

TORONTO STAFF REPORT

August 25, 2006

To: Works Committee

From: Lou Di Gironimo, General Manager, Toronto Water

Subject: Options for Implementing a Mandatory Downspout Disconnection Program
(City wide)

Purpose:

To report as requested on the implementation of a mandatory downspout disconnection program including by-law amendments, phase-in period and funding options.

Financial Implications and Impact Statement:

The capital costs associated with implementing a Mandatory Downspout Disconnection Program with the provision of a financial incentive as recommended in this report and having a 10 year phase-in period are estimated to be \$7.5 million per year. This represents an additional \$6 million per year over the funding traditionally provided to support the City's existing Voluntary Downspout Disconnection Program. In addition, there will be Operating Budget implications associated with hiring of six additional staff to administer and enforce this program, estimated at \$0.54 million per year. These costs have not been incorporated in any forecasts included as part of previous Toronto Water Capital and Operating Budget submissions.

The Deputy City Manager and Chief Financial Officer has reviewed this report and concurs with the financial impact statement.

Recommendations:

It is recommended that:

1. this report be referred to the 2007 Water and Wastewater Rate Budget approval process for further consideration.

Furthermore, if Council favours proceeding with the implementation of a Mandatory Downspout Disconnection Program at this time, then it is recommended that:

1. Council adopt Option D - “Mandatory Disconnection with the Provision of a Financial Incentive by the City with a Targeted Implementation” as outlined in this report; whereby downspouts which are presently connected to the municipal sewer system will have to be disconnected by the homeowner at their expense and where the homeowners are subsequently eligible to receive a rebate from the City to a maximum of \$300 per home in order to help offset the cost of undertaking the disconnection work;
2. the provisions of the By-Law will be phased in over a 10 year period by geographical area with priority given first to Wards with basement flooding prone areas, second to Wards serviced by combined sewer systems and then followed by all other Wards;
3. the General Manager, Toronto Water, incorporate the costs associated with the implementation of the Mandatory Downspout Disconnection Program in the forthcoming 2007 Toronto Water Capital and Operating Budget submissions; and
4. the appropriate City officials be authorized and directed to take the necessary action to give effect thereto, including introducing in Council of any Bills which may be required.

Background:

The Works Committee, at its meeting held on January 11, 2006, considered the report from the General Manager Toronto Water entitled “Consideration for Additional Funding in the 2007 Capital Budget for Source Water Protection, Tree Planting and Downspout Disconnection”, and adopted the recommendation that the General Manager, Toronto Water report to the Works Committee at its meeting on June 7, 2006, on the implementation of a mandatory downspout disconnection program, with a phase-in period of ten years, and the by-law amendments and funding options required to implement the program, and on options for source water protection in 2006.

City Council, at its meeting on April 25, 26 and 27, 2006 amended and adopted the Work Plan for the Engineering Review Addressing Basement Flooding, (Works Committee Report No. 2, Clause 16) including a recommendation to carry out, as a pilot project, a targeted implementation of the City’s existing voluntary Downspout Disconnection Program. The findings of this pilot project were to be used to assess whether a mandatory downspout disconnection program is required to obtain the higher uptake rates required to help prevent basement flooding.

Comments:

Benefits to the City from Mandatory Downspout Disconnection

Downspout disconnection was recognized as the key source control measure, to help reduce the amount of stormwater runoff entering the City’s storm and combined sewer systems, within the City’s Wet Weather Flow Master Plan (WWFMP), approved by Council in 2003. Reductions in stormwater runoff to the City’s combined sewer system help reduce the frequency of basement flooding and reduce the frequency and volumes of combined sewer overflow discharges. Within the City’s separate storm sewer system, computer simulation modelling undertaken in basement flooding prone areas has shown that downspout disconnection rates of 50-60% are required to

help prevent the storm sewer system from surcharging and thereby reducing infiltration/inflows to the sanitary sewer system, which results in basement flooding. The benefits of reducing stormwater flows and thereby reducing peak flows and volumes, which result in the flooding of streams, bank erosion and loss of aquatic habitat are well documented. Further, downspout disconnection, where the flow is directed onto lawns and gardens helps to increase stormwater infiltration, re-establish a more natural hydrologic cycle and increase stream base flows.

Notwithstanding the above, it should be noted that the City of St. Catharines embarked on a mandatory disconnection program in 1991 and flow monitoring undertaken subsequently did not demonstrate a significant reduction in runoff volumes to their sewer system. This was attributed to factors such as poor lot grading and disconnections where the flow was not directed far enough from the building walls.

In developing the WWFMP, the expansion of the City's existing voluntary downspout disconnection program was proposed to achieve a target disconnection rate of 40% for residential properties across the City, up from the estimated existing 15-20% disconnection rate, because higher uptake rates would require the implementation of a mandatory program. In the WWFMP, the combined sewer service area was considered a first priority, wherein the 40% target disconnection rate was expected to be achieved within 10 years of implementation.

Past experience in administering the existing voluntary program has proven that it is difficult to achieve higher uptake rates. While the program has averaged about 2,300 disconnections per year over the last seven years, it's been estimated that at this rate of disconnection, it would take 22 years to achieve the WWFMP disconnection target of 40%. Further, in the above-noted pilot project, within a targeted basement flooding prone area, an unprecedented level of effort by City staff canvassing residents has resulted in approximately 61% of the targeted 541 property owners agreeing to have their downspouts disconnected. This level of effort, where as many as three door-to-door visits were made to homes within the target neighbourhood during the day, evenings and weekends to help ensure contact with the property owners, and for repeat consultations, is not sustainable across the City.

Sewer Use By-Law Implications

The Sewer Use By-law (Chapter 681, Sewers, of the Toronto Municipal Code) regulates the way that private properties are connected to the City's sanitary, storm and combined sewers, including what types of connections are allowed and what substances can and cannot be discharged into the sewer system. The direct or indirect connection of downspouts to sanitary, combined or storm sewers is prohibited under the Sewer Use By-law for all new construction in Section 681-11 S(1) and, in the case of sanitary sewers, is also prohibited for existing buildings in Section 681-11 A.

If a mandatory downspout disconnection program was in place, it would no longer be permissible to have or maintain direct or indirect connections of roof water leaders to the municipal sewer system. Every property owner with downspouts connected to the sewer system would have to disconnect them and arrange for their roof water leaders to discharge at grade, away from the building in such a manner that the storm water will not accumulate at or near the building and will not adversely affect adjacent properties.

Section 681-11 S(2) provides that the General Manager of Toronto Water may make exceptions to the above provision in cases where compliance would create a hazardous situation. Some examples of hazardous situations would be the direct discharge of stormwater onto public sidewalks, onto unstable slopes, into adjacent buildings or, indirectly into a sanitary sewer. For this condition to apply, the homeowner would have to show that no reasonable re-arrangement to the drainage system would avoid a hazardous situation or would create a surface drainage problem. Surveys carried out in the past estimate that 20–25% of properties may need to be exempted from the disconnection requirements.

There may also be cases where the alterations needed to effect a safe disconnection are technically possible, but very expensive. If this is to be considered a reason for exception, then an additional amendment to the Sewer Use By-law would be required to establish a maximum threshold for costs for compliance that the General Manager would use to determine that a disconnection was not feasible.

Number of Properties Affected

It has been estimated that in the older, core area of the City, approximately 80% to 85% of the properties are directly connected, and in the surrounding districts approximately 60% of the properties are directly connected. It is estimated that 350,000 residential properties or 70% of the approximately 500,000 residential properties are directly connected to the City's sewer systems. A mandatory by-law is expected to reduce the number of connected properties to about 20% or 100,000 properties and thereby would affect about 250,000 properties.

Costs

It is often assumed that disconnecting a downspout is as simple as cutting off the existing down pipe at grade, installing an elbow, a short extension pipe and a splash pad. Often this is the case. However, where lots are small, it is often necessary to move the location of the down pipe, because the existing location does not permit a safe discharge (e.g. winter icing, potential flooding). Moving the down pipe can mean replacing all of the eaves-troughs, taking up and replacing patios, working under decks and re-grading lawns and gardens.

The most recent contract awarded by the City for downspout disconnection services indicates that on average it will cost the City \$1100 per house to disconnect downspouts under the current City program. Typically the distribution of costs per house includes a majority of houses at relatively low costs with a smaller number of houses at high costs. It is estimated that 50% of houses can be disconnected for \$600 or less.

Whether it will cost the average property owner more or less than it costs the City is not clear. The City is able to tender a contract for the disconnection of 1,000 houses at a time, which should provide for very competitive bids. On the other hand, City purchasing policies (e.g. Bid Bonding requirements) limits the bidding to a few large contractors, whereas homeowners contracting the work themselves would have access to a much wider field of smaller firms and thereby likely to obtain better prices. For the purposes of estimating costs, a more recent historical average of \$650 per house will be used. The estimated distribution of costs will provide for a median cost of \$600 per property.

On the assumption that 250,000 properties are amenable for downspout disconnection, then the total cost to disconnect these properties is estimated at about \$163 million (assuming a cost of about \$650 per property).

Options to fund such a program include:

- (a) the City continue to fund the full amount of the program;
- (b) the property owners fund the full amount of their individual disconnections, with costs of inspection and enforcement to be borne by the City; and
- (c) a combination of the other two options wherein the City would provide a financial incentive to offset the cost of the individual disconnections.

Options for the Implementation of a Downspout Disconnection Program

The following sections examine various options whereby the City would use funds collected through the water rates to offset the costs to property owners to comply with the by-law.

Option A – “Maintaining the existing Voluntary Downspout Disconnection Program”

The existing voluntary downspout program results in approximately 2,300 homes disconnected per year. The Wet Weather Flow Master Plan (WWFMP) assumed that the City would continue with its voluntary Downspout Disconnection Program in order to meet a target disconnection rate of 40%. This represents a total of approximately 200,000 homes Citywide. Therefore, an additional 50,000 homes would need to be disconnected in order to meet the 40% disconnection target of the WWFMP. At the current disconnection levels, it is projected that this could be achieved within a 22-year time frame. Further, because the City’s Sewer Use By-law does not permit new connections, over time as properties are redeveloped, this will translate to higher disconnection rate across the City.

Level of Disconnection:	40%
Total Cost to City: (excluding administration)	\$30 million (~\$1.5 million per year for 22 years)
Total Cost to Property Owners:	\$0

Option B – “Accelerating & Targeting the existing Voluntary Downspout Disconnection Program”

In this option, the existing voluntary program would be expanded (staff and contractors) to achieve the targeted 40% disconnection rate within a 10-year period. This translates to disconnecting an additional 50,000 homes (5,000 homes per year), across an average of 4 Wards per year. It is estimated that an annual budget of \$3 million would be required for contracts to undertake the disconnections.

The advantage to the City in this option is that the City has control over the quality and timing of the work done on each property. This option also allows the City to focus and schedule the work within pre-specified geographic areas (e.g. target the basement flooding prone and combined

sewer service areas as first priorities). The advantage to the property owner is that they do not have to do any of the work.

The disadvantages to the City are that the program places an administrative burden on the City in terms of consultation, soliciting buy-in from the property owners, inspection and contract administration.

Level of Disconnection:	40%
Total Cost to City: (excluding administration)	\$30 million (\$3.0 million per year for 10 years)
Total Cost to Property owners:	\$0

Option C – “Mandatory Downspout Disconnection”

This option would require all residential property owners, except those who can demonstrate that disconnecting their downspouts would create a hazardous situation, would have to disconnect their downspouts from the municipal sewer system by a given date. In the City of St. Catharines, for example, the City introduced their mandatory program in 1991 that included a 1-year phase-in, at which point they began to enforce compliance with the program. It is proposed that should Council favour this option, a similar phase-in period could be considered.

Administratively this would be the most straightforward option, would produce the quickest results at the lowest cost to the City. Staff would still be required to ensure enforcement, provide education as well as review requests for exemptions due to hazardous situations or the potential to create surface drainage problems.

The advantage to the property owner is that they have more control over what happens on their property. The disadvantages are that the City has less control over the quality of the work that may result in more incidences of drainage problems and the City may not realize the full extent of flow reductions to the City’s sewer systems.

Level of Disconnection:	80%
Total Cost to City: (excluding enforcement)	\$0
Total Cost to Property owners:	\$163 million

Option D – “Mandatory Disconnection with the Provision of a Financial Incentive by the City with a Targeted Implementation”

In this option, the homeowner would be responsible for arranging to have their downspouts disconnected. They would be responsible for hiring and paying the contractor or doing the work themselves. They would then submit an invoice to the City, which may involve inspection by City staff. The City would then provide a rebate to a maximum of \$300 per home (estimated to be about 50% of the cost of the disconnection for an average home). The approved amount would be paid to the applicant either as a rebate cheque or as a credit against their water bill.

The advantage to the City in this option is that the City is not involved in the construction work on private property. The overall cost of this program to the City will be lower than the existing

voluntary program, fully funded by the City. This option also allows the City to focus and schedule the work (approximately four Wards per year) within priority areas (e.g. target the basement flooding prone and combined sewer service areas as a first priority). If a homeowner were to disconnect their downspouts before the scheduled implementation year for their Ward, they would still qualify for the City rebate. The advantage to the property owner is that they have more control over what happens on their property.

The disadvantages are that the City has less control over the costs and the quality of the work. Further this option presents additional administrative burden to the City in terms of inspection for audit purposes (pre and post disconnection), enforcement and processing of rebates. The disadvantage to the property owner is that they will be responsible for finding contractors, doing the bookkeeping, filling in forms and submitting receipts to the City. They would also be out of pocket for the costs while waiting for the City to process their rebate application. This option would result in an 80% disconnection rate.

Level of Disconnection:	80%
Total Cost to City: (excluding administration)	\$75 million (\$7.5 million per year for 10 years)
Total Cost to Property Owners:	\$88 million

It should also be noted that all of these cost estimates are based on past experience with City contract prices that may not accurately reflect future costs to homeowners arranging to carry out the work themselves.

Based on an evaluation of the above-noted options, Option D - “Mandatory Disconnection with the Provision of a Financial Incentive by the City” is recommended, because it provides for an accelerated implementation schedule without an undue financial burden on property owners.

Phase-In Period

Implementing this type of mandatory program will require a phase-in period, before the By-Law comes into effect.

During the phase in period, property owners will need to:

- assess their property to see what needs to be done to comply with the by-law;
- perhaps receive advice from an expert;
- perhaps prepare a request for exception based on a potential hazardous situation;
- contract to have the work done, or do the work themselves; and/or
- have the work inspected.

During the phase in period, City staff will be required to:

- prepare communications material regarding the new by-law provisions;
- determine if requests for exceptions should be approved;
- administer the funding program; and
- inspect completed work.

The level of effort required, in a given year, will be commensurate with the length of the phase-in period. Also, City staff will be required to enforce the By-Law, once it comes into effect.

It is recommended that the program be phased in over a 10-year period, at a rate of approximately four, roughly contiguous Wards per year. In the first five years the program will be directed as a first priority to those Wards affected by basement flooding, the next three years would be directed to the combined sewer service areas and the remaining two years would be directed to remainder of the City. A ten-year phase-in schedule, reflective of these priorities, by Ward, is proposed in Attachment 1.

Conclusions:

Downspout disconnection was recognized as the key source control measure, to help reduce the amount of stormwater runoff entering the City's storm and combined sewer systems, within the City's Wet Weather Flow Master Plan (WWFMP). Reductions in stormwater runoff to the City's combined sewer system help reduce the frequency of basement flooding and reduce the frequency and volumes of combined sewer overflow discharges.

Implementing a Mandatory Downspout Disconnection Program at this time would have both Capital and Operating Budget implications for Toronto Water as no provisions have been made in existing rate budget forecasts to accommodate a program that would accelerate disconnection rates or vary the amount of financial assistance provided to homeowners. Therefore, it is recommended that consideration of implementing a Mandatory Downspout Disconnection Program be referred to the 2007 Water and Wastewater Rate Budget approval process.

If Council favours proceeding with the implementation of a mandatory program at this time, then it is recommended that Option D - "Mandatory Disconnection with the Provision of a Financial Incentive by the City with a Targeted Implementation" be approved for implementation across the City, beginning in 2007, based on the following principles:

1. The Sewer Use By-law be amended so that downspout disconnection will be mandatory for all properties, except for those where it will create a hazardous situation;
2. The provisions of the By-law will be phased in over a 10 year period by geographic area with priority given first to Wards with basement flooding prone areas, second to Wards serviced by combined sewer systems and then followed by all other Wards; and
3. The responsibility for compliance with the By-law will lie with the property owner, but the City will provide a rebate cheque or an offsetting credit to eligible property owners to a maximum of \$300.

It is projected that Toronto Water's staff complement will have to be increased by six staff to implement the program in accordance with the above schedule. This will increase Toronto Water's Annual Operating Budget by approximately \$540,000 starting in fiscal year 2007.

Toronto Water's 2007 Operating and Capital Budget submissions will have to incorporate the necessary provisions to begin the implementation of such a program in 2007.

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List of Attachments:

Attachment No. 1: Mandatory Downspout Disconnection Program: Ten Year Phase-in Schedule by Ward

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Attachment No. 1

Mandatory Downspout Disconnection Program: Ten Year Phase-in Schedule by Ward

<u>Year</u>	<u>Wards</u>
1	10, 23, 24, 33
2	9, 15, 16, 26
3	31, 37, 39, 40
4	7, 8, 11, 12
5	1, 3, 4, 13, 17
6	21, 22, 25, 34
7	30, 32, 35, 36
8	14, 18, 19, 20, 28
9	2, 5, 6, 27, 29
10	38, 41, 42, 43, 44