

**Fiscal Years 2022 through 2026 Capital Improvement Program
Project Cost and Means of Finance Summary**

Unappropriated Years

Project Number	Project Title	Appropriations to Date	Unappropriated Years					Total Programmed Costs
			FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	
Capital Projects								
Public Utilities								
53-120	Automated Meter Reading Equipment and Software	7,399,624	4,000,000	4,000,000	2,000,000	-	-	17,399,624
19-220	Cavalier Elevated and Ground Storage Tanks Rehabilitation	-	-	-	-	1,595,000	-	1,595,000
43-120	Centerville Turnpike Loop 3	7,929,000	-	-	-	-	-	7,929,000
20-230	Chesapeake Connector Water Pipeline	-	2,000,000	-	-	-	-	2,000,000
34-120	Customer Service & Billing Software	5,900,000	-	-	-	-	-	5,900,000
20-140	Deep Creek Pump Station Upgrade	192,627	-	-	-	-	-	192,627
37-240	Fentress NALF Water Transmission Main	13,000,000	-	-	-	-	-	13,000,000
34-200	Force Main Replacement - Dominion Blvd. and I-64	3,738,700	-	-	-	-	-	3,738,700
16-170	Gravity Sewer Renewal - Bainbridge Blvd. Basin	-	-	-	-	-	-	-
21-230	Great Bridge Force Main Redundancy Study	-	-	300,000	-	-	-	300,000
06-100	Greenbrier Pkwy. - Force Main Upgrade	2,700,389	-	-	-	-	-	2,700,389
22-230	Lake Gaston Pipeline - Capital Cost Sharing with Virginia Beach	885,000	340,000	350,000	350,000	375,000	-	2,300,000
21-130	Lake Gaston WTP - Membrane Replacement - Phase II	1,725,904	2,200,000	-	-	-	-	3,925,904
37-200	Lake Gaston WTP - Miscellaneous Modifications	3,870,000	-	500,000	2,700,000	1,000,000	2,000,000	10,070,000
28-170	Manhole Rehabilitation	922,000	-	-	-	-	-	922,000
28-200	Norfolk Highlands Elevated Tank Rehabilitation	-	-	-	-	-	1,500,000	1,500,000
23-230	Northwest River Lakes & Pump Station	2,000,000	-	1,000,000	-	1,000,000	-	4,000,000
19-130	Northwest River WTP - Miscellaneous Modifications	7,995,000	1,000,000	2,095,000	4,700,000	1,000,000	2,000,000	18,790,000
29-200	Northwest River WTP - Replace Ground Storage Tank	1,680,000	-	-	-	-	-	1,680,000
20-220	Northwest River WTP - Switchgear Replacement	-	5,982,000	-	-	-	-	5,982,000
47-250	Oak Grove Elevated Tank Rehabilitation	-	-	-	-	1,500,000	-	1,500,000
City of Chesapeake				221			FY 2022-2026	

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Unappropriated Years

Project Number	Project Title	Appropriations to Date	Unappropriated Years					Total Programmed Costs
			FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	
65-230	Philmont Ave Septic System Disconnection	1,325,000	-	-	-	-	-	1,325,000
30-210	Public Utilities - CIS Upgrade	100,000	-	-	-	-	-	100,000
48-250	Pump Stations - Replace Electric Control Panels	-	-	-	-	500,000	500,000	1,000,000
39-120	Red Top Raw Water Transmission Main	26,967,394	-	-	-	-	-	26,967,394
24-230	Replacement of Lead Service Lines	100,000	-	500,000	500,000	500,000	500,000	2,100,000
27-120	Sanitary Sewer Evaluation Study	8,660,079	-	-	-	-	-	8,660,079
23-170	Sewer and Water Renewal - Elbyrne Dr.	2,155,000	-	-	-	-	-	2,155,000
35-170	Sewer Improvements - Gravity Sewer System at Indian River Service Area - Phase I (Pump Station #3)	7,772,978	-	-	-	-	-	7,772,978
78-250	Sewer Lines - West Road Force Main	2,500,000	-	7,500,000	-	-	-	10,000,000
35-200	Sewer Pump Station Safety Improvements	2,000,000	500,000	500,000	500,000	500,000	500,000	4,500,000
21-220	Sewer Pump Station - Replacement and Rehabilitation	-	-	2,700,000	3,000,000	3,000,000	3,000,000	11,700,000
15-170	Sewer Renewal - 18th Street	1,124,270	-	-	-	-	-	1,124,270
05-180	Sewer Renewal - Additional Consent Order Capital Requirement	14,361,609	3,000,000	4,500,000	7,000,000	3,500,000	7,500,000	39,861,609
18-170	Sewer Renewal - Chesapeake Ave. (Guerriere to Ohio Sewer)	616,797	-	-	-	-	-	616,797
33-170	Sewer Renewal - Raleigh Place (Pump Station #7 Basin)	4,400,000	-	-	-	-	-	4,400,000
33-120	Sewer Renewal - SSES Implementation - Phase II (Indian River Area Study/PS #107 Upgrade)	5,379,737	-	-	-	-	-	5,379,737
22-220	Sewer System Redesign/Construction: Albemarle Dr.	700,000	-	-	-	-	-	700,000
03-260	Sewer - Gracie Road Force Main Relocation	-	-	-	-	-	1,280,000	1,280,000
31-240	South Central Water Transmission Main & Loop - Phase I	17,607,000	-	-	-	-	-	17,607,000
45-120	South Norfolk Improvements	2,850,000	-	-	-	-	-	2,850,000
23-240	Supervisory Control and Data Acquisition (SCADA) Upgrade	-	1,500,000	1,500,000	1,500,000	1,500,000	-	6,000,000
25-202	Unserved Areas/Cost Participation - Phase II: Willow Lakes Utility	3,100,000	-	-	-	-	-	3,100,000

**Fiscal Years 2022 through 2026 Capital Improvement Program
Project Cost and Means of Finance Summary**

Unappropriated Years

Project Number	Project Title	Appropriations to Date	Unappropriated Years					Total Programmed Costs
			FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	
02-260	Water Main - Sign Pine Road to South Battlefield 16 Inch	-	-	-	-	-	536,000	536,000
24-200	Water Renewal - Buchanan St. Area	3,306,870	-	-	-	-	-	3,306,870
71-120	Water Renewals: Waterline Upgrades - Phase I	2,030,558	-	-	-	-	-	2,030,558
14-160	Water Renewals: Waterline Upgrades - Phase II	3,250,000	-	2,000,000	2,000,000	2,000,000	2,000,000	11,250,000
32-200	Water Residuals Disposal	320,000	-	-	-	-	-	320,000
33-210	Water System Planning and Upgrades	1,150,000	250,000	400,000	-	400,000	-	2,200,000
24-120	Water System Renewal - Phase I	893,000	-	-	-	-	-	893,000
01-260	Water - Currie Ave at Steel Street Water Main Loop	-	-	-	-	-	301,300	301,300
47-120	Western Branch Interconnect to Lake Gaston WTP	7,298,000	-	-	-	-	-	7,298,000
Total		179,906,536	20,772,000	27,845,000	24,250,000	18,370,000	21,617,300	292,760,836

Means of Financing

Cash - Utilities	71,194,393	10,387,230	15,845,000	17,250,000	14,870,000	14,117,300	143,663,923
Fund Balance - Utilities	7,670,657	1,402,770	-	-	-	-	9,073,427
Revenue Bonds - Utility Fund	87,366,486	8,982,000	12,000,000	7,000,000	3,500,000	7,500,000	126,348,486
Grant	13,000,000	-	-	-	-	-	13,000,000
Cash- Stormwater	675,000	-	-	-	-	-	675,000
Total	179,906,536	20,772,000	27,845,000	24,250,000	18,370,000	21,617,300	292,760,836

53-120: Automated Meter Reading Equipment and Software

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Public Services Facilities
Year identified:	2008	Planning Area:	Citywide
Start Date:	7/1/2019	Project Status:	Proposed
Est. Completion Date:	6/30/2025		

Description:

This project will replace the current meter reading equipment with new automated meter reading equipment and software that will be used to record customer meter readings and initiate billing. This project will involve new technologies that require retrofitting the current water meters.

Justification:

The current equipment requires bi-monthly, manual reading of over 64,000 meters through antiquated hardware and means. Replacement is needed to ensure Public Utilities maintains the capability to generate timely and accurate customer invoices. This project will allow for remote control of water meters and better detection of water leaks. It will also improve productivity since meter readers will no longer have to be read manually. The automated system will also allow for monthly billing so that billing and customer payments are smaller and more manageable.

Comments:

In FY 2020, the project plan was updated to add \$2 million for FY 2020 and \$2 million for FY 2024 requirements. The testing of three different systems is ongoing, including a small system roll out in the City's municipal complex area.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022	4,000,000	4,000,000	0
2023	4,000,000	4,000,000	0
2024	2,000,000	2,000,000	0
2026			0
	10,000,000	10,000,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities	7,399,624	2,597,230	6,000,000		15,996,854
Fund Balance - Utilities		1,402,770			1,402,770
Total Revenue	7,399,624	4,000,000	6,000,000		17,399,624
Expense					
Equipment	7,399,624	4,000,000	6,000,000		17,399,624
Total Expense	7,399,624	4,000,000	6,000,000		17,399,624

19-220: Cavalier Elevated and Ground Storage Tanks Rehabilitation

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2018	Planning Area:	Deep Creek/Camelot
Start Date:	7/1/2021	Project Status:	Proposed
Est. Completion Date:	11/30/2025		

Description:

This project will provide for painting and rehabilitation of the Cavalier elevated and ground storage tanks. Project work will include interior and exterior painting of the 100 thousand gallon ground storage tank and the 1 million gallon elevated storage tank at the Cavalier Industrial Park. This project may also include minor structural modifications to the storage tanks, as needed. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

The paint systems of steel water storage tanks have a variable life expectancy of 15 to 20 years. Maintenance of the coating system is important for structural and aesthetic purposes to maximize the life expectancy of the asset.

Comments:

The Cavalier Elevated Tank was placed in service in 1998. Although the existing 3-coat paint system continues to provide protection to the underlying steel structure, the tanks need to be recoated to prevent structural damage.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022			0
2025	1,595,000	1,595,000	0
	1,595,000	1,595,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities			1,595,000		1,595,000
Total Revenue			1,595,000		1,595,000
Expense					
Design & Engineering			200,000		200,000
Construction			1,395,000		1,395,000
Total Expense			1,595,000		1,595,000

43-120: Centerville Turnpike Loop 3

Department:	Public Utilities Capital Projects		
Project Type:	Addition or Expansion	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2008	Planning Area:	South Chesapeake
Start Date:	7/1/2017	Project Status:	Proposed
Est. Completion Date:	12/31/2022		

Description:

This project will install approximately 7,700 linear feet of 16-inch water main from Mount Pleasant Road north to Elbow Road, crossing the Chesapeake and Albemarle Canal. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City’s utility system, and temporary to facilitate construction.

Justification:

This project is needed to provide an essential loop between the water mains south of the Chesapeake and Albemarle Canal to the water lines on Butts Station Road and Elbow Road. This loop will provide a second transmission line to the City’s Greenbrier area, which will significantly increase system reliability and fire protection to the area. Installation of the new water main will result in a nominal increase in the annual operating and maintenance costs.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund		7,489,097			7,489,097
Cash - Utilities		439,903			439,903
Total Revenue		7,929,000			7,929,000
Expense					
Design & Engineering		500,000			500,000
Construction		7,429,000			7,429,000
Total Expense		7,929,000			7,929,000

Operating Budget Impact:

Year	Exp (Rev)	FTE Impact
2023	5,000	0.0
2024	5,000	0.0
2025	5,000	0.0
2026	5,000	0.0

20-230: Chesapeake Connector Water Pipeline

Department:	Public Utilities Capital Projects		
Project Type:	Addition or Expansion	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2019	Planning Area:	Western Branch
Start Date:	7/1/2020	Project Status:	Proposed
Est. Completion Date:	7/30/2023		

Description:

This project will provide for the construction of a pipeline to convey water from Norfolk's Western Branch Reservoir pumping station to Chesapeake's Red Top water tank. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

The pipeline is required to convey the City of Chesapeake's one-sixth share of raw water from Lake Gaston (ten million gallons per day) to the Lake Gaston Water Treatment Plant.

Comments:

This project is part of a Settlement Agreement dated October 16, 1997 between the cities of Virginia Beach, Norfolk, Suffolk, and Chesapeake. Per the agreement, each city will contribute a specified share of the total project cost. The City of Norfolk will construct the pipeline, and then the City of Virginia Beach, City of Suffolk, and City of Chesapeake will each pay the agreed upon share of the project cost once the project is complete.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022	2,000,000	2,000,000	0
	2,000,000	2,000,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities		2,000,000			2,000,000
Total Revenue		2,000,000			2,000,000
Expense					
Design & Engineering		655,000			655,000
Construction		165,000			165,000
Other		1,180,000			1,180,000
Total Expense		2,000,000			2,000,000

Operating Budget Impact:

Year	Exp (Rev)	FTE Impact
2024	7,000	0.1
2025	7,000	0.1
2026	7,000	0.1

34-120: Customer Service & Billing Software

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Economy
Year identified:	2008	Planning Area:	Citywide
Start Date:	7/2/2007	Project Status:	Proposed
Est. Completion Date:	6/30/2022		

Description:

This project will provide for the replacement of Customer Service and Billing Software system used by Public Utilities.

Justification:

The current system is based upon aging mainframe architecture that limits the support of the application technically and functionally.

Comments:

This project is being completed in phases. The 1st phase of the CIS software was implemented in spring 2013. The 2nd phase is in progress and includes developing several custom modifications and testing. On July 12, 2016, City Council amended the CIP and modified the funding source for \$213,803 in project expenses from revenue bonds to cash.

Project Forecast:

<u>Year</u>	<u>Total Expense</u>	<u>Total Revenue</u>	<u>Difference</u>
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Project Details 2022:

	<u>Prior Years</u>	<u>2022</u>	<u>2023 - 26</u>	<u>Future Years</u>	<u>Total Amount</u>
Revenue					
Revenue Bonds - Utility Fund	908,081				908,081
Cash - Utilities	3,491,919				3,491,919
Fund Balance - Utilities	1,500,000				1,500,000
Total Revenue	5,900,000				5,900,000
Expense					
Other	5,900,000				5,900,000
Total Expense	5,900,000				5,900,000

20-140: Deep Creek Pump Station Upgrade

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2010	Planning Area:	Deep Creek/Camelot
Start Date:	6/1/2011	Project Status:	Proposed
Est. Completion Date:	6/30/2027		

Description:

This project will install new pumps and will upgrade telemetry, controls, and equipment.

Justification:

The Deep Creek Pump Station was placed in service in 1987. Equipment upgrades and replacements are required to provide optimum reliability.

Comments:

On September 13, 2016, City Council amended the CIP by appropriating and then transferring \$39,500 in lapsed funding from this project to the Unserved Areas project. Design was completed in FY 2013. Construction of this project will begin in future years, once additional funding is appropriated.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities	192,627				192,627
Total Revenue	192,627				192,627
Expense					
Design & Engineering	192,627				192,627
Total Expense	192,627				192,627

37-240: Fentress NALF Water Transmission Main

Department:	Public Utilities Capital Projects		
Project Type:	Addition or Expansion	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2020	Planning Area:	South Chesapeake
Start Date:	7/1/2019	Project Status:	Proposed
Est. Completion Date:	7/30/2024		

Description:

This project will provide for the installation of a water transmission main on Mount Pleasant Road to serve Naval Auxiliary Landing Field-Fentress (NALF-Fentress) and the area residents impacted by groundwater contamination with Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) from Aqueous Film-Forming Foams (AFFF) used in firefighting at NALF-Fentress. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

In 2016, the Navy discovered PFAS in on-base and some off-base drinking water wells near NALF-Fentress. The Navy provided short-term and mid-term solutions to the residents, while evaluating long-term alternatives. The selected long-term solution is to extend City water along Mount Pleasant Road from Stratford Terrace to NALF--Fentress, providing City water to the base and those residents with drinking water wells that exceed the EPA's Lifetime Health Advisory (LHA) level of 70 parts per trillion (ppt). The Navy will pay the cost of installing the water line and connections to those residences and businesses whose drinking water exceeds the LHA.

This project will allow the City's Public Utilities Dept. to develop the response to the Navy's requests for information, perform easement acquisition, design, and construction work required to install the water line on Mount Pleasant Road to NALF- Fentress. Although the water line project costs are being reimbursed by the Navy, it is necessary for the City to create the project to properly manage project execution.

Comments:

On June 25, 2019, City Council approved an amended the CIP to establish this project and appropriated \$3 million for FY 2020 to complete preliminary engineering and design with initial easement identification. A very preliminary total project cost estimate is \$13 million (includes design, easement acquisition, and construction), but this estimate will be revised when the Navy's RFP is fully evaluated and preliminary engineering tasks are completed.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Grant		13,000,000			13,000,000
Total Revenue		13,000,000			13,000,000
Expense					
Design & Engineering		3,000,000			3,000,000
Construction		9,000,000			9,000,000
Land Acquisition		1,000,000			1,000,000
Total Expense		13,000,000			13,000,000

34-200: Force Main Replacement: Dominion Blvd. and I-64

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2016	Planning Area:	Deep Creek/Camelot
Start Date:	7/1/2015	Project Status:	Proposed
Est. Completion Date:	10/31/2022		

Description:

This project will renew and replace 4,926 linear feet of 4-inch and 12-inch force main between Pump Stations #110 and #142. This project may also need to include directional drilling under Interstate 64 and Interstate 464.

Justification:

The existing force main is operating, but will likely require continued repairs due to the corrosive nature of the surrounding soil. Recent failures of the force main have caused several sewer spills. Because the existing main is 17 feet below grade, repairs are extremely expensive. Replacement of the existing force main will improve reliability, prevent future sewer spills, and avoid costly repairs.

Comments:

The preliminary engineering report has been completed. The duration of the design and easement acquisition phase is estimated to be one year and construction is also expected to take one year. In the FY 2018-22 CIP, a portion of this project's construction funding was reallocated to FY 2018 in order to accelerate CIP 42-170 "Sewer Renewal: Westwood Ave. and Redstart Ave." in South Norfolk. In November of 2019, City Council approved the transfer of \$1.5 million from this project to CIP 78-250 "West Road Force Main Project"

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund		3,651,826			3,651,826
Cash - Utilities		86,875			86,875
Total Revenue		3,738,700			3,738,700
Expense					
Design & Engineering		683,000			683,000
Construction		3,055,700			3,055,700
Total Expense		3,738,700			3,738,700

16-170: Gravity Sewer Renewal: Bainbridge Blvd. Basin (HRSD Project Area)

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2013	Planning Area:	South Norfolk
Start Date:	7/1/2026	Project Status:	Proposed
Est. Completion Date:	6/30/2028		

Description:

This project will repair and/or replace City sewer facilities in the area of the Hampton Roads Sanitation District (HRSD) projects in the Bainbridge Boulevard basin. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

The nature of the HRSD projects will require adjustment, relocation, repair or replacement of the City's sewer facilities.

Comments:

It is anticipated that this project will need to be funded in future years. HRSD has identified several projects along Bainbridge Boulevard, all of which are in the pre-design stage. Once HRSD identifies specific improvement areas for these projects, the City's Public Utilities Department will coordinate the relocation, repair, and replacement of Chesapeake sewer facilities with HRSD. The HRSD projects include:

- 1) Washington District Pump Station Area Sanitary Sewer Improvements (HRSD # AT013000)
- 2) South Norfolk Area Gravity Sewer Improvements (HRSD # AT013100)
- 3) Pump Station Replacements for Park Avenue (HRSD # VP018000) & Ferebee Avenue (HRSD # VP014010)
- 4) Sanitary Sewer Project 1950 12" Force Main, and 18" and 24" Gravity Sewer Replacement (HRSD # VP014020)

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022			0
2023			0
	0	0	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities				5,000,000	5,000,000
Total Revenue				5,000,000	5,000,000
Expense					
Construction				5,000,000	5,000,000
Total Expense				5,000,000	5,000,000

21-230: Great Bridge Force Main Redundancy Study

Department:	Public Utilities Capital Projects		
Project Type:	Study	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2019	Planning Area:	Great Bridge
Start Date:	7/1/2022	Project Status:	Proposed
Est. Completion Date:	6/30/2024		

Description:

This project will provide for a study to evaluate the need for a second sewer connection to the Hampton Roads Sanitation District (HRSD) sewer lines in Great Bridge. The options that will be investigated include a redundancy connection to HRSD along Cedar Road, or along Hanbury Road, or other locations to evaluate whether the existing pump stations can handle pressures at those points and evaluate whether HRSD's system can handle the City's flow at those points. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

This study is needed to determine a viable second connection to HRSD lines in order to prevent a series of pump stations from being down and requiring pumping and hauling of wastewater if there is only one force main connection to HRSD.

Comments:

Currently when HRSD restricts the City's wastewater from coming into their system in Great Bridge, it requires pumping and hauling of sewage from multiple City pump stations due to the City's current system structure.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2023	300,000	300,000	0
	300,000	300,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities			300,000		300,000
Total Revenue			300,000		300,000
Expense					
Design & Engineering			300,000		300,000
Total Expense			300,000		300,000

06-100: Greenbrier Pkwy. - Force Main Upgrade

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2006	Planning Area:	Greenbrier
Start Date:	7/2/2009	Project Status:	Proposed
Est. Completion Date:	3/31/2022		

Description:

This project will provide for the construction of 2,210 linear feet of new 12-inch sewer force main along the east side of Greenbrier Parkway between Eden Way North and Volvo Parkway. The new force main will connect the two existing force mains. This project may require the acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate project construction.

Justification:

This project will interconnect two separate City force main systems and reduce pressures in the Greenbrier sewer force main system.

Comments:

This project has been at 100% design for a few years. However, engineering staff in Public Utilities and Public Works have expressed slope stability risks may be higher than expected and a partial redesign is being considered for installation by horizontal directional drilling (HDD). Easements will be affected by redesign delaying the project.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund	1,000,000				1,000,000
Cash - Utilities	1,700,389				1,700,389
Total Revenue	2,700,389				2,700,389
Expense					
Design & Engineering	45,000				45,000
Construction	2,655,389				2,655,389
Total Expense	2,700,389				2,700,389

22-230: Lake Gaston Pipeline - Capital Cost Sharing with Virginia Beach

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2019	Planning Area:	Western Branch
Start Date:	7/1/2018	Project Status:	Proposed
Est. Completion Date:	7/30/2024		

Description:

This project will provide for the City of Chesapeake's share of capital improvements to the Lake Gaston Pipeline per the contract with the City of Virginia Beach.

Justification:

An ongoing program of capital improvements is necessary to ensure the long-term reliability of the of the Lake Gaston water supply to Hampton Roads. The City of Chesapeake is a one-sixth owner of the City of Virginia Beach's Lake Gaston Pipeline project. Under contractual obligation, the City of Chesapeake will fund its proportional share of both the capital and operating costs required to maintain the pipeline.

Comments:

In FY 2020, the project plan was updated and costs were revised. Phased capital improvements to the Lake Gaston Pipeline are established by the City of Virginia Beach, and include improvements to the raw water intake structure at Lake Gaston, pressure reducing facilities, stream crossings, and the pipeline itself.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022	340,000	340,000	0
2023	350,000	350,000	0
2024	350,000	350,000	0
2025	375,000	375,000	0
	1,415,000	1,415,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities	885,000	340,000	1,075,000		2,300,000
Total Revenue	885,000	340,000	1,075,000		2,300,000
Expense					
Construction	545,000				545,000
Equipment	340,000	340,000	1,075,000		1,755,000
Total Expense	885,000	340,000	1,075,000		2,300,000

21-130: Lake Gaston WTP - Membrane Replacement - Phase II

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2009	Planning Area:	Western Branch
Start Date:	7/2/2012	Project Status:	Proposed
Est. Completion Date:	7/30/2024		

Description:

This project will provide for the replacement of membranes used in the Lake Gaston Water Treatment Plant.

Justification:

This project serves as a funding source for ultra-filtration membrane elements at the Lake Gaston Water Treatment Plant.

Comments:

The installation of replacement modules for a complete membrane change-out for the Lake Gaston Water Treatment Plant was completed in FY 2014. The full-scale plant evaluation of aluminum chlorohydrate began in FY 2015. On September 13, 2016, City Council amended the CIP by transferring \$32,481 in appropriations to date from this project to the Unserved Areas project.

On April 28, 2015, Council approved closing the Phase I project # 52-120, and transferring \$13,384.73 to this project for Phase II.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022	2,200,000	2,200,000	0
2024			0
	2,200,000	2,200,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities	1,725,904	2,200,000			3,925,904
Total Revenue	1,725,904	2,200,000			3,925,904
Expense					
Equipment	1,725,904	2,200,000			3,925,904
Total Expense	1,725,904	2,200,000			3,925,904

37-200: Lake Gaston WTP - Miscellaneous Modifications

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2015	Planning Area:	Western Branch
Start Date:	7/1/2015	Project Status:	Proposed
Est. Completion Date:	7/30/2026		

Description:

This project will provide for the ongoing replacement and rehabilitation of aging equipment in order to safely and effectively operate the water treatment plant.

Justification:

This project addresses the life-cycle needs of the water treatment plant equipment with the goal of minimizing downtime and ensuring a continuous supply of high-quality drinking water. The need for equipment replacement is driven not only by normal wear and tear, but it also occurs when replacement parts become unavailable or when support is no longer provided (e.g., proprietary software systems). Additionally, the project includes the installation of an enclosure over the membrane system, a second centrifuge, a third manganese contractor, and converting the tank deposition mode of operation for the membrane system.

Comments:

The Lake Gaston Water Treatment Plant was placed in service in 2006. Since startup, operational methods and equipment have been refined, upgraded, or replaced to maximize reliability and produce the highest quality water possible at the lowest cost.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2023	500,000	500,000	0
2024	2,700,000	2,700,000	0
2025	1,000,000	1,000,000	0
2026	2,000,000	2,000,000	0
	6,200,000	6,200,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities	3,870,000		6,200,000	4,000,000	14,070,000
Total Revenue	3,870,000		6,200,000	4,000,000	14,070,000
Expense					
Design & Engineering	375,000		400,000		775,000
Construction	1,500,000		3,475,000	800,000	5,775,000
Equipment	1,995,000		2,325,000	3,200,000	7,520,000
Total Expense	3,870,000		6,200,000	4,000,000	14,070,000

28-170: Manhole Rehabilitation

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2013	Planning Area:	Citywide
Start Date:	7/1/2013	Project Status:	Proposed
Est. Completion Date:	6/30/2022		

Description:

This project will provide funding for manhole rehabilitation projects.

Justification:

This project is needed to rehabilitate sanitary sewer manholes that may be the cause of leaks, cave-ins, or other operational issues.

Comments:

Completed work as a result of this project includes the replacement of a manholes on Willow Avenue and Mooney Road. Other manhole repairs are being identified and are currently underway. Project funding will be used to rehabilitate additional manholes throughout the City. On July 12, 2016, City Council amended the CIP to modify the funding source for \$149,845 in project expenses incurred through June 15, 2016 from revenue bonds to cash.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund	217,407				217,407
Cash - Utilities	704,593				704,593
Total Revenue	922,000				922,000
Expense					
Construction	922,000				922,000
Total Expense	922,000				922,000

28-200: Norfolk Highlands Elevated Tank Rehabilitation

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2016	Planning Area:	South Norfolk
Start Date:	7/1/2018	Project Status:	Proposed
Est. Completion Date:	6/30/2024		

Description:

This project will provide for the rehabilitation of the Norfolk Highlands elevated water tank, which will include painting the interior and exterior surfaces, making minor structural repairs, installing a mixing system, upgrading safety devices, and installing water quality monitoring equipment. It is also necessary to increase the height of the tank to make better use of its available storage volume. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

Routine painting of a steel water storage tank is necessary to maximize the useful life of the structure. In addition to periodic blasting and painting, it has been determined that the height of the Norfolk Highlands elevated tank needs to be increased to allow better use of its storage capacity.

Comments:

The Norfolk Highlands elevated water tank is a 250-thousand gallon reservoir that provides water storage for the Norfolk Highlands and Indian River areas of Chesapeake. The tank is an important part of the water resource infrastructure in the area of the City served with bulk water purchased from the City of Norfolk.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2023			0
2026	1,500,000	1,500,000	0
	1,500,000	1,500,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities			1,500,000	1,500,000	3,000,000
Total Revenue			1,500,000	1,500,000	3,000,000
Expense					
Design & Engineering			165,000	200,000	365,000
Construction			1,335,000	1,300,000	2,635,000
Total Expense			1,500,000	1,500,000	3,000,000

23-230: Northwest River Lakes & Pump Station

Department:	Public Utilities Capital Projects		
Project Type:	New Facility	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2019	Planning Area:	South Chesapeake
Start Date:	7/1/2018	Project Status:	Proposed
Est. Completion Date:	7/30/2028		

Description:

This project will provide the construction of a floating raw water pump station and associated piping on the borrow pits in the vicinity of the Northwest River (NWR) Raw Water Intake Structure. This project will also evaluate the feasibility of placing a riverbank filtration system at the NWR Water Treatment Plant. The study will determine whether available technology is suitable for conditions existing at Northwest River. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

The cost to treat water from the Northwest River increases when salt and organic levels are high. A temporary, alternate supply of raw water will allow the Northwest River Water Treatment Plant to be operated at a lower cost during challenging conditions in the Northwest River with a higher degree of operational flexibility.

Comments:

The project plan was updated in FY 2020. The reverse osmosis system at the Northwest River Water Treatment Plant provides a proven means to effectively treat a challenging raw water source. Although highly effective, the operational cost of a reverse osmosis system exceeds the cost of other water treatment technologies. Surface water impoundments that originated as borrow pits can provide a temporary, redundant raw water supply.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2023	1,000,000	1,000,000	0
2025	1,000,000	1,000,000	0
	2,000,000	2,000,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities	2,000,000		2,000,000	2,700,000	6,700,000
Total Revenue	2,000,000		2,000,000	2,700,000	6,700,000
Expense					
Design & Engineering	700,000				700,000
Construction			1,300,000	1,700,000	3,000,000
Land Acquisition	300,000				300,000
Other	1,000,000		700,000	1,000,000	2,700,000
Total Expense	2,000,000		2,000,000	2,700,000	6,700,000

19-130: Northwest River WTP - Miscellaneous Modifications

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2009	Planning Area:	South Chesapeake
Start Date:	2/2/2008	Project Status:	Proposed
Est. Completion Date:	6/30/2027		

Description:

This project will provide for the replacement or rehabilitation of aging equipment to safely and effectively operate the water treatment plant.

Justification:

The Northwest River Water Treatment Plant was placed in service in 1980. Since then, operating methods and equipment have changed to maximize reliability and produce quality water at an affordable cost. This project focuses on improvements to the reverse osmosis membrane systems placed into operation in 1999 and which treat groundwater and surface water. The systems, housing structures, and supporting equipment require overhaul and major repairs. The operation of the membranes requires the use of corrosive solutions that deteriorate the membrane equipment. The project includes repair and replacement of equipment as needed. This project addresses the life-cycle needs of the water treatment plant equipment with the goal of minimizing downtime and ensuring a continuous supply of high-quality drinking water. The need for equipment replacement occurs due to normal wear and tear and due to obsolescence (unavailability of replacement parts and discontinuance of supplier support for software systems and equipment).

Comments:

In July of 2016 City Council amended the CIP to modify the source of \$734,740 of project funding from revenue bonds to cash. In March of 2018 City Council transferred \$1,680,000 in available appropriations from this project to CIP 29-200 "Northwest River Water Treatment Plant Ground Storage Tank Replacement".

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022	1,000,000	1,000,000	0
2023	2,095,000	2,095,000	0
2024	4,700,000	4,700,000	0
2025	1,000,000	1,000,000	0
2026	2,000,000	2,000,000	0
	10,795,000	10,795,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund	4,436,106		4,700,000		9,136,106
Cash - Utilities	3,558,894	1,000,000	5,095,000		9,653,894
Total Revenue	7,995,000	1,000,000	9,795,000		18,790,000
Expense					
Design & Engineering	625,000	375,000			1,000,000
Construction	5,370,000	625,000	4,005,000		10,000,000
Equipment	2,000,000		5,790,000		7,790,000
Total Expense	7,995,000	1,000,000	9,795,000		18,790,000

29-200: Northwest River WTP - Replace Ground Storage Tank

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2016	Planning Area:	South Chesapeake
Start Date:	7/1/2020	Project Status:	Proposed
Est. Completion Date:	9/30/2021		

Description:

This project will provide for the replacement of one of the existing two-million gallon water storage tanks at the Northwest River Water Treatment Plant.

Justification:

The existing water storage tank was constructed in 1979, and is currently out of service because the domed roof is sagging and is no longer weather tight. A second storage tank is still in good condition, but it does not have the capacity to allow optimal operations of the water treatment plant. Since the sagging dome had the potential to collapse, the demolition of this tank was accelerated and occurred in FY 2017 ahead of the construction of the new tank. This project will cover the replacement of the tank.

Comments:

The project is in the procurement process and will be constructed through the design-build method. On March 13, 2018, City Council amended the CIP by transferring \$1,680,000 in available appropriations from CIP 19-130 "NW River Water Treatment Plant Miscellaneous Modifications" to this project in order to complete the tank replacement.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022			0
	0	0	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund	680,000				680,000
Cash - Utilities	1,000,000				1,000,000
Total Revenue	1,680,000				1,680,000
Expense					
Design & Engineering	50,000				50,000
Construction	1,630,000				1,630,000
Total Expense	1,680,000				1,680,000

20-220: Northwest River WTP - Switchgear Replacement

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2018	Planning Area:	South Chesapeake
Start Date:	7/1/2021	Project Status:	Proposed
Est. Completion Date:	6/30/2023		

Description:

This project will provide for the replacement of the electrical switchgear and motor control centers at the Northwest River Water Treatment Plant.

Justification:

Major components of the existing switchgear are either no longer supported or are difficult to locate. To avoid potentially serious impacts to plant operations, it is necessary to replace the legacy system with modern equipment that is fully supported.

Comments:

The existing electrical switchgear at the Northwest River Water Treatment Plant is from 1979. It has provided a long service life and is currently functioning as designed. The equipment underwent major preventive maintenance in 2017. The total project cost was also revised down to reflect the most current estimates.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022	5,982,000	5,982,000	0
	5,982,000	5,982,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund		5,982,000			5,982,000
Total Revenue		5,982,000			5,982,000
Expense					
Design & Engineering		375,000			375,000
Construction		5,607,000			5,607,000
Total Expense		5,982,000			5,982,000

47-250: Oak Grove Elevated Tank Rehabilitation

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2021	Planning Area:	Rivercrest
Start Date:	7/1/2024	Project Status:	Proposed
Est. Completion Date:	11/30/2025		

Description:

This project will provide for the painting and rehabilitation of the Oak Grove elevated water storage tank. Project work will include exterior and interior coating of the 1 million gallon potable water storage tank. This project will also include any structural modification and repairs which are needed.

Justification:

The coating systems of steel water storage tanks have a variable life expectancy of 15 to 20 years. Maintenance of the coating system is important for structural and aesthetic purposes to maximize the life expectancy of the asset.

Comments:

The Oak Grove Tank was previously coated in 2010. The tank will need to be recoated at an appropriate interval to provide protection to the underlying steel structure. The Oak Grove Tank is displaying signs that the coating will need to be replaced at the 15-year mark.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2025	1,500,000	1,500,000	0
	1,500,000	1,500,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities			1,500,000		1,500,000
Total Revenue			1,500,000		1,500,000
Expense					
Design & Engineering			200,000		200,000
Construction			1,300,000		1,300,000
Total Expense			1,500,000		1,500,000

65-230: Philmont Ave Septic System Disconnection

Department:	Public Utilities Capital Projects		
Project Type:	New Facility	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2019	Planning Area:	South Norfolk
Start Date:	1/11/2019	Project Status:	Proposed
Est. Completion Date:	11/30/2022		

Description:

This project will disconnect the existing septic system along Philmont Avenue, and replace it with the City's modern sanitary sewer system. The sanitary sewer discharge from the current system will be directed by gravity flow to a pump station that will be connected to a second sanitary system in the neighboring area. Thirty-nine (39) residential homes will be connected to the gravity lines. This project will be jointly managed by Public Utilities and Stormwater (with Public Utilities leading coordination) because the new system will generate water quality improvements. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

As a part of the City's Stormwater Total Maximum Daily Load (TMDL) Action Plan for water quality, this septic system disconnection plan will help the City meet a requirement of the City's MS4 Permit. The Indian River and the Elizabeth River are "impaired waters" with a TMDL for bacteria, and the Elizabeth River is impaired with nitrogen. Public Works supports the implementation of this project because it will remove drain-field discharge from the contributing pollutants to the Elizabeth River. At 9.9 pounds of nitrogen per household per year, approximately 386.1 pounds of nitrogen will be credited towards the City's requirements in the action plan.

Comments:

On December 11, 2018, City Council amended the CIP to establish this project and transferred \$1,325,000 in available appropriations from CIP 33-120 "Sewer Renewal: SSES Implementation-Phase II" (\$650,000 or 49% of the project) and CIP 05-140 "Stormwater Quality Program/VPDES Permit Compliance" (\$675,000 or 51% of the project).

Some of the existing septic systems have been failing to function as originally designed for years. Modern ways of handling sewer discharge also have higher standards than those implemented with septic tank drain-fields. By redirecting the sewage effluent to a system that leads to the HRSD treatment plant, the City will be able to reduce the nitrogen and bacteria levels currently going to the Elizabeth River via the Indian River.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities	650,000				650,000
Cash - Stormwater	675,000				675,000
Total Revenue	1,325,000				1,325,000
Expense					
Design & Engineering	223,000				223,000
Construction	1,100,000				1,100,000
Other	2,000				2,000
Total Expense	1,325,000				1,325,000

30-210: Public Utilities - CIS Upgrade

Department:	Public Utilities Capital Projects		
Project Type:	System Acquisition or Upgrade	Comprehensive Plan Goal Area:	Public Services Facilities
Year identified:	2017	Planning Area:	Citywide
Start Date:	7/1/2017	Project Status:	Proposed
Est. Completion Date:	7/30/2022		

Description:

This project provides periodic upgrades to the Public Utility CIS billing system, which was originally implemented in October 2013. This system functions with primary integrations with the City’s financial system, the Treasurer, and the Hampton Roads Sanitation District (HRSD).

Justification:

The Customer Information System (CIS) is a necessity for the City and a vital tool for the Public Utilities Department to manage and bill all water and sewer accounts for residential, commercial, fire, irrigation, and back flow devices. Planned upgrades include the SQL Server, the Customer System Management (CSM) Module, and the product core with customizations.

Comments:

The most recent system upgrade occurred in FY 2018.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities	100,000				100,000
Total Revenue	100,000				100,000
Expense					
Software	100,000				100,000
Total Expense	100,000				100,000

Operating Budget Impact:

Year	Exp (Rev)	FTE Impact
2023	10,000	0.0
2024	10,000	0.0
2025	10,000	0.0
2026	10,000	0.0

48-250: Pump Stations: Replace Electric Control Panels

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2021	Planning Area:	Citywide
Start Date:	7/1/2024	Project Status:	Proposed
Est. Completion Date:	12/1/2038		

Description:

This project will replace three or more electric control panels per year inside designated pump stations.

Justification:

To keep in compliance with VDEQ/HRSD Regional Consent Order and prevent SSOs, it is necessary to replace at least three electric control panels each year at wastewater pump stations. IT estimates that 25% of the City's 274 pump stations (69 stations) contain control panels that are outdated, not compatible with newer technologies, and are subject to a corrosive environment. Corrosive environments reduce conductivity at the contact point between current-carrying components, increasing the resistance that may result in overheating and/or power outages.

In FY 2017, the cost for an electrical control panel ranged from \$84,000 to \$147,000 per station. In FY 2019, costs for electrical control panel replacements were approximately \$100,000 each as the stations were less complex. Panel replacements at larger, more complex stations were estimated to cost \$150,000 each in FY 2017 dollars; adjusted for inflation such estimates rise to \$187,000 by FY 2025

Comments:

Electric control panels (ECP) monitor current conditions of the pump station including pump status, number of pump starts, pump run time, pump capacity, operating trends, pump station inflow, outflow, and overflow. All of the control panels are connected to a telemetry unit which informs the supervisory control and data acquisition (SCADA) system if there is a pump failure and/or high water levels in the wet wells which may cause a sanitary sewer overflow (SSO).

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2025	500,000	500,000	0
2026	500,000	500,000	0
	1,000,000	1,000,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities			1,000,000	3,200,000	4,200,000
Total Revenue			1,000,000	3,200,000	4,200,000
Expense					
Design & Engineering			1,000,000		1,000,000
Construction				3,200,000	3,200,000
Total Expense			1,000,000	3,200,000	4,200,000

39-120: Red Top Raw Water Transmission Main

Department:	Public Utilities Capital Projects		
Project Type:	Addition or Expansion	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2008	Planning Area:	Western Branch
Start Date:	2/2/2009	Project Status:	Proposed
Est. Completion Date:	4/30/2023		

Description:

This project will provide for installation of approximately nine miles of 36-inch raw water pipeline and transmission facilities from Red Top in Suffolk to the Lake Gaston Water Treatment Plant. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate project construction.

Justification:

The Lake Gaston treatment plant currently treats water provided from excess capacity drawn from Norfolk's raw water resources. The new pipeline and transmission facilities will ensure that the City is able to draw its one-sixth allocation from the Lake Gaston under terms of a contract with the City of Virginia Beach.

Comments:

This project is 80% complete. Costs were updated in 2019 based on engineering estimates and current construction prices for the remaining pipeline phases. This added \$2.7 million to the project cost; additional funding was programmed for FY 2021. Cost estimates were previously revised in FY 2017, and \$7 million was added to start the next phase design and construction during FY's 2018 and 2019. Most of the increase has been due to inflation that has occurred since the original estimates from the 1990's.

On July 12, 2016, City Council amended the CIP and modified the funding source for \$9.8 million of this project from revenue bonds to cash. On March 13, 2018, City Council transferred \$1,675,394 (revenue bonds) in available appropriations from CIP 17-140 "Red Top Tank and Raw Water Pump Station" to this project.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund		15,640,903			15,640,903
Cash - Utilities		11,326,491			11,326,491
Total Revenue		26,967,394			26,967,394
Expense					
Design & Engineering		2,875,394			2,875,394
Construction		24,092,000			24,092,000
Total Expense		26,967,394			26,967,394

24-230: Replacement of Lead Service Lines

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2019	Planning Area:	Citywide
Start Date:	7/1/2018	Project Status:	Proposed
Est. Completion Date:	7/30/2033		

Description:

This project will replace water service lines and associated fittings which contain levels of lead and copper above the Environmental Protection Agency (EPA) established action levels. It is anticipated that in order to complete this work, the City of Chesapeake will have to remove the service lines that were installed prior to 1950.

Justification:

The Environmental Protection Agency (EPA) published a white paper in October 2016 on Lead and Copper Rule (LCR) Revisions. Both the EPA and the Centers for Disease Control and Prevention state that no amount of lead in water is safe and that lead exposure can result in serious, adverse health effects. Most recently in January 2018, The EPA Office of Drinking Water solicited input from state and local government officials on potential revisions to key areas of the Lead and Copper Rule. Public Utilities has estimated that approximately 1,000 lead service lines exist within the City, not including any appurtenances that may contain traces of lead or copper.

Comments:

Recent national events centered on lead in drinking water have eroded public trust in drinking water safety. In response, the United States Environmental Protection Agency (USEPA) is working on upcoming Lead and Copper Rule Long-Term Revisions (LCR LTR). The proposed revisions have the potential to cause significant impacts to community water systems throughout the United States, requiring additional actions associated with optimal corrosion control treatment, lead service line replacement, public education, and localized household-level responses (USEPA and NDWAC, 2016; Hazen & Sawyer, Horizons, 2017). Water sampling has been conducted in those areas of the City where service lines were installed prior to 1950. Public Utilities has been working on a Sampling Plan to identify and track those locations in the City that have older water systems.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2023	500,000	500,000	0
2024	500,000	500,000	0
2025	500,000	500,000	0
2026	500,000	500,000	0
	2,000,000	2,000,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities	100,000		2,000,000	4,520,000	6,620,000
Total Revenue	100,000		2,000,000	4,520,000	6,620,000
Expense					
Design & Engineering			500,000		500,000
Construction	100,000		1,420,000	4,480,000	6,000,000
Land Acquisition			80,000	40,000	120,000
Total Expense	100,000		2,000,000	4,520,000	6,620,000

27-120: Sanitary Sewer Evaluation Study

Department:	Public Utilities Capital Projects		
Project Type:	Study	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2008	Planning Area:	Citywide
Start Date:	7/1/2007	Project Status:	Proposed
Est. Completion Date:	7/30/2023		

Description:

This project will provide for the completion of a Sanitary Sewer Evaluation Study (SSES).

Justification:

This study and associated activities are required by the proposed Consent Order from Virginia Department of Environmental Quality (DEQ).

Comments:

Per the Consent Order, ongoing studies of the sewer systems and pump stations are underway. On July 12, 2016, City Council amended the CIP and modified the funding source for \$834,874 in project expenses incurred through June 15, 2016 from revenue bonds to cash.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund	7,498,637				7,498,637
Cash - Utilities	991,843				991,843
Fund Balance - Utilities	169,599				169,599
Total Revenue	8,660,079				8,660,079
Expense					
Design & Engineering	6,404,708				6,404,708
Construction	655,371				655,371
Other	1,600,000				1,600,000
Total Expense	8,660,079				8,660,079

23-170: Sewer and Water Renewal: Elbyrne Dr.

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2013	Planning Area:	South Norfolk
Start Date:	7/2/2018	Project Status:	Proposed
Est. Completion Date:	1/31/2022		

Description:

This project will renew or replace approximately 2,160 feet of the existing 8-inch sewer main along Elbyrne Drive between its intersections with Wingfield Avenue and with Pond Lane in South Norfolk.

Justification:

TV inspection and excessive maintenance indicates severe deterioration requiring replacement.

Comments:

This project is underway.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities	2,155,000				2,155,000
Total Revenue	2,155,000				2,155,000
Expense					
Construction	2,155,000				2,155,000
Total Expense	2,155,000				2,155,000

35-170: Sewer Improvements: Gravity Sewer System at Indian River Service Area - Phase I (Pump Station #3)

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2013	Planning Area:	Indian River
Start Date:	7/1/2013	Project Status:	Proposed
Est. Completion Date:	2/28/2022		

Description:

This project will provide for improvements to the existing gravity sewer system in the City's Indian River area, including improvements to Pump Station 3. This project will replace all of the existing antiquated gravity sewer and will install approximately 15,026 feet of new gravity sewer within the service area of Pump Station 3, and will include new sewer within the Indian River Estates subdivision and adjacent parcels.

Justification:

The Sanitary Sewer Evaluation Study (SSES) required by the Virginia Dept. of Environmental Quality (DEQ) revealed deficiencies in the sewer system in the Indian River area. The DEQ Consent Order requires the City to remediate deficiencies identified in the study. The study and City maintenance logs indicated severe deterioration that required replacement. The existing gravity sewer is composed of antiquated clay pipe that has deteriorated over time.

Comments:

Design is 90% complete, and project work will proceed after the water system purchase. Improvements to that water system will be included in this project. This project will completely replace the existing gravity sewer system, including manholes and service laterals within the Indian River Estates subdivision. Previous funding of \$4.67 million was appropriated to this project, and additional funding of \$1.6 million was added for FY 2018 because the City will provide new roads to replace existing sub-standard roads within this subdivision.

On July 12, 2016, City Council approved a change of funding source for \$201,481 in project expenses incurred through June 15, 2016 from future revenue bonds to cash.

On March 10, 2020, City Council approved an additional emergency reappropriation of \$1.5 million from closed project funding to allow the department to award the contract after bids came back higher than expected.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund		5,486,338			5,486,338
Cash - Utilities		2,286,640			2,286,640
Total Revenue		7,772,978			7,772,978
Expense					
Construction		7,772,978			7,772,978
Total Expense		7,772,978			7,772,978

Operating Budget Impact:

Year	Exp (Rev)	FTE Impact
2023	4,800	0.0
2024	4,800	0.0
2025	4,800	0.0
2026	4,800	0.0

78-250: Sewer Lines: West Road Force Main

Department:	Public Utilities Capital Projects		
Project Type:	Addition or Expansion	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2019	Planning Area:	South Chesapeake
Start Date:	12/1/2019	Project Status:	Proposed
Est. Completion Date:	6/30/2025		

Description:

This project will construct approximately 3.6 miles of 12-inch sanitary force main in conjunction with the South Central Water Transmission project (CIP 31-240). The project was added in order to install both water and sewer lines in a "one dig" project that minimizes disruption to West Road. The project installs the main from the entrance to the Chesapeake Municipal Airport to HRSD's interceptor at West and Cedar Roads. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

The project will divert sanitary flows from the Airport industrial area out of the Northwest River Watershed Protection District. Pump station connections will be made as appropriate for the Dominion Boulevard Corridor. Design and construction cost will be recouped through utility pro-rata reimbursements from subsequent developments. Simultaneous engineering design and construction of the mains will result in significant cost savings for the project.

Comments:

This is a new project proposed parallel to the South Central Water Transmission Main to convey wastewater in a portion of the Dominion Boulevard Corridor. On November 26, 2019, City Council amended the CIP and transferred \$2.5 million to this project to cover design costs.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2023	7,500,000	7,500,000	0
	7,500,000	7,500,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund	2,500,000		7,500,000		10,000,000
Total Revenue	2,500,000		7,500,000		10,000,000
Expense					
Design & Engineering	250,000				250,000
Construction	2,250,000		7,500,000		9,750,000
Total Expense	2,500,000		7,500,000		10,000,000

35-200: Sewer Pump Station Safety Improvements

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2016	Planning Area:	Citywide
Start Date:	7/1/2015	Project Status:	Proposed
Est. Completion Date:	6/30/2026		

Description:

This project will replace structural components at pump stations that have deteriorated and pose safety risks to maintenance personnel. The components will include fixed ladders, platforms, and various hardware that are subjected to corrosive environments. There are 274 pump stations throughout the City.

Justification:

This project is needed to replace structural components that have deteriorated at the City's sewer pump stations in order to ensure safe and effective operations. Since there are 274 pump stations throughout the City, this project will address the needs annually through a phased approach.

Comments:

This project will replace fixed ladders, platforms, and various hardware that are subjected to corrosive environments. This project was first funded in FY 2016 with annual investments of \$500,000 to continue ongoing repairs and maintenance of the City's sewer pump stations. Funding was removed for FY 2019 and FY 2020 since existing appropriations were sufficient to complete repairs through FY 2020. Annual funding resumed in FY 2021.

Two contractors have been contracted to complete the improvements. Work is currently underway or planned for Pump Stations #33, #201, #86, #25, #37, #197, #14, #79, #54, #158, and #227.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022	500,000	500,000	0
2023	500,000	500,000	0
2024	500,000	500,000	0
2025	500,000	500,000	0
2026	500,000	500,000	0
	2,500,000	2,500,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities	2,000,000	500,000	2,000,000	150,000	4,650,000
Total Revenue	2,000,000	500,000	2,000,000	150,000	4,650,000
Expense					
Design & Engineering	150,000				150,000
Construction	1,850,000	500,000	2,000,000	150,000	4,500,000
Total Expense	2,000,000	500,000	2,000,000	150,000	4,650,000

21-220: Sewer Pump Station: Replacement and Rehabilitation

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2018	Planning Area:	Citywide
Start Date:	7/1/2021	Project Status:	Proposed
Est. Completion Date:	6/30/2050		

Description:

This project will provide for critical repairs, replacement, and rehabilitation of pump stations to ensure efficient and effective sewer system operations. Funding will address deferred maintenance of critical and aged pump stations throughout the City. This project will be the main project, and sub-projects will be identified for specific pump station repair projects within the scope of this main project. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

These improvements are necessary to minimize sewer overflows, which can be caused by insufficient pressure to discharge into the Hampton Roads Sanitation District (HRSD) System, insufficient wet well capacity, and aged pumps. This will ensure continued compliance with the Regional Consent Order with the Virginia Dept. of Environmental Quality/HRSD, which requires localities to reduce sanitary sewer overflows.

Comments:

Project plans include rehabilitation and/or replacement work on pump stations #126, #213, #41, #9, #114, #38 and #184. As of FY 2019, the City had 273 active pump stations. The average lifespan of a wastewater pump station is 50 years. The average cost to rehab or replace a pump station is approx. \$1.5 million. Assuming \$3 million in annual project funding each year, the timeline to rehab or replace all of the City's pump stations is over 100 years.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2023	2,700,000	2,700,000	0
2024	3,000,000	3,000,000	0
2025	3,000,000	3,000,000	0
2026	3,000,000	3,000,000	0
	11,700,000	11,700,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities			11,700,000	259,700,000	271,400,000
Total Revenue			11,700,000	259,700,000	271,400,000
Expense					
Design & Engineering			1,750,000	39,650,000	41,400,000
Construction			9,950,000	220,050,000	230,000,000
Total Expense			11,700,000	259,700,000	271,400,000

15-170: Sewer Renewal: 18th Street

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2013	Planning Area:	South Norfolk
Start Date:	7/2/2016	Project Status:	Proposed
Est. Completion Date:	1/31/2022		

Description:

This project will provide for the renewal or replacement of approximately 1,250 of the existing 8-inch and 12-inch sewer mains along 18th Street between its intersection with "D" Street and its intersection with Seaboard Avenue in South Norfolk.

Justification:

TV inspection and excessive maintenance indicates severe deterioration requiring replacement.

Comments:

Additional funding of \$388,000 was added in FY 2019 to fully fund the project as the revised cost estimate came in higher than the original estimate. Design began in FY 2018.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund	580,738				580,738
Cash - Utilities	543,532				543,532
Total Revenue	1,124,270				1,124,270
Expense					
Design & Engineering	188,000				188,000
Construction	936,270				936,270
Total Expense	1,124,270				1,124,270

05-180: Sewer Renewal: Additional Consent Order Capital Requirement

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2014	Planning Area:	Citywide
Start Date:	7/1/2015	Project Status:	Proposed
Est. Completion Date:	7/30/2029		

Description:

This project will fund various sanitary sewer projects required to comply with the regional Consent Order issued by the Virginia Department of Environmental Quality (VDEQ) that will be performed in designated sewer basins based on the priority approved by VDEQ in the Rehabilitation Plan. Project work will include rehabilitating gravity sewer systems, force main systems, and pump stations; cleaning wet-wells, TV inspections, washing mainlines, valve operations, and other improvements that will help reduce or eliminate sanitary sewer overflows. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

Sewer improvements are necessary in order to comply with the regional Consent Order. Specific projects are identified based on TV inspection and sewer maintenance records indicating excessive repairs. Public Utilities has currently identified over \$200 million in projects that are needed to replace or rehab dilapidated sewer lines throughout the City. This project ensures the City maintains compliance with the regional Consent Order, which requires localities to reduce sanitary sewer overflows (SSOs). The City contains approx. 960 miles of gravity sewer and 105 miles of sanitary sewer force main. A large majority of these lines were installed before 1970 and are failing, which results in cave-ins, SSOs, blockages, and disruptions in service. This project will complete about 30 - 40 small-scale sewer rehab projects annually by using IDIQ (Indefinite Delivery/Indefinite Quantity) contractor.

The South Norfolk borough also needs extensive sewer rehabilitation work, and some streets may be substituted from the above plan pending pipe conditions/ failures.

Comments:

In FY 2018, CIP 31-210 "Sanitary Sewer Force Main at Volvo Parkway" and CIP 31-170 "Sewer Replacement at Orville Ave. Alleyway" were combined with this project. In June of 2018 City Council transferred \$1.4 million of appropriations from this project to CIP 51-129 "Unserved Areas: Battlewood Meadows". In January of 2019 City Council approved a change of funding source to cash for expenses paid prior to June 30, 2018. On February 25, 2020, City Council approved a change of funding source from revenue bonds to cash for \$1.48 million in projects including the Decatur Street and Edgewood Avenue upgrades.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022	3,000,000	3,000,000	0
2023	4,500,000	4,500,000	0
2024	7,000,000	7,000,000	0
2025	3,500,000	3,500,000	0
2026	7,500,000	7,500,000	0
	25,500,000	25,500,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund	8,544,841	3,000,000	22,500,000	294,388,391	328,433,232
Cash - Utilities	5,816,768				5,816,768
Total Revenue	14,361,609	3,000,000	22,500,000	294,388,391	334,250,000
Expense					
Design & Engineering	1,000,000	1,000,000	4,000,000	45,300,000	51,300,000
Construction	13,361,609	2,000,000	17,500,000	249,088,391	281,950,000
Land Acquisition			1,000,000		1,000,000
Total Expense	14,361,609	3,000,000	22,500,000	294,388,391	334,250,000

18-170: Sewer Renewal: Chesapeake Ave. (Guerriere to Ohio Sewer)

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2013	Planning Area:	South Norfolk
Start Date:	7/2/2016	Project Status:	Proposed
Est. Completion Date:	10/31/2021		

Description:

This project will replace approximately 1,005 feet of gravity sewer mains and appurtenances on Chesapeake Avenue (between Ohio and Guerriere Streets), and a pipe segment on Ohio Street (between Jackson Avenue and Rodgers Street). This is a joint effort between the Public Utilities and Public Works departments, with Public Works leading the project management efforts for design and construction.

Justification:

Inspection and excessive maintenance indicate severe deterioration requiring replacement. This system could not be TV inspected. Due to extensive deterioration of the main lines, washing from manhole to manhole could not be accomplished.

Comments:

The initial project cost estimate was increased by \$75,000 in FY 2017 to reflect the most current quantities and pricing. The cost estimate was increased again by \$328,000 in FY 2018 to cover the cost of approximately 500 feet of additional gravity sewer main work along Jackson Avenue and Ohio Street that was approved to be added to the initial project scope.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund		214,000			214,000
Cash - Utilities		402,797			402,797
Total Revenue		616,797			616,797
Expense					
Construction		616,797			616,797
Total Expense		616,797			616,797

33-170: Sewer Renewal: Raleigh Place (Pump Station #7 Basin)

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2014	Planning Area:	Western Branch
Start Date:	7/1/2019	Project Status:	Proposed
Est. Completion Date:	6/30/2024		

Description:

This project will provide for renewal or replacement of approximately 8,000 linear feet of gravity sanitary sewer main (between 8-inch to 12-inch) and appurtenances in the Raleigh Place Subdivision in the City's South Norfolk area, from Rosemont Avenue to the intersection of Burrow Avenue and Bainbridge Boulevard. (Pump Station #7 basin). This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

TV inspection and excessive maintenance indicate severe deterioration requiring replacement. This is one of 99 Pump Station areas investigated by Greeley & Hansen as part of the Wastewater Reliability Assessment Program. The report ranked Pump Station #7 basin as priorities 108, 133, 144, 191, and 221.

Comments:

This project's schedule was pushed back to align with the priority ranking in the engineer's report. Work on this project is anticipated to be performed over two years, with design in year one and construction in year two.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2023			0
	0	0	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities		4,400,000			4,400,000
Total Revenue		4,400,000			4,400,000
Expense					
Design & Engineering		600,000			600,000
Construction		3,800,000			3,800,000
Total Expense		4,400,000			4,400,000

33-120: Sewer Renewal: SSES Implementation - Phase II (Indian River Area Study/PS #107 Upgrade)

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2008	Planning Area:	Indian River
Start Date:	7/1/2011	Project Status:	Proposed
Est. Completion Date:	1/31/2022		

Description:

This project will implement the second phase of improvements necessary to address deficiencies identified in the Sewer System Evaluation Survey (SSES). Phase II will provide for an engineering assessment and recommendations for improving the existing Force Mains and Pump Station in the City's Indian River area. (See also CIP 27-120 "Sewer System Evaluation Survey (SSES)" and CIP 32-120 for details of Phase I). Based on the preliminary Engineering Study, this project will provide for the overhaul and complete replacement of the existing City pumping station #107 located on Providence Road, the replacement of 930 feet of the existing force main, and installation of a gravity sewer line.

Justification:

Due to the poor condition of Pump Station #107, a complete overhaul of the pump station, related force main, and gravity sewer is necessary. This project will prevent sanitary sewer overflows by improving the capability of the City's sewer pump station force main systems.

Comments:

On December 11, 2018, City Council amended the CIP by establishing CIP 65-230 "Philmont Ave Septic System Disconnection" and transferred \$650,000 from this project to the newly created project. On March 13, 2018, City Council approved an FY 2018 Capital Budget Amendment that transferred \$1 million to this project from four recently completed capital projects (12-160, 27-200, 29-170, and 54-120). The transferred funding included Utilities cash and revenue bonds. A preliminary engineering report was completed to study the Indian River Area needs. The report recommended rebuilding Pump Station #107, extending the 10" force main by 930 ft. upstream of PS #107, and improving the gravity sewer. In the FY 2018-22 CIP, \$1.6 million was added to FY 2018 to address the work outlined in the report. On July 12, 2016, City Council approved a change of funding source for \$126,200 in project expenses incurred through June 15, 2016, from future revenue bonds to cash.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund		3,643,494			3,643,494
Cash - Utilities		1,736,243			1,736,243
Total Revenue		5,379,737			5,379,737
Expense					
Design & Engineering		202,000			202,000
Construction		5,177,737			5,177,737
Total Expense		5,379,737			5,379,737

Operating Budget Impact:

Year	Exp (Rev)	FTE Impact
2023	11,500	0.0
2024	11,500	0.0
2025	11,500	0.0
2026	11,500	0.0

22-220: Sewer System Redesign/Construction: Albemarle Dr.

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2018	Planning Area:	Great Bridge
Start Date:	7/1/2017	Project Status:	Proposed
Est. Completion Date:	10/31/2022		

Description:

This project will provide for the redesign and construction of a new main sewer gravity system on Albemarle Drive, and will include a new grinder system to effectively deal with the specialized waste stream from the Jail and Juvenile Services.

Justification:

This project is needed because the sewer vault in front of the Jail requires frequent cleaning to remove plastic/paper wrappers and other trash from the waste stream of the Jail/Juvenile Services (which is typical for correctional facilities). This is very labor-intensive and costly. The main sewer system along Albemarle Drive also has grade problems and needs to be redesigned to meet current requirements. The planned improvements for this project will address these needs.

Comments:

The Jail and Juvenile Services facilities create special requirements on the main sewer system, which processes a very high volume and considerable amount of trash in the waste stream. The system was recently modified out by Albemarle Drive to resolve a grade problem. The existing grinder and grate system is not considered adequate, and the gravity system needs to be resigned for the anticipated load. Although this will require an additional part-time staff member (0.5 FTE), it is anticipated that this project will reduce other operating expenses for a net cost reduction overall.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities		700,000			700,000
Total Revenue		700,000			700,000
Expense					
Design & Engineering		100,000			100,000
Construction		600,000			600,000
Total Expense		700,000			700,000

Operating Budget Impact:

Year	Exp (Rev)	FTE Impact
2023	(24,000)	0.5
2024	(24,000)	0.5
2025	(24,000)	0.5
2026	(24,000)	0.5

03-260: Sewer: Gracie Road Force Main Relocation

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2022	Planning Area:	South Norfolk
Start Date:	7/1/2025	Project Status:	Proposed
Est. Completion Date:	12/30/2027		

Description:

This project is for the relocation of approximately 2,380 linear feet of 8-inch sewer force main from Pump Station #043 to Wingfield Avenue. The new facility will be located in the City right-of-way.

Justification:

Due to the force main's depth (less than six feet) and back yard location, City crews are unable to safely perform repairs, so contractors must perform this work, resulting in higher costs. The condition of the pipe makes it probable that additional breaks will occur. With the need for replacement and difficulty making repairs in its current location, it is necessary to relocate the force main to the City right of way.

Comments:

The 8-inch sewer force main which runs along Gracie Road suffered a significant failure in March 2019, resulting in a sanitary sewer overflow (SSO). The easement the force main is located in lies behind homes whose backyards contain trees and brush, fencing, sheds, residential pools and gardens and is bordered by a steep incline to the north.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2026	1,280,000	1,280,000	0
	1,280,000	1,280,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities			1,280,000		1,280,000
Total Revenue			1,280,000		1,280,000
Expense					
Design & Engineering			140,000		140,000
Construction			1,140,000		1,140,000
Total Expense			1,280,000		1,280,000

31-240: South Central Water Transmission Main & Loop - Phase I

Department:	Public Utilities Capital Projects		
Project Type:	Addition or Expansion	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2020	Planning Area:	South Chesapeake
Start Date:	7/1/2019	Project Status:	Proposed
Est. Completion Date:	7/30/2025		

Description:

This project will provide for the construction of a water transmission main to extend the current line and to create a loop in the South Central area of Chesapeake. The project work will start at the casing on Dominion Boulevard at West Road, will extend the current line by adding a 36-inch water main south along West Road to Chesapeake Regional Airport, and will create a loop with the existing water mains at Number 10 Lane and Drumcastle Lane. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

This water main extension and loop will provide additional reliability to the water distribution system. The loop will improve system hydraulics, reliability, and fire protection. Future phases of this project will continue the line eastward to the existing distribution system along Battlefield Boulevard near the Northwest River Water Treatment Plant.

Comments:

This project is part of the Water Master Plan. The installation of a new water main will result in a nominal increase in the annual operation and maintenance costs. The project may be able to utilize Pro Rata to recover capital costs.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund		17,607,000			17,607,000
Total Revenue		17,607,000			17,607,000
Expense					
Design & Engineering		2,000,000			2,000,000
Construction		15,607,000			15,607,000
Total Expense		17,607,000			17,607,000

45-120: South Norfolk Improvements

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2008	Planning Area:	South Norfolk
Start Date:	7/1/2008	Project Status:	Proposed
Est. Completion Date:	6/30/2022		

Description:

This project will install new water mains and replace substandard water mains and appurtenances at various locations in South Norfolk.

Justification:

This project will improve the City's water supply and reliability considering recent and anticipated growth in South Norfolk. The project consists of improvements to the City's water distribution system to allow transfer of demand to the Northwest River/ Lake Gaston supply. A master plan will be developed from hydraulic modeling of the City's system using the DHI Mike Urban software. Specific improvements will be designed and constructed in phases and will include upgrades to existing mains and new water main loops and interconnections in the South Norfolk and Washington Boroughs, which are presently supplied by Norfolk water.

Comments:

Sewer renewal along Decatur Street has been completed. Sewer renewal and water service line replacement along Chesapeake Avenue has begun. The water main on Lincoln Street is being renewed through Crestwood Sewer-Phase I. On July 12, 2016, City Council amended the CIP and modified the funding source for \$98,362 in project expenses incurred through June 15, 2016 from revenue bonds to cash.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund	2,231,012				2,231,012
Cash - Utilities	618,988				618,988
Total Revenue	2,850,000				2,850,000
Expense					
Design & Engineering	2,850,000				2,850,000
Total Expense	2,850,000				2,850,000

23-240: Supervisory Control and Data Acquisition (SCADA) Upgrade

Department:	Public Utilities Capital Projects		
Project Type:	System Acquisition or Upgrade	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2020	Planning Area:	Citywide
Start Date:	7/1/2021	Project Status:	Proposed
Est. Completion Date:	6/30/2026		

Description:

This project will provide for an upgraded Supervisory Control and Data Acquisition (SCADA) telemetry system to monitor operational conditions of 275 Pump Stations throughout the City of Chesapeake. The project will allow local maintenance personnel the ability to troubleshoot the software and configure the SCADA network as the City expands.

Justification:

This upgrade is necessary to minimize sewer overflows by alerting Pump Station maintenance personnel of adverse conditions caused by equipment failures, weather conditions and power outages. Having the ability to repair and reconfigure software will allow the City to quickly update for residential growth and rapidly respond to alarm conditions at wastewater pump stations. This project allows the City to maintain compliance with the VDEQ/HRSD Regional Consent Order that requires localities to reduce sanitary sewer overflows.

Comments:

The Engineering and Maintenance Divisions use telemetry data to monitor the efficiency of wastewater equipment throughout the community. Hardware and software components of the current system are outdated, proprietary, and inherently slow due to network sharing with critical City services. Technical support for the current system is through a single vendor and proprietary software access. Support response times are lengthy and network modifications can only be accomplished by the vendor personnel. Inability to repair and configure the SCADA system effectively reduces the ability of maintenance personnel to respond to alarm conditions.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022	1,500,000	1,500,000	0
2023	1,500,000	1,500,000	0
2024	1,500,000	1,500,000	0
2025	1,500,000	1,500,000	0
	6,000,000	6,000,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities		1,500,000	4,500,000		6,000,000
Total Revenue		1,500,000	4,500,000		6,000,000
Expense					
Design & Engineering		500,000			500,000
Construction			2,000,000		2,000,000
Equipment		500,000	2,500,000		3,000,000
Software		500,000			500,000
Total Expense		1,500,000	4,500,000		6,000,000

25-202: Unserved Areas/Cost Participation - Phase II: Willow Lakes Utility

Department:	Public Utilities Capital Projects		
Project Type:	Addition or Expansion	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2020	Planning Area:	Western Branch
Start Date:	7/1/2019	Project Status:	Proposed
Est. Completion Date:	7/30/2021		

Description:

This sub-project will provide for the design and construction needed to provide City water and sewer services to the Willow Lakes area. It will serve the lots that border Lake Shore Drive. This is a sub-project of CIP 25-200 "Unserved Areas/Cost Participation-Phase II". This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

The Willow Lakes area is not currently served by City water and sewer, and has been designated as an unserved area in the Cost Participation Policy since 2001. The residents of this area have completed the Cost Participation petition process, with over 75% of the owners signing a petition and 50% plus one of the connection fees being paid.

Comments:

On June 25, 2019, City Council amended the CIP to establish this as a new sub-project (under CIP 25-200 "Unserved Areas/Cost Participation-Phase II") with \$3.1 million in funding for FY 2020. Funding was provided by transferring \$1.0 million from other completed Unserved Area projects CIP 51-128 (\$781,204) and CIP 51-129 (\$218,796), and by appropriating \$2.1 million from available utilities cash (fund balance).

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund		218,796			218,796
Cash - Utilities		2,881,204			2,881,204
Total Revenue		3,100,000			3,100,000
Expense					
Construction		3,100,000			3,100,000
Total Expense		3,100,000			3,100,000

02-260: Water Main: Sign Pine Road to South Battlefield 16-Inch

Department:	Public Utilities Capital Projects		
Project Type:	Addition or Expansion	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2022	Planning Area:	South Chesapeake
Start Date:	7/1/2025	Project Status:	Proposed
Est. Completion Date:	6/30/2026		

Description:

This project is for the installation of approximately 600 feet of 16-inch equivalent water main to loop developments under the Chesapeake expressway.

Justification:

This project will improve the reliability of the water distribution system.

Comments:

As growth impacts the water distribution system in South Chesapeake, this connecting loop will improve redundancy and resiliency of the system. The connection under the Expressway will complete a second watermain loop from the 36-inch transmission main on Battlefield Boulevard to Edinburgh Parkway. Developments to the east and west of the Expressway will construct the largest portion of the loop.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2026	536,000	536,000	0
	536,000	536,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities			536,000		536,000
Total Revenue			536,000		536,000
Expense					
Design & Engineering			60,000		60,000
Construction			476,000		476,000
Total Expense			536,000		536,000

24-200: Water Renewal: Buchanan St. Area

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2016	Planning Area:	South Norfolk
Start Date:	7/2/2016	Project Status:	Proposed
Est. Completion Date:	7/31/2022		

Description:

This project will replace approximately 7,700 linear feet of existing antiquated and undersized water main on Buchanan Street with a minimum 8-inch water main. This project will also include water renewals on Bainbridge Boulevard (north of Porter Street to the City line), Grady Street, Stewart Street (north of Poindexter Street), Butt Street, D Street, and part of Decatur Street to restore fire protection in this area. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

Water main improvements are needed to improve the water distribution system on Buchanan Street and restore functional service to existing customers. Fire flows in the area are unreliable and below standard. Customers experience poor pressure and discoloration issues. Water mains in this area were installed in the 1930's and 1940's, and are unlined cast iron resulting in severe issues within the pipes. The Fire Marshall's Office has voiced concerns over fire flow for nearby highly-concentrated residential areas. Replacing only the galvanized 2-inch water mains would not restore the fire protection in the area to adequate flows.

Comments:

In FY 2019, the project scope was expanded and additional funding was provided in FY 2019 and FY 2020. The original project scope intended to replace the water main on Buchanan Street only. However, beginning in FY 2019, it was determined the scope needed to be expanded to include additional streets where water mains have progressively deteriorated over the years resulting in reduced fire flows to the area.

Fire flows in the area are below standard and are unreliable. Customers experience poor pressure and discoloration issues. Design was completed for the initial project scope for Buchanan Street only, which revealed renewing this limited area was not sufficient to improve fire flow to the overall area. The expanded scope included water renewals needed along other nearby streets, which will ensure fire flows in the area are improved.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities		3,306,870			3,306,870
Total Revenue		3,306,870			3,306,870
Expense					
Design & Engineering		500,000			500,000
Construction		2,806,870			2,806,870
Total Expense		3,306,870			3,306,870

71-120: Water Renewals: Waterline Upgrades - Phase I

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2008	Planning Area:	Citywide
Start Date:	7/1/2009	Project Status:	Proposed
Est. Completion Date:	7/30/2022		

Description:

This project will provide for replacement of water mains and appurtenances with adequate sizes and proper materials at various locations throughout the City.

Justification:

These improvements are necessary to provide fire protection and increase flows and pressures creating reliable flow patterns in the system to meet peak demands.

Comments:

To maximize efficiency, parts of this project will be completed at the same time as other Public Utilities capital projects. Some of the water line upgrades planned for this project will be completed at the same time as CIP 20-170 "Crestwood Sewer - Phase II", CIP 21-170 "Crestwood Sewer - Phase III", and CIP 75-120 "Partridge/Cloverdale Area Drainage Improvements".

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Fund Balance - Utilities		2,030,558			2,030,558
Total Revenue		2,030,558			2,030,558
Expense					
Construction		2,030,558			2,030,558
Total Expense		2,030,558			2,030,558

14-160: Water Renewals: Waterline Upgrades - Phase II

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2012	Planning Area:	Citywide
Start Date:	7/1/2014	Project Status:	Proposed
Est. Completion Date:	7/30/2028		

Description:

This project will provide for engineering design, construction, and inspection for the renewal of existing water mains throughout the City. These areas could be merged with the Sanitary Sewer Evaluation Survey (SSES) sewer improvements for efficiency and cost savings. When practical, water and sewer improvements will be constructed together. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City’s utility system, and temporary to facilitate construction.

Justification:

Chesapeake has approximately 950 miles of water mains, much of which was installed before 1970 and some dating to the 1920s. Due to age, inferior materials, and soil conditions many older lines have deteriorated, which causes leaks and main breaks. Improvements are necessary to ensure adequate fire protection, improve flows and pressures, and ensure reliability to meet peak demands.

Comments:

Upcoming projects include North Indian River water line renewals for \$3.8 million; Blanche Court and Willowood Court galvanized pipe replacements \$800,000; Elizabeth River Park Industrial Area water line and service main renewals \$2.9 million; Edgewood Avenue water line replacement \$1.5 million; and Walden Street (3100-3200 block) water line replacement \$1.2 million. Future projects to repair over 55,000 linear feet of water lines were identified in the 2012 CE Maguire Study (totaling approx. \$35.4 million). An additional 33,000 linear feet of water main replacements were identified by internal reviews (totaling approx. \$21.3 million).

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022			0
2023	2,000,000	2,000,000	0
2024	2,000,000	2,000,000	0
2025	2,000,000	2,000,000	0
2026	2,000,000	2,000,000	0
	8,000,000	8,000,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund		750,000			750,000
Cash - Utilities		2,500,000	8,000,000	72,250,000	82,750,000
Total Revenue		3,250,000	8,000,000	72,250,000	83,500,000
Expense					
Design & Engineering			1,900,000	11,100,000	13,000,000
Construction	3,250,000		6,000,000	60,750,000	70,000,000
Land Acquisition			100,000	400,000	500,000
Total Expense	3,250,000		8,000,000	72,250,000	83,500,000

32-200: Water Residuals Disposal

Department:	Public Utilities Capital Projects		
Project Type:	Study	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2016	Planning Area:	South Chesapeake
Start Date:	7/1/2018	Project Status:	Proposed
Est. Completion Date:	6/30/2022		

Description:

This project will provide for a long-term solution for the disposal of residuals (byproducts) resulting from water treatment. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

The existing residuals disposal site, adjacent to the Northwest River Water Treatment Plant, has a finite lifespan. It is necessary to identify and plan for a new disposal site to allow continued operation of the treatment plants and comply with regulatory requirements. Residuals are currently disposed of in trenches at the disposal site, but there is a limited amount of space available for future trenches. A long-term solution is required.

Comments:

Residuals include organic matter and minerals removed from raw water during the treatment process. The FY 2019 funding for this project provided for the completion of a study to evaluate alternatives. Additional funding will be needed to implement the study's recommendations.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities		320,000			320,000
Total Revenue		320,000			320,000
Expense					
Design & Engineering		320,000			320,000
Total Expense		320,000			320,000

33-210: Water System Planning and Upgrades

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2017	Planning Area:	Citywide
Start Date:	7/1/2017	Project Status:	Proposed
Est. Completion Date:	6/30/2026		

Description:

This project will provide for master planning and upgrades for the City of Chesapeake's water distribution system, which will include hydraulic studies for determining system upgrades, extension of the existing water mains to unserved areas within and/or beyond the Public Utilities franchise area, and the addition of new water mains to form an interconnected looped water system. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

The existing water distribution system requires ongoing repairs and renewals as well as the addition of new water lines in order to meet the constant demand of water supply. The master water planning will determine the existing conditions of the water distribution system and establish citywide water projects that will result in a more reliable and enhanced water system. There will be a nominal change to annual operating and maintenance costs. The impact on operating costs will be calculated as each project is defined and proposed for approval.

Comments:

The water system contains dead-end water mains in several locations that limit reliability during water main breaks or failures. There are also areas that do not have municipal water service and which are eligible for service under the Cost Participation Program.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2022	250,000	250,000	0
2023	400,000	400,000	0
2025	400,000	400,000	0
	1,050,000	1,050,000	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities	1,150,000	250,000	800,000		2,200,000
Total Revenue	1,150,000	250,000	800,000		2,200,000
Expense					
Construction	500,000	250,000	800,000		1,550,000
Other	650,000				650,000
Total Expense	1,150,000	250,000	800,000		2,200,000

24-120: Water System Renewal - Phase I

Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2008	Planning Area:	Rivercrest
Start Date:	7/1/2009	Project Status:	Proposed
Est. Completion Date:	12/30/2021		

Description:

This project will provide for replacement of small water lines and antiquated appurtenances that have not been identified for replacement, but may require replacement as a result of problems experienced with leaks or other operational issues.

Justification:

This project is needed to provide funding for small capital replacement of water lines which will include replacing the offset at the creek crossing along Deep Creek Boulevard; replacing fire hydrants; upgrading six large meter vaults; replacing 2-inch galvanized water lines on Port Chambers Court, Collins Court and Vallejo Place; and transferring service from 6-inch water main to 12-inch water main on Stewart Street (from Park Avenue to Jefferson Street).

Comments:

This project funded the replacement of the water main along Herrington Lane and curb and gutter work at Battlefield Boulevard and Oak Grove. Additional planned project work includes the replacement of fire hydrants and water lines on Port Chambers Court, Collins Court, and Vallejo Place. See also CIP 21-150 for Phase II.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Fund Balance - Utilities		893,000			893,000
Total Revenue		893,000			893,000
Expense					
Construction		893,000			893,000
Total Expense		893,000			893,000

01-260: Water: Currie Ave At Steel Street Water Main Loop

Department:	Public Utilities Capital Projects		
Project Type:	Renovation or Rehabilitation	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2022	Planning Area:	Deep Creek/Camelot
Start Date:	7/1/2025	Project Status:	Proposed
Est. Completion Date:	12/30/2027		

Description:

This project will connect the 8-inch water line on Currie Avenue to the 20-inch water main on Steel Street using a 20-inch x 12-inch tapping sleeve and valve (TS&V). The new 12-inch water line crossing at Steel Street will tie-in by turning the current 8-inch x 8-inch tee and tie to this tee with a 12-inch valve and a 12-inch x 8-inch reducer. The current 20-inch water main lies within an easement. The entire project consists of approximately 140 linear feet of additional water main.

Justification:

The absence of the water main loop hinders adequate fire protection as well as good circulation of water for the area. A second loop would provide the necessary fire protection to the surrounding industries, businesses, churches and residences. The additional loop will also provide improved water quality.

Comments:

The 8-inch water line on Steel Street between Currie Avenue and Shell Road/Vepco Street has prematurely deteriorated due to soil conditions. Multiple breaks have occurred and the line was turned off and abandoned in-place. This tie-in will allow for a water main loop in order to maintain fire flows and circulation for other water mains in this area. Valves are closed at Military Highway to separate the two water systems and during these times the area is without a loop, which causes numerous dead ends, lower fire flows, and poor circulation.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
2026	301,300	301,300	0
	301,300	301,300	0

Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Cash - Utilities			301,300		301,300
Total Revenue			301,300		301,300
Expense					
Design & Engineering			43,000		43,000
Construction			233,300		233,300
Land Acquisition			25,000		25,000
Total Expense			301,300		301,300

47-120: Western Branch Interconnect to Lake Gaston WTP

Department:	Public Utilities Capital Projects		
Project Type:	Addition or Expansion	Comprehensive Plan Goal Area:	Water and Sewer
Year identified:	2008	Planning Area:	Western Branch
Start Date:	7/1/2008	Project Status:	Proposed
Est. Completion Date:	1/31/2023		

Description:

This project will install water mains along Jolliff Road, which will bridge the gap between the existing mains and crossing I-664. This project will also connect the water mains of the Western Branch plant to the Cavalier Industrial Park and Deep Creek area of the City. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

Justification:

This project will improve system hydraulics and reliability, and will offer the flexibility to use either the Portsmouth or Chesapeake systems to serve Western Branch. This connection will also allow the Western Branch Elevated Water Tank and the Cavalier Elevated Water Tank to be able to support either system if either tank was offline.

Comments:

This project will be completed in phases. Phase I has been completed and installed over 1,800 feet of 16-inch water main along Jolliff Road and underneath Interstate 664 to Jolliff Middle School. Phase II is underway and will replace the 16-inch water main underneath Goose Creek and may also include additional water main improvements in Western Branch.

On November 26, 2019, City Council approved transferring \$1.0 million to the West Road Force Main project, Project #78-250.

Project Forecast:

Year	Total Expense	Total Revenue	Difference
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Project Details 2022:

	Prior Years	2022	2023 - 26	Future Years	Total Amount
Revenue					
Revenue Bonds - Utility Fund		4,068,211			4,068,211
Cash - Utilities		152,289			152,289
Fund Balance - Utilities		3,077,500			3,077,500
Total Revenue		7,298,000			7,298,000
Expense					
Construction		7,298,000			7,298,000
Total Expense		7,298,000			7,298,000