TORONTO

STAFF REPORT
ACTION REQUIRED

Source Water Protection Plan for City of Toronto Water Treatment Plants

Date:	November 2, 2012
To:	Public Works and Infrastructure Committee
From:	General Manager, Toronto Water
Wards:	All Wards
Reference Number:	P:/2012/Cluster B/TW/pw12013

SUMMARY

The purpose of this report is to advise Council about the progress of the Credit Valley, Toronto and Region, Central Ontario (CTC) Source Protection Plan for the Toronto and Region Source Protection Area. The report is seeking Council's endorsement of the Source Protection Plan policies that will protect and enhance intake protection zones within Lake Ontario; to request that Council call upon the Ontario Minister of the Environment to reaffirm the Ministry of the Environment's overarching responsibility to protect and enhance near shore water quality in Lake Ontario; and that the Ministry of the Environment, rather than the City or other municipalities as assumed in the *Clean Water Act*, accept lead responsibility for the implementation of the Lake Ontario policies contained in the CTC Source Protection Plan.

The CTC Source Protection Plan was submitted to the Minister of the Environment for final approval on October 22, 2012. It contains policies that specifically address current and potential future threats to Lake Ontario, the source of Toronto's drinking water. These threats are based on worst case scenarios of actual events that have occurred in Toronto and other jurisdictions and include threats from spills from fuel storage tanks, spills from pipeline failures, the release of tritium from nuclear power generating stations, the release of partially treated sewage due to disinfection process failures, and the release of raw sewage due to sanitary trunk failures.

Due to the nature of the threats and the fact that pollution inputs once released to Lake Ontario do not respect municipal or Source Protection Region boundaries, it is appropriate for the Ontario Government to take responsibility for implementing the Lake Ontario policies contained in the CTC Source Protection Plan.

RECOMMENDATIONS

The General Manager, Toronto Water recommends that:

1. City Council acknowledge the work of the Credit Valley, Toronto and Region, Central Ontario (CTC) Source Protection Committee and confirm support for the CTC Source Protection Plan submitted to the Ontario Minister of the Environment on October 22, 2012.

2. City Council formally endorse the Lake Ontario policies, which are intended to protect the City of Toronto's drinking water source, that are contained in the CTC Source Protection Plan.

3. City Council remind the Ontario Minister of the Environment, that the Ministry of the Environment has a duty to protect and enhance the near shore water quality of Lake Ontario.

4. City Council strongly urge the Ontario Minister of the Environment to accept responsibility and acknowledge the Ministry of the Environment as the "Implementing Body" for the purpose of the Lake Ontario policies contained in the CTC Source Protection Plan.

Financial Impact

There is no financial impact associated with the recommendations contained in this report.

DECISION HISTORY

City Council, at its meeting on September 26 and 27, 2007, authorized the Deputy City Manager responsible for Toronto Water, in consultation with the General Manager of Toronto Water, to designate Toronto's two representatives on the CTC Source Protection Committee.

A copy of the Council Decision Document can be found at:
http://www.toronto.ca/legdocs/mmis/2007/cc/decisions/2007-09-26-cc12-dd.pdf

ISSUE BACKGROUND

City of Toronto Water Quality

Lake Ontario plays an essential role in the health and well-being of Toronto's residents and provides them with a safe and abundant source of drinking water. Through Toronto Water, the City owns and operates four water treatment plants (WTPs), listed in Table 1, which supply drinking water to all industrial, commercial, institutional and household water users in the City of Toronto and an estimated 600,000 residents in the Region of York.

Table 1. City of Toronto Water Treatment Plant Characteristics

Plant Name	Rated Treatment Capacity (ML/day)	Intake Distance from Shore (metres)	Intake Depth (metres)
R.L. Clark WTP	615	1,615	18
R.C. Harris WTP	950	2,300	14
F.J. Horgan WTP	800	3,200	8
Island WTP	410	5,400	83

With the exception of the Island Water Treatment Plant, the intakes for the water treatment plants are located in the "near shore" zone of Lake Ontario, which is defined as the relatively narrow band of water along the perimeter of Lake Ontario where the depth of water to the lake bed is 30 metres or less.

Lake Ontario and its shoreline also provide a wide range of recreational opportunities, including swimming, boating, fishing, birding, cycling, and hiking. Thus, to sustain Toronto's economic, social, and environmental benefits, the water quality of Lake Ontario and its tributary watersheds must be protected and improved.

In 1987, the City of Toronto's waterfront was identified as one of 43 polluted "Areas of Concern" by the International Joint Commission. At that time, the principal sources of pollution were identified as wet weather discharges from combined sewer overflows (which contain a mixture of untreated sewage and stormwater runoff) and separated storm sewers discharging along the waterfront and within the six watersheds which extend across the City.

In response, the City undertook projects and programs to improve water quality, including development and implementation of the City's Wet Weather Flow Master Plan (WWFMP). The Plan addresses water quality and quantity impacts associated with stormwater runoff and combined sewer overflow discharges, with the aim of:

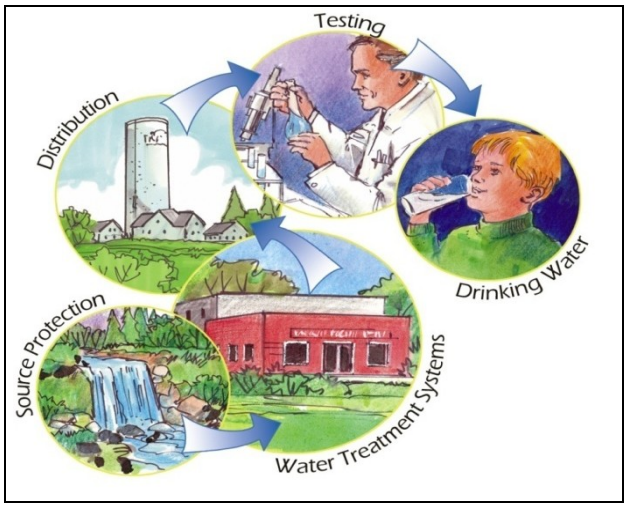
- Ensuring clean waterfront beaches that are healthy for swimming;
- Eliminating discharges from combined sewer overflows;
- Protecting basements against flooding;
- Protecting City infrastructure from stream erosion;
- Restoring degraded local streams;
- Improving stream water quality;
- Reducing algae growth along the waterfront and in Toronto's streams; and
- Restoring a healthy aquatic habitat

City Council adopted the WWFMP and the associated 25 year implementation schedule at its meeting on September 22 to 25, 2003 (see Council Decision Document at http://www.toronto.ca/legdocs/2003/agendas/council/cc030922/pof9rpt/cl042.pdf).

Work on implementation of the WWFMP is on-going. City Council receives regular updates on implementation status (see http://www.toronto.ca/legdocs/mmis/2011/pw/bgrd/backgroundfile-40671.pdf).

Ontario *Clean Water Act* and Source Water Protection

In 2006, the Ontario government passed the *Clean Water Act (2006)* [S.O. 2006, Chapter 22], which addresses recommendations made by Justice O'Connor in his judicial inquiry into the tainted water tragedy that occurred at Walkerton in 2001. The CWA sets out a framework that protects the sources of municipal drinking water using a multi-barrier approach (see Figure 1).



Source: Conservation Ontario (http://conservation-ontario.on.ca/resources/graphics/index.html)

Figure 1. The multi-barrier approach to drinking water protection.

The Act established Source Water Protection Regions in Ontario and delegated Conservation Authorities as Source Protection Authorities, requiring them to create Source Protection Committees with the mandate to develop plans that address activities and land uses around municipal wells (groundwater sources) and drinking water treatment plant intakes (surface water sources - including Lake Ontario) to protect existing and future sources of drinking water.

The work of the Source Protection Committees (SPCs) involved identification of vulnerable areas and preparation of:

- An Assessment Report providing information about:
  - Watershed Characterization
  - Water Budgets and a Water Quantity Threats Assessment
  - Groundwater Vulnerability
  - Surface Water Vulnerability
  - Threats and Issues affecting source water, culminating in a Water Quality Threats Assessment

- A Source Water Protection Plan containing a series of policies to protect drinking water supplies in the Source Protection Region against current and future potential threats.

In total, 19 Source Protection Committees were established, including six that border Lake Ontario. As shown in Figure 2, the City of Toronto is part of the CTC Source Protection Region.

In accordance with the 2007 Council Decision, the Associate Medical Officer of Health, Toronto Public Health, and the Director, Water Infrastructure Management, Toronto Water, were officially named as the City of Toronto representatives on the CTC SPC. More information about the CTC Source Protection Committee is available at http://www.ctcswp.ca

In addition to requiring the preparation of Source Water Protection Plans, the *Clean Water Act* anticipates implementation of the Plans. Section 38 of the Act states that municipalities shall be responsible for implementing Source Protection Plan policies, including development of Official Plan policies, zoning bylaws, licensing, and permitting processes and enforcement. With respect to the last item, Section 52 of the Act introduces municipality appointed "risk management officials and risk management inspectors" and identifies them as the agents responsible for enforcement of Plan policies against drinking water threats.

CTC Assessment Report – Understanding Threats to Lake Ontario Water Quality near Drinking Water Intakes

In support of the development of Source Protection Plans for all five Source Protection Regions bordering Lake Ontario, the Lake Ontario Collaborative (LOC) was formed in 2006. The LOC comprised representatives from all municipalities from Niagara to Prince Edward County having Lake Ontario based water treatment plants, as well as from each of the corresponding Conservation Authorities, the Ontario Ministry of the Environment, and Environment Canada.

Establishment of the LOC acknowledged that pollution inputs to Lake Ontario do not respect municipal or Source Protection Region boundaries. Once contaminants enter the lake, they are dispersed and can be transported far from the point of entry. Instead, the LOC determined that a whole lake-based approach was prudent and necessary to fully assess threats to drinking water. Furthermore, the adoption of a common methodology avoided duplication of effort and ensured consistency of approach and analysis for all Lake Ontario-based Source Protection Regions.

The 19 water quality threats prescribed by the Ontario government were examined and two of these threats were deemed to be of sufficient concern to warrant further investigation: sewage threats (disinfection failures at wastewater treatment plants and raw sewage spills resulting from sanitary trunk sewer failures) and bulk fuel storage spills (containing benzene). Two additional threats applicable to the Lake Ontario Source Protection Regions were also evaluated: the release of tritium from a nuclear generating station; and, spills of petroleum products containing benzene from a pipeline. The assessment of these potential threats used a three-dimensional water quality and circulation model that had been originally developed for the WWFMP. For application to Lake Ontario, the model was expanded to provide coverage across all affected water treatment plant intakes and incorporated pollution source inputs derived from information provided by affected municipalities and Conservation Authorities.

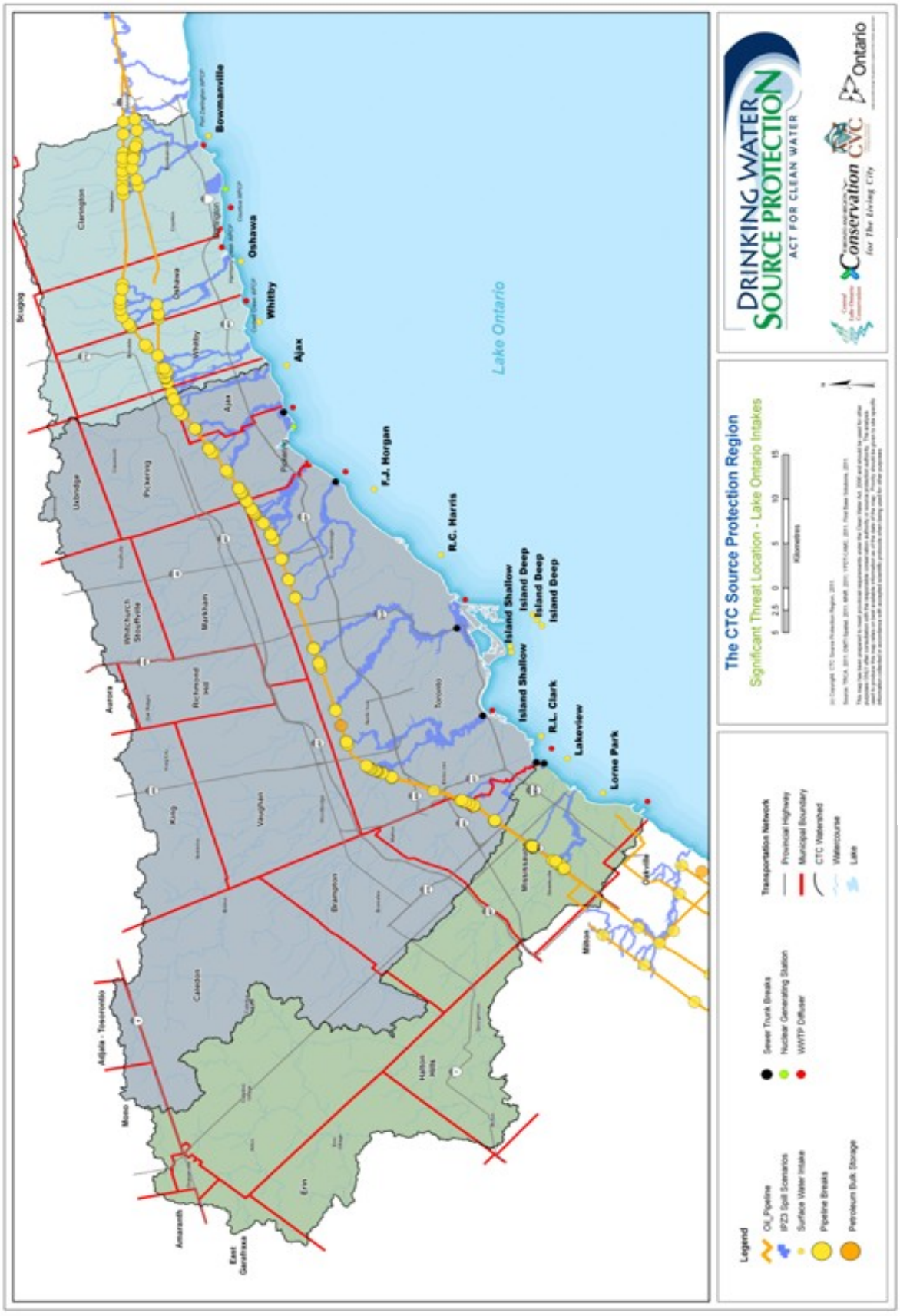


Figure 2. Map of the CTC source protection region.

A scenario approach was used to evaluate whether spills of contaminants (defined in the CWA Regulations) from specific sources could represent a significant threat to lake based intakes. Model inputs for the threat evaluation were based on actual or anticipated spill occurrences. The focus of the evaluation was on the near shore zone, which receives flows and pollutant loadings from various pollution sources along the shoreline, including the tributaries that flow to Lake Ontario, municipal wastewater treatment plant effluents, industrial discharges, and discharges from sewer outfalls, as shown in Figure 3.

The LOC produced a series of intake protection zone studies, which:

- Provided information about existing water quality conditions;
- Identified vulnerable areas around municipal water treatment plant intakes; and
- Described threats and issues within those vulnerable areas and prioritized low, moderate, and high risks to either quantity or quality of existing municipal water sources.

The LOC studies provided the foundation for the Assessment Reports for each Source Protection Region, and ultimately the policies contained in the SPPs.

A copy of the Assessment Report pertaining to the City of Toronto water treatment plant intakes can be found at: http://www.ctcswp.ca/Assessment-Report/assessment-report.html

CTC Source Water Protection Plan

Development of the CTC Source Protection Plan (CTC SPP) was a collaborative multi-year effort with significant public engagement and consultation. On October 22, 2012, the CTC Source Protection Committee submitted its Source Water Protection Plan to the Ontario Minister of the Environment for final approval.

The Plan is a series of policies that, when implemented, will protect drinking water sources, including Lake Ontario, from current and future threats. The Plan contains policies that address threats to ground and surface water. For the latter, the Plan relied on the findings provided by the LOC studies.

The Plan can be found at: http://www.ctcswp.ca/Source-Protection-Plan/source-protection-plan.html; Chapter 10, pages 83 to 98, presents the policies relevant to Lake Ontario based water treatment plant intakes.

COMMENTS

Lake Ontario Collaborative and the Assessment Report

The results obtained by the Lake Ontario Collaborative and presented in the Assessment Report confirm that source water at City of Toronto drinking water treatment plant intakes is generally high quality. However, water quality in the near shore zone surrounding Toronto's water treatment plant intakes can be adversely affected by increased pollution resulting either from plumes originating from point sources and/or discharges from tributaries to Lake Ontario.

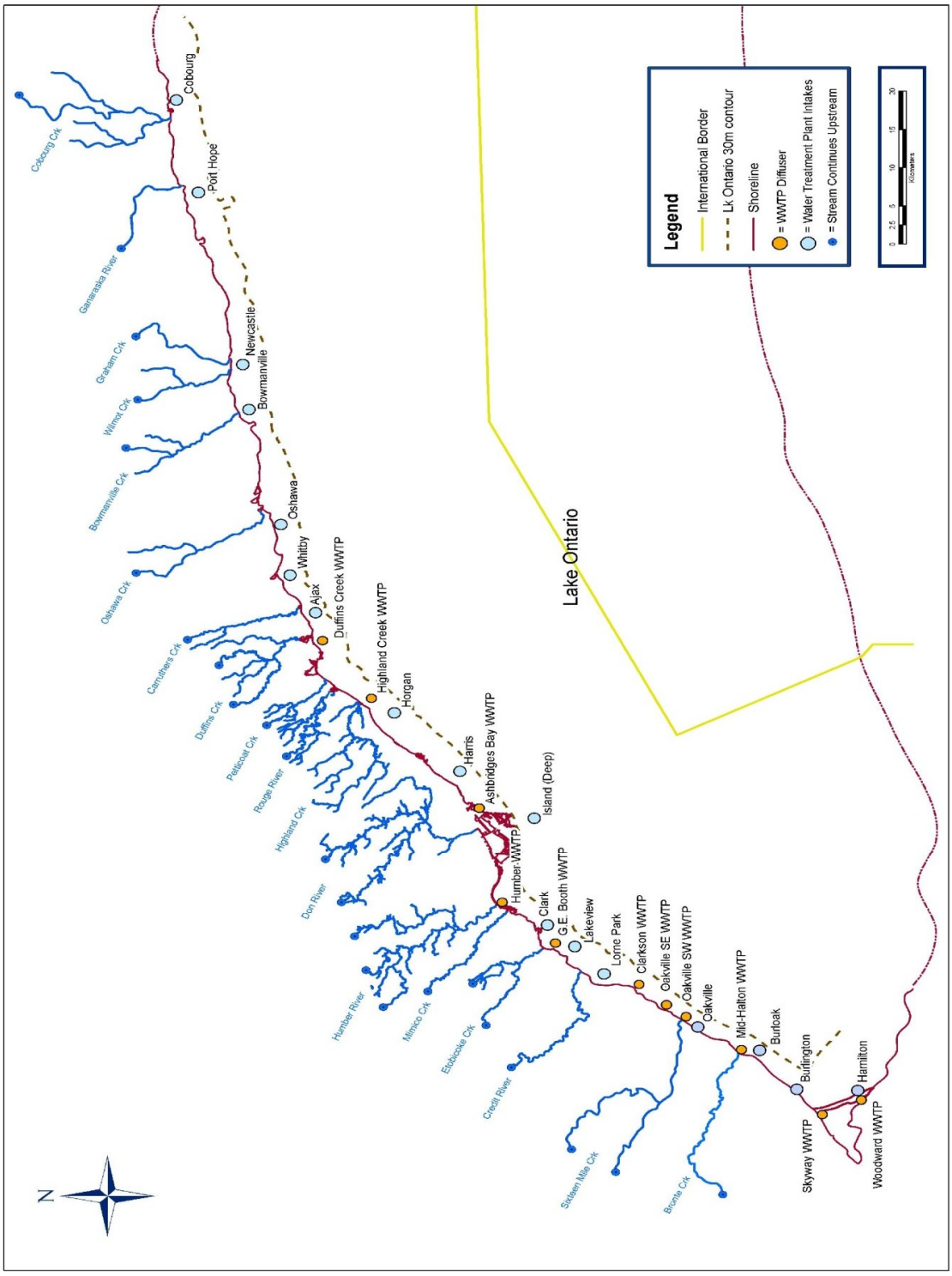


Figure 3. Map of the near shore zone along Lake Ontario showing City of Toronto water treatment plant locations.

The impact of watershed plumes can be aggravated during extreme storm events, when watershed flows into the lake increase in intensity and duration. The impact can be intensified when plumes from several watersheds merge along the waterfront. A further complicating factor is lake circulation, which is a dynamic, largely wind driven process. The result is that pollution within the near shore can be almost unidirectional, going from east to west and impacting one or a series of water treatment plant intakes at a given point in time, while a different set of intakes can be affected when the lake circulation pattern changes.

Given that the near shore serves as the source water for all of Toronto's Water Treatment Plants, except the Island Water Treatment Plant, the need for and importance of an effective Source Protection Plan to help ensure that water quality within this zone is evident.

As described above, various threats were evaluated using a computer simulation model and inputs for the threat evaluation were based on actual or anticipated spill occurrences. The modelling results showed the following scenarios to be a significant threat to one or more of the City of Toronto drinking water treatment plant intakes.

Petroleum spill from a fuel storage tank farm

Fuel from a storage facility in Oakville spilling into Bronte Creek and spills from a tank farm located in Toronto flowing into the Upper West Don River were assessed in this scenario. The scenario assumed a complete failure of a large gasoline storage tank causing a spill of 26,000 m^3 of gasoline (containing 1% benzene) over a six hour period. Water quality impairment was based on exceedance of the Ontario Drinking Water Standard for benzene of 5µg/L. Modelling results predicted that a spill from the Toronto facility would pose a significant threat to all four of the City's water treatment plants.

Petroleum spill from a pipeline failure

This scenario was based on the real-life rupture of a 750 mm diameter pipeline near Kalamazoo, Michigan, in 2010. The rupture discharged 3,100 m^3 of oil into a creek upstream from Kalamazoo. For the purpose of modelling the scenario for the City of Toronto, pipeline characteristics and product volumes for facilities located in the Greater Toronto Area were used to assess the impact of potential breaks at a number of river crossings. A spill volume of 2,700 m^3 over a six hour period was assumed. Water quality impairment was based on exceedance of the Ontario Drinking Water Standard of 5µg/L for benzene. Modelling results showed that different spill locations would pose a significant threat to Toronto WTP intakes, as follows:

River Crossing Spill Location	Water Treatment Plant Intakes Threatened
Credit River	R.L. Clark WTP
Don River	R.L. Clark, R.C. Harris and Island WTPs
Duffin Creek	R.C. Harris and F.J. Horgan WTPs
Highland Creek	R.C. Harris and F.J. Horgan WTPs
Humber River	R.L. Clark, R.C. Harris and Island WTPs
Rouge River	R.C. Harris and F.J. Horgan WTPs

Disinfection failure at a wastewater treatment plant

The basis for this scenario was an incident that occurred at the Region of Peel's Lakeview Wastewater Treatment Plant (WWTP), which involved the complete shutdown of the biological treatment units for several months as a result of an unexpected discharge into the sewer system from a food processing facility. In the scenario that was modelled, a two-day total disinfection failure was assumed at each of Toronto's wastewater treatment plants, the Duffin Creek Water Pollution Control Plant (WPCP) in the Region of Durham, and the Lakeview Wastewater Treatment Plant in the Region of Peel. The two-day event was modelled for normal weather conditions found during May to October so that different lake circulation patterns and speeds could be assessed. Water quality impairment was based on exceedance of the Provincial Water Quality Objective for receiving waters of 100 E. coli/100 mL at the WTP intake. Modelling results indicated that failures at the wastewater treatment plants pose significant threats to Toronto WTP intakes:

Wastewater Treatment Plant Where Disinfection Failure Was Assumed	Water Treatment Plant Intakes Threatened
Ashbridges Bay WWTP	R.L. Clark, R.C. Harris and F.J. Horgan WTPs
Duffin Creek WPCP	R.C. Harris and F.J. Horgan WTPs
Highland Creek WWTP	R.C. Harris and F.J. Horgan WTPs
Humber WWTP	R.L. Clark, R.C. Harris and F.J. Horgan WTPs
Lakeview WWTP	R.L. Clark and R. C. Harris WTPs

Streambank erosion leading to the failure of a sanitary trunk sewer

The basis for this scenario was the August 19, 2005, storm, which resulted in the collapse of the East Highland Creek Sanitary Trunk Sewer in Morningside Park. Spills were assessed for sanitary trunk sewers located in the valleys of the Humber and Don Rivers, and the Etobicoke and Highland Creeks. For the purpose of modelling the scenario, a 24 hour uncontrolled spill from a sanitary trunk sewer was assumed. Water quality impairment was based on exceedance of the Provincial Water Quality Objective for receiving waters of 100 E. coli/100 mL at the WTP intake. The modelling results predicted sanitary trunk spills would affect the following WTPs:

River Where Sanitary Trunk Sewer Failure Was Assumed	Water Treatment Plant Intakes Threatened
Don River	R.C. Harris WTP
Etobicoke Creek	R.L. Clark WTP
Highland Creek	F.J. Horgan WTP
Humber River	R.L. Clark WTP

The spill scenarios described above were worst cases because it was assumed that no contingency plans were activated to reduce and/or mitigate the impact of the spills. In reality, this would not be the case for most of the spill scenarios that were modelled.

It is worth noting that results of the LOC studies indicated overflows from the City's combined sewers did not represent a significant threat to Toronto water treatment plant intakes, nor did a

tritium release from OPG's Pickering or Darlington Nuclear Power Generating Stations (although the latter was shown to pose a drinking water threat to Durham Region WTP intakes).

Given the time and financial constraints within which the Lake Ontario Collaborative was operating, it was not possible to model all conceivable threats. The potential impacts associated with climate change, such as the occurrence of more frequent extreme storm events, represent another set of threat scenarios that could not be accommodated by the LOC. Extreme storms can have devastating consequences, where the erosion of stream channels and banks can result in tremendous sediment loads being transported to the mouth of the river, and then ultimately along the near shore of Lake Ontario. While these conditions are also of concern, because these discharges are not attributed to a single source or land parcel, any further assessment was determined to be beyond the scope specified by the *Clean Water Act*.

CTC SPP Policies to Address Threats to Lake Ontario Water Treatment Plants

The CTC Source Protection Plan presents 15 policies that are intended to specifically address current and future potential threats to the intake protection zone of Lake Ontario. These policies are grouped into five general categories and summarized in Table 2, and are available on-line at: http://www.ctcswp.ca/files/CTCProposedSourceProtectionPlan_LowRezFINAL.pdf

The Lake Ontario policies proposed by the CTC Source Protection Committee continue the work begun by the LOC. The individual policies are intended to facilitate future activities aimed at reviewing and updating the modelling scenarios, and refining the impact assessments by, for example, making provision for the implementation of appropriate contingency measures. The Ontario Ministry of the Environment is named as the "implementing body" for all the Lake Ontario policies proposed by the CTC SPC.

Table 2. Summary of CTC SPP Lake Ontario Policies.

CTC SPP Policy Category	Identifier	SPP Chapter 10 Page Reference	Overview Description
General	LO-G	pp. 116 – 119	Applicable to all threats and relating to improved spills notification protocols, the installation of instrumentation to assess real time lake circulation and water chemistry, the further development and application of Lake Ontario circulation and water quality modelling, and public education and outreach, particularly with other agencies including United States government agencies.
Nuclear Generating Stations	LO-NGS	p. 121	Pertaining to improved spills notification protocols.
Sewers	LO-SEW	pp. 123 – 125	Directed at wastewater treatment plant by-pass flows and potential disinfection failures, the failure of sanitary trunk sewers, spills from properties which could enter the municipal storm sewer system, and the need for pathogen risk assessments at water treatment plants.
Pipelines	LO-PIPE	pp. 127 – 128	In regards to reducing the risk and/or impact of petroleum pipeline breaks.
Petroleum Tank Farm Storage	LO-FUEL	pp. 129 – 10	Dealing with the adequacy of existing spills prevention/contingency plans.

Prior to submission of the Plan, the CTC Source Protection Committee contacted the Ministry of the Environment with a request for assistance regarding formulation of policies to address the intake protection zones in Lake Ontario.

Guidance was sought in respect of proposed policies related to future efforts to assess the impacts of other threats in Lake Ontario, future support for assessing the risks associated with specific waterborne pathogens, future development of an inventory of pipe facilities that cross tributaries draining into Lake Ontario, and consideration of a broader range of policies and measures to protect the Great Lakes. In response, the Director of Source Protection Programs at the Ministry advised the CTC SPC that the proposed policies were "out of scope" because they did not fit the defined general policy categories described at Section 22(7) of the Clean Water Act[1]. The Director's response did note that this did "not mean that the policies are not worth considering".

Notwithstanding the response from the Ministry, the CTC SPC carried forward the above-noted policy recommendations to the Source Protection Plan.

Ontario Government is Appropriate Implementing Body for Lake Ontario Policies

The *Clean Water Act* introduces risk management as a policy approach to mitigating threats to drinking water sources.

As described earlier, the *Clean Water Act* names municipalities as the authorities responsible for implementing Source Protection Plan policies through municipality appointed risk management officials and inspectors. The underlying assumption is that the presence and scope of threats to drinking water sources can be contained within municipal boundaries. The result is that the Act effectively downloads to municipalities the responsibility for actively identifying and preventing threats to drinking water sources. This approach may make sense for municipalities that rely on groundwater sources, where threats are largely land use based and enforcement can be conducted on a property by property basis with a view to protecting municipal well heads and surrounding areas. For groundwater sources, reliance on risk management officials and inspectors may be appropriate, because the risk can be contained at the property level.

It is, however, the conclusion of the CTC Source Protection Committee that the Ontario Government is the appropriate "Implementing Body" (i.e., the authority responsible to ensure the policy is implemented) for all Lake Ontario Source Protection Plan policies, and not the individual municipalities where a given threat may be located (e.g., pipeline, nuclear power plant, fuel storage facility, etc.). Downloading the responsibility for enforcing policies that address threats to Lake Ontario drinking water intakes to municipalities would be inappropriate for the following reasons:

1. Many of the threats identified by the Lake Ontario Collaborative originate with activities and/or operations that are regulated by other, more senior levels of governments. For example:

[1] Letter dated July 20, 2012, from Mary Anne Covelli, Director, Source Protection Programs Branch, Ministry of the Environment, to Ms. Susan Self, Chair, CTC Source Protection Committee.

- Petroleum operations are regulated by the Ontario Government;
- Nuclear power generation is regulated by the Canadian Nuclear Safety Commission and the Ontario Energy Board; and,
- Fuel storage is regulated by the Ontario Technical Standard and Safety Authority.

2. Pollutants entering Lake Ontario do not respect municipal boundaries. Without an ability to take inter-jurisdictional enforcement actions, individual municipalities cannot effectively mitigate threats originating beyond their borders, thus negating the efficacy of the risk management approach outlined in the *Clean Water Act*.

3. The Ontario Government already has in place effective emergency response infrastructure, in the form of the Ministry of the Environment's Spills Action Centre, which proactively prevents, mitigates, and prepares for potential emergencies related to spills and drinking water hazards.

For these reasons, the CTC Source Protection Committee contends, and Toronto Water agrees, that enforcement of policies directed at Lake Ontario intake protection zones must be led and managed by the Ontario Government, which is already responsible for matters affecting Lake Ontario.

Use of Ministry of the Environment Expertise and Infrastructure to Guide Contingency Planning

The CTC Source Protection Committee maintains that, based on the work completed to date, there is a strong need for the provision of real time "in-lake" monitoring data to track lake circulation and water quality characteristics. These data would be useful in guiding the implementation of contingency plans should a spill occur, which reaches the near shore of Lake Ontario. As well, there is an ongoing need to further develop Lake Ontario circulation and water quality simulation models, so that the model/s and the necessary expertise is available in the event a spill occurs and guidance can be provided with respect to the implementation of contingency plans. Furthermore, it would be prudent to assess threats that could not be modelled and evaluated through the Source Protection Plan development process due to time and financial constraints. The Ontario Ministry of the Environment already maintains the expertise, and the equipment necessary to perform the noted monitoring and computer simulation modelling functions advocated in the Source Protection Plan policies.

City of Toronto Responsibilities

Notwithstanding the development of the CTC Source Protection Plan, the City of Toronto continues to operate and maintain its water, wastewater, and stormwater systems to the highest standard of care. Current and future planned activities include:

- Development of contingency plans for all sanitary trunk sewer river crossings, using the Coxwell STS Contingency Plan as the basis/model for other similar locations;
- On-going stream restoration efforts to reduce the risk of erosion associated failures at sanitary trunk sewer river crossing, which involve assessments, conducted by the City with the support of the Toronto Region Conservation Authority, and continued

planning, design, and construction of improvements that have been identified initially as part of the WWFMP, and in subsequent stream specific studies;
- Ensure that the threats identified through this process are addressed in the WTP contingency plans required by the *Safe Drinking Water Act*, including updating the contingency plans, where necessary;
- Ensure wastewater treatment plant contingency plans address the threats posed in the event of catastrophic effluent disinfection process failure as identified in the risk assessment process, including updating the contingency plans, where necessary;
- Propose a review of the City's communication protocols to the Office of Emergency Management and other City Divisions with a view to improving preparedness in the event that a significant spill occurs, especially communications procedures with external agencies and other municipalities across the north shore of Lake Ontario; and,
- Implement enhanced communication protocols to provide early warning about threats to the City's water treatment plant intakes to plant operations staff.

The City is a strong advocate of the multi-barrier approach to source water protection and will continue to work with municipal and Conservation Authority members of the CTC SPC and other agencies to implement the CTC SPP.

This Staff Report has been prepared in collaboration with staff from Toronto Public Health.

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