

STORMWATER MANAGEMENT

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Stormwater Management Approved FY 2015 – 2024 Capital Improvement Program Summary of Projects

CIP Section/Subsection/Project	Unallocated (2/14)	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24	FY 15-24 TOTAL
Stormwater Management												
Ft. Ward Stormwater	\$460,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Taylor Run at Janney's Lane	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
NPDES / MS4 Permit	\$34,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Four Mile Run Channel Maintenance	\$1,610,000	\$0	\$0	\$0	\$600,000	\$0	\$0	\$0	\$0	\$600,000	\$0	\$1,200,000
Storm Sewer Capacity Assessment	\$0	\$0	\$0	\$0	\$0	\$0	\$475,000	\$475,000	\$0	\$0	\$0	\$950,000
Green Infrastructure in CSO Areas	\$300,000	\$700,000	\$500,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,200,000
Stream & Channel Maintenance	\$618,750	\$550,000	\$1,200,000	\$1,200,000	\$450,000	\$450,000	\$450,000	\$450,000	\$450,000	\$450,000	\$450,000	\$6,100,000
MS4-TMDL Compliance Water Quality Imprv.	\$800,000	\$0	\$0	\$400,000	\$500,000	\$500,000	\$3,000,000	\$3,000,000	\$3,500,000	\$3,500,000	\$7,000,000	\$21,400,000
Storm Sewer System Spot Improvements	\$2,734,113	\$0	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$2,700,000
Lake Cook Stormwater Management	\$0	\$2,400,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,400,000
Cameron Station Pond Retrofit	\$0	\$0	\$0	\$500,000	\$1,500,000	\$1,500,000	\$0	\$0	\$0	\$0	\$0	\$3,500,000
City Facilities Stormwater Best Management Practices (BMPs)	\$0	\$0	\$400,000	\$1,100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,500,000
Stormwater Management Total	\$6,556,863	\$3,650,000	\$2,400,000	\$3,500,000	\$3,350,000	\$2,750,000	\$4,225,000	\$4,225,000	\$4,250,000	\$4,850,000	\$7,750,000	\$40,950,000

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Ft. Ward Stormwater

Document Subsection: Stormwater Management
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): Recreation, Parks & Cultural Activities, Historic Alexandria
 ORG: 52412157

Project Location: 4301 West Braddock Rd.
 Reporting Area: Seminary Hill/Strawberry Hill
 Project Category: 3 – New Facilities
 Estimated Useful Life: 25 years

Ft. Ward Stormwater													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total FY 2015-2024
Expenditure Budget	585,000	585,000	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
Prior City Funding	585,000	585,000	0	0	0	0	0	0	0	0	0	0	0
Total Financing Plan	585,000	585,000	0	0	0	0	0	0	0	0	0	0	0
Add. Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0
Changes from Prior Year CIP: No changes from prior year CIP.													

Project Description & Justification

Fort Ward Park is the best preserved of the system of Union forts and batteries built to protect Washington, DC during the American Civil War (1861-1865). This site receives drainage from the adjacent Marlboro Estates subdivision built in the late 1970's, Episcopal High School property and from the adjacent Braddock Road area. Over time, due to changes in grading and overland drainage patterns, erosion has occurred in the park and in the adjacent Oakland Baptist Church cemetery. Additionally, the stream in the park is showing signs of erosion and degradation. Property owners at the bottom of the park are experiencing flooding. In calendar year 2011, an interim drainage system was installed to protect the Oakland Baptist Church Cemetery from further soil erosion and flooding due to overland flow and erosion.

The scope of work includes studying the existing drainage infrastructure in Fort Ward Park and make recommendations for improvements as well as the construction of those recommended improvements. This project will be informed by, and will be required to coordinate, planning and construction activities with ongoing OHA archaeological investigations and discoveries.

This project has been fully funded and will be active in FY 2015. The City expects completion of the stormwater master plan by spring 2014. The master plan will be the basis for design of the improvement which is expected to begin in FY 2015.

Environmental benefits achieved by the completion of this project include include overland flow improvements, erosion protection, stream restoration and flood prevention, all of which will improve the natural quality of the land in the project area.

City's Strategic Plan & City Manager's Performance Plan

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

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

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

- Ensure government is accountable to the community

External or Internal Adopted Plan or Recommendation

- Recommended by the Ad Hoc Fort Ward Park and Museum Area Stakeholder Advisory Group
- Budget Memorandum #46, April 8, 2011 (FY 2012)

Additional Operating Budget Impact

An additional impact to the operating budget is not anticipated.

Taylor Run at Janney's Lane

Document Subsection: Stormwater Management
 Managing Department: Dept. of Project Implementation
 Supporting Department(s): Transportation & Environmental Services
 ORG: 52411857

Project Location: Taylor Run Parkway at Janney's Ln.
 Reporting Area: Taylor Run
 Project Category: 2 – Renovations/Existing Assets
 Estimated Useful Life: 50 years

Taylor Run at Janney's Lane													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total FY 2015-2024
Expenditure Budget	1,051,250	1,051,250	0	0	0	0	0	0	0	0	0	0	0
Financing Plan													
Prior City Funding	1,051,250	1,051,250	0	0	0	0	0	0	0	0	0	0	0
Total Financing Plan	1,051,250	1,051,250	0	0	0	0	0	0	0	0	0	0	0
Add. Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0
Changes from Prior Year CIP: No changes from prior year CIP.													

Project Description & Justification

This project consists of reconstructing culvert head wall, stream restoration and realignment of a sanitary sewer to eliminate a siphon at the culvert located at Taylor Run Parkway at Janney's Lane.

This project has been fully funded. The project design has been completed and is scheduled for completion in FY 2014. Project completion will need to be coordinated with the re-paving project on Janney's Lane also scheduled for FY 2014.

Completion of this project will improve and extend the useful life of the City's stormwater infrastructure.

City's Strategic Plan & City Manager's Performance Plan

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

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

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

- Ensure government is accountable to the community

External or Internal Adopted Plan or Recommendation

- N/A

Additional Operating Budget Impact

An additional impact to the operating budget is not anticipated.

NPDES / Municipal Separate Storm Sewer System (MS4) Permit Program

Document Subsection: Stormwater Management
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): N/A
 ORG: 52411860

Project Location: Citywide
 Reporting Area: Citywide
 Project Category: 3 – New Facilities
 Estimated Useful Life: Varies

NPDES/Municipal Separate Storm Sewer System (MS4) Program													
	A	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	<i>Allocated Balance (02/14)</i>	<i>Unallocated (02/14)</i>	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total FY 2015-2024
Expenditure Budget	103,071	34,000	0			0	0	0	0	0	0	0	0
Financing Plan													
Prior Year City & Stormwater Funding	103,071	34,000	0	0	0	0	0	0	0	0	0	0	0
Total Financing Plan	103,071	34,000	0	0	0	0	0	0	0	0	0	0	0
Add. Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0
Changes from Prior Year CIP: No changes from prior year CIP.													

Project Description & Justification

This project provides for the data collection, reporting activities, public education, outreach, involvement and citizen participation associated with implementation of the programs required by the National Pollution Discharge Elimination System (NPDES) permit regulations that are administered currently by the Virginia Department of Conservation and Recreation (DCR) through the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Storm Water from Municipal Separate Storm Sewer Systems (MS4) per 4VAC50-60 et. seq.

The permit requires the City to develop, implement and enforce our 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 July 1, 2013. The currently Approved five-year permit is scheduled to be effective through June 30, 2018. Each successive permit has contained more regulatory requirements which necessitates more resources the new permit is no exception.

The new permit regulations require more public education and outreach, increased staff training, creation of new TMDL plans and SOPs for daily operations, enhanced inspections, greater data collection, and additional reporting. The new permit also contains stringent requirements to meet the recent Chesapeake Bay Total Maximum Daily Load (TMDL) for nutrients and sediment, as well as other TMDLs that have been developed for local surface waters.

This project maintains the City's compliance with regulatory permits, while developing and enhancing the MS4 program.

City's Strategic Plan & City Manager's Performance Plan

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

- Improve the health of City waterways
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Focus Area: Accountable, Effective, & Well-Managed Government

- Ensure government is accountable to the community

External or Internal Adopted Plan or Recommendation

- Consistent with the Eco-City Charter and Eco-City Action Plan 2030, adopted by City Council June 2008 and June 2009 respectively

Additional Operating Budget Impact

An additional impact to the operating budget is not anticipated.

Four Mile Run Channel Maintenance

Document Subsection: Stormwater Management
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): N/A
 ORG: 43411623

Project Location: Four Mile Run Stream/Channel
 Reporting Area: Potomac West
 Project Category: 2 – Renovations/Existing Assets
 Estimated Useful Life: 10 years

Four Mile Run Channel Maintenance													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C-L)
	Total Budget & Financing	Through FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total FY 2015-2024
Expenditure Budget	3,293,000	2,093,000	0	0	0	600,000	0	0	0	0	600,000	0	1,200,000
Financing Plan													
General Obligation Bonds	1,810,000	1,810,000											0
Cash Capital	1,483,000	283,000	0	0	0	600,000	0	0	0	0	600,000	0	1,200,000
Total Financing Plan	3,293,000	2,093,000	0	0	0	600,000	0	0	0	0	600,000	0	1,200,000
Add. Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0
Changes from Prior Year CIP: No changes from prior year CIP.													

Project Description & Justification

This project 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 U.S. Army Corps of Engineers 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 the Corps 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.

To date, \$2.093 million in City funding has been applied to the project, with an allocated and unallocated project balance of \$1.85 million remaining to complete current maintenance activities. Funding is programmed in the 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. Levee/flood wall maintenance remains the responsibility of the jurisdiction where the levee/wall is located.

The regular upgrades to the flood control system ensure that the flood control project will perform as predicted and protect citizens and property from flooding.

City's Strategic Plan & City Manager's Performance Plan

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

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

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

- Ensure government is accountable to the community

Focus Area: Safe, Secure, & Just Community

- Reduce harm to people or property from disasters

External or Internal Adopted Plan or Recommendation

- N/A

Additional Operating Budget Impact

An additional impact to the operating budget is not anticipated.

Storm Sewer Capacity Assessment

Document Subsection: Stormwater Management
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): N/A
 ORG: 52411851

Project Location: Citywide
 Reporting Area: Citywide
 Project Category: 1 – Asset Maintenance
 Estimated Useful Life: N/A

Storm Sewer Capacity Assessment													
	A	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	<i>Allocated Balance (02/14)</i>	<i>Unallocated (02/14)</i>	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total FY 2015-2024
Expenditure Budget	93,051	0	0	0	0	0	0	475,000	475,000	0	0	0	950,000
Financing Plan													
Prior City Funding	93,051	0	0	0	0	0	0	0	0	0	0	0	0
Cash Capital	0	0	0	0	0	0	0	475,000	475,000	0	0	0	950,000
Stormwater Management Tax	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Financing Plan	93,051	0	0	0	0	0	0	475,000	475,000	0	0	0	950,000
Add. Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0
Changes from Prior Year CIP: No changes in out-year cost estimates. Last year's CIP included \$950,000 in FY 2020. Plan has been adjusted to provide \$475,000 in both FY 2020 and FY 2021.													

Project Description & Justification

This project provides for a multi-year City-wide 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.

The project includes flow modeling, field verification of invert elevations and manhole locations, and condition assessments of pipes 24 inch 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 employing a variety of technologies to reduce flooding in problem areas 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. It is anticipated that completion of this project will result in some recommended improvements to the City storm sewer system. These future projects will be funded through the Storm Sewer System Spot Improvements project as funding becomes available.

As of February 2014, the project has 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, and Four Mile Run watersheds. In addition, identification of problem areas and their prioritizing on the bases of the findings has been completed. Funding planned in FY 2020 will provide for updated analysis and flow modeling.

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 proactive solutions in protecting citizens and property from stormwater flooding.

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

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

Green Infrastructure in Combined Sewer Overflow (CSO) Areas

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

Project Location: Citywide
 Reporting Area: Old Town, Old Town North,
 Braddock Road Metro
 Project Category: 3 – New Facilities
 Estimated Useful Life: Varies

Green Infrastructure in CSO Areas													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	Total Budget & Financing	Through FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total FY 2015-2024
Expenditure Budget	1,500,000	300,000	700,000	500,000	0	0	0	0	0	0	0	0	1,200,000
Financing Plan													
General Obligation Bonds	750,000	150,000	350,000	250,000	0	0	0	0	0	0	0	0	600,000
General Obligation Bonds - Sanitary Sewer	645,000	120,000	325,000	200,000	0	0	0	0	0	0	0	0	525,000
Sanitary Sewer Fees	105,000	30,000	25,000	50,000	0	0	0	0	0	0	0	0	75,000
Total Financing Plan	1,230,000	30,000	700,000	500,000	0	0	0	0	0	0	0	0	1,200,000
Add. Operating Impact													
Annual Impact			0	0	750	1,523	1,569	1,616	1,664	1,714	1,766	1,819	12,420
Cumulative Impact			0	0	750	2,273	3,842	5,457	7,122	8,836	10,601	12,420	12,420
Changes from Prior Year CIP: No changes from prior year CIP.													

Project Description & Justification

This project provides funding from both the sanitary sewer and storm sewer funds for study, design, and construction of at least two green infrastructure demonstration projects in the combined sewer area. Green infrastructure projects will include at least one “green alley”. Completion of these projects will provide the following benefits: increased stormwater infiltration, reduction of stormwater into the combined sewer system (CSS), providing stormwater treatment (nutrients), and decreasing the volume of combined sewer overflow (CSO) discharges. The City’s renewed permit of CSS requires a reduction of five million gallons of stormwater over the next five years. This project will provide infrastructure to help the City comply with this requirement.

For the City to stay in compliance with the CSS permit, overflows from the Combined Sewer System need to be mitigated. This is primarily because of new regulatory requirements of the bacteria TMDL for Hunting Creek. Total cost of mitigation of these overflows over two to three decades could range as high as \$200 million - \$300 million and depends on the type and mix of technologies that get implemented. Through the Alternatives Analysis to be conducted by the City in FY 2014 – 2018, an update to its Long-Term Control Plan will be developed. Only after completion of this analysis, and with the approval of the Long Term Control Plan update by the Virginia Department of Environmental Quality, will the exact costs of the resulting projects and applicable schedule will become certain. In the upcoming permit cycle, the City is required to continue implementation of Nine Minimum Controls, Area Reduction Plan, several capital projects that include Green Infrastructure, and select separation projects. The City will also need to continue extensive monitoring, sampling, inspections, and reporting.

City’s Strategic Plan & City Manager’s Performance Plan

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

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

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

- Ensure government is accountable to the community

External or Internal Adopted Plan or Recommendation

- T&ES Strategic Plan 2012-2015: Key Result Area III: Meet or exceed state or federal requirements of City’s separate storm sewer and combined sewer system permits and maintain compliance with these environmental permits.
- Consistent with Eco-City Charter (Water Resources) and with Eco-City Action Plan, Chapter 4, Goal 4
- 2013 Sanitary Sewer Master Plan

Additional Operating Budget Impact

Additional operating costs for a green alley and a bioretention facility will be approximately \$750 each annually for maintenance. Maintenance of a green alley includes vacuuming of sediments from the permeable pavement 3-4 times per year.

Stream and Channel Maintenance

Document Subsection: Stormwater Management
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): Dept. of Project Implementation
 ORG: 43411609

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

Stream & Channel Maintenance													
	A	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	<i>Allocated Balance (02/14)</i>	<i>Unallocated (02/14)</i>	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total FY 2015-2024
Expenditure Budget	1,361,792	618,750	550,000	1,200,000	1,200,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	6,100,000
Financing Plan													
Prior Year City & Stormwater Funding	1,361,792	0	0	0	0	0	0	0	0	0	0	0	0
Cash Capital	0	18,750	275,000	600,000	600,000	225,000	225,000	225,000	225,000	225,000	225,000	225,000	3,050,000
General Obligation Bonds	0	0	275,000	600,000	600,000	225,000	225,000	225,000	225,000	225,000	225,000	225,000	3,050,000
Environmental Restoration Funds	0	600,000	0	0	0	0	0	0	0	0	0	0	0
Total Financing Plan	1,361,792	618,750	550,000	1,200,000	1,200,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	6,100,000
Add. Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0
Changes from Prior Year CIP: Total project reduced from \$7.55 million in last year's plan to \$6.1 million based on current projects underway and projected costs of future projects.													

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, and stream stabilization/restoration.

Prior year allocated and unallocated balances of \$1.98 million will be combined with requested FY 2014 funding of \$2.15 million to mitigate damages caused by Tropical Storm Lee. Projects scheduled for construction in FY 2015 include: Cameron Run Weirs #2, #3, #4, and #5 repairs; Backlick Run S-Curve repairs; Backlick Run Flume Outlet repairs. These projects are eligible for up to 75% reimbursement from the Federal Emergency Management Agency, and City staff will pursue reimbursement as work is completed.

Continued urbanization in the City and in Fairfax County over the years has put excessive stress on the vitality of natural streams throughout the City. This has caused erosion, loss of natural habitat 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. Having access to healthy, thriving natural areas provides opportunities for people to connect with the natural world and improves the overall well-being of communities.

City's Strategic Plan & City Manager's Performance Plan
Primary Strategic Plan Goal: Goal 2 – Health & Environment
Focus Area: Livable, Green, and Prospering City
<ul style="list-style-type: none"> Improve the health of City waterways Sustain the natural quality of land within the City Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure
Focus Area: Accountable, Effective, & Well-Managed Government
<ul style="list-style-type: none"> Ensure government is accountable to the community
Focus Area: Safe, Secure, & Just Community
<ul style="list-style-type: none"> Reduce harm to people or property from disasters
External or Internal Adopted Plan or Recommendation
<ul style="list-style-type: none"> N/A

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

MS4 / Total Maximum Daily Load (TMDL) Compliance Water Quality Improvements

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

Project Location: Citywide
 Reporting Area: Citywide
 Project Category: 3 – New Facilities
 Estimated Useful Life: 50+ years

MS4-Total Maximum Daily Load (TMDL) Compliance Water Quality Improvements													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C-L)
	Total Budget & Financing	Through FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total FY 2015-2024
Expenditure Budget	800,000	800,000											0
Financing Plan													
Cash Capital	10,200,000	800,000	0	0	400,000	500,000	500,000	1,000,000	1,000,000	1,750,000	1,750,000	2,500,000	9,400,000
General Obligation Bonds	12,000,000	0	0	0	0	0	0	2,000,000	2,000,000	1,750,000	1,750,000	4,500,000	12,000,000
Total Financing Plan	22,200,000	800,000	0	0	400,000	500,000	500,000	3,000,000	3,000,000	3,500,000	3,500,000	7,000,000	21,400,000
Add. Operating Impact													
Annual Impact			0	0	0	0	50,000	50,000	100,000	150,000	150,000	150,000	650,000
Cumulative Impact			0	0	0	0	50,000	100,000	200,000	350,000	500,000	650,000	650,000
Changes from Prior Year CIP: Planned funding in FY 2015 has been reprogrammed to support the Lake Cook Stormwater Management project. Funding is added beginning FY 2017 for to be determined stormwater projects associated with the federally mandated infrastructure improvements. As specific projects are identified, funds will be shifted from this project to stand-alone projects like Lake Cook Stormwater.													

Project Description & Justification

The Virginia Department of Conservation and Recreation (DCR) has imposed City-specific stormwater nutrient and sediment reduction targets for the Chesapeake Bay (C-Bay) Total Maximum Daily Load (TMDL) through the City's next Municipal Separate Storm Sewer System (MS4) Permit. DCR has issued new stormwater regulations that apply to all Virginia jurisdictions in the Chesapeake Bay watershed. Accordingly, the new MS4 permit requires the City to implement practices sufficient to achieve 5% of the reduction targets during the first 5-year permit and 40% of reduction targets by the end of 10 years.

The City has been discussing the options available to comply with these targets through Stormwater Steering Committee, and Stormwater Workgroup. Additionally, the City completed the Chesapeake Bay TMDL Compliance Analysis and Options (Analysis) report that looked into options and alternatives for treating stormwater, and corresponding costs. As the specific projects to achieve these reductions are being discussed and developed, this budget is based on funding that can be used to implement a diverse mix of strategies to achieve a large portion of the required reductions in the next ten years.

In addition to these regional facilities, stormwater quality retrofits of City facilities and ROW will be required to meet the reductions. The budgetary estimates were developed in working with engineers from the firms conducting the Chesapeake Bay TMDL Compliance Analysis and Options Study. Please note that funding request, along with the inclusion of the Lake Cook, Cameron Station Pond Retrofit and City Facilities BMP projects will likely satisfy the first permit cycle (2013 - 2018 permit). For FY 2019 and beyond, estimates are provided based on staff's best professional judgment and may need to be revised as the 2018 permit requirements, and as the regulators' expectations become clearer.

(Continued on next page)

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

Additional Operating Budget Impact
<p>Operating impact is to cover for the maintenance of the retrofit facilities that will be coming online is estimated at \$50,000 in FY 2019 and increasing to \$150,000 by FY 2024. Costs will be lower in FY 2019 as the facilities that come online will be newer. With passing time, a more rigorous inspection and maintenance program will need to be implemented for the City to continue to get reduction credits from the implemented practices.</p>

Project Description and Justification (Continued)

This is primarily because of new regulatory requirements of Chesapeake Bay TMDLs for nutrients and sediments, bacteria TMDLs for Hunting Creek, and Four Mile Run. Total cost of compliance and mitigation for FY 2014 – 2023 may range as high as \$50 million and depends on the type and mix of technologies implemented. The cost of compliance beyond 2023 (i.e. FY 2023 – 2033) may be an additional \$100 million.

Storm Sewer System Spot Improvements

Document Subsection: Stormwater Management
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): Dept. of Project Implementation
 ORG: 52411855

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

Storm Sewer System Spot Improvements													
	A	B	C	D	E	F	G	H	I	J	K	L	M (C:L)
	<i>Allocated Balance (02/14)</i>	<i>Unallocated (02/14)</i>	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total FY 2015-2024
Expenditure Budget	111,218	2,734,113											0
Financing Plan													
Prior Year City & Stormwater Funding	111,218	2,734,113	0	0	0	0	0	0	0	0	0	0	0
General Obligation Bonds	0	0	0	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	2,700,000
Total Financing Plan	111,218	2,734,113	0	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	2,700,000
Add. Operating Impact													
Annual Impact			0	0	0	0	0	0	0	0	0	0	0
Cumulative Impact			0	0	0	0	0	0	0	0	0	0	0
Changes from Prior Year CIP: Planned funding in FY 2015 reduced from \$300,000 to \$0 based on available project balances; no other changes from FY 2016 - 2023. Added funding for FY 2024.													

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 need additional capacity to reduce flooding.

The current allocated and unallocated project balance of \$2.85 million will be utilized for projects listed on the next page.

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.

City's Strategic Plan & City Manager's Performance Plan
Primary Strategic Plan Goal: Goal 2 – Health & Environment
Focus Area: Livable, Green, and Prospering City
<ul style="list-style-type: none"> Improve the health of City waterways Promote an attractive urban environment that reflects our history and provides well-functioning infrastructure
Focus Area: Accountable, Effective, & Well-Managed Government
<ul style="list-style-type: none"> Ensure government is accountable to the community
External or Internal Adopted Plan or Recommendation
<ul style="list-style-type: none"> N/A

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

Current Storm Sewer Spot Improvement Projects

Project	Description	Status
N. Frazier Ave. / N. Frost Ave. / Lawrence Ave. Drainage System	Storm improvements along North Frazier, North Frost, and Lawrence Avenue. The existing drainage ditch has limited capacity and frequent ponding occurs.	Currently under design; Construction tentatively scheduled for FY 2015
DASH Facility Stormwater Outfall	This project includes storm sewer design and construction of a new storm sewer outfall through CSX railroad property which will provide an adequate outfall to the DASH facility to eliminate frequent flooding.	Currently under design; Construction tentatively scheduled for FY 2015
Route 1 Transitway Stormwater Collection System	Stormwater improvements along the Route 1 Transitway corridor, specifically the new construction of the Bus Rapid Transit (BRT) lanes	Currently under construction scheduled for completion in FY 2015
North Henry Street / Montgomery Street	Drainage improvements (along with sanitary sewer separation) along North Henry and Montgomery Streets	Currently under design; Construction tentatively scheduled for FY 2016

Lake Cook Stormwater Management

Document Subsection: Stormwater Management
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): Dept. of Project Implementation
 ORG: TBD

Project Location: Eisenhower Avenue
 Reporting Area: Seminary Hill/Strawberry Hill
 Project Category: 3 – New Facilities
 Estimated Useful Life: 30 years

Lake Cook Stormwater Management													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C-L)
	Total Budget & Financing	Through FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total FY 2015-2024
Expenditure Budget	2,400,000	0	2,400,000	0	0	0	0	0	0	0	0	0	2,400,000
Financing Plan													
Cash Capital	600,000	0	600,000	0	0	0	0	0	0	0	0	0	600,000
General Obligation Bonds	600,000	0	600,000	0	0	0	0	0	0	0	0	0	600,000
Stormwater Local Assistance Fund	1,200,000	0	1,200,000	0	0	0	0	0	0	0	0	0	1,200,000
Total Financing Plan	2,400,000	0	2,400,000	0	0	0	0	0	0	0	0	0	2,400,000
Add. Operating Impact													
Annual Impact			0	0	100,000	103,000	106,090	109,273	112,551	115,927	119,405	122,987	889,234
Cumulative Impact			0	0	100,000	203,000	309,090	418,363	530,914	646,841	766,246	889,234	889,234
Changes from Prior Year CIP: New project for FY 2015. Funding previously planned in the MS4-TMDL Compliance Water Quality Improvements project (\$800,000) has been shifted to this project in FY 2015. An additional \$400,000 are added to leverage a \$1.2 million State Stormwater Local Assistance Fund grant.													

Project Description & Justification

The Virginia Department of Environmental Quality (VDEQ) issued the City's new Municipal Separate Storm Sewer System (MS4) Permit on July 1, 2013 that specifies and imposes City-specific stormwater nutrients and sediment reduction targets for the Chesapeake Bay (C-Bay) Total Maximum Daily Load (TMDL) through the permit. Accordingly, the new permit requires the City to implement practices sufficient to achieve 5% of the reduction targets during first 5-year permit (2013-2018) and 40% of reduction targets by the end of 10 years (2023).

Retrofits to existing large regional stormwater facilities will provide additional pollutant removal either by enhancing the treatment efficiency and/or in combination to increasing the amount of area draining to the facility, and is one of the most cost effective strategies to meet the identified pollution reduction requirements. In order to comply with these targets, the City has been discussing these strategies and other options available through a Stormwater Steering Committee and Stormwater Workgroup. The City also completed the Chesapeake Bay TMDL Compliance Analysis and Options report that looked into options and alternatives for treating stormwater, and corresponding costs.

In order to capitalize on an opportunity available to seek a stormwater improvements grant, the City pursued and received \$1.2 million for the Lake Cook retrofit project, leveraged by \$1.2 million in City funds. Once completed, Lake Cook is expected to treat stormwater from a total of approximately 300 acres, including approximately 100 impervious acres, and is expected to meet approximately 10% of the total pollution reduction requirements of the City. This project also offers an opportunity to enhance the recreational elements of this facility, making it more of an amenity than it is currently.

City's Strategic Plan & City Manager's Performance Plan

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

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

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

- Ensure government is accountable to the community

External or Internal Adopted Plan or Recommendation

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

Additional Operating Budget Impact

Average operational costs based on published studies of such facilities with enhanced amenities and visibility are estimated at \$100,000 annually beginning in FY 2017, with a three percent annual inflation factor included each year thereafter.

Cameron Station Pond Retrofit

Document Subsection: Stormwater Management
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): Dept. of Project Implementation
 ORG: TBD

Project Location: Cameron Station
 Reporting Area: Landmark/Van Dorn
 Project Category: 3 – New Facilities
 Estimated Useful Life: 30 years

Cameron Station Pond Retrofit													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C-L)
	Total Budget & Financing	Through FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total FY 2015-2024
Expenditure Budget	3,500,000	0	0	0	500,000	1,500,000	1,500,000	0	0	0	0	0	3,500,000
Financing Plan													
Cash Capital	1,250,000	0	0	0	250,000	500,000	500,000	0	0	0	0	0	1,250,000
General Obligation Bonds	2,250,000	0	0	0	250,000	1,000,000	1,000,000	0	0	0	0	0	2,250,000
Total Financing Plan	3,500,000	0	0	0	500,000	1,500,000	1,500,000	0	0	0	0	0	3,500,000
Add. Operating Impact													
Annual Impact			0	0	0	0	67,500	135,000	139,050	143,222	147,518	151,944	784,233
Cumulative Impact			0	0	0	0	67,500	202,500	341,550	484,772	632,290	784,233	784,233
Changes from Prior Year CIP: New project added from FY 2017 - 2019 associated with federally mandated stormwater infrastructure improvements.													

Project Description & Justification

Virginia Department of Environmental Quality (VDEQ) issued the City's new Municipal Separate Storm Sewer System (MS4) Permit on July 1, 2013 that specifies and imposes City-specific stormwater nutrients and sediment reduction targets for the Chesapeake Bay (C-Bay) Total Maximum Daily Load (TMDL) through the permit. Accordingly, the new permit requires the City to implement practices sufficient to achieve 5% of the reduction targets during first 5-year permit (2013-2018) and 40% of reduction targets by the end of 10 years (2023).

Retrofits to existing large regional stormwater facilities will provide additional pollutant removal either by enhancing the treatment efficiency and/or in combination to increasing the amount of area draining to the facility, and is one of the most cost effective strategies to meet the identified pollution reduction requirements. In order to comply with these targets, the City has been discussing these strategies and other options available to the City through a Stormwater Steering Committee and Stormwater Workgroup. The City also completed the Chesapeake Bay TMDL Compliance Analysis and Options report that looked into options and alternatives for treating stormwater, and corresponding costs.

A Cameron Station Pond Retrofit is expected to meet approximately 9% of the City's total pollution reduction requirements, making it a very cost effective strategy. This project also offers an opportunity to enhance the recreational elements of this facility, making it more of an amenity than it is currently.

City's Strategic Plan & City Manager's Performance Plan

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

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

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

- Ensure government is accountable to the community

External or Internal Adopted Plan or Recommendation

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

Additional Operating Budget Impact

Average operational costs based on published studies of such facilities with enhanced amenities and visibility are estimated at \$135,000 annually beginning in FY 2020, with a three percent annual inflation factor included each year thereafter. FY 2019 is estimated at one-half year of operating.

City Facilities Stormwater Best Management Practices (BMPs)

Document Subsection: Stormwater Management
 Managing Department: Transportation & Environmental Services
 Supporting Department(s): Dept. of Project Implementation
 ORG: TBD

Project Location: Citywide
 Reporting Area: Citywide
 Project Category: 3 – New Facilities
 Estimated Useful Life: 25 years

City Facilities Stormwater Best Management Practices (BMPs)													
	A (B+M)	B	C	D	E	F	G	H	I	J	K	L	M (C-L)
	Total Budget & Financing	Through FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2015-2024
Expenditure Budget	1,500,000	0	0	400,000	1,100,000	0	0	0	0	0	0	0	1,500,000
Financing Plan													
Cash Capital	500,000	0	0	200,000	300,000	0	0	0	0	0	0	0	500,000
General Obligation Bonds	1,000,000	0	0	200,000	800,000	0	0	0	0	0	0	0	1,000,000
Total Financing Plan	1,500,000	0	0	400,000	1,100,000	0	1,500,000						
Add. Operating Impact													
Annual Impact			0	0	0	25,000	25,750	26,523	27,318	28,138	28,982	29,851	191,562
Cumulative Impact			0	0	0	25,000	50,750	77,273	104,591	132,728	161,710	191,562	191,562
Changes from Prior Year CIP: New project added from FY 2016 - 2017 associated with federally mandated stormwater infrastructure improvements.													

Project Description & Justification

The Virginia Department of Environmental Quality (VDEQ) issued the City's new Municipal Separate Storm Sewer System (MS4) Permit on July 1, 2013 that specifies and imposes City-specific stormwater nutrients and sediment reduction targets for the Chesapeake Bay (C-Bay) Total Maximum Daily Load (TMDL). Accordingly, the Approved permit requires the City to implement practices sufficient to achieve 5% of the reduction targets during the first 5-year permit and 40% of the reduction target by the end of 10 years.

One of the strategies to meet the identified pollution reduction requirements is by retrofitting existing City properties that currently do not provide stormwater treatment with stormwater facilities to provide the additional pollutant removal. The City has been discussing these and other options available to comply with these targets through a Stormwater Steering Committee and a Stormwater 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.

Working closely with the General Services and Recreation, Parks and Cultural Activities Departments, the following three locations have been identified for stormwater retrofits:

- City maintenance facility at Lockett Field
- T&ES/Recreation operations at 2900 Business Center Drive
- City traffic shop at Colvin Street

Once completed these retrofits are expected to treat stormwater from a total of approximately 4-8 impervious acres. These sites have been selected because of the facilities operational stormwater impacts and their relatively high percentage of impervious acreage.

City's Strategic Plan & City Manager's Performance Plan

Primary Strategic Plan Goal: Goal 2 – Health & Environment

Focus Area: Livable, Green, and Prospering City

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

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

- Ensure government is accountable to the community

External or Internal Adopted Plan or Recommendation

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

Additional Operating Budget Impact

Average operational costs based on published studies of such facilities with enhanced amenities and visibility are estimated at \$25,000 annually beginning in FY 2018, with a three percent annual inflation factor included each year thereafter.