

SANITARY SEWERS

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Sanitary Sewers Approved FY 2017 - 2026 Capital Improvement Program Summary of Projects

Note: Projects with \$0 total funding are active capital projects funded in prior CIPs that do not require additional resources.

	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	TOTAL FY 17-26
Sanitary Sewers											
Sanitary Sewers											
AlexRenew Wastewater Treatment Plant Capacity	0	0	0	11,070,000	11,400,000	11,750,000	0	0	0	0	34,220,000
Citywide Sewershed Infiltration & Inflow	0	3,000,000	2,375,000	3,075,000	2,850,000	4,000,000	0	0	0	0	15,300,000
Combined Sewer Overflow 001 Planning	0	0	0	0	0	0	0	0	0	0	0
Combined Sewer Separation Projects	700,000	300,000	200,000	200,000	600,000	200,000	200,000	600,000	200,000	200,000	3,400,000
Combined Sewer System (CSS) Permit Compliance	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	3,000,000
Four Mile Run Sanitary Sewer Repair	0	0	0	0	0	0	0	0	0	0	0
Holmes Run Trunk Sewer	0	0	0	0	0	0	0	0	0	0	0
Reconstructions & Extensions of Sanitary Sewers	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	9,000,000
Sewer Assessment & Rehabilitation	0	0	3,700,000	2,550,000	2,550,000	0	0	0	0	0	8,800,000
Wet Weather Management Facility	0	2,250,000	8,750,000	9,000,000	0	0	0	0	0	0	20,000,000
Total	1,900,000	6,750,000	16,225,000	27,095,000	18,600,000	17,150,000	1,400,000	1,800,000	1,400,000	1,400,000	93,720,000

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Sanitary Sewers Ten-Year Plan Approved FY 2017 – 2026 Capital, Operating and Debt Service

Sanitary Sewer Rate	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total FY 17-26
Sanitary Sewer Rate (\$ per 1,000 gallons)	\$1.25	\$1.40	\$1.68	\$2.18	\$2.63	\$2.96	\$2.96	\$3.00	\$3.00	\$3.00	
Proposed Rate Increase	12.0%	20.0%	30.0%	20.5%	12.5%	0.0%	1.3%	0.0%	0.0%	0.0%	
New Sanitary Sewer Rate	\$1.40	\$1.68	\$2.18	\$2.63	\$2.96	\$2.96	\$3.00	\$3.00	\$3.00	\$3.00	
Revenues	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total FY 17-26
Sewer Line Maintenance Fee	6,770,400	8,185,414	10,720,845	13,015,508	14,752,265	14,862,907	15,161,559	15,275,271	15,389,835	15,505,259	129,639,263
Sewer Connection Fee	3,750,000	3,000,000	2,200,000	2,310,000	2,425,500	2,546,775	2,674,114	2,807,819	2,920,132	3,036,938	27,671,278
New Debt Issuance	0	5,750,000	13,375,000	24,820,000	16,325,000	16,150,000	400,000	800,000	400,000	400,000	78,420,000
Reprogrammed Prior Year Funding	0	0	0	0	0	0	0	0	0	0	0
Fund Balance Carryover	415,999	0	489,846	1,234,256	1,445,569	1,760,569	759,469	157,795	(30,594)	160,543	6,393,452
Total Revenues	10,936,399	16,935,414	26,785,692	41,379,764	34,948,334	35,320,252	18,995,141	19,040,885	18,679,373	19,102,740	242,123,994
All Operating	6,473,315	6,699,659	7,029,437	7,734,887	8,095,043	8,311,820	8,552,315	8,782,421	9,016,857	9,258,192	79,953,946
All Capital Projects	1,900,000	6,750,000	14,375,000	25,820,000	17,325,000	17,150,000	1,400,000	1,800,000	1,400,000	1,400,000	89,320,000
All Debt Service	2,563,084	2,995,908	4,147,000	6,379,308	7,767,722	9,098,963	8,885,032	8,489,058	8,101,973	7,745,891	66,173,938
Total Expenditures	10,936,399	16,445,567	25,551,436	39,934,195	33,187,765	34,560,783	18,837,347	19,071,479	18,518,830	18,404,083	235,447,884
Operating Costs	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total FY 17-26
T&ES Personnel Charges (incl. Worker's Comp)	3,054,707	3,146,348	3,240,739	3,337,961	3,438,100	3,541,243	3,647,480	3,756,904	3,869,611	3,985,700	35,018,792
DPI Personnel Charges	567,364	584,385	601,916	619,974	638,573	657,730	677,462	697,786	718,720	740,281	6,504,192
Indirect Costs (Tr to G.F.)	967,877	1,029,058	1,188,718	1,409,947	1,580,354	1,601,691	1,640,882	1,663,644	1,684,517	1,705,882	14,472,570
Sewer Jet Cleaning	250,000	257,500	265,225	273,182	281,377	289,819	298,513	307,468	316,693	326,193	2,865,970
Corrective Maintenance	106,090	109,273	112,551	115,927	119,405	122,987	126,677	130,477	134,392	138,423	1,216,203
Other Non-Personnel (Training, Utilities, Rentals, etc.)	145,583	149,951	154,449	159,083	163,855	168,771	173,834	179,049	184,420	189,953	1,668,947
DPI Standard Specifications	0	0	0	0	0	0	0	0	0	0	0
Equipment Replacement	122,462	126,136	129,920	133,817	137,832	141,967	146,226	150,613	155,131	159,785	1,403,887
Sanitary Sewer Capacity Study- Flow Metering, Sewer Modeling, CMOM	400,000	412,000	424,360	437,091	450,204	463,710	477,621	491,950	506,708	521,909	4,585,552
Sewer Billing	84,872	87,418	90,041	92,742	95,524	98,390	101,342	104,382	107,513	110,739	972,962
Annual CCTV of Sewers	424,360	437,091	450,204	463,710	477,621	491,950	506,708	521,909	537,567	553,694	4,864,812
Heavy Cleaning of Sewers	350,000	360,500	371,315	382,454	393,928	405,746	417,918	430,456	443,370	456,671	4,012,358
Wet Weather Management Facility Operating	0	0	0	309,000	318,270	327,818	337,653	347,782	358,216	368,962	2,367,701
Subtotal, Operating Costs	6,473,315	6,699,659	7,029,437	7,734,887	8,095,043	8,311,820	8,552,315	8,782,421	9,016,857	9,258,192	79,953,946

Sanitary Sewers Ten-Year Plan Approved FY 2017 – 2026 Capital, Operating and Debt Service (Continued)

Capital Projects	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total FY 17-26
Reconstruction and Extension of Sanitary Sewers	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	9,000,000
Wet Weather Management Facility	0	2,250,000	8,750,000	9,000,000	0	0	0	0	0	0	20,000,000
Sewer Separation Projects	700,000	300,000	200,000	200,000	600,000	200,000	200,000	600,000	200,000	200,000	3,400,000
Green Infrastructure in CSO Areas	0	0	0	0	0	0	0	0	0	0	0
Combined Sewer Permit Compliance	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	3,000,000
City Standard Construction Specs	0	0	0	0	0	0	0	0	0	0	0
Citywide Sewershed Rehab and I&I Red.	0	3,000,000	2,375,000	3,075,000	2,850,000	4,000,000	0	0	0	0	15,300,000
Combined Sewer Assessment and Rehab	0	0	1,850,000	1,275,000	1,275,000	0	0	0	0	0	4,400,000
AlexRenew WWTP Expansion	0	0	0	11,070,000	11,400,000	11,750,000	0	0	0	0	34,220,000
Four Mile Run Sanitary Sewer Repair	0	0	0	0	0	0	0	0	0	0	0
Combined Sewer Overflow Planning	0	0	0	0	0	0	0	0	0	0	0
King/West Diversion Chamber	0	0	0	0	0	0	0	0	0	0	0
Holmes Run Trunk Sewer	0	0	0	0	0	0	0	0	0	0	0
<i>Subtotal, Capital Projects</i>	<i>1,900,000</i>	<i>6,750,000</i>	<i>14,375,000</i>	<i>25,820,000</i>	<i>17,325,000</i>	<i>17,150,000</i>	<i>1,400,000</i>	<i>1,800,000</i>	<i>1,400,000</i>	<i>1,400,000</i>	<i>89,320,000</i>
Debt Service	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total FY 17-26
<i>Debt Service Payments</i>	<i>2,563,084</i>	<i>2,995,908</i>	<i>4,147,000</i>	<i>6,379,308</i>	<i>7,767,722</i>	<i>9,098,963</i>	<i>8,885,032</i>	<i>8,489,058</i>	<i>8,101,973</i>	<i>7,745,891</i>	<i>66,173,938</i>
Total, All Categories	10,936,399	16,445,567	25,551,436	39,934,195	33,187,765	34,560,783	18,837,347	19,071,479	18,518,830	18,404,083	235,447,884

Holmes Run Trunk Sewer

Document Subsection: Sanitary Sewers
 Managing Department: Transportation & Environmental Services

Project Location: AlexRenew Plant to the City/Fairfax Border
 Reporting Area: Landmark/Van Dorn/Seminary Hill
 Taylor Run/Eisenhower East
 Project Category: 3 – New Facilities
 Estimated Useful Life: 40 years

Supporting Department(s): N/A
 ORG: 53411869

Holmes Run Trunk Sewer													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2025	Total FY 2017-2026
Expenditure Budget	9,002,000	9,002,000	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
Prior City Funding	500,000	500,000											0
GO Bonds - Sanitary Sewer	4,200,000	4,200,000	0	0	0	0	0	0	0	0	0	0	0
Sanitary Sewer Fees	4,302,000	4,302,000	0	0	0	0	0	0	0	0	0	0	0
Total Financing Plan	9,002,000	9,002,000	0	0	0	0	0	0	0	0	0	0	0
Additional Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0
Changes from Prior Year CIP: No changes from prior year CIP. This is an active project with no additional funding required.													

Project Description & Justification

This project provides for an increase in capacity in the Holmes Run Trunk Sewer line, which is owned and operated by AlexRenew. Both the City and Fairfax County send wastewater flows to this sewer and share in the capacity of this sewer. Increased capacity is required to support development occurring in the Eisenhower Valley, as well as future development and redevelopment in the West End. Engineering studies indicated that lining the existing sewer with specialized materials would address some capacity problems. In 2008, Phase I of this project included relining the western portion of the trunk sewer from I-395 to Cameron Run. Additional engineering and analysis has determined that pipe lining alone will not increase capacity sufficiently in the Phase II – East Eisenhower section. A study has been completed that recommends the construction of a Wet Weather Management Facility to address capacity issues in the East Eisenhower area and to prevent basement back-ups and sanitary sewer overflows. Additional engineering analysis is underway to evaluate capacity issues in the Holmes Run Trunk Sewer upstream of I-395, which is being undertaken jointly between the City, Fairfax County and Alexandria Renew Enterprises (AlexRenew). This study will be completed in FY2016.

A total of \$9.0 million from the Sanitary Sewer fund has been budgeted in prior fiscal years for this project. Engineering analysis which is being coordinated with Fairfax County and AlexRenew is expected to be completed in FY2016. The completion of the analysis will result in proposed recommended improvements for sewer capacity. Depending on the outcome of the current on-going study, additional funding may be required in future years for both design and construction.

Completion of this project will improve the City's sanitary sewer infrastructure, which will help mitigate any potential sanitary sewer overflows during periods of wet weather. Additionally, the project will improve the City's readiness for accommodating quality economic growth.

City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

- Improve the health of City waterways
- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure
- Increase the value of the real estate tax base
- Ensure Alexandria supports, retains, and attracts businesses

Focus Area: Accountable, Effective, & Well-Managed Government

- Ensure government is accountable to the community
- Ensure the fiscal strength of the City government

External or Internal Adopted Plan or Recommendation

- 2013 Sanitary Sewer Master Plan

Additional Operating Budget Impact

An additional impact to the operating budget is not anticipated.

Combined Sewer Overflow 001 Planning

Document Subsection: Sanitary Sewers
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): N/A
 ORG: 53412363

Project Location: CSO 001 – Pendleton St. at Potomac River
 Reporting Area: Old Town North
 Project Category: 3 – New Facilities
 Estimated Useful Life: N/A

Combined Sewer Overflow 001 Planning													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2025	Total FY 2017-2026
Expenditure Budget	500,000	500,000	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
Sanitary Sewer Fees	500,000	500,000	0	0	0	0	0	0	0	0	0	0	0
Total Financing Plan	500,000	500,000	0	0	0	0	0	0	0	0	0	0	0
Additional Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0

Changes from Prior Year CIP: No changes from prior year CIP. This is an active project with no additional funding required.

Project Description & Justification

The City's combined sewer system (sanitary and storm sewers) comprise approximately 540 acres located in the Old Town area. During certain wet weather events, flows in excess of the sewer pipes are discharged into receiving waterways via one of four combined sewer outfalls. These discharges are permitted by the Virginia Department of Environmental Quality (VDEQ). The Hunting Creek Bacteria Total Maximum Daily Load (TMDL) requires reductions in these discharges from 3 of the 4 permitted outfalls. This project is related to the Combined Sewer System (CSS) Permit Compliance project, but focuses only on the CSO 001 area.

The CSO 001 Planning project will provide for feasibility planning at CSO 001 (Pendleton Street) with the goal of reducing CSO discharges. A total of \$500,000 was budgeted in FY 2015 for feasibility planning with design and construction to be determined based on future permit requirements.

There will be an additional benefit of significantly reducing the nutrient and sediment loadings into the Chesapeake Bay. These reductions could be applied towards the Chesapeake Bay TMDL stormwater reduction requirements and may benefit the City. Finally, the redevelopment of the GenOn site in Old Town will require developer contributions towards separating the combined sewage at the site. These potential contributions can be used to fund the storage at CSO 001. Planning for CSO 001 will require coordination with redevelopment of the Robinson Terminal North site.

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City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

- Improve the health of City waterways
- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure
- Sustain the natural quality of land within the City

Focus Area: Accountable, Effective, & Well-Managed Government

- Ensure government is accountable to the community

External or Internal Adopted Plan or Recommendation

- T&ES Strategic Plan 2012-2015: Key Result Area III: Meet or exceed state or federal requirements of City's separate storm sewer and combined sewer system permits and maintain compliance with these environmental permits
- Eco-City Charter (Water Resources) and Eco-City Action Plan, Chapter 4, Goal 4: Eliminate the harmful impact of combined sewer systems in the long-term, and minimize them in the short-term
- 2013 Sanitary Sewer Master Plan

Additional Operating Budget Impact

An additional impact to the operating budget is not anticipated.

*Combined Sewer Overflow 001 Planning (Continued)***Project Description & Justification (Continued)**

For the City to stay in compliance with the future CSS permits, overflows from the Combined Sewer System need to be mitigated. This is primarily because of new regulatory requirements of the bacteria TMDL for Hunting Creek. The estimated total cost of mitigation of these overflows can range as high as \$200 million - \$300 million and depends on the type and mix of technologies implemented.

Through the ongoing update to the City's Long Term Control Plan for the CSS, an alternatives analysis is being conducted that will result in a recommended plan and projects to comply with the regulatory requirements. Only after completion of the Long Term Control Plan Update – scheduled for submission to the Virginia Department of Environmental Quality in August 2016 – and after their subsequent approval, will the schedule for the recommended projects and the costs associated with these projects become more certain. In the current permit cycle (2013-2018), the City is required to continue implementation of Nine Minimum Controls, along with other initiatives including implementation of the Area Reduction Plan, outfall improvements, green infrastructure, and select sewer separation projects. The City will also need to continue extensive monitoring, sampling, inspections, and reporting. This budget reflects the anticipated costs of improvements over the next five years only. Costs of improvements required for implementing the approved updated Long Term Control Plan (beyond FY 2019) have not yet been fully identified and are not included in the ten-year CIP.

Four Mile Run Sanitary Sewer Repair

Document Subsection: Sanitary Sewers
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): Dept. of Project Implementation
 ORG: 53411873

Project Location: End of Commonwealth Ave. to Bruce St.
 Reporting Area: Potomac West
 Project Category: 2 – Renovations/Existing Assets
 Estimated Useful Life: 40 years

Four Mile Run Sanitary Sewer Repair													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2025	Total FY 2017-2026
Expenditure Budget	2,500,000	2,500,000	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
GO Bonds - Sanitary Sewer	800,000	800,000	0	0	0	0	0	0	0	0	0	0	0
Sanitary Sewer Fees	1,700,000	1,700,000	0	0	0	0	0	0	0	0	0	0	0
Total Financing Plan	2,500,000	2,500,000	0										
Additional Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0

Changes from Prior Year CIP: No changes from prior year CIP. This is an active project with no additional funding required.

Project Description & Justification

This project will fund the rehabilitation of the Four Mile Run sanitary sewer. During field inspections of the Four Mile Run Inflow and Infiltration project in FY 2001, surcharged manholes with significant solids were encountered along the 36-inch diameter trunk sewer upstream of the Four Mile Run pump station. Efforts to clean the trunk sewer were unsuccessful due to the heavy solids volume and compaction in the sewer. In FY 2008, a specialty contractor successfully removed the solids and an inspection and condition assessment was completed. Based on the condition assessment of the trunk sewer following the removal of the solids, rehabilitation is necessary.

Total project costs are estimated at \$2.5 million, and include planning, design and engineering, construction management, and construction. The project is currently in the design phase and construction is tentatively scheduled to start in FY 2016.

Completion of this project will improve the City's sanitary sewer infrastructure and extend its useful life, reducing potential pipe collapse and other emergency repairs.

City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

- Improve the health of City waterways
- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure

Focus Area: Accountable, Effective, & Well-Managed Government

- Ensure government is accountable to the community

External or Internal Adopted Plan or Recommendation

- 2013 Sanitary Sewer Master Plan

Additional Operating Budget Impact

An additional impact to the operating budget is not anticipated.

Combined Sewer System (CSS) Permit Compliance

Document Subsection: Sanitary Sewers
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): N/A
 ORG: 53411875

Project Location: Old Town CSO Area
 Reporting Area: Old Town
 Project Category: 1 – Asset Maintenance
 Estimated Useful Life: Varies

Combined Sewer System (CSS) Permit Compliance													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2025	Total FY 2017-2026
Expenditure Budget	10,685,440	7,685,440	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	3,000,000
Financing Plan													
GO Bonds - Sanitary Sewer	245,072	245,072	0	0	0	0	0	0	0	0	0	0	0
Sanitary Sewer Fees	10,440,368	7,440,368	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	3,000,000
Total Financing Plan	10,685,440	7,685,440	300,000	3,000,000									
Additional Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0

Changes from Prior Year CIP: Funding added for FY 2026. No other changes from prior year CIP.

Project Description & Justification

The City's combined sewer system (sanitary and storm sewers) comprise approximately 540 acres located in the Old Town area. During certain wet weather events, flows in excess of the sewer pipes carrying capacity are discharged into receiving waterways via one of four combined sewer outfalls. These discharges are permitted by the Virginia Department of Environmental Quality (VDEQ). The Hunting Creek Bacteria Total Maximum Daily Load (TMDL) requires reductions in these discharges from 3 of the 4 permitted outfalls. The City received a new permit in August 2013 which requires the City to develop a Long-Term Control Plan (LTCP) update that complies with the TDML requirements, to submit the plan by August 2016, and to implement the plan no later than 2035.

In order to comply with the August 2013 permit, the City must perform a number of activities, including the Long Term Control Plan update. The Long Term Control Plan update is a detailed study of combined sewer control alternatives, their financial costs, and a schedule that is acceptable to Virginia Department of Environmental Quality.

Approval and implementation of this plan will enhance the ecological integrity of waterways by maintaining and improving storm water and sanitary infrastructure and stream system health to minimize environmental impacts.

Funding also ensures compliance with Commonwealth and Federal statutes and permits, and will continue to improve the City's combined sewer system.

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City's Strategic Plan & Budget Guidance
<p>Primary Strategic Plan Goal: Goal 2 – Health & Environment</p> <p>Focus Area: Livable, Green, and Prospering City</p> <ul style="list-style-type: none"> • Improve the health of City waterways • Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure • Sustain the natural quality of land within the City <p>Focus Area: Accountable, Effective, & Well-Managed Government</p> <ul style="list-style-type: none"> • Ensure government is accountable to the community • Ensure the fiscal strength of the City government
<p style="text-align: center;">External or Internal Adopted Plan or Recommendation</p> <ul style="list-style-type: none"> • Consistent with the Eco-City Charter and Eco-City Action Plan 2030, adopted by City Council June 2008 and June 2009 respectively • T&ES Strategic Plan: Key Result Area – Meet or exceed state and federal requirements of the City's MS4 and combined sewer permits • 2013 Sanitary Sewer Master Plan

Additional Operating Budget Impact
Unknown at this time. Additional operating impacts will be identified as new infrastructure is installed.

*Combined Sewer System (CSS) Permit Compliance (Continued)***Project Description and Justification (Continued)**

For the City to stay in compliance with the future CSS permits, overflows from the Combined Sewer System need to be mitigated. This is primarily because of new regulatory requirements of the bacteria TMDL for Hunting Creek. The estimated total cost of mitigation of these overflows can range as high as \$200 million - \$300 million and depends on the type and mix of technologies implemented.

Through the ongoing update to the City's Long Term Control Plan for the CSS, an alternatives analysis is being conducted that will result in a recommended plan and projects to comply with the regulatory requirements. Only after completion of the Long Term Control Plan Update – scheduled for submission to the Virginia Department of Environmental Quality in August 2016 – and after their subsequent approval, will the schedule for the recommended projects and the costs associated with these projects become more certain. In the current permit cycle (2013-2018), the City is required to continue implementation of Nine Minimum Controls, along with other initiatives including implementation of the Area Reduction Plan, outfall improvements, green infrastructure, and select sewer separation projects. The City will also need to continue extensive monitoring, sampling, inspections, and reporting. This budget reflects the anticipated costs of improvements over the next five years only. Costs of improvements required for implementing the approved updated Long Term Control Plan (beyond FY 2019) have not yet been fully identified and are not included in the ten-year CIP.

Reconstruction and Extension of Sanitary Sewers

Document Subsection: Sanitary Sewers
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): Dept. of Project Implementation
 ORG: 53411872

Project Location: Citywide
 Reporting Area: Citywide
 Project Category: 1 – Asset Maintenance
 Estimated Useful Life: 50 years

Reconstruction and Extension of Sanitary Sewers													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2025	Total FY 2017-2026
Expenditure Budget	20,892,959	11,892,959	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	9,000,000
Financing Plan													
GO Bonds - Sanitary Sewer	5,673,708	1,173,708	0	500,000	400,000	400,000	800,000	400,000	400,000	800,000	400,000	400,000	4,500,000
Sanitary Sewer Fees	15,219,251	10,719,251	900,000	400,000	500,000	500,000	100,000	500,000	500,000	100,000	500,000	500,000	4,500,000
Total Financing Plan	20,892,959	11,892,959	900,000	9,000,000									
Additional Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0

Changes from Prior Year CIP: Funding added for FY 2026. No other changes from prior year CIP.

Project Description & Justification

This project provides for the construction of new sewer mains and the replacement and rehabilitation of old lines as needed, repairs to City streets disturbed by sewer line repairs and reconstruction and funds for the City's share of the cost of sewer extensions required for development. This is an essential infrastructure project.

Prior year balances along with additional annual funding in FY 2017 will be utilized to fund multiple projects in this request. Several projects are in early planning stages, while others are currently under design and construction. Obstacles to construction may include the moving of buried utility lines, such as power, water, and gas lines by the various utility owners that if not moved would interfere with the construction.

Projects currently under study/design and tentatively scheduled for construction in FY2017 include:

- Pendleton Streets manhole additions
- Beauregard Street Sanitary Sewer Construction (included with King & Beauregard street intersection improvement project)
- North Alfred Sewer Replacement
- Wheeler Avenue Sewer Replacement
- Lucky Run Exposed Sewer Protection
- Holmes Run Exposed Sewer Protection
- Sewer lining projects based on annual CCTV contract

Completion of these projects improves the City's sanitary sewer infrastructure while reducing the frequency of unplanned repairs due to deferred maintenance.

City's Strategic Plan & Budget Guidance
Primary Strategic Plan Goal: Goal 2 – Health & Environment
Focus Area: Livable, Green, and Prospering City
<ul style="list-style-type: none"> • Improve the health of City waterways • Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure • Sustain the natural quality of land within the City
Focus Area: Accountable, Effective, & Well-Managed Government
<ul style="list-style-type: none"> • Ensure government is accountable to the community
External or Internal Adopted Plan or Recommendation
<ul style="list-style-type: none"> • 2013 Sanitary Sewer Master Plan

Additional Operating Budget Impact
An additional impact to the operating budget is not anticipated.

Wet Weather Management Facility

Document Subsection: Sanitary Sewers
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): N/A
 ORG: TBD

Project Location: Near the AlexRenew Facility
 Reporting Area: Southwest Quadrant
 Project Category: 3 – New Facilities
 Estimated Useful Life: 20+ years

Wet Weather Management Facility													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2025	Total FY 2017-2026
Expenditure Budget	22,250,000	2,250,000	0	2,250,000	8,750,000	9,000,000	0	0	0	0	0	0	20,000,000
Financing Plan													
GO Bonds - Sanitary Sewer	22,100,000	2,100,000	0	2,250,000	8,750,000	9,000,000	0	0	0	0	0	0	20,000,000
Sanitary Sewer Fees	150,000	150,000	0	0	0	0	0	0	0	0	0	0	0
Total Financing Plan	22,250,000	2,250,000	0	2,250,000	8,750,000	9,000,000	0	0	0	0	0	0	20,000,000
Additional Operating Impact													
Annual Impact			0	0	0	0	309,000	318,270	327,818	337,653	347,782	358,216	1,998,739
Cumulative Impact			0	0	0	0	309,000	627,270	955,088	1,292,741	1,640,523	1,998,739	1,998,739
Changes from Prior Year CIP: Funding pushed back to FY 2018 - FY 2020, from FY 2017 - FY 2019.													

Project Description & Justification

During periods of extreme wet weather, stormwater enters the City's sanitary sewer collection system. This has the potential to lead to sewer back-ups in homes and businesses throughout the City. In addition, wet weather flows in the sewer can cause sanitary sewer overflows (SSOs), where raw sewage is discharged to receiving waters before being treated. Due to a combination of wet weather flow and forecasted growth in the City (and Fairfax County), there is concern that the number of SSOs in the future will increase and create an additional potential for sewer back-ups.

A study was completed in 2010 (and updated in 2012) which recommended a wet weather management facility to mitigate SSOs and basement back-ups. The facility also would reduce the occurrence of combined sewer overflows (CSOs) from Outfall 004. The wet weather management facility includes the following components: increasing the flow at the AlexRenew plant from 108 to 116 million gallons per day (through primary treatment), relocation of Outfall 004 from Duke Street to just outside the AlexRenew plant, construction of a 500,000 gallon storage tunnel, and wet weather pumping to reduce the surcharging in the interceptor sewers to prevent back-ups.

The total project cost is estimated to be \$33.6 million (2012 dollars), and it is anticipated that the costs for this facility would be shared between Fairfax County and the City.

This project provides a number of benefits including reducing sanitary sewer backups into homes and business while reducing the impact that sanitary sewer that SSOs and CSOs have on the environment.

City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

- Improve the health of City waterways
- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure
- Sustain the natural quality of land within the City

Focus Area: Accountable, Effective, & Well-Managed Government

- Ensure government is accountable to the community

External or Internal Adopted Plan or Recommendation

- 2013 Sanitary Sewer Master Plan

Additional Operating Budget Impact

The annual operating and maintenance costs associated with the facility include electricity costs associated with the wet weather pumping, labor and equipment rental for the tunnel cleaning and inspection, and equipment replacement costs. The operating costs are assumed to be shared with Fairfax County, with the City being responsible for 50 percent of the costs.

Combined Sewer Separation Projects

Document Subsection: Sanitary Sewers
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): Dept. of Project Implementation
 ORG: 53411876

Project Location: Old Town CSO Area
 Reporting Area: Old Town/Old Town North/
 Braddock Road Metro
 Project Category: 3 – New Facilities
 Estimated Useful Life: 50 years

Combined Sewer Separation Projects													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2025	Total FY 2017-2026
Expenditure Budget	6,625,000	3,225,000	700,000	300,000	200,000	200,000	600,000	200,000	200,000	600,000	200,000	200,000	3,400,000
Financing Plan													
Sanitary Sewer Fees	6,325,000	2,925,000	700,000	300,000	200,000	200,000	600,000	200,000	200,000	600,000	200,000	200,000	3,400,000
Total Financing Plan	6,325,000	2,925,000	700,000	300,000	200,000	200,000	600,000	200,000	200,000	600,000	200,000	200,000	3,400,000
Additional Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0
Changes from Prior Year CIP: Funding added in FY 2026. Funding in the amount of \$300,000 moved from FY 2018 to FY 2017.													

Project Description & Justification

This project provides funding for the City to proactively separate small areas of combined sewers. Areas of opportunity exist for separation of combined sewer systems where construction of additional sewers in a few blocks due to new development may result in completing the separation of a larger area. Opportunities may also arise in conjunction with redevelopment in the combined sewer area.

In 2011, City staff identified portions of the King and West combined sewershed where separation may be achieved by disconnecting sanitary sewers from the combined sewer system and reconnecting to the Potomac Yards Trunk Sewer, which was designed to accommodate separated sanitary flow from this area. Field investigations were conducted to collect survey data, confirm sewer connectivity, and provide sewer separation recommendations and planning level design and construction costs. This project (Payne and Fayette Sewer Separation Project) is currently under construction. The project area is bounded by N Payne Street, N Fayette Street, Oronoco Street and Cameron Street. This project will meet one of the requirements of the City's Combined Sewer System permit that requires the separation of at least 60 sanitary laterals from the Combined Sewer System.

This project will provide water quality benefits in that the separation of sanitary sewers in the combined area will decrease the bacteria loading into Hooff's Run during rain events.

The City is currently in the process of identifying other areas of opportunity for sewer separation. Once these areas are identified, staff will move forward with field evaluation, design and construction phases for the next project.

(Continued on next page)

City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

- Improve the health of City waterways
- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure
- Sustain the natural quality of land within the City

Focus Area: Accountable, Effective, & Well-Managed Government

- Ensure government is accountable to the community
- Ensure the fiscal strength of the City government

External or Internal Adopted Plan or Recommendation

- Consistent with the Eco-City Charter and Eco-City Action Plan 2030, adopted by City Council June 2008 and June 2009 respectively
- T&ES Strategic Plan: Key Result Area – Meet or exceed state and federal requirements of the City's MS4 and combined sewer permits
- 2013 Sanitary Sewer Master Plan

Additional Operating Budget Impact

An additional impact to the operating budget is not anticipated.

*Combined Sewer Separation Projects (Continued)***Project Description and Justification (Continued)**

For the City to stay in compliance with the future CSS permits, overflows from the Combined Sewer System need to be mitigated. This is primarily because of new regulatory requirements of the bacteria TMDL for Hunting Creek. The estimated total cost of mitigation of these overflows can range as high as \$200 million - \$300 million and depends on the type and mix of technologies implemented.

Through the ongoing update to the City's Long Term Control Plan for the CSS, an alternatives analysis is being conducted that will result in a recommended plan and projects to comply with the regulatory requirements. Only after completion of the Long Term Control Plan Update – scheduled for submission to the Virginia Department of Environmental Quality in August 2016 – and after their subsequent approval, will the schedule for the recommended projects and the costs associated with these projects become more certain. In the current permit cycle (2013-2018), the City is required to continue implementation of Nine Minimum Controls, along with other initiatives including implementation of the Area Reduction Plan, outfall improvements, green infrastructure, and select sewer separation projects. The City will also need to continue extensive monitoring, sampling, inspections, and reporting. This budget reflects the anticipated costs of improvements over the next five years only. Costs of improvements required for implementing the approved updated Long Term Control Plan (beyond FY 2019) have not yet been fully identified and are not included in the ten-year CIP.

Citywide Sewershed Infiltration and Inflow

Document Subsection: Sanitary Sewers
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): Dept. of Project Implementation
 ORG: 53411864

Project Location: Citywide
 Reporting Area: Citywide
 Project Category: 2 – Renovations/Existing Assets
 Estimated Useful Life: 40 years

Citywide Sewershed Infiltration and Inflow													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2025	Total FY 2017-2026
Expenditure Budget	35,161,440	19,861,440	0	3,000,000	2,375,000	3,075,000	2,850,000	4,000,000	0	0	0	0	15,300,000
Financing Plan													
GO Bonds - Sanitary Sewer	31,050,000	15,750,000	0	3,000,000	2,375,000	3,075,000	2,850,000	4,000,000	0	0	0	0	15,300,000
Sanitary Sewer Fees	4,111,440	4,111,440	0	0	0	0	0	0	0	0	0	0	0
Total Financing Plan	35,161,440	19,861,440	0	3,000,000	2,375,000	3,075,000	2,850,000	4,000,000	0	0	0	0	15,300,000
Additional Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0

Changes from Prior Year CIP: Funding pushed back to FY 2018 - FY 2022, from FY 2017 - FY 2021.

Project Description & Justification

Portions of the sanitary sewer system located in the City are aging, deteriorated and require maintenance. During wet weather, infiltration and inflow into the sanitary sewers can result in over-capacity conditions that cause overflows into the environment or customers' basements. This CIP program provides for evaluation, remediation and rehabilitation of infiltration/inflow and deficient conditions for the sanitary sewer system across the entire city.

During FY 2016, ongoing rehabilitation of sanitary sewers and manholes in the Holmes Run Sewersheds, which impacts the Alexandria West, Landmark/Van Dorn West, and Seminary Hill/Strawberry Hill, continued and construction will be completed in FY 2017. Following completion of the rehabilitation projects, post-construction flow monitoring will be conducted to assess the amount of infiltration and inflow removed as a result of the rehabilitation. In addition, this program will be phased into broader infrastructure issues related to infiltration and inflow across the entire sanitary sewer system to ensure dependable service in the future.

Completion of this project will help mitigate sanitary sewer overflows. Additionally, it will improve the City's sanitary sewer infrastructure and extend the infrastructure's useful life by reducing the potential of pipe collapse and other emergency repairs.

City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

- Improve the health of City waterways
- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure
- Sustain the natural quality of land within the City

Focus Area: Accountable, Effective, & Well-Managed Government

- Ensure government is accountable to the community
- Ensure the fiscal strength of the City government

External or Internal Adopted Plan or Recommendation

- 2013 Sanitary Sewer Master Plan

Additional Operating Budget Impact

An additional impact to the operating budget is not anticipated.

Sewer Assessment and Rehabilitation

Document Subsection: Sanitary Sewers
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): N/A
 ORG: TBD

Project Location: Old Town CSO area
 Reporting Area: Citywide
 Project Category: 2 – Renovations/Existing Assets
 Estimated Useful Life: Varies

Sewer Assessment & Rehabilitation													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2025	Total FY 2017-2026
Expenditure Budget	8,800,000	0	0	0	3,700,000	2,550,000	2,550,000	0	0	0	0	0	8,800,000
Financing Plan													
GO Bonds	4,400,000	0	0	0	1,850,000	1,275,000	1,275,000	0	0	0	0	0	4,400,000
GO Bonds - Sanitary Sewer	4,400,000	0	0	0	1,850,000	1,275,000	1,275,000	0	0	0	0	0	4,400,000
Total Financing Plan	8,800,000	0	0	0	3,700,000	2,550,000	2,550,000	0	0	0	0	0	8,800,000
Additional Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0
Changes from Prior Year CIP: No changes from prior year CIP.													

Project Description & Justification

This project provides funding from both the Sanitary Sewer and General Fund for the condition assessment of all of the sewers (sanitary, storm, combined) in the combined sewer service area in Old Town and remediation of structurally deficient sewers.

The City will perform condition assessments including cleaning and televising of the lines, assessing information to determine condition of lines, and determining if rehabilitation is needed. Structurally deficient sewers will be identified and the results of the field work will be evaluated to develop remediation projects which are expected to include the relining of sewers and manhole repairs.

Funding is not planned until FY 2019, and totals \$8.8 million with 50% coming from the Sanitary Sewer Fund and 50% from City funds.

In addition to the health and environmental benefits of this project, completion of this project will repair and renew the City's sewer infrastructure, extend the infrastructure's useful life, and reduce the number of pipe collapses and other emergency repairs.

City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

- Improve the health of City waterways
- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure
- Sustain the natural quality of land within the City

Focus Area: Accountable, Effective, & Well-Managed Government

- Ensure government is accountable to the community

External or Internal Adopted Plan or Recommendation

- 2013 Sanitary Sewer Master Plan

Additional Operating Budget Impact

An additional impact to the operating budget is not anticipated.

AlexRenew Wastewater Treatment Plant Capacity

Document Subsection: Sanitary Sewers
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): N/A
 ORG: TBD

Project Location: 1500 Eisenhower Ave.
 Reporting Area: Southwest Quadrant
 Project Category: 3 – New Facilities
 Estimated Useful Life: 20+ years

AlexRenew Wastewater Treatment Plant Capacity													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2025	Total FY 2017-2026
Expenditure Budget	34,220,000	0	0	0	0	11,070,000	11,400,000	11,750,000	0	0	0	0	34,220,000
Financing Plan													
GO Bonds - Sanitary Sewer	34,220,000	0	0	0	0	11,070,000	11,400,000	11,750,000	0	0	0	0	34,220,000
Total Financing Plan	34,220,000	0	0	0	0	11,070,000	11,400,000	11,750,000	0	0	0	0	34,220,000
Additional Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0
Changes from Prior Year CIP: No changes from prior year CIP.													

Project Description & Justification

The City's Department of Planning and Zoning (P&Z) has developed growth forecasts for build-out conditions (post year 2040) as presented in the Sanitary Sewer Master Plan. Based on these forecasts, the City is projected to exceed its wastewater allocation at the Alexandria Renew Enterprises (AlexRenew) Water Resource Recovery Facility by approximately 4 million gallons per day (mgd) beginning incrementally sometime after 2040.

AlexRenew has indicated that their facility can be expanded/ upgraded to treat this additional 4 mgd at a total capital cost of \$34.22 million (increased for inflation). This cost is based on hydraulically expanding the plant at the same time as other anticipated upgrades are needed (as existing process equipment reaches the end of its useful life). Although the need for an additional 4 mgd is not anticipated until after 2040, it would be more cost-effective to perform the hydraulic expansion while other upgrades are occurring based on the timeline provided by AlexRenew.

The costs provided do not include any additional nutrient (phosphorous and nitrogen) loads associated with these flows, which the City will reach around 2040. Options for addressing these added nutrient loadings have been identified in the Sanitary Sewer Master Plan and will continue to be evaluated. Funding for this project is not planned until FY 2020 – 2022. With the hydraulic expansion, the agreements between the City and AlexRenew and AlexRenew and Fairfax County would have to be renegotiated.

Another option for an additional 4 mgd is to purchase 4 mgd of wastewater treatment capacity from Fairfax County at AlexRenew, estimated to be approximately \$56.0 million (2011 dollars). This option would not require any offset of nutrient loadings since the design flow at AlexRenew wouldn't change, but the City may be expected by Fairfax County to finance the entire \$56.0 million now for capacity the City will not need for 30 years. Additionally, this option is contingent on Fairfax County acquiring additional treatment plant capacity at DC Water Blue Plains facility. The City will be continuing discussions with Fairfax County concerning this option, including if this expansion will be necessary in the current planned time frame.

City's Strategic Plan & Budget Guidance

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

- Improve the health of City waterways
- Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure
- Increase the value of the real estate tax base
- Ensure Alexandria supports, retains, and attracts businesses

Focus Area: Accountable, Effective, & Well-Managed Government

- Ensure government is accountable to the community
- Ensure the fiscal strength of the City government

External or Internal Adopted Plan or Recommendation

- 2013 Sanitary Sewer Master Plan

Additional Operating Budget Impact

An additional impact to the operating budget is not anticipated.

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