

## **Discussion Paper: Consideration of Transportation of Dangerous Goods**

**Section 36. CTC Workplan 2018 Item 6**

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## Executive Summary

The CTC (Central Lake Ontario-Toronto and Region-Credit Valley) Source Protection Plan, along with the supporting Assessment Reports, was approved by the Province of Ontario (Ministry of Environment, Conservation and Parks - MECP) and came into effect on December 31, 2015. An order was issued under section 36 (S.36) of the *Clean Water Act, 2006* by the Minister of the Environment and Climate Change in July 2015 to prepare and submit a workplan for a S.36 Source Protection Plan (SPP) update, to the Ministry by December 21, 2018 (submitted). A S.36 update is a broad scale review, and an activity is focused on keeping the Assessment Report and Source Protection Plan up to date with general amendments and policy efficacy changes. The CTC 2018 Section 36 workplan sets out a number of tasks, each with their own completion date, ranging from April 2019 to June 2024. The Province later allowed for flexible and open workplan deadlines. Additionally, the Province subsequently eliminated this S.36 requirement with the understanding that updates to the Assessment Reports are ongoing under Section 34 amendments. No future S.36 comprehensive update orders are anticipated.

Table 1 in the workplan lists numerous tasks. Task 6 is the *consideration of a new local threat* with policies to address the *transportation of dangerous substances*. If it is determined by the Source Protection Implementation Working Group that there is a need for the addition of a local threat and or updated existing policies, the team will proceed with the preparation of draft new or updated policies, consultation with stakeholders and the Province, as required, prior to implementation.

This paper discusses the process of policy development and of adding a non-prescribed activity under the *Clean Water Act, 2006*. It presents summaries of policies in other jurisdictions and reviews a range of other legislative instruments, regulations, and best practices to determine the level of oversight that currently exists in Ontario and gaps that may be present. It should be noted that, to develop policies to address a potential threat, the threat must first be identified and followed by approval by the Province. Per Director's Rules 68 and 69, scientific study *must* support the request to the Province for the addition of a local threat.

This paper concludes that while consideration of additional policies to protect against spills and impacts to sensitive drinking water source areas is appropriate and prudent, there are already several instruments that currently address the fundamental concerns of source water protection through their provisions and emergency response plans. The spill response side appears to be well thought out and robust, and procedures include a level of redundancy that serves to provide increased protection. Municipalities are very well aware of Source Water Protection sensitive areas and are the same agencies charged with emergency response on-the-ground action. Additional prescriptive CTC Source Protection policies can be duplicative and introduce another level of administration that is unlikely to be helpful to the intent of the CTC Source Protection Plans. It is important that the program scope be understood while considering additional policies. However, there appears to be a gap with respect to awareness of the Source Water Protection Program and use of its data for planning purposes.

Recommendations for four policy updates are presented:

- 1) A revision and expansion of Specify Action LO-G-1 to expand clause (c) and add a clause (f) to require appropriate bodies to utilize and show source protection maps and data on an ongoing basis in their planning and emergency response processes.
- 2) A revision of Education and Outreach policy LO-G-4 (c) to require the MECP to develop and implement Source Water Protection awareness campaigns on a 5- or 10-year (suggest 8) basis to ensure all agencies are kept up-to-date and aware of sensitive drinking water areas and Source Water Protection policies.
- 3) A new Specify Action policy LO-G-5 to require the MECP, Spill Action Centre (SAC), and Canada Energy Regulator (CER) to provide all sampling data associated with a spill in the CTC SPR that could result in a significant threat to Lake Ontario's drinking water intakes to the lead Source Protection Authority and relevant Municipality for use in local analysis and model development. The policy also encourages MECP and SAC to use watershed and 'sewershed and outfall location' data for flow analyses, as well as data from Lake Ontario monitoring stations and enhanced tools such as the Lake Ontario Water Quality Forecasting System developed by the Lake Ontario Collaborative Group
- 4) A new Specify Action policy GEN-9 similar to LO-G-5; however, it requires the MECP, SAC and CER to provide spill data that could also result in a threat to Wellhead Protection Areas.

Please note that proposed amendments to the LO-G policies are also from the *Review of the existing local liquid hydrocarbon pipeline policies* discussion paper. Both discussion papers should be considered together to understand proposed policy changes.

## Preamble

The CTC SPP, along with the supporting Assessment Reports, was approved by the Province of Ontario (MECP) and came into effect on December 31, 2015. Section 36 under the *Clean Water Act, 2006* contains the provision to comprehensively review and update source protection plans, including assessment reports at established intervals (approximately every 5 years as directed by the Province). The Province recently eliminated this S.36 requirement with the understanding that updates to the Assessment Reports are ongoing under S.34 amendments. No future S.36 comprehensive update orders are anticipated. Periodically updating these documents ensures that all municipal drinking water systems are protected, and that changing biophysical and social conditions are captured in future planning for source protection. More urgent updates, such as Drinking Water System updates, may occur under Section 34.

The CTC Source Protection Region was issued an order under section 36 of the *Clean Water Act, 2006* by the Minister of the Environment and Climate Change in July 2015. The order including extensions, directed staff to consult with program partners to prepare and submit a workplan for a Section 36 Source Protection Plan update to the Ministry by December 21, 2018. This workplan sets out a number of tasks, each with their own completion date, ranging from April 2019 to June 2024. The Province, understanding challenges presented by the CoVid pandemic, staff turnover, multiple S.34 updates in the CTC and other emerging pressing issues which affect municipal budgets, has since allowed for flexible and open workplan deadlines. The CTC, nevertheless, continues to strive to complete all tasks outlined in the 2018 workplan as expeditiously as possible. Current timelines estimate all tasks completed by the end of the 2024 fiscal year.

## CTC S.36 Consideration/Review Items

The 2018 CTC Section 36 workplan (Table 1) includes numerous tasks. Three of those tasks, listed two “consideration of new policy tasks” and a policy review task:

- **Item 6:** The consideration of a new local threat with policies to address the transportation of dangerous substances.
- **Item 9:** The consideration of additional policies to address drinking water “issues” identified in 2015.
- **Item 11:** The work plan also documented a task to review the existing local liquid hydrocarbon pipeline policies to determine if they are adequate, given that this local threat was added as a Provincial threat under the Director’s Technical Rules (DTR) December 2021 amendments. The circumstances related to pipelines may differ from those considered in 2015 in the CTC.

It is expected that *new* policies, where developed, will go through research and consultative processes as did original SPP policies. Such work may also include technical studies, numerical modelling exercises and industry consultation, to determine the level of risk prior to the

drafting of any new policies. All work will be brought to the Committee's Implementation Working Group and the Source Protection Committee for approval/endorsement.

CTC staff will examine these CTC Section 36 2018 workplan items to:

- Review where available updated statistics/ background information regarding incidents and water quality trends,
- Prepare technical analysis including numerical modelling as needed,
- Determine new/updated risks to the CTC with metrics as needed,
- Review action/legislation/legal instruments in other jurisdictions,
- Prepare a rationale document for consideration by the SPC,
- Update documentation with SPC input,
- Prepare new/updated draft policies as necessary.

If it is determined that there is a need for the addition of a local threat and/or updated "issues" and/or pipeline policies, the team will proceed with the preparation of draft policies, consultation with stakeholders and the Province, as required prior to implementation.

This work began in 2023 and will continue in 2024. It is anticipated that staff will complete the policy recommendations for these items, supported by a discussion paper, by Spring of 2024. Interim reports will be brought forward by staff periodically, to the SPC Implementation Working Group and then to the SPC. This report pertains to *Item 6: the consideration of a new local threat with policies to address transportation of dangerous substances.*

## 1 Background

In 2015, the CTC Source Protection Region submitted its first Source Water Protection Plan (SPP) under the *Clean Water Act (2006)*. The SPP is supported by an Assessment Report which describes the jurisdiction where the SPP applies including delineated Source Protection areas; namely Well Head Protection Areas (WHPAs), Intake Protection Zones (IPZs), Highly Vulnerable Areas (HVAs) and Significant Groundwater Recharge Areas (SGRAs). Within WHPAs, IPZs and HVAs, vulnerability analyses and scoring determine which anthropogenic activities constitute significant, moderate or low threats to the drinking water source in question. Additional to these zones, the Directors Rules under the *Clean Water Act (2006)* direct the delineation of zones known as Issue Contributing Areas (ICAs) when monitoring data demonstrates an increasing contaminant trend.

In 2006, the Province listed 21 prescribed activities that could pose a threat to drinking water complemented by a table listing the circumstances under which these activities could be a threat. Circumstances supporting the determination of threat level are outlined in the Provincial Table of threats. Both the list of activities and the circumstances are subject to revision under the principle of continuous improvement. These revisions are supported by new information, data and scientific advancement. In 2017 and again in 2021, the Province revised the Rules and the circumstances for Drinking Water Threats. In the last iteration, the Province added 1 prescribed activity (liquid hydrocarbon pipeline) for a current total of 22.

A local threat may be added to the list of activities in a Source Protection Region (SPR). Such an addition must be submitted to the Province supported by specific technical studies for approval. Where the Province provides approval, the SPR's SPC must develop policies to address said local threat.

The transportation of dangerous goods is *not* listed as a prescribed activity under the *Clean Water Act*. The Directors Technical Rules and the Table of Drinking Water Threats do not address this activity and although discussed, the SPC did not identify this activity as a local threat to drinking water in the CTC SPR because the activity was believed to be adequately managed by other legislative instruments that are administered by other agencies.

### 1.1 Prescribed drinking water threats

The following activities are prescribed as drinking water threats for the purpose of the definition of "drinking water threat" in subsection 2 (1) of the Act:

1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.
3. The application of agricultural source material to land.

4. The storage of agricultural source material.
5. The management of agricultural source material.
6. The application of non-agricultural source material to land.
7. The handling and storage of non-agricultural source material.
8. The application of commercial fertilizer to land.
9. The handling and storage of commercial fertilizer.
10. The application of pesticide to land.
11. The handling and storage of pesticide.
12. The application of road salt.
13. The handling and storage of road salt.
14. The storage of snow.
15. The handling and storage of fuel.
16. The handling and storage of a dense non-aqueous phase liquid.
17. The handling and storage of an organic solvent.
18. The management of runoff that contains chemicals used in the de-icing of aircraft.
19. An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.
20. An activity that reduces the recharge of an aquifer.
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard.
22. The establishment and operation of a liquid hydrocarbon pipeline. O. Reg. 385/08, s. 3; O. Reg. 206/18, s. 1.

## 1.2 Early Source Water Protection Focus

Initially, circa 2004 when the Source Water Protection program was being designed, the focus was on groundwater sources. This was as the attention was on the Walkerton tragedy (2000) and the multiple barriers that had failed during the incident. The technical rules primarily focused on groundwater science (as associated with the prescribed activities) and the vulnerability scoring technical direction for surface water sources resulted in no drinking water threats for Great Lake sources.

## 1.3 Event-based Modelling

During the CTC SPC deliberations, the Committee urged the Province to consider additional threats that could impact the GTA's largest source of drinking water, Lake Ontario.

The Province subsequently developed technical rules to allow for event-based modelling to determine threats to drinking water from surface water sources including the Great Lakes. The CTC together with the Province and other SPRs situated along Lake Ontario initiated the Lake Ontario Collaborative (LOC).

The LOC developed a 3-D model of the Lake, listed and simulated with quantities, spill scenarios based on actual North American examples, calculated time-of-travel data from the spill site to the water treatment plant and concentrations of contaminants at the intake, all to determine the threats to these sources and to prepare policies to prevent such scenarios. The scenarios were linked to contaminants associated with the Provincial prescribed activities.

The simulations that resulted in concentrations above treatment capacities (requiring plant shut-downs or alternate source needs), were listed as Intake Protection Zone-3 threats and these zones were delineated for policy implementation. Policies include contingency plans, emergency response and notification upgrades to several activities such as fuel pipelines, waste treatment plants and nuclear plant waste-water processes. In the CTC, two local threats were approved in 2015, hydrocarbon pipelines and nuclear plants. In 2017, hydrocarbon pipelines were added as a Provincial threat. Nuclear plant activities remain a local threat in the CTC SPR.

As mentioned, a spill occurring during the transportation of dangerous goods was discussed but not pursued based on the Province's direction regarding oversight by other agencies, namely Transport Canada.

## 2 Discussion

### 2.1 What are Dangerous Goods?

A product is considered a dangerous good when it is listed in Schedule 1 or Schedule 3 of the Transportation of Dangerous Goods regulations. Schedule 1 includes products such as incendiary ammunition, nitro urea, explosives, gasoline and diesel and various other volatile chemicals. Schedule 3 includes dangerous goods that are forbidden for transport (on passenger carrying modes of transportation) but that do not have a UN number (four-digit number that identifies dangerous goods) and include products such as compressed oxygen and other gases, flammable liquids, infectious substances and radioactive materials. The Schedule is related to the packing group, group one being goods of highest dangerous risk.

Consolidated Transportation of Dangerous Goods Regulations including Amendment SOR/2008-34					Codification du règlement sur le transport des marchandises dangereuses incluant la modification DORS/2008-34				
Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9	Col. 10
UN Number	Shipping Name and Description	Class	Packing Group/ Category <i>SOR/2008-34</i>	Special Provisions	Explosive Limit and Limited Quantity Index	ERAP Index	Passenger Carrying Ship Index	Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index	Marine Pollutant
UN1089	ACETALDEHYDE	3	I		0	3 000	Forbidden	Forbidden	
UN1090	ACETONE	3	II		1		Forbidden	5	
UN1091	ACETONE OILS	3	II		1			5	

Figure 1. Example of Schedule table – Consolidated Transportation of Dangerous Goods Regulations including Amendment SOR/2008-34 (Transport Canada)

Of these products, the CTC SPC was primarily concerned with the potential for spilled petroleum products on a transportation corridor that could contaminate raw water supplies that are used for drinking water in the CTC.

### 2.2 LOC Simulation scenarios

In 2009, the LOC initiated the event-based approach for the purpose of identifying significant drinking water threats to the LOC municipal partners’ Lake Ontario sourced WTPs. A list of proposed spill scenario simulations for existing facilities was developed in concurrence with municipal partners, Source Protection Committees, and the MECP. The following criteria were used to develop the list of preliminary spill scenarios for Industrial, Commercial and Municipal facilities:

- Identifying the location and possible materials released under normal operation and spill scenarios.
- Using established lake and time of travel tributary models, predict under what conditions contaminants could reach drinking water intakes.
- Predict the concentration of key parameters and assess risks using MOE *Technical Rules (2009)*.
- Evaluate historical raw water analyses at drinking water plants to assess whether there are observed elevations of parameters that may be linked to storm events or past spill or weather conditions.

Based on the above criteria and discussions with municipal and SPC partners, the following represent the generalized locations of the spills considered by the Lake Ontario Collaborative. This list was initially extensive but was then reduced based on probability considerations that included existing infrastructure layout and age, topography, existing controlling laws and regulations. Management contingency and emergency response processes, even where impressive were not considered factors for elimination of the threat as these processes are subject to human error and have the possibility of failure.

The final list of event-based threats is reported in the Assessment Reports for LOC SPRs as IPZ-3s. The scenarios considered are as follows:

- A disinfection system failure at each Lake Ontario WWTP;
- Sanitary trunk sewer break caused by Stream Erosion in river valleys between Rouge River and Etobicoke Creek;
- A combined sewer overflow (CSO) release in the City of Toronto;
- Release of contaminants (a spill of *E. Coli*) from the lagoon of a Rural industry (an industrial animal food processing facility) located adjacent to a tributary of the Credit River in Brampton, ON;
- A release of gasoline from a bulk petroleum fuel storage facility; facilities on the lakeshore within Oakville ON and in the mid watershed area of Humber River and Don River in North York were evaluated;
- A spill of gasoline/refined product from large pipelines co-located with the Ontario Power transmission corridor across the North part of the GTA where the pipeline crosses under the watercourses and which would discharge to the major tributaries flowing south to the north shore of Lake Ontario;
- a discharge of tritium from the electrical generating stations located at the Pickering site and the Darlington site.

Other spill scenarios considered by the LOC (Dewey, 2011), but not pursued or documented:

- A petroleum/chemical spill from a shipping vessel / tanker travelling across the "Skyway Bridge" over the Burlington ship canal.

This scenario was ultimately abandoned, and no results were documented as a threat. As indicated, the Province at the time urged that this activity was adequately regulated and addressed by the Canadian Federal government, the Province and Municipalities through spill protocols and response provisions. These agencies have adopted extensive safety provisions. With limited resources, the CTC SPC chose to focus on a scoped list of scenarios for event-based modelling, scenarios most relevant to the CTC jurisdiction.

### 2.3 Other Jurisdictions

The Essex Region Source Protection Area (ERSPA) has an approved local threat and policies to address above grade storage, handling, or transportation of large volumes of liquid fuel. Supported by modeling studies of simulated spills, the transportation of large volumes of liquid fuels is shown to be a significant drinking water threat in all of the delineated Event Based Areas in the Essex Region SPA. Volume thresholds resulting in significant threats associated with the transportation of liquid fuels in various IPZs are the same as for the handling and storage of fuel. Specifically, this significant threat applies to extensive IPZ-3 areas, including all tributaries of Lake St. Clair and Detroit River, which extend into all Essex Region municipalities except Pelee Island and Chatham-Kent. ERSPA has concerns related to the large navigable water bodies that border the Region. There exists a heightened risk of spillage with several documented historical incidents. A local threat was approved by the Province in their May 2019 Source Protection Plan. Policies 18 and 19 apply to these IPZ areas. There are also some additional policies which apply to moderate or low threats in all IPZs and all Highly Vulnerable Aquifers (HVAs).

### 2.4 The CTC Concern

The GTA witnesses the transportation of large volumes of dangerous goods through its area daily, by road, rail and near-shore shipping. Spills occur from time to time and contaminants may find their way into the drinking water ground and surface water sources. The SPC is charged with the development of policies to protect drinking water sources within its jurisdiction. This work includes the ongoing examination of existing instruments to ensure that potential threats are covered and addressed by said instruments to safeguard drinking water resources and to complement such instruments where gaps are found. With several recent rail incidents in and around developed areas, CTC and other SPR staff have reopened the discussion regarding whether existing oversight by other instruments is adequate to protect drinking water supplies in the CTC SPR. There are questions that warrant discussion. Are the current provisions administered by other agencies strong or effective enough to protect drinking water supplies? Are vulnerable areas considered as part of the route planning and emergency response associated with the transportation of dangerous goods? And should the CTC SPC pursue the addition of this activity as a local threat and following, develop policy to reduce/eliminate the threat?

## 2.5 Legislative Instruments and Jurisdictional Oversight

The Province encourages the SPCs to avoid the development of policy where other agencies already have extensive controls and to use existing prescribed instruments and existing legislation to protect supplies where possible. This is to avoid confusion and duplication of effort. *The Clean Water Act, 2006*, is focused on the 22 prescribed activities outlined in the *Clean Water Act, 2006* and the Table of Drinking Water Threats and only on municipal supplies. Nonetheless, where SPCs believe that a non-prescribed threat could be significant, or they consider that the existing controls have significant gaps, they may request the addition of a local threat and support said request with scientific studies (modelling). Once approved by the Province, they may develop local policies to further address the threat with respect to the goals of the *Clean Water Act, 2006*. Alternatively, they may 'upgrade' existing or add new general outreach policies to promote the use of SWP materials by other agencies.

The following are prescribed legislative instruments that govern the transportation of dangerous goods in Ontario and/or Canada.

### 2.5.1 Transportation of Dangerous Goods Act 1992 – Federal/ Provincial regulations

The *Transportation of Dangerous Goods Act, 1992* (TDG) is administered by Transport Canada. The purpose of the TDG Act and Regulations is to promote public safety when dangerous goods are being handled, offered for transport or transported by road, rail, air, or water (marine). TDG also establishes safety requirements.

When transporting dangerous goods with an aircraft, comply with Section 12.14 of the TDG Regulations for domestic flights or the International Civil Aviation Organization (ICAO) Technical Instructions for international flights.

Generally Canada regulates marine transportation of packaged dangerous goods under two different Acts and related safety regulations:

- The *Transportation of Dangerous Goods Act, 1992* (TDG Act) and the Transportation of Dangerous Goods Regulations are administered by Transport Canada's Transport Dangerous Goods Directorate.
- The *Canada Shipping Act, 2001* (CSA 2001) and the Cargo, Fumigation and Tackle Regulations are administered by Transport Canada's Marine Safety and Security Directorate.

The Act is accompanied by Appendices (Schedules) outlining limits on state (liquid, solid, etc.), volumes and quantities, containment, handling and safety marking requirements. There are also restrictions on the type of carrier/vessel that may transport dangerous goods.

Information regarding the geographic location is to be contained in a 30-Day follow-up report (8.5) subsequent to any road, rail or marine incident. No mention is made of the sensitivity of the route.

The TDG Program develops safety standards and regulations, provides risk-based oversight and gives expert advice on dangerous goods to promote public safety in the transportation of dangerous goods by all modes of transport regulated by Transport Canada. There are both federal and provincial TDG Regulations. Provincial and territorial requirements typically parallel the federal regulations. Generally, the provincial TDG Regulations apply to the handling and transportation of dangerous goods within the Province on highways, as defined in the *Motor Vehicle Act* and on rail vehicles that are within the provincial jurisdiction.

There are several provisions associated with the movement of dangerous goods to prevent accidental discharge to the environment, but it is unknown whether Transport Canada has any special provisions or mapping associated with transportation through source protection areas.

Along with the Province, municipalities, the MECP's Spills Action Centre (SAC) and pipeline companies all have been provided with the Source Water Protection data and mapping. Municipalities have included these data in their planning and Emergency response processes. Additionally, the Province has reported in its annual report regarding Source Water Protection that it distributes source water protection data to all relevant agencies for their use in spill response planning.

## 2.5.2 Canadian Environmental Protection Act (CEPA) Federal – Spills

A spill, as defined in Part X of the *Canadian Environmental Protection Act* (CEPA), is a discharge a) into the natural environment, b) from or out of a structure, vehicle or other container; or c) that is abnormal in quality or quantity when considering all of the circumstances of the discharge.

The primary objective for plans developed as a requirement of CEPA is to help prevent or reduce the risk of spills of pollutants and prevent, eliminate or ameliorate any adverse effects that result or may result from spills. This may include notifying appropriate levels of government as well as the affected members of the public and development of response plans. The impacts as well as the outcomes of most spills are directly related to the level of preparedness.

*CEPA, 1999* is administered by Environment and Climate Change Canada. Environment and Climate Change Canada informs Canadians about protecting and conserving natural heritage, and ensuring a clean, safe and sustainable environment for present and future generations. Under the *Canadian Environmental Protection Act*, the powers, duties and functions of the Minister of Environment and Climate Change extend to matters such as:

- the preservation and enhancement of the quality of the natural environment, including water, air and soil quality, and the coordination of the relevant policies and programs of the Government of Canada
- renewable resources, including migratory birds and other non-domestic flora and fauna
- meteorology; and
- the enforcement of rules and regulations

Environment and Climate Change Canada delivers its mandate through a series of acts and regulations beyond *CEPA, 1999*, such as under the pollution prevention provisions of the *Fisheries Act, 1985*, the *Federal Sustainable Development Act, 2008*, the *Species at Risk Act, 2002*, the *Migratory Birds Convention Act, 1994*, the *Canada Wildlife Act, 1985*, and the *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act, 1992*.

While the detailed internal procedures are unknown regarding how Environment and Climate Change Canada handles a spill that may trigger provisions under the *Clean Water Act*, or whether these data are included in their planning processes, the Province has reported that it has shared the information and maps with all relevant agencies and promotes use of said information in operational as well as for response planning. The CTC has shared all maps and data with the Province, municipalities, the SAC and Pipeline companies and promotes use of these data for prevention and planning purposes. It may be prudent to engage Transport Canada and Environment Canada directly to ensure more widespread awareness and use.

### **2.5.3 Environmental Protection Act, 1990 – Provincial**

The purpose of the *Environmental Protection Act* (EPA) is to provide protection and conservation of the natural environment in Ontario. It is administered by the Ministry of Environment, Conservation and Parks granting it broad powers to address the discharge of contaminants that have deleterious impacts on the environment. The MECP may issue administrative control, stop, clean-up and preventative measure orders with respect to the discharge of contaminants which includes solid, liquid, gas, odour, heat, sound, vibration and any combination of these resulting from human activity and that causes adverse effects. The EPA sets out broad requirements, but the details are outlined in the supporting regulations.

Ontario Regulation 347 is a key instrument that provides detailed rules regarding the categorization and handling of waste. The main prohibition in this regulation is regarding the discharge of a contaminant into the environment in specified amounts, concentrations or excess levels as articulated in the Regulation. Allowable concentrations are linked to the type of land-use. For example, the allowable concentrations will vary between commercial/industrial zoning and residential.

The EPA, like its federal counterpart CEPA, contains provisions for spills of contaminants. There are specific requirements for those that spill a contaminant to report the spill to the MECP and the affected Municipality as well as requirements for the elimination of the spills and

restoration of the natural environment. In addition to its power to issue administrative orders, the EPA also creates a form of licensing system. A Certificate of Approval (“C of A”) is required to construct, alter, extend or replace a new plant, structure, equipment, apparatus, mechanism or thing that may discharge a contaminant into the natural environment. The EPA grants a broad array of powers of inspection and investigation to provincial MECP officers.

The Province, municipalities, the SAC and pipeline companies all have been provided with Source Water Protection data and mapping. These agencies have Emergency Response Plans and protocols including those that apply to transportation corridors. The Province has noted in its annual reporting that these maps and data have been distributed to all the appropriate bodies.

#### **2.5.4 The Spills Action Centre - Ontario**

Under the *Environmental Protection Act (EPA), 1990* it is the duty of the owner or controller of a spilled pollutant to clean up a spill. They must do everything possible to prevent and eliminate the negative effects from a spill, including restore the natural environment to its original state. The Spills Action Centre (SAC) handles reports of spills, adverse drinking water results and environmental concerns from the public. The SAC operates a 24-hour, province-wide, toll-free telephone reporting service. The SAC tracks and follows up on required cleanup activities, provides advice and information related to spills or environmental incidents, coordinates a response with other agencies if needed, and initiates government response when required. Spills that cause an adverse effect, spills that are likely to enter or enter any waters, as defined in the *Ontario Water Resources Act*, directly or through drainage structures, or spills of greater than 100 litres on land accessible by the public shall be immediately reported to the SAC and the offending perpetrator shall take appropriate remedial action to limit the impact.

The Spills Action Centre falls under the Ontario Ministry of Environment, Conservation and Parks (MECP) and has access to the Source Protection Program data and maps (also under the governance of the MECP). The SAC is aware of highly vulnerable drinking water areas. When a spill is reported that could impact a source protection area, the SAC should consider policies under the Clean Water Act, 2006 for compliance given that the MECP is listed as an implementer in the policies. Along with the Province, municipalities, the SAC and Pipeline companies all have been provided with the Source Water Protection data and mapping.

#### **2.5.5 Emergency Management and Civil Protection Act (EMCPA) Provincial – O. Regulation 380/04**

The *Emergency Management and Civil Protection Act (EMCPA)* and its supporting regulation outline several requirements for both the Ministries and Municipalities. Every municipality is required to have a Municipal Emergency Control Group (MECG) that is responsible for directing a municipal response to an emergency. Each municipality in Ontario has an Office of the Fire Marshal Emergency Management (OFMEM) field officer who is responsible for the support,

development, or delivery of any of the components of the required emergency management program. These Field Officers are very well-versed in the requirements of the EMCPA and O Reg 380/04, as well as very well experienced in areas such as the development of municipal emergency response plans; the delivery of emergency management training; and the development and conduct of emergency management exercises, among other things.

The CTC Municipalities all have Emergency Spill Response programs and plans. Generally, under these plans, the municipalities will respond to a spill if safe to do so to ensure the protection of public health and safety as well as the environment. For clean-up activities, the municipality's role is one of monitoring and, where necessary, enforcement, to ensure appropriate steps are taken by the responsible party to clean up spills. Those responsible for causing the spill are responsible for cleaning it up. Most municipalities in the GTA have Dangerous Goods Spill Response plans or similar bylaws or policies (pollution prevention and cleanup, fire protection and life safety, flood plain designation and protection, public works aid agreements). These plans take effect after a spill occurs. The plans do not have any special provisions for vulnerable areas under the *Clean Water Act, 2006* but the municipalities are equipped with the data and may take appropriate and specialized action as necessary in the event of a spill in those areas.<sup>1</sup>

Along with the Province, municipalities, the SAC and pipeline companies all have been provided with the Source Water Protection data and mapping. The Province ensures that the Federal agencies with jurisdiction are provided with the data as needed. Specifically, in the event of a spill in a transportation corridor, SAC will contact Canutec (Transport Canada's spill expert centre), the OPP's Hazardous Material Unit as well as the municipality to notify and provide all relevant sensitive area information. These data will be used to engage in special efforts as needed. The MECP also notifies ECCC under its Canadian Ontario Notification Agreement.

As these agencies (ECCC, Transport Canada, MECP, SAC, Municipalities) have Emergency Response Plans and protocols including those that apply to transportation corridors, without becoming too prescriptive, it may be prudent to introduce a policy to *require* these agencies to include more prominently, up to date vulnerable zone maps and emergency protocols related to drinking water sources in their operations planning and in their emergency response plans.

### 2.5.6 Clean Water Act, 2006

Per the 2021 Director Technical Rules (MECP, 2021):

“Rule 119: In addition to activities prescribed to be drinking water threats in paragraphs 1 through 18 and paragraphs 21 and 22 of subsection 1.1(1) of O. Reg. 287/07 (General), an activity shall be listed as a drinking water threat for a vulnerable area if,

1. the activity has been identified by the source protection committee as an activity that may be a drinking water threat; and

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<sup>1</sup> See the spill response webpage for the [City of Toronto](#) and the [City of Mississauga](#).

2. an approval is not required to engage in the activity pursuant to any Act (Provincial or Federal);
3. the Director has confirmed in writing that the activity is an activity that can be assessed and addressed as a drinking water threat under the *Clean Water Act*.”

### 3 Conclusion

Rule 119, Items 2 and 3 above restricts listing the transportation of dangerous goods as a provincial or local drinking water threat as these activities fall under the jurisdiction of the Federal and Provincial governments. Nevertheless, a SPC may still pursue the addition of a local threat under Rule 1. Historical discussions with the Province, however, have indicated that approval to list would be unlikely given the extensive list of regulations under the authority of other agencies. The CTC also did not pursue advanced scientific studies to add the transportation of dangerous goods as a local threat.

*Clean Water Act, 2006* authority does exist under Section 26 (6) of Ontario Regulation 287/07, which indicates that a Source Protection Plan may set out policies “to update spill prevention and spill contingency plans or emergency response plans for the protection of existing drinking water sources with respect to spills that occur within a wellhead protection area or a surface water intake protection zone” along highways, railway lines and shipping lanes (*Clean Water Act*, O. Reg. 287/07).

As noted, the CTC has the option, if the Committee has renewed concerns, to model the threat to determine if the threat is significant. If found to be significant, the CTC may apply to the Province to add this as a local threat. If approved, the SPC will be required to develop policies to eliminate the threat. This would likely be in the form of RMPs to be developed with input from the governing agencies (Federal, Provincial and Municipal agencies).

## 4 Recommendations

While consideration of additional policies to protect against spills and impacts to sensitive drinking water source areas is appropriate and prudent, there are already several instruments that currently address the fundamental concerns of source water protection through their provisions and emergency response plans. After a review of the instruments and of general agency procedures, it appears that the 'spill response' side has been well thought out and is robust. Municipalities are very well aware of SWP sensitive areas and are the same agencies charged with emergency response on-the-ground action. It is believed that additional prescriptive CTC Source Protection policies can be duplicative and may introduce another level of administration that is unlikely to be helpful to the intent of the CTC Source Protection Plans. It is important that the program scope be understood while considering additional policies. Having said this there appears to be a gap with respect to awareness of the Source Water Protection Program and use of its data for planning purposes. The following recommendations are offered:

- 1) There may be an opportunity to add a policy clause to ensure that spill prevention and emergency response plans (Municipal, Provincial and Federal) include consideration of current information pertaining to sensitive drinking source water areas. These data and maps may also support the selection of future transportation of dangerous goods routes and development of updated Emergency Response Plans. The policy may direct the agencies with jurisdiction over these matters to consult the Provincial site where these data and maps are kept current. Policy could require that all Dangerous Goods transportation routing, Spill prevention and Emergency Response Plans consider the location of these areas and include additional specialized provisions for spill prevention and response. This may be achieved by revision and expansion of Specify Action LO-G-1 to expand clause (c) and add a clause (f).
- 2) A revision of Education and Outreach policy LO-G-4 to require the MECP to develop and implement Source Water Protection awareness campaigns on a 5- or 10-year (suggest 8 years) basis to ensure all agencies are kept up-to-date and aware of sensitive drinking water areas.
- 3) A new Specify Action policy LO-G-5 to require the MECP, Spill Action Centre (SAC), and Canada Energy Regulator (CER) to provide all sampling data associated with a spill in the CTC SPR that could result in a significant threat to Lake Ontario's drinking water intakes to the lead Source Protection Authority and relevant Municipality for use in local analysis and model development. The policy also encourages MECP and SAC to use watershed and 'sewershed and outfall location' data for flow analyses, as well as data from Lake Ontario monitoring stations and enhanced tools such as the Lake Ontario Water Quality Forecasting System developed by the Lake Ontario Collaborative Group.
- 4) A new Specify Action policy GEN-9 similar to LO-G-5; however, it requires the MECP, SAC, and CER to provide spill data that could also result in a threat to Wellhead Protection Areas.

Finally, in the event that the SPC decides to pursue the addition of a local threat, the threat must first be identified and approved by the Province. Per Director's Rules 68 and 69, scientific study *must* support the request to the Province for the addition of a local threat. For IPZ-3s, this would entail event-based modelling. LO-G-2 clause (3) *Using the model as a consistent approach to assess potential drinking water threats from: a) other existing activities which might be a drinking water threat to one or more municipal drinking water system; b) assessing newly proposed activities which may pose a threat to one or more municipal drinking water systems at the proposal stage* allows for such modelling. The LOC model used to identify the current IPZ-3 CTC drinking water threats is currently maintained by the City of Toronto under the oversight of the Ontario Clean Water Agency. For modelling work associated with Wellhead Protection Areas, use of the local models would have to be used to perform scenario modelling to determine the potential level of threat to the intake zones in the well(s). The CTC SPC needs to determine whether this work is necessary and approve a budget to perform the work.

It should be noted that without the modelling work and the identification of a local threat, the CTC LOC general policies do contain language that could be strengthened to include broader distribution and a wider range of uses of the CTC drinking water maps and data for the purposes of planning and emergency protocol updates. The CTC LO-G policies are presented here for ease of reference.

It is *not* recommended at this time to perform event-based modelling for the potential addition of a local threat for the transportation of dangerous goods.

Policy updates (LO-G-1) to ensure that the agencies with the responsibilities consider Source Water Protection data in their planning and Emergency protocols and response would be appropriate.

Please note that proposed amendments to the LO-G policies are also from the *Review of the existing local liquid hydrocarbon pipeline policies* discussion paper. Both discussion papers should be considered together to understand proposed policy changes.

This document is presented as support for the CTC Implementation group and SPC discussions and deliberations regarding the consideration of the Transportation of Dangerous goods as a Local Threat in the CTC SPR. Staff will take feedback and direction from both groups and following consult broader with approval from the SPC as part of the CTC S.36 workplan Item 6.

## 5 References

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## Appendices

## Appendix A: Essex Region Source Protection Region – Transportation of Dangerous Goods Policies

In the ERSPA, IPZ-3s for the Lake St. Clair, Detroit River and Lake Erie intakes are delineated based on model simulations of tanker truck fuel spills in the headwaters of selected tributaries, and fuel storage facilities in various locations. In the threats analysis, tanker truck fuel spills were also considered representative of the activity of the transportation of fuels (see p. 13 of the [Essex Region Source Protection Plan](#)).

As per the letter dated August 9, 2011 from Ian Smith (Director, Source Protection Programs Branch, MOE) in Assessment Report Appendix XIII, the transportation of organic solvents, dense non-aqueous phase liquids (DNAPLs), fuels, pesticides/herbicides and fertilizers could be moderate and low threats in various intake protection zones (IPZs) in the Essex Region based on the vulnerability scoring.

Also, *Essex Region Source Protection Plan - Approved May 2019 20* through modeling studies of simulated spills, the transportation of large volumes of liquid fuels is shown to be a significant drinking water threat in all of the delineated Event Based Areas in the Essex Region SPA. Volume thresholds resulting in significant threats associated with the transportation of liquid fuels in various IPZs are the same as for the handling and storage of fuel, as shown above.

Fuels Working Group in the spring of 2011, the technical studies for the Updated Assessment Report identified the above grade storage and handling of large volumes of liquid fuel as a significant threat. This applies to existing and future facilities, as well as transportation. In June 2011, a Fuels Working Group (FWG) was established, and met several times during the summer and fall, to assist the SPC in addressing this threat. This significant threat applies to extensive IPZ-3 areas, including all tributaries of Lake St. Clair and Detroit River, which extend into all Essex Region municipalities except Pelee Island and Chatham-Kent. The FWG included SPC Members, staff members of most municipalities, the Facility Manager of Sterling Fuels (a major fuel storage and distribution facility), and the Emergency Management Coordinator for the County of Essex. The FWG gained an understanding of the requirements of the Technical Standards and Safety Act, the associated Regulations which apply to the storage, handling, and transportation of fuel, and the standards and practices of the fuel industry. The Group provided valuable input and recommendations to the SPC regarding policy approaches and several draft policies for this significant threat.

Several policies also apply to all EBAs within IPZs of the intakes in Lake St. Clair, Detroit River and Lake Erie, where the above grade storage, handling, or transportation of large volumes of liquid fuel has been identified as a significant threat. There are also some additional policies which apply to moderate or low threats in all IPZs and all Highly Vulnerable Aquifers (HVAs). The policies are mainly organized based on the policy tool used.

### **5.1.1 ERSPR Policy Text**

18 O. Reg 287/07 Section 26 (Specify Action): The transportation of organic solvents, dense non-aqueous phase liquids (DNAPLs), fuels, pesticides/herbicides, fertilizers All IPZ-1s, IPZ-2s and IPZ-3s

#### **18All123- transportcorridor1 (Specify Action)**

The Essex Region Conservation Authority (ERCA) will provide information on drinking water threats (the transportation of various quantities of organic solvents, dense non-aqueous phase liquids, fuels, pesticides/herbicides and fertilizers) and vulnerable areas (through maps) to various parties and organizations and encourage them to include this information in their spills response, prevention and/or emergency plans. The various parties and organizations include municipalities (various departments), Ministry of Transportation Ontario (MTO), Ministry of Environment (MOE), Hazmat, Environment Canada, railways, Transport Canada, Chemistry Industry Association of Canada, Regional Environmental Emergencies Team (REET), Canadian Coast Guard, Port Authorities, harbours/marinas, ferry operators, Ambassador Bridge authority, local distributors and dispatchers, Ontario Provincial Police (OPP) and other emergency responders. Information on the drinking water threats and vulnerable areas may also be sent to other relevant parties and organizations that the ERCA may become aware of.

The information will assist in responding to spills (such as reporting and containment) and preventing spills on transportation corridors within the Intake Protection Zones in the Essex Region watershed. The information will be sent by the ERCA to the various parties and organizations within 1(one) year of the date of the approval of the Source Protection Plan. Further, the ERCA will encourage marinas within or near the Intake Protection Zones to refer to best management practices in the Clean Marine Program related to fuel and other relevant substances and will encourage marinas to participate in the Clean Marine Program.

These specified actions apply to the existing and future, moderate and low threats of the transportation of organic solvents, dense non-aqueous phase liquids (DNAPLs), fuels, pesticides/herbicides and fertilizers in the vulnerable areas of: All IPZ-1s, IPZ-2s and IPZ-3s. The date of compliance is within 1 (one) year of the Source Protection Plan taking effect.

#### **5.1.2 18M All123- transportcorridor-2 (Monitoring Policy)**

The Essex Region Conservation Authority will prepare and submit a report to the Source Protection Authority which summarizes the actions taken to comply with policy All123-transportcorridor-1 (Specify Action). The above applies to the existing and future, moderate and low threats of the transportation of organic solvents, dense non-aqueous phase liquids (DNAPLs), fuels, pesticides/herbicides and fertilizers in the vulnerable areas of: All IPZ-1s, IPZ-2s and IPZ-3s. The date of compliance is by February 1 of each year.

19 O. Reg 287/07 Section 26 (Specify Action): The transportation of organic solvents, dense non-aqueous phase liquids (DNAPLs), fuels, pesticides/herbicides, fertilizers i) All Events Based Areas (EBAs) for the transportation of fuel within the IPZs in the Essex Region Source Protection Area. ii) IPZ-1s and IPZ-2s for the transportation of organic solvents, dense non-aqueous phase liquids (DNAPLs), pesticides/herbicides, fertilizers All123- transportcorridor3(Specify Action)

### **19 All123- transportcorridor3 (Specify Action)**

The Ministry of Transportation (MTO), in collaboration with the Ministry of the Environment and Climate Change (MOECC) as well as in consultation with Source Protection Authorities (SPAs), should design a sign to the appropriate Provincial standard, to identify the locations of Wellhead Protection Areas and Intake Protection Zones. The Ministry of Transportation should manufacture, install and maintain the signs along Provincial Highways within the Wellhead Protection Areas with a vulnerability score of 10, and/or within an Intake Protection Zones or Wellhead Protection Area E with a vulnerability score of 8 or higher. Municipalities will be responsible for the purchase, installation and maintenance of appropriate signs designed by the Province in collaboration with the SPAs. These signs should be placed, at a minimum, where municipal arterial roads are located within a Wellhead Protection Areas with a vulnerability score of 10, and/or an Intake Protection Zone or Wellhead Protection Area E with a vulnerability score of 8 or higher. The above policy will be implemented as part of an overall education and outreach plan within each Source Protection Area. This policy, in conjunction with additional education and outreach policies, should be implemented within 2 years after the effective date of the plan. The implementing bodies are MTO, MOE and the municipalities.

### **19M All 123- transport corridor4 (Monitoring Policy)**

The Ministry of Transportation Ontario will prepare and submit a report to the Source Protection Authority which summarizes the actions taken to comply with policy All3- transportcorridor-1(Specify Action).

The above applies to the existing and future significant threats of the transportation of fuels in the EBAs within IPZs and moderate and low threats of the transportation of organic solvents, dense non-aqueous phase liquids (DNAPLs), pesticides/ herbicides and fertilizers, in IPZ-1s and IPZ-2s in the Essex Region Source Protection Area. The date of compliance is by February 1 of each year.

There is one transportation corridor threat policy to be implemented by the Ministry of Transportation. This is a 'non-legally binding' policy which is targeted for implementation within two years of the Plan taking effect. ERCA is also an implementing body (to assist in an advisory capacity) on a 'transportation' corridor threat policy which involves providing information on threats and vulnerable areas to a wide variety of parties such as transportation authorities, emergency responders, haulers/distributors, etc., and encouraging the updating of spills response plans.

There are also policies for the transportation of large volumes of liquid fuel or other substances, through which information will be directed to parties such as emergency responders, highway/road authorities, railways, shipping authorities, and haulers/distributors, etc., encouraging the updating of spills response plans in recognition of potential 'transportation corridor' threats in various IPZ areas.