TORONTO

STAFF REPORT
INFORMATION ONLY

Toronto Water Outfall Monitoring Program 2007 Progress Report

Date:	November 9, 2007
To:	Public Works and Infrastructure Committee
From:	Lou Di Gironimo, General Manager, Toronto Water
Wards:	All
Reference Number:	P:\2007\Cluster B\TW\pw07044 (AFS# 3048)

SUMMARY

This report summarizes the progress and successes of the Outfall Monitoring Program from the summer of 2006 to September 2007. It includes the storm sewer outfall surveying and sampling work performed in the Taylor-Massey Creek and the Black Creek drainage areas, and the initial work or complaint responses carried out in various other drainage areas across the City. The benefits of the Outfall Monitoring program are a cleaner environment and a reduction in public health risks.

Financial Impact

There are no financial implications to the City as a result of this report.

The Deputy City Manager and Chief Financial Officer have reviewed this report and agree with the financial impact information.

DECISION HISTORY

The City of Toronto Works Committee at their meeting of November 2005 directed that an annual report be submitted on the status of the Outfall Monitoring Program. The previous reports can be reviewed at the following links:

http://www.toronto.ca/legdocs/2005/agendas/committees/wks/wks051108/it002b.pdf
http://www.toronto.ca/legdocs/2005/minutes/committees/wks/wks051108.pdf
http://www.toronto.ca/legdocs/2006/agendas/committees/wks/wks060911/it061.pdf
http://www.toronto.ca/legdocs/2006/minutes/committees/wks/wks060911.pdf

ISSUE BACKGROUND

The Outfall Monitoring Program is designed to identify and eliminate sources of contamination that are discharged from storm sewer outfalls to the City's surface waters. The Program will eventually survey all storm sewer outfalls within the City, with a diameter greater than 10 centimeters, and sampling those outfalls having flow during dry weather to determine if contaminants are being discharged.

All outfalls with a confirmed contaminated flow are added to a priority list for subsequent investigation by Toronto Water staff. Priority Outfalls (Appendix A) have discharges more than twice the storm sewer limit as stipulated in Municipal Code Chapter 681 – Sewers (Sewer Use By-law) and an E. coli bacteria concentration of greater than 10,000 per 100 mL of sample. Contamination at these levels indicate that sewage may be discharging from a storm sewer (typically the result of a cross connection between a sanitary sewer and a storm sewer).

The second level of priority is termed Outfalls of Concern (Appendix B). Outfalls of Concern have sample results and/or observations that indicate suspected and possibly continuous contaminated flows, but additional monitoring is required to confirm the test results before they can be classified as a Priority Outfall.

In the past year, Toronto Water staff have eliminated 89 cross connections that previously discharged sanitary sewage to Toronto's river systems and to Lake Ontario. Through these investigations, seven outfalls within the Taylor-Massey Creek drainage area were removed from the Priority Outfall list.

The Outfall Monitoring Program is currently involved in the investigation of 42 Priority Outfalls within Taylor-Massey Creek, Black Creek and other drainage areas. Toronto Water expects to complete the outfall survey in the remaining watersheds over the next three years. Staff will continue to investigate those outfalls currently on the Priority Outfall list and any other outfalls that may be added in future.

COMMENTS

Taylor-Massey Creek Monitoring Summary

In the fall of 2006, additional outfall sampling was completed in the Taylor-Massey Creek drainage area. This resulted in the identification of 28 outfalls that were designated as Priority Outfalls and subjected to intensive investigation. As of September 2007, these investigations have resulted in the identification and elimination of 18 cross connections (13 residential properties, three commercial properties with large volume discharges, and two from damaged or blocked sanitary sewers) allowing sanitary flow to enter the storm sewer.

Since 2005, a total of 22 cross connections have been eliminated within the Taylor-Massey Creek drainage area. The Program has been successful in significantly reducing contaminated storm discharges to Taylor-Massey Creek and removing seven outfalls from the Priority Outfall list.

Continued sampling of outfalls discharging to Taylor-Massey Creek has identified eight new Priority Outfalls and a total of 13 Outfalls of Concern that require additional sampling to determine priority status. The total number of Priority Outfalls discharging to Taylor-Massey Creek is now 29 (Appendix A) and there are a total of 13 Outfalls of Concern (Appendix B).

Table 1 provides a detailed summary of the work, broken down by Ward, performed in the Taylor-Massey Creek watershed between September 2006 and September 2007.

Table 1: Taylor-Massey Creek OMP Work Summary September 2006 to September 2007

	Ward 31	Ward 35	Ward 37	Ward 40	Total
Outfall Inspections	56	116	102	34	308
Outfalls Sampled	40	98	92	25	255
Property Dye Tests	20	15	0	2	37
Cross Connections	8	8	0	2	18
Outfalls of Concern	4	4	4	1	13
Priority Outfalls	10	9	10	0	29
De-Listed Priority Outfalls	1	3	1	2	7

An example of the effectiveness of the Outfall Monitoring Program is illustrated in Table 2 below. E. coli samples collected at two former Taylor-Massey Creek Priority Outfalls show a substantial reduction in bacteria concentrations after correcting the identified sewer pipe cross connections.

Table 2: Reduction in E. coli Concentrations at Former Taylor-Massey Creek Priority Outfalls

Former Taylor-Massey Creek Priority Outfall	Cross Connection Present (E. coli concentration)	Cross Connection Corrected (E. coli concentration)
TC78	390,000 cfu/100 mL	530 cfu/100 mL
TC115	2,000,000 cfu/100 mL	9 cfu/100 mL

Black Creek Monitoring Summary

The Outfall Monitoring Program within the Black Creek drainage area started in the summer of 2006 and was completed in 2007. A total of 316 outfalls, with a diameter greater than 10 cm, were identified in the drainage area and 137 of these outfalls had flow during dry weather. All of the 137 outfalls were subsequently sampled to determine if the dry weather flows were contaminated.

The first round of sample results identified 34 of the 137 as having a significant pollutant concentration during dry weather conditions. Additional samples were collected from these outfalls and analysis of the data resulted in eight of these outfalls being designated as Priority Outfalls (Appendix A). The remaining 26 outfalls were found to require further monitoring and designated as Outfalls of Concern (Appendix B).

Toronto Water investigated the network of sewers connected to the eight Black Creek Priority Outfalls and found 53 residential cross connections that have been corrected.

Subsequent sampling at one Black Creek Priority Outfall (BC11-1) has indicated this outfall will likely be removed from the Priority Outfall list shortly.

Table 3 provides a detailed summary, broken down by Ward, of the work performed in the Black Creek watershed between June 2006 and September 2007.

Table 3: Black Creek OMP Work Summary June 2006 to September 2007 by Ward

	Ward 7	Ward 8	Ward 9	Ward 11	Ward 12	Totals
Outfall Inspections	37	26	69	90	170	392
Outfalls Sampled	20	18	33	70	80	231
Property Dye Tests	0	0	0	222	0	222
Cross Connections	0	0	0	53	0	53
Outfalls of Concern	1	2	4	9	10	26
Priority Outfalls	1	1	0	4	2	8

Table 4 provides examples of E. coli samples collected at three Black Creek Priority Outfalls before and after cross connections have been identified and corrected. Storm sewer discharges are significantly less of a health concern as a result of the repairs and the water quality downstream of these outfalls has improved.

Table 4: Reduction in E. coli Concentrations at Black Creek Priority Outfalls

Priority Outfall	Cross Connection Present (E. coli concentration)	Cross Connection Corrected (E. coli concentration)
BC11-1	186,000 cfu/100 mL	10 cfu/100 mL
BC17	800,000 cfu/100 mL	30,000 cfu/100 mL
BC18	37,000,000 cfu/100 mL	1,700 cfu/100 mL

Rouge River Monitoring Summary

Toronto Water completed the Rouge River outfall survey during the summer of 2007. The Rouge River watershed (including Morningside Creek and Little Rouge Creek) was found to have a total of 61 storm sewer outfalls, and 25 of these were found to have a dry weather flow. Sampling of these 25 outfalls will commence in the spring of 2008.

Other Outfall Investigative Actions

In addition to the planned Outfall Monitoring Program work in the above noted watersheds, Toronto Water staff responded to and investigated contaminated storm sewer discharges as they were identified from various sources, including calls or complaints received from the public.

Table 5 provides a detailed summary of the work, broken down by Ward, performed in the Highland Creek watershed between September 2006 and September 2007.

Table 5: Highland Creek OMP Work Summary Sept 2006 to Sept 2007 by Ward				
	Ward 39	**Ward 41**	**Ward 42**	**Total**
Outfall Inspections	2	2	3	7
Property Dye Tests	2	30	25	57
Cross Connections	3	2	2	7

Table 6 provides a summary of cross connections located and corrected, broken down by Ward, in other Toronto watersheds between September 2006 and September 2007.

Table 6: Cross Connections Found in Other Watersheds - Sept 2006 to Sept 2007						
Watershed	**Ward 1**	**Ward 25**	**Ward 36**	**Ward 43**	**Ward 44**	**Total**
Don River	-	1	-	-	-	1
Humber River	4	-	-	-	-	4
Lake Ontario	-	-	2	2	2	6

The Outfall Monitoring Program has been successful in reducing the amount of contaminants entering into the City's waterways and will be continued as a permanent program. Toronto Water will continue to survey, monitor and investigate the City's watersheds for a cleaner environment and to reduce public health risks.

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SIGNATURE

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ATTACHMENTS

Appendix A: Toronto Water Priority Outfall List - September 2007
Appendix B: Toronto Water Outfalls of Concern - September 2007