



2018–2021 Business Plan & 2018 Budget

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Executive Summary of the Stormwater

Mission: To deliver world class stormwater networks while upholding community standards and enhancing quality of life and to plan, develop, construct, maintain and renew a stormwater system which protects property, infrastructure and the natural environment from erosion and flooding and enhances water quality.

Services we provide:

- Storm sewer, pond and watercourse inspections and maintenance
- Dredging and rehabilitation of Stormwater Management (SWM) facilities to maintain water quality and quantity controls
- Stormwater asset management, capital programming and project delivery
- Storm Sewer By-law enforcement
- Rainfall monitoring
- Enhanced Outreach and Education program

Interesting facts about this service:

- The City has over 2,100 kilometres of storm sewer pipes in its stormwater drainage system. If laid out end-to-end these pipes would connect the City of Mississauga to the territory of Nunavut
- The stormwater drainage system also includes over 51,000 catch basins, over 250 kilometres of ditches, 32 creeks and 62 stormwater management facilities that help to collect, drain and clean the City's rain water runoff before it enters Lake Ontario
- At an estimated 2017 replacement value of \$2.06 billion, the stormwater drainage system is the 2nd largest asset owned and operated by the City

Highlights of the Business Plan include:

- The dedicated Stormwater Charge funds the increasing stormwater management needs including infrastructure renewal and pressures as a result of flooding events
- An annual rate of \$104 per stormwater billing unit is proposed for 2018
- Further developing the Service Area and continued transition from an interim to a sustainable service level
- Ongoing development of a comprehensive asset management plan will ensure the cost effective management of all Stormwater infrastructure
- An enhanced Storm Sewer By-law enforcement program is proposed for 2018
- Continuation of an enhanced residential Outreach and Education program including the Home Visit Pilot Program
- Mitigation measures continue to be assessed and implemented for the Lisgar community to address basement water infiltration issues
- Cooksville Creek flood relief and improvement projects continue to move forward to implementation

Net Investment (000's)	2018	2019	2020	2021
Operating	11,936	12,061	12,143	12,098
Capital	16,014	47,560	52,460	52,110
Full Time Equivalents	24.4	22.4	22.4	22.4

Focus of the Business Plan

The Business Plan for the Stormwater Service Area focuses on improving stormwater conveyance, quality and flow control to address the pressures of aging stormwater infrastructure and the increasingly frequent extreme storm events resulting from climate change.

The Stormwater Service Area was established as a standalone Service Area in 2016 with the introduction of the Stormwater Charge. The impetus for the Stormwater Charge was the need to increase the City's investment in its stormwater infrastructure and supporting programs with a fair and dedicated source of funding. During the development of the Stormwater Charge program it was recognized that the Charge would initially be set at a point to fund an interim service level and that over time the Charge would increase to attain a sustainable service level that would allow for all Stormwater program needs to be fully funded. The 2018-2021 Business Plan continues this transition from an interim to a sustainable service level.

The transition continues with the ongoing development of a comprehensive asset management plan to better manage all stormwater infrastructure. This plan will include the development of inventories and assessment programs for storm sewers and technology to manage all stormwater infrastructure effectively and efficiently. Contribution to the storm pipe renewal reserve fund will also increase.

In 2018, an enhanced Storm Sewer By-law enforcement program is proposed to protect the quality of our water resources and remain in compliance with provincial legislative requirements. The Business Plan also proposes the continued development and implementation of an enhanced stormwater Outreach and Education program.

Other aspects of the Business Plan include the delivery of several key infrastructure projects. The Cooksville Creek flood

remediation projects continue to move forward including several above and below-ground stormwater management facilities. Construction of the stormwater pond on the north side of Matheson Boulevard West, between Hurontario Street and McLaughlin Road, is anticipated to be completed in 2018.

Several infrastructure projects and related initiatives to address basement water infiltration issues in the Lisgar community are included in the Stormwater capital program. In response to recent storm events, the previous schedule of works has been reviewed and an updated 'Action Plan' has been prepared. The updated plan will continue to include the design of dewatering works for the utility trench and ongoing monitoring.



The stormwater asset management plan includes managing the City's storm sewer network effectively and efficiently

Core Services

Vision, Mission, Goals of Service and Service Delivery Model

Vision

To deliver world class stormwater networks while upholding community standards and enhancing quality of life.

Mission

The Stormwater Service Area plans, develops, constructs, maintains and renews a stormwater system which protects property, infrastructure and the natural environment from erosion and flooding and enhances water quality.

Goals of Service

- **Establish** a sustainable service level for Stormwater
 - Develop and maintain an integrated asset management plan to better manage all stormwater infrastructure
 - Increase contribution to Pipe Renewal Reserve Fund
 - Enhance Storm Sewer By-law enforcement
- **Deliver** mitigation and improvement projects
 - Flood relief
 - Erosion control
 - Water quality enhancement





Current Service Levels and Trends

The Stormwater Service Area provides the following services annually:

Infrastructure and Environmental Monitoring

- Regular inspections and condition assessments of stormwater infrastructure assets (e.g., watercourses, stormwater facilities and storm pipes)
- Management of the City's rain gauge network
- Water quality monitoring

Infrastructure Planning and Programming

- Timely completion of district, watershed or City-wide studies to inform infrastructure needs to support growth and maintain expected levels of service
- Annual development of the 10-year Capital Plan for infrastructure investments

Infrastructure Design and Construction

• Timely delivery of stormwater capital projects

Infrastructure Maintenance and Operations

 Regular inspections and maintenance of stormwater infrastructure assets (e.g., catch basins, ditches and storm sewer outfalls)

Environmental Awareness

- Delivery of outreach and education programs for residents and businesses
- Development and maintenance of the online and print resources for stormwater and environmental awareness

Storm Sewer By-law Enforcement

 Investigation of inquiries, spills and sanitary cross connections and proactive enforcement of By-law

Stormwater Charge Program

 Administration of the Stormwater Charge and processing of technical exemptions and credit applications

Several trends are putting pressure on our ability to deliver the above services:

- Greater frequency of extreme storm events results in added pressure to improve stormwater conveyance, quality and flow control
- Aging stormwater infrastructure and the need to balance service levels with affordability
- Increased operating pressures due to legislative compliance
- Need for enhanced Storm Sewer By-law enforcement to manage increasing issues and ensure legislative compliance



Flooding of rail underpass during an extreme storm event (source: Credit Valley Conservation)

Performance Measures and Results

The City of Mississauga is committed to delivering services economically and efficiently. The City's Performance Measures are used to help assess how well we are doing at achieving our goals and where we need to improve operations. The results also inform decision making and strengthen accountability. The following section describes the measures that we use and provides context for results. The Balanced Scorecard shows trends since 2014 and expected outcomes up to 2021.

What we are measuring

Financial – Unit cost of catchbasin cleaning and cost to maintain Watercourses per kilometre are new performance measures and expenditures that comprise 12 per cent of our operating budget.

Customer – Number of outreach and education events and number of Stormwater operations and maintenance inquiries per 1,000 people relate to Outreach and Education engagement. Requests for review resolved within service level and credit applications reviewed within service level relate to the administration of the Stormwater Charge program.

Employee – Overall Job Engagement, Overall Team Engagement and Job Satisfaction are measures obtained from the most recent Employee Engagement Survey.

Business Process – *Watercourses and quality control ponds in 'fair' or better condition* are new performance measures that provide an overall condition rating for creek and pond assets. Progress towards achieving a sustainable Service Level is a measure defined by contributions to the pipe reserve fund to reach one per cent of storm pipes asset replacement value.

Why these measures are important

Financial – Catchbasins are an integral component of the stormwater pipe network and require regular cleaning. Watercourses are a significant asset maintained by the Stormwater Service Area and preserving their function and health are critical for drainage and the environment. Both measures support our business goals of maintaining infrastructure.

Customer – The number of Outreach and Education events demonstrates our commitment to engage our residents about Stormwater. The number of stormwater inquiries per 1,000 people demonstrates how engaged residents are with the Service Area. Both measures support our plans for enhanced outreach and education. The percentage of Requests for Review and credit applications that are reviewed within their service level targets demonstrates how well customers are being served.

Employee – Results from the Employee Engagement Survey provide insights into staff engagement and the pride and ownership they take in their day to day work.

Business – Condition assessments of creeks and ponds assist in prioritizing maintenance activities and capital projects as well as long term planning. These performance measures demonstrate our progress in achieving our business goals of maintaining infrastructure and delivery of mitigation and improvement projects. Progress towards achieving a sustainable Service Level also supports the above goals.

How we are improving results

Financial –These measures help to identify operational pressures, impacts to maintain service levels and allow us to compare to other municipalities.

Customer – Regarding outreach and education, new opportunities are being explored to engage residents more effectively and in return we anticipate more engagement from residents. As for Requests for Review and credit applications, we strive to maintain a high level of service.

Employee – Within the Stormwater Service Area, we continue to maintain a positive work environment by providing opportunities for training, skill development and career growth.

Business – Through the development of comprehensive asset management plans that allow for the effective planning of priority works, staff are able to maintain assets in an increasingly good state of repair. Annual increases to the Pipe Reserve Fund allow the fund to grow and reach a sustainable level.

Balanced Scorecard

A Balanced Scorecard identifies and measures four key areas of an organization's performance: Financial, Customer, Employee, and Business Process. By paying attention to all four areas, an organization can retain balance in its performance and ensure that it is moving towards the attainment of its goals.

Financial Measures

Unit cost of catchbasin cleaning is the total cost, including labour, contracts and equipment, for catchbasin cleaning divided by 1/3 the number of catchbasins estimated in the City's asset inventory. The existing service level is to clean 1/3 of all catchbasins annually. Significant increase in costs in 2017 is due to previous low prices on a multi-year contract and rising prices at contract renewal. As the largest Stormwater operating account, the internal target is to remain competitive with other municipalities and in line with inflation (estimated two per cent annual increase). Planned 2017 costs (\$35/unit) are close to the municipal average (\$33/unit) provided by the 2015 National Water & Wastewater Benchmarking Initiative - Stormwater (NWWBIS).

Cost to maintain Watercourses per kilometre is the total cost, including labour, contracts and equipment, assigned to the watercourse maintenance account divided by total estimated length of watercourses in the City's asset inventory. Watercourse maintenance is an important operating service and costs have been rising steadily in recent years as staff complete more maintenance with greater complexity. An internal target has been set to keep cost increases in line with inflation but this measure is subject to fluctuation due to storm event impacts.

Customer Measures

Number of outreach and education events is the total number of information booths, community events and presentations. Staff have proposed to maintain their participation in approximately 100 events per year pending continued budget for the enhanced Outreach and Education program.

Number of Stormwater inquiries per 1,000 people is derived from the total number of stormwater-explicit inquiries (including operation and maintenance) from 311 calls and service requests divided by total population expressed per 1000 people. The internal target is to achieve modest increases in this ratio as it represents public engagement with our Service Area. Significant increases attributed to extreme storm events need to be considered in future results. There was a noticeable spike in inquiries in 2016 attributed to the implementation of the Stormwater Charge. Projected for 2017, however, is a 34 per cent decrease in Stormwater Charge related inquiries, a 28 per cent increase in non-charge stormwater inquiries and a 27 per cent increase in operations and maintenance inquiries suggesting overall engagement is rising. This measure (3.3 inquiries, 2017) can also be compared to the municipal average (1.9 inquiries) provided by NWWBIS (2015).

The *Requests for Review and credit application* measures are the percentage of time that these applications were resolved/reviewed within our service level timelines. The internal target is to maintain service levels at 90 per cent or better.

Employee Measures

Overall Job Engagement is measured by 20 distinct factors that are considered 'Drivers' of Job Related Engagement'. *Job Satisfaction* is one of the 20 distinct factors that comprise the overall job engagement measure above. *Overall Team Engagement* is measured by 15 distinct factors that are considered 'Drivers of Team Related Engagement'. All the results are derived from the Employee Engagement Survey customized for staff dedicated to the Stormwater Service Area. The internal target is to achieve modest improvements in each measure.

Business Process Measures

Watercourses in fair or better condition is derived from a condition rating assessed during field inspection of a defined length of watercourse and dividing the number in fair or better condition by the total inspected. Quality control stormwater ponds in fair or better condition is derived in a similar manner in that a condition rating is assigned to ponds based on the need for sediment removal and those in fair or better condition are divided by the total that have been inspected. The internal target is to improve each measure by one per cent annually as the current backlog of sites in 'poor' condition is reduced. The long term goal is to approach 100 per cent in 'fair' or better condition. The comprehensive asset management plan for all Stormwater infrastructure will also shape these targets.

Progress towards achieving a sustainable Service Level is determined by dividing the annual contribution to the Pipe Reserve Fund by one per cent of the total pipe asset replacement value. Within the Stormwater Service Area, a sustainable Service Level is defined as fully funding the operating and capital programs, and having an annual contribution to the Pipe Reserve Fund that is equal to one per cent of the pipe replacement value. The asset replacement value is increased annually for inflation to forecast future costs.

Balanced Scorecard (Cont'd)

Magauraa far Starmwatar	2014	2015	2016	2017	2018	2019	2020	2021
measures for Stormwater	(Actual)	(Actual)	(Actual)	(Plan)	(Plan)	(Plan)	(Plan)	(Plan)
Financial:								
Unit cost of catchbasin cleaning		\$17	\$17	\$35	\$35.7	\$36.4	\$37.1	\$37.9
Cost to maintain Watercourses per kilometre		\$473	\$1,719	\$2,181	\$2,225	\$2,269	\$2,314	\$2,361
Customer:								
Number of outreach and education events		45	101	110	100	100	100	100
Number of Stormwater inquiries per 1,000 people			3.6	3.3	3.35	3.4	3.45	3.5
Requests for review resolved within service level	N/A	N/A	87%	95%	90%	90%	90%	90%
Credit applications reviewed within service level	N/A	N/A	84%	90%	90%	90%	90%	90%
Employees:								
Overall Job Engagement ¹		75%			76%			77%
Job Satisfaction ¹		77%			78%			79%
Overall Team Engagement ¹		84%			85%			86%
Internal Business Process:								
Watercourses in fair or better condition	75%	76%	77%	78%	79%	80%	81%	82%
Quality control storm water ponds in fair or better condition	76%	77%	80%	81%	82%	83%	84%	85%
Progress towards achieving a sustainable Service Level (through contributions to Pipe Reserve Fund)	N/A	N/A	17%	22%	27%	31%	36%	40%

¹ Results obtained from the Employee Engagement Survey which is completed once every three years (2015, 2018, 2021).

Awards and Achievements

- Excellence in People Leadership, Corporate Award Manager of Environmental Services
- Nominated for "Friends of the Credit" Conservation Award - permeable pavement maintenance initiative, CVC Head Office
- Successful launch of the Stormwater Home Visit Pilot Program – high demand to register exceeded the initial 100 visits allowing for an additional 20 visits while remaining under budget
- Stormwater staff developed and hosted **ArtworkX**, a unique event in association with National Public Works Week. The event showcased live art, activities and documentary screenings to engage the public about hidden infrastructure that supports their community



Engaging residents at Outreach and Education events such as ArtworkX

- Engaged residents at over 100 outreach and education events to inform the public on the Stormwater Charge and to provide environmental awareness
- Matheson Boulevard Stormwater Pond, Cooksville Creek
 construction of the pond moved forward with the
 installation of large storm pipe infrastructure



Installation of new storm pipe infrastructure

Completed the retrofit of the **Collegeway Stormwater Pond** for water quality control



Stormwater pond constructed to enhance water quality

2018-2021 Business Plan Outlook

Planning for the Future

The Stormwater Service Area is planning for the future by recognizing the pressures and challenges ahead resulting from aging stormwater infrastructure and greater frequency of extreme storm events.



A greater frequency of extreme storm events drives the need to invest in stormwater infrastructure

The basis of the Stormwater Charge was realizing the need to increase the City's investment in its stormwater infrastructure and supporting programs. During the development of the Stormwater Charge program it was recognized that the Charge would initially be set to fund an interim service level and that over time the Charge would increase to attain a sustainable service level, that would allow for all stormwater program needs to be fully funded. The 2018-2021 Business Plan continues this transition from an interim to a sustainable service level.

The transition includes the ongoing development of a comprehensive asset management plan to better manage and renew all stormwater infrastructure assets. This will include the development of inventories and assessment programs for storm pipes and technology to manage all stormwater infrastructure effectively and efficiently.

Additionally, an increase in the contribution to the storm pipe renewal reserve fund is proposed to allow for large storm sewer replacement projects to be undertaken as necessary in future years.



The storm pipe renewal reserve fund allows for large storm pipe replacement projects

Several drainage studies are proposed in the first year of the 2018-2027 Capital Budget. These studies include Master Drainage Plans and Flood Evaluation Studies for several watersheds that will identify Capital improvement needs now and pressures to be prioritized for the latter part of the 10-year Capital Program.

Engaging Our Residents

The Stormwater Service Area continues to develop the Residential Outreach and Education Program with the following goals:

- Educate homeowners about stormwater, how the City manages stormwater, the relationship between private property and the municipal stormwater management system, and the Stormwater Charge
- Educate homeowners on stormwater best management practices for their properties
- Direct homeowners to education and/or incentive programs offered by other levels of government, local conservation authorities, public agencies and not-for-profit organizations

The program focuses on providing information that helps homeowners understand how their properties drain, common issues that can put homes at risk of flooding, and actions that can be taken to reduce flooding risks and benefit the environment. Such actions include disconnecting downspouts; clearing debris from eaves troughs; choosing environmentally friendly alternatives to fertilizers, pesticides and winter salt; using native groundcover and plant species; improving lot grading conditions; proper disposal of pet waste; introducing permeable paving materials, rain gardens and rain barrels; tree planting, and other best practices.

Face-to-face interactions, training and demonstrations are key features of the outreach program. Other channels include direct mail, online information (including illustrations and videos), brochures, flyers, displays, billboards and outreach events.

At the core of the program is a comprehensive website (<u>www.mississauga.ca/stormwater</u>), featuring links to stormwater incentives and programs offered by local partners such as Credit Valley Conservation, Toronto and Region Conservation Authority and the Region of Peel. Engaging our residents and future generations is an integral part of the Stormwater Service Area. In 2017, staff are on pace to attended over 100 events to discuss the Stormwater Program with residents and promote environmental awareness. The 2018-2021 Business Plan continues our engagement with residents through:

- Development of new ways to enhance the Stormwater Outreach and Education Program
- Continuation of the Residential Stormwater Home Visit Program
- Continued development and expansion of online support (e.g., social media) and website information



Stormwater information booth at community outreach and education event

Finding Efficiencies

Lean Initiatives

- 2017 Projects
 - Improvements to the Watercourse Management Program planning and maintenance processes
- 2016 accomplishments
 - Erosion and Sediment Control Permit renewal program improvement to enhance by-law compliance and cost recovery
 - o Improvements to creek inspection schedule and reporting processes
 - Digital review of creek inspection reports to reduce paper waste

Proposed Efficiencies

- Storm Sewer By-law Compliance and Servicing Inquiries
 - To date, the review of these environmental compliance inquiries, and associated fee collection, has been partly administered by an incorrect division. It is planned to consolidate the services and fees for these inquiries as well as to clarify the process for customers to avoid unnecessary administration between divisions
- Streamline Service Request process utilizing Infor
 - Develop a digital process whereby staff are able to assign Service Requests (Infor) to the appropriate staff person responsible for the asset or program, making the existing process paperless. Work towards better collaboration/co-ordination between staff to enhance operation and maintenance works reporting
- Inlet and Outlet Inspection Program
 - In co-ordination with Works, Operations and Maintenance staff, undertake the review of the existing program to reconcile assets currently not included in the inspection program and identify redundancies with other Stormwater inspection programs. Formalize inventory and inspection reporting of inlets and outlets and process for adding new assets to program

Advancing the City's Strategic Plan

connect - completing our neighbourhoods

"Build and Maintain Infrastructure – to deliver infrastructure in a sustainable way."

- The ongoing development of a comprehensive asset management plan will ensure the cost effective management of all stormwater infrastructure
- Implementation of Cooksville Creek flood relief and improvement projects, including stormwater management facilities
- Implementation of mitigation measures for the Lisgar community to address basement water infiltration

green - living green

"Conserve, Enhance and Connect Natural Environments – to be responsible stewards of the land by conserving, enhancing and connecting natural environments."

- Development of an enhanced residential Outreach and Education program with a Residential Home Visit Program
- Completion of Low Impact Development (LID) projects such as the Alpha Mills Rain Gardens that mimic natural processes and improve water quality to the receiving drainage system
- Completion of the Collegeway Stormwater Pond retrofit to provide water quality control to Loyalist Creek



Transforming our Business with Technology

The Stormwater Service Area has initiated the development of an IT Road Map in alignment with the strategic directions of the Transportation and Works Technology Road Map. A summary of current and future initiatives appears below.

Modernized Mobile Workforce (Strategic Direction 1)

Streamline Service Request (S/R) process:

- Develop digital process to assign S/Rs to staff, and make it paperless
- Better collaboration and co-ordination between staff to enhance operation and maintenance works reporting

Future – Identify mobile technology opportunities after implementation of asset management system and opportunities related to inspections and enforcement of Storm Sewer By-law.

Real-Time GIS Mapping Tools aligned to a Centralized Data Repository of City Information (Strategic Direction 2)

Currently participating and providing input into the Geospatial Master Plan (Corporate IT).

Future – Conduct an inventory of all existing data sets, for example, review existing CCTV records for the potential to consolidate/leverage existing spatial data.

Automation & Asset Infrastructure (Strategic Direction 3)

Development of sewer pipe asset management program/system:

- Research into other municipalities' asset management plans/programs
- Benchmarking, lessons learned
- Participation in Federation of Canadian Municipalities (FCM) Asset Management guidance program

Future – Develop an integrated asset management system for all Stormwater assets including Watercourse and Pond asset inventories currently in other databases.

Customer Self-Service (Strategic Direction 4)

Employing several methods for customer self-service:

- Dynamic Portal (online) applicants can submit an application for a Stormwater Credit, Technical Exemptions and Requests for Review
- Web-tool estimator for Stormwater Charge
- Providing new ways for public to connect to staff (e.g., social media)

Future – Improve Service Request process and reporting in Infor. Consider other self-service processes such as online permit applications and improvement to website resources.

Business Intelligence for Ease of Use (Strategic Direction 5)

Standardize reporting for metrics/performance measures and participation in the National Water & Wastewater Benchmarking Initiative - Stormwater.

Maintaining Our Infrastructure

To maintain stormwater infrastructure now and in the future, the 2018-2021 Stormwater Business Plan continues the development of a storm pipe asset management plan; the enhancement of existing asset management plans and integration of all storm assets into a comprehensive system; and, the increased investment in capital and pipe reserves. The plan proposes a new initiative to provide enhanced enforcement of the Storm Sewer by-law.

Several drainage studies are proposed in the first year of the 2018-2027 Capital Budget, including Master Drainage Plans and Flood Evaluation Studies. These studies will help to identify additional Capital needs and pressures within the 10-year capital program and assist staff in planning for and maintaining our infrastructure. Stormwater infrastructure is also maintained through inspection and maintenance programs.

A Flood Evaluation Study for the Little Etobicoke Creek watershed is currently underway to identify Capital improvement needs to address nuisance flooding.

Achievements over the past year include:

- Initiated several **Pond forebay dredging** projects to remove sediment and reinstate water quality performance
- Jaguar Valley Emergency Storm Sewer Replacement and Dundas Street West at Proudfoot Street Emergency Slope Stabilization in 2016

Investigated over 100 requests related to spills, sanitary cross connections and enforcement of the Storm Sewer
 By-law in 2017 (30 per cent increase from 2016)



Storm Sewer dye test to confirm sanitary cross connections

 Completed several Watercourse maintenance projects – including the Levi Creek Road Embankment, Cooksville Creek Storm Outfall Reconstruction



Watercourse slope stabilization at failed road embankment

Managing Our Human Resources

Our Structure

Stormwater services are delivered with key support provided by multiple departments, divisions and an external partner (Region of Peel):

- Engineering and Construction
- Finance
- Information Technology
- Parks and Forestry
- Region of Peel (Stormwater Charge billing)
- Transportation and Infrastructure Planning
- Works Operations and Maintenance

Having a team of staff making key contributions to the Service Area requires strong internal relationships and communication to effectively organize and deliver our services. Working together, our Service Area structure supports Stormwater business goals to establish a sustainable service level for Stormwater and deliver mitigation and improvement projects.

Our Talent

The Stormwater team is comprised of individuals that bring a wealth of expertise and experience from across Canada and around the world, supporting our vision to be a leader in the delivery of stormwater services. The table below provides some of the roles that are dedicated to the Stormwater Service Area and their membership in professional associations:

Our Service Area staff includes:	Staff are active members with various associations including:
Engineers: Storm Drainage/Environmental/Water Resources	
Environmental Services Specialist	American Public Works Association (APWA)
Infrastructure Management Specialist	Municipal Engineers Association (MEA)
Outreach Assistants	Ontario Association of Certified Engineering Technicians and Technologists (OACETT)
Storm Drainage Coordinators	Professional Engineers of Ontario (PEO)
Storm Drainage/Environmental Technologists & Technicians	
Stormwater Charge Program Coordinator	

Critical Roles/Functions to Achieve Business Goals

Multiple staff working together provides support to deliver critical roles for Stormwater. The following functions are critical to achieving the 2018-2021 Stormwater business goals:

- Continued development of a storm sewer asset management plan
- Development of an asset management system to monitor and manage all stormwater assets
- Development of an enhanced Storm Sewer By-law enforcement program
- Enhanced outreach and education programming

Roles and functions are anticipated to change when more project management and program planning is required to support delivery of large drainage studies and Capital projects. Additionally, with the development of new and refined asset management plans and enhanced programs, critical roles and functions may also evolve from 2018 through to 2021.

Talent Needs

Service Area talent is supplied from internal promotions and external hires. Qualified applicants from the labour market as well as co-op students, engineers in training (EIT) and the proposed technologist in training internship program (shared with Roads Service Area) contribute to Stormwater. Historically, our seasonal staff and students have proven to be a good source for candidates for full time positions. Through these assignments, the students and contract staff gain the necessary experience to qualify for full time positions. For 2018, a Co-ordinator position is requested to develop and implement an enhanced Storm Sewer By-law enforcement program.

Proposed Full Time Equivalent Staffing Distribution by Program

Program	2017	2018	2019	2020	2021
Administration	3.0	2.0	2.0	2.0	2.0
Planning & Operations	21.4	22.4	20.4	20.4	20.4
Total Service Distribution	24.4	24.4	22.4	22.4	22.4

Note: Numbers may not balance due to rounding.

Staffing changes for 2018 - no net change in total FTEs:

- One contract position that supports the Stormwater Charge ends in 2017
- An increase of one permanent FTE for a Storm Sewer By-law Enforcement Co-ordinator (BR# 3960)

Staffing changes for 2019:

• Two Clean Water & Wastewater Fund (CWWF) positions end

Stormwater Budget & Financial Overview

2018 Stormwater Rate and Future Adjustments

The Stormwater Service Area, like other service areas in the City, depends on safe and reliable infrastructure to operate successfully. While some of Mississauga's stormwater infrastructure is relatively new, many of the assets are aging and require significant maintenance or renewal, and therefore require dedicated funding to maintain a state of good repair. Additionally, assets that were built many years ago, such as storm sewer pipes, are approaching the end of their service life and will require replacement in the near future. With increased frequency of extreme storm events, the need to invest in our infrastructure to ensure we have a resilient stormwater system is more apparent than ever. This investment in our stormwater infrastructure will provide for properly funded maintenance and capital improvement programming to mitigate flooding, enhance water quality and allow the Stormwater Service Area to continue to provide safe and reliable infrastructure moving forward.

To determine the stormwater rate, service levels and operating/capital needs are set to reflect infrastructure priorities, inflationary pressure and reserve fund contributions needed now to plan for funding challenges foreseen with replacing costly assets (e.g., pipes) in the future. Furthermore, service level changes and the resulting stormwater rate increase reflect a balance between fiscal responsibility and resident service expectations.

The stormwater rate is established on an annual basis during the budget approval process, through a fees and charges by-law subject to Council approval. An increase to the stormwater rate, from the initial 2016 rate that funded an interim level of service, will allow future stormwater capital and operational needs to be addressed. As shown in the table below an annual rate of \$104 per stormwater billing unit is proposed for 2018.

			•
	2016	2017	2018
Stormwater Rate (per billing unit)	\$100	\$102	\$104
			•

To learn more about the Stormwater Charge please visit: <u>www.stormwatercharge.ca</u>

Distribution of Stormwater Charge Revenue (\$ Millions)

The pie charts below provide an overview of Stormwater Charge Revenue segregated by the Operating and Infrastructure Renewal Programs for 2018. Furthermore, the 2018 Capital Program is distributed by funding source.





The following pie charts provide an overview of Stormwater Charge Revenue allocated to Infrastructure Renewal Programs for 2018.

Note: Numbers may not balance due to rounding.

Description of Stormwater Infrastructure Renewal Allocations

Infrastructure Renewal – 72 per cent of the total stormwater revenue is to be allocated for infrastructure renewal items as follows:

- (i) Capital Reserve Fund (\$24.0 million)
- (ii) Debt charges associated with the financing of capital projects from previous years (\$1 million)
- (iii) Repayment to the tax base for investment in the Stormwater Charge start-up costs (\$0.5 million)
- (iv) Stormwater Pipe Reserve Fund for future pipe replacement needs (\$5.1 million)



The following pie charts provide an overview of Stormwater Charge Revenue allocated to Operating Programs for 2018.

Note: Numbers may not balance due to rounding.

Description of Stormwater Operating Programs:

<u>Operations and Maintenance</u> – Provides for the City-wide direct and allocated costs associated with providing the stormwater service. Examples include watercourse maintenance, catch basin cleaning, storm sewer inspection and repair and enhanced residential outreach and education program (\$8.5 million).

<u>Administration Costs</u> – Provides for Region of Peel costs for Stormwater Charge billing and customer service support as well as costs for the City to administer the Stormwater Charge (\$1.1 million).

<u>Stormwater Charge Exemptions and Credits</u> – Provides for credits and technical exemptions to recognize properties with stormwater management best practices or which drain directly to Lake Ontario or an adjacent municipality (\$2.3 million).

Proposed Operating Budget

This part of the Business Plan sets out the financial resources required to deliver the proposed 2018-2021 Business Plan. Information is provided by major expenditure and revenue category as well as by program. The costs to maintain existing service levels and operationalize prior decisions are identified separately from proposed changes. The budget for 2017 was \$12.1 million and the proposed budget for 2018 is \$11.9 million.

Maintain Current Service Levels

The City aims to keep cost increases needed to maintain current service levels in line with inflation. Each year, City staff identify efficiencies and streamline processes through continuous improvement while maintaining service levels and managing additional costs associated with administering the Stormwater Charge.

Stormwater Charge Exemptions and Credits

The 2018 budget proposes a decrease in technical exemptions and program credits based on latest analysis indicating a decreased volume of applications.

New Initiatives

Enhanced Storm Sewer By-law Enforcement (BR# 3960) is proposed in 2018 and is detailed further in the 'Proposed New Initiatives and New Revenues section. The proposed initiative supports the *Connect – Maintain Infrastructure* pillar of Mississauga's Strategic Plan and is primarily focused on protecting the quality of our water resources and the source of our drinking water.

Proposed Changes to 2018 Net Operating Budget by Category (000s)



Total Changes to Maintain Current Service Levels

The following table breaks down the total cost (\$11.9 million) to maintain current service levels for the Stormwater Service Area, which is a net operating budget decrease of \$0.2 million over the 2017 Budget.

Increases to the 2018 proposed budget include:

- \$0.6 million cost allocation budget re-alignment between Other Expenses and Labour costs
- \$0.4 million in operating increases, including catch basin and inlet/outlet cleaning and watercourse maintenance
- \$0.2 million in new programs and other increases

Decreases to the 2018 proposed budget include:

- \$0.6 million cost allocation budget re-alignment between Other Expenses and Labour costs
- \$0.8 million decrease associated with the expected application of technical exemptions and credits

Category	Changes to 2018 budget from 2017 (\$000's)
2017 Base Budget	12,083
Operating Decreases:	
Technical Exemptions and Credits	-806
Cost allocation budget re-alignment between Other Expenses and Labour costs	-600
Operating Increases:	
Cost allocation budget re-alignment between Other Expenses and Labour costs	600
Increased catchbasin and inlet/outlet cleaning costs	310
Increased watercourse maintenance costs	100
Increase for CVC Greening Corporate Grounds Program	130
Other Increases	37
Total Changes to Maintain Current Service Levels	11,854
New Initiatives	82
Total 2018 Operating Budget	11,936

Operating Budget Details

The following table identifies the budgeted and forecasted operating expenditures and revenues for 2018-2021, as well as the 2017 Budget and 2016 Actuals by major program within the Service Area.

Proposed Budget by Program

Description	2016 Actuals (\$000's)	2017 Budget (\$000's)	2018 Proposed Budget (\$000's)	2019 Forecast (\$000's)	2020 Forecast (\$000's)	2021 Forecast (\$000's)
Expenditures to Deliver Current Services						
Storm Operations and Maintenance	7,209	7,877	8,460	8,502	8,529	8,427
Storm Administration Costs	1,237	1,076	1,083	1,086	1,089	1,092
Storm Exemptions & Credits	958	3,130	2,310	2,361	2,411	2,464
New Initiatives and New Revenues			82	112	113	115
Total Expenditures	9,404	12,083	11,936	12,061	12,143	12,098
Capital Reserve Fund Contributions	18,670	24,353	24,489	24,230	24,021	23,976
Pipe Reserve Fund Contributions	5,832	4,100	5,100	6,100	7,100	8,100
Debt Charges	1,020	1,010	1,000	990	978	964
Total Infrastructure Renew al	25,522	29,463	30,589	31,320	32,099	33,040
Stormwater Revenue Accrual	5,746					
Stormwater Program	40,672	41,546	42,525	43,380	44,241	45,138

Expenditures Budget - Changes by Year		(1%)	1%	1%	(0%)
Proposed Net Budget - Changes by Year		2%	2%	2%	2%

Note: Numbers may not balance due to rounding.

Budget forecast assumes 2% annual inflation to Stormwater Program.

Proposed Cost Increase Required to Maintain Current Service Levels

The following table provides detailed highlights of budget changes by major cost and revenue category. It identifies the net changes to maintain existing service levels, taking into account efficiencies, cost savings, and cost increases arising from prior-year decisions.

Category	2017 Budget (\$000's)	2018 Proposed Budget (\$000's)	Change (\$000's)	Details (\$000's)
Labour and Benefits	4,202	4,884	682	\$600 Increase is re-alignment of labour cost allocation budget transferred from Contractor & Professional Services resulting in no increase in net budget. \$83 Increase reflects labour adjustments and other fringe benefit changes.
Contractor & Professional Services	3,803	3,756	(47)	 (\$600) Decrease is re-alignment of labour cost allocation budget transferred to Labour and Benefits resulting in no increase in net budget. \$310 Increase in Catchbasin Cleaning \$130 Increase in CVC Greening Corporate Grounds Program \$100 Increase in Watercourse Maintenance
Transportation, Equipment Costs & Maintenance	546	519	(27)	
Materials, Supplies & Other Services	91	86	(5)	
Occupancy & City Costs, Advertising & Promotions Communication Costs	51	58	7	
Finance Other	160	140	(20)	
Transfers To Reserves and Reserve Funds	100	100	0	
Stormwater Charge Exemptions & Credits	3,300	2,494	(806)	Decrease in technical exemptions and program credits based on latest analysis
Other Revenues	(170)	(184)	(14)	
Total Operating Programs	12,083	11,853	(230)	
Infrastructure Renewal	28,453	29,589	1,136	\$1,000 Increase transfer to the Stormwater Pipe Reserve Fund \$455 Increase transfer to the Capital Reserve Fund (\$320) Decrease repayment cost for stormwater rate implementation
Debt	1,010	1,000	(10)	
Total Infrastructure Renewal	29,463	30,589	1,126	
Total	41,546	42,443	897	

Proposed New Initiatives and New Revenues

This table presents the costs by Budget Request (BR#) for proposed new initiatives. Detailed descriptions of each Request can be found on the pages following the table.

Description	BR #	2018 FTE Impact	2018 Proposed Budget (\$000's)	2019 Forecast (\$000's)	2020 Forecast (\$000's)	2021 Forecast (\$000's)	2018 to 2021 FTE Impact	2018 to 2021 Capital (\$000's)
New Initiatives								
Enhanced Storm Sewer By-law Enforcement	3960	1.0	82	112	113	115	1.0	0
Total New Initiatives		1.0	82	112	113	115	1.0	0
Total New Initiatives and New Revenues		1.0	82	112	113	115	1.0	0

Note: Numbers may not balance due to rounding.

Amounts are net.

Enhanced Storm Sewer By-law Enforcement

A Storm Sewer By-law Enforcement Co-ordinator is proposed to develop and implement an enhanced enforcement program. Increasing issues and expected level of service demonstrates the need to proactively protect our water resources and stormwater system. This new initiative allows the Stormwater Service Area to ensure the necessary due diligence to remain in compliance with legislative requirements (i.e., Ontario's Water Resources Act and Environmental Protection Act). Further, demand on existing resources supports the need for dedicated staff to co-ordinate the enforcement program.

Budget Request #: 3960

Proposed Initiative	Department	Service Area
Enhanced Storm Sewer By-law Enforcement	Transportation & Works Department	Stormwater

Required Annual Operating Investment

Impacts (\$000s)	2018	2019	2020	2021
Gross Expenditures	81.7	111.5	113.1	114.7
Reserves & Reserve Funds	0.0	0.0	0.0	0.0
User Fees & Other Revenues	0.0	0.0	0.0	0.0
Tax Levy Requirements	81.7	111.5	113.1	114.7
* Net Change in \$		29.8	1.6	1.6
FTEs	1.0	1.0	1.0	1.0

*In each year, all values are cumulative, not incremental.

Required Capital Investment

Total Capital (\$000s)	2017 & Prior	2018	2019	2020	2021 & Beyond
Expenditures	0.0	0.0	0.0	0.0	0.0

Why Staff Recommend this Initiative

Storm Sewer By-law enforcement is carried out by the Environmental Technologist who also has development application review duties. Due to workload pressures, this staff person can devote just 30 per cent of her time to by-law enforcement. The need for additional resources allocated to enforcement activities to ensure compliance with provincial legislation and protect water quality has continued to increase. Effective enforcement of the by-law requires dedicated staff resources focused on the program.

Details of Service Change

A new FTE is proposed for 2018 to be dedicated to the Storm Sewer By-law enforcement program. The objective is to enhance the program with resources needed for the City to effectively do its due diligence to remain in compliance with provincial legislation regulating the operation of the stormwater pipe network and to protect water quality. A dedicated staff resource will allow for prompt responses to complaints as well as the design and implementation of a program that proactively identifies problem areas and applies the appropriate tools to address them. Specific objectives include: complaints are investigated and appropriate action initiated within 24 hours; problem sites are monitored at the appropriate frequency; potential sewer cross-connections are investigated in a timely manner and confirmed cross-connections are rectified; the City's Oil and Grit Separator (OGS) database is kept up to date and all OGS units are properly inspected and maintained as required; sites that would benefit from a Pollution Prevention Plan are requested to prepare a plan and, once accepted by the City, the plan is successfully implemented and maintained; sites that undertake a pollution prevention plan as part of the Stormwater Charge Credit program will have their reports reviewed and their implementation inspected in a timely manner; and, problem areas are proactively identified, specific contaminants are tracked to their source and appropriate actions are taken to achieve compliance.

Service Impact

This resource, a Storm Sewer By-law Enforcement Co-ordinator, will represent an operating budget increase of \$85,000 starting in April, 2018. Without this resource, it is anticipated that response times to investigate complaints and sewer cross-connections will not meet expected levels of service, and adequate protection for our storm drainage system from illicit discharges may not be provided. This would also put the City at risk of being out of compliance with provincial legislation which regulates the operation of the City's storm sewers and the water and contaminants they discharge to the environment. Furthermore, the City will not be in a position to respond to any increased expectations on the part of residents with respect to water quality issues or to review and inspect an increasing number of pollution prevention plans submitted under the Stormwater Credit Program. In the absence of a demonstrated commitment to the protection of our water resources, the City may be put at some risk of non-compliance with provincial legislation and/or litigation should environmental degradation or property damages arise from contaminated storm sewer discharges.

Capital Program & Financing Overview

Infrastructure

The City of Mississauga is committed to providing quality stormwater services through safe, reliable infrastructure. **Build and Maintain Infrastructure** is a key strategic goal in the City of Mississauga's Strategic Plan as well as a top priority of the City's Business Plan. These principles are key concepts underlying the Stormwater Charge. When the Charge was initially approved at \$100 per stormwater billing unit, it was based on the interim funding level. It was anticipated that funding would increase in the future to respond to increasing infrastructure requirements.

At the core of the City's need to achieve a sustainable stormwater business model is the need to implement sound asset management practices involving:

- Developing an inventory of City-owned assets
- Monitoring and reporting of infrastructure condition
- Preparing appropriate asset renewal and maintenance programs
- Developing financial strategies to effectively manage those programs over the lifecycle of stormwater infrastructure

As previously mentioned, one of the business goals of the 2018-2021 plan is to continue to improve asset management practices as they pertain to storm pipes and all stormwater assets. This includes the improvement of inventory data, monitoring, capital and maintenance planning and the financing of storm sewer infrastructure with the development of an asset management system. Repairing and rehabilitating aging stormwater infrastructure requires an increased focus on the funding needed to renew the City's long term assets. As such, enhanced infrastructure funding strategies and mechanisms are being developed to assist the City in addressing these challenges.

A critical part of the City's Stormwater Charge is the need to provide adequate and sustainable funding for the renewal of the storm pipes, in addition to stormwater management ponds and watercourse erosion control.

Stormwater Infrastructure 2017 Replacement Costs (Estimated \$2.1 billion)



Pipe Program Financing

The stormwater program includes a provision of \$5.1 million in 2018 for future pipe replacement needs. The 2018-2021 Business Plan and Budget assumes this provision will increase in each of the next four years, reaching an annual provision of \$8.1 million in 2021. This increase is necessary as part of the Service Area's goal to reach a sustainable service level.

The following chart reflects the projected annual closing balances of the Stormwater Pipe Reserve Fund, with a balance of \$70.1 million in 2027.



Work is underway to assess the condition of storm sewers, program any future repair and rehabilitation needs and identify funding pressures. Continuation of this work to deliver a comprehensive asset management plan is included in this Business Plan. This body of work will provide more accurate information to determine the appropriate level of annual funding required to fund the Pipe Reserve Fund moving forward.



Renewal of storm sewers is a major focus of the Business Plan



Corroded metal storm sewers require replacement

Capital Program Financing

In addition to the funding required for the City's pipe infrastructure, the Stormwater Service Area must address present and future needs that include stormwater ponds, flood relief, watercourse erosion control and drainage studies.

Revenues from the 2018 Stormwater Charge will be \$42.5 million and are estimated to increase to \$45 million by 2021. This revenue also funds the Stormwater Capital Reserve Fund. As shown in the following chart, the closing balances for the Reserve Fund will range between \$18 million and \$32 million over the 10-year period. Careful planning will ensure that capital priorities will be funded throughout the forecast to 2027, with a positive balance remaining in the Reserve Fund.

Maintaining adequate balances will allow flexibility to address infrastructure needs that arise as the City moves to implement the Stormwater asset management plan, recommendations from future studies and to fund projects that are currently unfunded.

Stormwater Capital Reserve Fund Balance (2018-2027)



Proposed Capital Budget

This section summarizes the forecast 10-year capital requirements for this service. The following table presents the forecast by major program. The next table summarizes the sources of financing for the capital forecast.

Program Expenditures	2018 Proposed Budget (\$000's)	2019 Forecast (\$000's)	2020 Forecast (\$000's)	2021 Forecast (\$000's)	2022- 2027 Forecast (\$000's)	Total 2018- 2027 (\$000's)
Drainage Studies and Improvements	6,790	14,680	8,790	6,260	36,200	72,720
SWM Facilities and Flood Relief Works	4,570	25,480	32,210	32,580	69,220	164,060
Watercourse Erosion Control	4,654	7,400	11,460	13,270	73,120	109,904
Total	16,014	47,560	52,460	52,110	178,540	346,684

Proposed 2018-2027 Capital Budget by Program

Note: Numbers may not balance due to rounding. Numbers are gross.

The proposed 2018 budget is lower relative to years 2019 through to 2021 due to the advancement of several projects in 2017 enabled by CWWF funding.

Proposed 2018-2027 Capital Forecast Highlights include the following:

- Storm Sewer Condition Assessment, Rehabilitation and Asset Management System (2018, ongoing)
- Lakeview Master Drainage Plan (2018)
- Applewood Creek and Serson Creek Flood Evaluation Studies (2018)
- Lisgar Community Monitoring and Improvements (2018, ongoing)
- Storm Pond Rehabilitation and Dredging various locations (2018, ongoing)
- Cooksville Creek Flood Storage Facilities, McKenzie Park and Mississauga Valley Boulevard (2019)
- Cooksville Creek Erosion Control, Meadows Boulevard to Rathburn Road East (2019)
- Little Etobicoke Creek Channel Widening and Dixie Road Culvert Assessment (2021)

Proposed 2018-2027 Capital Budget by Funding Source

The following table provides the funding sources proposed to fund the capital portion of the proposed 2018-2021 Business Plan and 2018 Budget and the consolidated forecast for 2022-2027.

Funding	2018 Proposed Budget (\$000's)	2019 Forecast (\$000's)	2020 Forecast (\$000's)	2021 Forecast (\$000's)	2022-2027 Forecast (\$000's)	Total 2018-2027 (\$000's)
Tax/Debt	390	2,840	2,310	0	0	5,540
Development Charges	1,325	14,123	12,354	12,270	18,670	58,742
Developer Contributions	0	475	750	750	0	1,975
Recoveries	0	0	750	750	0	1,500
Subsidies and Senior Govt. Level Grants	0	0	0	0	0	0
Stormwater Charge	14,299	30,122	36,297	38,340	159,870	278,927
Total	16,014	47,560	52,460	52,110	178,540	346,684

Proposed 2018 Capital Budget Detail

The following tables provide a detailed listing of proposed capital projects for 2018.

Program: Drainage Studies and Improvements

Project Number	Project Name		Recovery (\$000's)	Net Cost (\$000's)	Funding Source
TWSD00113	Storm Sewer Network Modelling - City-wide Model	250	0	250	Stormwater Charge
TWSD00137	Monitoring and minor modification of Stormwater Management Facilities - Various Locations	80	0	80	Development
TWSD00229	Low Impact Development Roads and Stormwater and Sustainable Practices - Various Locations	250	0	250	Stormwater Charge
TWSD00306	Lakeview Master Drainage Plan	380	0	380	Development
TWSD00308	Port Credit Master Drainage Plan	380	0	380	Development
TWSD00321	Storm Sewer Oversizing - Various Locations	270	0	270	Development
TWSD00334	Local Storm Sewer Assessment Enhancements - Various	1,000	0	1,000	Stormwater Charge
TWSD00335	Storm Sewer Asset Management System	660	0	660	Stormwater Charge
TWSD00375	STM Pond Rehabilitation – Various Locations	230	0	230	Stormwater Charge
TWSD00402	Lisgar Improvements - Ongoing monitoring, Report & Implementation Plan	390	0	390	Tax/Debt
TWSD00450	Drainage Improvements - Various Locations	500	0	500	Stormwater Charge
TWSD00462	Serson Creek & Applewood Creek Flood Evaluation Study	250	0	250	Stormwater Charge
TWSD00463	Corrugated Metal Pipe Trunk Sewer Rehabilitation - Various Locations	550	0	550	Stormwater Charge
TWSD00486	Storm Sewer Cross-Connection Rehabilitations - Various Locations	100	0	100	Stormwater Charge
TWSD00487	Stavebank Creek, culvert and erosion control works - behind Pinetree Crescent	1,500	0	1,500	Stormwater Charge
Total		6,790	0	6,790	

Note: Numbers may not balance due to rounding.

Program: SWM Facilities and Flood Relief Works

Project Number	Project Name	Gross Cost (\$000's)	Recovery (\$000's)	Net Cost (\$000's)	Funding Source
TWSD00104	SWM Pond Rehabilitation – Various Locations	700	0	700	Stormwater Charge
TWSD00236	Cooksville Creek Flood Protection Berm Improvement - Helen Molasy Memorial Park	350	0	350	Development
TWSD00332	Detailed Design Works to Renew Trunk Storm Sewers	100	0	100	Stormwater Charge
TWSD00336	Condition Assessments Trunk Storm Sewers	320	0	320	Stormwater Charge
TWSD00345	SWM Pond Rehabilitation – Various Locations	600	0	600	Stormwater Charge
TWSD00376	Pinnacle STM Facility (#3704) - near Hurontario & Eglinton	2,000	0	2,000	Development
TWSD00449	Little Etobicoke Creek Channel Improvements and Dixie Road Culvert Upgrades	500	0	500	Stormwater Charge
Total		4,570	0	4,570	

Proposed 2018 Capital Budget Detail (Cont'd)

Program: Watercourse Erosion Control

Project Number	Project Name		Recovery (\$000's)	Net Cost (\$000's)	Funding Source
TWSD00095	Cooksville Creek Erosion Control - Canadian Pacific Railway to Kirwin Avenue	480	0	480	Development
TWSD00133	Minor Erosion Control Works - Various Locations	80	0	80	Development
TWSD00179	Mimico Creek Erosion Control - Etude Drive to Derry Road East	110	0	110	Development
TWSD00206	Applewood Creek Erosion Control - Lakeview Golf Course	450	0	450	Development
TWSD00246	Sheridan Creek Erosion Control - Lushes Ave. to behind Fletcher Valley Cres.	530	0	530	Development
TWSD00250	Little Etobicoke Creek Erosion Control - Dundas Street to Dixie Road	150	0	150	Development
TWSD00318	Etobicoke Creek Erosion Control - Behind Pony Trail Drive to Bloor Street	1,200	0	1,200	Development
TWSD00371	Levi Creek watercourse realignment, upstream of Old Derry Road	320	0	320	Development
TWSD00372	Mary Fix Creek erosion control, downstream of Dundas Street West	480	0	480	Development
TWSD00374	Mimico Creek erosion control, upstream and downstream of Rena Rd	210	0	210	Development
TWSD00446	Etobicoke Creek Erosion Control, upstream of Eglinton Avenue -contributions to T.A.M.	384	0	384	Development Charges,Stormwater
TWSD00447	Credit River eroson control and ice dam repair, Erindale Park	170	0	170	Development
TWSD00448	Credit River erosion control at Barbertown Bridge - contributions to CMS	90	0	90	Development
Total		4,654	0	4,654	

Proposed 2019-2021 Capital Budget by Sub-Program

The following tables provide a listing of capital forecast by sub-program for 2019 -2021.

Sub-Program	2019 Forecast (\$000's)	2020 Forecast (\$000's)	2021 Forecast (\$000's)
Drainage Studies and Improvements			
STM Drainage	3,190	3,160	910
STM Storm Sewer	6,950	5,280	5,000
STM Storm Sewer Oversizing	270	270	270
STM Studies	4,270	80	80
Subtotal	14,680	8,790	6,260

Sub-Program	2019 Forecast (\$000's)	2020 Forecast (\$000's)	2021 Forecast (\$000's)
SWM Facilities and Flood Relief Works			
STM Channelization	0	0	0
STM Culvert Improvement	0	0	0
STM Flood Relief	12,400	21,140	22,090
STM SWM Facilities	13,080	10,320	9,740
Subtotal	25,480	31,460	31,830

	2019	2020	2021
Sub-Program	Forecast	Forecast	Forecast
	(\$000's)	(\$000's)	(\$000's)
Watercourse Erosion Control			
STM Erosion Control	7,400	11,460	13,270
Subtotal	7,400	11,460	13,270
Total Expenditures	47,560	51,710	51,360

Note: Numbers may not balance due to rounding. Numbers are net.

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Reserves and Reserve Funds

Reserves and Reserve Funds are established by Council to assist with long term financial stability and financial planning. These funds are set aside to help offset future capital needs, obligations, pressures and costs. They are drawn upon to finance specific purpose capital and operating expenditures as designated by Council, to minimize Stormwater Charge fluctuations due to unanticipated expenditures and revenue shortfalls, and to fund ongoing projects and programs.

The following chart shows the relationship between the different funds:



Existing Core Services

Reserves

The Stormwater Reserve for Contingency is funded entirely from the Stormwater Operating Budget. If needed, these funds will offset any unanticipated fluctuations in revenue or expenses which occur during the year. It will also provide for costs associated with the implementation of the new Regional water billing system.

Reserve Funds

Reserve Funds are segregated, restricted and provide for capital emplacements.

The Stormwater **Capital Reserve Fund** will provide funding for infrastructure needs related to ponds and erosion control along watercourses. The Stormwater **Pipe Reserve Fund** provides for the renewal of the City's pipe infrastructure.

The **Development Charges Reserve Fund** accumulates funds collected under the City's Development Charges By-law as permitted under the *Development Charges Act*, 1997 and funds growth related projects. These funds are obligatory in nature and reported as deferred revenue on the City's Financial Statements.

Additional Reserve Funds included in this Section are:

- Developer Contributions
- Lot levies
- General Municipal Development
- Excess Debt



Forecast Change

The following table provides a summary of the projected 2018 Reserve and Reserve Funds as compared to 2017. Detailed descriptions of each Reserve and Reserve Fund can be found at the end of this section.

Reserve and Reserve Funds Summary

2018 Operating and Capital Reserve Funds	2017 Projected Balance (\$000's)	2018 Projected Balance (\$000's)	Change (\$000's)	%Change
Reserve for Contingency	6,500	6,500	0	0.00%
Capital Reserve Fund	16,370	30,416	14,046	85.81%
Pipe Reserve Fund	10,107	11,936	1,829	18.10%
Deferred Fund (Development Charges)	29,622	32,675	3,053	10.31%
Other Reserve Funds	23,969	24,688	719	3.00%
Total	86,567	106,214	19,647	23%

Note: Numbers may not add due to rounding

Transfers to Stormwater Reserve and Reserve Funds:

The 2018 Stormwater Operating Program recommends transfers to the Reserve and Reserve Funds totalling \$29.2 million as follows:

- \$24.0 million to Stormwater Capital Reserve Fund
- \$5.1 million to the Stormwater Pipe Reserve Fund
- \$0.1 million to the Stormwater Reserve for Contingency which will provide for potential costs associated with the Region of Peel's billing system

Transfers from Reserve Funds:

The 2018 Stormwater Capital Program recommends transfer from the Reserves and Reserve Funds to capital totalling \$15.6 million as follows:

- \$10.8 million from the Stormwater Capital Reserve Fund
- \$3.5 million from the Stormwater Pipe Reserve Fund
- \$1.3 million from the Development Charges Reserve Fund

Continuity Schedule of Stormwater Reserve and Reserve Funds

RESERVE/RESERVE FUND	Balance January 01, 2017 (\$000)	2017 Projected Contribution s (\$000)	2017 Projected Expenditure S (\$000)	2017 Projected Interest (\$000)	Projected Balance December 31, 2017 (\$000)	2018 Projected Contribution s (\$000)	2018 Projected Expenditure S (\$000)	2018 Projected Interest (\$000)	Projected Balance December 31, 2018 (\$000)		
Total Stormwater Operating Reserve											
Reserve for Stormwater Contingency	6,345	100	55	0	6,500	0	0	0	6,500		
Total Stormwater Operating Reserv	6,345	100	55	0	6,500	0	0	0	6,500		
Total Storm Water						•					
Capital Reserve Fund	9,346	23,533	(16,986)	477	16,370	23,989	(10,829)	886	30,416		
Pipe Reserve Fund	5,832	4,100	0	175	10,107	5,100	(3,470)	199	11,936		
Total Storm Water	15,177	27,633	(16,986)	652	26,476	29,089	(14,299)	1,085	42,351		
Total Deferred Funded						1					
Development Charges Reserve Fund	25,859	3,400	(500)	863	29,622	3,426	(1,325)	952	32,675		
Total Deferred Funded	25,859	3,400	(500)	863	29,622	3,426	(1,325)	952	32,675		
Total Other Funded						•					
Debt Management - Storm Water	870	0	0	26	896	0	0	27	923		
Major Storm Improvement	17,337	0	0	520	17,858	0	0	536	18,393		
Major Watercourses	3,080	0	0	92	3,173	0	0	95	3,268		
Stormwater	4,474	82	(2,572)	59	2,042	0	0	61	2,104		
Total Other Funded	25,761	82	(2,572)	698	23,969	0	0	719	24,688		
Total Non-Tax Supported Reserve Funds	73,143	31,214	(20,003)	2,213	86,567	32,515	(15,624)	2,756	106,214		

Note: Numbers may not add due to rounding

10-Year Forecast Schedule

Stormwater Capital Reserve Fund

The following table summarizes the Stormwater Capital Reserve Fund opening balances, contributions, withdrawals, allocation to projects and closing balance. This Reserve Fund is used to fund stormwater infrastructure capital repair and replacement costs as well as investments required to ensure that the aging infrastructure continues to operate effectively, especially in light of the increasingly frequent extreme storm events resulting from climate change. The infrastructure contribution will be fully funded from the Stormwater Charge and fund \$237 million in projects over the 10-year period. The annual Stormwater Charge is forecasted to increase to maintain the proposed capital spending included in this plan.

Stormwater Capital Reserve Fund	2018 (\$000's)	2019 (\$000's)	2020 (\$000's)	2021 (\$000's)	2022 (\$000's)	2023 (\$000's)	2024 (\$000's)	2025 (\$000's)	2026 (\$000's)	2027 (\$000's)	2018-2027 TOTAL (\$000's)
Opening Balance	16,370	30,416	32,274	26,469	18,052	25,100	26,816	30,533	26,893	26,150	16,370
Infrastructure Contribution	23,989	23,970	24,021	23,976	23,615	23,320	23,028	22,732	23,337	23,053	235,041
Interest Income (Charge)	886	940	771	526	731	781	889	783	762	654	7,723
Total Available Balance	41,245	55,326	57,066	50,972	42,397	49,201	50,733	54,048	50,992	49,856	259,134
Allocation to Projects	10,829	23,052	30,597	32,920	17,297	22,384	20,201	27,155	24,843	27,390	236,667
Closing Balance	30,416	32,274	26,469	18,052	25,100	26,816	30,533	26,893	26,150	22,466	22,466

Note: Numbers may not add due to rounding

Stormwater Pipe Reserve Fund

The following table summarizes the Stormwater Pipe Reserve Fund opening balances, contributions, withdrawals, allocation to projects and closing balance. Over the next ten years, \$42 million in capital projects are planned for the pipe infrastructure. This estimate is most likely to change with the completion of the City's asset management plan initiative.

This reserve fund will be used to fund the replacement of the City's stormwater pipe network. The estimated replacement cost of the pipe inventory is \$1.88 billion. In the 2012 Stormwater Financing Study, the sustainable level of recommended funding was \$16 million annually. The annual contributions will amount to \$5.1 million in 2018 and increase to \$14.1 million by 2027. The annual Stormwater Charge will need to increase to maintain the proposed capital spending included in this plan.

Pipe Reserve Fund	2018 (\$000's)	2019 (\$000's)	2020 (\$000's)	2021 (\$000's)	2022 (\$000's)	2023 (\$000's)	2024 (\$000's)	2025 (\$000's)	2026 (\$000's)	2027 (\$000's)	2018-2027 TOTAL (\$000's)
Opening Balance	10,107	11,936	11,112	12,674	15,572	20,401	27,817	36,455	46,353	57,548	10,107
Infrastructure Contribution	5,100	6,100	7,100	8,100	9,100	10,100	11,100	12,100	13,100	14,100	96,000
Interest Income (Charge)	199	146	162	218	329	516	739	998	1,295	1,630	6,231
Total Available Balance	15,406	18,182	18,374	20,992	25,001	31,017	39,655	49,553	60,748	73,278	112,338
Allocation to Projects	3,470	7,070	5,700	5,420	4,600	3,200	3,200	3,200	3,200	3,200	42,260
Closing Balance	11,936	11,112	12,674	15,572	20,401	27,817	36,455	46,353	57,548	70,078	70,078

Note: Numbers may not add due to rounding

Stormwater Development Charges – Stormwater Management

The following tables summarize the Stormwater Development Charges – Stormwater Management Reserve Fund opening balance, contributions, withdrawals, allocation to projects and closing balance. In keeping with the City's Development Charges policy, Development Charges revenues and costs are closely monitored. Projects in the medium and longer term will be re-evaluated as part of the annual budget process.

DCA-Stormwater Management Reserve Fund	2018 (\$000's)	2019 (\$000's)	2020 (\$000's)	2021 (\$000's)	2022 (\$000's)	2023 (\$000's)	2024 (\$000's)	2025 (\$000's)	2026 (\$000's)	2027 (\$000's)	2018-2027 Total (\$000's)
Opening Balance	29,622	32,675	22,699	14,275	5,712	4,775	(2,419)	(403)	1,446	3,306	29,622
Development Revenue	3,426	3,486	3,513	3,540	2,787	2,802	2,817	2,832	2,832	2,832	30,867
Interest Income (Charge)	952	661	416	166	139	(70)	(12)	42	96	124	2,514
Total Available Balance	34,000	36,822	26,629	17,982	8,638	7,507	386	2,471	4,374	6,262	63,004
Allocation Projects	1,325	14,123	12,354	12,270	3,863	9,926	789	1,025	1,068	2,000	58,742
Closing Balance	32,675	22,699	14,275	5,712	4,775	(2,419)	(403)	1,446	3,306	4,262	4,262

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Appendix 1: Listing of Projects for Multi-Year Funding

The following projects, with multi-year funding, which have or will commence prior to full funding being allocated, are recommended to be approved to a maximum cost as follows:

Project Number	Project Name	Total All Years	Periods
TWSD00104	STM Pond Rehabilitation – Various Locations	1,040,000	2018 to 2019
TWSD00206	Applewood Creek Erosion Control - Lakeview Golf Course	3,300,000	2018 to 2020
TWSD00250	Little Etobicoke Creek Erosion Control - Dundas Street to Dixie Road	990,000	2018 to 2020
TWSD00345	STM Pond Rehabilitation – Various Locations	850,000	2018 to 2019
TWSD00374	Mimico Creek erosion control, upstream and downstream of Rena Rd	1,390,000	2018 to 2020
TWSD00375	STM Pond Rehabilitation – Various Locations	3,420,000	2018 to 2019
TWSD00449	Little Etobicoke Creek Channel Improvements and Dixie Road Culvert Upgrades	6,500,000	2018 to 2021
TWSD00462	Serson Creek & Applewood Creek Flood Evaluation Study	500,000	2018 to 2019
TWSD00463	Corrugated Metal Pipe Trunk Sewer Rehabilitation - Various Locations	1,100,000	2018 to 2019
Total		19,090,000	

Note: Numbers may not balance due to rounding. Numbers are gross.

Existing Multi-Year Projects with additional funding requests

Project Number	Project Name	Additional Amounts (\$)	Periods
TWSD00192	Cooksville Creek Erosion Control - Queen Elizabeth Way to Elaine Trail	1,060,000	2017 to 2019
TWSD00199	New Facility - Cooksville Creek Pond #2101 - Mississauga Valley Boulevard and Cntrl Pkwy	360,000	2015 to 2021
TWSD00208	Land/Cooksville Creek SWM Pond#2101/City Centre Outlet	1,060,000	2017 to 2020
TWSD00251	Cooksville Creek - Meadows Blvd. to Rathburn Rd. E.	2,080,000	2017 to 2019
Total		4,560,000	

Note: Numbers may not balance due to rounding. Numbers are gross.

Appendix 2 – Summary of Reserve and Reserve Fund Transfers

Transfers from the Operating Program to the following Reserve and Reserve Funds in 2018 are:

- \$23,989,091 to Stormwater Capital Reserve Fund
- \$5,100,000 to Stormwater Pipe Reserve Fund
- \$500,000 to Tax Capital Reserve Fund
- \$100,000 to Stormwater Reserve for Contingency

Transfers from the Stormwater Reserve for Contingency for the billing system implemented in conjunction with the Region of Peel and fluctuations in revenues and expenses, will be based on the actual amounts incurred.

Glossary

Please refer to section "V - Glossary" for corporate and Stormwater related definitions.