STORMWATER MANAGEMENT

Note: Projects with a $0 total funding are active capital projects funded in prior CIP's that do not require additional resources.

	FY 2020 and Before	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2021 - FY 2030
Stormwater Management												
Cameron Station Pond Retrofit	4,681,885	0	0	0	0	0	0	0	0	0	0	0
City Facilities Stormwater Best Management Practices (BMPs)	1,633,000	0	0	0	0	0	0	0	0	0	0	0
Four Mile Run Channel Maintenance	3,293,000	0	0	936,600	0	0	0	0	1,251,300	4,177,000	0	6,364,900
Green Infrastructure	1,850,000	206,500	210,000	0	1,549,000	0	0	0	0	0	0	1,965,500
Lucky Run Stream Restoration	2,800,000	0	0	0	0	0	0	0	0	0	0	0
MS4-TDML Compliance Water Quality Improvements	1,255,000	3,000,000	3,500,000	3,500,000	7,000,000	7,000,000	7,000,000	9,000,000	5,000,000	3,000,000	3,000,000	51,000,000
NPDES / MS4 Permit	815,000	165,000	170,000	168,400	170,000	171,700	173,500	175,200	177,000	178,700	180,500	1,730,000
Phosphorus Exchange Bank	0	0	0	0	0	0	0	0	0	0	0	0
Storm Sewer Capacity Assessment	4,713,500	498,750	508,300	0	0	7,529,100	0	588,100	10,213,900	0	0	19,338,150
Storm Sewer System Spot Improvements	7,605,221	420,000	430,500	441,400	452,500	464,000	475,800	488,000	500,500	513,400	526,700	4,712,800
Stormwater BMP Maintenance CFMP	135,000	140,000	144,200	148,600	153,000	1,201,500	1,220,100	157,700	160,900	164,100	167,400	3,657,500
Stormwater Utility Implementation	1,673,200	0	0	0	0	0	0	0	0	0	0	0
Strawberry Run Stream Restoration	800,000	0	0	0	0	0	0	0	0	0	0	0
Stream & Channel Maintenance	6,570,454	450,000	459,000	468,200	477,600	487,100	496,900	506,800	517,000	527,300	537,800	4,927,700
Taylor Run Stream Restoration	2,092,850	0	0	0	0	0	0	0	0	0	0	0
Stormwater Management Total	39,918,110	4,880,250	5,422,000	5,663,200	9,802,100	16,853,400	9,366,300	10,915,800	17,820,600	8,560,500	4,412,400	93,696,550
Grand Total	**39,918,110**	**4,880,250**	**5,422,000**	**5,663,200**	**9,802,100**	**16,853,400**	**9,366,300**	**10,915,800**	**17,820,600**	**8,560,500**	**4,412,400**	**93,696,550**

Stormwater Management Utility Ten-Year Plan
Proposed FY 2021 – FY 2030 Capital, Operating and Debt Service

The Stormwater Management Utility plan presented on the following pages represents the approved operating budget, debt service and capital program for FY 2020 and a preliminary estimate for FY 2022 – FY 2030. Staff will reevaluate the program and Stormwater Utility rate every year and present changes to City Council as part of each year's budget development cycle.

Stormwater Rate	FY 2020 Approved	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	
Stormwater Utility Rate per ERU	$140.00	$140.00	$146.30	$159.47	$173.82	$190.33	$208.41	$223.00	$239.73	$267.30	$279.32	
Proposed Rate Increase	**0.0%**	**4.5%**	**9.0%**	**9.0%**	**9.5%**	**9.5%**	**7.0%**	**7.5%**	**11.5%**	**4.5%**	**1.5%**	
New Stormwater Utility Rate	$140.00	$146.30	$159.47	$173.82	$190.33	$208.41	$223.00	$239.73	$267.30	$279.32	$283.51	

Revenues	FY 2020 Approved	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Total FY 21-30
Billing Units	60,279	60,279	60,520	60,762	61,005	61,249	61,494	61,740	61,987	62,235	62,484	
Annual Revenue Generation	8,439,060	8,818,818	9,650,961	10,561,626	11,611,240	12,765,166	13,713,362	14,800,832	16,568,939	17,383,799	17,715,135	**133,589,878**
Other Revenue Sources	21,017	21,017	21,017	21,017	21,017	21,017	21,017	21,017	21,017	21,017	21,017	**210,170**
Revenue Stream Reductions	(239,064)	(246,236)	(253,623)	(261,232)	(269,069)	(277,141)	(285,455)	(294,019)	(302,839)	(311,924)	(321,282)	**(2,822,819)**
New Debt Issuance	3,987,993	2,910,000	3,570,000	3,845,000	8,020,000	15,110,000	7,665,000	9,255,000	16,205,000	6,990,000	2,890,000	**76,460,000**
Use of Fund Balance	0	0	0	0	0	0	0	0	0	0	0	**0**
Total Revenues	**12,209,006**	**11,503,599**	**12,988,355**	**14,166,411**	**19,383,189**	**27,619,042**	**21,113,924**	**23,782,830**	**32,492,117**	**24,082,892**	**20,304,870**	**207,437,229**

Expenditures	FY 2020 Approved	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Total FY 21-30
All Operating	5,108,961	5,075,335	5,271,840	5,487,220	5,719,271	5,964,923	6,195,773	6,443,685	6,758,591	6,990,305	7,181,047	**61,087,990**
All Capital Projects	6,280,697	5,534,740	6,109,000	6,385,200	10,560,100	17,650,400	10,204,300	11,795,800	18,744,600	9,530,500	5,431,400	**101,946,040**
All Debt Service	819,348	893,523	1,313,114	1,667,773	2,501,109	3,938,908	4,646,283	5,477,725	6,946,814	7,525,665	7,671,860	**42,582,774**
Total Expenditures	**12,209,006**	**11,503,599**	**12,693,954**	**13,540,193**	**18,780,480**	**27,554,232**	**21,046,356**	**23,717,209**	**32,450,004**	**24,046,470**	**20,284,307**	**205,616,804**

Operating Costs	FY 2020 Approved	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Total FY 21-30
TES Personnel	3,145,624	3,345,023	3,445,374	3,548,735	3,655,197	3,764,853	3,877,798	3,994,132	4,113,956	4,237,375	4,364,496	**38,346,940**
Main Operating	587,695	453,831	467,446	481,469	495,913	510,791	526,115	541,898	558,155	574,900	592,147	**5,202,664**
BMP's Operation	263,008	262,508	270,383	278,495	286,850	295,455	304,319	313,448	322,852	332,537	342,513	**3,009,360**
Oronoco Outfall Maintenance	100,000	103,000	106,090	109,273	112,551	115,927	119,405	122,987	126,677	130,477	134,392	**1,180,780**
Additional operating impact from capital	194,480	62,525	64,000	66,000	68,000	70,000	72,000	74,000	76,000	78,000	80,000	**710,525**
Indirect Costs	778,154	811,331	887,888	971,670	1,068,234	1,174,395	1,261,629	1,361,677	1,524,342	1,599,310	1,629,792	**12,290,269**
Contingent Cash Funding	40,000	37,117	30,659	31,579	32,526	33,502	34,507	35,542	36,608	37,707	37,707	**347,453**
Subtotal, Operating Costs	*5,108,961*	*5,075,335*	*5,271,840*	*5,487,220*	*5,719,271*	*5,964,923*	*6,195,773*	*6,443,685*	*6,758,591*	*6,990,305*	*7,181,047*	*59,027,967*

Stormwater Management Utility Ten-Year Plan
Proposed FY 2021 – FY 2030 Capital, Operating and Debt Service
(continued)

Capital Projects	FY 2020 Approved	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Total FY 21-30
City Facilities Stormwater Best Management Practices (BMPs)	0	0	0	0	0	0	0	0		0	0	**0**
Four Mile Run Channel Maintenance	600,000	0	0	936,600	0	0	0	0	1,251,300	4,177,000	0	**6,364,900**
Green Infrastructure (1)	0	206,500	210,000	0	1,549,000	0	0	0	0	0	0	**1,965,500**
MS4-TMDL Compliance Water Quality Improvements	1,255,000	3,000,000	3,500,000	3,500,000	7,000,000	7,000,000	7,000,000	9,000,000	5,000,000	3,000,000	3,000,000	**51,000,000**
NPDES / MS4 Permit	160,000	165,000	170,000	168,400	170,000	171,700	173,500	175,200	177,000	178,700	180,500	**1,730,000**
Storm Sewer Capacity Assessment & Improvements	475,000	498,750	508,300	0	0	7,529,100	0	588,100	10,213,900	0	0	**19,338,150**
Storm Sewer System Spot Improvements	300,000	420,000	430,500	441,400	452,500	464,000	475,800	488,000	500,500	513,400	526,700	**4,712,800**
Stormwater Utility Implementation	0	0	0	0	0	0	0	0		0		**0**
Stream and Channel Maintenance	450,000	450,000	459,000	468,200	477,600	487,100	496,900	506,800	517,000	527,300	537,800	**4,927,700**
Stormwater BMP Maintenance CFMP	135,000	140,000	144,200	148,600	153,000	1,201,500	1,220,100	157,700	160,900	164,100	167,400	**3,657,500**
Strawberry Run Stream Restoration	550,000	0	0	0	0	0	0	0	0	0	0	**0**
Taylor Run Stream Restoration	1,695,000	0	0	0	0	0	0	0	0	0	0	**0**
DPI Personnel	609,373	602,200	632,000	664,000	697,000	732,000	769,000	807,000	847,000	889,000	933,000	**7,572,200**
Capitalized Sustainability Coordinator	51,324	52,290	55,000	58,000	61,000	65,000	69,000	73,000	77,000	81,000	86,000	**677,290**
Subtotal, Capital Projects	*6,280,697*	*5,534,740*	*6,109,000*	*6,385,200*	*10,560,100*	*17,650,400*	*10,204,300*	*11,795,800*	*18,744,600*	*9,530,500*	*5,431,400*	*101,946,040*

Debt Service	FY 2020 Approved	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	Total FY 21-30
Total Debt Service Payments	*$819,348*	*$893,523*	*$1,313,114*	*$1,667,773*	*$2,501,109*	*$3,938,908*	*$4,646,283*	*$5,477,725*	*$6,946,814*	*$7,525,665*	*$7,671,860*	*$42,582,774*
Total Expenditures, All Categories	**12,209,006**	**11,503,599**	**12,693,954**	**13,540,193**	**18,780,480**	**27,554,232**	**21,046,356**	**23,717,209**	**32,450,004**	**24,046,470**	**20,284,307**	*205,616,804*

CAMERON STATION POND RETROFIT

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Ben Brenman Park, 4800 Brenman Park Dr, Alexandria, VA 22304
MANAGING DEPARTMENT:	Department of Transportation and Environmental Services	REPORTING AREA:	Landmark/Van Dorn
		PROJECT CATEGORY:	3
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	30+ Years

Cameron Station Pond Retrofit

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	4,681,885	4,681,885	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
Cash Capital	0	0	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	1,750,000	1,750,000	0	0	0	0	0	0	0	0	0	0	0
Private Capital Contributions	1,050,000	1,050,000	0	0	0	0	0	0	0	0	0	0	0
State/Federal Grants	1,750,000	1,750,000	0	0	0	0	0	0	0	0	0	0	0
Stormwater Local Assistance Gra	131,885	131,885	0	0	0	0	0	0	0	0	0	0	0
Financing Plan Total	4,681,885	4,681,885	0	0	0	0	0	0	0	0	0	0	0
Additional Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

PROJECT DESCRIPTION & JUSTIFICATION

Virginia Department of Environmental Quality (DEQ) issued the City's current Municipal Separate Storm Sewer System (MS4) Permit on July 1, 2013 that mandates City-specific stormwater nutrient and sediment reduction targets for the Chesapeake Bay (Bay) Total Maximum Daily Load (TMDL) enforced through three 5-year permit cycles. Accordingly, the current MS4 permit requires the City to implement practices sufficient to achieve 5% of the reduction targets during the first 5-year permit (2013-2018), while successive MS4 permits will require implementation of practices to achieve an additional 35% or 40% of total reduction targets during the second 5-year permit (2018-2023) by 2023, and the remaining 60% or 100% of the total reductions on or before the end of the third 5-year permit (2023-2028) by 2028. The City's 2018 – 2023 MS4 General Permit mandating a total of 40% Bay reductions by June 30, 2023 is scheduled to be in effect on or after July 1, 2018 and remain effective through June 30, 2023.

Retrofits to existing large regional stormwater facilities will provide additional pollutant removal either by enhancing the treatment efficiency and/or increasing the amount of area draining to the facility and are one of the most cost-effective strategies to meet the identified pollution reduction requirements.

The City has been discussing these strategies to comply with the reduction targets and other options available to the City through the Water Quality Steering Committee and Water Quality Workgroup. The City also completed the Chesapeake Bay TMDL Compliance Analysis and Options report that investigated options and alternatives for treating stormwater and provided corresponding costs. The City's Phase 1 Chesapeake Bay TMDL Action Plan for achieving 5% of the reductions was submitted to DEQ on October 1, 2015 and approved by DEQ on January 12, 2016. The City's draft Bay Action Plan for achieving a total 40% of the reductions was submitted in June 2018, with the final due one year after the effective date of the 2018 – 2023 MS4 General Permit (October 31, 2019). The City's approved Bay TMDL Action Plan and the draft Phase 2 Action Plan identify the retrofit of large regional stormwater facilities as a major strategy towards meeting pollution reduction goals. Most of the structure components have been installed for the pond retrofit, including the diversion of an extra 35 acres of stormwater being treated in the pond. The next phase will include the installation of plant materials on the shore and for the aquatic bench. Substantial completion is slated for 2020.

In FY 2015, City staff pursued and received $1.75 million in a grant from the state through the Stormwater Local Assistance Fund (SLAF) by leveraging an equivalent amount of City funding for this project. This reduced the City funded contribution to this project by half of the original budgeted amount. While the Cameron Station Pond Retrofit is a cost effective strategy to meet the City's pollution reduction requirements, this project also offers an opportunity to enhance the recreational elements of this facility, making it more of an amenity to park-goers than it is currently.

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) General Permit, Program Plan, and Year 5 Annual Report; City's Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter; Eco-City Action Plan

ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

CITY FACILITIES STORMWATER BEST MANAGEMENT PRACTICES (BMPs)

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Citywide
MANAGING DEPARTMENT:	Department of Transportation and Environmental Services	REPORTING AREA:	Citywide
		PROJECT CATEGORY:	3
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	21 - 25 Years

City Facilities Stormwater Best Management Practices (BMPs)

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	1,633,000	1,633,000	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
Cash Capital	125,000	125,000	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	1,133,000	1,133,000	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	375,000	375,000	0	0	0	0	0	0	0	0	0	0	0
Financing Plan Total	1,633,000	1,633,000	0	0	0	0	0	0	0	0	0	0	0
Additional Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

PROJECT DESCRIPTION & JUSTIFICATION

The Virginia Department of Environmental Quality (DEQ) issued the City's current Municipal Separate Storm Sewer System (MS4) Permit on November 1, 2018 that mandates City-specific stormwater nutrient and sediment reduction targets for the Chesapeake Bay (Bay) Total Maximum Daily Load (TMDL) enforced through three 5-year MS4 permit cycles. Accordingly, the previous 2013-2018 permit required the City to implement practices sufficient to achieve 5% of the reduction targets during the first 5-year permit (2013-2018), while the current MS4 permit requires implementation of practices to achieve an additional 35% or 40% of the total reduction targets during the second 5-year permit (2018-2023) by 2023, and the remaining 60% or 100% of the reduction on or before the end of the third 5-year permit cycle (2023-2028) no later than 2028. The City's 2018 – 2023 MS4 General Permit mandating the total 40% Bay reductions by June 30, 2023 was effective November 1, 2018 and remains in effect through October 31, 2023. The City's Chesapeake Bay TMDL Action Plan identifies BMP retrofits on City properties as a strategy towards meeting mandated pollutant reduction goals.

One of the City's strategies to meet the identified pollution reduction requirements is retrofitting existing City properties that currently do not provide stormwater treatment with stormwater best management practices (BMPs) or to install additional stormwater BMPs for untreated areas to provide additional pollutant removal. The City has been discussing these and other options available to comply with these targets through the Water Quality Steering Committee and a Water Quality Workgroup. The City has also completed the Chesapeake Bay TMDL Compliance Analysis and Options (Analysis) report that looked into options and alternatives for treating stormwater and corresponding costs. The City's Phase 1 Chesapeake Bay TMDL Action Plan for achieving 5% reductions was approved January 2016. The City's draft Phase 2 Bay Action Plan for achieving a total 40% was submitted June 2019, with the final due October 31, 2020.

(continued on next page)

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) General Permit, Program Plan and Year 5 Annual Report; Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter and Action Plan

ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

City Facilities Stormwater Best Management Practices (continued)

Working closely with the General Services; Recreation, Parks and Cultural Activities; and Project Implementation departments, the following locations, among others, have been identified as potential locations for stormwater retrofits:

- T&ES/Recreation operations at 2900 Business Center Drive,
- City Fuel Island on Wheeler Avenue,
- King Street Gardens;
- ACPS Mount Vernon Elementary School and Recreation Center, and
- City Traffic Control Shop on Colvin Street.

The City is working on a Request for Qualification (RFQU) to further analyze City-owned properties to determine the best approach for retrofitting these properties with stormwater facility best management practices (BMPs). The RFQU scope includes the prioritization of at least 16 potential locations in addition to the above list and the development of conceptual design of those projects, with the option to complete the design. Once completed, these retrofits are expected to treat stormwater from a total of approximately 4-8 acres of impervious surface. These sites have been selected because of the facilities' operational stormwater impacts and their relatively high percentage of impervious acreage.

FOUR MILE RUN CHANNEL MAINTENANCE

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Four Mile Run Stream/Channel
MANAGING DEPARTMENT:	Department of Transportation and Environmental Services	REPORTING AREA:	Potomac West
		PROJECT CATEGORY:	2
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	6 - 10 Years

Four Mile Run Channel Maintenance

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	9,657,900	3,293,000	0	0	936,600	0	0	0	0	1,251,300	4,177,000	0	6,364,900
Financing Plan													
Cash Capital	583,000	583,000	0	0	0	0	0	0	0	0	0	0	0
GO Bonds	1,810,000	1,810,000	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	4,765,200	0	0	0	564,600	0	0	0	0	1,251,300	2,949,300	0	4,765,200
Stormwater Utility Fund	2,499,700	900,000	0	0	372,000	0	0	0	0	0	1,227,700	0	1,599,700
Financing Plan Total	9,657,900	3,293,000	0	0	936,600	0	0	0	0	1,251,300	4,177,000	0	6,364,900
Additional Operating Impact	949,300	0	0	0	99,400	104,400	109,600	115,100	120,800	126,900	133,200	139,900	949,300

CHANGES FROM PRIOR YEAR CIP

Project recosted as part of the development of the Proposed FY 2021 - FY 2030 CIP.

PROJECT DESCRIPTION & JUSTIFICATION

This project reflects the City's share of the costs to maintain the federally funded stormwater flood control channel and system of flood walls and levees. The project was constructed as a federal flood control project built by the U.S Army Corps of Engineers (USACE) in the late 1970's, which by mutual agreement requires the City to provide regular upgrades to its capital infrastructure. The USACE annually inspects Four Mile Run and dictates the extent of the channel maintenance activities that are to be completed. The City has hired a consultant to perform a detailed inspection of the flood control system and to develop recommendations for corrections. Staff is working with USACE to determine exactly what improvements the City needs to do to bring the rating up to the upgraded post-Hurricane Katrina standards that the USACE now considers acceptable. The City is currently developing revised plans for USACE to review that includes maintenance repairs to the flood walls, embankments, and gabions.

To date, nearly $3 million in City funding has been applied to the project. Funding is programmed in the near term to address maintenance items with funding in out-years of the CIP to address future capital infrastructure requirements. As Four Mile Run maintenance is a shared responsibility with Arlington County, it will be necessary for the County and the City to engage in a joint decision-making process concerning some elements of Four Mile Run maintenance activities. Staff is working on the design with Arlington County for a sediment removal project that will initiate in calendar year 2020. Levee/flood wall and appurtenant structure maintenance remains the responsibility of the jurisdiction where each levee/wall is located.

Routine inspection and maintenance of structures, updating the operations and maintenance (O&M) manual, design and removal of accumulated sediment, and continued vegetation removal from the levee, as requested by USACE, uncovered additional maintenance concerns that need to be addressed. This project involves routine inspection and maintenance, including design and removal of significant accumulated sediment and routine vegetation maintenance, is necessary to get this flood control channel back into conditions considered acceptable by the federal government. Achieving federal acceptance provides that our communities – along with Arlington – includes regular inspection and maintenance to the flood control system and ensures that the flood control project will perform as predicted and protects citizens and property from flooding, and provides eligibility for federal assistance in repairing any damage to the channels that storms may cause.

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) General Permit, Program Plan and Year 5 Annual Report; Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter and Action Plan

ADDITIONAL OPERATING IMPACTS

Additional staffing or contractor support will be need for regular inspection and maintenance of assets.

GREEN INFRASTRUCTURE

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Citywide
MANAGING DEPARTMENT:	Department of Transportation and Environmental Services	REPORTING AREA:	Citywide
		PROJECT CATEGORY:	3
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	Varies

Green Infrastructure

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	3,815,500	1,850,000	206,500	210,000	0	1,549,000	0	0	0	0	0	0	1,965,500
Financing Plan													
GO Bonds (Stormwater)	1,284,900	1,195,000	0	0	0	89,900	0	0	0	0	0	0	89,900
Sanitary Sewer Fund	350,000	350,000	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	2,180,600	305,000	206,500	210,000	0	1,459,100	0	0	0	0	0	0	1,875,600
Financing Plan Total	3,815,500	1,850,000	206,500	210,000	0	1,549,000	0	0	0	0	0	0	1,965,500
Additional Operating Impact	26,000	0	0	0	2,000	2,000	2,000	4,000	4,000	4,000	4,000	4,000	26,000

CHANGES FROM PRIOR YEAR CIP

Project recosted as part of the development of the Proposed FY 2021 - FY 2030 CIP.

PROJECT DESCRIPTION & JUSTIFICATION

This project receives funding from the stormwater utility special revenue funds for study, design, and construction of green infrastructure projects. This project is consistent with the objectives of the citywide approach to implement Green Infrastructure for the combined sewer system (CSS) and the separate storm sewer area, to address water pollution reduction goals. Projects completed will implement green infrastructure in the City to help address regulatory requirements in conjunction with the co-benefits provided by the implementation of these practices.

Completion of these projects will provide the following benefits: increase stormwater infiltration, reduce stormwater runoff, provide stormwater treatment (nutrients and sediment), and decrease the volume of discharges; along with providing co-benefits including creating habitat, reducing heat island effect, and enhancing air quality.

Prior year funding will be used for the design and construction of green infrastructure demonstration project(s) in the combined sewer area, with additional projects to be identified through work related to the City's Chesapeake Bay TMDL Action Plan as part of the City-wide approach to the implementation of Green Infrastructure. A Green Infrastructure Program Policy Study commenced in FY 2019 that laid out a citywide approach to implementation. Funding for projects identified through these efforts will be used for future years and supplemented, as needed, through the MS4-TMDL Compliance project. Construction of the current green infrastructure demonstration project is scheduled for completion in FY 2021/FY2022. Consistent with the City's planning documents that include green infrastructure as a strategy, funding has been added to the FY2021 – FY 2030 budget to continue with the implementation of green infrastructure.

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

T&ES Strategic Plan 2012-2015; City of Alexandria Municipal Separate Storm Sewer System (MS4) General Permit, Program Plan, and PY5 Annual Report; Eco-City Charter City's Combined Sewer System Permit; City's Chesapeake Bay TMDL Action Plan; Old Town North Small Area Plan; Eisenhower West Small Area Plan; Landmark Van Dorn Small Area Plan

ADDITIONAL OPERATING IMPACTS

Annual inspection, minor routine maintenance, and major maintenance will be required to ensure continued proper functioning of the asset.

LUCKY RUN STREAM RESTORATION

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	2601 Gadsby Place
MANAGING DEPARTMENT:	Department of Transportation and Environmental Services	REPORTING AREA:	Beauregard
		PROJECT CATEGORY:	3
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	21-25

Lucky Run Stream Restoration

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	2,800,000	2,800,000	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
Cash Capital	0	0	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	1,935,000	1,935,000	0	0	0	0	0	0	0	0	0	0	0
State/Federal Grants	668,720	668,720	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	196,280	196,280	0	0	0	0	0	0	0	0	0	0	0
Financing Plan Total	2,800,000	2,800,000	0	0	0	0	0	0	0	0	0	0	0
Additional Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

PROJECT DESCRIPTION & JUSTIFICATION

Urban Stream Restoration is one of the major strategies in the City's Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan to reduce pollution and address the Bay TMDL mandates enforced through the City's Municipal Separate Storm Sewer System (MS4) permit. The project also allows restoration of ecological habitats, removal of invasive plants, replanting with native plants, and wetland enhancements as co-benefits. Additionally, the project will address an exposed portion of the sanitary sewer located along the existing stream bank by burying the sanitary sewer and relocating that portion of the stream away from the sewer. This project is highlighted in the Phase 2 Chesapeake Bay TMDL Action Plan as a specific strategy to meet the City's compliance goals.

To comply with the plan targets, the City has completed a preliminary stream assessment to obtain information on conditions to guide in protecting and restoring local streams. During these assessments, Lucky Run was identified as being in poor condition that make it a prime candidate for a stream restoration project. The Chesapeake Bay TMDL Compliance Analysis and Options report (2012) reviewed options and alternatives for treating stormwater and provided corresponding costs. While the Lucky Run Stream Restoration project is a cost-effective strategy to meet the City's pollution reduction requirements, this project also offers an opportunity to enhance the ecological integrity of the stream, the Resource Protection Area (RPA), and address the exposed sanitary sewer. Also, the City will perform rehabilitative maintenance of the Lucky Run Pond under the agreement stating that the City is required to perform maintenance for this regional facility to ensure proper functioning and the ability to continue claiming pollutant removal credits for the Pond as noted in the Phase 1 Bay TMDL Action Plan.

The City has also been awarded a $668,720 grant from the state through the Stormwater Local Assistance Fund (SLAF) by leveraging an equivalent amount of funding from the Stream and Channel Maintenance project to fully fund this project. This reduced the City contribution by half of the original estimated amount for the stream restoration portion of the project. Design is completed and construction procurement will occur in FY2021, with an anticipated completion Fall 2020 / Winter 2021.

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) General Permit, Program Plan, and Year 5 Annual Report; City's Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter; Eco-City Action Plan; Green Infrastructure Program

ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

MS4-TMDL COMPLIANCE WATER QUALITY IMPRV.

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Citywide
MANAGING DEPARTMENT:	Department of Transportation and Environmental Services	REPORTING AREA:	Citywide
		PROJECT CATEGORY:	3
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	30+ Years

MS4-TDML Compliance Water Quality Improvements

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	52,255,000	1,255,000	3,000,000	3,500,000	3,500,000	7,000,000	7,000,000	7,000,000	9,000,000	5,000,000	3,000,000	3,000,000	51,000,000
Financing Plan													
GO Bonds (Stormwater)	45,703,500	1,155,000	2,040,000	2,611,000	2,370,800	7,000,000	7,000,000	6,692,300	8,260,200	3,748,700	3,000,000	1,825,500	44,548,500
Stormwater Utility Fund	6,551,500	100,000	960,000	889,000	1,129,200	0	0	307,700	739,800	1,251,300	0	1,174,500	6,451,500
Financing Plan Total	52,255,000	1,255,000	3,000,000	3,500,000	3,500,000	7,000,000	7,000,000	7,000,000	9,000,000	5,000,000	3,000,000	3,000,000	51,000,000
Additional Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

CHANGES FROM PRIOR YEAR CIP

Funding added to project for FY 2030.

PROJECT DESCRIPTION & JUSTIFICATION

The Virginia Department of Environmental Quality (DEQ) issued the City's current Municipal Separate Storm Sewer System (MS4) Permit on July 1, 2013 that mandates City-specific stormwater nutrient and sediment reduction targets for the Chesapeake Bay Total Maximum Daily Load (TMDL) enforced through three 5-year MS4 permit cycles. Accordingly, the permit requires the City to implement stormwater treatment best management practices (BMPs) sufficient to achieve 5% of the reduction targets during the first 5-year permit (2013-2018), while successive MS4 permits will require implementation of practices to achieve an additional 35% or 40% of total reduction targets during the second 5-year permit (2018-2023) by 2023, and the remaining 60% or 100% of the reductions on or before the end of the third permit cycle (2023-2028), no later than by 2028.

The City continues planning efforts and identifying options to comply with these targets and discusses these through the City's Water Quality Workgroup, and through meetings with other internal and external stakeholders. Additionally, the City completed the Chesapeake Bay TMDL Compliance Analysis and Options report (August 2014) that considered options and alternatives for treating stormwater to meet the Bay TMDL regulatory mandates, along with the corresponding costs to implement these alternatives. These formed the basis of the strategies included in the City's Phase 1 Chesapeake Bay TMDL Action Plan and form the basis of the strategies in the draft Phase 2 Chesapeake Bay Action Plan that was submitted June 1, 2018, with the final Action Plan due no later than October 31, 2019, one year from the effective date of the 2018 – 2023 MS4 General Permit. This budget is based on funding that can be used to implement a diverse mix of strategies to achieve the required reductions in the next ten years. In addition to retrofit of regional facilities, implementation of Green Infrastructure as stormwater quality retrofits of City facilities and right-of-way retrofits, along with urban stream restoration, are the top strategies that will be implemented to meet the required reductions. Funding is used as specific projects are identified and developed to achieve these reductions.

The budgetary estimates were developed with engineers from the firms conducting the Chesapeake Bay TMDL Compliance Analysis and Options study. Please note that these MS4-TMDL Compliance Water Quality Improvement projects such as retrofit of regional ponds, along with the inclusion of City Facilities BMP projects, Green Infrastructure projects, and stream restorations projects will likely satisfy the second permit cycle (2018 - 2023 permit) and exceed the Strategic Plan goal of 45% reductions by 2022; towards more aggressive reductions to meet 100% reductions as mandated. For FY 2021 and beyond, estimates are based on staff planning and will be revised as the 2023 – 2028 MS4 permit requirements and other regulatory expectations become clearer through the implementation of the state's Phase III Watershed Implementation Plan (WIP III), and uncertainty decreases.

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) Permit, Program Plan, and Year 5 Annual Report; City's Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter; Eco-City Action Plan

ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

NPDES / MS4 PERMIT

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Citywide
MANAGING DEPARTMENT:	Department of Transportation and Environmental Services	REPORTING AREA:	Citywide
		PROJECT CATEGORY:	3
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	Varies

NPDES / MS4 Permit

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	2,545,000	815,000	165,000	170,000	168,400	170,000	171,700	173,500	175,200	177,000	178,700	180,500	1,730,000
Financing Plan													
Cash Capital	250,000	250,000	0	0	0	0	0	0	0	0	0	0	0
Prior Capital Funding	0	0	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	2,295,000	565,000	165,000	170,000	168,400	170,000	171,700	173,500	175,200	177,000	178,700	180,500	1,730,000
Financing Plan Total	2,545,000	815,000	165,000	170,000	168,400	170,000	171,700	173,500	175,200	177,000	178,700	180,500	1,730,000
Additional Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

CHANGES FROM PRIOR YEAR CIP

Funding plan updated to reflect application of cost escalation to out years of project.

PROJECT DESCRIPTION & JUSTIFICATION

This project provides funding for the data collection, inspection and enforcement, public education and outreach, public involvement and citizen participation, GIS mapping, development of water qualtiy action plans, BMP database management, and reporting activities associated with implementation of the programs required by the National Pollution Discharge Elimination System (NPDES) permit regulations administered by the Virginia Department of Environmental Quality (DEQ) through the Virginia Stormwater Management Program (VSMP) General Virginia Pollutant Discharge Elimination System (VPDES) Permit for Discharges of Storm Water from Small Municipal Separate Storm Sewer Systems (MS4) per 9VAC25-890 et. seq.

The MS4 general permit has a duration of 5-year cycles that requires the City to develop, implement and enforce an MS4 Program Plan to reduce discharges of pollutants from the MS4, protect water quality, and satisfy the appropriate requirements of the Clean Water Act.

The City was originally issued General Permit VAR040057 on July 8, 2003, and the most recent permit was issued on November 1, 2018 and is effective through October 31, 2023. Each successive permit contains increased regulatory requirements which necessitate more resources. The current 2018 – 2023 MS4 general permit is no exception, with requirements for public education and outreach, staff training, revisions to Total Maximum Daily Load (TMDL) plans, implementation of Stormwater Pollution Prevention Plans (SWPPPs), enhanced inspections, and additional reporting. The permits continue to contain increasingly stringent mandates to address the Chesapeake Bay TMDL.

The City developed and submitted on April 1, 2018 the required MS4 permit registration statement as an application for coverage under the 2018 – 2023 MS4 general permit, which included a Phase 2 Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan that contains strategies to achieve an additional 35% of reductions in nutrients and sediment by 2023. The general permit also requires the City to update the MS4 Program Plan and perform new programmactic compliance, with MS4 annual reports covering compliance activities and other permit reporting requirements carried out for each fiscal year that are due by October 1st. Planned capital projects to meet the Bay TMDL reductions are budgeted as separate, specific projects under the “Stormwater Management” section of the CIP.

Finally, new broad requirements under the Virginia Watershed Implementation Plan Phase III (WIP III) are likely to be translated into additional compliance activities.

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) Permit; MS4 Program Plan; MS4 Annual Report; City's Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter; Eco-City Action Plan

ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

PHOSPHORUS EXCHANGE BANK

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Citywide
MANAGING DEPARTMENT:	Department of Transportation and Environmental Services	REPORTING AREA:	Citywide
		PROJECT CATEGORY:	3
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	30+ Years

Phosphorus Exchange Bank

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	0	0	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
Private Capital Contributions	0	0	0	0	0	0	0	0	0	0	0	0	0
Financing Plan Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Additional Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

PROJECT DESCRIPTION & JUSTIFICATION

Virginia Stormwater Management Program (VSMP) regulations, as incorporated into Article XIII of the City's Environmental Management Ordinance (EMO), require properties that undergo development or redevelopment to reduce the amount of phosphorous in stormwater runoff that leaves the site in the post-construction condition. The amount of phosphorus that must be reduced is based upon several factors such as disturbed area, increases in impervious area, land cover types, etc. Owners of development sites may use applicable "offsite compliance options" to meet these requirements pursuant to 62.1-44.15:35 of the Code of Virginia and the attendant VSMP regulations per 9VAC25-870-69 A. The City can 'exchange' phosphorus reductions between projects occurring on city-owned properties under the current VSMP regulations.

Small-scale City-funded construction projects and City projects with unfavorable site conditions face difficulties in meeting stormwater management requirements on-site through the installation of stormwater quality structural best management practices (BMPs) due to lack of space and/or cost of construction that make installation infeasible. As such, these projects regularly use offsite compliance options to meet their regulatory phosphorous reduction requirements. Most often, this requirement is met by purchasing nutrient credits from the state's Nutrient Credit Exchange for practices implemented outside the City within the Potomac River basin. In effect, these purchases send funds outside of the City and provide no benefit to local water quality.

The Transportation and Environmental Services, Stormwater Management Division (T&ES-SWM) created this policy alternative for City projects that allows offsite compliance options that provide benefits to local water quality and keep funds within the City. The policy was developed with input across city agencies, revised given that input, shared and approved by the Virginia Department of Environmental Quality, and executed via signature by the director of Transportation and Environmental Services. This project was initially seeded with $100,000 to supplement the installation of BMPs that go beyond stormwater quality requirements that may be used on other projects. The project seeding also includes five (5) pounds of phosphorus that may be purchased by other City departments for small capital projects where installation of BMPs are not feasible.

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) Permit, Program Plan and Year 5 Annual Report; City's Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter; Eco-City Action Plan

ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

STORM SEWER CAPACITY ASSESSMENT

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Citywide
MANAGING DEPARTMENT:	Department of Transportation and Environmental Services	REPORTING AREA:	Citywide
		PROJECT CATEGORY:	1
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	11 - 15 Years

Storm Sewer Capacity Assessment

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	24,051,650	4,713,500	498,750	508,300	0	0	7,529,100	0	588,100	10,213,900	0	0	19,338,150
Financing Plan													
Cash Capital	949,492	949,492	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	17,415,900	0	0	69,500	0	0	7,158,900	0	0	10,187,500	0	0	17,415,900
Private Capital Contributions	0	0	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	5,686,259	3,764,009	498,750	438,800	0	0	370,200	0	588,100	26,400	0	0	1,922,250
Financing Plan Total	24,051,650	4,713,500	498,750	508,300	0	0	7,529,100	0	588,100	10,213,900	0	0	19,338,150
Additional Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

CHANGES FROM PRIOR YEAR CIP

Project recosted as part of the development of the Proposed FY 2021 - FY 2030 CIP.

PROJECT DESCRIPTION & JUSTIFICATION

This project provides for a multi-year citywide storm sewer analysis and flow modeling to determine the stormwater system's capacity and to develop recommendations for improvements to the existing storm sewer system. This project provides the resources for a thorough understanding of the City's storm sewer system and will assist in anticipating problems in performance and capacity, allowing for the implementation of proactive solutions in protecting citizens and property from stormwater flooding from capacity issues. The increasing frequency of intense storm events will require increasing funding of capacity projects to provide for climate resiliency and adaption measures consistent with the City's Climate Emergency Declaration.

The project includes flow modeling, field verification of invert elevations and manhole locations, and condition assessments of pipes 24 inches in diameter or greater. This study is budgeted as a response to several large magnitude storms in 2003 and 2006 that caused flooding in low-lying areas of the City.

The analysis and assessment will look at reducing flooding in problem areas by employing a variety of technologies including "Green Infrastructure" such as: rain gardens, infiltration swales, planter boxes, tree canopy and infiltration wells, pervious pavement, gutters, and sidewalks, street/alley retrofits into "green streets," rain barrels and cisterns, green roofs, etc. Recommendations also included improvements to the City storm sewer system. These future projects will be funded through the Storm Sewer System Spot Improvements or Green Infrastructure projects as funding becomes available.

The project collected field data, updated the City's GIS storm sewer layers, built computer models, and performed condition assessments on storm sewer manholes and pipes for Hooff's Run, Holmes Run, Taylor Run, Backlick Run, Cameron Run, Strawberry Run and Four Mile Run watersheds. In addition, identification of problem areas and prioritizing on the basis of the findings has been completed. Final deliverables were received February 2016. Funding planned in FY 2021 will provide for updated analysis, additional data collection, flow modeling, and updated mapping associated with those priority areas that were identified in the initial study and analysis. Areas identified in the initial study prioritization will receive more rigorous analyses and updated prioritization, to include comparison against receipt of notifications through the City's Alex311 system, staff observations, and other means of reporting, to target capacity issues that have manifested reportable issues. The prioritization will include cost estimates for these potential capital flooding projects in the near term and includes funding in mid-term and long-term to implement at least one each of the large capacity projects. Previous cost estimates were roughly $3-5M (construction only) for implementation of just one of the prioritized projects from the previous study. The additional detailed analysis will be used to prioritize the projects and provide more accurate and detailed cost estimates for full feasibility, design, escalation of costs, and contingencies to implement the prioritized projects. Current cost estimates in this project have been developed that include these items; however, these funding levels will be refined following the upcoming analysis.

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

Eco-City Charter; Strategic Plan, MS4 General Permit

ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

STORM SEWER SYSTEM SPOT IMPROVEMENTS

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Citywide
MANAGING DEPARTMENT:	Department of Transportation and Environmental Services	REPORTING AREA:	Citywide
		PROJECT CATEGORY:	1
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	Varies

Storm Sewer System Spot Improvements

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	12,318,021	7,605,221	420,000	430,500	441,400	452,500	464,000	475,800	488,000	500,500	513,400	526,700	4,712,800
Financing Plan													
Cash Capital	2,876,648	2,876,648	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	9,126,446	4,413,646	420,000	430,500	441,400	452,500	464,000	475,800	488,000	500,500	513,400	526,700	4,712,800
Prior Capital Funding	0	0	0	0	0	0	0	0	0	0	0	0	0
Private Capital Contributions	9,927	9,927	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	305,000	305,000	0	0	0	0	0	0	0	0	0	0	0
Financing Plan Total	12,318,021	7,605,221	420,000	430,500	441,400	452,500	464,000	475,800	488,000	500,500	513,400	526,700	4,712,800
Additional Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

CHANGES FROM PRIOR YEAR CIP

Funding plan updated to reflect application of cost escalation to out years of project.

PROJECT DESCRIPTION & JUSTIFICATION

This project provides funding for essential capital infrastructure improvements on the City's storm sewer system. These projects are identified as reconstruction projects due to deterioration or the need for additional capacity upgrades to reduce localized flooding. Completion of these projects will improve the City's storm sewer capital infrastructure while mitigating the impacts of flooding. Regular capital infrastructure improvements can reduce the number of pipe collapses while reducing emergency repair costs caused by deferred maintenance. FY 2021 planning efforts include a wider identification and formal prioritization of projects for consideration of funding under this capital program. This more formal effort includes maintaining and updating the ranking and prioritization for those identified projects, with implementation pending identification of mitigation measures, development of cost estimates, and funding. The increasing frequency of intense storm events will require increasing funding for mitigation of local flooding for spot improvement projects to provide for climate resiliency and adaptation measures consistent with the City's Climate Emergency Declaration.

The City identifies flooding and drainage projects through resident complaints, analyses, and field observations. The City completed the following Spot projects in FY 2020: N. Ashton Emergency Repair, W. Alexandria Alley Drainage, Angel Park Repair, Founders Park Improvements, and Saylor Place Improvements. The City is creating a proactive, methodical approach to prioritizing these types of projects, and will update the below list of projects as others are identified and options considered.

Current and future projects include, but are not limited to:

- DASH Bus Facility Flood Mitigation
- Key Drive Unnamed Tributary channel wall
- Lloyd's Lane
- Loyola Street
- Oakland Terrace, Timber Branch channel wall
- N. Columbus Street Alley

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

Storm Sewer Capacity Analysis final report (February 2016); Northern Virginia Hazard Mitigation Plan

ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

STORMWATER BMP MAINTENANCE CFMP

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Citywide
MANAGING DEPARTMENT:	Transportation and Environmental Services	REPORTING AREA:	Citywide
		PROJECT CATEGORY:	1
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	30+ Years

Stormwater BMP Maintenance CFMP

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	3,792,500	135,000	140,000	144,200	148,600	153,000	1,201,500	1,220,100	157,700	160,900	164,100	167,400	3,657,500
Financing Plan													
Stormwater Utility Fund	3,792,500	135,000	140,000	144,200	148,600	153,000	1,201,500	1,220,100	157,700	160,900	164,100	167,400	3,657,500
Financing Plan Total	3,792,500	135,000	140,000	144,200	148,600	153,000	1,201,500	1,220,100	157,700	160,900	164,100	167,400	3,657,500
Additional Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

CHANGES FROM PRIOR YEAR CIP

Funding plan updated to reflect application of cost escalation to out years of project.

PROJECT DESCRIPTION & JUSTIFICATION

The Virginia Department of Environmental Quality (DEQ) issued the City's current Municipal Separate Storm Sewer System (MS4) Permit on November 1, 2018 that mandates City-specific stormwater nutrient and sediment reduction targets for the Chesapeake Bay Total Maximum Daily Load (TMDL) enforced through three 5-year MS4 permit cycles. Accordingly, the previous 2013-2018 permit required the City to implement stormwater treatment best management practices (BMPs) sufficient to achieve 5% of the reduction targets during first 5-year permit (2013-2018), while the current MS4 permit requires implementation of practices to achieve an additional 35% or 40% of total reduction targets during the second 5-year permit (2018-2023) by 2023, and the remaining 60% or 100% of the reductions on or before the end of the third permit cycle (2023-2028), no later than 2028. Identification of strategies to meet these reductions, which includes the retrofit of large regional ponds, urban stream restoration, and installation of green infrastructure, are included in the City's Chesapeake Bay Total Maximum Daily Load (TMDL) Action Plan.

Long-term maintenance of this new infrastructure must be performed to ensure proper functioning and reduce pollution in stormwater runoff to meet the state and federal mandates. This project funds maintenance of Stormwater Best Management Practices (BMPs) implemented throughout the City, with a focus on the maintenance of larger stormwater management capital projects implemented under the Bay TMDL Action Plan:

- Cameron Station Pond Retrofit
- City Facilities Stormwater BMPs
- Green Infrastructure
- Lake Cook Stormwater Management
- Lucky Run Stream Restoration
- MS4-TMDL Water Quality Compliance projects
- Strawberry Run Stream Restoration
- Taylor Run Stream Restoration

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

Bay TMDL Action Plan, MS4 General Permit, Strategic Plan, Environmental Action Plan, Water Quality Management Supplement

ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

STORMWATER UTILITY IMPLEMENTATION

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Citywide
MANAGING DEPARTMENT:	Department of Transportation and Environmental Services	REPORTING AREA:	Citywide
		PROJECT CATEGORY:	3
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	N/A

Stormwater Utility Implementation

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	1,673,200	1,673,200	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
Cash Capital	1,518,200	1,518,200	0	0	0	0	0	0	0	0	0	0	0
Prior Capital Funding	0	0	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	155,000	155,000	0	0	0	0	0	0	0	0	0	0	0
Financing Plan Total	1,673,200	1,673,200	0	0	0	0	0	0	0	0	0	0	0
Additional Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

PROJECT DESCRIPTION & JUSTIFICATION

The City Council directed staff in February 2016 to develop the framework of a Stormwater Utility (SWU) to provide a dedicated funding source to more equitably distribute the increasing costs of recent state and federal Chesapeake Bay water pollution reduction mandates that require the implementation of costly infrastructure associated with stormwater management, as enforced through the City's Municipal Separate Storm Sewer System (MS4) general permit. Increasing operating and capital costs associated with the mandates exceeded the ½ cent dedication, demanding increasing contributions from the General Fund. Creation of the SWU more equitably apportions the cost obligation and provides a dedicated funding source for the City's Stormwater Management Program by shifting the burden to those properties that contribute more to stormwater runoff, thus alleviating pressure on the General Fund to support these funding responsibilities.

Following extensive public outreach, the City Council adopted the Stormwater Utility framework at its May 4, 2017 special meeting as part of the FY 2018 Budget. The City began implementing the Stormwater Utility Fee, effective January 1, 2018, with first billing sent May 2018 and second billing in October 2018, with the Real Estate bill, and every May and October thereafter with each Real Estate bill, to fund these mandated stormwater improvements and the stormwater management program in an adequate, sustainable and equitable manner.

The Stormwater Utility Phase 1 Credit Manual for Non-Residential Properties was adopted in October 2017. The Comprehensive Credit Manual, combining Phase 1 and Phase 2 for Residential Properties, was developed and adopted in FY 2019. The toolbox of GIS models used to generate billing data was expanded in FY 2020 to streamline the billing process. In FY 2021 database management, additional systems development (database modeling, integration and user interfaces), ongoing GIS data management, and other identified needs will continue to successfully implement the utility. Extensive and robust public engagement is also key to implementation of the utility.

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

City of Alexandria Municipal Separate Storm Sewer System (MS4) Permit; MS4 Program Plan; MS4 Year 5 Annual Report; City's Chesapeake Bay TMDL Action Plan; T&ES Strategic Plan; Eco-City Charter; Eco-City Action Plan

ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

STRAWBERRY RUN STREAM RESTORATION

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Ft. Williams Parkway
MANAGING DEPARTMENT:	Transportation and Environmental Services	REPORTING AREA:	Seminary Hill
		PROJECT CATEGORY:	3
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	21-25 years

Strawberry Run Stream Restoration

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	800,000	800,000	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
Cash Capital	50,000	50,000	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	625,000	625,000	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	125,000	125,000	0	0	0	0	0	0	0	0	0	0	0
Financing Plan Total	800,000	800,000	0	0	0	0	0	0	0	0	0	0	0
Additional Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

PROJECT DESCRIPTION & JUSTIFICATION

The Virginia Department of Environmental Quality (DEQ) issued the City's current Municipal Separate Storm Sewer System (MS4) Permit on July 1, 2013 that mandates City-specific stormwater nutrient and sediment reduction targets for the Chesapeake Bay Total Maximum Daily Load (TMDL) enforced through three 5-year MS4 permit cycles. Accordingly, the permit requires the City to implement stormwater treatment best management practices (BMPs) sufficient to achieve 5% of the reduction targets during the first 5-year permit (2013-2018), while successive MS4 permits will require implementation of practices to achieve an additional 35% or 40% of total reduction targets during the second 5-year permit (2018-2023) by 2023, and the remaining 60% or 100% of the reductions on or before the end of the third permit cycle (2023-2028), no later than by 2028.

As part of the effort to meet the goals of the Chesapeake Bay TMDL and to further reduce pollutant discharges into the MS4, the City has proposed the Strawberry Run Stream Restoration project to City Council. The project team consists of staff from T&ES, RPCA, DPI and a consultant working together on the design phase that is currently underway with projected completion of design by Spring/Summer 2020. Construction is anticipated to be completed by Winter 2021.

The project involves stream restoration for approximately 900 linear feet of stream north of Duke Street and continuing north to the culvert under Fort Williams Parkway. It is bounded by residential development along Taft Avenue, residential development along Featherstone Place, and Fort Williams Parkway. When the Taft Avenue development was constructed, stream restoration was completed for a 500-foot section of Strawberry Run just to the north of Duke Street. This project will restore the reach above this previously restored section and extend to the culvert under Fort Williams Parkway.

A stream restoration project to stabilize the stream banks and provide overall improvement to the stream's function is a stormwater treatment strategy that protects local water quality and mitigates the transport of pollutants to the Chesapeake Bay. The project will mitigate channel and bank erosion, preventing sediment and phosphorous associated with that erosion from being delivered downstream from an actively incising urban stream.

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

MS4 General Permit, Chesapeake Bay TMDL Action Plan, Strategic Plan, Environmental Action Plan, Water Quality Management Supplement

ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

STREAM & CHANNEL MAINTENANCE

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Citywide
MANAGING DEPARTMENT:	Department of Transportation and Environmental Services	REPORTING AREA:	Citywide
		PROJECT CATEGORY:	1
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	Varies

Stream & Channel Maintenance

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	11,498,154	6,570,454	450,000	459,000	468,200	477,600	487,100	496,900	506,800	517,000	527,300	537,800	4,927,700
Financing Plan													
Cash Capital	3,802,125	3,802,125	0	0	0	0	0	0	0	0	0	0	0
GO Bonds	1,487,602	1,487,602	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	4,927,700	0	450,000	459,000	468,200	477,600	487,100	496,900	506,800	517,000	527,300	537,800	4,927,700
Private Capital Contributions	230,000	230,000	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	1,050,727	1,050,727	0	0	0	0	0	0	0	0	0	0	0
Financing Plan Total	11,498,154	6,570,454	450,000	459,000	468,200	477,600	487,100	496,900	506,800	517,000	527,300	537,800	4,927,700
Additional Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

CHANGES FROM PRIOR YEAR CIP

Funding plan updated to reflect application of cost escalation to out years of project.

PROJECT DESCRIPTION & JUSTIFICATION

This project provides funding for annual capital infrastructure improvements to various streams and channels throughout the City to preserve their capacity to carry a 100-year floodwater and for repairs to erosion damage, stream corridor degradation, grade control structures, storm sewer discharge points, conducting sediment removal, vegetation maintenance, and stream stabilization/restoration in Holmes Run and Cameron Run watersheds, to include smaller tributaries to these streams. The increasing frequency of intense storm events will require increasing funding for sediment and vegetation removal to ensure the conveyance capacity of these waterways as climate resiliency and adaption measures consistent with the City's Climate Emergency Declaration.

The Phase III Stream Restoration and Outfall Rehabilitation Feasibility Study was finalized in FY 2019. The Study considered five stream segments for potential restoration projects and five outfalls for potential rehabilitation. The purpose of the Study was to help the City to develop overall strategies to deal with degraded streams and assist in prioritizing the projects. The Study prioritized two potential stream restoration projects, with the top two potential projects identified along Strawberry Run and Taylor Run. Partial funding for those projects included funding from this project and from the MS4 TMDL Water Quality Improvement CIP project.

Project funds will be utilized to mitigate damages caused by heavy storm events, provide water quality benefits, and mitigate flooding. Project costs may be funded directly or may form the basis of funding for new needs broken out into separate projects, such as Lucky Run Stream Restoration. A request for new projects for Strawberry Run Stream Restoration and Taylor Run Stream Restoration was been included and approved in the FY 2020-FY 2029 CIP with a portion of prior year funding leveraged from this project to create the two new projects in the CIP. Outfall projects include Dora Kelly Nature Center and Foxchase, which are still being considered and will likely be funded directly from this project. Sediment removal and vegetation maintenance was conducted on Cameron Run in FY 2018. Vegetation maintenance for Holmes Run is scheduled to occur in FY 2021.

The urban nature of the City and the areas of Fairfax County whose stormwater drains into the City puts stress on the vitality of natural streams throughout the City. This has caused erosion, loss of natural habitat, impacted riparian areas, infrastructure damage, and flooding issues in these streams. Designing and implementing restoration for these streams will provide the additional capacity needed to handle the added stormwater runoff from urbanization, allowing for the return of natural habitat and enhancing the health of these important resources in our City. Restoration of these resources can also provide the added benefit of creating nutrient and sediment pollution reductions and help the City address Chesapeake Bay Total Maximum Daily Load (TMDL) mandates.

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

Eco-City Charter; Water Quality Management Supplement to City Master Plan; MS4 General Permit and Program Plan; Chesapeake Bay TMDL Action Plan; Strategic Plan

ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.

TAYLOR RUN STREAM RESTORATION

DOCUMENT SUBSECTION:	Stormwater Management	PROJECT LOCATION:	Chinquapin and Forest Parks
MANAGING DEPARTMENT:	Transportation and Environmental Services	REPORTING AREA:	Taylor Run
		PROJECT CATEGORY:	3
PRIMARY STRATEGIC THEME:	Theme 8: Environmental Sustainability	ESTIMATE USEFUL LIFE:	21-25 Years

Taylor Run Stream Restoration

	A (B + M) Total Budget & Financing	B Through 2020	C FY 2021	D FY 2022	E FY 2023	F FY 2024	G FY 2025	H FY 2026	I FY 2027	J FY 2028	K FY 2029	L FY 2030	M (C:L) Total FY 2021 - FY 2030
Expenditure Budget	2,092,850	2,092,850	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
Cash Capital	100,000	100,000	0	0	0	0	0	0	0	0	0	0	0
GO Bonds (Stormwater)	1,867,850	1,867,850	0	0	0	0	0	0	0	0	0	0	0
Stormwater Utility Fund	125,000	125,000	0	0	0	0	0	0	0	0	0	0	0
Financing Plan Total	2,092,850	2,092,850	0	0	0	0	0	0	0	0	0	0	0
Additional Operating Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

CHANGES FROM PRIOR YEAR CIP

No changes from previous CIP.

PROJECT DESCRIPTION & JUSTIFICATION

The Virginia Department of Environmental Quality (DEQ) issued the City's current Municipal Separate Storm Sewer System (MS4) Permit on July 1, 2013 that mandates City-specific stormwater nutrient and sediment reduction targets for the Chesapeake Bay Total Maximum Daily Load (TMDL) enforced through three 5-year MS4 permit cycles. Accordingly, the permit requires the City to implement stormwater treatment best management practices (BMPs) sufficient to achieve 5% of the reduction targets during the first 5-year permit (2013-2018), while successive MS4 permits will require implementation of practices to achieve an additional 35% or 40% of total reduction targets during the second 5-year permit (2018-2023) by 2023, and the remaining 60% or 100% of the reductions on or before the end of the third permit cycle (2023-2028), no later than 2028.

As part of the effort to meet the goals of the Chesapeake Bay TMDL and to further reduce pollutant discharges into the MS4, the City has proposed the Taylor Run Stream Restoration project to City Council. Staff began public outreach prior to the application for the SLAF grant and continues to reach out to the public. The project team consists of staff from T&ES, RPCA, DPI and a consultant working together on the design phase that is currently underway with projected completion of design by spring/summer 2020. Construction is anticipated to begin by spring 2021.

The project along Taylor Run is mainly located in Chinquapin Park, west of King Street in the City. This project will restore a severely degraded section of the stream from below the culvert near the Chinquapin Recreation Center to approximately 1900 feet downstream.

A stream restoration project to stabilize the stream banks and provide overall improvement to the stream's function is a stormwater treatment strategy that protects local water quality and mitigates the transport of pollutants to the Chesapeake Bay. The project will mitigate channel and bank erosion, preventing sediment and phosphorous associated with that erosion from being delivered downstream from an actively incising urban stream.

EXTERNAL OR INTERNAL ADOPTED PLAN OR RECOMMENDATION

MS4 General Permit, Chesapeake Bay TMDL Action Plan, Strategic Plan, Environmental Action Plan

ADDITIONAL OPERATING IMPACTS

No additional operating impacts identified at this time.