DRAINAGE AND FLOODING

MARCH, 2010

MISSISSAUGA
Leading today for tomorrow

CONTENTS

Floods are a natural occurrence and are part of the hydrologic cycle. The City of Mississauga considers flooding a serious issue as it can result in property damage, closures of facilities, disruption of city services, and possible evacuation. The City of Mississauga is committed to minimizing flooding and reducing the impacts on people, property and the environment.

Residents are encouraged to use this website to learn more about the City of Mississauga's stormwater management practices and updates on ongoing flooding issues.

I: TYPES OF FLOODING

Overland Flow

The volume of water generated from a heavy downpour can sometimes cause storm drainage systems to breach their capacity, resulting in the excess water flowing overland along the major drainage system. If the elevation of a building is at the same level or lower that that of the road, the runoff may spill onto the property and enter the building through the basement windows or other openings.

Surcharging Sanitary sewer

Heavy or unusually prolonged rainfall can overwhelm an adequately designed sanitary sewer system. During an overland flow event, water can enter the sewer at manhole covers and through cracks and spaces around the manhole which could lead to the sewer exceeding its capacity. Direct connections to the sanitary sewer, such as those from downspouts and weeping tiles can further compound the problem. Moreover, since sanitary sewers are not watertight, stormwater can also infiltrate into the sewer from the surrounding ground and through cracks and joints in the sewer. The additional volume can cause the sewer to overflow or 'surcharge' and lead to the backflow of water into the building through the drains.

Watercourse Flooding

Properties and structures located within a floodplain are especially susceptible to flooding due to the rise in water levels resulting from large, infrequent storm events.

II: STORMWATER MANAGEMENT

In an urban setting, such as the City of Mississauga, the development of roads, buildings, houses and parking lots, do not allow water to absorb into the ground naturally. This results in water remaining on the surface. It is important to direct and control this surface run-off and therein lies the purpose of **s**torm **w**ater **m**anagement (SWM).

SWM systems are primarily designed to control the quantity, quality and distribution of stormwater. They are typically categorized into two types:

- The minor system (storm sewers and road ditches) provides a basic level of service by conveying flows during minor storm events and;
- The major system (streets, roads, and natural channels) conveys runoff from events in excess of the minor system capacity.

It is important to note that it is neither practical nor economically feasible to design a SWM system capable of eliminating all flooding risk

The City of Mississauga has two separate sewer systems.

- The sanitary sewer system carries wastewater from toilets, showers, sinks and basement floor drains and falls under the jurisdiction of the Region of Peel.
- The storm sewer system carries stormwater from roads, paved areas, roofs and surface drains and building foundation tiles.

III: MAINTENANCE PROGRAMS

The Transportation and Works Department regularly inspects, cleans, maintains and repairs catch basins, storm sewers, culverts, bridges, storm drainage inlets/outlets and watercourses. The objectives are to:

- ensure that the City's drainage systems function as designed;
- ensure proper drainage and safe passage of traffic within the public road allowance;
- keep watercourses clear to meet design flood protection criteria;
- reduce the risk of flooding;
- ensure public safety;
- prevent damages to public/private property and pollution to the environment; and
- preserve the integrity of the storm drainage system.

During April to October, all storm sewer inlets and outlets are physically inspected on a monthly basis and cleaned as required to remove debris, garbage and vegetation. Between November and March, inlets and outlets are cleaned on a demand basis. The prioritized sites are inspected prior to a storm weather alert or flood advisory warning and after a heavy rainfall event, and cleaned as required. The removal of debris, garbage and vegetation is also addressed as required by responding to calls from the public.

All watercourses in the City are thoroughly evaluated. The watercourses are examined and erosion sites are identified, evaluated, prioritized and any maintenance requirements are determined. Watercourse maintenance activities include the removal of fallen trees, garbage, woody and urban debris including tires, shopping carts, bicycles and sediment accumulation. It also includes responding to spills and illegal dumping, maintaining the bed and embank and controlling erosion. Residents are encouraged to report sightings of such incidents to the City at 905-615-3000.

The City's Capital Works Program also includes larger scale watercourse rehabilitation projects that provide significant improvements to an area through natural rehabilitation, embankment stabilization and improved aesthetics.

IV: FLOOD PRECAUTIONS

Drainage Improvement Tips

- Eavestroughs should be cleaned regularly and inspected spring and autumn for leaks and debris. Downspouts should exit at a splash pad or be connected to extensions that divert water away from the building foundation. Onsite infiltration of this rooftop drainage is desirable with any excess water directed to a street or back lane and not onto a neighbour's property.

- Proper lot grading keeps water away from the foundation walls and basement windows and reduces the amount of water that seeps into underground weeping tile. The lawn should slope downward away from the property, and the grade should be checked regularly as ground settles over time. Contact the City of Mississauga's Transportation and Works Department at 905-615-3200 ext. 5155 prior to carrying out any grading works.

- Leaves and other yard waste that can clog catch basins and prevent the free flow of water should be cleared from the grates on your property.

- An effective way of absorbing and retaining water on lawns is to plant trees and shrubs. The extensive root-system of these alternatives absorbs water over a large area. Additionally, the canopy of a tree will slow the rate at which the ground receives water and allow it to absorb more than it otherwise would.

- Protective plumbing devices such as backflow valves and sump-pumps may reduce the risk of basement flooding from the surcharging of the sanitary sewer.

- Keep floor drains clear and sewer cleanouts accessible.

Residents in the Floodplain

Protect your property:

- Flood proof the home and other buildings.
- Keep vehicles, garden sheds and other items that may be damaged by moving waters out of the floodplain.

Prepare your basement:

- Do not have sleeping areas within your basement as flooding can occur rapidly.
- Keep electronics, furniture and other valuables raised off the floor as much as possible.
- Keep wet/dry vacuums and pumps on hand for quick removal of water.
- Consider elevating the furnace, water heater and electric panel to the ground floor. Also consider sealing basement walls with waterproofing compounds to minimize seepage.

V: FLOOD EMERGENCIES

In the event of a severe weather emergency, warnings provided by The Credit Valley Conservation Authority and through weather reports will alert the appropriate City of Mississauga staff. Monitor the local forecasts and listen to the radio for information.

Be aware of flood waters:

- Flow conditions within a creek can change dramatically within minutes of a rain storm starting and may continue to rise after the storm has passed.
- Flash flooding can occur. If there is any possibility of a flash flood, move immediately to higher ground.
- Be aware of areas known to flood.

If time permits immediately before a flood, prepare your home by:

- Shutting off all power to the home.
- Turning off basement furnaces and outside gas valves.
- Stockpiling drinking water.
- Installing pumps, if available.
- Removing all chemicals, pesticides and other toxic substances from the basement.
- Removing valuable furniture, electrical appliances and other belongings from the basement.

VI: During a Flood

If conditions permit you to safely remain in your home:

- Pump out flooded areas as required.
- Disinfect the flooded area every two or three days.
- Disinfect contaminated drinking water by boiling it for at least 5 minutes.
- Listen to the radio for local news reports and instructions.

If you must evacuate, you should do the following:

- Secure your home. If you have time, move essential and valuable items to an upper floor.
- Turn off utilities at the main switches or valves.
- Disconnect electrical appliances.
- Do not touch electrical equipment if you are wet or standing in water.
- Ensure all family members are suitably dressed for the weather conditions.
- Do not walk through moving water. If you must, use a stick to check the firmness of the ground.
- Do not drive into flooded areas. If floodwaters rise around your car, abandon the car and move to higher ground if you can do so safely.

Creek Safety:

- Creek banks and crossings may become unstable and erode quickly during high flow events. Keep a safe distance away.
- Avoid submerged pathways and trails as currents may be strong and water depths unknown.
- The creek water can be very cold and fast moving during spring flood events and may carry large pieces of ice and other debris.

VII: After a Flood

Moving back into your home:

- Return home only when you feel it is safe to do so.
- Use extreme caution when entering buildings; there may be hidden damage, particularly in foundations.
- Restore your home to good order as soon as possible to protect health and prevent further damage to house and contents.
- Use a battery powered flashlight to inspect for damage. Never use an open flame.
- Dispose of all contaminated foods.
- Have the water supply inspected and declared safe for use prior to using.
- Ensure your toilet is functioning properly.
- Discard sewage soaked materials immediately.
- Flush and disinfect floor drains and sump pumps with bleach.
- Thoroughly clean and disinfect all flood affected rooms.
- Ventilate and dehumidify your house until it is completely dry.
- Clean and disinfect everything that got wet.
- If required, you may find assistance through a Water Damage Restoration contractor.

Heating and electrical systems:

- Do not use flooded appliances, heating systems, electrical outlets, switch boxes or fuse breaker panels until they have been inspected by a qualified technician.
- Replace filters and insulation inside furnaces, water heaters, refrigerators and freezers if flooded.
- Flooded heating and ventilation ducts should be cleaned or replaced.

Safety precautions for outside flood waters:

- Avoid flood waters; water may be contaminated by oil, gasoline, or raw sewage. Water may also be electrically charged from underground or downed power lines.

- Be aware of areas where flood waters have receded. Roads may have weakened and could collapse under the weight of a car.
- Stay away from downed power lines, and report them to the Police and Enersource Mississauga (24-hr line: 905-273-9050).
- Stay out of any building that is surrounded by flood water.

Additional information: Government of Canada: Floods in Canada

VIII: Roles and Responsibilities

The City of Mississauga is responsible for the welfare of its residents and the protection of property and will respond to flooding and flood emergencies within its municipal boundaries. The responsibility for dealing with flood related issues and emergencies is also shared by the regional government, conservation authorities and the provincial government.

Regional Government

The Region of Peel is responsible for flood emergencies resulting from sanitary sewer backups or blockages and water main breakages which can result in basement flooding.

Conservation Authorities

Conservation authorities work with their watershed municipalities and the Ontario Ministry of Natural Resources to monitor and communicate anticipated or actual flooding situations.

The following conservation authorities are within the municipal boundary of the City of Mississauga:

- Credit Valley Conservation Authority
- Toronto and Region Conservation Authority
- Conservation Halton

Provincial Government

In the event of a large scale flooding emergency, the City has in place an Emergency Plan to respond to situations, including flooding, that extend beyond the scope of a routine emergency response. The Province may also be called upon to coordinate a response in support of municipal actions.

IX: COOKSVILLE CREEK UPDATES

Corporate Reports

- August 2009 Storm Events Update - August 27, 2009
  - Appendix 1: Rain Gauge Locations.
  - Appendix 2: Map - Service Requests Received by the City (August 4 – August 19, 2009)
  - Appendix 3: Memorandum prepared by the Region of Peel outlining an Action Plan for the August 4th flooding in Wards 1, 3, 4, 5, 6 and 7.
- August 2009 Storm Progress Update - February 19, 2010
- Region of Peel General Committee Report – Phase 1, Inflow and Infiltration Program, City of Mississauga: Wards 1, 3, 4, 5, 6 and 7.

Public Meetings

- November 9, 2009 – Cooksville Creek Flooding Issues.
- Summary of Tasks Undertaken since November 9, 2010 Meeting, as of January 13, 2010.
- *Next Meeting* - Cooksville Creek Task Force Meeting No. 3, March 30, 2010.

Cooksville Creek Task Force

- Agenda for Cooksville Creek Task Force Meeting No. 1, January 13, 2010.
- Minutes for Cooksville Creek Task Force Meeting No. 1, January 13, 2010.
- Update on Actions and Issues from January 13, 2010 Task Force Meeting.
- Agenda for Cooksville Creek Task Force Meeting No. 2, February 17, 2010.
- Minutes for Cooksville Creek Task Force Meeting No. 2, February 17, 2010
- Agenda for Cooksville Creek Task Force Meeting No. 3, March 30, 2010.

Maps

- 2010-2019 Watercourse and Storm Drainage Improvements Capital Program.
- 2010-2019 Watercourse and Storm Drainage Improvements Capital Program (Cooksville Creek Locations).
- Cooksville Creek Reach Map.
- Flood Remediation Projects completed along Cooksville Creek.
- Cooksville Creek Maintenance Site Map.

X: Frequently Asked Questions

1. **What is the 100-year storm?**

   A 100-year storm means that the probability of such a storm occurring in a given year is 1 in a 100, or 1%. It is important to note that a 100-year storm does not occur like clockwork every 100 years and it is entirely possible that two or more such storms can occur in a given year.

2. **What is a "Regional" storm?**

   A Regional storm is a major storm of record designated by Environment Canada as a standard for flood design. In Ontario, *Hurricane Hazel*, which produced a record amount of precipitation in the area, is classified as the Regional storm.

3. **What is a floodplain?**

   A floodplain is a portion of land beside a lake or watercourse that is expected to contain the excess water from a given storm. The size of the floodplain depends on the intensity of the storm.

4. **If I live near a creek, will I be flooded?**

   Homes and properties adjacent to a watercourse may be affected by a higher water level resulting from a storm depending on the elevation and distance of the property in relation to the creek.

5. **How would I know if there is a possibility of flooding in my area?**

   The following resources can be consulted to determine the level of threat for flooding:

   - Credit Valley Conservation Authority
   - The Meteorological Service of Canada
   - Environment Canada's Weatheradio

6. **What are my responsibilities as a property owner?**

   A property owner living by a creek or in a floodplain is responsible for ensuring that the flow is unobstructed. Property owners with ownership of creek channels are responsible for maintaining the section of creek on their property and are not permitted to negatively impact upstream and downstream properties. All property owners are required to obtain

the necessary approvals from both the appropriate conservation authority and the City of Mississauga for site alterations.

7. **Who do I call if I've been flooded?**

   Residents and businesses can call 3-1-1 to contact representatives from the Region of Peel and/or the City of Mississauga.