## Sanitary Sewers

### Approved FY 2014 – 2023 Capital Improvement Program

#### Summary of Projects

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### Holmes Run Trunk Sewer

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**Basis of Project Cost Estimation:** Costs were estimated by engineering consultant.

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### Project Description & Justification

This project provides for an increase in capacity in the Holmes Run trunk sewer line, required to support development occurring in the Eisenhower Valley, as well as future development and redevelopment in the West End. Engineering studies indicated that lining the existing sewer with specialized materials would provide the needed capacity increase with minimal environmental disruption. Relining will increase the capacity in the western portion of the sewer from Van Dorn Street to Eisenhower Avenue at Cameron Run.

Phase I of this project included relining the western portion of the trunk sewer, completed in summer 2008. Additional engineering and analysis has determined that pipe lining alone will not increase capacity sufficiently in the Phase II – East Eisenhower section. Additional engineering analysis is underway to evaluate other capacity relief options, including constructing a relief sewer from Eisenhower Avenue to the AlexRenew plant, and potential wet weather sewer storage and treatment in the Holmes Run Service Area.

A total of $9.0 million from the Sanitary Sewer fund has been budgeted in prior fiscal years for this project. Engineering analysis which is being coordinated with Fairfax County and AlexRenew is expected to be completed in FY 2014. Upon completion of the analysis, design will begin for recommended improvements. Depending on the outcome of the current on-going study, additional funding may be required in future years.

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

### Linking to the City's Strategic Plan

**Goal 1 – Economic Development**
- **LTO:** Increase the City's non-residential and residential tax base
  - **IO:** Increase value created by the City’s planning and development process.
  - **IO:** Increase residential developer/builder base for new projects
  - **IO:** Improve the markets' awareness of Alexandria development opportunities

**Goal 2 – Health & Environment**
- **LTO:** Improve natural quality of land within the City
  - **IO:** Improve ecological quality of green spaces to meet regional standards
  - **IO:** Reduce contaminants in water runoff

**Goal 5 – Financial Sustainability**
- **LTO:** Improve community's perception of the effectiveness of City services
  - **IO:** Improve public's satisfaction regarding their requests to fix public infrastructure

### External or Internal Adopted Plan or Recommendation

- 2013 Sanitary Sewer Master Plan

### Details of Changes from Prior Year Approved Plan

No changes from prior year approved plan. Project has been fully funded; however, depending on the outcome of the current on-going study, additional funding may be required in future years.

### Additional Operating Budget Impact

An impact on the annual operating budget is not anticipated.
**Four Mile Run Sanitary Sewer Repair**

**Document Subsection:** Sanitary Sewers  |  **Project Location:** End of Commonwealth Ave to Bruce St.

**Managing Department:** Transportation & Environmental Services  |  **Reporting Area:** Potomac West

**Supporting Department(s):** N/A  |  **Project Category:** 2 – Renovations/Existing Assets

**OCA:** 255136  |  **Estimated Useful Life:** 40 years

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**Add. Operating Impact**

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| Cumulative Impact | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |

**Basis of Project Cost Estimation:** Cost estimate based on costs of previous similar projects.

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**Project Description & Justification**

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

Total project costs are estimated at $2.3 million, and include planning, design and engineering, construction management, and construction. The project is currently in the design phase and construction is tentatively scheduled to start in FY 2014.

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

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**Linking to the City’s Strategic Plan**

**Goal 5 – Financial Sustainability**

- LTO: Maintain the value of City's physical assets
  - IO: Increase the ration of maintenance investment relative to repair expenditures

**External or Internal Adopted Plan or Recommendation**

- 2013 Sanitary Sewer Master Plan

**Details of Changes from Prior Year Approved Plan**

Add additional $500,000 from the Sanitary Sewer Fund is added to the project to complete construction funding.

**Additional Operating Budget Impact**

An impact on the annual operating budget is not anticipated.
Project Description & Justification
The City’s combined sewer system (sanitary and storm sewers) comprise approximately 540 acres located in the Old Town area. During certain wet weather events, flows in excess of the sewer pipes carrying capacity are discharged into receiving waterways via one of four combined sewer outfalls. These discharges are permitted by the Virginia Department of Environmental Quality (VDEQ). The Hunting Creek Bacteria Total Maximum Daily Load (TMDL) requires reductions in these discharges from 3 of the 4 permitted outfalls. The City is currently in discussions with VDEQ regarding what will be required of the City in the next permit cycle. It is likely the City will be required (mandated) to implement significant combined sewer system controls over a specified timeframe (still being negotiated).

In order to comply with this future CSS permit, the City must perform a number of activities. The City will be required to conduct an Alternatives Analysis envisioned to be in the upcoming permit as it was included in the City’s proposal to Virginia Department of Environmental Quality. This Alternatives Analysis is a detailed study of all possible alternatives, their financial costs, and other impacts. Based on the analysis a revised Long Term Control Plan is to be developed which becomes basis of the implementation of projects at a schedule that is acceptable to Virginia Department of Environmental Quality.

The project will also fund the construction of a new weir structure at Outfall 004. This new weir structure will decrease both the number of combined sewer overflow (CSO) discharges at Outfall 004 and the total CSO volume, which will provide the benefit of improving water quality in Hooff’s Run.

Completion of these initiatives will enhance the ecological integrity of waterways by maintaining and improving storm water and sanitary infrastructure and stream system health to minimize environmental impacts.

(Continued on next page)
Project Description and Justification (Continued)

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

For the City to stay in compliance with future CSS permits, overflows from the Combined Sewer System need to be mitigated. This is primarily because of new regulatory requirements of the bacteria TMDL for Hunting Creek. Total cost of mitigation of these overflows can range as high as $200 - $300 million and depends on the type and mix of technologies that get implemented. Through the Alternatives Analysis being 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 (VDEQ), will the exact costs of the resulting projects and applicable schedule become certain. In the upcoming permit cycle, the City is required to continue implementation of Nine Minimum Controls, Area Reduction Plan. This includes implementation of several capital projects including Green Infrastructure, and select separation projects. The City will also need to continue extensive monitoring, sampling, inspections, and reporting. This budget reflects the anticipated costs of improvements over the next five years only. Costs of improvements required for implementing the approved updated Long Term Control Plan (FY 2019 onwards) are not reflected in the budget. These costs over two to three decades could be in the $200 million - $300 million range.
Reconstruction and Extension of Sanitary Sewers

Document Subsection: Sanitary Sewers
Project Location: Citywide
Managing Department: Transportation & Environmental Services
Supporting Department(s): N/A
OCA: 255133

Reconstruction and Extension of Sanitary Sewers

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Project Description & Justification

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

Prior year allocated and unallocated balances of $3.956 million along with annual funding of $900,000 will be utilized to fund multiple projects in this request. Several projects are in early planning stages, while others are currently under design. Obstacles to construction may include the moving of buried utility lines, such as power, water, and gas lines by the various utility owners that if not moved would interfere with the construction.

Projects currently under study/design and tentatively scheduled for construction in FY 2014 include:
- Groves Avenue sewer replacement
- West Uhler Avenue sewer replacement
- Hooff's Run sewer relocation (Chapman Street to Maple Street)
- Beauregard and King Street sewer replacement (being completed in conjunction with the Beauregard and King Street intersection improvement project (Streets & Bridges CIP section)
- Mt. Vernon and Glebe Road sewer siphon replacement
- North Alfred and Pendleton Street alley reconstruction
- Sewer lining project not yet identified
- Miscellaneous or emergency repairs as required

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

Linking to the City's Strategic Plan

Goal 2 – Health & Environment
- LTO: Improve natural quality of land within the City
  - IO: Improve ecological quality of green spaces to meet regional standards

Goal 5 – Financial Sustainability
- LTO: Maintain the value of the City's physical assets
  - IO: Increase the maintenance investment relative to repair expenditures

External or Internal Adopted Plan or Recommendation
- 2013 Sanitary Sewer Master Plan

Details of Changes from Prior Year Approved Plan

Annual funding for reconstruction and extension project now budgeted at $900,000 annually. Annual costs varied in prior year approved plan.

Additional Operating Budget Impact

An impact on the annual operating budget is not anticipated.
Combined Sewer Separation Projects

**Document Subsection:** Sanitary Sewers
**Managing Department:** Transportation & Environmental Services
**Supporting Department(s):** N/A
**OCA:** 255115

**Combined Sewer Separation Projects**

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**Expenditure Budget**

**Financing Plan**

- **General Obligation Bonds - Sanitary Sewer**
  - 0
- **Sanitary Sewer Fees**
  - 1,445,886

**Total Financing Plan**

- 1,445,886

**Add. Operating Impact**

- Annual Impact
  - 0
- Cumulative Impact
  - 0

**Basis of Project Cost Estimation:** Cost estimate based on limited information, including current field evaluation and design services for the ongoing separation project and engineer's planning-level estimate for design.

**Project Description & Justification**

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

In 2011 City staff identified portions of the King and West combined sewershed where separation may be achieved by disconnecting sanitary sewers from the combined sewer system and reconnecting to the Potomac Yards Trunk Sewer, which was designed to accommodate separated sanitary flow from this area. Field investigations were conducted in the fall of 2011 to collect survey data, confirm sewer connectivity, and to provide sewer separation recommendations and planning level design and construction costs. In 2012, the City moved forward with design of the recommended separation projects and construction is anticipated to commence in 2013.

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

This project will provide water quality benefits in that the separation of sanitary sewers in the combined area will decrease the bacteria loading into Hooff’s Run during rain events where combined sewer overflows are activated.

(Continued on next page)

**Linking to the City’s Strategic Plan**

**Goal 2 – Health & Environment**

- **LTO:** Improve natural quality of land within the City
  - **IO:** Improve ecological quality of green spaces to meet regional standards
  - **IO:** Reduce contaminants in water runoff
  - **IO:** Increase public awareness of Eco-City Alexandria
  - **IO:** Reduce pollutants discharged to residences and businesses within the City

- **LTO:** Decrease residents’ incidence of preventable diseases
  - **IO:** Reduce contaminants in water runoff

**External or Internal Adopted Plan or Recommendation**

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

**Details of Changes from Prior Year Approved Plan**

Total funding reduced from $4.9 million in prior year approved plan to $3.0 million in current plan based on anticipated needs and project implementation rates. Funding in the amount of $200,000 is added from FY 2023.

**Additional Operating Budget Impact**

An impact on the annual operating budget is not anticipated.
For the City to stay in compliance with the future CSS permits, overflows from the Combined Sewer System need to be mitigated. This is primarily because of new regulatory requirements of the bacteria TMDL for Hunting Creek. Total cost of mitigation of these overflows can range as high as $200 million - $300 million and depends on the type and mix of technologies that get implemented. Through the Alternatives Analysis being 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 (VDEQ), 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. This includes implementation of several capital projects including Green Infrastructure, and select separation projects. The City will also need to continue extensive monitoring, sampling, inspections, and reporting. This budget reflects the anticipated costs of improvements over the next five years only. Costs of improvements required for implementing the approved updated Long Term Control Plan (FY 2019 onwards) are not reflected in the budget. These costs could be over a two to three decade period in the $200 million to $300 million range.
Holmes Run Sewershed Infiltration and Inflow

| A (B+M) | B | C | D | E | F | G | H | I | J | K | L | M (C:L) |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Expenditure Budget | 35,161,440 | 19,861,440 | 0 | 3,000,000 | 2,375,000 | 3,075,000 | 2,850,000 | 4,000,000 | 0 | 0 | 0 | 0 | 15,300,000 |
| Financing Plan | 30,215,000 | 15,750,000 | 0 | 3,000,000 | 2,375,000 | 2,925,000 | 2,565,000 | 3,600,000 | 0 | 0 | 0 | 0 | 14,465,000 |
| General Obligation Bonds - Sanitary Sewer | 4,946,440 | 4,111,440 | 0 | 0 | 0 | 150,000 | 285,000 | 400,000 | 0 | 0 | 0 | 0 | 835,000 |
| Total Financing Plan | 35,161,440 | 19,861,440 | 0 | 3,000,000 | 2,375,000 | 3,075,000 | 2,850,000 | 4,000,000 | 0 | 0 | 0 | 0 | 15,300,000 |
| Add. Operating Impact | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Annual Impact | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cumulative Impact | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Basis of Project Cost Estimation: Cost estimate based on previous inspection and remediation contracts, and consultant estimate.

Project Description & Justification

This project provides for the evaluation and remediation of infiltration/inflow and sewer rehabilitation conditions for the sanitary sewer system in the Holmes Run sewershed, which impacts the Alexandria West, Landmark/Van Dorn and Seminary Hill/Strawberry Hill reporting areas.

Many of the sewers and manholes located in these areas are old and deteriorated, and require rehabilitation. During wet weather, infiltration and inflow into the sanitary sewers have created overload conditions causing basement backups. The field work and monitoring is being performed by dividing the 4,600 acre sewershed into sections and proceeding through each section sequentially. Leaking sewers and connections (which allow excessive infiltration/inflow to enter sewers), and deteriorated sewers requiring remediation, will be identified via street by street closed circuit television inspection of sewers. The results of this field study are being evaluated to develop remediation projects that are expected to include the relining of sewers and manhole repairs. This information will be utilized to prioritize capital improvements.

Design of remediation measures started in summer 2010 for two sub-basins and construction is anticipated to begin in FY 2013. To date, a total of $19.9 million has been budgeted for this project, with current allocated and unallocated balances of $17.1 million remaining. During FY 2014, the Pegram and Strawberry Run sewersheds drainage basin are tentatively scheduled for construction. Funding from the Sanitary Sewer fund planned for FY 2015 – 2019 includes completing remaining field evaluations ($1.0 million) design ($1.0 million) and remediation costs ($1.0 million).

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

Linking to the City’s Strategic Plan

Goal 2 – Health & Environment
- LTO: Improve the natural quality of land within the City
  - IO: Improve ecological quality of green spaces to meet regional standards
  - IO: Reduce contaminants in water runoff

Goal 5 – Financial Sustainability
- LTO: Maintain the value of the City’s physical assets
  - IO: Increase the maintenance investment relative to repair expenditures

External or Internal Adopted Plan or Recommendation
- 2013 Sanitary Sewer Master Plan

Details of Changes from Prior Year Approved Plan

Planned funding from FY 2014 – 2017 totaling $15.5 million reduced to $15.3 million and extended to FY 2019 based on anticipated construction schedule.

Additional Operating Budget Impact

An impact on the annual operating budget is not anticipated.
Wet Weather Management Facility

**Project Description & Justification**

During periods of extreme wet weather, stormwater enters the City’s sanitary sewer collection system. This has the potential to lead to sewer back-ups in homes and businesses throughout the City. In addition, wet weather flows in the sewer can cause sanitary sewer overflows (SSOs), where raw sewage is discharged to receiving waters before being treated. There are two SSO locations in the City - at the Four Mile Run Pumping Station and at the Alexandria Renew Enterprises (AlexRenew) wastewater treatment facility. Due to forecasted growth in the City (and Fairfax County), there is concern that this growth will lead to increased SSOs in the future and create an additional potential for sewer back-ups.

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

Initial planning and design funding is scheduled to begin in FY 2015. The total project cost is estimated to be $22.3 million (2012 dollars), and it is assumed that the costs for this facility would be shared equally between Fairfax County and the City. In addition, the funding includes extending the storage tunnel upstream to capture additional combined sewage from Outfall 003.

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

**Linking to the City’s Strategic Plan**

**Goal 2 – Health & Environment**

- LTO: Improve the natural quality of land within the City
  - IO: Improve ecological quality of green spaces to meet regional standards
  - IO: Reduce contaminants in water runoff
  - IO: Reduce pollutants discharged to residences and businesses within the City
- LTO: Decrease residents’ incidences of preventable diseases
  - IO: Reduce contaminants in water runoff

**External or Internal Adopted Plan or Recommendation**

- 2013 Sanitary Sewer Master Plan

**Details of Changes from Prior Year Approved Plan**

Total estimated costs reduced from $31.5 million to $22.3 million based on the draft report entitled “Wet Weather Management Evaluation Update” prepared by CH2M Hill on behalf of the City, Fairfax County, and AlexRenew dated July 2012.

**Additional Operating Budget Impact**

The annual operating and maintenance costs associated with the facility includes electricity costs associated with the wet weather pumping, labor and equipment rental for the tunnel cleaning and inspection, and equipment replacement costs. The operating costs are assumed to be shared with Fairfax County with the City being responsible for 50 percent of the costs. Operating costs will be paid for from the Sanitary Sewer Fund.
### Sewer Assessment and Rehabilitation

**Project Location:** Old Town CSO area  
**Managing Department:** Transportation & Environmental Services  
**Supporting Department(s):** N/A  
**Reporting Area:** Old Town, Old Town North  
**Project Category:** 1 – Asset Maintenance  
**Estimated Useful Life:** Varies

#### Sewer Assessment & Rehabilitation

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**Basis of Project Cost Estimation:** Cost estimate is based on previous infiltration and inflow contracts for field evaluation services (CCTV, condition assessment, engineering design) and construction and construction management services (lining, manhole rehabilitation, etc.). Costs have been increased to account for inflation based on the date of the previous contracts and by applying 3% inflation for project being performed in out years.

#### Project Description & Justification

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

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

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

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

#### Linking to the City’s Strategic Plan

**Goal 2 – Health & Environment**
- **LTO:** Improve the natural quality of land within the City
  - **IO:** Improve ecological quality of green spaces to meet regional standards
  - **IO:** Reduce contaminants in water runoff
  - **IO:** Increase public awareness of Eco-City Alexandria
  - **IO:** Reduce pollutants discharged to residences and businesses within the City

**Goal 5 – Financial Sustainability**
- **LTO:** Maintain the value of the City’s physical assets
  - **IO:** Increase the maintenance investment relative to repair expenditures

#### External or Internal Adopted Plan or Recommendation
- 2013 Sanitary Sewer Master Plan

#### Details of Changes from Prior Year Approved Plan

This is a new project in the Capital Improvement Program.

#### Additional Operating Budget Impact

An impact to the annual operating budget is not anticipated.
**Combined Sewer Overflow 001 Planning**

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**Basis of Project Cost Estimation:** Rough estimate based on limited information, including communication from the City’s combined sewer permit contractor regarding how much the study and design services might be. Costs were based on unit costs that were derived from other similar facilities.

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**Project Description & Justification**

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

The CSO 001 Mitigation project will provide initial feasibility planning funding for combined sewer storage at CSO Outfall 001 (Pendleton Street), resulting in a reduction of 30-40 overflows per year at each outfall to approximately four per year per outfall which will provide significant water quality benefits in Oronoco Bay and the Hunting Creek area.

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

(Continued on next page)

**Linking to the City’s Strategic Plan**

**Goal 2 – Health & Environment**

- **LTO:** Improve the natural quality of land within the City
  - **IO:** Improve ecological quality of green spaces to meet regional standards
  - **IO:** Reduce contaminants in water runoff
- **LTO:** Improve the health of the waterways within the City
  - **IO:** Reduce pollutants discharged by residents and businesses within the City
- **LTO:** Decrease residents’ incidences of preventable diseases
  - **IO:** Reduce contaminants in water runoff

**External or Internal Adopted Plan or Recommendation**

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

**Details of Changes from Prior Year Approved Plan**

This is a new project in the Capital Improvement Program.

**Additional Operating Budget Impact**

Impact on the annual operating budget is unknown until specific capital improvement projects are identified and funded.
Combined Sewer Overflow 001 Planning (Continued)

Project Description & Justification (Continued)

For the City to stay in compliance with the future CSS permits, overflows from the Combined Sewer System need to be mitigated. This is primarily because of new regulatory requirements of the bacteria TMDL for Hunting Creek. Total cost of mitigation of these overflows can range as high as $200 million - $300 million over a two to three decade period and depends on the type and mix of technologies that get implemented. Through the Alternatives Analysis being 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 (VDEQ), 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. This includes implementation of several capital projects including Green Infrastructure, and select separation projects. The City will also need to continue extensive monitoring, sampling, inspections, and reporting. This budget reflects the anticipated costs of improvements over the next five years only. Costs of improvements required for implementing the approved updated Long Term Control Plan (FY 2019 onwards) are not reflected in the budget.
AlexRenew Wastewater Treatment Plant Capacity

Project Location: 1500 Eisenhower Ave.  
Reporting Area: Southwest Quadrant  
Project Category: 2 – Renovations/Existing Assets  
Estimated Useful Life: 20+ years

### Expenditure Budget & Financing

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### Additional Operating Budget Impact

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### Basis of Project Cost Estimation

Planning level cost estimate provided by AlexRenew in 2011.

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**Project Description & Justification**

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

AlexRenew has indicated that their facility can be expanded / upgraded to treat this additional 4 mgd at a total capital cost of $35.2 million (increased for inflation). This cost is based on hydraulically expanding the plant at the same time as other anticipated upgrades are needed (as existing process equipment reaches the end of its useful life). Thus, although the need for an additional 4 mgd is not anticipated until after 2040, it would be more cost-effective to perform the hydraulic expansion while other upgrades are occurring based on the timeline provided by AlexRenew.

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

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

---

**Linking to the City’s Strategic Plan**

**Goal 1 – Economic Development**

- **LTO:** Increase the City's non-residential and residential tax base
  - **IO:** Increase value created by the City's planning and development process.
  - **IO:** Increase residential developer/builder base for new projects.
  - **IO:** Improve the markets' awareness of Alexandria development opportunities.

**Goal 5 – Financial Sustainability**

- **LTO:** Improve community’s perception of the effectiveness of City services
  - **IO:** Improve public's satisfaction regarding their requests to fix public infrastructure

---

**External or Internal Adopted Plan or Recommendation**

- **2013 Sanitary Sewer Master Plan**

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**Details of Changes from Prior Year Approved Plan**

Initial feasibility study funding of $500,000 budgeted in FY 2014 in the prior year approved plan is no longer required. No changes to funding planned from FY 2020 – 2022.

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**Additional Operating Budget Impact**

An impact on the annual operating budget is not anticipated.
### Stormwater Management Approved FY 2014 – 2023 Capital Improvement Program

#### Summary of Projects

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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  
**OCA:** 250071  
**Project Location:** 4301 West Braddock Rd.  
**Reporting Area:** Seminary Hill/Strawberry Hill  
**Project Category:** 3 – New Facilities  
**Estimated Useful Life:** 25 years

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*Basis of Project Cost Estimation:* Cost estimate prepared by staff based on similar projects.

**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 OHA archaeological investigations and discoveries; which are ongoing.

This project has been fully funded and will be active in FY 2014. As of February 2013, the City is seeking to secure the services of a qualified consulting firm to perform the drainage study and formulate the storm water management plan for the park.

Environmental benefits achieved by the completion of this project 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.

**Linking to the City’s Strategic Plan**

**Goal 2 – Health & Environment**
- **LTO:** Improve the natural quality of the land within the City  
  - **IO:** Improve ecological quality of green spaces to meet regional standards

**Goal 5 – Financial Sustainability**
- **LTO:** Improve community’s perception of the effectiveness of City services  
  - **IO:** Improve public’s satisfaction regarding their requests to fix public infrastructure

**Goal 6 – Public Safety**
- **LTO:** Decrease loss of property from disasters  
  - **IO:** Decrease areas within the City that frequently flood

**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)

**Details of Changes from Prior Year Approved Plan**

No changes from prior year approved plan. Project does not require additional funding.

**Additional Operating Budget Impact**

An impact on the annual operating budget is not anticipated.
Taylor’s Run at Janney’s Lane

Expenditure Budget 1,051,250  1,051,250  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

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

This project has been fully funded and will be active in FY 2014. The project design has been completed and is tentatively scheduled for completion in FY 2014. Environmental permitting must be obtained from state and federal authorities before construction can begin. 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.

Linking to the City’s Strategic Plan
Goal 5 – Financial Sustainability
• LTO: Maintain the value of City’s physical assets
  o IO: Increase the ratio of maintenance investment relative to repair expenditures

External or Internal Adopted Plan or Recommendation
• N/A

Details of Changes from Prior Year Approved Plan
No changes from prior year approved plan.

Additional Operating Budget Impact
An impact on the annual 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  
**OCA:** 255230  
**Project Location:** Citywide  
**Reporting Area:** Citywide  
**Project Category:** 3 – New Facilities  
**Estimated Useful Life:** Varies

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**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 (VSMTP) 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. The DCR permit re-issued on July 9, 2008 will expire June 30, 2013. The currently proposed 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 proposed 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.

### Linking to the City’s Strategic Plan

**Goal 2 – Health & Environment**
- **LTO:** Improve the natural quality of land within the City
  - **IO:** Improve ecological quality of green spaces to meet regional standards
  - **IO:** Reduce contaminants in water runoff
  - **IO:** Increase public awareness of Eco-City Alexandria
  - **IO:** Reduce pollutants discharged to residences and businesses within the City

**External or Internal Adopted Plan or Recommendation**
- **N/A**

**Details of Changes from Prior Year Approved Plan**

No changes from prior year approved plan. Project does not require additional funding.

**Additional Operating Budget Impact**

An impact on the annual operating budget is not anticipated.
Four Mile Run Channel Maintenance

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.

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

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Basis of Project Cost Estimation: Estimate prepared by consultant and based on previous work.

Linking to the City’s Strategic Plan

Goal 2 – Health & Environment
- LTO: Improve the natural quality of land within the City
  - IO: Improve ecological quality of green spaces to meet regional standards

Goal 6 – Public Safety
- LTO: Decrease loss of property from disasters
  - IO: Decrease areas within the City that frequently flood

External or Internal Adopted Plan or Recommendation
- N/A

Details of Changes from Prior Year Approved Plan

Funding originally planned in FY 2017 is shifted to FY 2018 based on anticipated timing of maintenance and restoration work. Funding in the amount of $600,000 is added for FY 2023.

Additional Operating Budget Impact
An impact on the annual operating budget is not anticipated.
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 2012, 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. Problem identification and developing and prioritizing solutions are the next step. 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.

Linking to the City’s Strategic Plan

Goal 2 – Health & Environment
- LTO: Improve the natural quality of land within the City
  - IO: Improve ecological quality of green spaces to meet regional standards
  - IO: Reduce contaminants in water runoff

Goal 6 – Public Safety
- LTO: Decrease loss of property from disasters
  - IO: Decrease areas within the City that frequently flood

External or Internal Adopted Plan or Recommendation
- N/A

Details of Changes from Prior Year Approved Plan

Planned funding in FY 2014 in the amount of $400,000 is reduced to $250,000 based on anticipated funding needed to complete the current study. Funding in the amount of $950,000 is added in FY 2020 to provided updated analysis and flow modeling.

Additional Operating Budget Impact

An impact on the annual operating budget is not anticipated.
Green Infrastructure in Combined Sewer Overflow (CSO) Areas

**Basis of Project Cost Estimation:** Staff estimate based on limited information.

**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 is currently in discussions with the Virginia Department of Environmental Quality (VDEQ) regarding requirements of the next VPDES permit for the CSS. Based on recent discussions with VDEQ, it is anticipated that some funding towards green infrastructure will be a requirement (mandate) of the next CSS permit.

The City will be conducting an Alternatives Analysis as part of the upcoming permit cycle to determine what CSO controls (storage, sewer separation, etc.) should be pursued for meeting the Hunting Creek Bacteria Total Maximum Daily Load (TMDL), which calls for significant reductions from three of the four City CSO outfalls.

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 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.

**Linking to the City’s Strategic Plan**

**Goal 2 – Health & Environment**
- **LTO:** Improve the natural quality of land within the City
  - **IO:** Improve ecological quality of green spaces to meet regional standards
  - **IO:** Reduce contaminants in water runoff
  - **IO:** Increase public awareness of Eco-City Alexandria

**Goal 5 – Financial Sustainability**
- **LTO:** Maintain the value of the City’s physical assets

**External or Internal Adopted Plan or Recommendation**
- 2013 Sanitary Sewer Master Plan

**Details of Changes from Prior Year Approved Plan**
This is a new project in the Capital Improvement Program.

**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. Maintenance of a bioretention facility includes inspection, possible repair and replacement of the individual components. Inflation at 3% per year has been included.
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 $2.2 million will be combined with requested FY 2014 funding of $2.15 million to mitigate damages caused by Tropical Storm Lee. Projects currently under design 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.

Linking to the City’s Strategic Plan

Goal 2 – Health & Environment
- LTO: Improve the natural quality of land within the City
  - IO: Improve ecological quality of green spaces to meet regional standards
  - IO: Reduce contaminants in water runoff

Goal 6 – Public Safety
- LTO: Decrease loss of property from disasters
  - IO: Decrease areas within the City that frequently flood

Goal 5 – Financial Sustainability
- LTO: Maintain the value of the City’s physical assets
  - IO: Increase the maintenance investment relative to repair expenditures

External or Internal Adopted Plan or Recommendation
- N/A

Details of Changes from Prior Year Approved Plan
Funding in the prior year approved plan totaled $8.4 million from FY 2014 – 2022. Based on anticipated project implementation rates, funding is reduced to $7.2 million from FY 2014 – 2022. Funding in the amount of $450,000 is added for FY 2023.

Additional Operating Budget Impact
An impact on the annual operating budget is not anticipated.
Project Description & Justification

The Virginia Department of Conservation and Recreation (DCR) has indicated that City-specific stormwater nutrient and sediment reduction targets for the Chesapeake Bay (C-Bay) Total Maximum Daily Load (TMDL) will be imposed 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 proposed permit - with a planned effective date of July 1, 2013 - will require 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.

In the fall of 2012, the City completed the Chesapeake Bay TMDL Compliance Analysis and Options (Analysis) which recommends that treating stormwater can be treated through multiple strategies. In addition to regional facilities, stormwater quality retrofits of City facilities and ROW will also be required to meet the reductions. The budgetary estimates were developed in working with engineers from the respective firms conducting the Chesapeake Bay TMDL Compliance Analysis and Options and the Feasibility Study.

The funding request for FY 2014 – 2015 of $1.6 million does not completely satisfy the funding needs for compliance with the upcoming permit cycle (FY 2014 – 2018). This request funds only immediate planning and feasibility studies to determine the type and mix of technologies and locations of capital improvements. This analysis will allow determination of more accurate future funding requirements for FY 2016 – 2023, and will become the basis for future requests.

For the City to stay in compliance with its MS4 (Municipal Separate Storm System) permit, the City must improve stormwater management and water quality of discharges from its storm sewer system.

(Continued on next page)
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

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 $2.9 million will be utilized for projects listed on the next page.

Completion of this project 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.

Linking to the City's Strategic Plan

Goal 2 – Health & Environment
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Goal 5 – Financial Sustainability
- LTO: Maintain the value of the City's physical assets
  - IO: Increase the maintenance investment relative to repair expenditures

External or Internal Adopted Plan or Recommendation
- N/A

Details of Changes from Prior Year Approved Plan

Funding in the amount of $9.6 million from FY 2014 – 2022 in the prior year approved plan has been reduced to $2.4 million over the same time period. Funding in the amount of $300,000 is added for FY 2023.

Increased operating costs associated with regular cleaning and maintenance, and increased staffing required for MS4 / TMDL requirements has reduced the amount of funding available for capital projects. When current identified projects are completed, additional resources may need to be added to this project.

Additional Operating Budget Impact

An impact on the annual operating budget is not anticipated.
### Current Storm Sewer Spot Improvement Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monroe Avenue / Nelson Avenue Alley Improvements</td>
<td>Alley re-grading and storm sewer improvements to alleviate flooding on adjacent properties in the vicinity of the Alexandria and Wayne Avenues</td>
<td>Currently under design; Construction tentatively scheduled for FY 2014</td>
</tr>
<tr>
<td>Bishop Lane Drainage Improvements</td>
<td>Installation of storm sewer improvements to alleviate ponding and drainage onto adjacent properties from the public right-of-way</td>
<td>Design complete; Construction spring or summer of calendar year 2013</td>
</tr>
<tr>
<td>North Henry Street / Montgomery Street</td>
<td>Drainage improvements (along with sanitary sewer separation) along North Henry and Montgomery Streets</td>
<td>Currently under design; Construction tentatively scheduled for FY 2015</td>
</tr>
<tr>
<td>North Rosser Street / Calhoun Avenue / Colfax Avenue / Dawes Avenue Drainage System</td>
<td>Storm sewer evaluation and possible improvements including extension of existing storm sewers in roadside ditches to alleviate nuisance flooding and ponding water.</td>
<td>Currently under design; Construction tentatively scheduled for FY 2014</td>
</tr>
<tr>
<td>N. Frazier Ave. / N. Frost Ave. / Lawrence Ave. Drainage System</td>
<td>Storm improvements along North Frazier, North Frost, and Lawrence Avenue. The existing drainage ditch has limited capacity and frequent ponding occurs.</td>
<td>Currently under design; Construction tentatively scheduled for FY 2014</td>
</tr>
<tr>
<td>DASH Facility Stormwater Outfall</td>
<td>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.</td>
<td>Currently under design; Construction tentatively scheduled for FY 2014</td>
</tr>
<tr>
<td>Route 1 Transitway Stormwater Collection System</td>
<td>Stormwater improvements along the Route 1 Transitway corridor, specifically the new construction of the Bus Rapid Transit (BRT) lanes</td>
<td>Currently under design; Construction tentatively scheduled for FY 2014</td>
</tr>
</tbody>
</table>