u>Expenditures:</u>			
Bond Expenses	\$47,169,669	\$45,820,906	\$47,225,170
Total Expenditures	\$47,169,669	\$45,820,906	\$47,225,170
Total Revenue	\$47,169,669	\$45,820,906	\$47,225,170
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
Total Positions	0 / 0	0 / 0	0 / 0

Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Outstanding Debt per Connection	1,827	1,685	1,554	1,422	1,837
Debt Coverage Ratio including Availability Fees	2.46	2.53	2.47	2.27	2.34

The Wastewater Debt Management uses metrics to improve performance and ensure regulatory compliance. The two metrics used for this LOB demonstrate the commitment to maintaining the highest quality of work and regulatory compliance.

Wastewater Management Program

LOB #389:

CAPITAL IMPROVEMENT PROGRAM

Purpose

The Wastewater Management Program is a highly capitalized program. The total gross capital assets of the program as of June 30, 2015 are equal to \$2.4 billion. To maintain these capital assets, an aggressive and strict capital improvement program is critical. If any of the program's assets fails, it could generate an environmental disaster and have a potential negative impact on public health.

Description

The Wastewater Capital Improvement Program is critical in the management of the program assets in order to protect the environment, public health, and provide economic development within Fairfax County. The FY 2016 - FY 2020 Adopted Capital Improvement Program totaled \$616.5 million with an addition of \$494.2 million for FY 2021 - FY 2025 for a total of \$1.1 billion. This program is funded solely by Wastewater Management Program revenues and the sale of Sewer Revenue Bonds. The Wastewater Debt Management assesses and monitors long-term financial needs for the Wastewater Management Program and conducts financial reviews to maintain a balanced Capital Improvement Program between debt-funded capital projects and cash-funded capital projects.

There are three components to the Wastewater Management Program Capital Improvement Program. They are:

- Treatment by Contract – The program has capacity at the DC Water Blue Plains facility, Alexandria Renew Enterprise facility, Arlington County facility, Upper Occoquan Service Authority facility, and Loudoun Water Board Run Reclamation facility.
- Collection and Conveyance – The collection and conveyance system consist of approximately 3,412 miles of sewer lines, 63 sewer pumping stations, 54 metering stations, 130 grinder pumps, and 11 rain gauges. In addition, the County is responsible for the pro-rata share of the conveyance systems owned by the Treatment by Contract facilities for conveying County flows to those facilities. The average age of each of the County owned collection system assets is:
 - Sewer lines 34 years
 - Pump stations 28 years
 - Force Mains 17 years
- Treatment facilities – The NMCPCP is the only facility owned and operated by the program. The capacity of the plant is 67 mgd, with an average flow of 40 mgd. The average age of the treatment assets is 22 years.

Wastewater Management Program

Benefits

The Wastewater Capital Improvement Program LOB protects public health, aquatic life and the environment within Fairfax County. This LOB implements several vision elements in the 2015 Strategic Plan to Facilitate the Economic Success of Fairfax County, as noted below. The primary correlation to County vision elements includes:

- **Building Livable Spaces** - Wastewater Capital Improvement Program allows for building livable spaces by ensuring sufficient capacity in the wastewater conveyance system and treatment facilities in order to allow for economic development and redevelopment.
- **Maintaining Healthy Economies** - Wastewater Capital Improvement Program is a key element in providing economically priced wastewater services.
- **Practicing Environmental Stewardship** – Wastewater Capital Improvement Program is a key element in wisely using and protecting the County’s natural environment. Over the years, the Program has implemented a Water Reuse Program, invested in energy saving capital assets, and implemented an Odor Control Program.
- **Exercising Corporate Stewardship** - Wastewater Capital Improvement Program by maintaining the highest level of accountability provides quality wastewater services at one of the lowest cost in the region.

Mandates

This LOB complies with the following laws and mandates:

- Clean Water Act PL 92-500
- Clean Air Act
- 33USC 1251
- Code of Virginia §15.1-160, 15.1-166, and 15.1-167
- Code of Virginia §32.1-164
- Code of Virginia §62.1-44.19.32.1
- State Water Control Board VR355-17-02
- State Water Control Board VR680-14-01
- State Water Control Board VR680-14-02
- State Water Control Board VR680-14-03

Trends and Challenges

The Wastewater Capital Project LOB trends and challenges are similar to the trends and challenges of the Wastewater Debt Management LOB. The aging infrastructure requires investment and funding a \$1.1 billion CIP, while maintaining competitive rates, will be a difficult task. Trends include: maintaining a manageable cash flow; continuation of reinvestment; and maintaining our financial planning. Challenges include: keeping the CIP financing at a manageable level; completing the projects on time; and minimizing interruptions to the plant operations.

Wastewater Management Program

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #389: Capital Improvement Program			
FUNDING			
<u>Expenditures:</u>			
Capital Projects	\$120,011,186	\$90,125,917	\$99,389,000
Total Expenditures	\$120,011,186	\$90,125,917	\$99,389,000
Total Revenue	\$74,324,972	\$69,335,420	\$75,974,660
POSITIONS			
<i>Authorized Positions/Full-Time Equivalents (FTEs)</i>			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
Total Positions	0 / 0	0 / 0	0 / 0

Metrics

Metric Indicator	FY 2013 Actual	FY 2014 Actual	FY 2015 Actual	FY 2016 Estimate	FY 2017 Estimate
Maintain Days of Working Capital between 150-200 days	166	304	291	157	157

The Wastewater Capital Improvement Program uses metrics to improve performance and ensure regulatory compliance. The one metric used for this LOB demonstrates the commitment to maintaining a balance between debt-funded projects and cash-funded projects, and maintaining the system at the highest level of efficiency. It should be noted that the FY 2014 Actual and the FY 2015 Actual were high because the Capital Improvement Program met its projected spending levels in both fiscal years.

Grant Support

The Capital Improvement Program LOB has been awarded a grant of approximately \$23 million from the Virginia Department of Environmental Quality's Water Quality Improvement Fund for the County's share of the upgrades to the DC Water's Blue Plains facility. This grant supports Nitrogen removal environmental requirements associated with the Chesapeake Bay Program.

Wastewater Management Program

LOB #390:

WASTEWATER (GENERAL FUND)

Purpose

The General Fund reimburses the Wastewater Management Program for those customers serviced by Utilities Inc., which is a private company that owns and operates the Colchester Wastewater Treatment Facility. This company services 169 residents of the Harbor View subdivision in the Mount Vernon District and bills the County for wastewater services. This allows the Wastewater Management Program to charge Utilities Inc. customers the same sewer service charges as the other Wastewater Management Program customers.

Description

Each year, the Wastewater Management Program staff initiates a transfer from the General Fund to the Wastewater Management Program for the budgeted amount approved by the Board of Supervisors for those customers serviced by Utilities Inc. This practice has been in effect since 1976.

Benefits

The General Fund contribution allows the Wastewater Management Program to charge Utilities Inc. customers the same sewer service charges as the other Wastewater Management Program customers. It serves approximately 169 homes in the Mount Vernon District.

Mandates

This Line of Business is not mandated.

Trends and Challenges

Over the years, Utilities Inc. has increased the charge to the Wastewater Management Program.

Wastewater Management Program

Resources

Category	FY 2014 Actual	FY 2015 Actual	FY 2016 Adopted
LOB #390: Wastewater (General Fund)			
FUNDING			
<u>Expenditures:</u>			
Operating Expenses	\$145,600	\$145,600	\$145,600
Total Expenditures	\$145,600	\$145,600	\$145,600
Total Revenue	\$0	\$0	\$0
POSITIONS			
Authorized Positions/Full-Time Equivalents (FTEs)			
<u>Positions:</u>			
Regular	0 / 0	0 / 0	0 / 0
Total Positions	0 / 0	0 / 0	0 / 0

Overview of Capital Project Support

The Wastewater Capital Improvement Program is critical in the management of the program assets in order to protect the environment, public health, and provide economic development within Fairfax County. There are five LOBs responsible for the implementation of the Wastewater Management Program's CIP.

Wastewater Treatment is responsible for the treatment plant and reuse facilities. The current list of active projects include:

- Rehabilitation of the bio-solid facilities
- Replacement of the disinfection facilities
- Rehabilitation of the filter facilities
- Rehabilitation of the equalization basins

Wastewater Collection is responsible for the conveyance system, pumping stations, and force mains. The current list of active projects include:

- Rehabilitation of gravity sewer lines
- Rehabilitation of 8 sewer pumping stations
- Rehabilitation of the Dead Run force main
- Rehabilitation of the Difficult Run pump station and force main

Wastewater Management Program

Wastewater Planning and Monitoring is responsible for treatment by contract, providing funding, and financial planning. The current list of treatment by contract projects include:

- DC Water Blue Plains wet weather control tunnels
- ARenew nutrient removal facilities
- Arlington County bio-solids facilities upgrade
- UOSA new nutrient removal facilities

Wastewater Debt Management is responsible for balancing the funding of projects between debt and cash. Wastewater Capital Projects is responsible for the implementation of the Capital Improvement Program to ensure projects are completed on time and within budget. In addition, the Office of Capital Facilities, Utilities Design and Construction is responsible for providing overall project management for the design and construction of major wastewater treatment and collection projects.

The revenue source for the Wastewater Management Capital Improvement Program is:

- Sewer Service Charges, after funding O&M and Debt, fund cash-funded portion of the County's reinvestment projects, and Treatment by Contract projects.
- Sewer Revenue Bonds are sold to provide cash for debt-funded portion of the treatment plant upgrades and major rehabilitation projects.

The FY 2016 - FY 2020 Adopted Capital Improvement Program totaled \$616.5 million with an addition \$494.2 million for FY 2021-FY 2025 for a total of \$1.1 billion. This program is funded solely on Wastewater Management Program revenues and the sale of Sewer Revenue Bonds. The Wastewater Debt Management assesses and monitors long-term financial needs for the Wastewater Management Program and conducts financial reviews to maintain a balanced Capital Improvement Program between debt-funded capital projects and cash-funded capital projects.

There are three components to the Wastewater Management Program Capital Improvement Program. They are:

- Treatment facilities – The NMCPCP is the only facility owned and operated by the Program. The capacity of the plant is 67 mgd, with an average flow of 40 mgd. The average age of the treatment assets is 22 years.
- Collection and Conveyance – The collection and conveyance system consist of approximately 3,412 miles of sewer lines, 63 sewer pumping stations, 54 metering stations, 130 grinder pumps, and 11 rain gauges. In addition, the County is responsible for the County's pro-rata share of the conveyance systems owned by the Treatment by Contract facilities for conveying County flows to those facilities. The average age of the collection system assets are:
 - Sewer lines 34 years
 - Pump stations 28 years
 - Force Mains 17 years
- Treatment by Contract – The Program has capacity at DC Water Blue Plains facility, Alexandria Renew Enterprise facility, Arlington County facility, Upper Occoquan Service Authority facility, and Loudoun Water Board Run Reclamation facility.