

Lakehead Source Protection Plan Implementation Resource Guide



Implementation Resource Guides

A Compendium of Eight Modules

Look for all eight modules in our Drinking Water Source Protection series. You can find them at www.conservation-ontario.on.ca

MODULE 1



MODULE 2



MODULE 3



MODULE 4



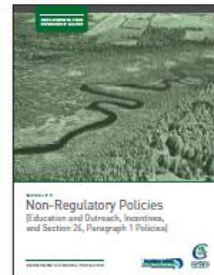
MODULE 5



MODULE 6



MODULE 7



MODULE 8



DRINKING WATER SOURCE PROTECTION

DRINKING WATER
SOURCE PROTECTION
ACT 7 OF CLEAN WATER



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Lakehead Source Protection Plan Implementation Resource Guide

November 2014

Written and Published by:



Lakehead Region
Conservation Authority
Conserve Today...For A Better Tomorrow

Note that this document has not been reviewed by legal counsel and is not presented as legal advice. You are encouraged to retain and consult with a lawyer should you require legal advice regarding the *Clean Water Act* and appropriate compliance with relevant Source Protection Plan policies.



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1.0 Introduction

The Lakehead Region Conservation Authority (LRCA) has created the Lakehead Source Protection Plan Implementation Resource Guide to provide a brief summary of the history of Source Water Protection and a summary of the relevant sections out of Conservation Ontario's full version of the Implementation Resource Guide which was created to be applicable to all Source Protection areas.

The Lakehead Source Protection Plan Implementation Resource Guide will provide relevant background information to the Plan's implementation bodies, which include the Municipality of Oliver Paipouge and the Thunder Bay District Health Unit. The guide will also serve to provide a summary to other interested parties (i.e. LRCA Staff and Board Members, City of Thunder Bay, Municipal Councils, Lakehead Rural Planning Board, etc.).

1.1 *About this Guide*

The full guide was created by Conservation Ontario to assist implementing bodies with their responsibilities under the *Clean Water Act*. Specifically, this guide aims to assist municipalities and other agencies with meeting their implementation responsibilities as outlined in Source Protection Plans. The full guide contains eight modules including:

Module 1: Establishing a Risk Management Office

Module 2: Understanding Where Policies Apply

Module 3: Land Use Planning

Module 4: Annual Reporting & Information Management

Module 5: Risk Management Plans

Module 6: Part IV Prohibition

Module 7: Non-Regulatory Policies (Education and Outreach, Incentives, etc.)

Module 8: Other Obligations (Transport Pathways, Septic Systems, etc.)

While the purpose of the guide is to provide options available to municipalities to implement Source Protection Plan policies, there may be options available beyond what is presented in these modules. The guide provides templates, examples and checklists that may assist in implementation and can be amended, where appropriate, as needed to suit local needs. The full version of the modules are available from the LRCA upon request.

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2.0 Background

2.1 *Clean Water Act*

The *Clean Water Act, 2006* came into effect on July 3, 2007. While the Ontario Ministry of the Environment and Climate Change works in collaboration with key stakeholders, the Province is the lead in the development of rules, regulations and guidance under this legislation. The intent of the *Clean Water Act* is to protect sources of water to municipal residential drinking water systems and ultimately protect human health and the environment.

In May 2000, the municipal drinking water system in Walkerton became contaminated resulting in the death of seven residents and thousands falling ill. In response to this tragedy, the Government of Ontario commissioned Justice Dennis O'Connor to evaluate the reasons for the events and to make recommendations for measures to ensure that similar events are avoided in the future. The *Clean Water Act* was an outcome of the "Report of the Walkerton Inquiry" by Justice O'Connor, which was released in 2002. Justice O'Connor recommended the implementation of source water protection to protect existing and future sources of drinking water by reducing the risk of contamination; that is, the protection of water resources even before they arrive for treatment at the municipal drinking water system. The *Clean Water Act* is one measure in the Government of Ontario's commitment to implement all of the recommendations put forward by Justice O'Connor.

The full *Clean Water Act* can be viewed on-line at:

http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_06c22_e.htm.

2.2 *Source Protection Committee*

The Source Protection Committee, as stated in the *Clean Water Act*, is responsible for preparing the Terms of Reference, the Assessment Report and the Source Protection Plan, while being supported by Source Protection Authorities. A number of regulations have been released under the *Clean Water Act*, governing the preparation of the Assessment Reports and Source Protection Plans. The Source Protection Committee obtains direction from these regulations on how the Source Protection Committee, Source Protection Authorities and municipalities should work together to prepare these documents.

All 19 Source Protection Committees were appointed in the fall of 2007. Each Committee has a Chair appointed by the Minister of the Environment, and a number of representatives, as specified by Ontario Regulation 288/07. The Committee generally has one-third representation from each of the following sectors: municipal; agriculture, industrial and commercial; and other interests. First Nations representatives also participate as Committee members. A number of non-voting representatives participate in Committee discussions. These seats are occupied by representatives from the Source Protection Authority, Health Units, and the Ministry of the Environment and Climate Change.

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In the case of the Lakehead Source Protection Plan, the Source Protection Committee has representation from the following sectors: Municipal (City of Thunder Bay and Municipality of Oliver Paipooonge), Industrial (Thunder Bay Port Authority, Forest Industry and Agriculture) and Other (Tourism, Education and General Public). Non-voting liaison members from the Thunder Bay District Health Unit and the Lakehead Region Conservation Authority also participate with the Source Protection Committee.

The Source Protection Committee sought a First Nations representative for the Committee, but despite outreach, there was no interest in joining the Committee.

2.3 Source Protection Authority

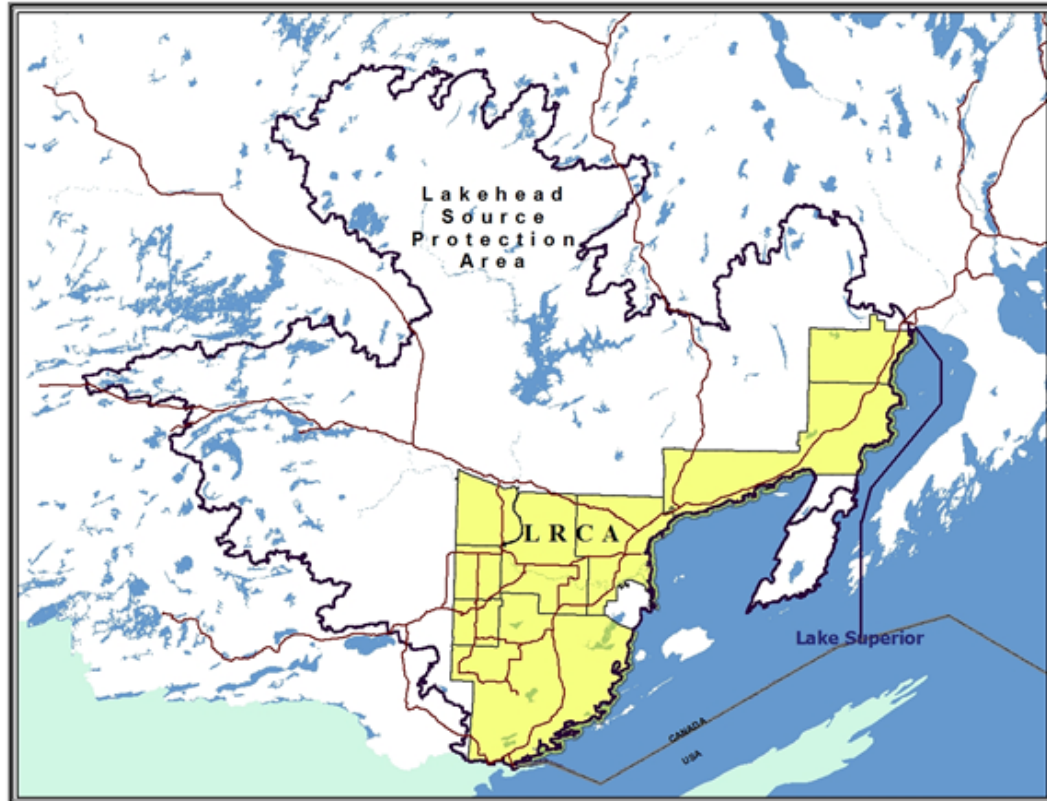
Source Protection Authority Boards follow the same structure as Conservation Authority Boards, which are made up of members appointed by municipal councils; however, Source Protection Authorities have additional responsibilities outlined in the *Clean Water Act*. Generally, where a Conservation Authority exists it becomes the Source Protection Authority and the watershed is the Source Protection Area of the Authority. There are exceptions to this rule. The jurisdictions of some Conservation Authorities have been expanded for the purposes of the *Clean Water Act*. In such situations, the Source Protection Authority would then consist of the Conservation Authority Board plus membership from the jurisdiction outside of the Conservation Authority's boundaries. Under Ontario Regulation 284/07, there are 38 Source Protection Areas and 10 Source Protection Regions.

2.4 Source Protection Area

In the case of the Lakehead Source Protection Plan, the Source Protection Area is considerably larger than the area of jurisdiction of the Lakehead Region Conservation Authority which covers an area of 2,600 square kilometres including the municipal boundaries of the City of Thunder Bay; Townships of O'Connor, Conmee, Dorion and Gillies; and the Municipalities of Oliver Paipooonge, Neebing and Shuniah. The Source Protection Area is 11,526 square kilometres and covers the area of land where the flow of water contained within the secondary watershed would eventually pass through the LRCA area of jurisdiction and reach Lake Superior.

(See Map 1: Lakehead Source Protection Area and LRCA Jurisdiction)

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Map 1: Lakehead Source Protection Area and LRCA Jurisdiction

2.5 Completed Studies and Reports

All completed studies and further information related to the Lakehead Source Protection Area and Plan can be found on-line at www.sourceprotection.net.

2.5.1 Terms of Reference

The Terms of Reference was the first document prepared by the Source Protection Committee. It explains the process and tasks that needed to be completed to develop the Assessment Report and the Source Protection Plan. The Terms of Reference outlines roles, responsibilities and timelines. The Terms of Reference for each of the Source Protection Areas and Source Protection Regions were approved by the Ministry of the Environment and Climate Change in 2008 through 2009.

The Terms of Reference for the Lakehead Source Protection Area was submitted on October 17, 2008, and approved by the Minister of Environment on May 25, 2009.

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2.5.2 Assessment Report

The Assessment Report is the technical background upon which the Source Protection Plan is prepared. The Assessment Report describe the local watershed, assess the available water supply, map vulnerable areas and identify threats in these vulnerable areas that pose risks to drinking water. The report contains past and present water quality and quantity information and identifies the areas that supply water to municipal residential drinking water systems. In addition to assessing the vulnerability of these areas to contamination, the Assessment Report identifies activities that are or would be significant threats to the quality and quantity of the drinking water systems within these areas. The Assessment Report describes research findings in detail. The Assessment Reports for each of the Source Protection Areas and Source Protections Regions were approved by the Ministry of the Environment and Climate Change in 2010 through 2012.

The Lakehead Assessment Report was submitted on July 6, 2010, and approved by the Minister of Environment on June 21, 2011.

2.5.3 Lakehead Source Protection Plan

The *Clean Water Act* and the Ontario Regulation 287/07 establish the requirements governing the contents of a Source Protection Plan. In particular, Ontario Regulation 287/07 requires that the Source Protection Plan contain the following objectives:

- polices to protect existing and planned drinking water sources, and
- policies for every area where threats could be significant to ensure that the activities identified as significant drinking water threats either never become a significant threat or, if the activity is already taking place, the activity ceases to be a significant threat.

The Source Protection Plan contains a series of policies developed by the Source Protection Committee in consultation with the local community to protect municipal drinking water sources from existing and future drinking water threats. The Plan describes the actions that must be taken by various agencies to protect surface water and groundwater sources that supply municipal drinking water. At a minimum, the Source Protection Plan contains policies to address significant drinking water threats identified in the Assessment Report. The Source Protection Plan may also contain policies for drinking water threats that are moderate and low in nature.

Most Source Protection Areas and Regions submitted their Source Protection Plan to the Minister of the Environment by the legislated deadline of August 20, 2012. Some Source Protection Regions were granted an extension to complete their Source Protection Plans. Source Protection Plans will come into effect once they are approved by the Minister. Approval is expected to occur in 2013 through 2015.

The Lakehead Source Protection Plan was submitted on June 6, 2012, and approved by the Minister of the Environment on January 16, 2013, with an effective date of October 1, 2013. The Lakehead Source Protection Plan was the first approved Plan in the province of Ontario.

3.0 Polices in the Lakehead Source Protection Plan

The following are the policies that the implementing bodies (i.e. Municipality of Oliver Paipoonge and Thunder Bay District Health Unit) will be required to implement.

No significant or moderate threats were found to occur within the Intake Protection Zones of the City of Thunder Bay's Bare Point Water Treatment Plant. For this reason only two specify action policies were included in the Lakehead Source Protection Plan. These policies are non-legally binding; however, were considered to be important to the Source Protection Committee, and represents a good faith commitment on behalf of the City of Thunder Bay. They must have regard for this policy and should consider it when making decisions pertaining to its applicability.

The full polices can be viewed in the full version of the Lakehead Source Protection Plan which can be viewed on-line at www.sourceprotection.net.

3.1 *Municipality of Oliver Paipoonge*

The "Lakehead Source Protection Plan" contains six policies that apply to the Municipality of Oliver Paipoonge. The policies were implemented to ensure activities that are or would be a significant threat to municipal drinking water sources cease to exist or never become significant.

Policies that apply to the Municipality are summarized below:

1. Policy number RV.1.CW-PA (on page 55 of the Plan) states:

"The following land uses are prohibited in WHPA-A:

- 1) Land uses that normally require waste disposal sites approvals including:
 - Application of hauled sewage to land;
 - Mine tailings stored in a pit or in impoundment structures where the National Pollutant Release Inventory (NPRI) notice requires a person to report;
 - Landfarming of petroleum refining waste (more than ten hectares);
 - Landfilling of hazardous waste (less than one hectare);
 - Landfilling of municipal waste (less than one hectare);
 - Land disposal of commercial or industrial waste (less than one hectare);
 - Land disposal of liquid industrial waste
 - Storage of PCBs; and
 - A waste disposal site that is not approved to accept hazardous waste or liquid industrial waste but accepts small volumes that are exempt from Ontario Regulation 347.
- 2) Sewage treatment facilities, not including septic systems under 10,000 litres per day.

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- 3) Non-residential uses where organic solvents occur including, but not limited to, dry cleaning operations, vehicle service centres, paint and hardware stores, retail or wholesale pharmaceutical storage and distribution centres.
 - 4) Uses where fuel is stored including but not limited to, non-residential fuel storage, retail fuel outlets, uses where backup generators are required (with the exception of the backup generator at the Rosslyn Village Water Treatment Plant), industrial operations and any other uses involving the bulk handling and storage of fuel.
 - 5) Uses which include the storage of DNAPLs except for incidental volumes for personal domestic use.
 - 6) Future Agricultural uses.
 - 7) The Official Plan and Zoning By-law shall be brought into conformity with provisions 1 to 6 in accordance with Section 26 of the *Planning Act*.”
2. Policy RV.2.M-PA is used to monitor the implementation of RV.1.CW-PA under the Source Protection Plan. Through the monitoring, the Lakehead Source Protection Authority can monitor changes to the Official Plan and necessary Zoning By-laws. This will help to facilitate the monitoring process and advise the Source Protection Committee of any issues related to the Land Use Planning Policy.

Policy RV.2.M-PA (located on page 57 of the Plan) states:

“In relation to policy RV.1.CW-PA, the Municipality of Oliver Paipoonge shall provide an Annual Report to the Lakehead Source Protection Authority by February 1 of each year on the steps it has taken in the previous calendar year to implement the policies that are set out in the Source Protection Plan and apply to its decisions under the *Planning Act* and the *Condominium Act*.

The Source Protection Authority, in conjunction with the Municipality, shall evaluate the effectiveness of the significant threat policies in the Source Protection Plan that affect *Planning Act* and *Condominium Act* decisions.”

3. Policy RV.3.CW.SP manages future significant threats of application handling and storage of road salt, and storage of snow.

Policy RV.3.CW.SP (located on page 58 of the Plan) states:

“To address the handling and storage of road salt (existing and future) and storage of snow (existing and future) the Municipality of Oliver Paipoonge shall prepare a Salt Management Plan to address the sensitivity of the Rosslyn Village WHPA-A within one year of the Source Protection Plan taking effect. Specific actions that should be included in the plan to address the risk of road salt effects on source water include:

- a) Locating salt and snow storage areas outside of the WHPA-A

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b) Minimizing application of road salt within WHPA-A

Copies of any Official Plan and Zoning By-law amendment applications in WHPA-A shall also be provided by the Municipality of Oliver Paipoonge to the Lakehead Source Protection Authority once they have been received for review and comment and shall provide copies of these amendments once they have been adopted. This procedure must be established within one (1) year of the Source Protection Plan taking effect.”

4. Policy RV.4.M.SP is the monitoring policy that has been put in place in order to monitor the actions and measures of policy RV.3.CW.SP.

Policy RV.4.M.SP (located on page 60 of the Plan) states:

“By February 1 of each year after the Source Protection Plan takes effect, the Municipality of Oliver Paipoonge shall provide an Annual Report to the Lakehead Source Protection Authority with a description of the actions/measures they have taken to implement policy RV.3.CW-SP during the previous calendar year. The report shall also include a description of what steps are being taken to determine the extent to which the specified action has achieved its objectives and any information on the results of those steps.

The Municipality of Oliver Paipoonge shall provide the Lakehead Source Protection Authority with a copy of the Salt Management Plan once it is adopted.”

5. Policy RV.5.CW-EO is designed to educate the residents of WHPA-A on existing and possible future threats on their property.

Policy RV.5.CW-EO (located on page 62 of the Plan) states:

“The Municipality of Oliver Paipoonge shall develop an education program regarding the potential harmful effects of plane de-icer within the WHPA-A. This material will be required in the event of an airport being proposed.

To address all agricultural related drinking water threats (existing and future – Agricultural Source Material, Non-Agricultural Source Material, commercial fertilizer, pesticide and livestock grazing or pasturing of land, an outdoor confinement area or farm animal yard) the Municipality of Oliver Paipoonge shall develop an education and awareness program to advise the landowner in WHPA-A whose property currently contains existing agricultural threats. The Municipality shall prepare a package that will include information for best management practices and to raise awareness of and reduce drinking water threats. This information shall be developed and distributed within 2 years of the Source Protection Plan taking effect.

The Municipality shall prepare a package that will include information for best management practices and to raise awareness of and reduce drinking water threats related to the harmful effects of DNAPLs impacting groundwater resources.”

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6. Policy RV.6.M-EO has been put forth to monitor policy RV.5.CW-EO, allowing the Lakehead Source Protection Authority to ensure the actions and measures being carried out by the Municipality of Oliver Paipoonge are in compliance with the Source Protection Plan.

Policy RV.6.CW-EO (located on page 62 of the Plan) states:

“By February 1 of each year, the Municipality of Oliver Paipoonge shall provide an Annual Report to the Lakehead Source Protection Authority with a description of the actions/measures they have taken to implement the education and outreach program in the Source Protection Plan in the previous calendar year. The report shall also include a description of what steps are being taken to determine the extent to which the program has achieved its objectives and any information on the results of those steps.

The Municipality of Oliver Paipoonge shall also provide a copy of any materials produced and the number of residents or reached by the education and outreach materials.”

The policies are applicable to the Municipality of Oliver Paipoonge and only apply to the WHPA-A designated area.

3.2 Thunder Bay District Health Unit

Six Policies apply to the Municipality of Oliver Paipoonge’s Rosslyn Village drinking water source; four of which apply to the Thunder Bay District Health Unit (TBDHU) were included in the Source Protection Plan.

Policies that apply to the TBDHU are summarized below:

1. Policy number RV.3.CW-SP (on page 58 of the Plan) manages the existing significant threat of septic systems under 10,000 litres a day as well as new septic systems under 10,000 liters a day. The Policy states:

“The Thunder Bay District Health Unit shall ensure that on-site sewage maintenance inspections are conducted on all existing and future septic systems within WHPA-A, under the authority of the Building Code. This process will begin within 5 years of the approval of the Assessment Report for the Lakehead Source Protection Area (June 21, 2011).”

This means that the inspections of all septic systems in the Rosslyn Village Wellhead Protection Area-A (WHPA-A) must be completed by the Thunder Bay District Health Unit before June 20, 2016.

2. Policy RV.4.M.SP (on page 60 on the Plan) is the monitoring policy that has been put in place in order to monitor the actions and measures of policy RV.3.CW.SP.

The Policy states:

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“By February 1 of each year after the Source Protection Plan takes effect, the Thunder Bay District Health Unit shall provide an Annual Report to the Lakehead Source Protection Authority with a description of the actions/measures they have taken to implement policy RV.3.CW-SP during the previous calendar year. The report shall also include a description of what steps are being taken to determine the extent to which the specified action has achieved its objectives and any information on the results of those steps.

The Thunder Bay District Health Unit shall also provide the Lakehead Source Protection Authority with the following information:

- a) Results of mandatory sewage system maintenance inspections.
 - b) A summary compliance report outlining any corrective action found to be necessary as a result of the Sewage Systems Maintenance Program.”
3. Policy number RV.5.CW-EO (on page 62 on the Plan) is designed to educate the residents of WHPA-A on existing and possible future threats on their property.

The Policy states:

“To address septic systems under 10,000 litres a day (existing and future) the Thunder Bay District Health Unit shall provide within two years of the Source Protection Plan taking effect, information to landowners whose properties are serviced by an on-site sewage system within WHPA- A. The information shall be made available for a minimum of two years and will include:

- a) The reasons for the required inspection program.
 - b) Maintenance of systems.
 - c) Various types of allowed systems.
 - d) Best management practices for using a system”
4. Policy number RV.6.M-EO (on page 64 on the Plan) states:

“By February 1 of each year, the Thunder Bay District Health Unit shall provide an Annual Report to the Lakehead Source Protection Authority with a description of the actions/measures they have taken to implement the education and outreach program (Policy RV.5.CW-EO) in the Source Protection Plan in the previous calendar year. The report shall also include a description of what steps are being taken to determine the extent of which the program has achieved its objectives and any information on the results of those steps.

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Enclosed with the Thunder Bay District Health Unit Annual Report shall be copies of any materials produced and the number of landowners/operators/persons engaged in significant drinking water threats reached by the program.

3.3 City of Thunder Bay

The Specify Action policies within the Lakehead Source Protection Plan are non-legally binding; however, were considered to be important to the Lakehead Source Protection Committee during the Plan development. They are recommended “best management practices” for the City of Thunder Bay.

Policy TB.1.NLB-SP was implemented to protect the intake pipe from the potential impacts of ship anchorage. The policy states:

“The City of Thunder Bay should update a Spill Prevention and Contingency Plan which may include, at a minimum placing a buoy at the anchorage boundary that is within proximity to the Intake”. It was further recommended by the Lakehead Source Protection Authority that the City of Thunder Bay should consider the following:

Instead of placing one buoy on the anchorage line, it is suggested that buoys are placed at the intersections of the anchorage line and Intake Protection Zone 2 (IPZ 2), if depth permits.

Policy TB.2.M-SP was created to monitor the implementation of Policy TB.1.NLB-SP by stating that “the City of Thunder Bay shall provide the Lakehead Source Protection Authority with a copy of any updates to the Spill Prevention and Contingency Plan that is created, any actions that are taken under this Plan to protect the Bare Point Intakes”.

Module 1 – Establishing a Risk Management Office

4.0 Module 1: Establishing a Risk Management Office

The Lakehead Source Protection does not contain any policies that require the establishment of a Risk Management Office or a Risk Management Official. Module 1 is therefore not applicable to the implementing bodies of the Lakehead Source Protection Plan.

Module 1 – Establishing a Risk Management Office

5.0 Module 2: Understanding Where Policies Apply

This module is the second in a series of documents which have been developed to assist implementing bodies with preparing for the implementation of Source Protection Plans. This module is intended to assist municipal staff and/or implementing bodies with implementing the policies in the Source Protection Plan. By the end of this module, you will understand:

- what a vulnerable area is,
- how to identify a vulnerable area,
- how vulnerability scores are calculated,
- what a significant drinking water threat is,
- how to identify significant drinking water threats,
- how to determine if a Source Protection Plan policy applies.

5.1 Threats Verification

The threats identification in the Assessment Report was based on a preliminary understanding of activities which were believed to be taking place at the time of the assessment. These initial threat counts serve only as an estimate of the scope of work necessary to implement the Source Protection Plan. Verifying the existence of these threats is therefore the necessary first step in initiating the implementation of the policies of the Source Protection Plan.

In the case of the Lakehead Source Protection Plan, threat verification will not be required as the threats were thoroughly enumerated during the Assessment Report phase. Updates to the threat counts may be required in subsequent Plan updates however.

5.2 Threats Verification

You may require access to private property to verify significant drinking water threats. Section 88 of the Clean Water Act, 2006 allows an employee or agent of a Source Protection Authority to enter private property in order to collect data and information that is relevant to the preparation of an Assessment Report, a Source Protection Plan, an interim/annual progress report, or for the purposes of conducting a monitoring program for implementation of Source Protection Plans.

Even though the *Clean Water Act* provides powers of entry, it is expected that, under most circumstances, a trained person will enter with the consent of the property owner and will be accompanied by the property owner. Therefore, it is important for anyone likely to be engaged in the verification of threats to complete the Ministry of the Environment and Climate Change mandated training. The Property Entry Training Course, developed by the Ministry, is the model for property entry skills and knowledge

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taught to persons likely to enter private property for the purposes of compliance with the *Clean Water Act*.

For information on the Ministry of the Environment and Climate Change Property Entry training, please contact the Source Protection Programs Branch by email: sourceprotection@ontario.ca.

5.3 Useful Supporting Documents and Terms

All supporting documents can be found on the Lakehead Source Protection website www.sourceprotection.net.

5.3.1 Assessment Reports

Assessment Reports are technical documents which describe the local watershed, assess the available water supply, map vulnerable areas and identify threats in these vulnerable areas that pose risks to our drinking water. In some cases, threats were identified through a desktop exercise only. A multi-stakeholder Source Protection Committee, with representation from the public sector, as well as local interests such as farming, business, environmental and public health organizations, municipalities and First Nations in some regions, completed Assessment Reports for the Source Protection Area. The Assessment Reports enumerate significant drinking water threats in order to determine the extent and scope of threat activities, and this information contributed to the development of policies in Source Protection Plans.

5.3.2 Source Protection Plans

Source Protection Plans contain a series of policies developed by the Source Protection Committee in consultation with the local community to protect municipal drinking water sources from existing and future drinking water threats. The *Clean Water Act* and Ontario Regulation 287/07 establish the requirements governing the contents of a Source Protection Plan. In particular, Ontario Regulation 287/07 requires that the Source Protection Plan contain the following objectives:

- policies to protect existing and planned drinking water sources, and
- policies for every area where threats could be significant to ensure that the activities identified as significant drinking water threats either never become a significant threat or, if the activity is already taking place, the activity ceases to be a significant threat.

5.3.3 Provincial Table of Drinking Water Threats

The Provincial Tables of Drinking Water Threats documents drinking water threats and the level or risk associated with that threat under certain circumstances.

These tables include:

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- the prescribed activities that can be identified as threats,
- the circumstances which make them threats,
- the vulnerable areas where those activities can be identified as threats, and
- the level of risk that the threat poses based on the above details.

The Provincial Tables of Drinking Water Threats can be found at the following link: <https://www.ontario.ca/environment-and-energy/tables-drinking-water-threats>

5.3.4 Provincial Table of Circumstances

The Provincial Tables of Circumstances is designed to enable the reference of threats by vulnerable area types (i.e. groundwater, surface water); contaminant type (i.e. chemical, pathogen, DNAPL); vulnerability score; and, threat level (i.e. significant, moderate, low). Based on the possible combinations of vulnerable areas, vulnerability scores and the types of parameters associated with the threats sub-categories, 76 different Provincial Tables of Circumstances are available. These tables contain the same information as the Provincial Tables of Drinking Water Threats, just presented in a different format.

The Provincial Tables of Circumstances can be found at the following link: <https://www.ontario.ca/environment-and-energy/provincial-tables-circumstances>

5.3.5 Mapping Database

All 19 Source Protection Regions submitted their vulnerability and threats assessment data, in geodatabase format, to the Ministry of the Environment and Climate Change using a tool called the Assessment Report Database. This geodatabase contains a summary of all significant drinking water threats that were identified in vulnerable areas.

The Municipality of Oliver Paipooonge has been provided the delineation of the well-head protection areas through the on-line mapping service provided to the Municipality by the Lakehead Region Conservation Authority.

The Ministry of the Environment and Climate Change also has plans for a province-wide web mapping portal where implementing bodies can look up the vulnerable area, vulnerability score and the relevant significant drinking water threats that apply in each area. The estimated release date of this Portal is 2014/2015.

5.3.6 Technical Rules

Throughout this document, reference is made to the Technical Rules. The Technical Rules were developed by the Ministry of the Environment and Climate Change and establish requirements for completing the technical work required to be included in an Assessment Report.

The Technical Rules can be found online at the following link: <http://www.ontario.ca/environment-and-energy/technical-rules-assessment-report>

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5.3.7 The Director

Also in this document, reference will be made to the Director. The Director refers to the Director of Source Protection Programs Branch at the Ministry of the Environment and Climate Change.

5.4 *Vulnerable Areas and Vulnerability Scoring*

The *Clean Water Act* requires that policies are developed to protect municipal drinking water sources from activities that are or would be significant drinking water threats. The *Clean Water Act* identifies four types of vulnerable areas:

1. Wellhead Protection Areas (WHPAs),
2. Surface Water Intake Protection Zones (IPZs),
3. Highly Vulnerable Aquifers (HVAs),
4. Significant Groundwater Recharge Areas (SGRAs).

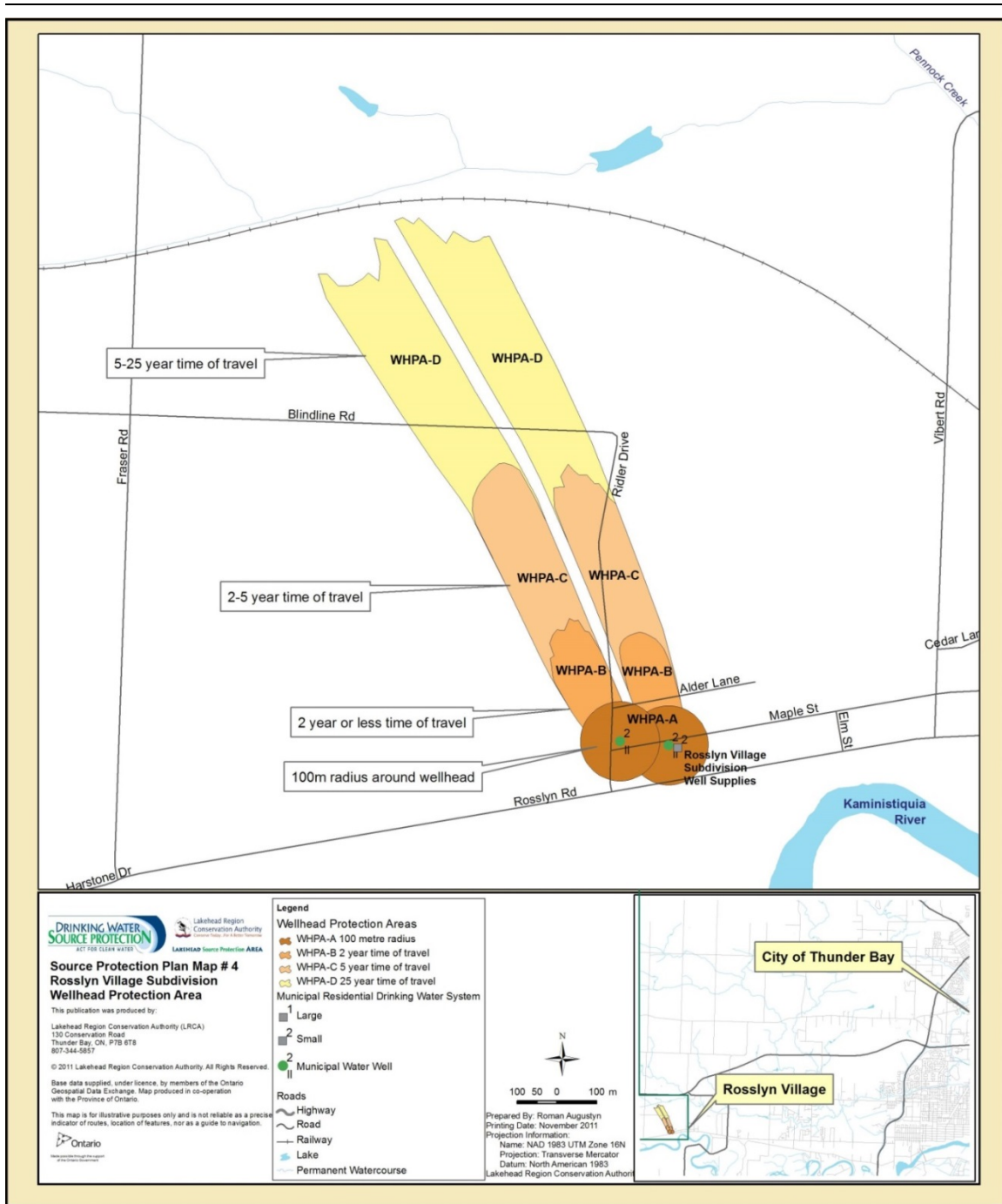
5.4.1 Wellhead Protection Areas (WHPA)

A Wellhead Protection Area (WHPA) is the area of land around a municipal well, the size of which is determined by how quickly water travels underground to the well, in relation to the subsurface geology (rocks and sediments), and water extraction rates. This measurement is generally described in years and referred to as “time of travel”. Map 2 displays Rosslyn Village’s Wellhead Protection Area.

The different WHPAs around a municipal well are as follows:

1. WHPA-A: The 100 metre radius around the wellhead.
2. WHPA-B: The area within which the time of travel to the well (within the aquifer) is up to and including 2 years (excluding WHPA-A).
3. WHPA-C: The area within which the time of travel to the well (within the aquifer) is up to and including 5 years (excluding WHPA-A and WHPA-B).
4. WHPA-D: The area within which the time of travel to the well (within the aquifer) is up to and including 25 years (excluding WHPA-A, WHPA-B and WHPA-C).

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Map 2: Rosslyn Village's Wellhead Protection Area

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5.4.1.1 Vulnerability Scoring for Wellhead Protection Areas

Each WHPA is further assessed for the intrinsic vulnerability (natural vulnerability) of the aquifers. The intrinsic vulnerability is evaluated by assessing how the geology, geography, hydrogeology, and soil (among other things) work together to affect the speed at which water moves toward it. The outcome of the intrinsic vulnerability assessment is a map that reports the vulnerability as high, medium or low.

Once the intrinsic vulnerability has been evaluated, vulnerability scores can be assigned within the WHPAs. The Technical Rules provide the guidance necessary to take the intrinsic vulnerability (high, medium or low) and translate it to a vulnerability score (based on a 10-point scale).

The first step to assigning vulnerability scores is overlaying the WHPAs capture zones onto the intrinsic vulnerability map. Table 1 shows an example of how the Technical Rules establish the relationship between the intrinsic vulnerability and the vulnerability score when using the intrinsic susceptibility index (ISI) or aquifer vulnerability index (AVI) methodology.

Within a WHPA-A, where the intrinsic vulnerability is high, medium or low, the table indicates that a vulnerability score of 10 is to be assigned. Within WHPA-B the table indicates that a vulnerability score of 10 is to be assigned where the intrinsic vulnerability is high, 8 where it is medium and 6 where it is low. A WHPA will have several vulnerability scores assigned within it, even if the intrinsic vulnerability is the same across the wellhead.

Table 1: Example Relationship between Vulnerability and Vulnerability Score

Vulnerability	Vulnerability Score				
	WHPA-A	WHPA-B	WHPA-C	WHPA-C1	WHPA-D
High	10	10	8	8	6
Medium	10	8	6	6	4
Low	10	6	4	4	2

The vulnerability scores within the capture zones can be increased if a transport pathway is present. A transport pathway acts as a conduit or direct path for contaminants to get into the underground aquifer. An example of this would be an old well that has not been abandoned properly. Another example of a transport pathway is an open aggregate pit or quarry that has removed the natural protective materials overlaying the municipal aquifer.

The vulnerability scores required for a significant drinking water threat to be present within a WHPA are summarized in Table 2.

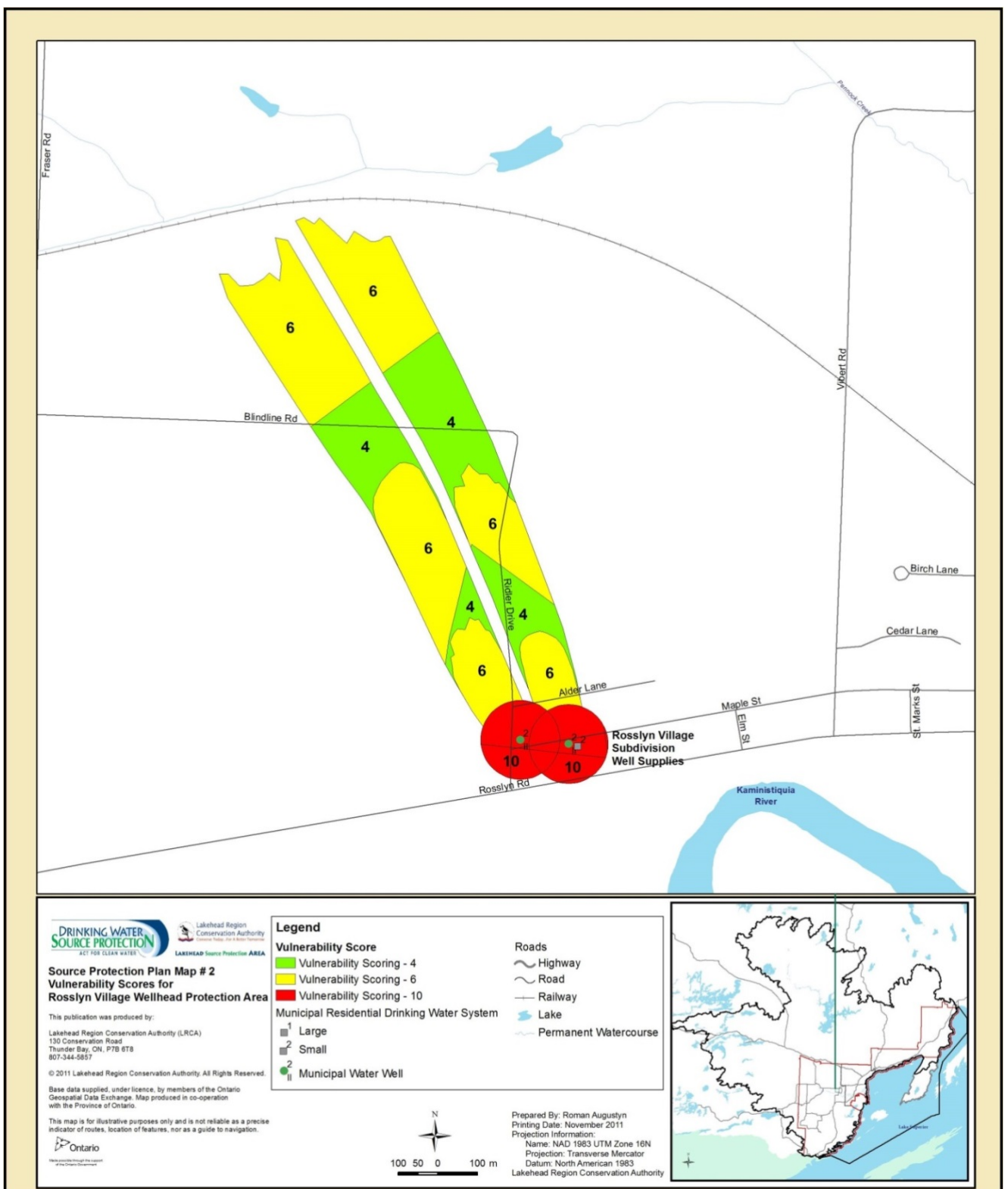
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Table 2: Vulnerability Score required for a Drinking Water Threat to be Significant in a WHPA

Threat Type	Vulnerable Area	Vulnerability Score Required for a Significant Threat
Chemical	WHPA- A, B,C,D	8 – 10
	WHPA- E	8.1 – 9
Pathogen	WHPA- A and B	10
	WHPA -E	8 – 9
Dense Non-Aqueous Phase Liquid (DNAPL)	WHPA- A,B, C	Any score

Map 3 displays the vulnerability scores for Rosslyn Village’s WHPAs.

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Map 3: Vulnerability Scores for Rosslyn Village's Wellhead Protection Area

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5.4.2 Intake Protection Zones

An Intake Protection Zone (IPZ) is the area of water and land immediately surrounding a surface water intake. It is based on the distance from the intake as well as the minimum response time for the water treatment plant operator to respond to adverse conditions or an emergency. The IPZ also includes the remaining watershed area upstream of the minimum travel time area, or an area where it can be demonstrated through modeling or other methods that a contaminant would reach the intake during an extreme event.

The Technical Rules classify surface water intakes according to the nature of the water source from which they draw water. Different methodologies are prescribed for the delineation of IPZs for each intake classification. Table 3 outlines the four intake classifications as outlined in the Technical Rules. In some cases, intakes are classified or re-classified based on other circumstances through approval granted by the Director of the Source Protection Programs Branch of the Ministry of the Environment and Climate Change.

Table 3: Definitions for Surface Water Intakes as Outlined in the Technical Rules

Intake Type	Description
A	Intake or the planned intake is or would be located in a Great Lake
B	Intake or the planned intake is or would be located in a connecting channel (e.g. St. Lawrence, St. Mary's, St. Clair, Detroit and Niagara rivers, and the Welland Canal)
C	Intake or the planned intake is or would be located in a river and neither the direction nor velocity of the flow of the water at the intake is affected by a water impoundment structure
D	If the intake is not a Type A, B or C (e.g., intakes located in inland lakes)

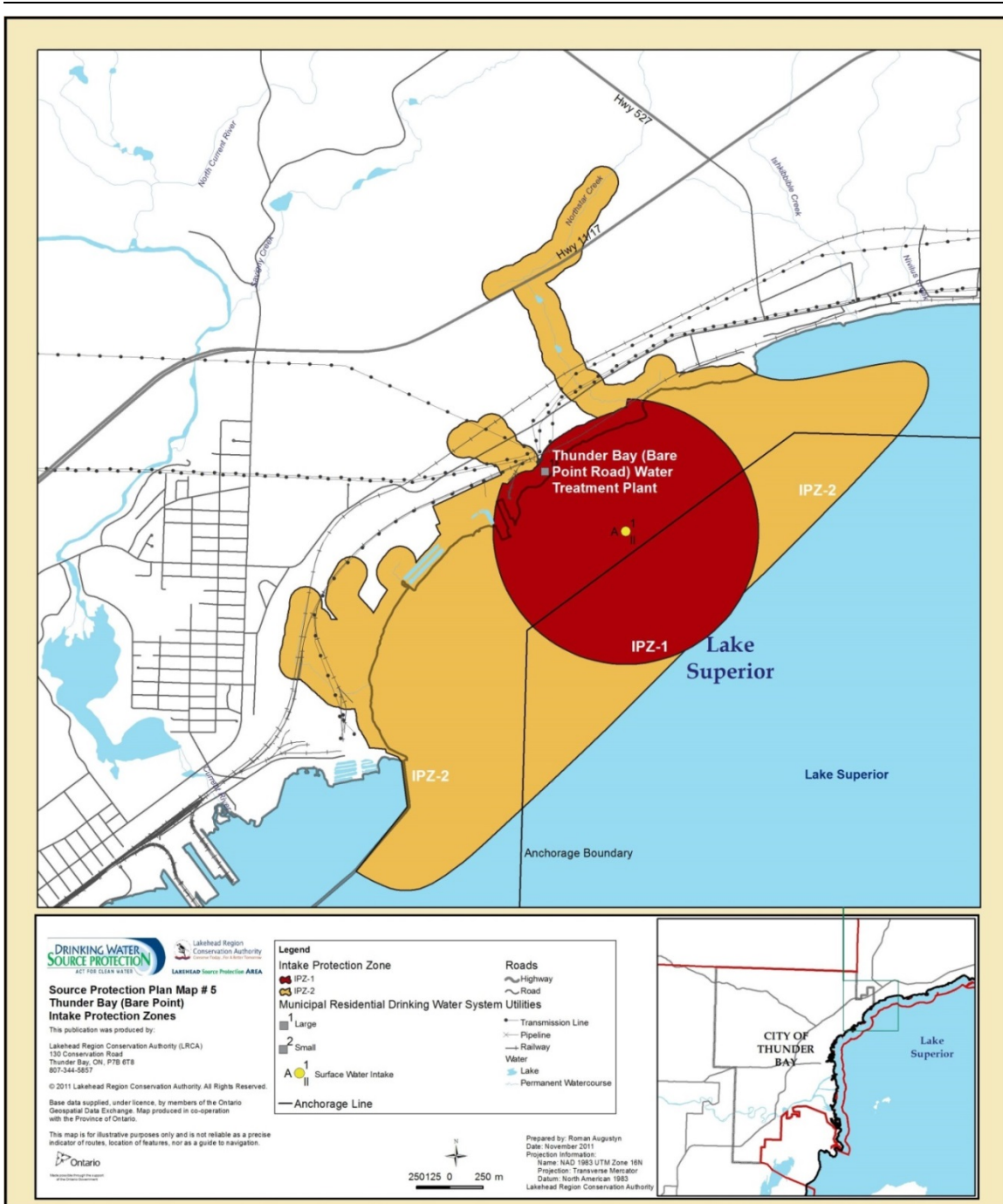
For each surface water intake, three IPZs are identified. A summary of the methodologies for delineation of the vulnerable areas around a surface water intake are provided in Table 4. Map 4 displays the City of Thunder Bay's Bare Point Intake Protection Zones.

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Table 4: Methods for Delineating Vulnerable Areas around Surface Water Intakes

	Intake Type	Delineation
<p>Intake Protection Zone 1 (IPZ-1)</p> <p>The area immediately around the intake.</p>	A and D	Defined by a 1 km radius centered on the crib of the intake.
	B	Defined by a semi-circle that has a radius of 1 km extending upstream from the crib of the intake and a rectangle with a length of 2 km centered on the crib of the intake and a width of 100 metres extending downstream from the crib of the intake.
	C	Defined by a semi-circle that has a radius of 200 metres extending upstream from the crib of the intake and a rectangle with a length of 400 metres centered on the crib of the intake and a width of 10 metres downstream of the intake.
<p>Note: The IPZ-1 is a fixed distance from the intake based on the sensitivity analysis of a massive sudden spill in the vicinity of the intake.</p>		
<p>Intake Protection Zone 2 (IPZ-2)</p>	<p>The IPZ-2 is defined as the area that may contribute water to the intake where the time of travel to the intake is equal to or less than the time that is sufficient to allow the operator of the system to respond to an adverse condition in the quality of the surface water. The Technical Rules indicate that a minimum 2-hour time of travel should be used to delineate the IPZ-2 (excluding IPZ-1).</p>	
<p>Note: The IPZ-2 represents the operator response time to shut down the drinking water system in case of a spill.</p>		
<p>Intake Protection Zone 3 (IPZ-3)</p>	<p>For all types of intakes, the IPZ-3 is defined as the area of the water and land that may lead to contaminants reaching an intake during an extreme event such as a one in one hundred year rainfall as determined through modeling or other methods (contaminant transport, boundary approach, combined approach). Significant threats are then identified if it can be shown through modeling that a release of a contaminant during an extreme event may be transported to the intake.</p> <p>For type C and D intakes not located in Lake Nipissing, Lake Simcoe, Lake St. Clair, or the Ottawa River, the IPZ-3 is defined as the area within each surface water body that may contribute water to the intake within the watershed boundary.</p>	
<p>Note: The IPZ-3 is an area beyond the IPZ-1 and 2 and is delineated differently based on the intake type.</p>		
<p>For all intake types where the IPZ-1, IPZ-2 and IPZ-3 abuts land, a setback of less than or equal to 120 metres or the Conservation Authority Regulation limit is included, whichever, is greater. The set-back is measured from the high water mark of the surface water body that encompasses the area where overland flow drains into the surface water body and the areas of the Conservation Authority Regulation limit along the abutted land.</p>		

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Map 4: Thunder Bay (Bare Point) Intake Protection Zones

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5.4.2.1 Vulnerability Scoring for Intake Protection Zones

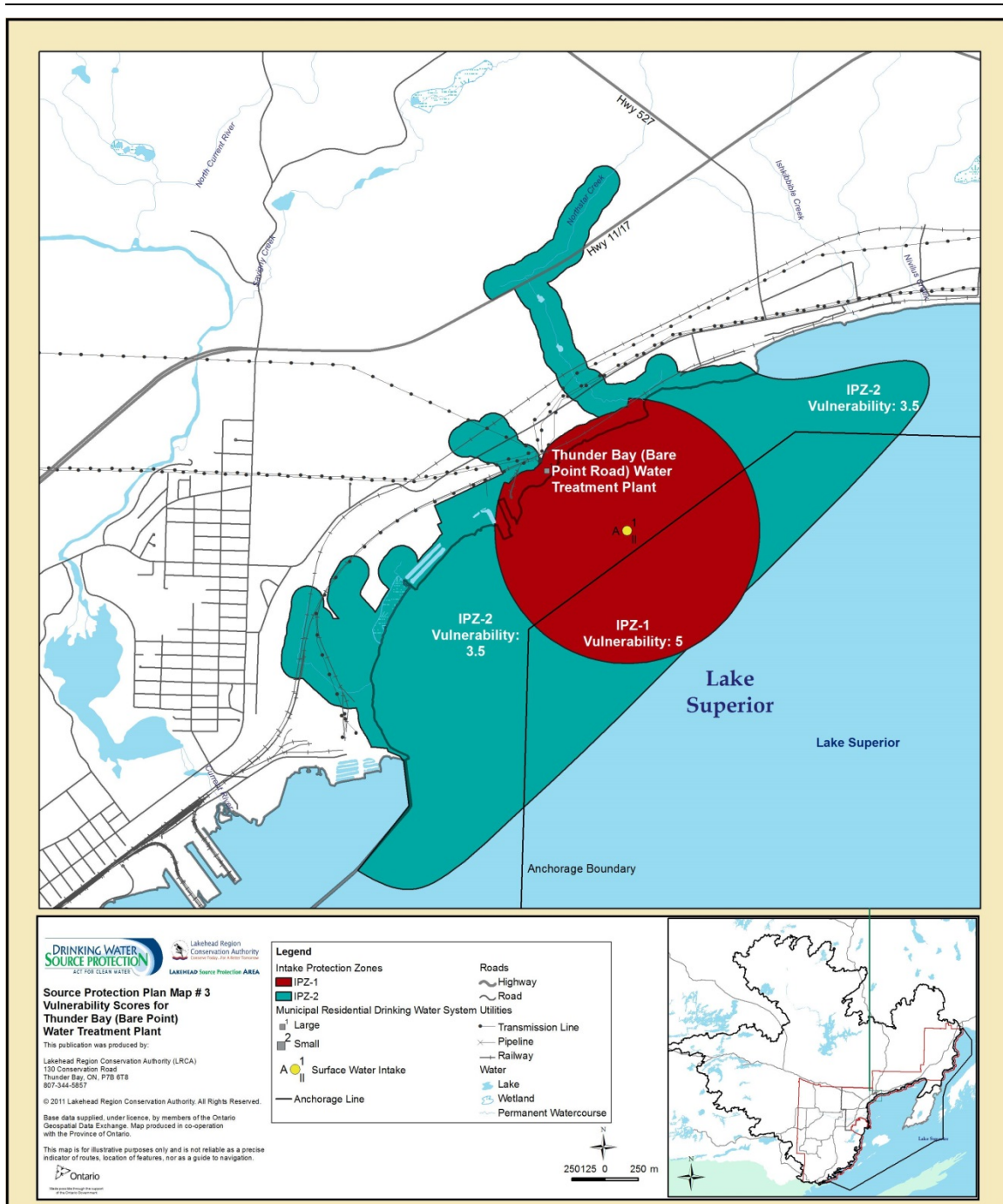
As was the case with the WHPAs, the vulnerable areas around a surface water intake have also been assigned a vulnerability score.

The vulnerability scores required for an activity to be designated as a significant drinking water threat, taking into consideration the type of threat and the vulnerable area around a surface water intake, are outlined in Table 5. Note Table 5 does not apply when significant drinking water threats are identified under the issue or events based approaches discussed in Sections 5.5.2 and 5.5.4 respectively. Note also that intakes located in the Great Lakes or connecting channels do not have a vulnerability score associated with their IPZ-3 as per the Technical Rules.

Table 5: Vulnerability Score Required for a Significant Drinking Water Threat in an IPZ

Threat Type	Vulnerable Area	Vulnerability Score Required for a Significant Threat
Chemical	IPZ/WHPA-E	8 – 10
Pathogen	IPZ-WHPA-E	8 – 10
DNAPL	IPZ/WHPA-E	10

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Map 5: Vulnerability Scores for Thunder Bay's Bare Point Water Treatment Plant

5.4.3 Highly Vulnerable Aquifers (HVA)

Although Highly Vulnerable Aquifers (HVA) are one of four types of vulnerable areas identified under the *Clean Water Act*, significant drinking water threats cannot be found in HVAs, unless an identified issue is present. For an issue to be present in a HVA, the issue contributing area for a municipal system would have been extended to incorporate

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the HVA. If this is the case, significant threats associated with the issue can be located within the entire delineated issue contributing area. The issue contributing area is discussed in 5.5.3.

5.4.4 Significant Groundwater Recharge Areas (SCRA)

Although Significant Groundwater Recharge Areas (SGRAs) are one of four types of vulnerable areas identified under the *Clean Water Act*, significant drinking water threats cannot be found in SGRAs, unless an identified issue is present. For an issue to be present in a SGRA, the issue contributing area for a municipal system would have been extended to incorporate the SGRA. If this is the case, significant threats associated with the issue can be located within the entire delineated issue contributing area. The issue contributing area is discussed in Section 5.5.3.

5.5 Threats

A threat is an activity or condition that adversely affects or has the potential to adversely affect the quality or quantity of any water that is or may be used as a source of drinking water that is prescribed by the Regulations as a drinking water threat. The Province has prescribed 21 threats to municipal drinking water sources. The identified activities or conditions are considered to be chemical, pathogen or dense non aqueous phase liquid (DNAPL) threats.

Each of the activities prescribed to be drinking water threats under the *Clean Water Act* are those considered to be undertaken by humans. These activities are listed in Ontario Regulation 287/07 and examples of each activity are summarized in Table 6, and sorted by category in Table 7.

Table 6: Prescribed Drinking Water Threats under the Clean Water Act, 2006

Threat #	Prescribed Drinking Water Threat Activity	Examples of Threat
1	The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the <i>Environmental Protection Act</i> .	Storage of PCBs and other hazardous waste, landfilling of hazardous, non-hazardous, municipal or commercial waste, and land application of untreated septage.
2	The establishment, operation or maintenance of a system that collects, stores, transmits, treats, or disposes of sewage.	Septic systems, stormwater treatment ponds, discharge of industrial effluent, sewage treatment plants, and sanitary sewer systems.

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3	The application of agricultural source material to land.	Manure produced by farm animals, and run-off from farm yards and manure storages.
4	The storage of agricultural source material.	
5	The management of agricultural source material.	Facilities that cultivate fish or other aquatic organisms in a controlled environment.
6	The application of non-agricultural source material.	Land application of sewage biosolids or other similar wastes.
7	The handling and storage of non-agricultural source material.	
8	The application of commercial fertilizer to land.	Contaminants of interest include nitrogen and phosphorus.
9	The handling and storage of commercial fertilizer.	
10	The application of pesticide to land.	Pesticides of interest include the chemicals used to control weeds (herbicides), or fungi (fungicides) or those used as a soil fumigant to control fungi, and nematodes and weeds.
11	The handling and storage of pesticide.	
12	The application of road salt.	Contaminants of interest include chloride and sodium.
13	The handling and storage of road salt.	
14	The storage of snow.	Contaminants of interest include chloride, sodium, and petroleum hydrocarbons.
15	The handling and storage of fuel.	Bulk plants or facilities where fuel is manufactured, gas stations and cardlocks or keylocks, marinas, private storage such as farms and contractor yards, and heating oil tanks for homes and businesses.
16	The handling and storage of a dense non-aqueous phase liquid.	Dry-cleaning chemicals, paint and spot removers, rug-cleaning fluids, and varnishes.
17	The handling and storage of an organic solvent.	Paints, varnishes, lacquers, adhesives, glues, and degreasing or cleaning agents, and in the production of dyes, polymers, plastics, textiles, and printing inks.
18	The management of run-off that contains	Airports using ethylene glycol

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	chemicals used in the de-icing of aircraft.	to de-ice aircrafts.
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.	Water taken from Lake Simcoe and discharged into groundwater.
20 *	An activity that reduces the recharge of an aquifer.	Increasing impervious cover (parking lots).
21	The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard.	Fields where livestock graze, and confinement areas outside barns.

* This implementation module does not detail the process to identify significant threats for water quantity (threat #s 19 and 20) as the process is unique for each water quantity threat identified. Water quantity threats are only derived through Tier 3 Water Budget studies. This was not completed for the Lakehead Assessment Report as it was not necessary.

Table 7: Summary of Water Quality Threats by Threat Category

Threat Category	Threat #
Chemical	1,2,3,4,6,7,8,9,10,11,12,13,14,15,17,18,21
Pathogen	2,3,4,5,6,7,21
DNAPL	1,2,16

If an activity is not as listed above, it does not fall within the scope of the *Clean Water Act*. Examples of activities outside the scope of the *Clean Water Act* include: geothermal power, pharmaceuticals and personal care products and disposal of imported fill. However, activities not strictly identified above can be added as “local” threats.

The 21 potential threats above can be classified into three categories: low, moderate or significant, based on the calculated risk score. The process for determining a risk score is in the following section.

5.5.1 Approaches for Identifying Significant Drinking Water Threats

There are five ways of identifying significant drinking water threats, as prescribed under the *Clean Water Act*:

1. threats based approach,
2. issue based approach,
3. events based approach,
4. conditions based approach, and
5. local threats based approach.

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According to the *Clean Water Act*, policies must be developed for all activities classified as “significant” drinking water threats. Policies must address activities that currently occur as well as any activities that may occur in the future.

Each Source Protection Committee is given the option of creating policies for “moderate” or “low” drinking water threats. The Lakehead Source Protection Plan did not contain any policies for low or moderate threats.

5.5.1.1 Threats Based Approach

The threats based approach is the most common way to identify drinking water threats. The foundation for the threats based approach is the “risk score”. A risk score is assigned to an activity that is based on a combination of hazard rating (of the specific activity) and vulnerability score (of the area where the activity takes place).

$$\text{Risk Score} = \text{Hazard Rating} \times \text{Vulnerability Score}$$

Hazard ratings are the basis for the circumstances in the Tables of Drinking Water Threats, and are assigned scores on a scale of 2 – 10 by the Ministry of Environment. The scores were assigned by considering a number of factors, including but not limited to toxicity, quantity of contaminant released, and the frequency of association with pathogens.

Recall that the vulnerability score is assigned on a scale of 2 – 10 by considering the intrinsic vulnerability and time of travel.

Table 8 summarizes the risk scores required for an activity or condition to be considered a significant, moderate or low drinking water threat. A risk score of 80 – 100 is required for the activity or condition to be considered a significant drinking water threat.

Table 8: Summary of Risk Scores Required for Drinking Water Threats

Threat	Risk Score
Significant	80 – 100
Moderate	60 – 79
Low	41 – 59

As an example, an activity that is assigned a hazard rating of 8 that takes place in an area where the vulnerability score is 8 is given a risk score of 64. Table 8 identifies this as a “moderate” threat.

As another example, an activity that is assigned a hazard rating of 8 that takes place in an area where the vulnerability score is 10, is given a risk score of 80. Table 8 identifies this as a significant threat.

The risk scores required to be a significant drinking water threat are built into the Tables of Drinking Water Threats and Tables of Circumstances. This means that you do not need

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to explicitly calculate the risk score to identify significant drinking water threats. The Tables indicate when a specific circumstance is significant, moderate or low.

5.5.1.1.1 Using the Provincial Tables to Determine Threats

Tables of Drinking Water Threats

The Tables of Drinking Water Threats were established by the Province to identify circumstances in which activities are classified as drinking water threats. These tables can be used to identify circumstances where activities are significant threats and to indicate vulnerable areas where activities are or would be significant drinking water threats. To determine these circumstances and areas, it is important to understand how the tables are set up. The Tables of Drinking Water Threats can be found by using the following link: <https://www.ontario.ca/environment-and-energy/tables-drinking-water-threats>.

Upper Thames River Conservation Authority has an interactive version of the table also available online:

<http://maps.thamesriver.on.ca/swpCAMaps/threatsLookup/threats/threatsList.aspx>.

Table 9 outlines the layout of the Tables of Drinking Water Threats.

Table 9: Layout of the Tables of Drinking Water Threats

Location in Table	Field
Column 1	Activity (drinking water threat), based on the 19 water quality prescribed drinking water threats.
Column 2	Set of circumstances specific to a drinking water threat, including presence of contaminant parameters, volumes, and release into the environment.
Column 3	Vulnerable area (e.g. WHPA, IPZ)
Columns 4 – 6	Vulnerability scores identifying whether the activity under the set of circumstances is a significant, moderate or low drinking water threat.

The following outlines an example of how to determine threats using the Table of Drinking Water Threats.

Example: Determining Threats Using the Tables of Drinking Water Threats

Step 1: Identifying Drinking Water Threat (Table 10, Column 1)

- The establishment, operation or maintenance of a system that collects, transmits, treats or disposes of sewage.

Step 2: Review the Circumstances (Table 10, Column 2)

- Is the sewage system a stormwater management facility designated to discharge storm water to land or surface water?

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- Is the drainage area associated with the stormwater facility more than 10 hectares but not more than 100 hectares?
- Are the predominant land uses in the area rural, agricultural or low density residential?
- Could the discharge of stormwater result in the presence of lead or one or more of its compounds containing lead in groundwater or surface water?

If you answer “yes” to all of these questions, then this circumstance would apply.

Step 3: Review the location of the activity (i.e., stormwater management facility) (Table 10, Column 3)

- Is the activity in the IPZ-1, IPZ-2, IPZ-3, or WHPA-E?
- Is the activity in the WHPA-A, WHPA-B, WHPA-C, WHPA-C1, or WHPA-D?
- Is the activity in a highly vulnerable aquifer area?
- Is the activity in a significant groundwater recharge area?

Step 4: Determine whether the threat is significant, moderate, or low (Table 10, Columns 4-6)

- If the activity in the IPZ-1, IPZ-2, IPZ-3, or WHPA-E with vulnerability score of 10, the threat is **significant**.
- If the activity is in the IPZ-1, IPZ-2, IPZ-3 or WHPA-E with a vulnerability score of 8 – 9, or WHPA-A, B, C and D with a vulnerability score of 10, the threat is **moderate**.
- If the activity is in the IPZ-1, IPZ-2, IPZ-3, or WHPA-E with a vulnerability score of 4.9 – 7.2, the threat is **low**.

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Table 10: Sample from the Tables of Drinking Water Threats

Drinking Water Threats	Reference Number	Under the Following CIRCUMSTANCES	Areas Within Vulnerable Areas	Threat is Significant in Areas with a Vulnerability Score of	Threat is Moderate in Areas with a Vulnerability Score of	Threat is Low in Areas with a Vulnerability Score of
Column 1		Column 2	Column 3	Column 4	Column 5	Column 6
The establishment, operation or maintenance of a system that collects, transmits, treats or disposes of sewage.	522	1. The system is a storm water management facility designed to discharge storm water to land or surface water. 2. The drainage associated with the storm water management facility is more than 10 but not more than 100 hectares and the predominant land uses in the area are rural, agricultural, or low density residential. 3. The discharge may result in the presence of Lead or one or more of its compounds containing Lead in groundwater or surface water.	IPZ-1, IPZ-2, IPZ-3, and WHPA-E	10	8-9	4.9-7.2
			WHPA-A, WHPA-B, WHPA-C, WHPA-C1, WHPA-D		10	6-8
			HVA			6
			SGRA			6

Tables of Circumstances

The Provincial Tables of Circumstances contain the same information as the Tables of Drinking Water Threats, but are presented in a different format. Based on the possible combinations of vulnerable areas and vulnerability scores, 76 different Provincial Tables of Circumstances have been created. The Tables of Circumstances represent all of the different combinations for which there are provincially prescribed threats and circumstances within the Tables of Drinking Water Threats. There are 5 categories of tables:

1. Chemical tables for groundwater (WHAPs),
2. Dense Non-Aqueous Phase Liquid (DNAPL) tables for groundwater,
3. Pathogen tables for groundwater,
4. Chemical and DNAPL tables for surface water (IPZs), and
5. Pathogen tables for surface water.

Each of the five categories of tables have been further broken down into activities that are significant, moderate, or low drinking water threats depending on the vulnerability score of the vulnerable area. 12 of these 76 Provincial Tables of Circumstances list circumstances where a threat could be significant (see Table 11). Provincial Tables of Circumstances can be found using the following link:

<https://www.ontario.ca/environment-and-energy/provincial-tables-circumstances>.

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The Provincial Tables of Circumstances were used to generate maps for each drinking water system (included in the Assessment Report) that relate the vulnerability score for a WHPA or IPZ to the number and types of circumstances in the Tables of Drinking Water Threats. The maps in the Assessment Report illustrate the areas around the municipal drinking water systems where land use activities either are (for the case of existing activities), or would be (for the case of potential future activities) significant, moderate or low drinking water threats. Embedded in these maps or in the Assessment Report are tables to direct the reader to the appropriate list of threats that corresponds to the combination of vulnerable area, i.e. WHPA A-E or IPZ 1-3 and vulnerability score (10, 8, 6 or 2).

Determining Threats Using the Tables of Circumstances

Using Figure 1 as an example, the areas where a significant, moderate, or low drinking water threats are present is shown for both chemical and pathogen threats. The embedded table demonstrates that, where the vulnerability score is 10 (Red), Provincial Tables 20 and 46 would list the circumstances under which an activity in that area would be considered a chemical or pathogen threat, respectively. The areas where the vulnerability score is 8 (orange) are where the circumstances listed in Provincial Tables 21 (chemical) and 47 (pathogen) would apply. Please note that the colouring used to illustrate the vulnerability scores in this example was not used by all Source Protection Regions. Therefore, the mapping in your Assessment Report(s) may not be exactly the same.

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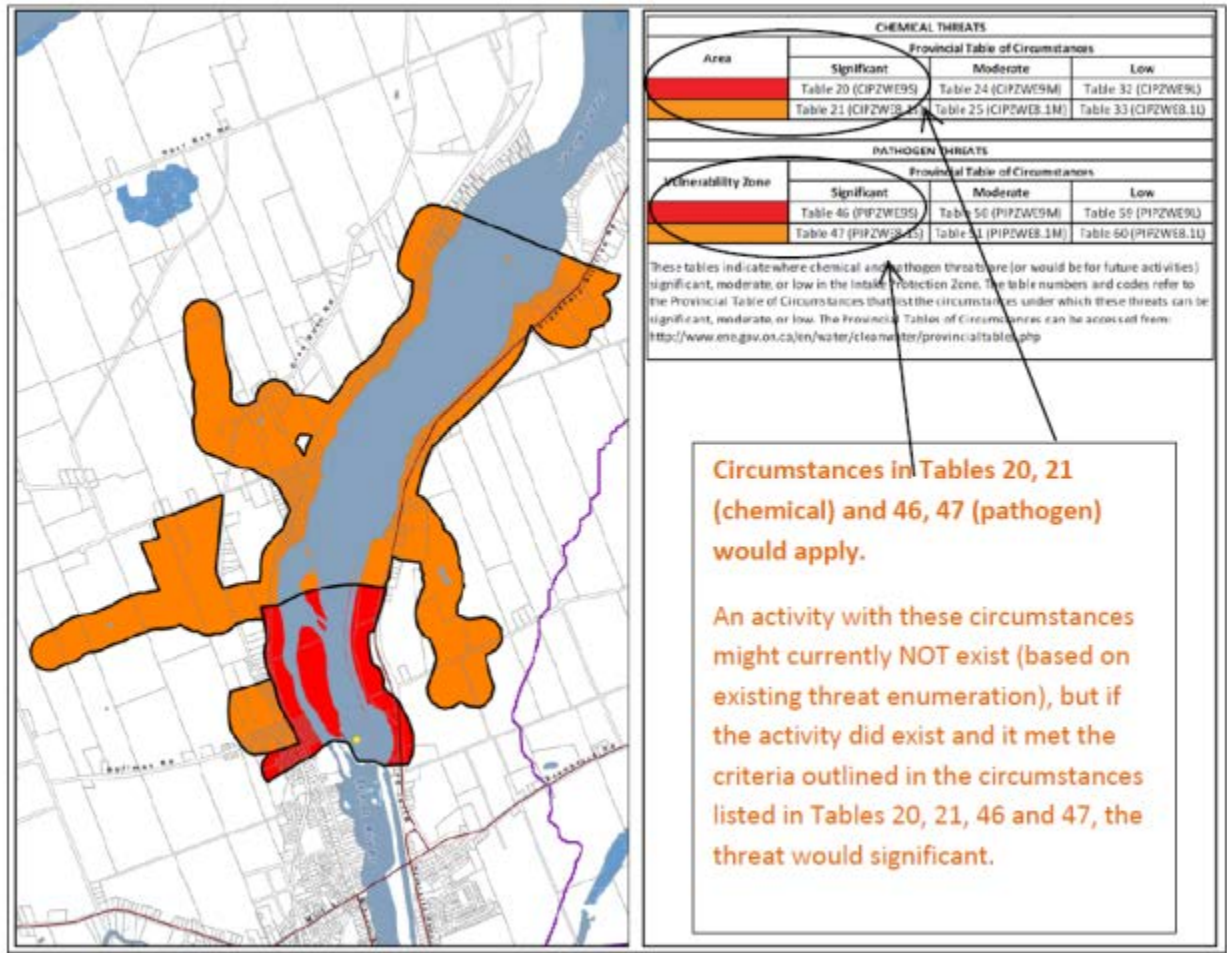


Figure 1: Areas for Significant, Moderate and Low Drinking Water Threats

A numerical code corresponds to each of the Provincial Tables of Circumstances. The code distinguishes between the type of threat (i.e., chemical, pathogen, DNAPL), the location of the activity (i.e., IPZ, WHPA), the vulnerability score, and the classification of the threat (i.e. significant, moderate or low). The Provincial Tables of Circumstances supports the Tables of Drinking Water Threats. As you complete the threat verification exercise, you will work extensively with both sets of Tables. For some threats and vulnerable areas you may find it easier to work with the Provincial Tables of Circumstances, while in other cases the Tables of Threats will be easier to work with. For example, when screening for significant drinking water threats within WHPA-E, the Tables of Circumstances may be easier to work with as you only need to look at a few pages instead of searching through each threat type in the Tables of Threats.

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Table 11: Provincial Tables of Circumstances Where a Threat Could be Significant

TABLE NUMBER	CODE	DESCRIPTION
1	CW10S	Chemicals in a WHPA with a vulnerability score of 10
2	CW8S	Chemicals in a WHPA with a vulnerability score of 8
19	CIPZ10S	Chemicals in an IPZ with a vulnerability of 10
20	CIPZWE9S	Chemicals in an IPZ or WHPA E where the vulnerability score is 9
21	CIPZWE8.1S	Chemicals in an IPZ or WHPA E where the vulnerability score is 8.1
22	CIPZWE8S	Chemicals in an IPZ or WHPA E where the vulnerability score is 8
9	DWAS	DNAPLS in WHPA A, B, C, C1, with any vulnerability
12	PW10S	Pathogens in WHPA A, B with a vulnerability of 10
45	PIPZ10S	Pathogens in an IPZ with a vulnerability of 10
46	PIPZWE9S	Pathogens in an IPZ or WHPA E with a vulnerability of 9
47	PIPZWE8.1S	Pathogens in an IPZ or WHPA E with a vulnerability of 8.1
48	PIPZWE8S	Pathogens in an IPZ or WHPA E with a vulnerability of 8

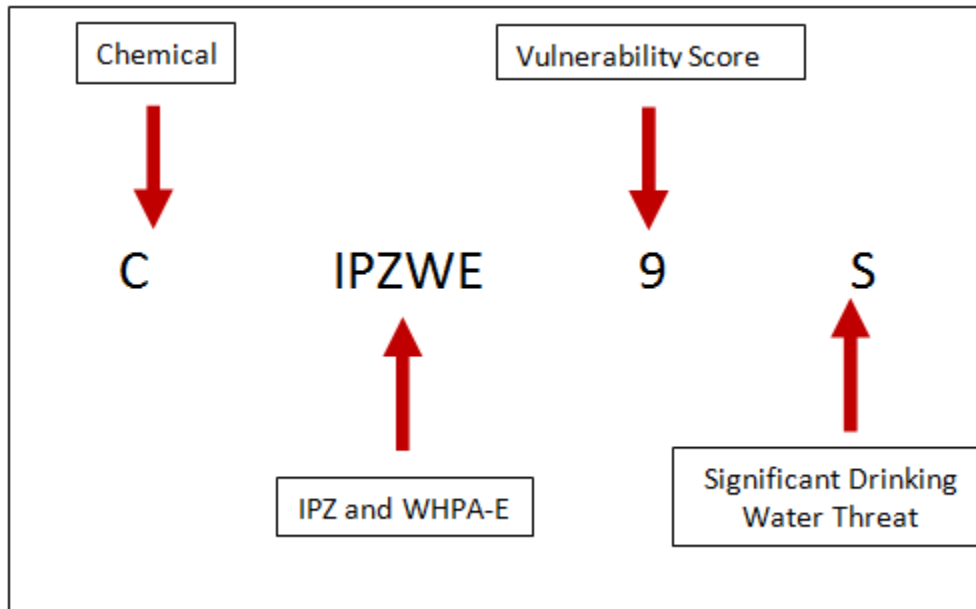


Figure 2: Understanding the Provincial Tables of Circumstances Codes (Example 1)

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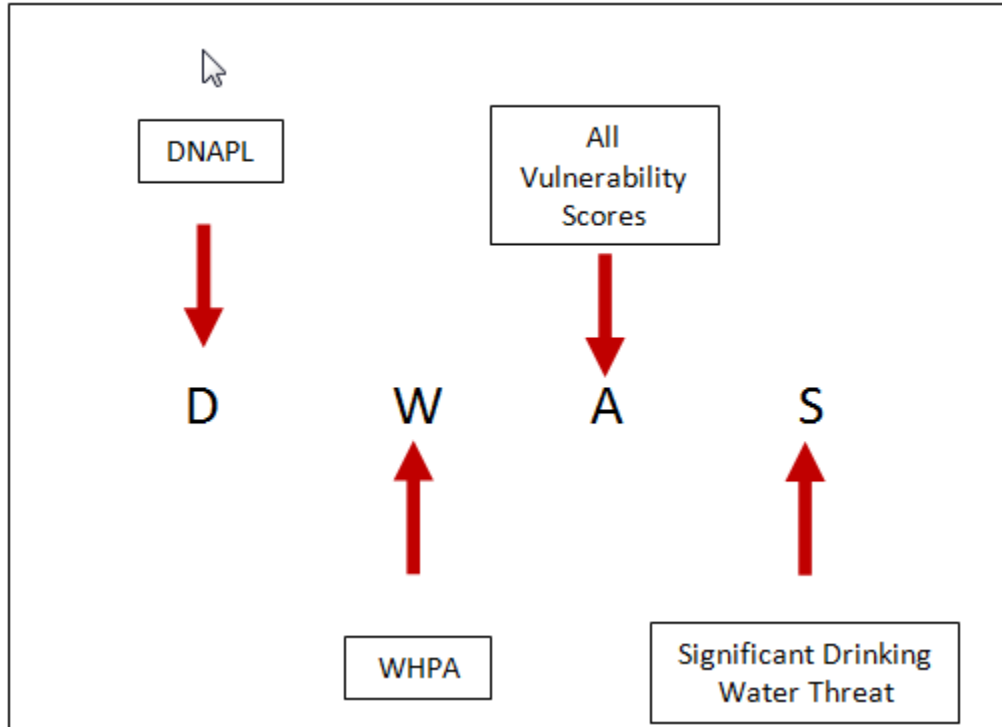


Figure 3: Understanding the Provincial Tables of Circumstances Codes (Example 2)

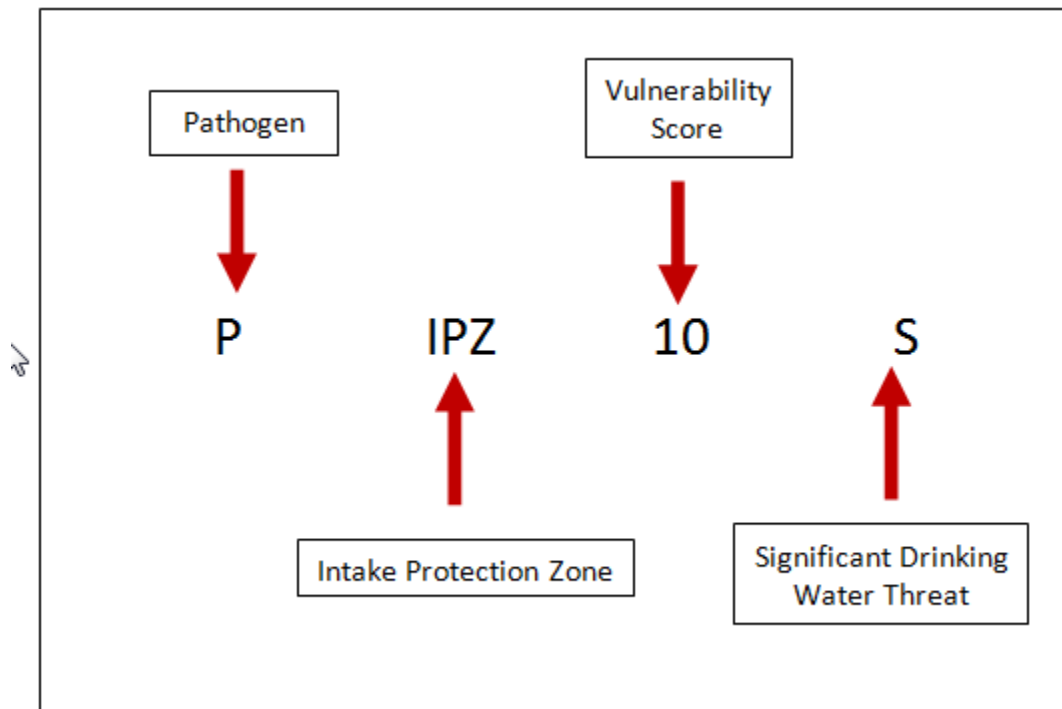


Figure 4: Understanding the Provincial Tables of Circumstances Codes (Example 3)

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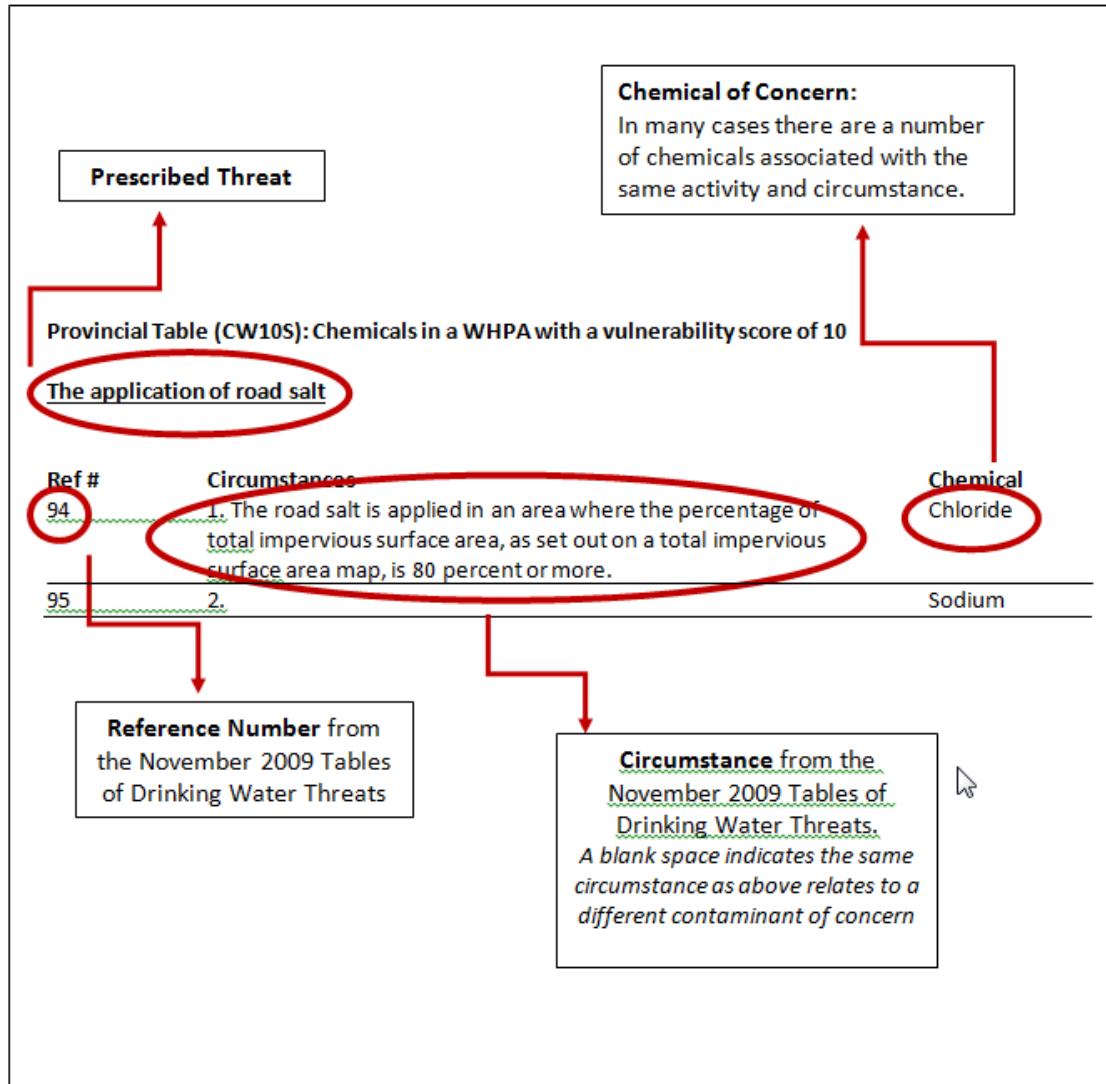


Figure 5: Understanding the Provincial Tables of Circumstances

5.5.2 Issue Based Approach

An issue is defined under the *Clean Water Act* as an existing water quality problem associated with a municipal drinking water supply (this includes monitoring wells), or evidence of a trend that suggests a deterioration of water quality for one or more parameters. The Assessment Report will identify any issues for each drinking water system. It is noted that the Lakehead Assessment Report did not identify any issues for the municipal drinking water supplies in either Rosslyn Village or the Bare Point Water Treatment Plant.

The intent of the issues evaluation is to identify chemical or bacterial concentrations in raw drinking water at the drinking water system that will limit the ability of the water to serve as a drinking water source, either now or in the future. The presence of a contaminant in a well or drinking water system is determined through the analysis of available data and reports. To be considered a drinking water issue, a parameter needs to

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be at a concentration that is above the Ontario Drinking Water Quality Standards, or have an increasing trend that will lead to concentrations being above the standards, in accordance with the Technical Rules. A parameter may not be identified as an issue in cases where it is naturally occurring or effective treatment is in place. For example, both iron and manganese can occur naturally in the environment. Therefore, exceeding the Ontario Drinking Water Standards for these two metals in the data collected from a municipal drinking water system doesn't necessarily identify it as an issue.

The different Source Protection Regions developed a process for identifying issues which met the Technical Rules. The process outline in Figure 6 is an example of an approach used by a few Source Protection Regions to identify an issue. Note the following acronym definitions in this figure: MAC = Maximum Acceptable Concentration, ODWQS = Ontario Drinking Water Quality Standards, AO = Aesthetic Objective, OG = Operational Guideline.

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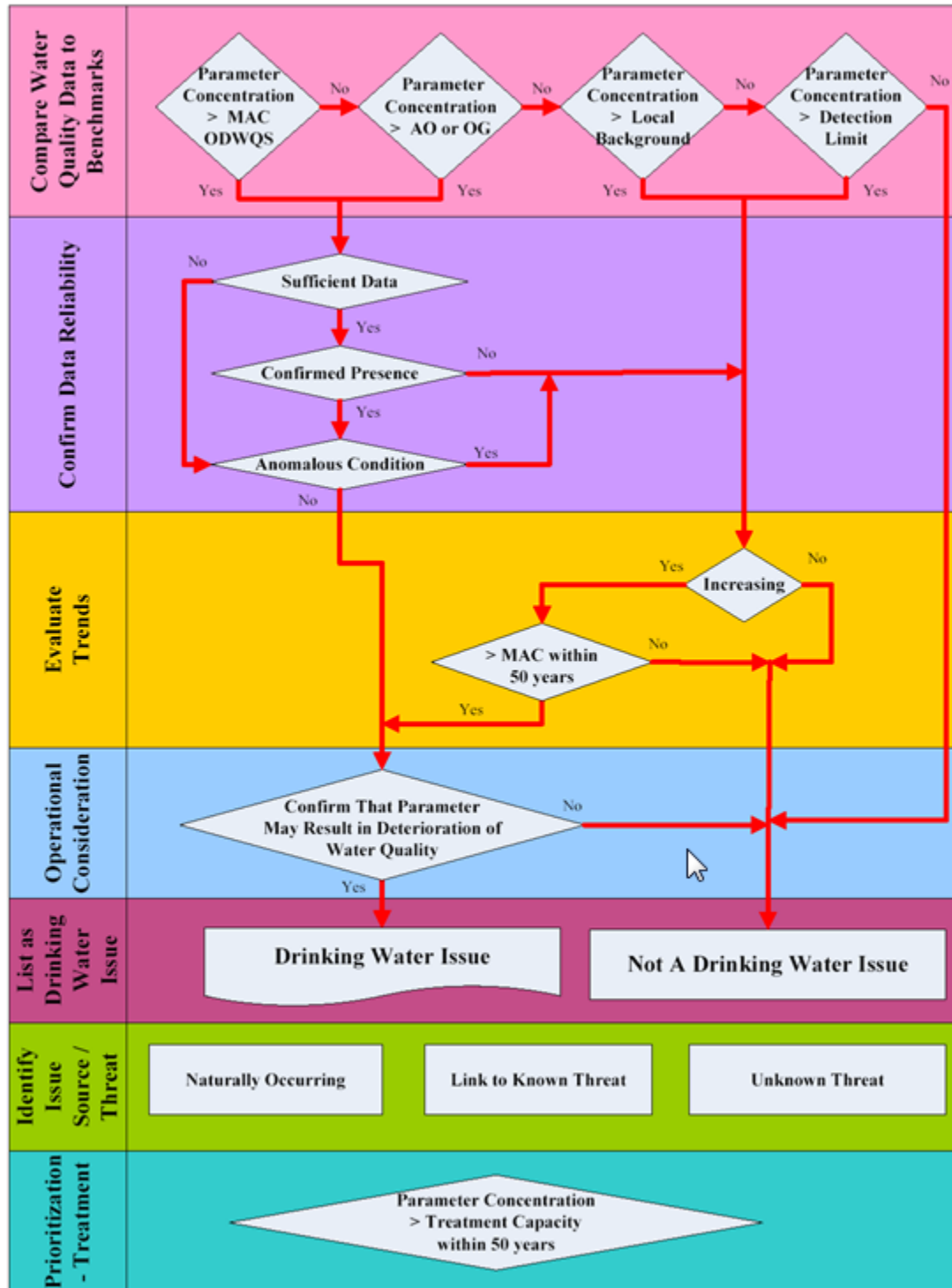


Figure 6: Methodology for Identifying Drinking Water Issues

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5.5.3 Issue Contributing Area

An issue contributing area is the area where drinking water threats may contribute to a known drinking water issue. An issue contributing area can occur within a WHPA, an IPZ, and may include a HVA, or a SGRA. The Lakehead Assessment Report did not identify any Issue Contributing Areas, as there were no identified Issues.

Within issue contributing areas, significant drinking water threats are present anywhere a circumstance for the identified issue is occurring, regardless of the vulnerability score stated to be required in the Tables of Threats or Circumstances.

Step 1: Review available data and reports for evidence that the concentration of a parameter is above the Ontario Drinking Water Quality Standards, or has an increasing trend that will lead to concentrations being above the standards. For this example it has been determined that a nitrate-nitrogen issue exists.

Step 2: Identify the issue contributing area (Figure 7, Table 12). For this municipal drinking water supply system, the issue contributing areas represents the entire WHPA shown in red.

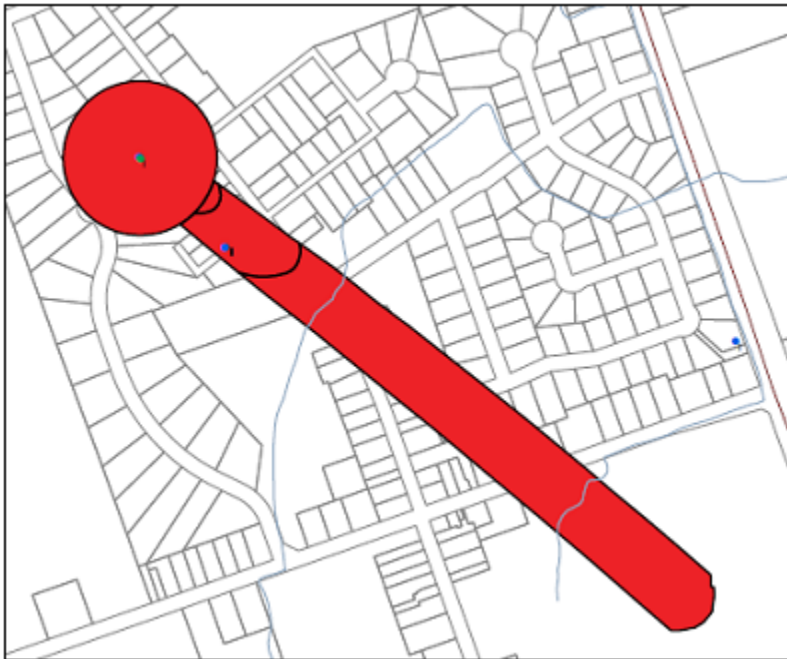


Figure 7: Issue Contributing Area of a Municipal Well

Table 12: Area Where Activities Are or would be Significant Drinking Water Threats

THREATS RELATED TO DRINKING WATER ISSUES	
Area	Significant
	Activities prescribed to be drinking water threats that can generate nitrate-nitrogen (NO ₃ – N)
This table identifies the activities that are (or would be for future activities) significant drinking water threats within the issue contributing area.	

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Step 3: Identify all significant threats within the issue contributing area that are associated with the issue. All circumstances associated with nitrate and nitrogen listed in the Provincial Tables of Threats and Circumstances would trigger the identification of a significant drinking water threat if the activity or condition is present or could be occurring anywhere within the issue contributing area regardless of the vulnerability score within the different capture zones.

5.5.4 Events Based Approach

The events based approach uses numerical modeling to identify potential significant threats and delineate the IPZ-3 for certain intakes. Through numerical modeling, spills of potential contaminants are simulated. This model calculates the probability of a spill reaching the intake at a concentration sufficient to trigger a threat by considering factors such as wind speed, water currents and flow rates. At the time the Lakehead Assessment Report was released, IPZ-3 was not delineated in the Lakehead Source Protection Area. If this modelling is ever completed, it would be included in subsequent Assessment Report updates.

Steps to Identify Significant Drinking Water Threats and IPZ-3 Delineation

Step 1: Select extreme events for threat identification and IPZ-3 delineation.

An analysis of wind speeds and river flows is undertaken to develop an extreme event scenario with a joint probability (considering both wind and flow) of approximately a 1 in 100 year storm event.

Step 2: Identify potential significant threats and assign spill scenarios.

Identify specific activities that may result in a contaminant being transported to the intake during an extreme event and the possible deterioration of the drinking water source. If an activity is considered to be a potential significant threat, then spill scenarios are developed for the purposes of modeling transport to the intake.

Step 3: Lake and tributary spill modeling.

Calculate the dilution and reduction in spill concentrations in tributaries between the spill location and the tributary mouth by analytical means, during an extreme event.

Step 4: Significant threat identification and IPZ-3 delineation.

Determine whether the spill constitutes a threat to the drinking water source at the intake through a comparison of modeled concentrations at the intake with the Ontario Drinking Water Quality Standard (ODWQS). Concentrations exceeding the ODWQS are typically considered to be a deterioration of the drinking water. If the identified activity is not within an existing IPZ (IPZ-1 or 2), then an IPZ-3 is delineated based on the location of the significant threat activities.

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Identifying the extent of the IPZ-3 and the associated significant threats is an iterative process. Upon review of step 3 and 4 results, revisit step 1 to ensure additional activities excluded in the first round are still no longer a threat. If the new modeling results indicate that an additional activity should be considered, then proceed with steps 3 and 4.

5.5.5 Conditions Based Approach

A condition represents the contamination of rock, soil, or water resulting from a past activity such as a fuel spill. A condition must be within a vulnerable area (WHPA, IPZ, HVA or SGRA) and meet certain criteria as outlined in the Technical Rules to be considered a threat. Unless there is evidence that the condition is causing off-site contamination, the condition will not be considered a significant threat as prescribed by the Technical Rules and described below. The Lakehead Assessment Report did not identify any conditions in WHPA, IPZ, HVA or SGRA.

Criteria to Identify a Condition in the Technical Rules

1. The presence of a DNAPL in groundwater in a HVA, SGRA or WHPA,
2. The presence of a single mass more than 100 litres of one or more DNAPLs in surface water in an IPZ,
3. The presence of a contaminant in groundwater in a HVA, SGRA or WHPA, if the contaminant is listed in Table 2 of the Soil, Groundwater and Sediment Standards and is present at a concentration that exceeds the potable groundwater standard set out for the contaminant in that table,
4. The presence of a contaminant in surface soil in an IPZ, if the contaminant is listed in Table 4 of the Soil, Groundwater and Sediment Standards and is present at a concentration that exceeds the potable groundwater standard set out for the contaminant in that table, and
5. The presence of a contaminant in sediment, if the contaminant is listed in Table 1 of the Soil, Groundwater and Sediment Standards and is present at a concentration that exceeds the sediment standard set out for the contaminant in that table.

Conditions are evaluated by calculating a risk score (Table 13 **Error! Reference source not found.**). The risk score is calculated by multiplying the hazard rating by the vulnerability score of the vulnerable area in which the condition is located. The hazard rating is higher when there is evidence that the condition is causing off-site contamination or if the condition is on a property where a well, intake, or monitoring well related to a drinking water system is located. The Technical Rules specify that where there is evidence that the condition is causing off-site contamination, or if the condition is on the same property as the drinking water system well, intake or monitoring well, then the hazard rating is 10. In all other situations the hazard rating is 6 (i.e. if the condition is and will remain contained within the site).

A condition may also be a significant drinking water threat if it is associated with a drinking water issue or if there is evidence that it is causing off-site contamination.

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Table 13: Classification of Threat Levels for Drinking Water Conditions

Threat Level	Risk Score
Significant	≥ 80
Moderate	60 – 79
Low	41 – 59

Steps to Identify a Condition

Step 1: Review available data and reports for evidence that a past activity is causing contamination off-site. For this example, there is evidence of vinyl chloride contamination as a result of past activities.

Step 2: Identify the hazard score for the condition based on the Technical Rule criteria. For this example, it was determined that the hazard score associated with the vinyl chloride contamination is 10 because of evidence of off-site contamination.

Step 3: Identify the risk score of the condition. Recall that the risk score is equal to the vulnerability score multiplied by the hazard score and 14 identifies the areas where the condition would be significant, moderate and low.

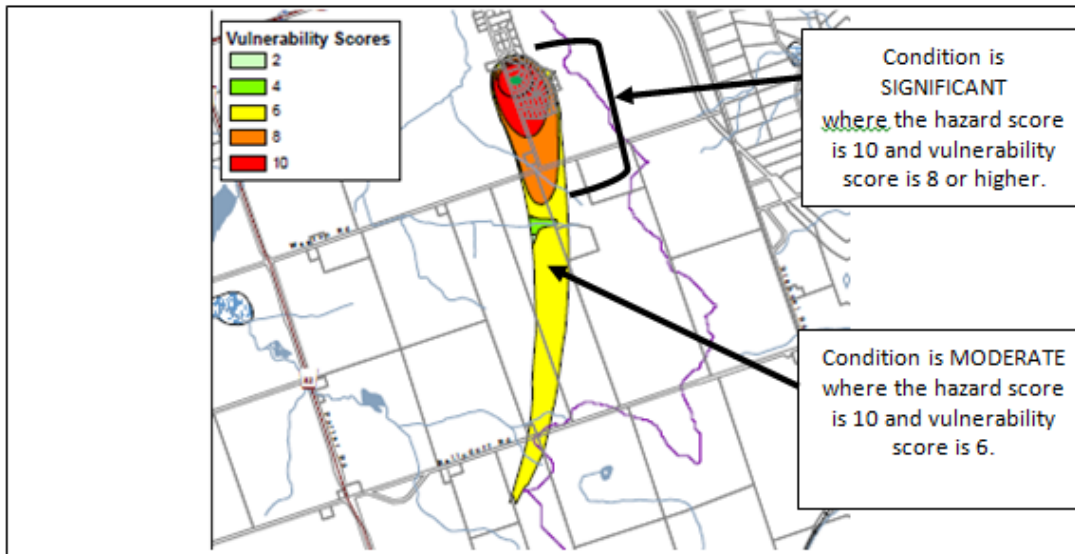


Figure 8: Location of a Condition to be Classified as a Significant Threat

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Table 14: Summary of the Impact of Conditions to Drinking Water Threats

Vulnerability Score	Evidence that the condition is causing off-site contamination and/or condition is on a property or well related to the drinking water system			All other situations		
	Hazard Score	Risk Score	Are or Would be Conditions Risk	Hazard Score	Risk Score	Are or Would be Conditions Risk
10	10	100	Significant	6	60	Moderate
8	10	80	Significant	6	48	Low
6	10	60	Moderate	6	36	Negligible Risk
4	10	40	Negligible Risk	6	24	Negligible Risk

5.5.6 Local Threats Based Approach

Source Protection Committees had the option to identify local threats as significant where permission was given by the Director of the Source Protection Programs Branch. To be designated as a local threat, three main criteria must be met:

- 1) The Source Protection Committee identified the activity as a potential threat to a municipal drinking water source,
- 2) In the opinion of the Director, the chemical hazard rating of the activity is greater than 4, or the pathogen hazard rating of the activity is greater than 4, and
- 3) The risk score for the activity in the vulnerable area is greater than 40, calculated as outlined in the Technical Rules.

The Lakehead Source Protection Committee did not designate any activity as a local threat.

Appendix 1 in the full version of Module 1 provides an example of a local threat in the Otonabee-Peterborough Source Protection Region.

5.6 Putting It All Together – Steps for Identifying Threats and Applying Policies

This Section pieces together the information provided to determine if significant drinking water threats are present on a property. The process of determining whether an activity is a significant drinking water threat can be broken into seven key steps (Figure 9).

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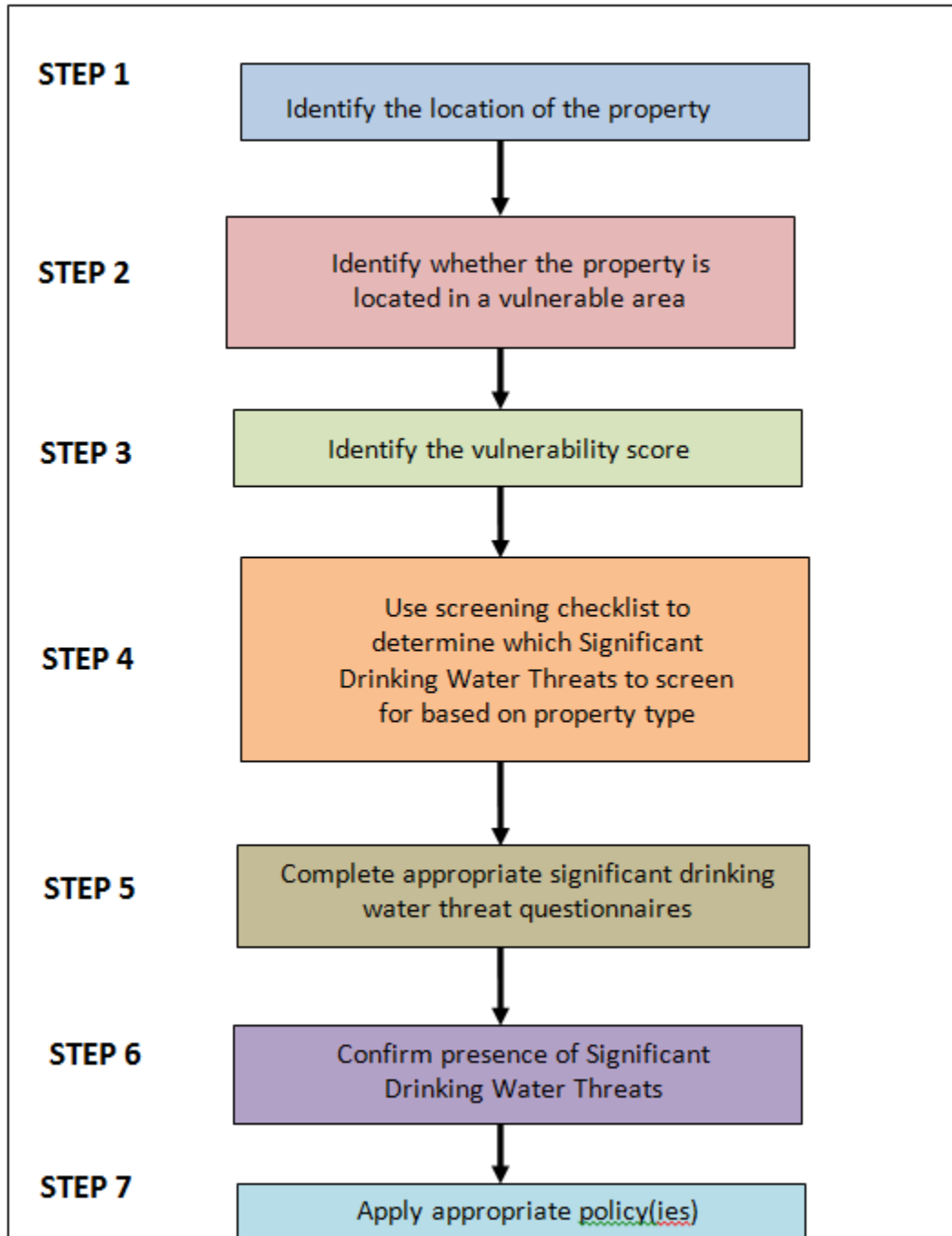


Figure 9: Steps in Identifying and Confirming Significant Drinking Water Threats

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The first three steps in determining if significant drinking water threats are present on-site involve identifying the location of the property in question in relation to vulnerable area and vulnerability score. Once the property location has been determined it will need to be confirmed that the property is located within a vulnerable area where significant drinking water threats are possible. Under the *Clean Water Act* significant drinking water threats are only found within WHPAs, IPZs or an issue contributing area, which may include HVAs or SGRAs.

The next key piece of information that is required to determine if a significant drinking water threat is present is to identify the vulnerability score. Within WHPAs and IPZs significant drinking water threats are possible anywhere the vulnerability score is 8 – 10, with the exception of the issue contributing area. Within the issue contributing area, significant drinking water threats are present anywhere a circumstance for the identified threat is met, regardless of the vulnerability score.

Once the property location, vulnerable area and vulnerability score have confirmed that the property is located in an area where significant drinking water threats are possible, identify the significant drinking water threats for which you want to screen. Figure 10 identifies threats commonly found on parcels of land based on the property type. The screening chart groups property types into four broad categories: agricultural, residential, industrial / commercial / institutional and municipal. Not all properties will fall into the four broad classes exclusively. For example, agricultural properties can have a residence and an ancillary commercial business also on-site. If this is the case, you may have to screen by vulnerable area and vulnerability score. Figures 11 and 12 provide a quick reference as to what threats are possible depending on the vulnerable area (WHPA or IPZ) vulnerability score.

Once a list of threats to screen for has been narrowed down, the next step is to complete the appropriate significant drinking water threat questionnaires. Questionnaires for each of the 18 water quality drinking threats are located in Appendix A of this module. The questionnaires have been developed to obtain the information necessary to determine if a significant drinking water threat exists.

Once the individual threat questionnaires have been completed, the next step is to take the respondent's answers and compare them with the Provincial Tables of Threats and/or the Provincial Tables of Circumstances to determine if a significant drinking water threat exists. How to use the Tables of Threats and Tables of Circumstances is described in Section 5.5.1.1.1 - Using the Provincial Tables to Determine Threats.

If the Tables of Threats and/or Circumstances confirm that a significant drinking water threat is present on-site, the last step is to apply the appropriate Source Protection Plan policy. The Lakehead Source Protection Plan can be found at www.sourceprotection.net.

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Threat		Agricultural Operations	Residential Properties	Industrial, Commercial, Institutional	Municipal Lands
1a	Untreated septage	√			√
1b	Waste disposal sites				√
1c	Mine tailings			√	
2a	Stormwater management			√	√
2b	Wastewater treatment plants/sewer systems				√
2c	On-site sewage systems		√	√	
2d	Industrial effluent			√	
3	Application of agricultural source material to land	√			
4	Storage of agricultural source material	√			
6	Application of non-agricultural source material	√			
7	Handling and storage of non-agricultural source material	√			
8	Application of commercial fertilizer to land	√	√	√	√
9	Handling and storage of commercial fertilizer	√		√	√
10	Application of pesticides to land	√		√	√
11	Handling and storage of pesticides	√		√	√
12	Application of road salt			√	√
13	Handling and storage of road salt			√	√
14	Storage of snow			√	√
15	Handling and storage of fuel	√	√	√	√
16	Handling and storage of DNAPLs		√	√	√
17	Handling and storage of organic solvents			√	√
18	Aircraft de-icing			√	
21	Livestock grazing, pasturing, outdoor confinement and farm-animal yards	√			

Figure 10: Screening Chart of Questionnaires to Complete by Property Type

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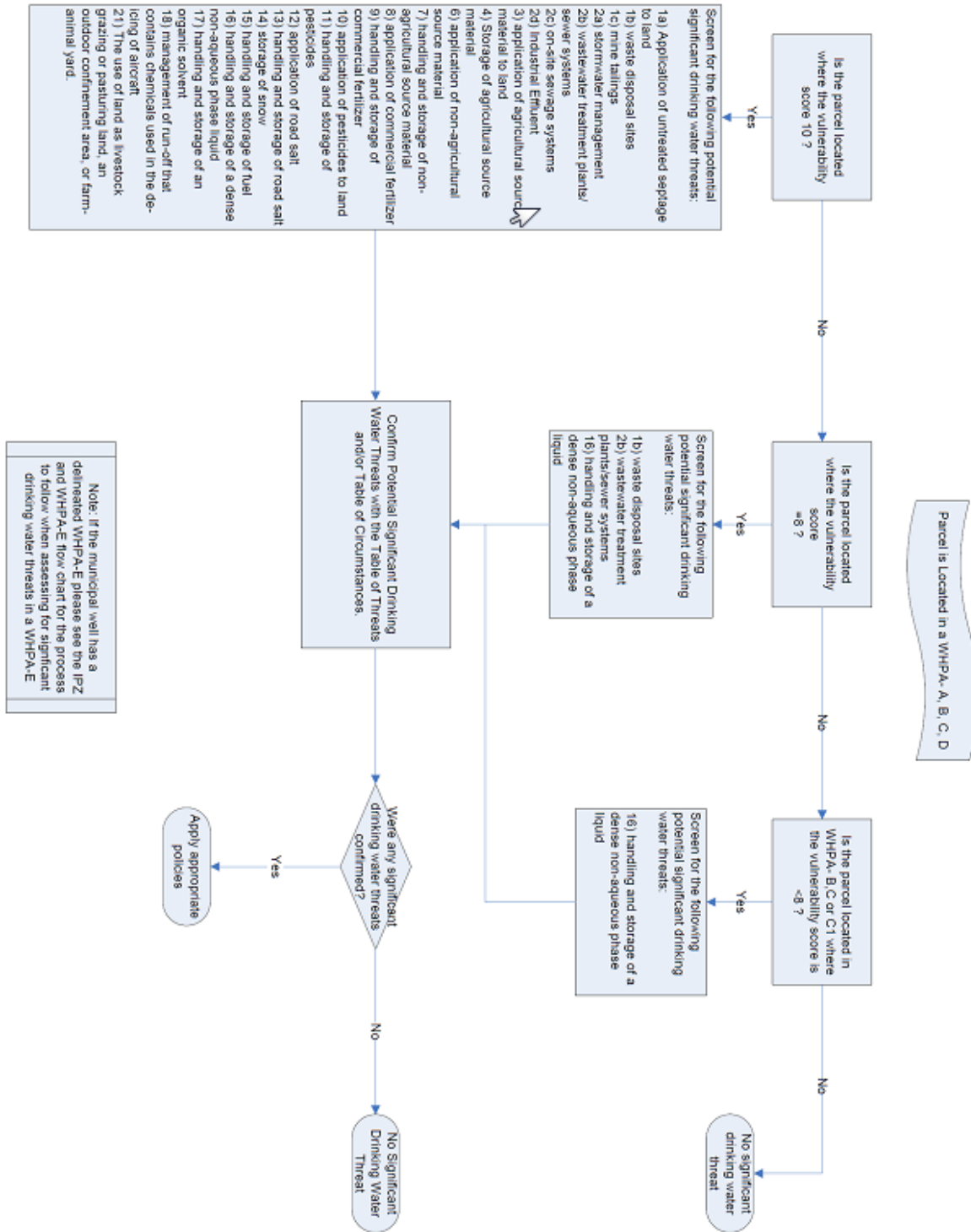


Figure 11: Flow Chart of Threats to Screen for Within a Wellhead Protection Area Based on Vulnerability Score

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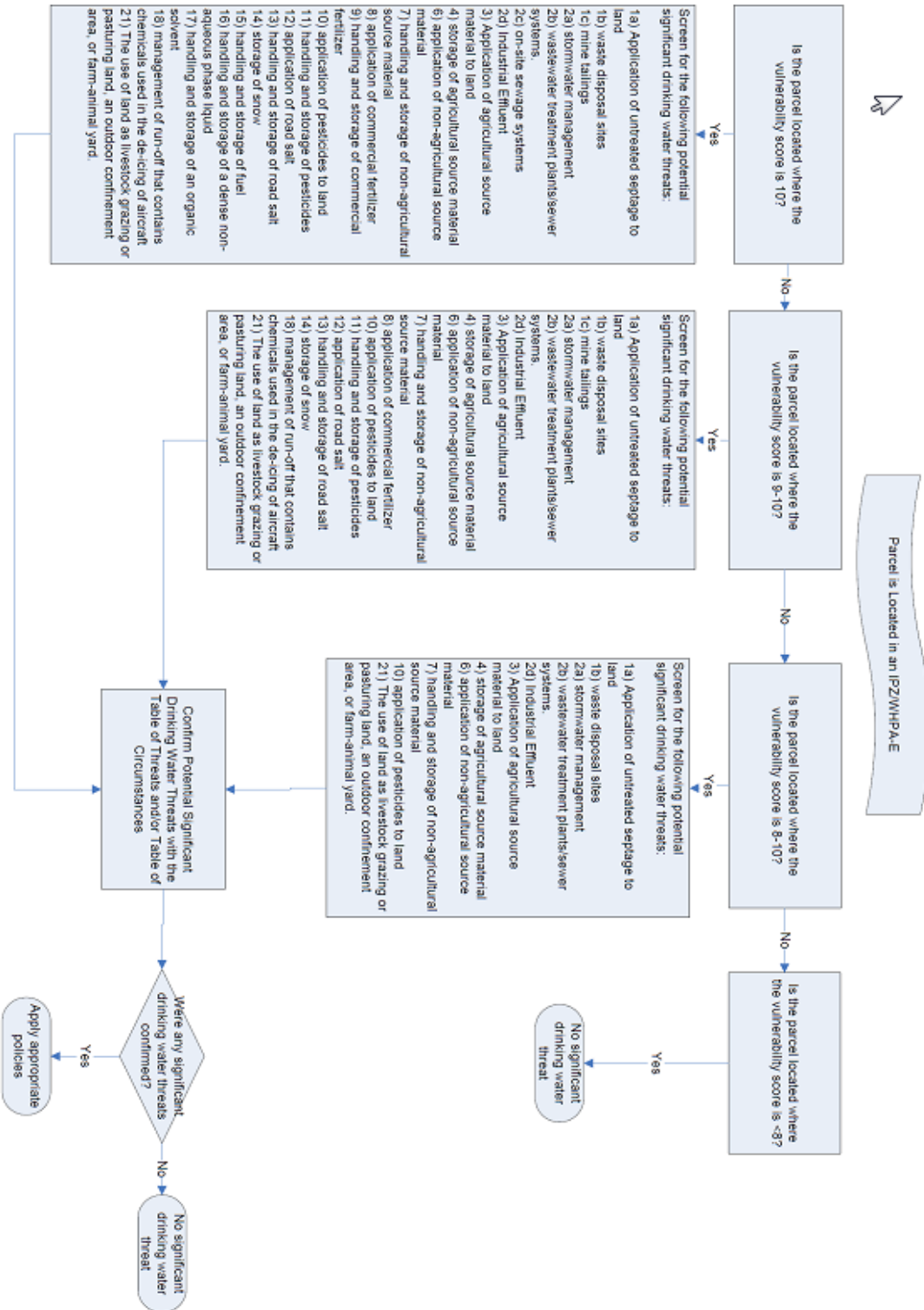


Figure 12: Flow Chart of Threats to Screen for Within IPZ/WHPA-E Based on Vulnerability Score

Appendix A – Threat Screening Questionnaires

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Threat 1a – Application of Untreated Septage to Land

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Note: Please see the end of questionnaire for a unit conversion chart.

Application and Storage of Nutrients (Managed Lands)

- Is untreated septage applied to land on the property?
 - Yes, please continue
 - No

- What is the approximate land area on the property where the untreated septage is applied?
 - Less than 1 hectare
 - 1-10 hectares
 - More than 10 hectares

Unit Conversion Chart

Metric	Imperial
1 hectare	2.47 acres
10 hectares	24.71 acres
100 hectares	247.1 acres

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Threat 1b – Waste Disposal Sites

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Note: Please see the end of questionnaire for a unit conversion chart.

Waste Management

1. Is the property registered through Ontario's Hazardous Waste Information Network?
 - Yes, please provide the registry number if known: _____
 - No

2. Is the property registered as a waste receiver or waste generator through the MOE?
 - Yes, please provide the registry number if known: _____
 - No

3. Does the property have an MOE Environmental Compliance Approval/Certificate of Approval for waste storage or waste disposal?
 - Yes, please specify Environmental Compliance Approval/Certificate of Approval type and number (e.g. hazardous waste storage):

 - No

Land Disposal

4. Is the property currently used for any of the following? (check all that apply)
Please answer the additional question if you check any of the boxes.

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- Land disposal of petroleum refining waste. If checked, what is the land/fill area?
 - Less than 1 hectare
 - 1-10 hectares
 - More than 10 hectares
 - Land disposal of hazardous waste, liquid industrial waste, or processed liquid industrial waste. If checked, what is the land/fill area?
 - Less than 1 hectare
 - 1-10 hectares
 - More than 10 hectares
 - Land disposal of municipal waste. If checked, what is the land/fill area?
 - Less than 1 hectare
 - 1-10 hectares
 - More than 10 hectares
 - Land disposal of industrial or commercial waste. If checked, what is the land/fill area?
 - Less than 1 hectare
 - 1-10 hectares
 - More than 10 hectares
5. Is the property used for land disposal of liquid industrial waste?
- Yes
 - No, skip to next Section, PCB Waste
6. Are there injection wells for the disposal of liquid industrial waste on the property?
- Yes
 - No, skip to next Section, PCB Waste
7. What is the combined injection rate of all injection wells on the property?
- Less than 380 m³/year
 - 380 – 3,799 m³/year
 - 3,800 – 37,999 m³/year
 - 38,000 – 379,999 m³/year
 - 380,000 – 3,799,999 m³/year
 - 3,800,000 to 37,999,999 m³/year
 - More than 38,000,000 m³/year

PCB Waste

8. Is the property used to store or dispose of PCB waste? Yes
- No, skip to next Section, Hazardous or Liquid Industrial Waste

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9. How is the PCB waste stored?
- In a facility or engineered cell below grade
 - In drums, located at or above grade
 - In a storage tank(s) located below grade
 - In a storage tank(s) located partially below grade
 - Outdoors, not in a container
 - Other
 - a. Please specify container: _____
 - b. Where is it stored? (Check all that apply)
 - Above grade
 - Below grade
 - Partially above and below grade

Hazardous or Liquid Industrial Waste

10. Are you subject to the *Toxics Reduction Act*?
- Yes, please continue questionnaire
 - No, skip to question 12
 - Not sure
11. Do you have a Toxics Reduction Plan?
- Yes
 - No
 - Not sure
12. Is hazardous waste or liquid industrial waste stored on the property?
- Yes, please continue questionnaire
 - No, questionnaire has been completed.
13. Where is it stored? (check all that apply)
- Above grade
 - Below grade
 - Partially above and below grade
14. Does the property store or handle small quantities of any of the following hazardous or liquid industrial wastes? (check all that apply) Please answer the additional questions if you check any of the boxes.
- Waste that is a hazardous industrial waste, hazardous waste chemical, ignitable waste, corrosive waste, leachate toxic waste or reactive waste and that is produced in any month in an amount less than 5 kilograms or otherwise accumulated in an amount less than 5 kilograms. If checked, where is the waste stored or handled? (check all that apply)
 - Above grade
 - Below grade

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- Partially above and below grade

If checked, does the waste contain arsenic, cadmium, mercury, or chromium VI?

- Yes
- No

- Waste that is an acute hazardous waste chemical and that is produced in any month in an amount less than 1 kilogram or otherwise accumulated in an amount less than 1 kilogram. If checked, where is the waste stored or handled? (check all that apply)

- Above grade
- Below grade
- Partially above and below grade

If checked, does the waste contain arsenic, cadmium, mercury, or chromium VI?

- Yes
- No

- An empty container or the liner from an empty container that contained hazardous industrial waste, hazardous waste chemical, ignitable waste, corrosive waste, leachate toxic waste or reactive waste. If checked, where is the waste stored or handled? (check all that apply)

- Above grade
- Below grade
- Partially above and below grade

If checked, does the waste contain arsenic, cadmium, mercury, or chromium VI?

- Yes
- No

- An empty container of less than 20 litres capacity or 1 or more liners weighing, in total, less than 10 kilograms from empty containers, that contained acute hazardous waste chemical. If checked, where is the waste stored or handled? (check all that apply)

- Above grade
- Below grade
- Partially above and below grade

If checked, does the waste contain arsenic, cadmium, mercury, or chromium VI?

- Yes
- No

- The residues or contaminated materials from the cleanup of a spill of less than 5 kilograms of waste that is a hazardous industrial waste, hazardous waste chemical, ignitable waste, corrosive waste, leachate toxic waste or reactive waste. If checked, where is the waste stored or handled? (check all that apply)

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- Above grade
- Below grade
- Partially above and below grade

If checked, does the waste contain arsenic, cadmium, mercury, or chromium VI?

- Yes
- No

- The residues or contaminated materials from the cleanup of a spill of less than 1 kilogram of waste that is an acute hazardous waste chemical. If checked, where is the waste stored or handled? (check all that apply)

- Above grade
- Below grade
- Partially above and below grade

If checked, does the waste contain arsenic, cadmium, mercury, or chromium VI?

- Yes
- No

- Liquid industrial waste that is produced in any month in an amount less than 25 litres or otherwise accumulated in an amount less than 25 litres. If checked, where is the waste stored or handled? (check all that apply)

- Above grade
- Below grade
- Partially above and below grade

If checked, does the waste contain arsenic, cadmium, mercury, or chromium VI?

- Yes
- No

15. Is hazardous waste or liquid industrial waste stored on the property?

- Yes, please continue questionnaire
- No, questionnaire has been completed.

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16. How many of each of the following types of wells are on the property? If you do not have a type of well please print 0.

Type of Well	# of Wells
Industrial Use Wells	
Unused Wells	
Irrigation Wells	
Dewatering wells	
Drinking Water Wells	
Geothermal Wells	
Monitoring Wells	
Drywell or Soakaway Pit	
Other: _____	
Other: _____	
Other: _____	

Unit Conversion Charts

Metric	Imperial
1 litre	0.22 gallons
25 litres	5.5 gallons
50 litres	11 gallons
250 litres	55 gallons
2500 litres	550 gallons

Metric	Imperial
1 hectare	2.47 acres
10 hectares	24.71 acres
100 hectares	247.1 acres

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Threat 1c – Mine Tailings

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

1. Are tailings from mining operations stored on the property?
 - Yes, please continue questionnaire
 - No

2. How are the tailings typically stored on the property? (check all that apply)
 - In a pit
 - In an impoundment structure

3. Is the property required to report to the National Pollutant Release Inventory?
 - Yes
 - No

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Threat 2a – Stormwater Management

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Note: Please see the end of questionnaire for a unit conversion chart.

Stormwater

- Does the property have a stormwater management facility?
 - Yes, please continue questionnaire
 - No
- What is the drainage area serviced by the facility?
 - Less than 1 hectare
 - 1 to 9 hectares
 - 10 to 100 hectares
 - More than 100 hectares

Unit Conversion Charts

Metric	Imperial
1 hectare	2.47 acres
10 hectares	24.71 acres
100 hectares	247.10 acres

Module 2 – Understanding Where Policies Apply



Threat 2b – Waste water Treatment Plants/Sewer Systems

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Sanitary Sewage

The following questions ask about sanitary sewage systems. Note that if more than one system (of the same type) is present on the property, you need to fill in the combined capacity of all systems.

- Does the property have a privately-owned or operated sewage system that discharges untreated or partially treated sewage into the municipal sanitary sewer, or that is not connected to the municipal sewer system? Note that this includes sewage holding tanks or treatment tanks, but does not include plumbing features such as toilets or pipes.
 - Yes, please continue questionnaire
 - No, skip to question 4
- Does the system include a designed bypass to divert extra flow due to higher volume/higher flow events?
 - Yes
 - No

Designed bypass means an intentional diversion of wastewater from the wastewater system, from any portion of a pre-treatment facility prior to completing pre-treatment, or from any industrial process or other source of wastewater prior to pre-treatment (i.e. during periods of high volume, some wastewater may bypass the wastewater treatment and flow directly to the sewer system, sewer or surface water).

Module 2 – Understanding Where Policies Apply

3. What is the designed conveyance capacity of the sewage system?
- Less than 250 m³/day
 - 250 – 999 m³/day
 - 1,000 – 9,999 m³/day
 - 10,000 – 100,000 m³/day
 - More than 100,000 m³/day
4. Does the system have a wastewater treatment tank or storage tank?
- Yes, treatment tank
 - Yes, storage tank
 - No, fill out the On-Site Sewage Systems questionnaire
5. What is the designed capacity of the tank? Note: if more than one tank is present indicate the total capacity of all tanks.
- Less than 500 m³/day
 - 2,050 – 2,499 m³/day
 - 2,500 – 17,499 m³/day
 - 17,500 – 50,000 m³/day
 - More than 50,000 m³/day
6. Does the tank(s) service more than 1 property?
- Yes
 - No
7. The tank(s) is: (check all that apply)
- Above grade
 - Below grade
 - Partially above and below grade

Module 2 – Understanding Where Policies Apply



Threat 2c – On-site Sewage Systems

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Note: Please see the end of questionnaire for a unit conversion chart.

1. Does the property have a septic system, outhouse, earth-pit privy, privy vault, greywater system, cesspool, or leaching bed systems?
 - Yes
 - No

2. Does the property have a sewage system that uses a holding tank for hauled sewage?
 - Yes
 - No

7. What is the capacity of the system? If you have more than 1 system on the property, indicate the total combined capacity of all systems.
 - Less than 10,000 L/day
 - More than 10,000 L/day

8. Is the system servicing more than one property?
 - Yes
 - No

Module 2 – Understanding Where Policies Apply

Unit Conversion Chart

Metric	Imperial
1 litre	0.22 gallons
25 litres	5.5 gallons
50 litres	11 gallons
250 litres	55 gallons
2500 litres	550 gallons

Module 2 – Understanding Where Policies Apply



Threat 2d - Industrial Effluent

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

1. Does the property have an on-site industrial sewage system?
 - Yes, please continue questionnaire
 - No

2. Does the system discharge to surface water?
 - Yes
 - No

3. Is the property required to report to the National Pollutant Release Inventory?
 - Yes
 - No

4. Please list the chemicals discharged to surface water.

Module 2 – Understanding Where Policies Apply



Threats 3, 4 and 5 – Agricultural Source Material

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Application, Handling and Storage of Agricultural Source Material (Manure)

This Section asks about application, handling and storage of manure (liquid or solid) on the property. The Source Water Protection program refers to manure as Agricultural Source Material (ASM).

1. Is manure applied to land on the property?
 - Yes, please state to what percentage of the property it is applied
_____ %
 - No

2. What is the approximate land area where agricultural source materials were applied on the property in the last year?
 - Less than 1 hectare
 - 1 – 9.9 hectares
 - 10 – 100 hectares
 - More than 100 hectares

3. Is manure stored on the property?
 - Yes, please continue questionnaire
 - No, skip to question 5

4. How is the manure typically stored? (check all that apply)
 - Permanent nutrient storage facility located at or above grade
 - Permanent nutrient storage facility located partially below grade

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- Permanent nutrient storage facility located below grade
 - Temporary field nutrient storage site located at or above grade
 - Temporary field nutrient storage site located below grade
5. Is any part of the property currently used for aquaculture?
- Yes
 - No

Unit Conversion Charts

Metric	Imperial
1 litres	0.26 gallons
25 litres	6.6 gallons
50 litres	13 gallons
250 litres	66.04 gallons
2500 litres	660.4 gallons

Metric	Imperial
1 hectare	2.47 acres
10 hectares	24.71 acres
100 hectares	247.1 acres

Module 2 – Understanding Where Policies Apply



Threats 6 & 7 – Non Agricultural Source Material (NASM)

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Application, Handling and Storage of NASM

This questionnaire asks about Non-Agricultural Source Material (NASM) that may be on your property. NASM refers to biosolids from outside sources, including sewage treatment facilities, pulp and paper mills, and food processing operations.

- Is non-agricultural source material applied to land on the property?
 - Yes, please state to what percentage of the property it is applied _____%
 - No

2. What is the approximate land area where non- agricultural source materials were applied on the property in the last year?
 - Less than 1 hectare
 - 1 – 9.9 hectares
 - 10 – 100 hectares
 - More than 100 hectares

3. If nutrients are applied to less than 100% of the property, please give a brief description of the areas to which nutrients are NOT applied: _____

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Application, Handling and Storage of NASM

5. In the last 10 years, was any NASM stored on the property?
- Yes, please continue questionnaire

 - No
6. How is the NASM typically stored? (check all that apply)
- Permanent nutrient storage facility located at or above grade
 - Permanent nutrient storage facility located partially below grade
 - Permanent nutrient storage facility located below grade
 - Temporary field nutrient storage site located at or above grade
 - Temporary field nutrient storage site located below grade
7. How much nitrogen is typically contained in the stored NASM?
- Less than 0.5 tonnes
 - 0.5 - 5 tonnes
 - More than 5 tonnes
 - Unknown
8. Do you have a NASM Plan?
- Yes, please provide the Reference number _____
 - No

Module 2 – Understanding Where Policies Apply



Threats 8 & 9 – Commercial Fertilizer

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Note: Please see the end of questionnaire for a unit conversion chart.

Application of Commercial Fertilizer

- Is commercial fertilizer applied to land on the property?
 - Yes, applied by outsourced contractor. Please state to what percentage of the property it is applied _____%
 - Yes, applied by property owner/tenant. Please state to what percentage of the property it is applied _____%
 - No

Handling and Storage of Commercial Fertilizer

- Is commercial fertilizer stored on the property?
 - Yes, please continue questionnaire
 - No
- What is the purpose of fertilizer stored on the property? (check all that apply) Please answer the additional questions if you check any of the boxes.
 - Stored for use on the property? If checked, what is the quantity of fertilizer stored on the property?
 - Less than 25 kg
 - 25-249 kg
 - 250-2,500 kg
 - More than 2,500 kg

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- Sold wholesale on the property? If checked, what is the quantity of fertilizer stored on the property?
 - Less than 25 kg
 - 25-249 kg
 - 250-2,500 kg
 - More than 2,500 kg
 - Sold for retail on the property? If checked, what is the quantity of fertilizer stored on the property?
 - Less than 25 kg
 - 25-249 kg
 - 250-2,500 kg
 - More than 2,500 kg
 - Manufactured and/or processed on the property? If checked, what is the quantity of fertilizer stored on the property?
 - Less than 25 kg
 - 25-249 kg
 - 250-2,500 kg
 - More than 2,500 kg
4. What is the typical nitrogen content in the fertilizer?
- Less than 5%
 - 5 – 25%
 - More than 25%
5. What is the typical phosphorus content in the fertilizer?
- Less than 5%
 - 5 – 25%
 - More than 25%

Unit Conversion Chart

Kilograms	Pounds
1 kilogram	2.20 pounds
25 kilograms	55.1 pounds
250 kilograms	551.1 pounds
2500 kilograms	5511.55 pounds

Module 2 – Understanding Where Policies Apply



Threats 10 & 11 – Pesticides

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Note: Please see the end of questionnaire for a unit conversion chart.

Application, Handling and Storage of Pesticides

1. In the past year, were pesticides applied to land on the property?
 - Yes, applied by outsourced contractor
 - Yes, applied by property owner/tenant
 - No, skip to question 4

2. What is the approximate land area where pesticides were applied on the property in the past year?
 - Less than 1 hectare
 - 1 – 9.9 hectares
 - 10 – 100 hectares
 - More than 100 hectares

3. Does the pesticide applied on the property contain any of the following ingredients? (check all that apply)
 - Atrazine
 - Dicamba
 - Dichlorophenoxy Acetic Acid (2,4-D)
 - Dichloropropene-1,3
 - Glyphosate
 - Atrazine
 - MCPA (2-methyl-4-chlorophenoxy acetic acid)

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- Mecoprop
 - Metalaxyl
 - Metolachlor or s-Metolachlor
 - Pendimethalin
 - MCPB (2-methylphenoxy) butanoic acid
 - Other _____
 - Unknown
 - None of these
4. Are pesticides stored on the property?
- Yes, please continue questionnaire
 - No
5. What is the purpose of pesticide storage on the property? (check all that apply)
- Pesticides are stored for use on the property
 - Pesticides are sold for retail on the property
 - Pesticides are sold wholesale on the property
 - Pesticides are manufactured/processed on the property
6. Does the pesticide stored on the property contain any of the following ingredients? (check all that apply)
- Atrazine
 - Dicamba
 - Dichlorophenoxy Acetic Acid (2,4-D)
 - Dichloropropene-1,3
 - Glyphosate
 - Atrazine
 - MCPA (2-methyl-4-chlorophenoxy acetic acid)
 - Mecoprop
 - Metalaxyl
 - Metolachlor or s-Metolachlor
 - Pendimethalin
 - MCPB (2-methylphenoxy) butanoic acid
 - Other _____
 - Unknown
 - None of these

Unit Conversion Chart

Metric	US Standard Units
1 hectare	2.47 acres
10 hectares	24.71 acres
100 hectares	247.1 acres

Module 2 – Understanding Where Policies Apply



Threats 12 & 13 – Road Salt

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Note: Please see the end of questionnaire for a unit conversion chart.

Road Salt and Winter Salt Storage and Application

1. Do you use any salt for de-icing on the property?
 - Yes, please continue questionnaire
 - No, skip to question 4

2. How much salt is applied in a typical year?
 - Less than 25 kilograms
 - 25-99 kilograms
 - 100-250 kilograms
 - More than 250 kilograms

3. Is the salt managed by an outside hired contractor or company?
 - Yes
 - No

4. Are any alternative salt application practices used? (check all that apply)
 - Anti-icing liquid
 - Pre-wetting (e.g. beet juice)
 - Reduced chloride
 - Pickled sand
 - Chloride-free products (e.g. Calcium Magnesium Acetate)
 - Other, please specify _____

Module 2 – Understanding Where Policies Apply

- None
5. Do you store salt for de-icing on the property?
- Yes, please continue questionnaire
- No
6. What quantity of salt is stored?
- Less than 500 tonnes
- 500 5,000 tonnes
- More than 5,000 tonnes
7. How is the salt stored? (check all that apply)
- In a manner that allows exposure to precipitation, or runoff from precipitation or snow melt
- In a salt dome or other facility to prevent exposure to runoff and precipitation
- In manufacturer's package, indoors (e.g., garage or shed)

Unit Conversion Chart

Kilograms	Pounds
1 kilogram	2.20 pounds
25 kilograms	55.1 pounds
250 kilograms	551.1 pounds
2500 kilograms	5511.55 pounds

Module 2 – Understanding Where Policies Apply



Threat 14 - Storage of Snow

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Snow Storage

1. Is any part of the property used to store snow collected from roads or other paved areas located on a different property?
 - Yes, from public roads, please continue questionnaire
 - Yes, from private properties, please continue questionnaire
 - Yes, from public roads and private properties, please continue questionnaire
 - No

2. What is the approximate land area on the property used to store the snow?
 - Less than 0.01 hectares
 - 0.01 – 0.5 hectares
 - 0.5 – 0.9 hectares
 - 1 – 5 hectares
 - More than 5 hectares

3. Where is the snow stored?
 - Above grade
 - Below grade (e.g. in a pit or quarry)
 - Both

Module 2 – Understanding Where Policies Apply

Unit Conversion Chart

Metric	US Standard Units
1 hectare	2.47 acres
10 hectares	24.71 acres
100 hectares	247.1 acres

-
-

Module 2 – Understanding Where Policies Apply



Threat 15 - Handling and Storage of Fuel

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Note: Please see the end of questionnaire for a unit conversion chart.

- Are any of the following types of liquid fuel used or stored on the property? (check all that apply) Please answer the additional questions if you check any of the boxes.
 - Gasoline. What is the maximum quantity of fuel stored on the property at any one time? (check only one)
 - Less than 25 litres (e.g. Jerry can)
 - 25-249 litres (up to 1 drum)
 - 250-2,500 litres (at least 1 drum, up to 1 tank)
 - More than 2,500 litres (more than 1 tank)
 How is the fuel stored? (Check all that apply)
 - Above ground tank
 - Underground tank (includes basement tanks)
 - Portable container
 - Diesel. What is the maximum quantity of fuel stored on the property at any one time? (check only one)
 - Less than 25 litres (e.g. Jerry can)
 - 25-249 litres (up to 1 drum)
 - 250-2,500 litres (at least 1 drum, up to 1 tank)
 - More than 2,500 litres (more than 1 tank)
 How is the fuel stored? (Check all that apply)
 - Above ground tank
 - Underground tank (includes basement tanks)

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- Portable container
- Heating oil/fuel oil. What is the maximum quantity of fuel stored on the property at any one time? (check only one)
- Less than 25 litres (e.g. Jerry can)
 - 25-249 litres (up to 1 drum)
 - 250-2,500 litres (at least 1 drum, up to 1 tank)
 - More than 2,500 litres (more than 1 tank)
- How is the fuel stored? (Check all that apply)
- Above ground tank
 - Underground tank (includes basement tanks)
 - Portable container
- Used oil/waste oil. What is the maximum quantity of fuel stored on the property at any one time? (check only one)
- Less than 25 litres (e.g. Jerry can)
 - 25-249 litres (up to 1 drum)
 - 250-2,500 litres (at least 1 drum, up to 1 tank)
 - More than 2,500 litres (more than 1 tank)
- How is the fuel stored? (Check all that apply)
- Above ground tank
 - Underground tank (includes basement tanks)
 - Portable container
- Other (please specify) _____. What is the maximum quantity of fuel stored on the property at any one time? (check only one)
- Less than 25 litres (e.g. Jerry can)
 - 25-249 litres (up to 1 drum)
 - 250-2,500 litres (at least 1 drum, up to 1 tank)
 - More than 2,500 litres (more than 1 tank)
- How is the fuel stored? (Check all that apply)
- Above ground tank
 - Underground tank (includes basement tanks)
 - Portable container

Unit Conversion Chart

Metric	Imperial
1 litre	0.22 gallons
25 litres	5.5 gallons
50 litres	11 gallons
250 litres	55 gallons
2500 litres	550 gallons

Module 2 – Understanding Where Policies Apply



Threat 16 - Handling and storage of Dense Non Aqueous Phase Liquids (DNAPLs)

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Note: Please see the end of questionnaire for a unit conversion chart.

Chemical Storage and Handling

- Are any of the following chemical products used or stored on the property? (check all that apply) Please answer the additional three questions if you check any of the boxes.
 - Degreasers (e.g. acetone, methyl hydrate) not containing chlorinated solvents. What is the maximum quantity of chemical products stored on the property at any one time? (check only one)
 - Less than 25 litres (e.g. Jerry can)
 - 25-249 litres (up to 1 drum)
 - 250-2,500 litres (at least 1 drum, up to 1 tank)
 - More than 2,500 litres (more than 1 tank)

Please print the trade name or chemical name of the product used **most often** in this category:

How are the chemical products stored? (Check all that apply)

- Above ground tank
- Underground tank (includes basement tanks)
- Portable container

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- Paints/paint thinners (e.g. Varsol, Turpentine). What is the maximum quantity of chemical products stored on the property at any one time? (check only one)

- Less than 25 litres (e.g. Jerry can)
- 25-249 litres (up to 1 drum)
- 250-2,500 litres (at least 1 drum, up to 1 tank)
- More than 2,500 litres (more than 1 tank)

Please print the trade name or chemical name of the product used **most often** in this category:

How are the chemical products stored? (Check all that apply)

- Above ground tank
- Underground tank (includes basement tanks)
- Portable container

- Enamels/lacquers (e.g. Varathane, Hydrocote). What is the maximum quantity of chemical products stored on the property at any one time? (check only one)

- Less than 25 litres (e.g. Jerry can)
- 25-249 litres (up to 1 drum)
- 250-2,500 litres (at least 1 drum, up to 1 tank)
- More than 2,500 litres (more than 1 tank)

Please print the trade name or chemical name of the product used **most often** in this category:

How are the chemical products stored? (Check all that apply)

- Above ground tank
- Underground tank (includes basement tanks)
- Portable container

- Adhesives/glues (e.g. Epoxy, Polyurethane). What is the maximum quantity of chemical products stored on the property at any one time? (check only one)

- Less than 25 litres (e.g. Jerry can)
- 25-249 litres (up to 1 drum)
- 250-2,500 litres (at least 1 drum, up to 1 tank)
- More than 2,500 litres (more than 1 tank)

Please print the trade name or chemical name of the product used **most often** in this category:

How are the chemical products stored? (Check all that apply)

- Above ground tank
- Underground tank (includes basement tanks)
- Portable container

Module 2 – Understanding Where Policies Apply

- Resins (e.g. PVC Resin, Urea Formaldehyde). What is the maximum quantity of chemical products stored on the property at any one time? (check only one)

- Less than 25 litres (e.g. Jerry can)
- 25-249 litres (up to 1 drum)
- 250-2,500 litres (at least 1 drum, up to 1 tank)
- More than 2,500 litres (more than 1 tank)

Please print the trade name or chemical name of the product used **most often** in this category:

How are the chemical products stored? (Check all that apply)

- Above ground tank
- Underground tank (includes basement tanks)

Portable container

- Furniture strippers (e.g. Acetone, Toluene, Turpentine). What is the maximum quantity of chemical products stored on the property at any one time? (check only one)

- Less than 25 litres (e.g. Jerry can)
- 25-249 litres (up to 1 drum)
- 250-2,500 litres (at least 1 drum, up to 1 tank)
- More than 2,500 litres (more than 1 tank)

Please print the trade name or chemical name of the product used **most often** in this category:

How are the chemical products stored? (Check all that apply)

- Above ground tank
- Underground tank (includes basement tanks)
- Portable container

- Chlorinated solvents (e.g. Trichloroethylene (TCE), Perchloroethylene (PCE)). What is the maximum quantity of chemical products stored on the property at any one time? (check only one)

- Less than 25 litres (e.g. Jerry can)
- 25-249 litres (up to 1 drum)
- 250-2,500 litres (at least 1 drum, up to 1 tank)
- More than 2,500 litres (more than 1 tank)

Please print the trade name or chemical name of the product used **most often** in this category:

How are the chemical products stored? (Check all that apply)

- Above ground tank
- Underground tank (includes basement tanks)
- Portable container

Module 2 – Understanding Where Policies Apply

- PCB liquids or fluids. What is the maximum quantity of chemical products stored on the property at any one time? (check only one)
- Less than 25 litres (e.g. Jerry can)
 - 25-249 litres (up to 1 drum)
 - 250-2,500 litres (at least 1 drum, up to 1 tank)
 - More than 2,500 litres (more than 1 tank)

Please print the trade name or chemical name of the product used **most often** in this category:

How are the chemical products stored? (Check all that apply)

- Above ground tank
- Underground tank (includes basement tanks)
- Portable container

- Creosote. What is the maximum quantity of chemical products stored on the property at any one time? (check only one)
- Less than 25 litres (e.g. Jerry can)
 - 25-249 litres (up to 1 drum)
 - 250-2,500 litres (at least 1 drum, up to 1 tank)
 - More than 2,500 litres (more than 1 tank)

Please print the trade name or chemical name of the product used **most often** in this category:

How are the chemical products stored? (Check all that apply)

- Above ground tank
- Underground tank (includes basement tanks)
- Portable container

- Other (please specify chemical name)

_____. What is the maximum quantity of chemical products stored on the property at any one time? (check only one)

- Less than 25 litres (e.g. Jerry can)
- 25-249 litres (up to 1 drum)
- 250-2,500 litres (at least 1 drum, up to 1 tank)
- More than 2,500 litres (more than 1 tank)

Please print the trade name or chemical name of the product used **most often** in this category:

How are the chemical products stored? (Check all that apply)

- Above ground tank
- Underground tank (includes basement tanks)
- Portable container

Module 2 – Understanding Where Policies Apply

Unit Conversion Chart

Metric	Imperial
1 litre	0.22 gallons
25 litres	5.5 gallons
50 litres	11 gallons
250 litres	55 gallons
2500 litres	550 gallons

Module 2 – Understanding Where Policies Apply



Threat 17 - Handling and Storage of Organic Solvents

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Note: Please see the end of questionnaire for a unit conversion chart.

Chemical Storage, Handling and Disposal

1. Do you store or handle organic solvents on the property?
 - Yes, please continue questionnaire
 - No

2. Do you store or handle more than 25 litres of the following organic solvents on the property:
 - Wood preservative such as creosote or CCA?
 - Paint stripper / degreaser
 - Cleaning agent/ refrigerant
 - Chloroform (historically used as an anesthetic, now as dyes, cleaning agent)
 - Yes, please state how much is stored _____ (litres)
 - No
 - Unsure

Module 2 – Understanding Where Policies Apply



Threat 18 - Aircraft De-icing

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Management of Runoff that Contains Chemicals used in the De-icing of Aircraft

1. Is the airport classified as:
 - Remote
 - Small
 - Regional-continue

2. Is there an opportunity for run-off containing de-icing materials to discharge to land or water?
 - Yes
 - No

Module 2 – Understanding Where Policies Apply



- Threat 21 - Livestock
-

Contact Information

Contact Name for Property:	
Property Owner:	
Property Address:	
Phone Number:	
Roll Number:	
E-mail:	

Use of Land as Livestock, Grazing or Pasturing; an Outdoor Confinement Area; or a Farm Animal Yard

- Are livestock and/or poultry raised on the property?
 - Yes, please fill in the table below
 - No, skip to question 2

Please indicate the total number of each type of livestock and/or poultry on the property.

Type of Livestock	# of Livestock
Beef cattle	
Horses	
Sheep	
Ducks	
Dairy cattle	
Chicken	
Turkeys	
Goats	
Swine	
Other: _____	
Other: _____	

- What is the total percentage of the property that is used for livestock grazing, pasture lands and outdoor confinement? _____%

6.0 Module 3: Land Use Planning

This module outlines how the *Clean Water Act* Assessment Reports and Source Protection Plans can influence municipal planning. The first section describes the Source Protection Planning process, the alignment of the local Assessment Reports with the Provincial Policy Statement and how the information in Assessment Reports should be used to inform planning decisions.

The second section describes the content and legal effect of Source Protection Plans and implications for planning decisions.

The third section explains how to integrate Source Protection Plan policies into Official Plans, zoning by-laws, and other tools available through the *Planning Act*. This section also describes transition provisions that could be included in some Source Protection Plans, and how these provisions should be considered when making planning decisions.

6.1 Land Use Planning and the Clean Water Act, 2006

6.1.1 Source Protection for Land Use Planners

The purpose of the *Clean Water Act* is to protect existing and future sources of municipal residential drinking water. This legislation is a major part of the Ontario government's commitment to ensuring that every Ontarian has access to safe drinking water. Protecting water at its source is the first step in the multi-barrier approach to protecting drinking water. By stopping contaminants from getting into sources of drinking water — lakes, rivers and aquifers — we can provide the first line of defense in the protection of our environment and the health of Ontarians. The *Clean Water Act* relies on locally developed, watershed-based Source Protection Plans founded on sound science to effectively meet this objective.

As part of the Province's multi-barrier approach to drinking water, the *Clean Water Act* mandated that drinking water be protected at its source using a variety of tools, including using existing tools such as municipal land use planning authorities. To assist municipalities to use these authorities, the *Clean Water Act* established locally driven, watershed-based, Source Protection Committees to review and assess municipal drinking water sources. The *Clean Water Act* mandated each Source Protection Committee prepare three documents:

1. Terms of Reference (a work plan that identified the drinking water systems that are included in the program),
2. local Assessment Reports (technical studies), and
3. drinking water Source Protection Plan to address threats to municipal drinking water (policies to protect drinking water sources from threats).

Land use planners consider the best available information when making planning decisions. Historically, many municipalities indicated that they could not protect their drinking water supplies because they didn't know where they were. For many municipalities in Ontario, this information is now readily available in the local Assessment Reports.

Module 3 – Land Use Planning

6.1.1.1 Assessment Reports

Assessment Reports are technical documents that describe the local watershed and available water supplies, identify vulnerable areas where drinking water sources might face a risk of contamination or depletion, assess threats to drinking water within those vulnerable areas, and provide the basis for the development of a Source Protection Plan. All 38 Assessment Reports have been approved by the Director of the Source Protection Programs Branch. Assessment Reports are not policy documents; they contain technical and scientific information, including the delineations of vulnerable areas. The information and delineations in the Assessment Reports cannot be appealed to the Ontario Municipal Board.

Several municipalities currently have provisions in their land use planning documents to protect sources of drinking water. Some municipalities are beginning to use the information in the Assessment Reports as they update their planning documents and make decisions on land use planning applications.

The Approved Assessment Report for the Lakehead Source Protection Area can be found here: <http://www.sourceprotection.net/reports.htm>

Links to the other approved Assessment Reports can be found here:

<http://conservation-ontario.on.ca/uncategorised/143-otherswpreionsindex>

6.1.2 Director’s Technical Rules

In determining the location and extent of vulnerable areas, Source Protection Committees used scientific rules that were applied across the province and are found in the Director’s Technical Rules. In areas of the province where Assessment Reports were not completed, municipalities can rely on the Directors Technical Rules to delineate vulnerable areas or portions of vulnerable areas. The Technical Rules describe, among other matters, how to delineate vulnerable areas and assess the vulnerability of these areas to contamination or depletion. The Director’s Technical Rules can be found here:

<https://www.ontario.ca/environment-and-energy/technical-rules-assessment-report>

When vulnerable areas are delineated using the Director’s Technical Rules, these vulnerable areas would then be delineated in accordance with provincial standards and would align with the definition of *designated vulnerable areas* for the purpose of 2.2.1.e of the Provincial Policy Statement, 2014. Municipalities could then rely on the science as they make decisions to impose restrictions on development and site alteration to satisfy their obligations under the Provincial Policy Statement.

6.1.3 Tables of Drinking Water Threats

The Technical Rules contain tables that set out what activities pose a risk to drinking water, the “circumstances” that have to be in place for the activity to be identified as a threat, and where

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those activities are considered significant, moderate or low drinking water threats. Examples of circumstances include the volume of a product at a site, the size of the contributing area for a stormwater pond, or the size of area where materials are applied. The area where these activities and circumstances pose a risk are dependent on the vulnerability score of the area where the activity is taking place. In some cases, the volume of the contaminant or the vulnerability score is so low that the activity is not considered a risk to drinking water.

The Tables of Drinking Water Threats combine the activity, circumstances, and vulnerability score into one document that is very complex. There are other tools available to help someone understand if an activity poses a risk to drinking water. The tables can be viewed at the following link:

<http://www.ontario.ca/environment-and-energy/tables-drinking-water-threats>

6.1.4 Tables of Circumstances

The Province has also developed Tables of Circumstances to allow you to see only the activities that are a significant risk in a certain vulnerable area. Municipal planning staff can use the Tables of Circumstances as a guide to assist in determining whether a proposed use would be appropriate. For example, a planner could review the vulnerability of an area to help determine whether a gas station would be acceptable. Planners can use the Tables of Circumstances as a guide when considering planning applications.

There is also a searchable version of the Tables of Drinking Water Threats available: <http://www.trcgauging.ca/RmmCatalogue/>.

6.1.5 Source Protection Plans

Source Protection Plans must include policies to address areas where threats to sources of drinking water could be significant. Generally, these are areas that are close to municipal wellheads or intakes. Source Protection Plans may contain policies to address threats to sources of drinking water in areas where the threat could only rate as moderate or low (such as highly vulnerable aquifers and significant groundwater recharge areas). This means that in many areas where communities rely on private drinking water services, a municipality's planning decisions to protect designated vulnerable areas may be the only way to protect these sources of drinking water as they are not covered by the *Clean Water Act*. Outside of the implementation of Source Protection Plan policies, municipalities are not limited to addressing the activities that are considered drinking water threats under the *Clean Water Act* (listed in Ontario Regulation 287/07), and can make their own decisions about which land uses are incompatible with the protection of vulnerable areas for drinking water sources.

The Source Protection Plan will be the crucial link between the science in the Assessment Reports and the policy(ies) to address threats. Planning decisions will be required to “conform with” significant threat policies, as well as to “have regard to” any moderate and low threat policies in approved Source Protection Plans. Once a Source Protection Plan is approved, it will prevail. In the case of a conflict over Official Plans and zoning by-laws (i.e. where a conformity

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exercise has not been undertaken to update an Official Plan or zoning by-law to bring them into conformity with an approved Source Protection Plan) the approved Source Protection Plan still prevails. Where there is a conflict between a Source Protection Plan and the Provincial Policy Statement or other provincial plans, the provision that offers the greatest protection to the source of drinking water will prevail. The *Clean Water Act* also ensures that where there is a conflict between a provision of the *Clean Water Act* and any other Act, the provision providing the highest level of protection to the water quality and quantity will prevail.

Links to Source Protection Plans can be found at this link:

<http://conservation-ontario.on.ca/uncategorised/143-otherswpreionsindex>

The Lakehead Source Protection Plan can be found at the following link:

<http://sourceprotection.net/>.

6.1.6 Threats to Drinking Water

The General Regulation under the *Clean Water Act* prescribed certain threats to drinking water. This list was developed through a multi stakeholder working group and includes threats or “activities” that were either known to cause contamination, or were identified as having a higher potential to impact sources of drinking water. The list of prescribed threats to drinking water is found in Section 1.1 of Ontario Regulation 287/07. The list includes 19 specific activities that could affect the **quality** of the source of the water supply by contributing chemicals or pathogens, and 2 activities that could result in depletion of water supply **quantity** (threats 19 and 20). The specific threat activities are listed below:

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.

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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.

In addition to the list of threats described above, a Source Protection Committee can apply to the Director of the Source Protection Programs Branch for a local drinking water threat to be added. For example, one local threat that has been approved is the transportation of specific hazardous substances, such as fuel and septage along transportation corridors. It is noted that the Lakehead Source Protection Plan did not include any local drinking water threats.

Municipal staff involved in planning will need to consider vulnerable areas sensitive to contamination or depletion. Land uses that involve drinking water threat activities should be evaluated to make decisions on development applications in vulnerable areas.

6.2 Source Protection Considerations and Obligations Before Source Protection Plans Take Effect

6.2.1 Assessment Reports and the Provincial Policy Statement 2014

Assessment Reports describe the watershed, provide the scientific basis for the Source Protection Plan, and are approved by the Director, Source Protection Programs Branch, and Ministry of the Environment and Climate Change. Assessment Reports were developed using standardized scientific methods provided by the Ministry of the Environment and Climate Change's Director's Technical Rules. Vulnerable areas that are delineated using the Technical Rules are the "designated vulnerable areas" as defined in the Provincial Policy Statement. Four types of vulnerable areas are delineated and mapped in the Assessment Reports:

1. Surface water intake protection zones (IPZs),
2. Wellhead protection areas (WHPAs),
3. Highly vulnerable aquifers (HVAs),
4. Significant groundwater recharge areas (SGRAs).

In addition, if an issue with water quality is identified that is, or could, impact the use of the drinking water system, the issue could be documented in the Assessment Reports. If an issue is identified in the Assessment Reports, it will also include an issue contributing area (ICA) within the vulnerable area. This typically means that threat activities in the ICA that could contribute to that drinking water issue, could be identified as significant threats in a broader area. For example, if a nitrate issue is identified at or near a well, all threat activities that could contribute nitrates, such as application of fertilizer, agricultural source material, non-agricultural source materials, and sewage disposal systems could be significant drinking water threats in the broader issue contributing area.

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The *Planning Act* requires that municipal planning decisions be consistent with the Provincial Policy Statement, 2014. The Provincial Policy Statement provides municipalities the authority to protect, improve and restore the quality and quantity of water resources. Specifically, Section 2.2.1 includes the following provision:

*“Planning authorities shall protect, improve or restore the quality and quantity of water by...
...e. implementing the necessary restrictions on development and site alteration to:*

- 1. protect all municipal drinking water supplies and designated vulnerable areas;*
- 2. protect, improve or restore vulnerable surface and groundwater, sensitive surface water features and sensitive groundwater features, and their hydrologic functions.”*

The designated vulnerable areas delineated in the Assessment Reports align with the definition of “designated vulnerable areas” in the Provincial Policy Statement. These designated areas are defined as vulnerable, in accordance with provincial standards, by virtue of their importance as a drinking water source. Decisions on planning matters should consider information from the relevant local Assessment Reports. Municipalities are beginning to review the mapping in the Assessment Reports as part of their considerations when locating new land uses. Sample illustrations of vulnerable areas are included in Figures 1 and 2 below.

The Director’s Technical Rules are a provincial standard which were used to delineate vulnerable areas in approved Assessment Reports. Therefore, vulnerable areas delineated in Assessment Reports should be considered when making planning decisions in order to be consistent with the Provincial Policy Statement.

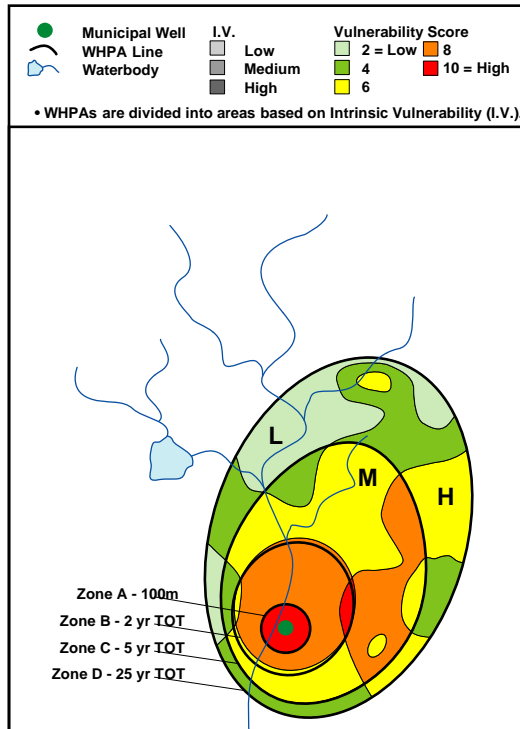
A municipality may also identify and protect sensitive groundwater features that are important locally, and/or important if the hydrologic function contributes to a sensitive groundwater recharge area or highly vulnerable aquifer. These sensitive groundwater features would fall under Section 2.2.1.e of the Provincial Policy Statement.

To better understand the delineation of vulnerable areas, vulnerability scores and how to determine the presence of significant drinking water threats, please refer to Module 2 in this series “Understanding Where Policies Apply” and consult with your local Source Protection Authority.

All existing appeal rights under land use planning legislation continue to apply. A planning decision to protect drinking water sources could still be appealed to the Ontario Municipal Board. Assessment Reports provide decision makers information used to make an informed decision in a sensitive area. Assessment Reports could be used to support decisions to restrict new uses in vulnerable areas.

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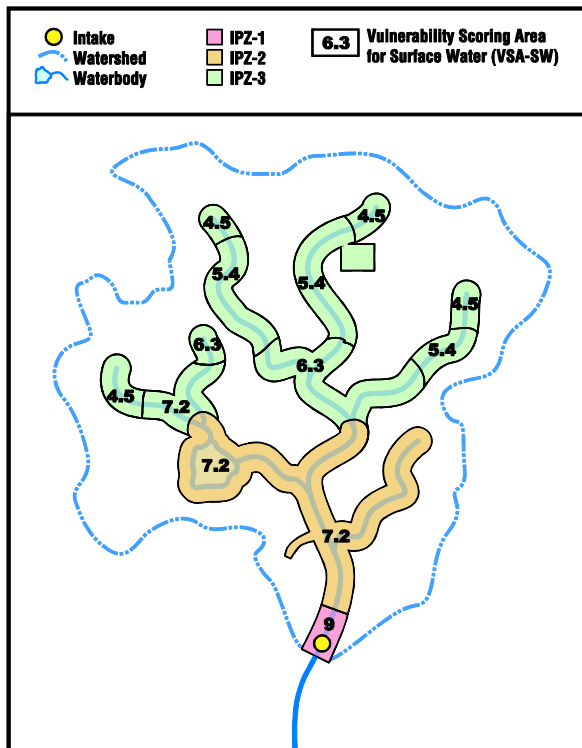
Figure 1: Illustration of a Wellhead Protection Area and Vulnerability Scoring



WHPA Vulnerability Scoring

- Overlay WHPA zones with groundwater vulnerabilities of low, medium and high
- Scoring decreases away from the well and with decreasing aquifer vulnerability
- Always score 10 in Zone A
- WHPA-B scores 10, 8 and 6 with high, medium and low vulnerability, respectively
- WHPA-C scores 8, 6 and 4
- WHPA-D scores 6, 4 and 2

Figure 2: Illustration of an Intake Protection Zone and Vulnerability Scoring



Example Vulnerability Scores for Intake Protection Zones Type C Intake

- Vulnerability scores decrease from IPZ-1 to IPZ-2 to IPZ-3
- Individual vulnerability scores are applied to the IPZ-1 and IPZ-2
- Variable vulnerability scores are possible within IPZ-3

6.2.2 Official Plan Updates to be Consistent with Provincial Policy Statement

Prior to Source Protection Plan approval, the planning approval authority should consider the information and mapping in the Assessment Reports to ensure that decisions are consistent with the Provincial Policy Statement, to protect drinking water supplies and designated vulnerable areas. Some municipalities have vulnerable area mapping that does not match the mapping in the Assessment Reports. The vulnerable area mapping in the Assessment Reports should be used when relying on 2.2.1.e of the Provincial Policy Statement. However, municipalities may also have a local interest in areas that were mapped using locally determined criteria.

Municipalities are required to periodically undertake a review and, where appropriate, update their planning documents. Prior to completion of the Assessment Reports, many municipalities were uncertain where their vulnerable areas were located. With the information from the Assessment Reports now available, municipalities can review the maps and update their planning documents to be consistent with the Provincial Policy Statement. Including vulnerable area mapping in Official Plans will also generate greater awareness about source protection and vulnerable areas amongst property owners, developers, real estate agents, lawyers, and the general public. Municipalities may also elect to be more restrictive and protect other drinking water sources, including non-municipal drinking water systems that are outside of the scope of the Assessment Reports.

Municipal Official Plan updates may include general or detailed policies, together with mapping of designated vulnerable areas to satisfy their obligations under the Provincial Policy Statement. Municipalities may also consider amending Official Plans to include provisions to make vulnerable areas subject to site plan control. Additionally, the Official Plan could be reviewed to determine whether further information is required in vulnerable areas in order for council to make an informed decision.

In developing Official Plan policies, municipalities may wish to consider the direction in the submitted Source Protection Plan, recognizing that the direction can change prior to final approval of the Plan. When the Source Protection Plan takes effect, municipalities may have a limited amendment, if any, to ensure conformity with the Source Protection Plan.

6.2.3 Planning Act and Development Application Review Prior to Source Protection Plan Approval – Supporting Information

Whether or not an Official Plan has been updated to be consistent with the Provincial Policy Statement, planning decisions must be consistent with the Provincial Policy Statement in the interim. In order for a municipality to make an informed decision on a development application, supporting documents may be requested from applicants to help determine if an application relates to vulnerable areas. The municipality may be required to amend the Official Plan to require any documentation currently not specified in the Official Plan or the *Planning Act*. Supporting documents, such as a disclosure report, hydrological/hydrogeological study, or a spill prevention and contingency plan, could be required to address significant drinking water threats, as part of a *Planning Act* or development application in vulnerable areas such as Wellhead Protection Areas, Intake Protection Zones, and Issue Contributing Areas. This information could

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also be included as part of a planning justification report in support of an application. This can be incorporated into the development review process, especially if your municipality has a development application checklist.

Requirements to submit documents to support an application must be entrenched in the Official Plan so that proponents are aware of the complete application requirements.

1) **Disclosure Report**

This report should detail the nature, activities and operations of the proposed development/use. It should describe:

- the nature of the proposed use,
- its associated required services and facilities (e.g. stormwater management facility),
- the threat activities and related operations to be conducted on-site, and
- the substances and their quantities to be used or stored on-site.

2) **Detailed Hydrological/Hydrogeological Study**

This study should be prepared by a qualified professional (e.g. hydrogeologist or hydrologist) with a designation of a P. Geo. or P. Eng. in the form of a technical report that uses professional standards and protocols acceptable to the Ministry of the Environment and Climate Change.

The study should:

- predict the net groundwater and surface water quality and quantity impacts likely to occur on the subject property, on down-gradient properties and on the municipal surface water intake or well,
- address cumulative impacts of development in the intake protection zones or wellhead protection areas, and
- include mitigating measures for the design, construction and post-construction monitoring of the proposed use.

Note: Where the impacts of the use cannot be adequately mitigated within an acceptable risk to surface or groundwater quality or quantity to the satisfaction of the municipality, the use should not be permitted.

3) **Spill Prevention and Contingency Plan**

This plan should outline design measures, facilities and procedures to avoid and mitigate the effects of spillage of any contaminants.

During development application review, municipal staff should provide information related to source protection to the proponent, to indicate whether the application is within a vulnerable area and that Source Protection Plan policies may apply.

6.3 *Municipal Planning Processes*

It will be important for municipal planning departments to understand source protection mapping and policies, so that Source Water Protection becomes integrated into regular planning processes.

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Planning decisions must conform to the Source Protection Plan policies as soon as the Source Protection Plan takes effect. Therefore, it is recommended that planners become familiar with any policies on List A and List B in the Source Protection Plan.

6.3.1 Planning Act/Development Applications Review Process

Source Protection can be considered in different steps of the development application process. For example, municipal councils may pass by-laws requiring pre-submission consultation with proponents and municipal staff before submitting most planning and development applications. Pre-consultation would be useful to allow municipal staff members to consult Assessment Report mapping and Source Protection Plans to determine if the application is in a vulnerable area and if threat policies apply before the applicant submits their formal application. This would flag applications that fall in vulnerable areas before the formal application submission, and allow proponents to make any changes needed or cease the application process altogether, if, for example the land use is prohibited by policies in the Source Protection Plan.

It will be important for municipal staff members who regularly review development applications to understand source protection mapping and policies, so that Source Water Protection becomes integrated into regular planning processes. It is recommended that these processes be established prior to Source Protection Plans taking effect. A flowchart that provides an example of the integration of source water into the planning process can be found in Figure 3. Many municipalities have development application checklists to ensure that the appropriate municipal staff members and, where needed, external agencies such as the local conservation authority have participated in the review process. An example of a checklist that could be used by municipal staff members to ensure source protection has been considered is found in Appendix A.

Additionally, it may be beneficial to require a source protection checklist as a requirement for a complete application. A municipality may also elect to update its existing checklist or incorporate questions into existing application forms. The *Planning Act* provides that persons applying for amendments to Official Plans or zoning by-laws submit any information or material that the municipal council may need, beyond the prescribed information. However, complete application submission requirements must be specified in the Official Plan. Therefore, in order to require source protection information to be submitted as part of a completed application, the Official Plan may need to be amended. Once the Official Plan is amended to require applicants to provide source protection information, the municipality may wish to create a checklist or form addressing source protection. An example of a checklist that could be required as part of a complete application to ensure Source Protection Plan policies are considered with *Planning Act* or development applications is provided in Appendix B. When the completed application is circulated to municipal staff, they can review the checklist or form to determine if significant drinking water threat policies apply. This could be accompanied by specific threat-related checklists, which are provided in Module 2 of the Implementation Guide, “Understanding Where Policies Apply”.

6.3.2 Site Plan Control

Site plan control can be used to address the layout of a site and ensure source protection planning matters such as waste disposal, grading and drainage, building and septic envelopes, and vegetated buffer strips are considered, and to ensure other features are provided and maintained. To use site plan control, the Official Plan must include provisions that allow site plan control by-laws in the appropriate areas. A local Official Plan provides general or specific provisions as to where site plan control applies and what classes of development are included. A municipality may want to include provisions to require site plan control for all or certain classes of development in all vulnerable areas delineated in the Assessment Reports, or only in vulnerable areas where threats could be significant. Many municipalities only use site plan control for certain classes of uses, and often single detached residential uses or agricultural uses are exempted from site plan control. Depending on the local circumstances, site plan control could be an effective tool to address the layout of sites in vulnerable areas. Table 1 provides examples of significant drinking water threat activities and how they could be managed by site plan control.

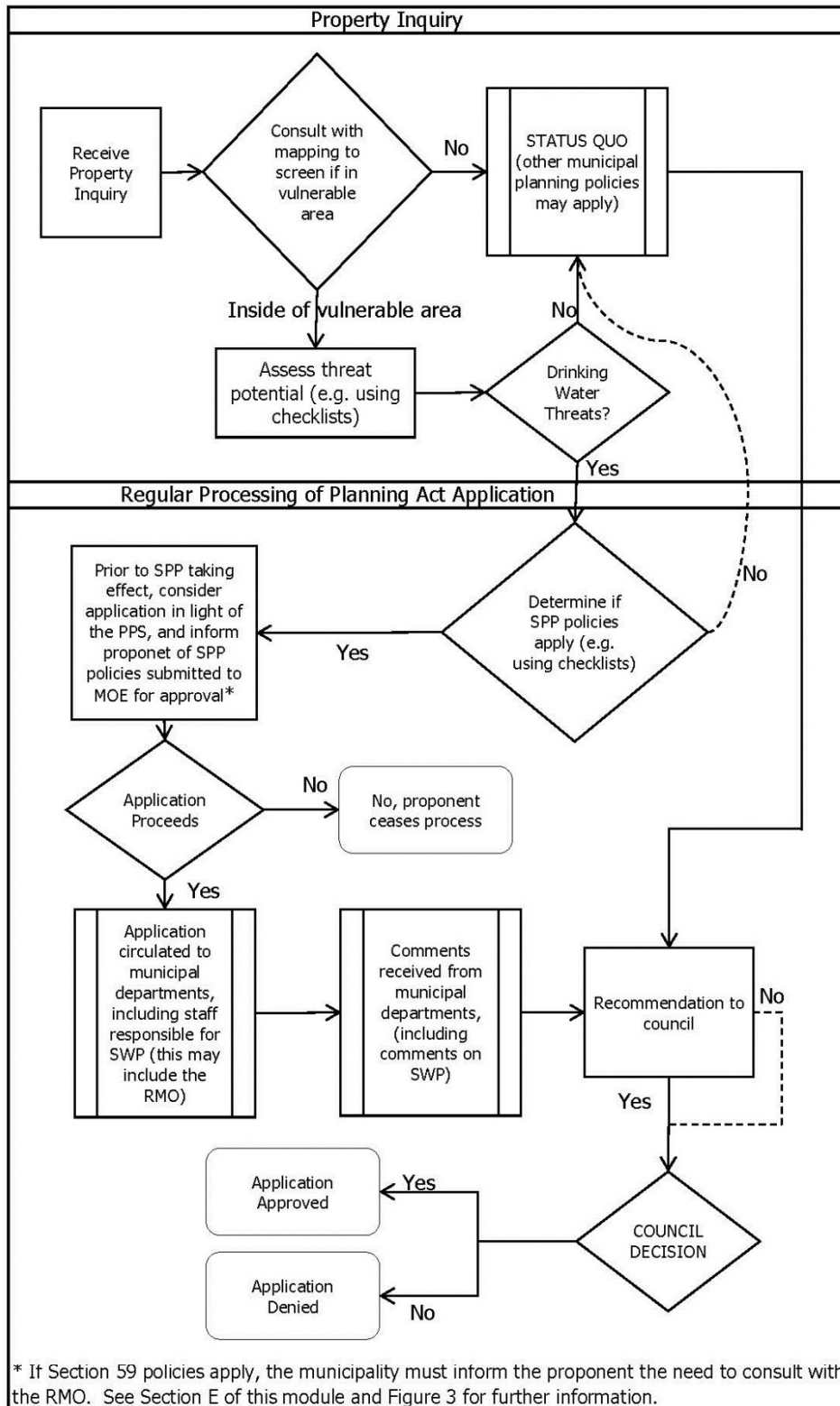
Site plan control will also be useful to implement Source Protection Plan policies, including cases in which a property is only partially within a vulnerable area, or where more than one vulnerability score applies. When a property is in a vulnerable area and site plan control is required, the municipality can ensure that significant threat activities associated with specific structures are not located within the vulnerable area, or within areas with the highest vulnerability scores. If the activity can be sited so that it is no longer a significant threat, then the activity ceases to be subject to Source Protection Plan policies – a benefit that should be emphasized to the proponent. For example, if a commercial property requiring a large parking lot is partially located in a Wellhead Protection Area where the application of road salt would be a significant drinking water threat, then site plan control could be used to ensure that the parking lot is located outside of the vulnerable area.

6.3.3 Holding By-Law

Holding by-laws allow for future land use or building but delay development until, for example, local services, such as roads, are in place. In order to use this planning tool, holding by-laws must be provided for in the municipal Official Plan. Holding provisions apply only for a limited time, and once the provisions have been met, the holding by-law is removed. This would therefore not preclude someone from modifying the activity at a later date, and thus, the use of holding by-laws for implementation of source protection policies may be limited. However, municipalities may choose to investigate the feasibility of holding provisions for source protection purposes.

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Figure 3: Application Process Considering Source Water Protection (Adapted from York Region)(Note: Lakehead Plan does not have RMO or Section 59 Policies)



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Table 1: Site Plan Control

Prescribed Threat	Example of Threat	Examples of Site Plan Control Requirements
Establishment of a waste disposal site within the meaning of Part V of the EPA	Storage of hazardous waste	Location of storage facility on parcel Size and capacity of storage facility
	Landfilling solid non-hazardous waste	Location of landfill facilities on parcel Setback of development
Establishment of a system that collects, stores, transmits, treats or disposes of sewage	Septic system	Location of septic tank on parcel Size and capacity of tank
	Discharge of untreated stormwater from a stormwater retention pond	Lot grading Capacity of retention pond
Storage of snow	Snow disposal site	Lot grading Location of dedicated snow storage Stormwater management plan
Storage of agricultural storage material	Manure produced and stored on a farm	Building envelope for storage facility Capacity of storage facility
Storage of non-agricultural source material	Storage of unprocessed plant waste from food processing facility	
Storage of commercial fertilizer	Storage of commercial fertilizer	
Storage of fuel	Industry storing fuel	
Storage of pesticide	Storage of pesticide at manufacturing plant	
Storage of DNAPLs and organic solvents	Storage of chemicals at an industrial facility	
Storage of road salt	Storage of road salt at a contractor's yard	Lot grading Stormwater management plan
Application of road salt	Parking lot	
The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard.	Farm animal yard	Location of yard Lot grading

6.4 Source Protection Considerations and Obligations After Source Protection Plans Take Effect

Source Protection Plans contain policies that manage or prohibit specific activities that are, or may become, significant threats to drinking water. Source Protection Plans are not land use plans, but rather plans that rely on other legislation for implementation, like the *Planning Act*. Policies in the Source Protection Plan that rely on land use planning authorities may need to be translated into appropriate land use planning restrictions. For example, a Source Protection Plan may specify “no handling and storage of road salt.” A land use planning restriction may state “no municipal works yards or large scale private works facilities”.

6.4.1 Activities versus Uses

The *Planning Act* provides the legislative framework for municipalities to regulate land uses, not specific activities occurring within these uses. Some of the threat activities prescribed for the *Clean Water Act* cannot be easily addressed through the land use planning framework. For example, municipal planning decisions cannot restrict specific activities such as the handling and application of agricultural source material, non-agricultural source material, commercial fertilizer, pesticides, or chemicals. In addition, the use of land for livestock grazing, pasturing, outdoor confinement areas, farm-animal yards and aquaculture generally do not qualify as ‘development’ or ‘site alteration’ as defined in the Provincial Policy Statement. Therefore, to address these activities through land use planning, a decision would have to be made to restrict all of the uses where these activities might occur. For example - to prohibit an activity like the spreading of agricultural source materials through land use planning, it would be necessary to prohibit agriculture in the designated area, effectively prohibiting many other activities that may pose no risk to sources of drinking water, thus causing a significant impact on the local economy. Committees considered these limitations in the legislation when developing policies, so the Source Protection Plan may or may not rely on *Planning Act* authorities depending on the local circumstances.

6.4.2 Additional Restrictions

Outside of the implementation of Source Protection Plan policies, municipalities are not limited to addressing prescribed drinking water threats and can make their own decisions about which land uses are incompatible with the protection of vulnerable areas for drinking water sources. For example, a municipality may review the maps in the Assessment Reports and determine that they want additional restrictions on land uses or increased setbacks in vulnerable areas. If challenged, the municipality would be responsible for defending these decisions and showing how the decision is consistent with the Provincial Policy Statement and balances provincial interests.

6.4.3 Municipal Act Authorities

Municipalities may also use existing authorities under the *Municipal Act* to establish by-laws to control activities that fall within their sphere of jurisdiction, for example, the disconnection of downspouts or household hazardous waste collection. Once a Source Protection Plan is

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approved, a municipality may be required to establish by-laws using their authority under the *Municipal Act* to satisfy the obligations of the applicable significant threat policies. These policies would be found on List E and/or List J located in the Appendix of your local Source Protection Plan.

6.5 Policies Affecting Land Use Planning- Legal Effect and Effective Date

6.5.1 Legal Effect of Source Protection Plans

Part III of the *Clean Water Act* specifies the legal effect of each type of policy. Under the *Act*, some policies can be legally binding on implementing bodies while others cannot. Each Source Protection Plan has an Appendix which contains the lists of policies identified for each legal effect provision of Part III. The purpose of each list is to ensure that the appropriate provisions of Part III of the *Clean Water Act* are applied to a policy. In order to determine which Source Protection Plan policies rely on land use planning tools, municipal planners should refer to **Lists A and B** in the Appendix of the Source Protection Plan. **List A** sets out the significant threat policies in the plan that affect decisions under the *Planning Act* and *Condominium Act*. **List B** sets out the moderate and low threat policies that affect decisions under the *Planning Act* and *Condominium Act*.

Where the Source Protection Plan policies rely on authorities in the *Planning Act*, and *Condominium Act*, municipalities and local boards are required to make decisions that conform with significant drinking water threat policies (policies on **List A** as described above), and have regard to moderate and low threat policies (policies on **List B**). Please note that the legal effect lists in the Appendix to the Source Protection Plan give the policies in the Source Protection Plan their legal effect. Many policies are included on List A, but not included on List B. If a policy only appears on List A, then the policy has the legal effect “conform with”. In order for a policy to have the legal effect “have regard to” the policy would have to be included on List B, otherwise the policy does not apply to areas were moderate or low.

6.5.2 Effective Date of Source Protection Plans

Source Protection Plans will take effect on the day they are posted on the Environmental Registry, or on a later effective date specified in the local Source Protection Plan. This effective date triggers conformity requirements under the *Planning Act* and *Condominium Act*. Decisions on planning matters made by a municipality or planning authority, including the Ontario Municipal Board, on or after the effective date must conform to applicable significant drinking water threat policies, and have regard to moderate and low drinking water threat policies. For example, if an applicant applied to change a land use designation to one that was prohibited through a Source Protection Plan policy, the planning authority would not be able to approve the change.

The effective date of the Lakehead Source Protection Plan was October 1, 2013.

In addition to planning decisions being affected by the Source Protection Plan when it takes effect, municipalities will also need to review their planning documents (Official Plan, zoning

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by-law) to ensure conformity with significant drinking water threat policies. Timeframes are established in each Source Protection Plan for Official Plan and zoning by-law conformity, and were determined locally during discussions between the Source Protection Committee and municipalities in your Source Protection Area during plan development. The timeframe in most Source Protection Plans follows the same dates as Official Plan and zoning by-law reviews and amendments mandated by Section 26 of the *Planning Act*. Municipalities are encouraged to work with their local Source Protection Authority to determine how to bring Official Plans and zoning by-laws in compliance with significant threat policies.

Municipalities should be aware of Source Protection Plan policies prior to the effective date of the Source Protection Plan. Additionally, municipalities or planning authorities should prepare to have the necessary internal processes in place to be able to meet their legislative obligations when plans take effect.

6.6 Official Plan and Zoning By-law Conformity

Municipalities will need to review and, where appropriate, update or amend Official Plans to ensure conformity with significant threat policies in Source Protection Plans. Municipalities will also need to review and, where appropriate, amend zoning by-laws to conform to significant threat policies.

In many cases, Source Protection Plan policies are written in a way that allows municipalities to amend Official Plans and zoning by-laws during the next scheduled update.

6.6.1 Existing Official Plan Mapping Differs from Assessment Report Mapping of Vulnerable Areas Before Official Plan Amendments

Once the Source Protection Plan takes effect, municipal decisions must conform to significant drinking water threat policies in the Plan. For the purposes of the Provincial Policy Statement, the Assessment Report mapping of vulnerable areas is considered to be the provincial standard. Other areas may be of importance locally. If an application relates to threat activities within vulnerable areas delineated in the Assessment Reports, it will be important to identify if any significant drinking water threat policies will apply. Assessment Report mapping is available from local Source Protection Authorities, or through online copies which can be found through Conservation Ontario's website.

6.6.2 Policy Approaches to Conform with Source Protection Plans

If a Source Protection Plan policy prohibits, for example, storage of commercial fertilizer, then depending on the local circumstances, the municipality could include a variety of policy approaches in the Official Plan to conform with the Source Protection Plan direction (either alone or in combination):

- recommend zoning using setbacks from a vulnerable area,
- include Official Plan provisions to ensure that the vulnerable area is subject to site plan control,

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- designate the vulnerable area as a natural vegetated buffer strip or other use that would prevent the erection of buildings and structures,
- use an overlay designation or provide provisions to use an overlay designation in the zoning by-law to ensure source protection matters are considered in vulnerable areas, and
- include mapping of vulnerable areas delineated in the Assessment Reports.

A zoning by-law could implement the Official Plan direction in a variety of ways:

- prohibit use of land, buildings and structures in vulnerable areas,
- impose setbacks from vulnerable areas,
- continue to allow agriculture as a main use, but prohibit certain accessory uses or structures, such as structures intended to store agricultural materials in specific areas,
- use a vegetated buffer strip zone,
- limit the size of additions or prohibit additions in vulnerable areas, and
- provide an overlay zone to define a building envelope, to restrict the size, location or nature of the development, or to impose other restrictions as may be deemed necessary by the municipality.

6.6.3 Policy Examples and Official Plans and Zoning By-laws

Land use planning policies used to implement Source Protection Plans will vary across the province. Many municipal Official Plans already contain policies that consider the protection of water quantity and quality. Other municipalities may wish to refer to the following Official Plans and zoning by-laws to see examples of how water protection has been considered:

- Norfolk County Official Plan – Section 6.3 is devoted to source water protection; draft zoning by-law section 3.35 is devoted to wellhead protection.
- Region of Waterloo Official Plan – Chapter 8 is devoted to source water protection (note: as of January 24, 2011, the plan in its entirety was under appeal before the OMB).
- City of North Bay Official Plan – Section 2.1.14.4 provides for complete application requirements for development in IPZ-1.
- Town of Innisfil Official Plan – Section 4.3 has policies for the protection of IPZs; draft zoning by-law section 3.51 has policies related to WHPAs and IPZs.
- City of Barrie Official Plan – Section 3.5.2.3.3 addresses groundwater protection and refers to wellhead protection areas; Section 3.5.2.3.4 refers to the protection of significant groundwater recharge areas.
- City of Kawartha Lakes Oak Ridges Moraine Official Plan – Section 5.4 sets out prohibited uses in WHPAs; Section 5.5 sets out provisions for areas of high aquifer vulnerability.

Other examples can be found through municipalities which were affected by the Oak Ridges Moraine Conservation Plan which required that each of the 32 municipalities on the Oak Ridges Moraine review and, where necessary, amend or update Official Plans and zoning by-laws to implement policies of the Oak Ridges Moraine Conservation Plan, including policies to protect the quality and quantity of water.

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6.6.4 Part IV of the Clean Water Act for Planners

Part IV of the *Clean Water Act* provides municipalities with the authority to regulate significant threat activities through Prohibition (Section 57), Risk Management Plans (Section 58) and Restricted Land Use (Section 59).

The Lakehead Source Protection Plan did not include any policies related to Part IV of the *Clean Water Act*; therefore, Risk Management Officials or Risk Management Inspectors are not required under the Lakehead Source Protection Plan.

6.6.5 Appeals to the Ontario Municipal Board

Once approved, the Source Protection Plan cannot be appealed; however, decisions under the *Planning Act* or the *Condominium Act* can be appealed to the Ontario Municipal Board. Appeals could be made to the Ontario Municipal Board regarding the following:

- i. amendments proposed to the municipal Official Plan and zoning by-law to conform with the Source Protection Plan, and
- ii. decisions on applications, including when the decision is based on SPP provisions.

It is important to note that Ontario Municipal Board decisions must also conform with significant drinking water threat policies in the Source Protection Plan (policies on List A), and have regard to policies in the Source Protection Plan that rely on authorities under the *Planning Act and Condominium Act* and that apply in areas where threats could be moderate or low.

6.6.6 Annual Reporting

Municipalities will have responsibilities related to annual reporting, which may include reporting to the Source Protection Authority on land use planning activities related to source protection. Please see Module 4 in this series “Annual Reporting and Information Management” for more information on annual reporting.

**Appendix A – Municipal Development Checklist
(adapted from York Region)**

Module 3 – Land Use Planning



File No.

Type of Application: _____

Applicant: _____

Location: _____

Date of Site Visit (if applicable): _____

Application Considerations	Comments	
	Yes	No
Archaeological Comments:		
Site Contamination Comments:		
Environmental Considerations Comments:		
Water/Wastewater Servicing Comments:		
Land Use Compatibility Comments:		
Transportation Comments:		
Source Water Protection Comments:		
Official Plan Conformity Comments:		
Zoning by-law Conformity Comments:		
Additional Comments:		

Are additional comments attached? YES NO

Appendix B: Source Water Protection Development Application Checklist

Module 3 – Land Use Planning



SOURCE WATER PROTECTION INFORMATION

Is the subject property within a Wellhead Protection Area (WHPA)¹? YES NO

IF YES, please complete the rest of the Screening Checklist and email, mail or fax it to the address below. Municipal staff will respond to you in 2-3 business days.

Mail checklist to: ATTN: Mr. Planner, Planning Department, Example Municipality, #1 Municipal Street, City, Ontario, A1B 2CD
 Email checklist to: mrplanner@example.ca
 Fax checklist to: (555) 555 - 5555

WELLHEAD PROTECTION AREA²:

WHPA-A

WHPA-B

WHPA-C

PROPERTY & CONTACT INFORMATION

Source Protection Area³: _____ Date: _____
 Name of Applicant: _____
 Contact Information: Address: _____
 Telephone/Cellular Number: _____
 Email Address: _____
 Municipal Address of Subject Property: _____
 Legal Description of Subject Property: _____
 Lot/Part No.: _____ Registered Plan No.: _____
 Lot & Concession: _____

PROPOSAL

¹ This form could be modified to include “intake protection zone”, “issue contributing area” or other vulnerable areas where land use planning policies apply

² Additional WHPAs may need to be added.

³ This field is only required if municipality is located in two or more source protection areas

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Classification

	New Structure		Geothermal System ⁴ (Transport Pathway)
	New Land Use/Change of Use		New or Replacement Septic System
	Expansion OR Conversion of an Existing or Previous Approved Land Use or Structure		New Well ⁵ (Transport Pathway)
	Single Residential		Industrial
	Multi – residential (incl. subdivision)		Commercial (incl. mixed use)
	Agricultural		Institutional.

Brief Description of Proposal and/or Activity

PLANNING INFORMATION

OFFICIAL PLAN DESIGNATION: _____
 OFFICIAL PLAN DOCUMENT NAME: _____
 CURRENT ZONING: _____

POTENTIAL THREATS ASSOCIATED WITH PROPOSED ACTIVITY

⁴Section 27, Ontario General Regulation 287/07 requires the municipality to notify the SPA and SPC when a new transport pathway may be created

Module 3 – Land Use Planning

A drinking water threat as defined under the *Clean Water Act, 2006* as “an activity or condition that adversely affects or has the potential to adversely affect the quality or quantity of any water that is or may be used as a source of drinking water”.

Please note that activities that are, or may be, significant drinking water threats will vary in each vulnerable area.

*PLEASE CHECK ALL ACTIVITIES THAT MAY BE ASSOCIATED WITH THE DEVELOPMENT PROPOSAL
WITHIN THE VULNERABLE AREA:*

	1. FUEL HANDLING & STORAGE
	a. Includes both liquid fuel and fuel oil
	b. Home heating, retail outlets, bulk plant, marina, farm
	2. CHEMICAL HANDLING & STORAGE
	a. Automotive and automotive related businesses that use paints, degreasers, chemicals etc.
	b. Dry cleaning establishments
	c. Industrial manufacturing and processing (e.g. using furniture stripping products, paints, chemical processes)
	d. Industrial strength cleaning agents
	e. De-icing of aircraft
	3. APPLICATION, HANDLING & STORAGE OF ROAD SALT
	4. SNOW STORAGE
	5. WASTE DISPOSAL
	a. Raw, untreated liquids and solids that are pumped out of septic systems and holding tanks
	b. Disposal of petroleum refining waste; hazardous, liquid and industrial waste; municipal waste, industrial and commercial waste; PCB waste
	c. Mine tailings
	6. STORMWATER MANAGEMENT
	a. Stormwater management facility (treatment, retention, infiltration or control of stormwater)
	b. Car or truck washing facility
	c. Sewage treatment plant effluent discharge (e.g. lagoons)
	d. Sewer systems and related pipes
	7. SEPTIC SYSTEMS
	a. Small septic for residential or small-scale commercial/industrial/institutional
	b. Large septic system (>10,000 L/day) for commercial/industrial/institutional
	8. AGRICULTURAL
	a. Application, handling and storage of fertilizers and pesticides
	b. Application, handling and storage of agricultural and non-agricultural source material (e.g. biosolids)
	c. Grazing and pasturing of livestock

7.0 Module 4: Annual Reporting and Information Management

This module aims to provide information on Annual Reporting and information management requirements for Source Protection Plan implementation to municipalities or other implementation bodies. Information has also been included regarding the data management associated with source water protection in general.

Annual Reporting makes up the first section of this module and includes a summary of requirements under the *Clean Water Act, 2006*, as well as how to fulfill these obligations. The Annual Reporting requirements are made through the *Clean Water Act*, specifically Sections 46 and 81, as well as Sections 52 and 65 of Ontario Regulation 287/07. Reference should be made to the legislation for exact wording and provisions.

Data and information management are discussed in the second section of this module. The module also explores how data and information management pertain to Annual Reporting and general source water protection.

Data is not static; therefore changes may be made to Annual Reporting and information management requirements in the future. The Ministry of the Environment and Climate Change will be developing requirements and/or recommendations to assist with Annual Reporting or information management. The information contained in this module is current as of the time of writing.

7.1 Annual Reporting

The *Clean Water Act* requires that Risk Management Officials, Source Protection Authorities, other implementing bodies, as well as the Minister of the Environment report annually on the implementation of Source Protection Plans. The goal of annual reporting is to track and advise the public that the implementation of the Source Protection Plans, and their respective policies, are protecting sources of Ontario's drinking water.

The *Clean Water Act* prescribes the Annual Reporting process flow, as summarized in Figure 1 and described here. Ontario Regulation 287/07 requires that all implementing bodies report directly to the Source Protection Authority on the actions taken to implement the Source Protection Plan. The Source Protection Authority combines the information from the various implementing bodies into one succinct report for the Source Protection Area. Once complete, the report is provided to the Source Protection Committee for commenting. All comments provided by the Source Protection Committee are incorporated into the final version of the report provided to the Director. Upon submission to the Director, the Source Protection Authority shall make the report publicly available as soon as reasonably possible.

Module 4 – Annual Reporting and Information Management

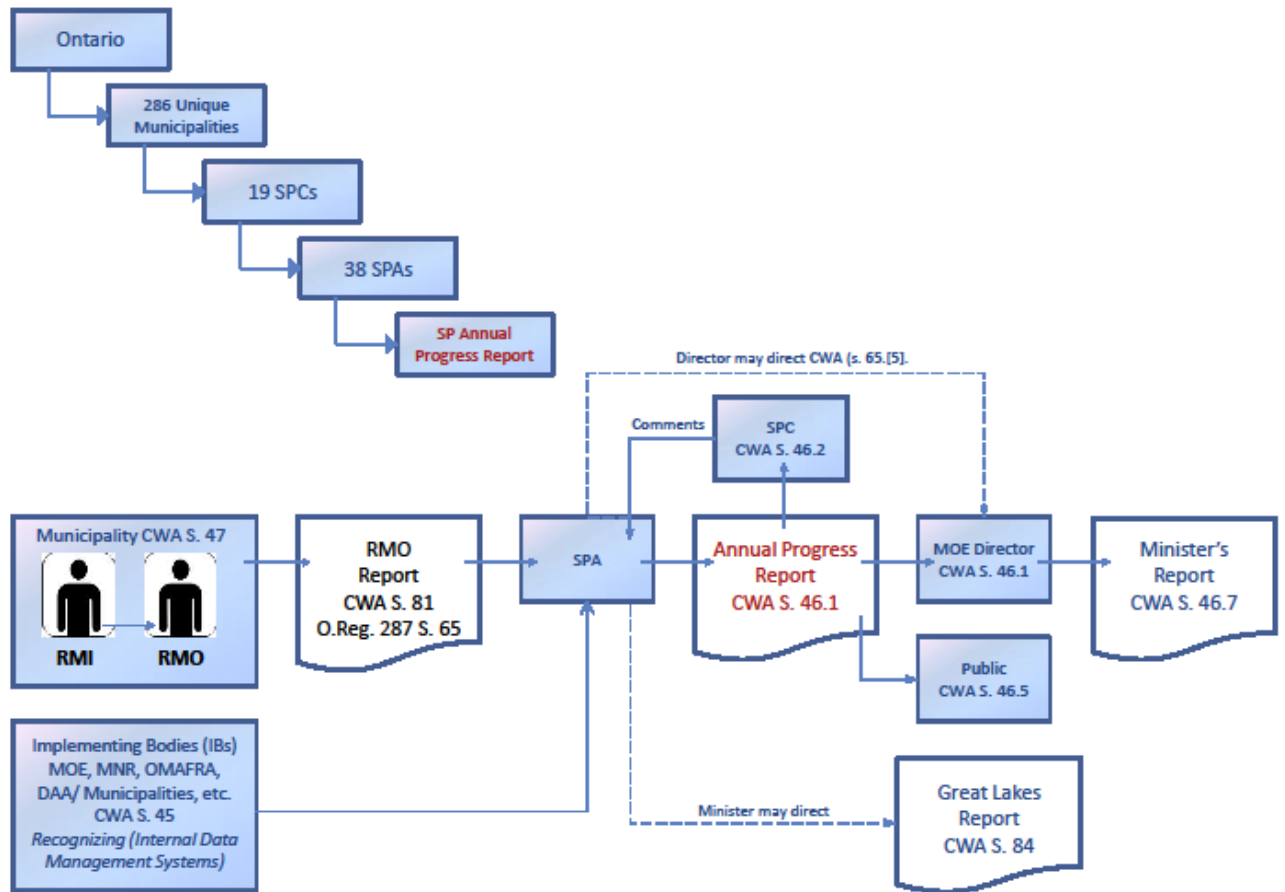


Figure 1: Annual Reporting Process

Module 4 – Annual Reporting and Information Management

Annual Reports describe the measures taken to implement the source protection plans, ensure activities cease to be significant drinking water threats, and ensure activities do not become significant drinking water threats. The goal of the Minister's Annual Report is to provide a provincial larger scale picture of all the measures taken.

There are two separate and distinct annual reporting processes that need to be completed under the requirements of the *Clean Water Act* in order for the Ministry of the Environment and Climate Change to complete its Annual Report for the public. The general contents of the Annual Progress Report are outlined in Section 65 of O. Reg. 287/07, and the general contents of the Section 46 Annual Report are outlined in the monitoring policies of each source protection plan.

- 1 Under Section 81 of the *Clean Water Act*, annual reporting focuses on the implementation of Part IV powers and is completed by the Risk Management Official. The Province is currently developing a reporting mechanism to facilitate Section 81 Annual Reporting.
- 2 Section 46 Annual Reporting focuses on the implementation of the remaining source protection plan policies and includes a summary of the Risk Management Official Annual Report. The general contents of the Section 46 Annual Report are outlined in Section 65 of Ontario Regulation 287/07.

The information required to complete the Section 46 Annual Report will be provided by the implementing bodies to the source protection authority. Your local source protection authority will be providing additional details on the information required to complete Section 46 Annual Reporting. The Ministry of the Environment and Climate Change is in the process of creating guidance – which could come in the form of templates, software, or forms – for long-term annual reporting assistance. The local source protection authorities may also provide templates or forms in the interim to assist with annual reporting; however, source protection authority data collection will continue along with the Ministry of the Environment and Climate Change data collection once in place. Data collection by the source protection authority may be more extensive than what the Ministry of the Environment and Climate Change requires. The source protection authority needs to gather information to assist the source protection committee in assessing the effectiveness of source protection plan policies and gauging the need for revisions in the future.

The Lakehead Source Protection Authority will be required to submit their first annual report to the Province by May 1, 2016. The implementing bodies were required to submit their first annual report to the Source Protection Authority on February 1, 2014.

The implementing bodies of Lakehead Source Protection Plan that will be required to submit annual reports to the Source Protection Authority include the Municipality of Oliver Paipooonge and the Thunder Bay District Health Unit.

Reporting templates for the implementing bodies of the Lakehead Source Protection Plan are included in Appendix A.

Module 4 – Annual Reporting and Information Management

The two separate annual reporting processes are discussed in greater detail later in this module.

7.1.1 Section 46 Annual Reporting

Legislated Requirements

Section 46 of the *Clean Water Act* requires that the Source Protection Authority annually prepare and submit a report to the Director that describes the measures taken to implement the Source Protection Plan. The first report will begin the day the plan takes effect and will end on December 31 of the second calendar year following the year the plan takes effect. The report needs to be submitted to the Director by May 1 in the year following the year for which the report was written.

The first reporting period for the Lakehead Source Protection Plan that was approved on January 16, 2013, with an effective date of October 1, 2013 would be from October 1, 2013 to December 31, 2015 and would be submitted to the Director by May 1, 2016. The Director may require that the report be prepared using an approved form and/or specific software.

Section 46 of the *Clean Water Act* requires the Source Protection Authority's Annual Report contain the following:

- a description of the measures that have been taken to implement the Source Protection Plan, including measures taken to ensure that activities cease to be significant drinking water threats and measures taken to ensure that activities do not become significant drinking water threats;
- a description of the results of any monitoring program conducted in accordance with Section 45 of the *Clean Water Act*;
- a description of the extent to which the objectives set out in the Source Protection Plan are being achieved;
- other such information as prescribed by the regulations; and
- a copy of the comments supplied by the Source Protection Committee, if any were provided.

Section 52 of Ontario Regulation 287/07 contains a list of the other information that is prescribed by the Regulations to include in the Annual Report. The list includes:

- if the Source Protection Plan sets out a policy that specifies a date by which a particular action shall be taken by a person or body, and the person or body fails to take that action by that date, a description of the failure and the reasons for the failure;
- description of any steps taken during the reporting period to address any deficiencies in the information that was used in developing the Assessment Report set out in the Source Protection Plan;
- summary of the report prepared and submitted by the Risk Management Official under Section 81 of the *Clean Water Act* for the same calendar year to which the report under Section 46 of the *Clean Water Act* applies; and
- any other information that the Source Protection Authority considers advisable.

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Section 22 of the *Clean Water Act* requires Source Protection Plans to include monitoring policies for significant drinking water threat policies. The Source Protection Plan may also include monitoring policies to monitor activities or conditions that are moderate or low threats to prevent them from becoming significant and to monitor drinking water issues.

Much of the information required to prepare this report will come from the monitoring policies that accompany each significant drinking water threat policy. The monitoring policies that accompany each significant drinking water threat policy are legally required to be conducted by public bodies designated as being responsible for the monitoring policy under Section 45 of the *Clean Water Act*.

Certain monitoring policies may require Annual Reporting, although some may only require a one-time report on a certain event or order. These policies will mainly focus on the progress of implementation of the significant threat policy. Monitoring policies provide information to support the Annual Reporting requirements of the Source Protection Authority, and help the Source Protection Committees gauge policy effectiveness. Additionally, these policies include specific dates by which the implementing body is required to report to the Source Protection Authority to facilitate the Annual Reporting process.

Public bodies, including municipalities, local boards, Conservation Authorities, a ministry, board, agency, or official of the Government of Ontario may be designated as implementing bodies for monitoring policies. If designated, these public bodies must conform to obligations set out in monitoring policies as stated in Section 45 of the *Clean Water Act*. The information gathered from monitoring policies is an essential part of the material that will be used to prepare the Annual Report. However, the information generated from monitoring policies is not the only information Source Protection Authorities can use to prepare the Annual Report. Monitoring policies that a municipality must conform to can be found in the Source Protection Plan appendix that designates the legal effect of each policy.

Monitoring policies will vary depending on the significant threat, the implementing body and the policy tool used to manage the threat. At a minimum, a monitoring policy may require that you report on actions taken to implement a policy. If a policy has not been implemented, you may be required to report on why implementation has not yet occurred. Many Source Protection Authorities are working with their Source Protection Committees to determine the information that should be collected for monitoring policies. In order to ensure you are collecting the appropriate data, it is important to consult with your Source Protection Authority. Examples of potential reporting requirements, based on the policy tool used, are found in Table 2.

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Table 1: Monitoring Policy Requirement Example

<i>POLICY TOOL</i>	<i>REQUIREMENT EXAMPLE</i>
<i>Planning Act Tools</i> (e.g. Official Plan)	Copy of Official Plan or zoning by-law amendment Date Official Plan or zoning by-law amended Number of approvals issued under the <i>Planning Act</i>
Specify and Promote Best Management Practices	Management plan updated (e.g. salt management plan, stormwater management plan, pesticide management plan) Date management plan updated or comes into effect
Education	Type of program (e.g. mail-out, open house, public service announcements, site visits, hazardous material collection, etc.) Number of persons contacted or number of participants Location of participants or event
Establish Stewardship Programs	Type of stewardship (e.g. fencing along agricultural properties, creation of buffer zones, etc.) Number of landowners contacted Number of projects completed Amount of land impacted (hectares)
Incentives	Type of Program (fuel storage upgrades, septic upgrades*, agricultural best management practices, etc.) Total amount of funding made available Number and locations of funded projects

**Note that septic systems are now managed through the Ontario Building Code; however, many Source Protection Plans have policies that directly reference the Ontario Building Code and septic inspection program, including monitoring policies related to the outcomes of septic inspection programs.*

As part of the Source Protection Plan implementation, your Source Protection Authority will determine what information is required to be collected to comply with the significant drinking water threat monitoring policies under Section 22 of the *Clean Water Act*. The Source Protection Authority will then communicate this information to each municipality and work with you to set up a process for the information transfer. It is highly recommended that you contact the Source Protection Authority prior to setting an information collection process to ensure the system meets the reporting needs of both parties.

7.1.2 Municipal Annual Reporting Process to the Source Protection Authority

Since data and other information will be collected for multiple purposes, it will be important to establish internal procedures to facilitate the process. Procedures need to be established for data collection and data transfer to the Source Protection Authority. Data collection procedures will vary based on the Source Protection Plan policy; procedures for transferring data should be established through meetings with the Source Protection Authority.

Information generated and collected outside of source water protection may also be considered by Source Protection Authorities during the Annual Reporting process. Some examples include private well data and location of septic systems. Section 87 of the *Clean Water Act* includes provisions that allow Source Protection Authorities to ask for information related to a drinking

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water threat from public bodies. This includes copies of any documents or records related to source water, including technical studies and records related to drinking water threats.

Procedures will need to be set up in order to ensure proper maintenance of data. The specific procedures are up to the municipality; however, it is important to stress that maintaining information is key. Proper documentation is not only good practice, but it is also needed in case of appeals to the Environmental Review Tribunal or Ontario Municipal Board.

The following internal procedures will need to be decided upon:

- which data is collected;
- which data is inputted;
- who enters the data;
- how often data is entered;
- how often all data is summarized; and
- how log books and other notebooks are kept and where they are kept.

The tasks involved with data collection and Annual Reporting are ongoing. Municipal (Section 46) Annual Reporting is summarized in Figure 3. Some of the key tasks are as follows:

- determining what data to collect;
- establishing a data collection method;
- developing data standards (e.g. units always reported in km² vs. ha);
- developing a database schema;
- compiling a database of data collected;
- assigning staff members with various data collection tasks; and
- determining how data will be stored.

In order to provide the required reports under the *Clean Water Act*, staff will need to be in place to complete those reports. Staff time must be taken into consideration for these additional requirements. Keep in mind that the level of effort needed to produce a report can be reduced by ensuring the required information is collected on an on-going basis.

When considering the staff that would be best suited to complete the reporting requirements, it is important to consider what their training entails. It may be beneficial to ensure that the staff member who completes these duties is proficient in certain software that will facilitate the reporting. In addition, the staff member should have some knowledge of the Source Protection Plan in general to ensure the reporting requirements follow the appropriate methodology as set forth by the local Source Protection Authority and the Ministry of the Environment and Climate Change.

Figure 2 provides a sample thought process to follow when developing and setting-up internal procedures to comply with Annual Reporting requirements. It is recommended that the Source Protection Authority is consulted prior to setting-up internal procedures to comply with Annual Reporting requirements. Once information needs have been established, the various departments responsible for Annual Reporting data collection will need to be consulted. The consultation process will make each department aware of their reporting responsibilities. From there, the various departments will need to integrate the Annual Reporting requirements into everyday

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business practices. The approach taken to integrate Annual Reporting into everyday practices will vary depending on the municipality. Once the internal procedures have been put in place, and the Source Protection Plan is approved, the Annual Reporting process flow begins. The various departments will work together or report back to the main department responsible for source water protection implementation for report compilation. Once the report has been prepared, it may need to go to council for approval prior to submission to the Source Protection Authority by the date specified in the Source Protection Plan.

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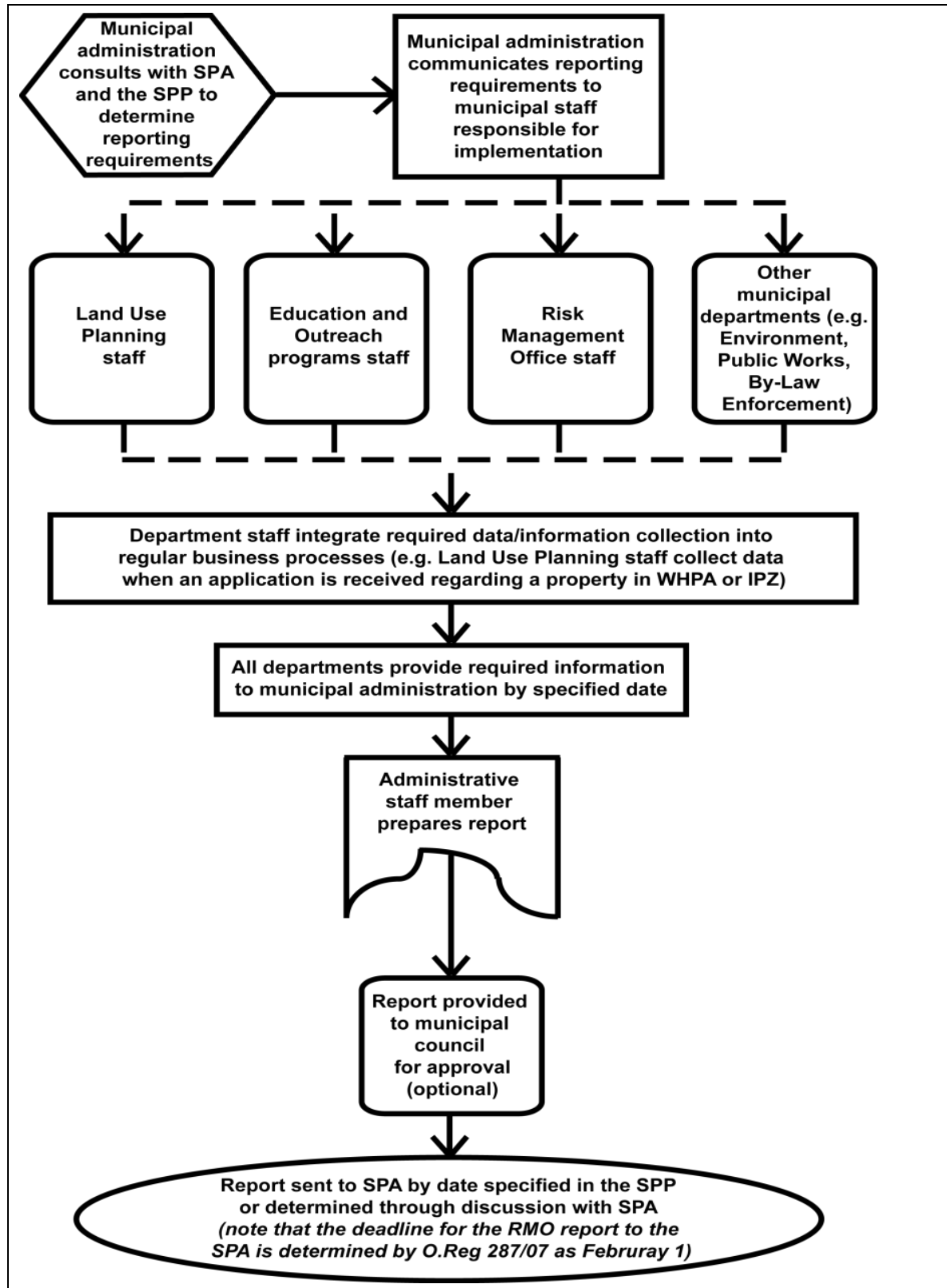


Figure 2: Example Procedures for Municipal Annual Reporting to the SPA (Note the Lakehead Source Protection Plan does require Risk Management Offices or Risk Management Officials (RMOs).)

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Source Protection Plan implementation involves municipal staff such as planners, administrative staff for reporting on applications received, and by-law enforcement officers for some violations that are relevant to reporting back to the Source Protection Authority on monitoring policies.

If your municipality has an Information Management department, these staff members should be consulted for assistance in determining data requirements as well as data collection and storage methods. Your municipality may have database software available that can be used for Source Protection Plan purposes. Additionally, Information Management staff with database knowledge may be able to develop a data schema and create your database structure.

It may be necessary to train staff members who will be required to implement source water protection along with regular business about source water protection data management. For example, land use planning staff may need training on where mapping on Source Protection Plans can be found. Your municipality may need to integrate source water protection with municipal mapping and your local Source Protection Authority may be able to assist with this.

GIS staff will be of great assistance when dealing with source water protection data. Depending on the scope of the workload, hiring a GIS staff member may not be feasible; however, in larger areas with a vast number of threats, it could be an option. Staff knowledge of a database program consistent with municipal needs is beneficial when it comes time to input all necessary data. If your municipality does not have GIS capabilities it is recommended that you reach out to your Source Protection Authority for help and advice. Source Protection Authority staff will be able to guide you in alternate data recording methods that will facilitate an easy transfer of data between agencies for implementation purposes. It is noted that the Municipality of Oliver Paipoonge engages the services of the Lakehead Region Conservation Authority to provide a mapping service to them which includes providing mapping data related to Source Water Protection. The City of Thunder Bay has also been provided the GIS layers related to the delineation of the IPZs related to the Bare Point Water Treatment Plant.

Several items may be beneficial to reporting and record keeping. Certain computer software will be of benefit to input data in a form that is easily transferable to the Source Protection Authority. At the very least, a spreadsheet program will be required, such as Microsoft Excel. Some more efficient and usable programs include database programs, such as Microsoft Access. Your municipality may also utilize software that is already available in your office and can be tailored to store and report information relevant to source water protection. In the future, the Ministry of the Environment and Climate Change may also require the use of certain software and formats for this information; however, there are no current requirements.

Technological items, such as handheld GPS devices, can also facilitate Annual Reporting. GPS coordinates will be valuable when completing the Annual Report. It is advisable that GPS coordinates be taken at each threat location when completing source water protection tasks.

In addition to this software, you will require staff that can use it effectively. This may involve including “knowledge of ____ software an asset” in the job advertisement or providing staff training to current staff members.

Module 4 – Annual Reporting and Information Management

At the bare minimum, it would be helpful for reporting purposes to have a portable GPS device, a simple database program and a GIS enabled mapping program. The GPS device will allow coordinates to be taken at each location and can be used in a GIS program to spatially display information and correlate it to other features. A simple database will allow for the management of data. As an example, most Conservation Authorities and Source Protection Authorities use ESRI software for GIS mapping.

Your municipality may want to use software that will integrate a variety of business processes in one location. For example, by using Information, Planning and Conservation System (iPaC) or Cityview software to integrate development permitting and risk management in one central location. Your municipality may already have software that can be modified to collect other data required for source water protection purposes.

In addition to assisting with the collection and storage of data, a database program can also assist with the information management lifecycle. A database can be setup to retain and dispose of records in a 15 year cycle. The reporting required will be much more streamlined if data is well organized within a database structure, rather than located in multiple formats and various locations. Your Source Protection Authority may have specific reporting requirements beyond those of the Province. Data from the municipality must be in either a format that can be used directly by the Source Protection Authority or converted into a usable format.

Databases and the data within should have scheduled backups to ensure that data is not lost. Other technology may be required for backup storage of all records which you are required to retain. This could be internal backup storage such as an external hard drive, or cloud technology at an off-site location. When dealing with hosted (cloud) based applications and solutions, it is very important to ensure private information (e.g. landowner name) resides in a country where privacy laws are consistent with *Canada's Privacy Act*.

Source Protection Authorities may provide municipalities with certain options to assist with Annual Reporting. These options may be provided through forms, templates or online databases. These will allow for consistency across the Source Protection Authorities and will assist municipalities as they will not have to create any of these items from scratch. Annual reporting templates have been created by the Lakehead Source Protection Authority for annual reporting purposes. Examples have are included in Appendix A.

7.1.2.1 What this Means to my Municipality

- Procedures must be established for data collection, maintenance and transfer to the Source Protection Authority. Information outside of source water protection may also be considered by the Source Protection Authority; therefore, it may be useful to ensure that the Source Protection Authority is regarded as part of regular business processes.
- The municipality must consider which staff would be best suited to complete reporting requirements, including municipal planners, GIS staff, administrative staff, and by-law enforcement officers. Staff training will be required.

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- Certain computer software and technological items can facilitate reporting, such as a simple database program, a portable GPS device and a GIS enabled mapping program. Staff training will be required.
- Many municipal staff members will be involved in Annual Reporting tasks. Therefore, it will be important to integrate tasks into daily business practices.

7.2 *Data and Information Management*

Information management is an important component in implementing Source Protection Plan policies, completing Annual Reports, verifying and identifying significant drinking water threats, and transferring information back to the Source Protection Authority. Collecting this data, and then being able to easily extract and report the desired information, requires some pre-planning and consistent data entry.

Managing data involves deciding and coordinating what, who, when, where, and why information is used, disclosed, collected, and retained. Information and related processes and technology to support it include operations-critical information assets. These assets are the essential information that must be properly managed because failure to do so will impact the ability of the municipality to function or meet legislated obligations. Examples of operations-critical information assets related to source water protection include:

- mandated information – e.g. risk management information; and
- executive accountability and legal risk (e.g. Environmental Review Tribunal, Ontario Municipal Board, *Municipal Freedom of Information and Protection of Privacy Act, 1990*).

Information management is also the management of organizational processes and systems that acquire, create, organize, distribute, and use information.

7.2.1 *Types of Data and Information to Manage*

To date, the information that is available from your local Source Protection Authority includes the Terms of Reference, the Assessment Report, and the Source Protection Plan. These documents contain valuable information to assist you with implementation.

Additionally, raw data may be available in a number of digital formats. This includes water budget information and Assessment Report data. Your municipality should review the policies in the local Source Protection Plan to determine what data you require to implement different policies. Consultation with municipal staff, such as land use planners, who will be responsible for implementing policies, will establish what datasets the municipality already has access to, and which datasets are needed from the Source Protection Authority.

Specific datasets that are available from your local Source Protection Authority may include but are not limited to:

- WHPAs;
- IPZs;

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- highly vulnerable aquifers;
- significant groundwater recharge areas;
- vulnerability mapping;
- livestock density mapping;
- managed lands mapping;
- municipal wells and/or intakes;
- threats;
- ownership parcel boundaries with parcel identification number;
- assessment parcel boundaries with assessment roll number;
- private well data;
- septic data;
- permits to take water; and
- water quality reports.

The local Source Protection Authority has a list of significant drinking water threats that were enumerated during the Assessment Report process, which includes locations, prescribed threat, threat subcategory, and may include circumstances. This information can be provided to each municipality, or has already been provided in some cases, in GIS, database, Excel spreadsheet, or other formats.

Other tools that are available to assist municipalities are the Threats Analysis Tool, the Risk Management Measures Catalogue (RMMC) and the Policy Database. Links to these tools are provided in Module 2. Certain information may also be readily available at your municipality, such as orders, by-laws, enforcement information, GPS data, and education programs.

Confirming threats will be ongoing for all municipalities. During the threat verification process, threats will be confirmed. This task will involve fieldwork to visit and verify each threat in your municipality. Each threat will need to be verified by assessment roll number and may be given GPS coordinates. If the threat is not taking place according to the circumstances and the threat reference number, the threat can be removed. This information will assist your local Source Protection Authority when updating Assessment Reports. Data that would be used to support Assessment Reports updates will also need to be provided in specific formats, and you should consult with your Source Protection Authority to determine their needs. Data for Assessment Reports will be used to populate models that support the implementation of Source Protection Plans, such as water quantity or quality models. It will also be useful to report any municipal changes that may be forthcoming, such as new municipal wells or changes in pumping rates. New drinking water threats may be identified during threats verification and in the future, during the review of proposed development and other activities. This information should also be collected and retained. See *Module 2: Determining Where Policies Apply* for more details on how threats can be verified.

Since the requirements for the Ministry of the Environment and Climate Change Annual Reporting database are still undefined, the data that will need to be managed in order to complete the Annual Reporting is unclear. Therefore, the Source Protection Authority will provide additional information regarding these data to municipalities as they receive it.

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According to Section 53 of Ontario Regulation 287/07, the following records must be kept for a period of 15 years:

- Risk Management Plans – taken from the date the Risk Management Plan ceases to be in effect (not applicable to the Lakehead Source Protection Plan);
- a notice or order – taken from the date the notice or order is issued;
- Risk Assessment – taken from the date of acceptance (not applicable to the Lakehead Source Protection Plan);
- acceptance of a Risk Assessment – taken from the date of acceptance (not applicable to the Lakehead Source Protection Plan); and
- any record related to source water protection – taken from the date the record is acquired or created.

7.2.2 Data Cycle and Data Sharing

There is currently a structure and format for data that is readily available from your local Source Protection Authority. Contact the local Source Protection Authority for details on how to obtain these data and to discuss what format best suits your needs. In future years, the local Source Protection Authority will continue to share information that will be useful to you during implementation, including any updates to Assessment Reports.

Figure 3 outlines the basic data cycle process implementing bodies can expect to follow. Assessment Reports and any associated data is translated into the various Source Protection Plan policies (i.e. land use policies, risk management plan policies, prescribed instrument policies, etc.), which are in turn implemented by multiple agencies (i.e. Province, municipalities, other public bodies, etc.). During policy implementation, implementing bodies will collect new data; this new data may inform regular business for these agencies, and will be transferred back to the Source Protection Authority, and used to update the Assessment Report as part of the Annual Reporting cycle prescribed under the *Clean Water Act*.

Agreements should be made between the municipality and Source Protection Authority regarding access to and use of data. The Source Protection Authority, represented by the Conservation Authority or other body as defined under the *Clean Water Act* (see Ontario Regulation 284/07), is expected to have rights to the raw data used to generate the Assessment Report and Source Protection Plan. If someone else owns the rights to the data (e.g. a municipality) used in the development of the approved Assessment Report and Source Protection Plan, the Source Protection Authority is expected to attain an unrestricted license agreement with those parties to use, execute, modify, manufacture, copy, reproduce, distribute, publish, sublicense to others, and prepare, in any form, derivative works with the data for source water protection planning and implementation purposes.

Data sharing agreements are required to ensure data can be used for the following purposes:

- to provide and publish deliverables and/or derivative works within the Ontario Public Service;
- to provide and publish derivative works to the public, such as maps of vulnerable areas;

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- to enable the Ministry and/or clients to make evidence based policy and program area decisions and to meet obligations required of the Ministry and/or clients to review prescribed instruments;
- to meet obligations as described in policies in approved source protection plans;
- to ensure that owners and operating authorities of all drinking water systems in source protection areas in Ontario have the information needed to be in compliance with the *Clean Water Act, 2006* and the *Safe Drinking Water Act, 2002*;
- to enable the Ministry and clients to make evidence based decisions regarding policy and any related program area planning and risk assessment initiatives;
- to meet obligations pursuant to the Canada-Ontario Agreement Respecting the Great Lakes Ecosystem;
- to meet the principles and carry out the roles and responsibilities under the Low Water Response Program; and
- to meet any obligations required of the Ministry and clients to address concerns associated with climate change initiatives.

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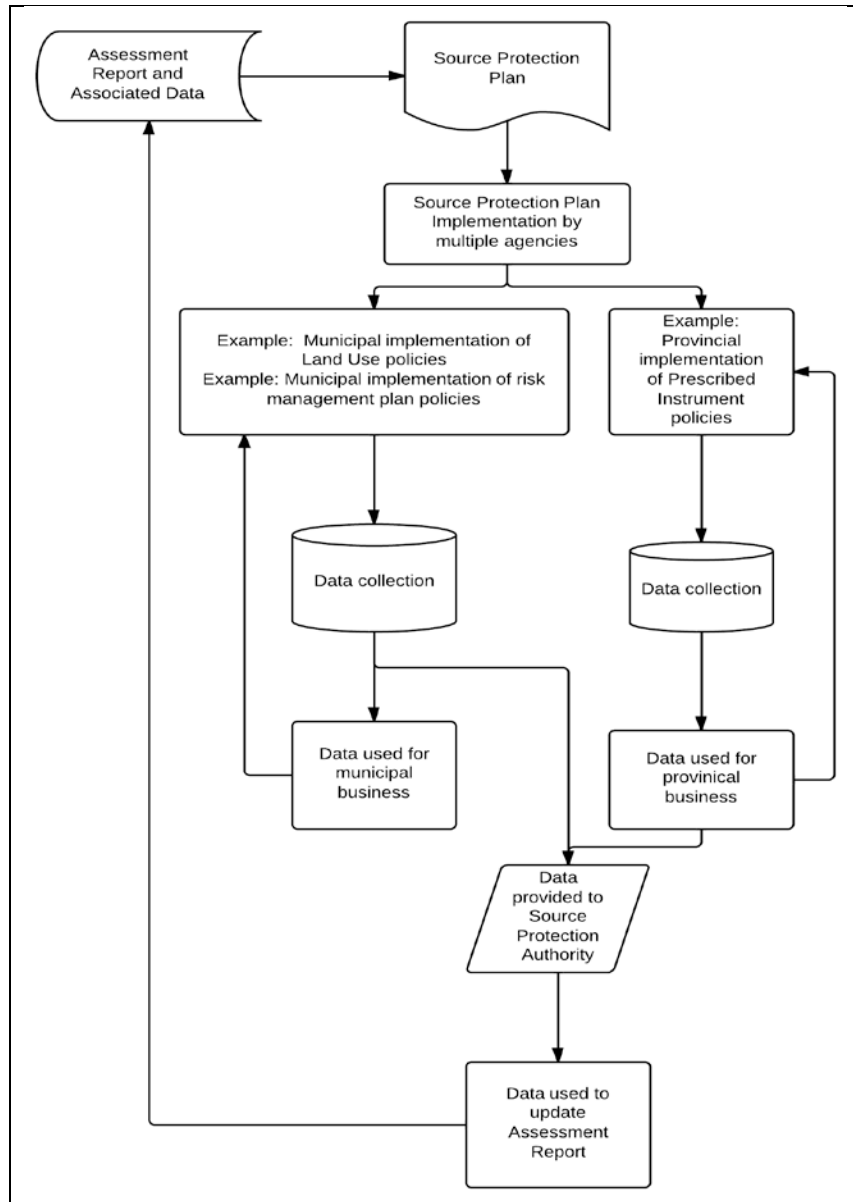


Figure 3: Data Maintenance Cycle for Municipalities

Sharing data with your Source Protection Authority or other agencies will occur; therefore, it is important to generate useable and shareable data. Source Protection Authorities and the Ministry of the Environment and Climate Change are working on developing a streamlined process. This will require that data is stored in a format that is easily sent to other agencies. Some things to consider are:

- having a database that can be searched and filtered in order to extract the desired information;
- using software that can export data to other formats, including ones that are easily read by other programs; for example, comma separated values are readable by spreadsheet, database and GIS applications;

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- ensuring that spatial data (assessment roll number and GPS coordinates) are related to information such as notices, documents and Risk Management Plans; and
- ensuring that data standards are adhered to so that data are collected and reported in a standardized way.

Please review this document in its entirety to determine programming and data requirements as the Ministry of the Environment and Climate Change may dictate certain requirements in the future.

7.2.3 Setting up a Data Management Model

The process and functions of information can be organized into an information management framework comprised of elements as shown in Figure 4. This framework is dependent on the data and information made available through the technical work that was completed to develop the Assessment Reports; these data and information are available from your local Source Protection Authority.

Figure 4 shows that agencies responsible for implementing Source Protection Plan policies will also be responsible for managing the corresponding information. Implementing bodies should collaborate to ensure consistent, standard data are maintained and stored to support program requirements for multiple agencies. The formation of teams with representatives from these agencies could assist in streamlining information management. Six steps have been derived from this framework and are specific to Source Protection Plan implementation.

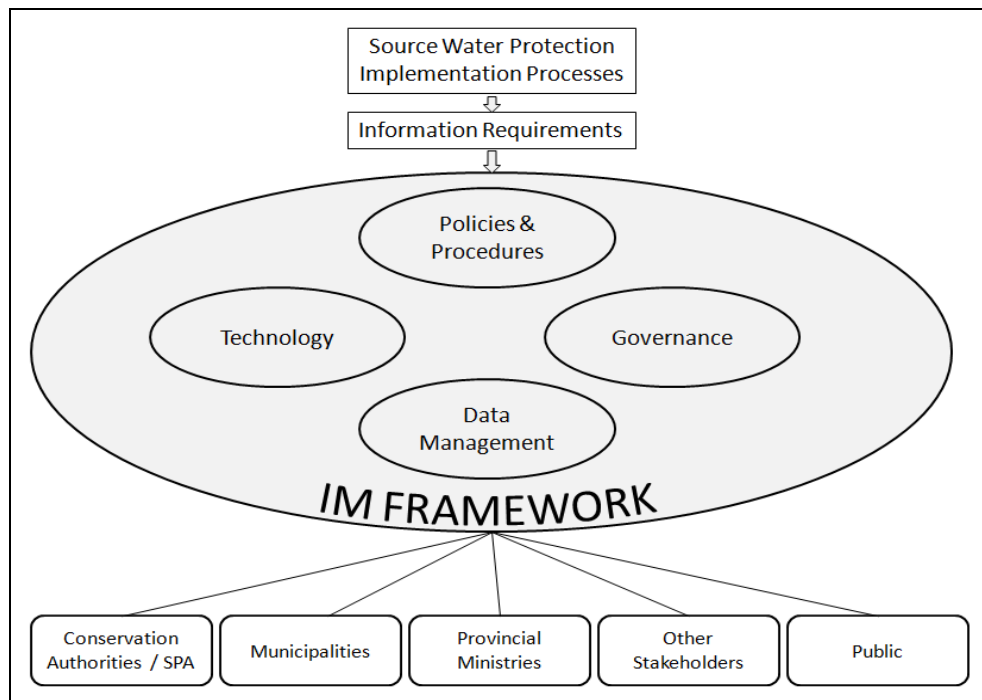


Figure 4: Information Management Framework

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Step 1: Define Information Requirements and Resources

Municipalities must assess their particular situation with respect to existing data management structures to better understand the effort that will be required to maintain, exchange, and make source water protection data available. Source Protection Authorities will be able to provide lists of data used to generate the Assessment Reports and Source Protection Plans.

Information resources that can facilitate successful Source Protection Plan implementation may include:

- tabular and geospatial databases (e.g. Assessment Report Database, Threats Database, Water Quantity Databases, Boundaries and Models);
- images, photographs, graphics, maps, and reports; and
- look-up tools, key tables and Risk Management Measures.

Municipalities will need to determine what information they already have and what additional information they will require to successfully implement Source Protection Plan policies. Municipalities should also assess what data and information related to source water protection they will collect during implementation, or through other regular municipal business processes.

Step 2: Define Guiding Principles

The implementation of Source Protection Plan policies and on-going data management should be an open and transparent process; therefore, defining the guiding principles required to manage data effectively and efficiently in a collaborative inter-agency environment is essential. The principles can be determined internally or in collaboration with partner agencies, such as the local Source Protection Authority or Conservation Authority.

- **Define Custodianship:** Custodianship implies a primary custodian or curator of data. A custodian does not necessarily have to be an individual or a single agency, and responsibilities can be jointly shared or transferred between business departments or agencies. Data custodians provide a leadership role by ensuring that staff and stakeholders derive the greatest benefit from the investment made in data collection, maintenance and storage.
- **Accountability for Information Management:** Accountability for management of the information required for implementation should be clearly defined and understood. The designation of accountability should be appropriate to the capabilities and availability of staff or agencies involved.
- **Accessible and Shared Information:** The custodian ensures the design of the information promotes easy use, access and sharing. This does not mean that private information should be shared beyond the limits imposed by legislation, such as MFIPPA, FIPPA, existing or future licensing agreements, access, confidentiality rights, and internal policies.
- **Integrated Information Management:** Information should be defined and managed to promote integration regardless of medium. At the municipal level, integrated information should be managed and displayed across shared municipal boundaries. Based on the diversity of municipal information systems, the management solution for integration will be different in almost every case.

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- **Define a Sustainable Funding Model:** It is essential that long term sustainable funding be secured to allow the program to support the minimum ongoing requirements, such as Annual Reporting. It is anticipated that the increased recent investment in information related to source water protection will require financial planning to ensure the value of the information collected to date are maintained.
- **Collected and Maintained Information Value and Efficiency:** Information has significant value and plays an important role in source water protection, both currently and in the future. Source water protection information is a resource and a reusable asset. Municipalities and other agencies should aim to find efficiencies, by eliminating the need to collect, maintain or provide access to the same or similar source water protection information more than once.
- **Business Driven Information:** Source water protection information gathered and maintained by municipalities and other agencies must be relevant to the decisions that will be made, such as whether or not a Risk Management Plan is required. Sustainable funding is required to support effective decision-making, public accountability and cost-effective delivery of programs and services. Information management should be planned and integrated into the municipal business planning process.

Step 3: Define a Data-Sharing Framework

Data sharing agreements are fundamental to enabling a collaborative environment. The agreements follow from the ‘information is shared’ principle described above, and they represent the legal agreements enabling fair exchange of data among all parties involved. Further discussion about data agreements is provided in Section 7.2.2 “Data Cycle and Data Sharing”.

The mechanism for sharing data can be as simple as sending some files by email, creating a CD or posting to an FTP site. Another method is a data exchange where member organizations can share their data and have access to the data of other members. A data exchange is similar to a data-sharing agreement; however, it is more streamlined, flexible and open to numerous organizations. Land Information Ontario’s Ontario Geospatial Data Exchange is one good example of a data exchange framework. A direct data transfer can be made from one Ontario Geospatial Data Exchange member to another as long as: the other party is an Ontario Geospatial Data Exchange member; the party providing the data has the rights to do so; and it is solely for the transfer of data. A similar process could be set-up between the source protection region and its municipalities to easily facilitate data sharing among the partners.

Step 4: Agree to a Data Maintenance Protocol

Data standards for both input and output data can ensure consistent, standardized deliverables across municipalities that span multiple source protection areas or regions. Standards also allow for the efficient use of automated systems and facilitate data transfer between agencies to enable managers, planners and others to compile data at the municipal or watershed region scale. A list of standards and reference tools used in source water protection to date is included in Section 7.2.4 below. These standards and tools can be used as a starting point for local business requirements, while maintaining the necessary data fields to support provincial reporting and

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update needs. The local Source Protection Authority may have further information and can provide assistance.

Many datasets lack maintenance protocols and many data holdings are not properly catalogued or documented; therefore, they are unknown to others that may benefit from the data. Maintaining current data will provide benefits to the planning cycle and position local organizations to benefit from future planning cycles and other water management activities. Information requirements are used as a starting point for the assessment of existing and potential data sources. Detailed investigations are required at the local level to ensure that source water protection data are available on the right scale and in sufficient detail for the data to be used for a specific purpose.

A gap analysis should be conducted by comparing the existing spatial and tabular data against the specific requirements for each of the municipal business areas that will require source water protection data. When data are unavailable to support a specific source water protection requirement, a gap exists. Where gaps exist, the best available data source should be determined. In cases where local efforts cannot reasonably satisfy gaps, municipalities should make these gaps known to the Source Protection Authority, Conservation Authority, and other implementing bodies. Ultimately, municipalities must ensure that appropriate data and information exist to support the implementation requirements of the local Source Protection Plan.

Metadata is defined as a description of your dataset. As data are created or enhanced, metadata should be recorded for the dataset. The metadata catalogue addresses the fundamental requirement that data be discoverable. The catalogue increases the value of data assets by making their existence more widely known and used, especially if using best practice standards, such as the Federal Geographic Data Committee.

Step 5: Define your Technology Environment

Source Protection Plan implementation involves many participating organizations and a large number and variety of datasets. Consequently, the process requires a mechanism to enable discovery, distribution and data standardization.

There are several database models, such as centralized or disconnected database environments. However, the key is that in order to support the implementation phases and the integration of source water protection information into other business processes, municipalities need to establish or leverage existing local data storage and analysis environments, including analytical software, geographic information systems, database management systems, internet servers, analytical software, and communication/consultation capabilities.

Models were used to delineate vulnerable areas and determine vulnerability scores, which are described in the Assessment Report. Models used varied between source protection areas and regions, and each model will have different input requirements, analysis methodology and output processes. The Ministry of the Environment and Climate Change streamlined the selection of the specific models to a limited list of preferred models; however, variations with respect to in-house

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capacity and the software used for modeling, can significantly impact software and hardware requirements.

Step 6: Refined Governance Model

Existing governance models should be refined to capture the requirements for Source Protection Plan implementation and oversee implementation of the information management framework. The refined governance model will be used to resolve technical issues as well as foster data standardization and collaboration among partners.

The ideal governance model effectively coordinates the information management needs of the municipality and other partners; a multi-agency technical committee is an example of a governance model that may work well for source water protection data management. The collaborative information management environment envisioned in the framework involves multiple organizations working together.

7.2.4 Data Standards and Reference Tools

Data standards exist for several source water protection related tools and databases. Some of these tools are described below:

- **Assessment Report Database:** A fixed set of source water protection data that includes threats, issues, intake protection zones, wellhead protection areas, significant groundwater recharge areas, and highly vulnerable aquifers. These standards and associated data are available from Source Protection Authorities.
- **Threats Database 1.9:** Source Protection Authority conducted threat assessments for which the Province of Ontario has prescribed specific activities and circumstances that when combined can create significant, low or moderate threats to municipal drinking water sources.
- **Threats Analysis Tool:** The threats data standard includes tables describing the threat and associated attributes including standard “lookup tables” for a set list of chemicals, allowing toxicity and persistence values to be automatically selected when a land use activity (i.e. threat) is identified. Similarly, hazard scoring for pathogens has been set at a fixed value for a specific pathogen depending on whether the occurrence was within groundwater or surface water. Refer to <http://maps.thamesriver.on.ca/swpCAMaps/threatslookup/default.aspx>
- **Risk Management Measures Catalogue:** The catalogue describes hundreds of tools and techniques that can be utilized in the management of activities that may pose a drinking water threat. Refer to: <http://www.trcgauging.ca/RmmCatalogue/>
- **Water Budget:** Includes the Water Budget Geodatabase and associated Risk Assessments. Refer to www.waterbudget.ca
- **Policy Database:** Refer to <http://maps.thamesriver.on.ca/swpPolicyEntry/disclaimer.aspx>
- **Symbology Standards:** For source water protection cartographic and web products, Conservation Authorities used standards, guidelines and best management practices for the production of output products (i.e. maps and other images) found in the document

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“Source Water Protection Mapping Symbology and Standards” (Ontario Ministry of Natural Resources, 2006).

- **GIS Software:** The Ministry of the Environment and Climate Change requires Source Protection Authorities and Conservation Authorities to work with ESRI GIS software. Therefore, for spatial water quality outputs, and some water quantity outputs, data are available in ESRI geodatabase format. Regardless of the GIS or planning software tools a municipality may be using, ESRI format is flexible enough to import ESRI GIS format into any platform or format.

7.2.5 *What this Means to my Municipality*

- Agreements should be made between the municipality and the Source Protection Authorities regarding access and data usage; datasets are available from the Source Protection Authority.
- Confirming threats will be an ongoing task for all municipalities.
- Record retention requirements are generally 15 years and can be found in Section 53 of Ontario Regulation 287/07.
- Implementing bodies should collaborate to ensure consistent, standard data are maintained and stored to support program requirements for multiple agencies.
- Proper data management can help municipalities integrate source water protection information into regular decision making, and leverage this knowledge for other municipal processes.

7.2.6 *York Region Data Management Example*

The following information was provided by York Region as an example for other municipalities. This example provides information on the upgrading of their data management system. Please note that this is strictly an example and may or may not suit the specific needs of your municipality.

The goal of the York Region Data Management Project was to upgrade the current environmental data management system (e.g. Access and Excel databases) to a system that will support business processes for source water protection risk management and all industrial waste control functions. When the project was initiated in early 2012, there were no *Clean Water Act* source water protection data management systems available. In fact, there is no system or guidance available for source water protection data management. The following steps were key in the creation of this system:

- a request for tenders was jointly released by the York Region Risk Management Office and the group that enforces the York Region sewer use by-law because partnering on the project had benefits for the Environmental Services department;
 - the groups have similar data management requirements; however, the processes of the two groups are very different and added to the challenge of finding a suitable system;
- a contractor was selected based on their ability to meet the needs of both groups by providing a customizable product that was capable of working with GIS;

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- in order to clarify requirements for the system, several meetings were held with the contractor to develop flow charts, checklists and templates to describe the process requirements; and
- several versions of the system were released by the contractor, with each version requiring extensive review and testing;
 - the development process required a great deal of time and effort since the system and the risk management program were being refined at the same time. The added benefit of conducting this work was that the Risk Management Office developed a number of tools that will be of benefit as the risk management program is implemented, such as a system to manage work flows.

As a result, the Risk Management Office now has a data management system that will manage threats data, as well as data related to other programs such as development review. Data quality has also been improved through the quality assurance/quality control process required during development of the system. The data management system includes:

- a ‘dashboard’ for the Risk Management Officials and Risk Management Inspectors that displays tasks such as inspections required and Risk Management Plan follow-up;
- templates for documents, such as notices;
- access to information for Annual Reports;
- the capability to manage and track applications, fees, inspections, enforcement, correspondence, and Risk Management Plan conditions;
- GIS capabilities that can populate WHPAs, produce vulnerability scores as well as validate addresses; and
- a lookup tool that can quickly and accurately summarize threats for a given location.

Appendix A: Lakehead Source Protection Plan Annual Reporting Templates

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Lakehead Source Protection Plan
Annual Report to the Lakehead Source Protection Authority
Implementing Body: Municipality of Oliver Paipoonge
4569 Oliver Road, Murillo, ON, P0T 2G0
Phone: (807) 935-2613

Section 1 – General Information (Annual Report due by February 1 of each calendar year)	
Reporting Body Information:	
Reporting Year:	
Date of Report:	
Report Completed By:	

Section 2 - Policies	
Policy Number:	Policy Details:
RV.1.CW-PA	Prohibits the following future significant threats: establishing a waste disposal site, sewage treatment facilities (not including those under 10,000 litres a day), storage of organic solvents, storage of fuel, the storage of pure dense non-aqueous liquids (DNAPLs) and agricultural uses.
Policy Number:	Policy Details:
RV.2.M-PA	This Policy monitors the steps taken to implement the above Policy (RV.1.CW-PA)
Steps taken to implement Policy (RV.1.CW-PA)	
The following land uses are prohibited in WHPA-A:	Were any of the land uses permitted during the reporting period?
Application of hauled sewage to land.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Mine tailings stored in a pit or in impoundment structures.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Land farming of petroleum refining waste.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Landfilling of hazardous waste.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Landfilling of municipal waste.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Land disposal of commercial or industrial waste.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Land disposal of liquid industrial waste.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Storage of PCBs.	<input type="checkbox"/> Yes <input type="checkbox"/> No
A waste disposal site that is not approved to accept hazardous waste or liquid industrial waste but accepts small volumes that are exempt from O. Reg. 347.	<input type="checkbox"/> Yes <input type="checkbox"/> No
The following land uses are prohibited in WHPA-	Were any of the land uses permitted during the

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A:	reporting period?
Sewage treatment facilities, not including septic systems under 10,000 litres per day.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Non-residential uses where organic solvents occur, including but not limited to dry cleaning operations, vehicle service centres, paint and hardware stores, retail or wholesale pharmaceutical storage and distribution centres.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Uses where fuel is stored including but not limited to, non-residential fuel storage, retail fuel outlets, uses where backup generators are required (with the exception of the backup generator used at the Rosslyn Village Water Treatment Plant), industrial operations and any other uses involving the bulk handling and storage of fuel.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Uses which include the storage of DNAPLs except for incidental volumes for personal domestic use.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Future Agricultural uses.	<input type="checkbox"/> Yes <input type="checkbox"/> No
<p>The Official Plan and Zoning By-Law shall be brought into conformity with provisions 1 to 6 in the above noted policy (i.e.: prohibited uses listed above) in accordance with Section 26 of the Planning Act.</p>	
<p>Outline all amendments to the Official Plan and Zoning By-Law that were undertaken to achieve conformity (i.e.: prohibit uses in WHPA-A).</p>	

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Policy Number:	Policy Details:
RV.3.CW-SP	<p>1. To address the handling and storage of road salt (existing and future) and storage of snow (existing and future) the Municipality of Oliver Paipoonge shall prepare a Salt Management Plan to address the sensitivity of the Rosslyn Village WHPA-A within one year of the Source Protection Plan taking effect [by Sept. 30, 2014]. Specific actions that should be included in the plan to address the risk of road salt effects on source water include:</p> <p style="margin-left: 20px;">a) Locating salt and snow storage areas outside of the WHPA-A. b) Minimizing application of road salt within WHPA-A.</p> <p>2. Copies of any Official Plan and Zoning By-law amendment applications in WHPA-A shall also be provided by the Municipality of Oliver Paipoonge to the Lakehead Source Protection Authority once they have been received for review and comment and shall provide copies of these amendments once they have been adopted. This procedure must be established within one year of the Source Protection Plan taking effect [by Sept. 30, 2014].</p>
Policy Number:	Policy Details:
RV.4.M.SP	This Policy monitors the steps taken to implement the above Policy (RV.3.CW-SP).
Steps taken to implement Policy (RV.3.CW-SP)	
Describe the steps taken to determine the extent to which the specified action has achieved its objectives and any information on the results of those steps:	
Oliver Paipoonge must prepare a Salt Management Plan once it has been adopted (by September 30, 2014).	
Date of completed Salt Management Plan:	
Date Salt Management Plan was adopted by Council:	
<input type="checkbox"/> A copy of Oliver Paipoonge's current Salt Management Plan is attached.	

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Are any salt or snow storage areas located in WHPA-A? <input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, provide location and description of quantity of salt and/or snow stored:
Is road salt applied within WHPA-A? <input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, provide details of application (i.e.: material, spread, frequency of applications, etc.):
Has a procedure been established to provide the SPA all zoning by-law amendments in WHPA-A? <input type="checkbox"/> Yes <input type="checkbox"/> No
If yes, provide outline of procedure:
<input type="checkbox"/> Copies of Official Plan and Zoning By-Law amendment applications in WHPA-A are attached.
Please list the attached items related to this policy (<i>if applicable</i>):

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Policy Number:	Policy Details:
RV.5.CW-EO	<p>1. The Municipality of Oliver Paipoonge shall develop an education program regarding the potential harmful effects of plane de-icer within the WHPA-A. This material will be required in the event of an airport being proposed.</p> <p>2. To address all agricultural related drinking water threats (existing and future – Agricultural Source Material, Non-Agricultural Source Material, commercial fertilizer, pesticide and livestock grazing or pasturing of land, an outdoor confinement area or farm animal yard) the Municipality of Oliver Paipoonge shall develop an education and awareness program to advise the landowner in WHPA-A whose property currently contains existing agricultural threats. The Municipality shall prepare a package that will include information for best management practices and to raise awareness of and reduce drinking water threats. This information shall be developed and distributed within 2 years of the Source Protection Plan taking effect [by Sept. 30, 2015].</p> <p>3. The Municipality shall prepare a package that will include information for best management practices and to raise awareness of and reduce drinking water threats related to the harmful effects of DNAPLs impacting groundwater resources.</p>
Policy Number:	Policy Details:
RV.6.M-EO	This Policy monitors the steps taken to implement the above Policy (RV.5.CW-EO)
Have the following education/outreach materials been produced?	If produced, how many copies have been distributed to residents/or number of people reached?
Plane de-icer educational material. <input type="checkbox"/> Yes <input type="checkbox"/> No	
Agricultural drinking water threats educational material (must be prepared and distributed by September 30, 2015). <input type="checkbox"/> Yes <input type="checkbox"/> No	
DNAPL educational material. <input type="checkbox"/> Yes <input type="checkbox"/> No	

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<input type="checkbox"/> Copies of Oliver Paipoonge’s plane de-icer educational material is attached.
<input type="checkbox"/> Copies of Oliver Paipoonge’s agricultural drinking water threats educational material is attached.
<input type="checkbox"/> Copies of Oliver Paipoonge’s DNAPL educational material is attached.
Items are not attached because <i>(if applicable)</i> : <div style="border: 1px solid black; height: 80px; width: 100%;"></div>
Please list all additional items that are attached related to this policy <i>(if applicable)</i> : <div style="border: 1px solid black; height: 150px; width: 100%;"></div>

This report has been reviewed and certified by the Municipality of Oliver Paipoonge CAO:

Name (print):
Signature:
Title:

For internal use only:

Date received by LRCA staff:
Date accepted by Lakehead SPA:
Date forwarded to MOE:

Revision Date: December 16, 2013

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Lakehead Source Protection Plan
Annual Report to the Lakehead Source Protection Authority
Implementing Body: Thunder Bay District Health Unit
 999 Balmoral St, Thunder Bay, ON P7B 6E7
 Phone: (807) 625-5900

Section 1 – General Information (Annual Report due by February 1 of each calendar year)	
Reporting Body Information:	
Reporting Year:	
Date of Report:	
Report Completed By:	

Section 2 - Policies				
Policy Number:		Policy Details:		
RV.3.CW-SP		All existing and future septic systems within WHPA-A must be inspected by June 20, 2016, and every 5 years thereafter		
Property ID #	Address in WHPA-A:	Inspected during reporting year:	Date of Inspection (if applicable):	Date of Last Inspection:
1		<input type="checkbox"/> Yes <input type="checkbox"/> No		
2		<input type="checkbox"/> Yes <input type="checkbox"/> No		
3		<input type="checkbox"/> Yes <input type="checkbox"/> No		
4		<input type="checkbox"/> Yes <input type="checkbox"/> No		
5		<input type="checkbox"/> Yes <input type="checkbox"/> No		
6		<input type="checkbox"/> Yes <input type="checkbox"/> No		
7		<input type="checkbox"/> Yes <input type="checkbox"/> No		
8		<input type="checkbox"/> Yes <input type="checkbox"/> No		

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9		<input type="checkbox"/> Yes <input type="checkbox"/> No		
10		<input type="checkbox"/> Yes <input type="checkbox"/> No		
11		<input type="checkbox"/> Yes <input type="checkbox"/> No		
12		<input type="checkbox"/> Yes <input type="checkbox"/> No		
13		<input type="checkbox"/> Yes <input type="checkbox"/> No		
14		<input type="checkbox"/> Yes <input type="checkbox"/> No		
15		<input type="checkbox"/> Yes <input type="checkbox"/> No		
16		<input type="checkbox"/> Yes <input type="checkbox"/> No		
17		<input type="checkbox"/> Yes <input type="checkbox"/> No		
18		<input type="checkbox"/> Yes <input type="checkbox"/> No		
19		<input type="checkbox"/> Yes <input type="checkbox"/> No		
20		<input type="checkbox"/> Yes <input type="checkbox"/> No		
21		<input type="checkbox"/> Yes <input type="checkbox"/> No		
22		<input type="checkbox"/> Yes <input type="checkbox"/> No		

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23		<input type="checkbox"/> Yes <input type="checkbox"/> No		
24		<input type="checkbox"/> Yes <input type="checkbox"/> No		
25		<input type="checkbox"/> Yes <input type="checkbox"/> No		

**These residences received new septic systems in 2011-2012 under ODWSP funding program*

Policy Number:	Policy Details:
RV.4.M.SP	This Policy monitors the steps taken to implement the above Policy (RV.3.CW-SP)
Steps taken to implement Policy (RV.3.CW-SP)	
Describe the steps taken to determine the extent to which the specified action has achieved its objectives and any information on the results of those steps:	
<input type="checkbox"/> No steps have been taken because:	
<input type="checkbox"/> The following steps have been taken:	
Provide a summary compliance report outlining any corrective action found to be necessary as a result of the Sewage Systems Maintenance Program:	
<input type="checkbox"/> A Summary Compliance Report is attached, or see below:	

Policy Number:	Policy Details:
----------------	-----------------

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RV.5.CW-EO	<p>This Policy number is designed to educate the residents of WHPA-A on septic threats on their property. Must be in place by September 30, 2015. Must be available for a minimum of two years (i.e. Sept. 30, 2017) and must include:</p> <p>a) The reasons for the required inspection program. b) Maintenance of systems. c) Various types of allowed systems. d) Best management practices for using a system</p>
RV.6.M-EO	This Policy monitors the steps taken to implement the above Policy (RV.5.CW-EO)
Steps taken to implement Policy (RV..CW-EO)	
<input type="checkbox"/> No steps have been taken because:	
<input type="checkbox"/> The following steps have been taken:	
<input type="checkbox"/> Educational/Outreach materials have been completed and attached to this report. <i>Please list the attached materials:</i>	
<input type="checkbox"/> Educational/Outreach materials are currently in draft form.	<input type="checkbox"/> Educational/Outreach materials have been distributed to WHPA-A residents.
<input type="checkbox"/> Research has begun on these materials, but no draft copy has been created.	Distributed on <i>(insert date)</i> :

This report has been reviewed and certified by the Thunder Bay District Health Unit:

Name (print):
Signature:
Title:

For internal use only:

Date received by LRCA:
Date accepted by SPA:
Date forwarded to MOE:

Revision Date: December 16, 2013

Module 5 – Risk Management Plans

8.0 Module 5: Risk Management Plans

NOTE: Module 5 provides information on risk management plan creation, negotiation and enforcement to manage activities that threaten municipal drinking water sources.

As the Lakehead Source Protection Plan does not require a Risk Management Plan, or Risk Management Personnel, or a Risk Management Office, this Module has no information that is applicable to our region.

Module 5 – Risk Management Plans

Module 6 - Prohibition

9.0 Module 6: Prohibition

NOTE: This Module deals with Prohibition of certain activities that pose significant risk to municipal drinking water systems.

As the Lakehead Source Protection Plan does not have any prohibition policies, this Module has no information that is applicable to our region.

Module 6 - Prohibition

10.0 Module 7: Non-Regulatory Policies (Education and Outreach, Incentives and Section 26, Paragraph 1 Policies)

This module aims to provide information to municipalities, and other implementing bodies, on the implementation requirements for the following types of source protection plan policies:

- education and outreach policies (which may be included in plans as ‘threat’ policies or as general education and outreach policies)
- incentive policies (which may be included in plans as ‘threat’ policies or as general education and outreach policies)

Section 26, Paragraph 1 policies (as set out under Ontario Regulation 287/07 of the Ontario *Clean Water Act, 2006*), which are always ‘threat’ policies and include policies that:

- specify actions to be taken,
- establish stewardship programs,
- specify and promote best management practices (BMPs),
- establish pilot programs, or
- govern research.

At the end of this module, you should have a general understanding of the municipality’s role in implementing these types of policies, as well as where to look for further information.

The information contained in this module is current as of the time of writing.

10.1 Overview of Non-Regulatory Policies

Source Protection Plans may contain policies that rely on education and outreach, incentives, or the other non-regulatory tools noted above (Section 26, Paragraph 1 of Ontario Regulation 287/07) to achieve their desired outcome of managing drinking water threats. The use of these tools in a Source Protection Plan is not limited by the legislation and, therefore, they can be broadly used to address significant, moderate, or low drinking water threats.

Often these tools have been used in combination with other, more regulatory tools when addressing significant threats. However, in many plans these tools have been used as a stand-alone approach. There is considerable variability in how these policies have been used across Ontario. You should become familiar with your local Source Protection Plan(s) to determine how these policies are to be implemented.

The following sections provide brief descriptions of the non-regulatory policy tools, and provide some examples of how they have been used in local Source Protection Plans.

Module 8 – Other Obligations

10.1.1 Education and Outreach Policies

Education and outreach policies are intended to increase awareness of the benefits of drinking water source protection and encourage positive changes in behaviour. They have also been used to improve landowner acceptance of policies in Source Protection Plans. Education and outreach policies may be specific to significant drinking water threats, or they can be used as a broad approach to influence behaviour related to source protection in general. The distinction of whether or not the policy addresses a significant drinking water threat is important when considering if the policy is legally binding on the municipality, which is discussed in more detail below in Section 10.2. “Legal Effect and Implications”.

Education and outreach programs can take many forms, from the simple and relatively economical, such as the mailing out of letters or fact sheets, to comprehensive programs such as classroom programming or site visits. An education and outreach program could include written materials, community outreach, and/or special activities.

Most education and outreach policies contained in Source Protection Plans do not prescribe methods purposefully, so that there is flexibility to design a program and deliver it in a manner that is both effective and efficient for the implementing body. Section 10.5.1 of this module provides some general guidance on how to develop and implement education and outreach policies to meet the requirements of local Source Protection Plans. However, you should always refer to your local education and outreach policies to determine whether there are prescribed methods to which the education and outreach program must adhere.

The Lakehead Source Protection Plan utilized Education and Outreach in the following policy which applies to the Municipality of Oliver Paipoonge and the Thunder Bay District Health Unit (refer to the Plan for the full policies and/or refer to Section 3.0 of this document):

- Policy RV.5.CW-EO.

10.1.2 Incentive Policies

Incentive policies can provide the positive motivation for a voluntary change in behaviour. They are not limited to financial incentives; they could include things like discounted products or community recognition. For example, an incentive policy may set out requirements for municipal household hazardous depot days when it is free to drop off hazardous waste, while the rest of the year it must be brought to a transfer station with a tipping fee.

Similar to education and outreach policies, incentive policies may be applied to specific drinking water threats, or they can be used generally in a source protection plan. Whether or not an incentive policy addresses a significant drinking water threat is important when considering if the policy is legally binding on the municipality, which is discussed in more detail in Section 10.2.

Incentive policies may be general or particular in nature. For example, incentives may be used as a complement to all threats or a group of threats, or they may be used to address a specific

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drinking water threat, at a specific risk level. Like education and outreach, many incentive policies have been written to provide implementing bodies with flexibility in developing and delivering incentive programs. Section 10.5.2 of this module provides some guidance on developing an incentive program to meet the requirements of source protection plan policies.

No incentive policies were included in the Lakehead Source Protection Plan.

10.1.3 Section 26, Paragraph 1 Policies, Including Specify Actions

The another group of non-regulatory policies is often described as the “other” policies. These “other” approaches are authorized under Section 26, Paragraph 1 of Ontario Regulation 287/07 and always relate to one or more drinking water threats:

- specify actions to be taken,
- establish stewardship programs,
- specify and promote best management practices,
- establish pilot programs, or
- govern research.

These policy approaches may be applied alone or in combination with other policy approaches to reduce the risk from specific drinking water threat activities.

See Section 10.5.3 of this module for further information about the “other” policy tools.

The Lakehead Source Protection Plan utilized Specify Action policies which applies to the Municipality of Oliver Paipooonge and the Thunder Bay District Health Unit (refer to the Plan for the full policies and/or refer to Section 3.0 of this document):

- Policy RV.3.CW-SP.

10.1.4 Section 33, Strategic Action Policies

Strategic Action policies are another example of an “other” policy. These “other” approaches are authorized under Section 33 of Ontario Regulation 287/07. This policy is a non-legally binding policy.

The Lakehead Source Protection Plan utilized a Strategic Action policy which applies to the City of Thunder Bay (refer to the Plan for the full policies and/or refer to Section 3.0 of this document):

- Policy TB.1.NLB.SP.

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10.2 Legal Effect and Implications

Source protection plan policies will have a range of legal effects. The requirements of municipalities and other implementing bodies named in each policy vary according to the risk level of the drinking water threat the policy is addressing, the type of policy tool being used, and the implementing body.

When education and outreach, incentives, or one of the “other” tools are used to address a significant drinking water threat, and municipalities, local boards, or source protection authorities are identified as the implementing body, the policy is legally binding and they must comply with the obligations set out in the policy; these policies can be found in List E, in the Appendix of each source protection plan. For example, if an education and outreach policy addresses a significant drinking water threat and identifies a municipality as the implementing body, the municipality is legally required by Section 38 of the *Clean Water Act* to implement the actions described in the policy. A municipality could encounter increased civil liability if the public experiences harm due to a failure to take appropriate action.

Where these tools are used for moderate and low threats, or when general (e.g. non-threat) education and outreach, strategic action or incentive policies are included in plans, these policies have no legal effect; these policies are included in List J within the Appendix of each source protection plan. While public bodies are not legally required to implement these policies, the public and other stakeholders may still expect these policies to be implemented to the extent possible, given the inclusive and consultative process of source protection plan development and the transparent nature of annual reporting that follows implementation.

To determine the legal effect of any policy, reference the source protection plan.

10.3 Roles and Responsibilities

There is flexibility in determining who will implement education and outreach, incentives, and the “other” category of policies. Local source protection committees selected the implementing bodies for non-regulatory policies in the source protection plans, and there is considerable variability between areas/regions.

Implementing bodies include municipalities, conservation authorities, source protection authorities, local boards, health units, planning authorities, provincial ministries, etc. Staff members at the local source protection authority can be contacted, or the local source protection plan can be consulted, to find out which combinations of implementing bodies have been identified in the source protection plan policies.

If a municipality falls into more than one source protection region, municipal staff will need to understand the non-regulatory policy requirements for each region in the municipality. For more information about understanding where source protection plan policies apply, refer to Module 2: Understanding Where Policies Apply.

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10.4 Timelines

Conformity dates for non-regulatory policies are highly variable. In some cases, there is a requirement to implement policies within the first year that a plan takes effect. In other cases, it may be several years. In any case, it is important to begin planning and budgeting for this work as early as possible. The sooner teams initiate these policies, the earlier they can implement protective measures.

10.5 Implementation of Non-Regulatory Policy Tools

10.5.1 Education and Outreach

Well-designed education and outreach programs can be an effective way to raise public awareness about where drinking water comes from, the importance of protecting it, and what residents, businesses and visitors can do to help keep it safe. Depending on the nature of the policies in the source protection plan, an education and outreach initiative can help ensure people know:

- where vulnerable drinking water areas are located,
- what activities could pose a threat in these areas,
- what actions can help protect drinking water, and
- what other programs, if any, exist to help them start these actions or projects.

Source protection plan policies may actually require several education programs depending on the threat activity, circumstances, policies, and audiences. Where an activity or condition is assessed as a low or moderate threat to drinking water, an outreach program may be delivered fairly broadly, with an emphasis on general best management practices when taking part in activities that could impact drinking water. However, where an activity is assessed as a significant threat to drinking water, a more detailed and individualized program with an emphasis on risk mitigation and/or other property owner requirements might be needed. Again, local source protection plans should be consulted before education and outreach programs are developed. The plans are available online or from local source protection authorities. Education and outreach has been used in source protection plans to:

- **Complement other mandatory policies.** E.g. An education program that precedes the requirement for a risk management plan. In this way, landowners can receive information about risks to drinking water, the need for a risk management plan, and the role of a municipal Risk Management Official.
- **Complement existing programs.** E.g. Providing information on septic system care and maintenance to keep septic systems functioning properly between five-year mandatory inspections that are now required under the Ontario Building Code.
- **Address significant threats when the source protection committee has decided to use non-regulatory tools to address the threat.** E.g. Providing education to residential

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landowners who store fuel in highly vulnerable areas around municipal drinking water supplies.

- **Address low or moderate threats that cannot be addressed through regulatory measures.** E.g. Encouraging risk reduction when there are outdoor, above-ground heating oil tanks. This kind of education and outreach can add more protection to water, even when a threat is not assessed as significant.
- **Address threats at the household level where the activities do not constitute a significant threat, but the source protection committee may have been concerned about the potential for cumulative impacts from many households.**
E.g. Many homeowners in one community might use excessive amounts of road salt on their driveways.
- **Raise general awareness of the vulnerable areas.** Encourage good stewardship practices, and promote financial incentive programs, when and where available, that help property owners initiate these practices.

10.5.1.1 Objectives and Expected Outcomes

When designing an education and outreach program, municipalities and implementing bodies should consider the learning expectations (or outcomes). In short, what do property owners need to know? A well-designed program includes expectations of what the property owner will understand. The learning needs and expectations will also depend upon the type of threat and the details of the policy.

Some plans may describe in detail how education and outreach must be delivered, while others will have left the details up to the implementing bodies to decide. When it comes to educating property owners about science, legislation, and new rules that impact them, a flyer in the mail may not be enough to meet requirements. It is extremely important to understand the expected outcomes of education and outreach policies. Refer to local source protection plans and explanatory documents for further information. The source protection plan and explanatory document includes:

- the need for each education and outreach program,
- the desired outcome,
- the body implementing the policy,
- the compliance date,
- the details for how education and outreach should be carried out.

10.5.1.2 Resources and Tools

Municipalities and other implementing bodies are encouraged to identify existing education materials and capacity, partners in the municipality, and opportunities to expand upon existing programs to address the objectives of the source protection plan policies. The implementing body can then benefit from, and build upon, established partnerships, existing relationships with

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property owners and residents, current program resources (e.g. staff capacity), and watershed knowledge that has already been developed (e.g. assessment reports, watershed characterizations, watershed report cards, professionally developed education programs).

Examples of existing education programs include:

- Education materials (fact sheets, DVDs, resource guides, etc.) developed by health units, conservation authorities, provincial ministries, and Conservation Ontario (see Conservation Ontario's drinking water source protection tool kit): <http://www.conservation-ontario.on.ca/uncategorised/140-source-protection-program-outreach-toolkit>
- Environmental Farm Plans: A voluntary environmental education and awareness program delivered by the Ontario Farm Environmental Coalition. The Ontario Farm Environmental Coalition is also developing a Farm Source Water Protection Framework for farmers to use to understand the source water risks and existing protective measures on their properties, and to understand what additional measures, if any, may be appropriate. <http://www.omafra.gov.on.ca/english/environment/efp/efp.htm>
- Stewardship Guides for Rural Non-Farm and Seasonal/Shoreline Residents (University of Guelph and Partners):
 - Stewardship Guide for the Lake Huron Coastline:
 - <http://theguide.huronstewardship.on.ca/index.php>.
 - The Rural Landowner Stewardship Guide for the Lake Huron Watershed:
 - http://theguide.huronstewardship.on.ca/index.php?option=com_content&task=view&id=3&Itemid=7
- Adult education program about drinking water source protection developed by the Ausable Bayfield Maitland Valley Drinking Water Source Protection Region (2007) – Modules available online at <http://www.sourcewaterinfo.on.ca/>

Local source protection plans may outline how to implement education and outreach policies, or the policies may give municipalities the latitude to design their own programs (sometimes in cooperation with another body, such as a health unit or conservation authority). Municipalities are encouraged to contact personnel from the local source protection area(s) about materials that are already available and plan and budget for any resources that are still needed.

10.5.1.2.1 Methods, Budget and Evaluation

Some of the most effective communications methods for use in education and outreach programs include:

- direct site visits, by appointment, with landowners and residents,

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- local public meetings, workshops, or events (with a purposeful, engaging format and information), such as an Open Well event where property owners in wellhead protection areas are invited to see their local municipal well and find out how their drinking water is protected, treated, and distributed,
- direct, addressed letters to landowners and residents (no junk mail)
- phone calls to landowners and residents that produce meaningful results (e.g. tracking information, explaining how a workshop can provide them with information they need to know about policy impacts, soliciting commitments to sign up for a newsletter or attend a workshop, etc.).

An education/ outreach program could also include:

- written materials (e.g. brochures, fact sheets, mass-distributed flyers)
- online materials (e.g. electronic newsletters and e-mail marketing, websites)
- social media (e.g. Facebook postings, Twitter feeds, YouTube videos)
- community outreach (e.g. presentations to community groups, schools, industry organizations)
- special activities (e.g. workshops, demonstrations/tours, videos, school/community programs)
- media liaison/relations (e.g. news releases and photos, meetings with editors to suggest editorial content about protecting water, production of newsworthy content with a drinking water message, interviews)

To develop an appropriate strategy for education and outreach and determine whether more than one strategy is required, carefully consider these questions.

- What education and outreach is required for properties with significant drinking water threat activities or conditions?
- What (if any) education and outreach is recommended for moderate and low threats?
- Will different land uses (e.g. residential, commercial, industrial, agricultural) require different education?
- If education and outreach is required in combination with other policy tools, how will it be delivered?
- How will education and outreach be delivered when it is being used as a stand-alone tool?
- Is the education and outreach going to be delivered region-wide, area-wide, or municipality-wide?
- Is the education targeted to specific vulnerable areas?
- Are there different education requirements for different drinking water threat activities?

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- Should education and outreach involve the municipal Risk Management Official, and if so, what role would he/she provide?
- What is the audience's literacy level? Are materials in English sufficient, or do they need translation? What communications channels does the audience prefer (e.g. large files or small files, mobile devices or computers, social media or e-mail, meetings or in-person site visits, e-mail or phone, etc.)?
Are there any reporting requirements for the implementation of the education and outreach policy? For example, the policy may require a report back on the policy progress to source protection authority.

The answers to some of these questions may be available in the education and outreach policies set out in local source protection plans.

Once a delivery strategy has been developed, the next step is determining the budget. Consider the following list when developing a budget for implementation and delivery of education and outreach policies.

Staffing Considerations

Estimate staffing costs by determining the level of staffing needed and the amount of staff time required. Some questions to consider:

- Who will need to be involved in the education and outreach program?
- What internal staff are needed, what external consultants or services (e.g. website designer and maintenance, graphic designer, printing supplier, meeting facilitators, translators)?
- Who of the following people need to be involved, and how much of their time is required?
 - chief administrative officer
 - general manager
 - project manager
 - financial administrator
 - educator
 - communicator
 - stewardship professional
 - risk management official/inspector
 - geographic information systems specialist
 - information systems specialist
 - provincial government staff
 - health unit staff
 - administrative assistant
 - front office staff

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Other Budget Considerations

Other considerations that will impact your budget:

- mileage
- meeting/workshop/event costs (rentals, hospitality, meals, etc.)
- printing (education guides or worksheets, letters, guides, flyers, fact sheets, maps, etc.)
- mailing (postage, envelopes, stationery, etc.)
- computers and software
- overhead expenses (telephone, heating, insurance, etc.)
- advertising
- evaluation of effectiveness and cost-effectiveness of education and outreach

Based on available financial and staffing resources, the education and outreach strategy may require adjustments. Keep in mind that most education and outreach policies allow implementing bodies some flexibility.

Evaluation

An educational design best practice is to evaluate and/or assess what the audience has learned. A mailed pamphlet from the municipality may cover the required content for a property owner, but it can easily go unread. Good education and outreach programs include a combination of strategies to appeal to different types of learners and convey messaging in a way that demonstrates how threats can impact them and encourages them to take action.

Municipalities can choose the evaluation tool they will use to determine that the property owner has demonstrated understanding of the knowledge expectations, and that the source protection plan policy has been effectively delivered. While this may be good practice, it should be noted that source protection plans do not necessarily require an evaluation of the effectiveness of policy implementation. Check the education and outreach, as well as associated monitoring policies, for the requirements. If education and outreach is being used to address significant threats, it is prudent for municipalities and other implementing bodies to document information on the effectiveness of the education and outreach policy. In addition, the municipality (as the implementing body) makes this information available to source protection authorities so they can assess the success of policy implementation in achieving objectives. For more information about annual reporting requirements, please refer to Module 4: Annual Reporting and Information Management.

Example

Consider the following example of a source protection plan policy and implementation strategy for education and outreach to address the drinking water threat that septic systems pose.

Education and Outreach Policy Example – Septic Systems Assessed as Significant Threats

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Municipalities shall implement an outreach and education program for property owners who own or operate a septic system that is a significant drinking water threat. Delivery of this education and outreach program should be in conjunction with the new mandatory septic re-inspection program required under the Ontario Building Code.

After considering the education policy, the municipality has determined the following implementation policy details and associated deliverables:

- There are 100 property owners with septic systems identified as significant threats.
- Send a letter to property owners to inform them inspections are required under the Ontario Building Code within five years, provide information on how to maintain a septic system to help protect drinking water, include an invitation to an information workshop, and inform them that a staff member will be contacting them by phone to answer any questions and confirm their attendance at the workshop.
- Liaise with other implementing bodies and subject matter experts to learn about existing septic educational materials; design, prepare and print materials for mail-outs and workshop.
- Phone each of the 100 property owners.
- Hold a workshop that educates property owners about inspection requirements, and how to upgrade their systems, and whether financial incentives are available. Schedule property visits for those people who request them.
- Have appropriate staff members conduct the requested site visits.
- Record the outcomes of education and outreach program in database.
- Have a project manager oversee work and have administration keep records, issue cheques, etc.

Sample Budget			
– Direct Delivery of Education and Outreach to 100 Significant-Threat Septic Properties			
Staffing – Internal			
Staffing	Hours	Hourly Rate	Cost
Education staff	30 days X 7 hours = 210 hours	\$55/hour	\$11,550
Other staff (administration/project management, finance, office, mapping/information technology, communications, etc.)	6 days X 7 hours = 42 hours	(Including salary, benefits, computer fee/depreciation, overhead – heating, insurance, telephone, information technology, etc.)	\$2,310
Total internal staffing costs:			\$13,860
Staffing – External			
Educational design services	20 hours	\$60/hour	\$1,200
Graphic design	10 hours		\$600
Expert speaker for workshop			\$500
Total external staffing costs:			\$2,300
Non-Staffing Costs			
Mileage	2,000 km X 0.45		\$900
Meeting hall rental			\$150
Supplies			\$250
Printing			\$300

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Total of non-staffing costs:	\$1,600
Total cost to deliver direct education and outreach to 100 significant-threat properties:	\$17,760

Based on these estimates, a program of direct education and outreach to owners of 100 properties with septic system threats would cost a total of \$17,760, or \$177.60 for each property reached. This example shows a relatively comprehensive education and outreach program that uses a variety of tools and resources. The cost to implement the policy may be less or more than the estimates shown. Budgeting for this policy may depend on the scope and depth of the program, the expectations for the program, and the requirements of the education policy.

Depending on the scope of the education and outreach policies prescribed by local source protection plans, and the capacity of the municipality, the budget for delivery of education and outreach may be quite similar or very different to the one outlined here. This was simply provided for illustrative purposes.

Local implementation of education and outreach will vary across Ontario and will depend on local source protection plan requirements, as well as local needs and conditions. Always consult source protection plans before developing any education and outreach strategies. Contact local source protection authorities for further information, advice and guidance.

10.5.2 Incentives

Like education and outreach, incentives are a tool that can be used to increase public and stakeholder awareness about the importance of drinking water source protection and/or actions that could reduce the risk of a particular threat activity. Such programs can be used to address one threat, a group of threats, or all threats, and can complement other policy tools.

No incentive policies were included in the Lakehead Source Protection Plan. Refer to the full version of the Module if information is required regarding incentive policy implementation.

10.5.3 Section 26, Paragraph 1 Policies, Including Specify Actions

Ontario Regulation 287/07 spells out the “other” policy tools to deal with drinking water threats that may be included in a source protection plan. These tools include policies that specify certain actions, establish stewardship programs, best management practices, pilot programs, and policies that govern research. The use of Section 26, Paragraph 1 tools in source protection plans is more limited than the use of the other policy tools that were available to source protection committees (except for “specify action” policies). Their use is also quite variable from one area to another. The following section describes each of the Section 26, Paragraph 1 policy tools.

Specify Actions

The most common of the “other” tools, and which has been used widely in all source protection plans, is the “specify actions” tool. The “specify actions” tool is quite broad, and covers actions that do not fall within the other policy tool categories, regulatory or non-regulatory. For example, policies which direct a municipality to establish a road salt management and reduction plan uses the specify actions tool, as does a policy which requires routine septic system

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inspections. This tool is also used in policies that set out actions which rely upon other municipal authorities (e.g. the *Municipal Act*), such as policies which direct a municipality to pass a by-law requiring properties connect with municipal services where wastewater services exist.

Stewardship Programs

Stewardship programs often include financial and practical technical assistance for landowners to complete a variety of environmental projects. Stewardship policies in source protection plans are generally used in combination with education and outreach, best management practice, and/or incentive policies.

Stewardship programs can include:

- developing technical tools to monitor and assess the state of the watershed,
- providing advice and technical assistance in completing on-the-ground projects,
- promoting community involvement in projects,
- building partnerships with all levels of government, environmental groups, businesses, residents and landowners, and
- creating educational resources.

Best Management Practices

Best management practices are measures taken to mitigate or prevent impacts to water quality or quantity. Best management practices policies in source protection plans have frequently been combined with stewardship, incentive, and education and outreach policies.

Pilot Programs

Pilot program policies can be used to implement an activity/project as a test or on a trial basis, before it is put into broader use. Pilot programs have been used as a policy tool by only two source protection committees: the Saugeen Grey Sauble Northern Bruce Peninsula Source Protection Committee and the Cataraqui Source Protection Committee.

Research

Additional research may be required to determine new, innovative methods or technologies for addressing certain threats, or to better understand where targeted actions to address threats would have the most benefit to source water (e.g. issue contributing area). Policies that govern research have primarily been used as a stand-alone tool in source protection plans to investigate local threats and issue contributing areas.

10.5.4 Purpose of Policies

In general, the Section 26, Paragraph 1 policy tools have been used in a variety of ways which differ considerably from one source protection area to another. Despite this variability, these tools have primarily been used in combination with other policies to provide a comprehensive approach to managing drinking water threat activities.

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10.6 Further Information

For full details about the ways that these non-regulatory policies have been used in local source protection areas, and any implementation requirements, local source protection plans and explanatory documents should be referenced. Local source protection authority staff can also provide additional information, advice and guidance with respect to these policies.

11.0 Module 8: Other Obligations

This module is the eighth in a series of documents which have been developed for use by municipalities to assist with implementation of source protection plans. This module focuses on these subjects:

- I. Mandatory maintenance inspections of septic systems
- II. Transport pathways
- III. Spill prevention, contingency or response plans

11.1 *Septic System Inspections*

11.1.1 *Overview*

Onsite sewage systems (commonly called septic systems) are intended to collect, treat and dispose of sewage. The establishment, operation, and maintenance of a septic system is a prescribed drinking water threat under O. Reg. 287/07 of the *Clean Water Act*. When located in vulnerable areas where the threat could be significant, septic systems regulated by the Building Code are now subject to mandatory maintenance inspections once every five years to ensure they are in substantial compliance with operation and maintenance requirements.

Systems with a design flow of up to 10,000 L/day are subject to regulations under Ontario's *Building Code Act, 1992* and Building Code (O. Reg. 350/06), and are overseen by the local principal authority which may be a municipality, a board of health, or a conservation authority. Any onsite sewage system with a design flow larger than 10,000 L/day must be operated under terms specified in an environmental compliance approval administered by the Ministry of the Environment and Climate Change. Large treatment systems typically service facilities such as schools, campgrounds and larger businesses. In the Thunder Bay District the Thunder Bay District Health Unit oversees the septic program.

The Ontario Building Code (O. Reg. 350/06) was recently amended to establish and govern onsite sewage system maintenance inspection programs to support the implementation of the *Clean Water Act* and the *Lake Simcoe Protection Act*. The new provisions for mandatory inspection programs in Division C, section 1.10 came into force in January 2011. This section of the Building Code covers three sewage system maintenance inspection programs:

- a) Mandatory maintenance inspection programs for vulnerable areas identified in an assessment report or source protection plan where a sewage system is or would be a significant drinking water threat, as part of the implementation of the *Clean Water Act*.
- b) Mandatory maintenance inspection programs for specific sections of the Lake Simcoe shoreline and watershed, as part of the implementation of the Lake Simcoe Protection Plan.
- c) Discretionary maintenance inspection programs, where the principal authority can choose to designate part or its entire jurisdiction as requiring a periodic maintenance inspection (some municipalities already had these types of programs, the Township of Huron-Kinloss for example).

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The focus of this section is mandatory maintenance inspections for vulnerable areas for the protection of drinking water sources. Guidelines for conducting maintenance inspection programs are provided in Appendix C: Onsite Sewage System Maintenance Inspections (MMAH, 2011).

Maintenance inspections can be undertaken by inspectors appointed by principal authorities (the local agency charged with enforcement of legislation related to small onsite sewage systems governed by the Ontario Building Code) only. The details of the inspection procedure are at the discretion of the agency conducting the program.

With respect to the establishment and administration of mandatory sewage inspection programs for vulnerable areas, the Ontario Building Code Division C, Section 1.10.2.3 specifically states:

- (1) Subject to Article 1.10.2.5., an inspector shall inspect all sewage systems located in whole or in part in the areas set out in Sentence (2) for compliance with the requirements of section 8.9. of Division B.
- (2) The areas referred to in Sentence (1) are:
 - “(b) areas within a vulnerable area that are located in a source protection area and that are identified in the most recent of the following documents as the areas where an activity described in Sentence (4) is or would be a significant drinking water threat:
 - i. the assessment report for the source protection area, as initially approved under the *Clean Water Act, 2006* or as most recently approved following any updating under that Act, or
 - ii. the source protection plan for the source protection area, as initially approved under the *Clean Water Act, 2006* or as most recently approved following any amendments or reviews under that Act.”

11.1.2 Determining Areas Subject to Mandatory Maintenance Inspections

Septic systems subject to mandatory maintenance inspections are those located where they are or would be a significant drinking water threat. This determination considers whether the system is in a vulnerable area, the vulnerability score at the system’s location, and the circumstances related to the system. In most cases, septic systems are considered significant threats only in wellhead protection areas (WHPAs) and/or intake protection zones (IPZs) with a vulnerability score of 10. These areas are relatively small. However, there are situations in which septic systems may contribute to an existing issue of impaired water quality and the resulting vulnerable area could be quite extensive. In both cases, all sewage systems subject to the program must be inspected.

Figure 1 illustrates the various vulnerability scores associated with a WHPA. Sewage system maintenance inspections are mandatory only in the red area shown on the map, where the vulnerability score is 10, and where septic systems are considered significant threats. Refer to Module 2 for detailed definitions and descriptions of how vulnerable areas and significant threats are delineated. Figure 2 provides a map of the Rosslyn Village Wellhead Protection Area and Vulnerability Scores. Septic inspections are required for septic systems located within WHPA-A (i.e. 100 metre radius around the wells).

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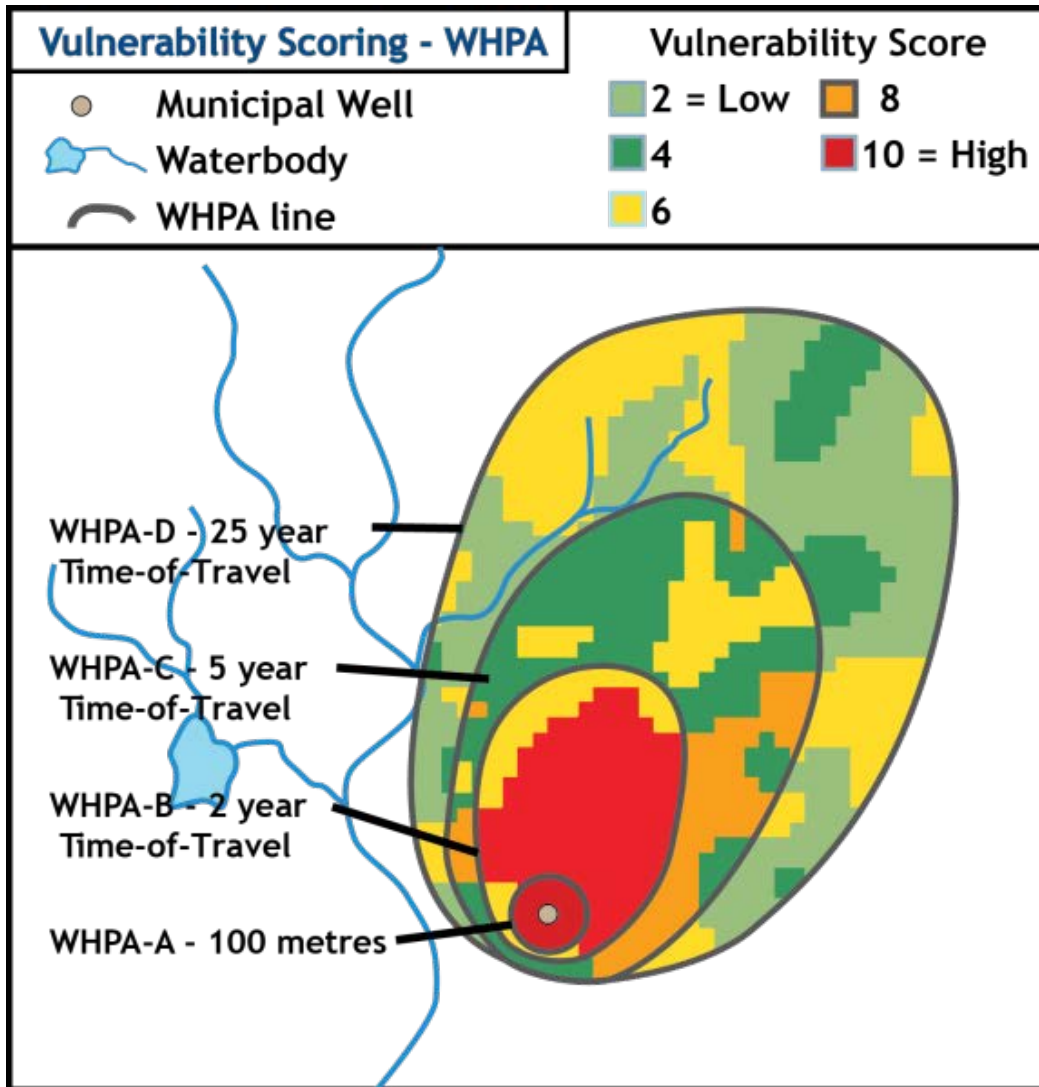


Figure 1: Wellhead Protection Area and Associated Vulnerability Scores (Ministry of the Environment and Climate Change, 2012)

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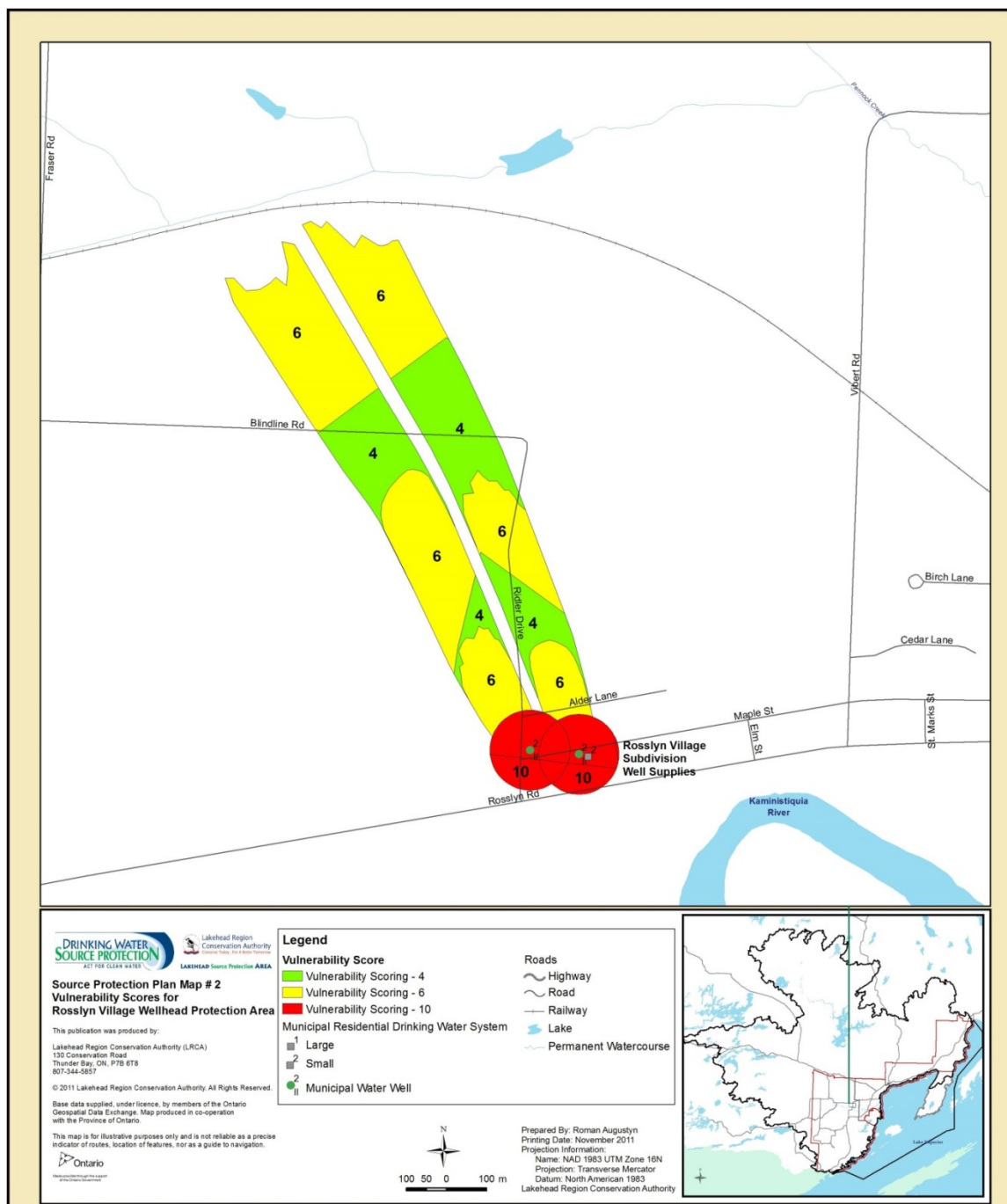


Figure 2: Rosslyn Village Wellhead Protection Area and Vulnerability Scores

11.1.3 Timelines for Maintenance Inspections

The Building Code also establishes timelines for the execution of mandatory maintenance inspections. Inspections for existing systems identified as significant threats should be completed no later than five years after the approval of a local Assessment Report. The Lakehead Assessment Report was approved on June 21, 2011; therefore the first round of inspections must be completed by June 21, 2016. For a comprehensive list of program completion deadlines

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established for each source protection area in Ontario, refer to, Appendix A of this module. Onsite sewage treatment systems installed on or after the publication of a local source protection plan will need to be inspected within five years of their construction. Furthermore, all treatment systems subject to maintenance inspection programs will need to be inspected every five years on a recurring basis, following initial inspection.

The Building Code sets out the minimum requirements with which principal authorities must comply when administering maintenance inspection programs. As previously mentioned, under the *Building Code Act* (section 7(1) (b.1)), principal authorities also have the discretion to establish inspection programs in other parts of their jurisdiction, beyond what is mandatory under the Building Code.

11.1.4 How to Implement

The *Building Code Act, 1992*, requires that the principal authority with jurisdiction over Part 8 of Division B of the Building Code (the construction, operation and maintenance of all sewage systems), take on the responsibility of establishing and conducting maintenance inspection programs. In most cases this principal authority will be the local municipality. In unorganized territories and some municipalities, the administration and enforcement of Part 8 of the Building Code may be assigned to a Board of Health or conservation authority. Where a municipality has delegated the responsibility to a conservation authority or Board of Health by an agreement, it may be necessary to determine if the existing wording of the agreement would address the mandatory maintenance inspection program or if additional clauses may need to be negotiated to delegate this added task.

Under the *Building Code Act* section 7(1) (b.1) municipalities are authorized to pass by-laws to help establish and administer sewage system maintenance inspection programs in accordance with the Building Code and *Building Code Act*. By-laws can aid municipalities with the enforcement of sewage system maintenance inspection programs in their community, as well as help define the parameters associated with the inspection program. A sample by-law established for the mandatory maintenance inspection program for the Tay Valley Township is provided in Appendix B for reference.

The Ontario Building Code gives principal authorities the power to implement their sewage system inspection programs using a number of different approaches. This section will outline some of these potential implementation options.

11.1.4.1 In-House Inspection Program

After establishing the parameters of the program, the principal authority must appoint personnel qualified according to the requirements of Section 3.1 of Division C of the Building Code to carry out sewage system maintenance inspections. Under the Code, qualified inspectors are individuals who have successfully completed the examination program administered by the Ministry of Municipal Affairs and Housing, related to the Building Code and *Building Code Act*.

Qualified inspectors are permitted to carry out sewage maintenance inspections, sign inspection reports, issue orders (including unsafe orders and emergency orders to remediate dangerous

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situations), and enter property to conduct an inspection. Qualified inspectors may include individuals from within the organization, such as the Chief Building Official and supporting staff.

The Building Code also authorizes intern inspectors who are not fully qualified under the Building Code to conduct inspections of onsite sewage systems under mandatory and discretionary inspection programs. These inspectors must be supervised by a Chief Building Official or qualified inspector and cannot issue any orders. For more information on inspector qualifications, visit the Ministry of Municipal Affairs and Housing website: <http://www.mah.gov.on.ca/Page9846.aspx>

11.1.4.2 Third-Party Inspection Program

As an alternative to retaining existing staff members to conduct inspections, principal authorities may choose to accept third-party inspection certificates prepared by a qualified person. Under the Building Code (section 1.10.2.5, Division C) municipalities have the authority to accept approved inspection certificates completed by qualified third parties. In accordance with section 1.10.1.3 (3), qualified third parties include designers and installers of onsite sewage systems holding a Building Code Identification Number, architects, and professional engineers. Principal authorities may decide to require property owners to contract a qualified company to conduct the inspection and complete a third-party inspection certificate. Third-party inspection certificate forms are available through the Ministry of Municipal Affairs and Housing website, and should be issued by principal authorities. A sample third-party inspection certificate form is also available in Appendix B.

Principal authorities may also opt to establish a contract with a qualified consulting or engineering firm to complete the inspection program. Authorities should retain firms with experience in onsite sewage design and inspections. Contracts should be established with firms meeting the section 1.10.1.3(3) qualification requirements of Division C of the Building Code. Establishing a contract with a firm requires the firm to take on the responsibility for completing all of the inspections for the municipality over an established period of time.

For more information on how to implement maintenance inspection programs in your community, visit the Ministry of Municipal Affairs and Housing website: <http://www.mah.gov.on.ca/Page9845.aspx>

11.1.4.3 Requirement to Monitor Implementation in Source Protection Plan

Source protection plans include policies to track the implementation of policies addressing significant drinking water threats, including septic system maintenance inspection programs, and to gauge their effectiveness. More specifically, these monitoring policies help ensure that the established program is effectively addressing the risks to sources of drinking water, by providing the source protection authority access to documentation and data relating to the inspection program. Access to information about the maintenance inspection programs (e.g. total number of systems, number of systems inspected, number of orders to remediate) is important for tracking

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the effectiveness of the policy, and planning for future policy development. Principal authorities should work cooperatively with their local source protection authority to track the effectiveness of the established program and monitor implementation.

11.1.5 Inspection Method

During an inspection, inspectors should aim to identify any defects or failures in the treatment system. An equally important goal of the maintenance inspection should be to determine the risk of future malfunction or failure in the system. Following an inspection, principal authorities should be able to confidently determine if the system is in compliance with the operation and maintenance requirements outlined in the Building Code (section 8.9 of Division B). The six steps of the inspection process, as shown on Figure 2, are detailed later in this section.

11.1.5.1 What Constitutes an Inspection?

When carrying out the inspection, inspectors may choose to implement a tiered approach, and conduct the assessment in phases. Initial (Phase I) inspections should be non-intrusive, and should thus avoid significant disturbance to the system. In the first phase of the inspection, inspectors may want to obtain the latest records available in order to locate the system's components, and identify any apparent signs of malfunction or risk of failure.

In many instances, the completion of a Phase I inspection will be sufficient to determine compliance with the standards outlined in the Building Code. When a Phase I inspection indicates that a system is at risk of future failure, or when the initial inspection does not reveal an obvious reason for an existing malfunction, a second, more intrusive inspection will be necessary. This Phase II inspection should determine the cause behind observed problems and suggest remedial actions to bring the system into compliance with the Building Code.

The following section outlines a series of progressive steps to consider when establishing and administering a sewage system maintenance inspection program. Figure 2 summarizes the steps for setting up and implementing an inspection program. Consult the document Onsite Sewage System Maintenance Inspections in Appendix C of this module for information on how to plan and conduct onsite sewage system maintenance inspections.

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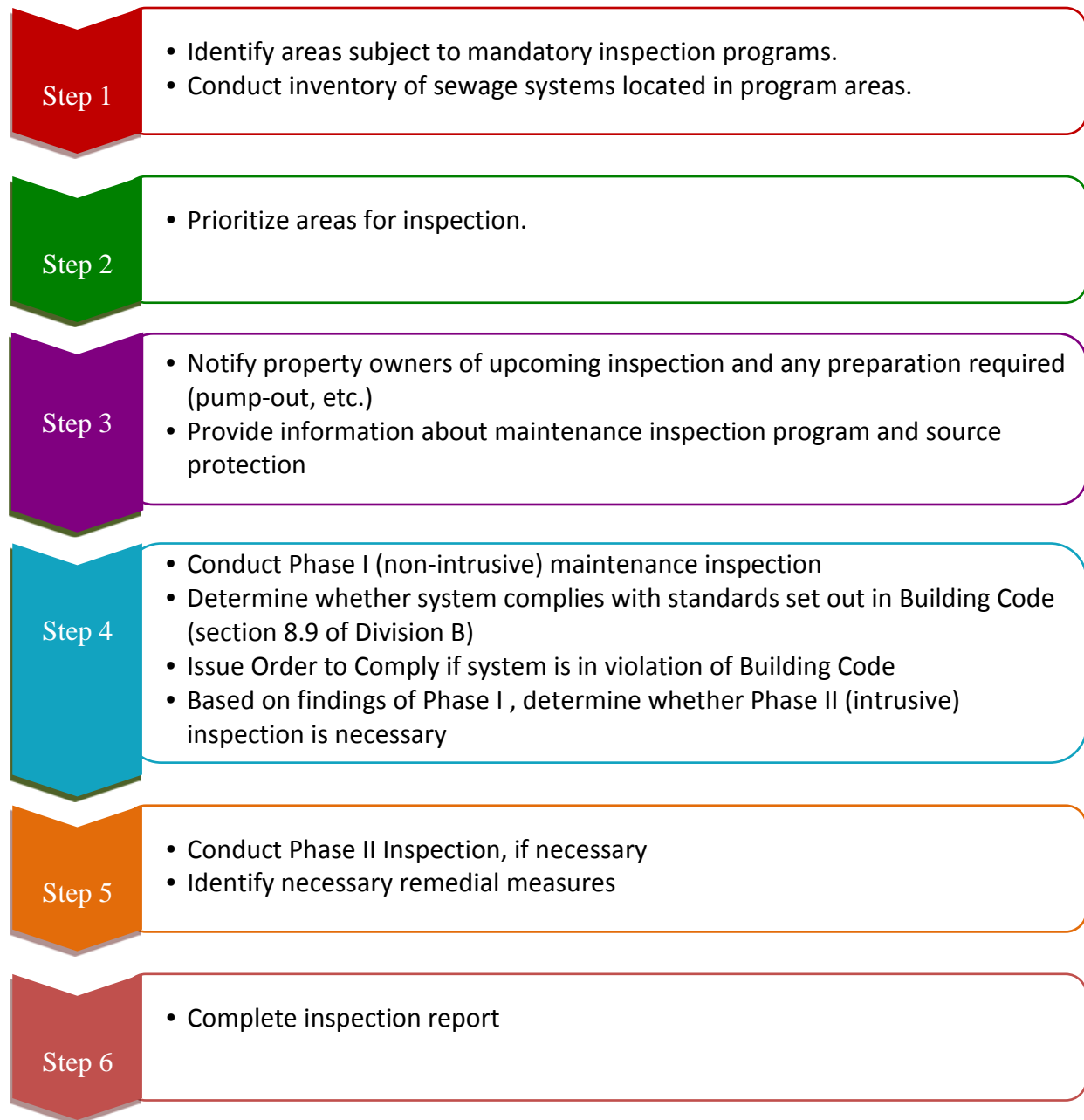


Figure 3: Suggested Steps for Setting up and Implementing a Sewage System Maintenance Program.

Step 1: Identification of Sewage System Maintenance Inspection Program Areas and Sewage System Inventory

To effectively implement an inspection program, principal authorities should first identify the areas in their jurisdiction that are subject to the mandatory maintenance inspections. Identifying these areas will also help authorities decide what additional areas they may want to incorporate into their discretionary programs, if they choose to implement them. Principal authorities will want to refer to Assessment Reports produced by their local source protection committee.

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Assessment Reports contain maps that delineate areas where sewage systems are subject to mandatory inspection programs. Much of this information is available from the local source protection authority. Electronic versions of Assessment Reports are also available through your source protection authority's website. Alternatively, hard copies are available for viewing at your local conservation authority.

Following identification of program areas, principal authorities should locate the individual sewage systems situated in each area. A review of the following items may assist authorities with the identification of mandatory program areas and individual sewage systems:

- Assessment Reports, in consultation with the local source protection authority, to determine septic systems identified as part of the Assessment Report threat enumeration
- permit applications submitted under the *Building Code Act, 1992*
- certificates of approval or use permits issued under the *Environmental Protection Act*
- orders issued under the *Building Code Act, 1992*
- records of problems and complaints regarding sewage systems
- water use records
- maintenance inspection reports (for systems that require the existence of a service agreement as a condition of use, or for systems previously inspected by the principal authority);
- lists of properties with residential or other uses not serviced by either municipal services or sewage works administered by the Ministry of the Environment and Climate Change
- field surveys

Step 2: Prioritization of Areas for Inspection

After identifying areas subject to inspection programs, local enforcement bodies may want to prioritize the areas based on their risk to sources of drinking water. Maps of surface water intakes and WHPAs (documented in Assessment Reports), as well as records of known groundwater or surface water contamination related to sewage may be helpful in this regard. Suggestions for prioritizing systems based on risk:

- systems in proximity to municipal drinking water wells or surface intakes
- areas with existing ground or surface water contamination issues
- older systems and systems without records

Step 3: Inspection Notification

Notifying property owners of planned inspections will give them an opportunity to gather records that may assist the inspector with the process. Notifications sent well in advance of planned inspection dates will also allow property owners to have their systems pumped, undertake remedial work prior to the assessment, and be onsite on the day of evaluation.

If the principal authority decides to accept third-party inspection certificates as an alternative to conducting inspections, property owners should be allowed appropriate time to retain a qualified person to inspect and to remediate any problems with the system prior to returning the signed certificate. Third-party certificate forms are available through the Ministry of Municipal Affairs and Housing website (<http://www.mah.gov.on.ca/Page9235.aspx>), and should be issued by

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principal authorities to third-party inspectors for completion. When third-party inspectors return the certificate, principal authorities have the power to decide whether to accept or reject the certificate. A sample of the form can also be found in Appendix B.

When drafting notifications, the principal authority should include details such as associated fees, procedural information, the legislative authority for the inspection program, and a contact name to whom property owners can direct questions. The notification may also state whether the principal authority will be accepting third-party inspection certificates and, if so, advise property owners to notify the responsible authorities when they have retained a third party. Educational materials related to source protection could be distributed to homeowners with this notification. The principal authority should consult with the source protection authority to ensure they have all materials.

Find a sample notification letter in Appendix B.

Step 4: Phase I Inspection

A Phase I inspection should be a non-intrusive process that aims to establish compliance with the Building Code (section 8.9 of Division B). Ultimately, the inspector should identify any existing defects in the system, and potential risks that may trigger future malfunctions. When conducting the Phase I, the inspector will conduct a comprehensive review of any available records that provide information about the specific components of the system. During the Phase I inspection, the inspector should aim to determine:

- the type of occupancy to determine the source and type of the sanitary sewage
- the source of water supply (municipal, well, lake, etc.)
- the approximate volume of sewage generated
- the use of special devices such as garbage grinders or water softeners
- the general nature of the system (class, components, type, layout, etc.)
- the location of the system's components with respect to wells, surface water, and other environmental features
- the approximate level of ground water

This may be achieved by

- reviewing local maps and records of ground water elevation observed on site or nearby properties, including the local assessment report, if available;
- observing the conditions of the septic tank and the distribution box for indications of ground water infiltration;
- observing the elevation of nearby water body, or evidence of ground water infiltration in other subsurface structures; or
- the use of hand augering.
- the size, material and condition of the septic tank, or the holding tank
- the frequency of tank pump-out and the last time the tank was cleaned
- any indication of sewage system failure, including:
 - evidence of backup of effluent
 - signs of hydraulic failure (breakout of sewage, wetting conditions in the leaching bed area)
 - condition of surface vegetation

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- odour problems
- documentation of previous effluent sampling test results where required (i.e., under Article 8.9.2.4. of the Building Code).

A Phase I inspection may sufficiently establish compliance with the Building Code. When the Phase I inspection indicates a defect or failure of the system, a Phase II inspection is required.

Step 5: Phase II Inspection

Phase II inspections should be conducted when the inspector determines that the system is at risk of future malfunction or failure following the completion of the Phase I inspection. A Phase II inspection may also be necessary when the inspector identifies a malfunction or failure in the system, but cannot readily identify the cause for the failure.

The inspector may consider this list of matters when undertaking the Phase II investigation:

- the depth of the sludge layer and the distance from the top of the sludge layer and the outlet tee
- the thickness of the scum layers
- the distance between the bottom of the scum/grease layer and the bottom of the outlet tee
- the distance between the top of the scum layer and the top of the outlet tee;
- the physical condition of the inlet and outlet
- the condition of the effluent filter, if utilized

For sewage systems utilizing treatment units, Phase II inspections may also include a review of these items:

- the existence of a maintenance agreement and the date of latest servicing
- the test results of a new round of effluent sampling (if otherwise required by the Building Code, or by an authorization issued by the BMEC)
- operational problems or system malfunction before or, at the time of inspection

When used in sewage systems, distribution boxes, dosing tanks and pumps may be inspected to determine their condition and functionality.

Phase II inspections of leaching beds may also consider:

- clearance distances to environmental features, wells and surface water intakes
- soil type and its permeability
- additional sources of hydraulic loading (e.g. surface discharge, roof drains)
- evidence of ponding
- encroachments into the leaching bed area (e.g. building additions, patios, driveways, pools)
- trees and deep rooting shrubs in the vicinity of the bed

Blockages in the leaching bed and pollution sources may be identified by measures including:

- evaluation of in-home plumbing and estimates of water usage,

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- conducting a leak diagnostics,
- conducting a flow trial,
- conducting a dye tracing test, or
- excavating a cross section of the leaching bed.

Step 6: Inspection Reports

Following the inspections, principal authorities should create records that include this information:

- identification of the property attended
- identification of any information collected as part of the inspection
- status of deficiencies noted in previous inspections
- deficiencies identified during the current visit
- the legislative authority for the inspection program
- enforcement action taken

These records may be useful when undertaking future inspections. For a sample inspection report, see Appendix B.

11.1.6 What This Means to My Municipality

The Thunder Bay District Health Unit is responsible to conduct all required inspections required under the Lakehead Source Protection Plan.

11.1.7 Inspection Program Comparison

The Township of Huron-Kinloss, Township of Ramara, and Tiny Township each have septic inspection programs. They have been running their programs for different lengths of time with some differences in their approach. Table 1 highlights some of the key comparison areas.

Table 1: Inspection Program Comparison Chart

Program (more details provided in Appendix D)	Mandatory under <i>Clean Water Act, 2006</i>	Huron-Kinloss Community Septic Inspection Program	Ramara Onsite Sewage Maintenance Inspection Program	Tiny Township Inspection Program
Inspections conducted by	As designated by principal authority	Third-party qualified inspectors coordinated by local engineering firm - B. M. Ross and Associates Limited	Third-party inspection was attempted, discontinued, and replaced by contract with local consulting engineer	Contract with local consulting engineer C.C. Tatham & Associates

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Program (more details provided in Appendix D)	Mandatory under <i>Clean Water Act, 2006</i>	Huron-Kinloss Community Septic Inspection Program	Ramara Onsite Sewage Maintenance Inspection Program	Tiny Township Inspection Program
Inspection rotation	Every 5 years	Every 6-7 years	Every 5 years	Every 5 years
Area included	Vulnerable areas only for those areas where activity designated as existing or potential significant drinking water threat	All sewage treatment systems in township	Ontario Building Code (OBC) legislated – landowners sent letters	Community program initially, now following OBC requirements
Year of establishment	2011	2007	2011	2002
How program is funded	Per principal authority	Flat rate fee on property tax bill, \$55 for inspection, pump-out at owners expense	Landowner pays township fees and must complete any needed work under stipulated timelines	Landowner pays fees to township for first phase and sewage hauler for pump out
Prioritizing	No later than 5 years after approval of local Assessment Report for existing, within 5 years after source protection plan published for new construction	Perceived risk/no records or 20 years old were inspected first	Volunteers first then as required	High-risk systems first

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Program (more details provided in Appendix D)	Mandatory under <i>Clean Water Act, 2006</i>	Huron-Kinloss Community Septic Inspection Program	Ramara Onsite Sewage Maintenance Inspection Program	Tiny Township Inspection Program
Steps	At discretion of principal authority conducting the program	Three steps: 1. Pump-out (if not done in past 12 months) 2. Third party inspector performs visual, non-invasive inspection and documents features of property, uses camera to look in tank and takes system history 3. Education materials, aerial photo and inspection reports sent to landowner	Two steps: 1. Consulting engineer – visual surface inspection 2. Property owner must arrange a pump-out and send certificate to township – see samples in Appendix B	Two steps: 1. Visual surface inspection; any deficiencies are noted and senior inspectors follow up and issue orders for compliance 2. Pump-out with written report and receipt submitted to consulting firm

11.2 Transport Pathways, s.27, Clean Water Act

11.2.1 Overview

Transport pathways may increase the risk of contamination to both surface and subsurface drinking water sources by circumventing the natural protection that soils and overburden create. Their presence may increase the distribution of contaminants horizontally (e.g. sewer lines) and/or vertically (e.g. wells) throughout the drinking water source.

The *Clean Water Act* defines transport pathways as “a condition of land resulting from human activity that increases the vulnerability of a raw water supply of a drinking water system,” (O. Reg. 287/ 07, s.1). The intent of this legislation is to address artificial (or “constructed”) transport pathways, such as storm sewers, ditches and improperly constructed or abandoned wells. Naturally occurring transport pathways, such as fractured bedrock and karst formations, are accounted for separately under the intrinsic vulnerability assessment that is part of the scoring system for WHPAs.



Figure 4: Under high flows, municipal drains and storm sewers can rapidly move contaminants toward a surface water intake. (SGSNBP Source Protection Region)

11.2.2 Requirement to Report Transport Pathways under the Clean Water Act

In an effort to reduce the risk to drinking water sources from transport pathways, s. 27 of O. Reg. 287/ 07 requires municipalities to report any new transport pathways to the source protection authority and source protection committee. In turn, the source protection authority and source protection committee will make sure the source protection plan (including the Assessment Report section) is appropriately updated to account for the new transport pathways to help ensure the assigned implementing body is implementing all applicable policies.

Considering the extent that water can travel in a given time, transport pathways can influence surface water sources. See Section 11.2.4 for further details.

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Examples of transport pathways that may increase the risk of contamination to surface water sources include:

- drainage ditches
- storm sewers
- tile drains

For groundwater sources, transport pathways act as a conduit that may bypass some of the natural protection offered by soils and other material that overlies an aquifer. See section 11.2.4 for further details. Examples of transport pathways that may increase the risk of contamination to subsurface water sources include:

- improperly abandoned wells
- aggregate pits
- boreholes
- improperly constructed or maintained wells
- deep excavations, such as trenching for sewer lines



Poorly maintained wells can provide a conduit for contaminants to travel from the surface down to the aquifer. (SGSNBP Source Protection Region)

11.2.3 Reporting Transport Pathways under the Clean Water Act

According to O. Reg. 287/07, s. 27(3), if a municipality receives a development application or other application related to a project where the proponent proposes to engage in an activity that could create a new, or modify an existing, transport pathway in a WHPA or IPZ, the municipality must provide notice of the proposal to the source protection committee and source protection authority. A copy of the notice is also provided to the person responsible for the proposal (O. Reg. 287/07, s. 27(4)).

The notice of the proposal must include (O. Reg. 287/07, s.27(3)):

- a description of the proposal
- identity of the person responsible for the proposal
- description of the approvals the person requires to engage in the proposed activity

The source protection committee can consider changes to the vulnerability scoring for any transport pathway notices for the respective portion of the vulnerable area. The timing of this review and determination is at the discretion of the source protection committee. The review of

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transport pathway notices could form part of the terms of reference for an update to the Assessment Report (CWA, s. 36). The time between such updates may be several years, however.

There is an optional process whereby the source protection authority, with the concurrence of the source protection committee, may initiate an amendment to the source protection plan under s. 34 of the *Clean Water Act* (see also O. Reg. 287/07, s.48). The source protection authority could decide to initiate an amendment based on an analysis of the impacts that a project referenced in a transport pathway notice could have. For example, the review process could reveal that a new transport pathway would change the vulnerability score, and, as a result, nearby activities could become significant drinking water threats. Consultation requirements for amendments are specified in O. Reg. 287/07, s. 48 and 50. If the project proceeds, the source protection authority would submit the amendment to the Ministry of the Environment and Climate Change and Climate Change. Once the amendment is approved, the applicable source protection plan policies would apply in that area.

Municipalities could also have the option to include an analysis of the impact of a transport pathway during the application review process. The municipality could use the information from the analysis to better inform its decision on an application. Under the Provincial Policy Statement, “planning authorities shall protect, improve or restore the quality and quantity of water...” (PPS 2014, s. 2.2). The municipality could make arrangements with the local conservation authority to undertake a review of an application during its processing before any decision is returned to the proponent. This review process could be part of a service agreement with the conservation authority. Alternatively, the municipality could require the proponent of the application to undertake a study that would achieve a similar determination and submit the report to the municipality as part of the complete application requirements.

Figure 5 depicts the basic reporting process municipalities should follow when a new transport pathway is identified, as well as the options for considering the potential impacts of the transport pathway on nearby activities.

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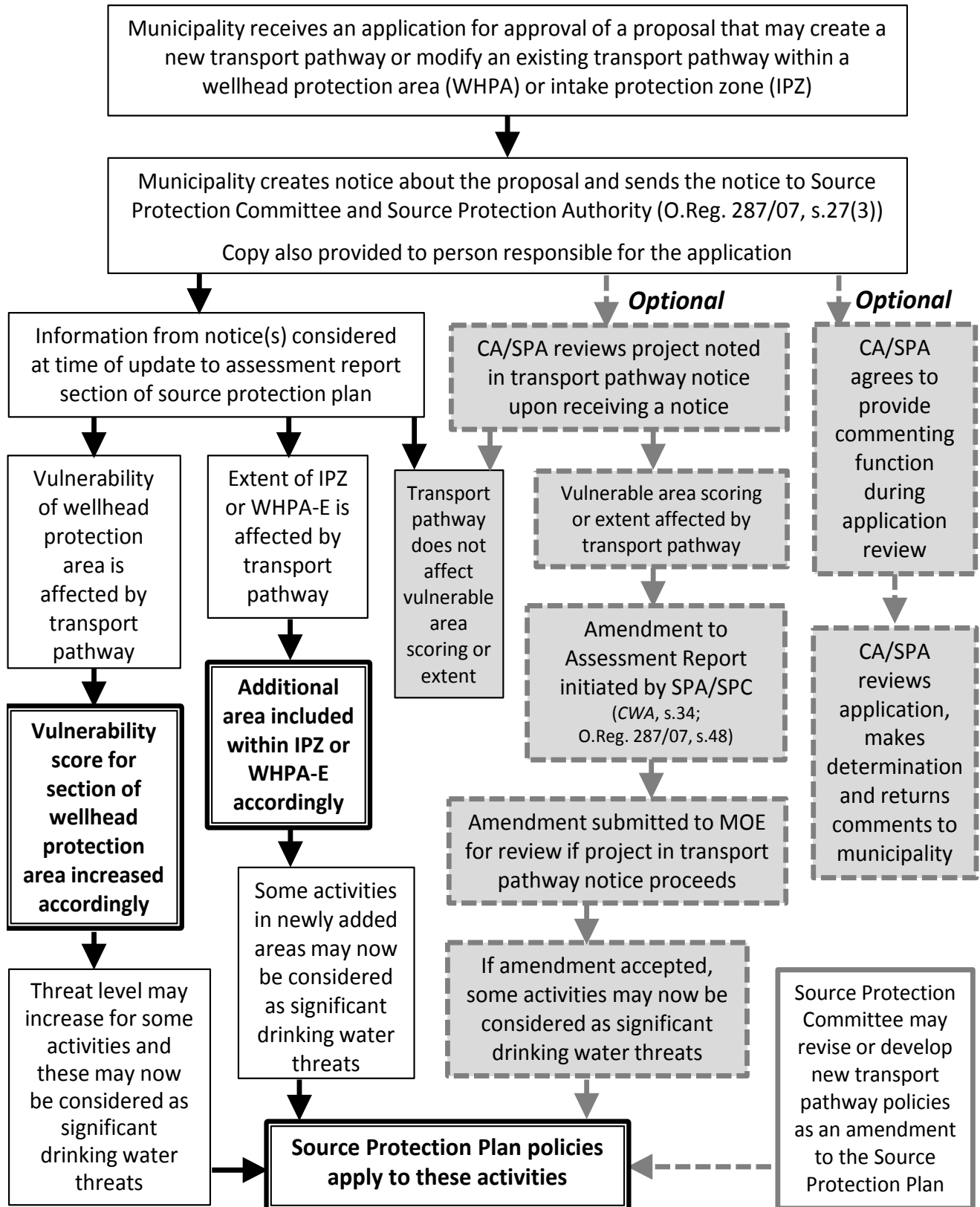


Figure 5: Process for Reporting New Transport Pathways to Source Protection Authority

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11.2.4 Transport Pathways' Effect on Vulnerability or Extent of Vulnerable Area

The source protection authority will compile the information from notices pertaining to any new and/or modified transport pathways and use these to consider amendments to the Assessment Report section of the source protection plan, and/or future updates of these documents.

For WHPAs the transport pathway may trigger a change of the vulnerability scores. The vulnerability scores for groundwater (i.e. WHPAs) are developed by intersecting intrinsic vulnerability with associated time-of-travel capture zones. Technical Rules 38, 39, and 40 allow for the intrinsic vulnerability score to be increased taking into account the impact of transport pathways. Hydrogeological conditions, type and design of transport pathway, cumulative impact, and extent of any assumptions used in the vulnerability assessment, must be considered when determining whether vulnerability of an area is increased (*Clean Water Act*, Technical Rules, December 2009). Notices generated by municipalities about potential new transport pathways will serve as one source of information. See also Vulnerability Scoring for Wellhead Protection Areas in Module 2 for more information.

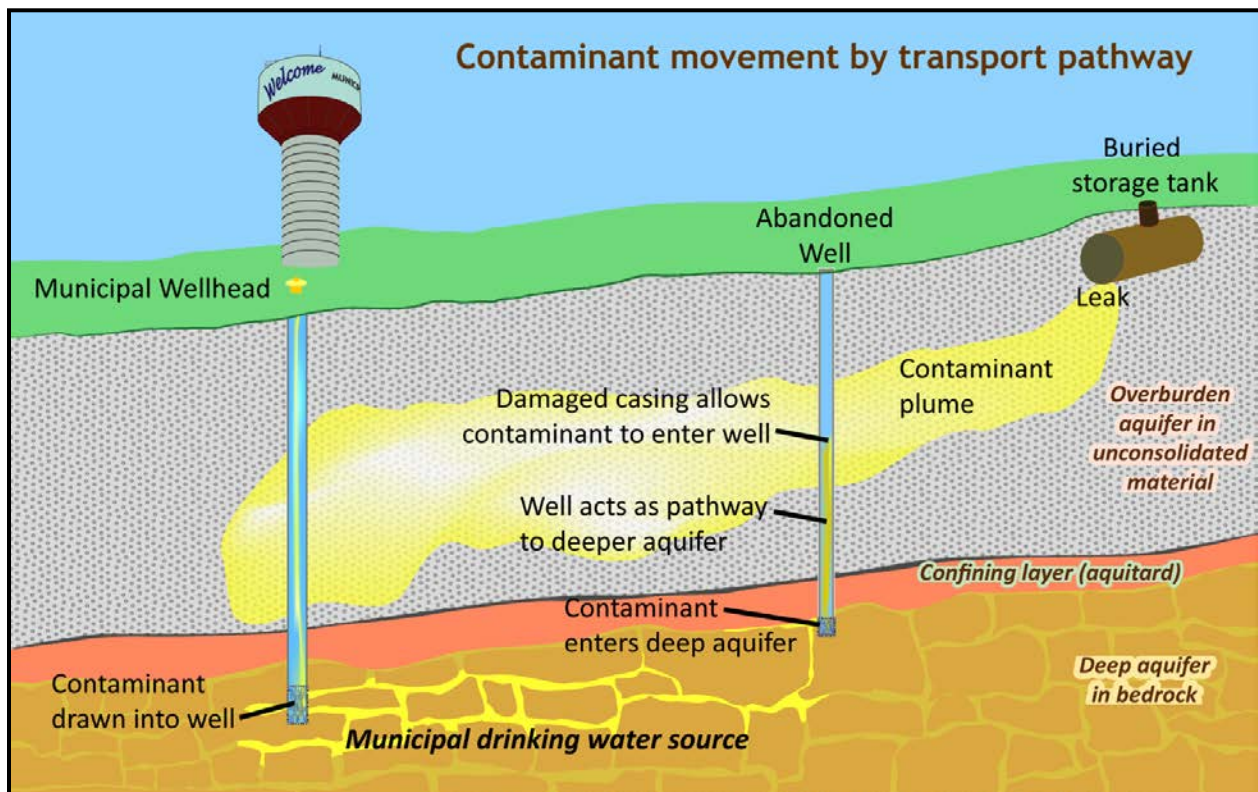


Figure 6: Sample Process of Contaminants Using a Transport Pathway to Migrate from One Aquifer to Another and Cause Contamination of a Municipal Drinking Water Source.

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Improperly constructed or maintained wells may allow contaminants to travel in subsurface zones. For example, a failed seal could allow a spill plume in an upper aquifer to enter the well and exit into a deeper part of the same aquifer. The spill could even bypass a confining layer, or aquitard, that normally acts as a barrier between two aquifers and enter a deeper aquifer (see Figure 6). The removal of material in a gravel pit operation may eliminate much of the natural protection between the surface and the groundwater.

If it is determined that the transport pathway(s) would increase the intrinsic vulnerability of part of the WHPA, the vulnerability score of that part may also be increased. Changes to vulnerability scores in the area adjacent to the transport pathway may mean that low or moderate threats become significant drinking water threats. Therefore, some existing activities may become subject to source protection plan policies included in the approved source protection plan (e.g. risk management plans), where they had not been subject to policies prior to the new transport pathways being proposed/created. Future activities may also become subject to source protection plan policies.

Transport pathways affecting surface water sources can result in extended delineation of vulnerable areas, specifically IPZ-2, IPZ-3 and WHPA-E. In urban areas, storm sewers are designed to convey rain and snowmelt away from roads, buildings and structures. A similar function is served by roadside ditches and municipal drains in rural areas. Tile drains in agricultural lands are buried, perforated pipes that work as a subsurface drainage system to collect water percolating in the soil. Some of the water this subsurface system collects will eventually leave the field through outlet pipes to a ditch or watercourse. Because these constructed facilities are hydraulically connected to bodies of water, they are considered part of the flow network when looking at surface water vulnerable areas.

Technical Rules 72-75 allow for the extension of surface water vulnerable area delineations to include an area with a conduit that may decrease travel time of contaminants to an intake (e.g. storm sewers or tile drains). Changes to transport pathways within or near one of these zones may warrant an update to the delineation of the vulnerable zone. Changes to the extent of the vulnerable area delineation may mean that activities previously not subject to policies are now in a vulnerable area where the activity would be considered a significant threat and subject to source protection plan policies.

The source protection committee may choose to revise existing transport pathway policies, if included in the source protection plan, or develop new transport pathways as part of an amendment to the source protection plan, per O. Reg. 287/07, s. 27.

11.2.5 What This Means for My Municipality

Transport pathways may increase the risk to drinking water as a result of an activity near the pathway. Transport pathways are different than threat activities, so they need special policy considerations. Under O. Reg. 287/07, s. 27 (1), municipalities can address transport pathways using the following policy types:

- stewardship programs
- pilot programs
- best management practices
- governing research
- specify actions required to implement source protection plan

Consult the local source protection authority to discuss the types of activities that may create potential transport pathways that would have to be reported and whether any source protection plan policies address transport pathways.

11.3 Spill Prevention, Contingency, or Response Plans

11.3.1 Overview

A spill means a discharge of a pollutant into the natural environment from or out of a structure, vehicle or other container, and that is abnormal in quality or quantity in light of all the circumstances (*Environmental Protection Act*, s. 91(1)). The *Clean Water Act* allows source protection plans to include policies that focus on spill prevention, contingency, or response plans. According to s. 26(6) of O. Reg. 287/07, these policies may specify actions to update spill prevention plans, spill contingency plans, or emergency response plans with respect to spills that occur within a WHPA or surface water IPZ along highways, railway lines or shipping lanes. These policies are not significant threat policies and therefore are not legally binding on municipalities, except in limited situations pertaining to local threats.

Some source protection committees opted to include the transportation of specified substances along corridors as a local threat (the Technical Rules require that these be approved by the Director of the Source Protection Programs Branch of the Ministry of the Environment and Climate Change). In a few cases, the transportation of oil through pipelines has also been included as a local threat.

11.3.2 What Are Spill Prevention Plans?

There are three types of spills plans: spill prevention, spill contingency and emergency response. The primary objectives are to help prevent or reduce the risk of spills of pollutants and prevent, eliminate or recover from any adverse effects that result or may result from spills. Actions may

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include notifying appropriate levels of government, as well as the affected members of the public, and the developer of the plan. The impacts as well as the outcomes of most spills are directly related to the level of preparedness.

Spill prevention plans, spill contingency plans, and emergency response plans are continually evolving documents. Major themes outlined in these plans include:

- Prevention: actions taken to prevent spills or emergencies; may be long-term and include capital improvements, regulations, building codes, and public education
- Mitigation: actions taken to reduce or eliminate the effects of a spill or an emergency
- Preparedness: measures taken prior to spill or emergency to ensure effective response; may include plans, procedures, public education, and training, such as for emergency responders
- Response: measures taken to ensure a controlled, coordinated and effective response
- Recovery: measures to assist individuals, businesses and communities to return to a state of normalcy; may include clean up and financial assistance.

Each plan details the actions, documentation, and responses to spills. Changes to any one of the included elements of these plans could necessitate changes to other plan components as well. Updates to these plans could address existing gaps related to protecting municipal drinking water supplies. Note that other source protection plan policies may apply to these activities and that the implementation of these other policies may facilitate the prevention of spills.

The municipality may use the process of reviewing and updating emergency response plans as a communication tool for both the municipality as an organization, and the general public. Within the municipal organization, staff members in different departments would be made aware of vulnerable areas (i.e. WHPA or IPZ) to provide the appropriate response in the event of a spill. These actions may also result in greater public awareness of the location of vulnerable areas.

11.3.3 Requirements of Source Protection Plan Policies

Here are some notes about spill response and contingency policies in source protection plans:

- Fewer than half of the local source protection plans have policies about spills
- Spill policies are not legally binding
- Some plans have opted to include a road signage policy for consistent signage design for vulnerable areas across the province. The signs are intended to increase awareness of the location of vulnerable areas for transport companies, emergency response personnel and the general public.

Refer to the local source protection plan to determine if there are policies that would apply in your municipality. Appendix E contains some examples of spill policies.

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11.3.3.1 Current legislation/policies/program

Table 2 highlights current legislation, policies and programs at various levels of government which may affect spills plans. Consideration of these elements and vulnerable areas during spills plan development may facilitate communication between agencies, avoid duplication of effort and assist in the protection of drinking water sources. The Thames-Sydenham Source Protection Authority has developed a summary of these laws, policies and programs, [available on its website](#).

Table 2: Current legislation, policies and programs applicable to SPP spills policies

Level of Government	Applicable Legislation/Policies/Programs
Federal	Emergency Management Act
	Canadian Regional Emergency Teams
	transCAER (Transportation Community Awareness and Emergency Response) Program
	Marine
	Canada-United States Joint Marine Pollution Contingency Plan
	Canadian Coast Guard Marine Spills Contingency Plan
	Transport Canada's National Marine Oil Spill Preparedness and Response Regime
	St. Lawrence Seaway Management Corporation
	Land
	Canada-United States Joint Inland Pollution Contingency Plan
	National Environmental Emergencies Contingency Plan
	Transportation of Dangerous Goods Act and Regulation
	Chemistry Industry Association of Canada
	<ul style="list-style-type: none"> • Responsible Care Programs • Transportation Emergency Response Programs
Canadian National Railway Emergency Response Plan	
Provincial	Environmental Protection Act 1990
	Ontario Regulation 224/07-Spill Prevention and Contingency Plans
	MOE Spills Action Centre
	Emergency Management and Civil Protection Act 1990
	Ontario Regulation 380/04-Standards
	Province of Ontario Emergency Response Plan
Municipal	Municipal By Laws and Emergency Plan

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11.3.3.2 General Source Protection Plan Spills Policy Content

When a source protection committee has chosen to include spills policies in its plan, it may also direct that spill prevention and contingency plans or emergency response plans include education and outreach components to:

- Raise awareness of the need for timely and adequate spill response related to the transportation and handling of goods within IPZs and WHPAs
- Provide training to emergency responders, transportation agencies and operators including maps and information about the areas where a spill could be a significant drinking water threat.
- Ensure that the drinking water system operator is alerted in the event of a spill.
- Provide information to the general public, such as what to do in the event of a spill and the reasons for not discharging contaminants like used motor oil onto the ground or into the water.

Some spills policies also direct municipalities to consider:

- location of vulnerable areas when planning new highways or arterial roads
- municipal by-laws to prohibit transportation of specific substances/volumes through vulnerable areas
- signs alerting drivers that they are entering IPZ/WHPAs, particularly emergency responders
- enhancements to emergency response programs that include training and equipment to manage spills
- upgrading/reviewing water treatment response time and equipment
- updates to spill prevention plans, spill contingency plans and emergency response plans to identify all IPZs and WHPAs

In addition, some spills policies may request that the MOE Spills Action Centre review and update procedures to include source protection mapping and communicate spill information to municipal contacts in a timely way. Some spills policies encourage the Ministry of Transportation to conduct a regional and province-wide review of Emergency Detour Routes considering IPZs. Consult your local source protection plan for applicable policies.

11.3.4 What It Means for My Municipality

When a source protection plan has policies related to spills response and contingency plans, the municipality should review the local policies and take action depending on the details of the policy. Where a spills policy addresses a local threat, your municipality may be legally obligated to implement the policy.

Module 8 – Other Obligations

Whether or not your local source protection plan includes spills policies, or the spills policies do not apply to your municipality, municipalities are encouraged to consider updating their spill prevention, contingency and emergency response plans as a best management practice and/or communication tool. Having spills response plans in place can protect local water sources beyond the municipal residential drinking water systems included in Assessment Reports and source protection plans.

Appendix A: Septic Inspection Program Deadlines

Module 8 – Other Obligations

Septic Inspection Program Deadlines

Table 9: Inspection Program Completion Deadlines According to Source Protection Authority

Source Protection Area	Assessment Report Approval Date	Deadline for Completion of Inspection Program
Ausable Bayfield Source Protection Area	9 January, 2012	9 January, 2017
Cataraqui Source Protection Area	16 January, 2012	16 January, 2017
Catfish Creek Source Protection Area	29 November, 2010	29 November, 2015
Central Lake Ontario Source Protection Area	18 January, 2012	18 January, 2017
Credit Valley Source Protection Area	10 January, 2012	10 January, 2017
Crowe Valley Source Protection Area	17 January, 2012	17 January, 2017
Essex Region Source Protection Area	25 January, 2012	25 January, 2017
Ganaraska Region Source Protection Area	17 January, 2012	17 January, 2017
Grand River Source Protection Area	12 September, 2012	12 September, 2017
Grey Sauble Source Protection Area	24 January, 2012	24 January, 2017
Halton Region Source Protection Area	11 January, 2012	11 January, 2017
Hamilton Region Source Protection Area	11 January, 2012	11 January, 2017
Kawartha-Haliburton Source Protection Area	17 January, 2012	17 January, 2017
Kettle Creek Source Protection Area	29 November, 2010	29 November, 2015
Lakehead Source Protection Area	21 June, 2011	21 June, 2016
Lakes Simcoe and Couchiching/Black River Source Protection Area	19 January, 2012	19 January, 2017
Long Point Region Source Protection Area	30 May, 2011	30 May, 2016
Lower Thames Valley Source Protection Area	25 March, 2011	25 March, 2016
Lower Trent Source Protection Area	17 January, 2012	17 January, 2017
Maitland Valley Source Protection Area	9 January, 2012	9 January, 2017
Mattagami Region Source Protection Area	29 November, 2010	29 November, 2015
Mississippi Valley Source Protection Area	25 January, 2012	25 January, 2017
Niagara Peninsula Source Protection Area	12 January, 2012	12 January, 2017
North Bay-Mattawa Source Protection Area	30 May, 2011	30 May, 2016
Northern Bruce Peninsula Source Protection Area	24 January, 2012	24 January, 2017
Nottawasaga Valley Source Protection Area	19 January, 2012	19 January, 2017
Otonabee-Peterborough Source Protection Area	17 January, 2012	17 January, 2017
Quinte Source Protection Area	5 May, 2011	5 May, 2016
Raisin Region Source Protection Area	23 January, 2012	23 January, 2017
Rideau Valley Source Protection Area	25 January, 2012	25 January, 2017
Saugeen Valley Source Protection Area	24 January, 2012	24 January, 2017
Sault Ste. Marie Region Source Protection Area	13 January, 2012	13 January, 2017
Severn Sound Source Protection Area	19 January, 2012	19 January, 2017
South Nation Source Protection Area	23 January, 2012	23 January, 2017
St. Clair Region Source Protection Area	7 April, 2011	7 April, 2016
Sudbury Source Protection Area	13 January, 2012	13 January, 2017
Toronto And Region Source Protection Area	10 January, 2012	10 January, 2017
Upper Thames River Source Protection Area	20 January, 2012	20 January, 2017

Appendix B: Septic Inspection Program Sample Documents

Module 8 – Other Obligations

Sample By-Law for Inspection Program

THE CORPORATION OF TAY VALLEY

TOWNSHIP BY-LAW NO. 2012-009

SEWAGE SYSTEM MAINTENANCE INSPECTION PROGRAMS

WHEREAS, malfunctioning on-site sewage systems can have significant negative impacts on both human health and the environment;

AND WHEREAS, in 2000, the Corporation of Tay Valley Township (the "Township"), implemented a septic tank re-inspection program for waterfront properties based on voluntary participation by property owners;

AND WHEREAS, Section 7(1) (b.1) of the *Building Code Act*, 1992, S.O. 1992, c. 23, as amended (the "Act"), authorizes the council of a municipality to pass by-laws establishing and governing sewage system maintenance inspection programs in accordance with Division C, Part 1, Section 1.10 of the *Building Code Act, 1992 - Ontario Regulation 350/06*, as amended (the "Building Code");

AND WHEREAS, the Township Council considers it desirable for the protection of the health, safety and well-being of persons and the environmental well-being of the municipality to exercise its authority to implement a mandatory sewage system maintenance inspection program which will apply to all waterfront properties located in the areas described in Schedule "A" to this By-Law ;

AND WHEREAS, the Township Council considers it desirable for the protection of the health, safety and well-being of persons and the environmental well-being of the municipality to continue to offer a voluntary sewage system maintenance program to owners of waterfront properties located in the areas described in Schedule "B" to this By-Law;

AND WHEREAS, the above referenced mandatory and voluntary sewage system maintenance inspection programs (collectively the "Sewage System Maintenance Inspection Programs") are described in the Septic System Re-Inspection Program document attached as Schedule "C" to this By-Law;

AND WHEREAS, the Township has entered into an agreement with the Mississippi Valley Conservation Authority in accordance with Section 6.2 of the Act to provide for the enforcement of the provisions of the Act and the Building Code relating to sewage systems and to allow the Mississippi Valley Conservation Authority, through its Mississippi Rideau Septic System Office (the "MRSSO") to deliver the Sewage System Maintenance Inspection Programs on behalf of the Township;

NOW THEREFORE BE IT RESOLVED THAT, the Council of the Corporation of Tay Valley Township enacts as follows:

Module 8 – Other Obligations

Sample By-Law for Inspection Program (Continued)

THE CORPORATION OF TAY VALLEY
TOWNSHIP BY-LAW NO. 2012-009

1. GENERAL REGULATIONS

- 1.1 THAT, the mandatory sewage system maintenance inspection program will apply to all waterfront properties located in the areas described in Schedule "A" to this By-Law.
- 1.2 THAT, the voluntary sewage system maintenance inspection program will apply to all waterfront properties located in the areas described in Schedule "B" to this By-Law.
- 1.3 THAT, the Septic System Re-Inspection Program, attached hereto as Schedule "C", be adopted.

2. BY-LAWS TO BE REPEALED

- 2.1 All by-laws or parts thereof and resolutions passed prior to this by-law which are in contravention of any terms of this by-law are hereby rescinded.

3. ULTRA VIRES

- 3.1 Should any sections of this by-law, including any section or part of any schedules attached hereto, be declared by a court of competent jurisdiction to be ultra vires, the remaining sections shall nevertheless remain valid and binding.

4. EFFECTIVE DATE

- 4.1 ENACTED AND PASSED this 13h day of March, 2012.


for Keith Kerr, Reeve




Amanda Mabo, Clerk

Module 8 – Other Obligations

Sample Notification Letter

CURRENT DATE
NAME
STREET ADDRESS,
CITY/TOWN, ON POSTAL CODE

Dear Mr. and or Mrs. LAST NAME:

RE: Mandatory Maintenance Inspection Program
MUNICIPAL ADDRESS PROPERTY ROLL NUMBER TOWN,
DISTRICT

The North Bay-Mattawa Conservation Authority (NBMCA) is required by legislation to conduct maintenance inspections of specific sewage systems that have been identified through the Ontario *Clean Water Act's* assessment report process. Your property has been identified as a property that is included in the Mandatory Maintenance Inspection Program.

The Ontario Building Code requires that a maintenance inspection be conducted on your property once every five years. The NBMCA has listed your property to participate in the mandatory maintenance inspection program during the 2012 construction season. A NBMCA sewage system inspector will be visiting your property this summer/fall to conduct the required maintenance inspection.

The goal of the program is to inspect existing septic systems to ensure that the existing septic systems are being operated and maintained in accordance with the Ontario Building Code. The objectives of the maintenance inspection program is to determine, at the time of inspection, if the existing septic system is functioning properly, assess the minimum setback requirements and ensure that there is not an unsafe condition associated with the existing septic system.

The maintenance inspection required is a visual inspection that requires input from property owners with regard to septic system: type, age, location and past operation. Additional information regarding water usage is also requested. The information is recorded and compiled into a file of the property, a site inspection is conducted and an evaluation of the system performance is determined.

A questionnaire is enclosed, please complete the form and return it to the NBMCA (North Bay office), alternatively, you may complete the questionnaire and call the NBMCA to advise that the questionnaire is complete and will be available onsite when the inspection is conducted.

Should you have any questions regarding the above, please do not hesitate to contact this office (705) 474-5420.

Your participation and cooperation in this program is greatly appreciated.

Sincerely,

THE NORTH BAY-MATTAWA CONSERVATION AUTHORITY

Manager, On-Site Sewage System Program
Enclosure: Questionnaire

Module 8 – Other Obligations

Sample Property Owner Information Questionnaire



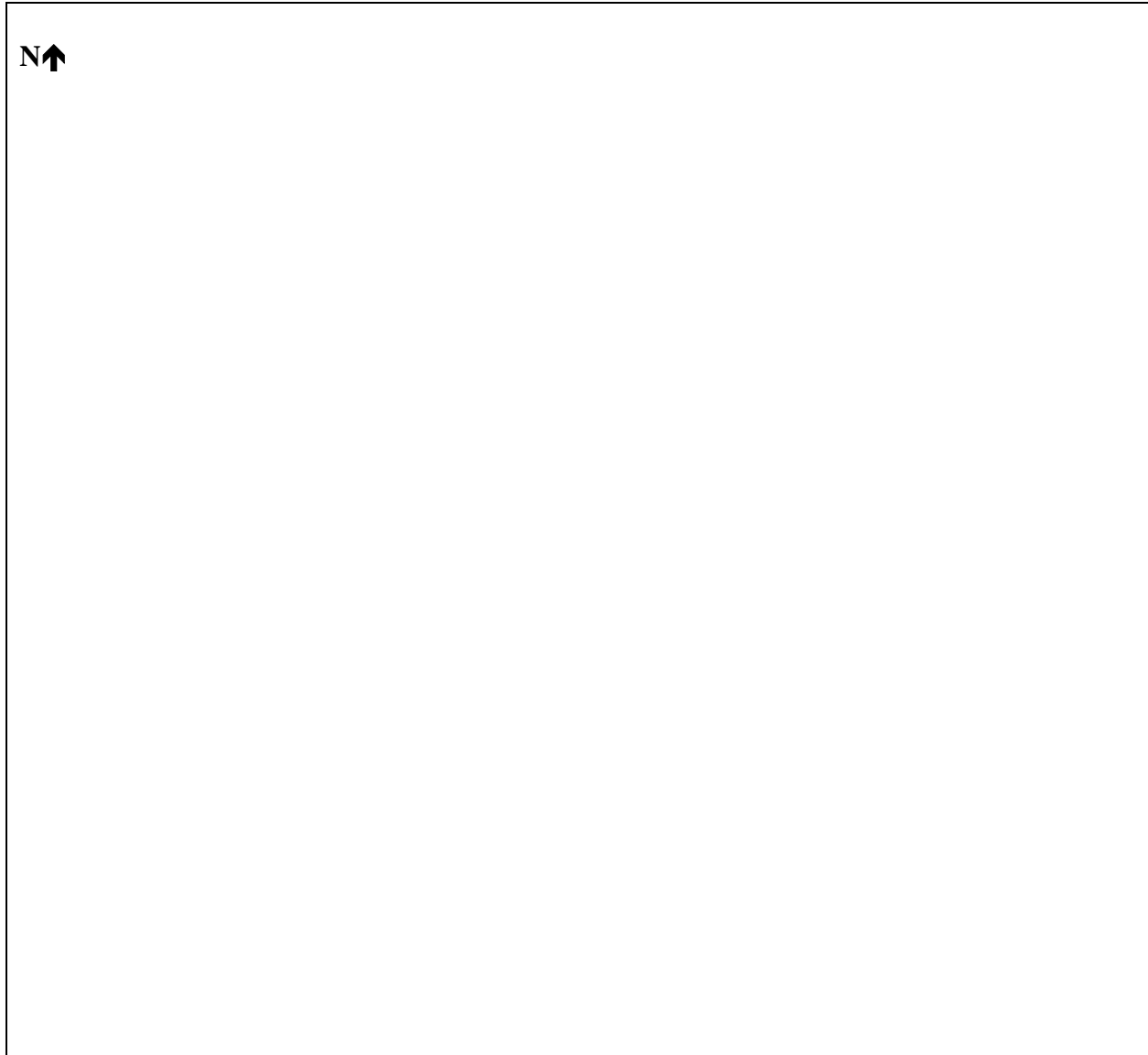
Mandatory Maintenance Inspection Program Property Owner Information Questionnaire

Property Information:			
Owner/Tenant:			
Municipal Address (of subject property):			
Mailing Address (if different from above):			
Phone Number: ()			
Size of property (acres):			
Permanent Residence <input type="checkbox"/> Seasonal Residence <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Other: _____			
Would you like to be present during the mandatory maintenance inspection? Yes <input type="checkbox"/> No <input type="checkbox"/> <i>If yes, please contact our office to arrange an appointment (705) 474-5420</i>			
Drinking Water Source: (please provide as much detail as possible)			
Dug Well <input type="checkbox"/> Drilled Well <input type="checkbox"/> Other <input type="checkbox"/> <input type="checkbox"/> Please specify:			
Water filtered? Yes <input type="checkbox"/> No <input type="checkbox"/> Filter type:			
Water treated? Yes <input type="checkbox"/> <input type="checkbox"/> No <input type="checkbox"/> If yes how:			
Sewage Disposal Information:			
Type(s) of septic system in use (please indicate if more than one system services property):			
Is the septic/holding tank: <input type="checkbox"/> Concrete <input type="checkbox"/> Steel <input type="checkbox"/> Plastic <input type="checkbox"/> Unknown			
Age of system:			
Last pump-out date (if available please attach copy of receipt):			
Name of pump-out contractor:			
Number of residents		Number of full bathrooms	
Number of bedrooms		Number of half bathrooms	
Number of dishwashers		Number of additional sinks	
Number of garborators		Number of washing machines	
Number of laundry tubs		Number of hot tubs/whirlpool baths	
Please list any previous problems with septic system:			

Module 8 – Other Obligations

Sample Property Owner Information Questionnaire (continued)

Site Plan Sketch



Site Plan Drawing:

1. Lot size, property dimensions, roads, existing rights-of-way, easements, or municipal/utility corridors;
2. Show and identify neighboring properties, including wells on adjacent properties (document if any at all);
3. Show the location and size of existing sewage system components (tanks, pump chambers, alarms, distribution bed)
4. Show the direction of surface water flow (grade);
5. Indicate directions of North on the site plan (draw an arrow through the “N” in the direction of north);
6. Show the distances from the sewage system components to all property lines, easements, rights-of-way, driveways, structures, and wells;
7. Show any surface water (creek, pond, lake) on or adjacent to the property and provide the common name.

Module 8 – Other Obligations

Sample Inspection Form

Mandatory Maintenance Inspection Program



Permit #: _____	Date: _____ Time: _
Owner: _____ _____	<input type="checkbox"/> GPS <input type="checkbox"/> Mapping <input type="checkbox"/> Inspection not required
Person in attendance:	Sewage System Class: 2 4 4F 5 Privy Other (<i>Specify</i>): _____

Property Info	Property Address: _____
	Roll Number: _____
	Legal Description: _____
	Property Slope & Description: _____
	Well Present on Site: <input type="checkbox"/> YES <input type="checkbox"/> NO
	Any Occurrences on Property: <input type="checkbox"/> YES <input type="checkbox"/> NO
Set Backs	Distance from waterbody (m): _____
	Distance from dwelling to bed (m): _____
	Distance from dwelling to tank (m): _____
	Distance from well to septic (m): _____

Any sign of malfunction or concern? YES NO

Comment: _____

Module 8 – Other Obligations

Sample Inspection Form (continued)

Diagram

(include all distances and points of interest, e.g. well, waterbodies, etc.)



Re-Inspection completion status

Date of Completion: _____

Time of Completion: _____

Inspector Signature: _____

Module 8 – Other Obligations

Sample third-party inspection certificate

Certificate Mandatory Sewage System Maintenance Inspection Program
(pursuant to Article 1.10.2.5 of Division C of the Building Code)

Certificate Number: _____ Date Certificate Issued: _____

Address of Property on which Sewage System is Located: (hereinafter called the “Property”)

Owner of Property on which Sewage System is Located:

Certificate issued to (name and address of Principal Authority):

Certification

Person Signing Certificate:

(Name, Address, Business telephone number, Building Code Identification Number, if applicable)

I certify that:

- (a) I am a person described in Sentence 1.10.1.3. (3) of Division C of the Building Code.
- (b) I have conducted an inspection of the sewage system located at the Property.
- (c) I am satisfied on reasonable grounds that the sewage system located on the Property is in compliance with the requirements of Section 8.9 of Division B of the *Building Code*.

Certificate issued by:

Name: _____

Complete as applicable:

BCIN: _____

- I am the holder of a license, a certificate of practice or a temporary license under the *Architects Act*.
- I am a person who holds a license or a temporary license under the *Professional Engineers Act*.

Signature: _____ Date: _____

This certificate is approved by the Minister of Municipal Affairs and Housing under the *Building Code Act, 1992*

[Personal information contained in this form and schedules is collected under the authority of clause 34(2.2) (d) of the *Building Code Act, 1992*, and will be used in the administration and enforcement of the *Building Code Act, 1992*. Questions about the collection of personal information may be addressed to: a) the Chief Building Official of the municipality or upper-tier municipality to which this application is being made, or, b) the inspector having the powers and duties of a chief building official in relation to sewage systems or plumbing for an upper-tier municipality, board of health or conservation authority to whom this application is made, or, c) Director, Building and Development Branch, Ministry of Municipal Affairs and Housing 777 Bay St., 2nd Floor. Toronto, M5G 2E5 (416) 585-6666.]

***Appendix C: Ministry of Municipal Affairs and
Housing Sewage System Maintenance Inspection
Guide***

On-Site Sewage System Maintenance Inspections

March 2011

Building and Development Branch
Ministry of Municipal Affairs and Housing

Introduction

The *Building Code Act, 1992* and Building Code (Ontario Regulation 350/06) regulate the design, construction and renovation of treatment systems which are located wholly on the property which they serve (i.e. “on-site”) and have a design sewage capacity of 10,000 litres/day or less.¹ Such systems typically provide treatment for smaller buildings such as houses, cottages and small businesses.

Enforcement of the on-site sewage provisions of the *Building Code Act, 1992* and Building Code is the responsibility of local enforcement bodies, or “principal authorities”, – the municipality, the board of health or the conservation authority, depending on the location within Ontario.

Ontario’s Building Code (Ontario Regulation 350/06) was recently amended to establish and govern mandatory on-site sewage system maintenance inspection programs, to be administered in certain areas by local enforcement bodies. The recent amendments to the Building Code also govern discretionary on-site sewage system maintenance inspection programs established by local enforcement bodies.

The Ministry of Municipal Affairs and Housing, in consultation with the Ministry of the Environment and Climate Change, has developed this document for principal authorities to provide information and highlight certain issues respecting inspections undertaken in connection with on-site sewage system maintenance inspections programs.

Note: This document has been prepared for explanatory purposes only and does not form part of the regulations, and is not intended to provide legal or other professional advice. Persons requiring such advice should consult their legal or professional advisors.

Module 8 – Other Obligations

¹ “sewage system” is defined in Article 1.4.1.2. of Division A of the Building Code (Ontario Regulation. 350/06) as follows:

Sewage system means,

- (a) a chemical toilet, an incinerating toilet, a recirculating toilet, a self-contained portable toilet and all forms of privy including a *portable privy*, an *earth pit privy*, a *pail privy*, a *privy vault* and a composting toilet system,
- (b) a *greywater* system,
- (c) a cesspool,
- (d) a *leaching bed* system, or
- (e) a system that requires or uses a *holding tank* for the retention of *hauled sewage* at the site where it is produced before its collection by a *hauled sewage system*, where these,
 - (f) have a *design capacity* of 10,000 litres per day or less,
 - (g) have, in total, a *design capacity* of 10,000 litres per day or less, where more than one of these are located on a lot or parcel of land, and
 - (h) are located wholly within the boundaries of the lot or parcel of land on which is located the *building* or *buildings* they serve.

Authority for Inspections

Sewage system maintenance inspections are generally intended to determine whether a sewage system is in substantial compliance with the operation and maintenance requirements outlined in Section 8.9 of Division B or, in the case of discretionary programs, with the requirements enforced by the program. These inspections are undertaken by inspectors appointed by Principal Authorities in respect of maintenance inspection programs:

- Required under Article 1.10.2.3. of Division C of the Building Code (“Mandatory Programs”); and
- Established by Principal Authorities under by-laws, resolutions or regulations under clause 7(1)(b.1) of the *Building Code Act*, 1992 (“Discretionary Programs”).

Identification of Sewage System Maintenance Inspection Program Areas and Sewage System Inventory

Module 8 – Other Obligations

As a first step, Principal Authorities will need to identify areas that would be subject to Mandatory Programs (these areas are set out in Article 1.10.2.3. of Division C of the Building Code) and, where applicable, Discretionary Programs.

As a next step, Principal Authorities will need to identify existing sewage systems located within areas subject to Mandatory Programs and Discretionary Programs. These sewage systems may be identified by reviewing:

- a) Assessment reports, in consultation with the local source protection authority, to identify septic systems identified as part of the assessment report threat enumeration;
- b) Permit applications submitted under the *Building Code Act, 1992*;
- c) Certificates of approval or use permits issued under the Environmental Protection Act;
- d) Orders issued under the *Building Code Act, 1992*;
- e) Records of problems and complaints;
- f) Water use records;
- g) Maintenance inspection reports (for systems that require the existence of a service agreement as a condition of use, or for systems previously inspected by the Principal Authority);
- h) Lists of properties with residential or other uses not serviced by sewage works administered by the Ministry of the Environment and Climate Change [or municipal services]; and/or
- i) Field surveys.

Inspection Notification

Mandatory inspection programs require that all systems be inspected every five years. In doing so, Principal Authorities may choose to prioritize areas for inspection based on:

- Proximity to a municipal residential drinking water well or surface water intake as identified in the local assessment report;
- Known groundwater or surface water contamination related to sewage;
- Previous drinking water issues at a well or intake that may be related to sewage, as identified in the local assessment report;
- Age of on-site sewage system;
- Systems without records.

Module 8 – Other Obligations

Principal Authorities may find it helpful to notify property owners of the intention to inspect their property. Such notifications may include notice of:

- a) Any applicable fees to be charged;
- b) Procedural information;
- c) Whether the Principal Authority accepts third-party certificates as an alternative to conducting an inspection and, if so, requesting owners to notify the Principal Authority if they have retained a third party for this purpose;
- d) A contact name within the Principal Authority, and
- e) The legislative authority for the inspection program.

It may be helpful to send such notifications well in advance of the inspection to give the opportunity for the property owner (or representative) to be on site on the day of the inspection and to gather information and records which may assist in the inspection, and also to give the property owner the opportunity to undertake remedial work prior to the inspection.

Where the Principal Authority has determined that it will accept third-party certificates as an alternative to conducting an inspection, the Principal Authority should provide sufficient time:

- a) for the property owner to consider retaining a person qualified to sign such a certificate;
- b) if a person is retained, for the person to inspect the sewage system; and
- c) for any necessary remedial work to be carried out where this will be necessary before the person may sign the certificate.

Inspections

Maintenance Inspections - Overview

These guidelines provided in this document set out a progressive audit approach to maintenance inspections for sewage systems, as with most inspections under the *Building Code Act, 1992*. Under this approach, initial inspections are designed to be non-intrusive tests and will generally avoid significant disturbance to the system and to the surrounding soil area. Where concerns are identified, more tests may follow.

A Phase I maintenance inspection may be sufficient to establish compliance with Section 8.9. of the Building Code or with the standards enforced under a Discretionary program. A follow-up Phase II inspection (described below) is required where the Phase I inspection indicates a defect or failure of the system.

Module 8 – Other Obligations

Phase I – Maintenance Inspections

Inspections generally begin with a review of available material, including material collected in the identification phase, and reports from previous inspections.

The purpose of Phase I maintenance inspections is to:

- a) Obtain the most recent information on the system, as well as the size of the building and the number of fixtures and bedrooms that it is servicing;
- b) Locate the sewage system's components;
- c) Identify any obvious or outward signs of malfunction or failure; and
- d) Identify systems that are at risk of malfunction or failure.

Phase I maintenance inspections generally avoid significant disturbance to the system and the surrounding soil area. During the course of a Phase I maintenance inspection, the inspector would normally identify:

- a) The type of occupancy to determine the source and type of the sanitary sewage;
- b) The source of water supply (municipal, well, lake, etc.);
- c) The approximate volume of sewage generated;
- d) The use of special devices such as garbage grinders or water softeners;
- e) The general nature of the system (class, components, type, layout, etc.);
- f) The location of the system's components with respect to wells, surface water, and other environmental features;
- g) The approximate level of ground water: This may be achieved by
 - i. reviewing local maps and records of ground water elevation observed on site or nearby properties, including the local assessment report, if available;
 - ii. Observing the conditions of the septic tank and the distribution box for indications of ground water infiltration;
 - iii. Observing the elevation of nearby water body, or evidence of ground water infiltration in other subsurface structures; or
 - iv. The use of hand augering;
- h) The size, material and the condition of the septic tank, or the holding tank;
- i) The frequency of tank pump-out and the last time the tank was cleaned;
- j) Any indication of sewage system failure, including:
 - i. Evidence of backup of effluent;

Module 8 – Other Obligations

- ii. Signs of hydraulic failure (breakout of sewage, wetting conditions in the leaching bed area);
 - iii. Condition of surface vegetation; and
 - iv. Odour problems;
- k) Documentation of previous effluent sampling test results where required (i.e., under Article 8.9.2.4. of the Building Code).

Phase II – Follow-Up Maintenance Inspections

It may be appropriate to undertake more intensive follow-up maintenance inspections where:

- a) The Phase I maintenance inspection has identified that the septic system is at risk of future malfunction or failure, or
- b) The Phase I inspection detected a malfunction or failure, but did not reveal the reason (e.g., location or nature) of malfunction or failure.

Phase II inspections will be familiar to Principal Authorities in terms of usual Building Code enforcement activities (i.e., investigation of potentially failing sewage systems, inspections due to neighbour complaints). These inspections may typically include examinations of the following elements:

- a) The depth of the sludge layer and the distance from the top of the sludge layer and the outlet tee;
- b) The thickness of the scum layers;
- c) The distance between the bottom of the scum/grease layer and the bottom of the outlet tee;
- d) The distance between the top of the scum layer and the top of the outlet tee;
- e) The physical condition of the inlet and outlet; and
- f) The condition of the effluent filter, if utilized.

For sewage systems utilizing treatment units, Phase II inspections may also include a review of:

- a) The existence of a maintenance agreement and the date of latest servicing;
- b) The test results of a new round of effluent sampling (if otherwise required by the Building Code, or by an authorization issued by the BMEC); and
- c) Operational problems or system malfunction before or, at the time of inspection.

Where used in sewage systems, distribution boxes, dosing tanks and pumps may be inspected to determine their condition and functionality.

Module 8 – Other Obligations

Phase II inspections of leaching beds may also consider:

- a) Clearance distances to environmental features, wells and surface water intakes;
- b) Soil type and its permeability;
- c) Additional sources of hydraulic loading (e.g. surface discharge, roof drains);
- d) Evidence of ponding;
- e) Encroachments into the leaching bed area (e.g. building additions, patios, driveways, pools); and
- f) Trees and deep rooting shrubs in the vicinity of the bed.

Blockages in the leaching bed and pollution sources may be identified by measures including:

- a) Evaluation of in-home plumbing and estimates of water usage;
- b) Conducting a leak diagnostics;
- c) Conducting a flow trial;
- d) Conducting a dye tracing test; or
- e) Excavating a cross section of the leaching bed.

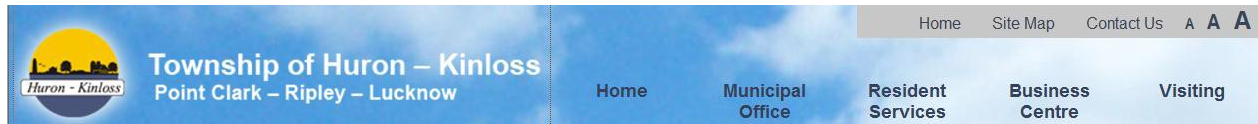
Inspection Reports

Principal Authorities may wish to maintain documentation in respect of maintenance inspections, which could include the following information:

- a) Identification of the property attended;
- b) Identification of any information collected as part of the inspection;
- c) Status of deficiencies noted in previous inspections;
- d) Deficiencies identified during the current visit;
- e) The legislative authority for the inspection program; and
- f) Enforcement action taken.

Appendix D: Further Materials from Septic Case Studies

Huron-Kinloss Website



Community Septic Inspection Program

The Township of Huron-Kinloss initiated the Huron-Kinloss Community Septic Inspections (HK- CSI) program in the spring of 2007. The goal of this program is to encourage regular maintenance of septic systems, through mandatory inspections. If unmaintained, septic systems are a threat to public health and the environment. Regular maintenance, however, can ensure that systems work efficiently and safely, protecting the natural environment. Through the program, every property with a septic system (including outhouses/pit privies) will be inspected on a rotating basis over a six to seven year period.

If you own a septic system in the Township of Huron-Kinloss, here's what you need to know about the HK-CSI program:

- Property owners must call the Township (519-395-3735) to book an appointment for an inspection.
- Inspections are done between spring and fall, weather permitting.
- Appointments are available Monday to Thursday between 9:00 am and 1:00 pm, with some evening and Saturday appointments available as well.
- If you haven't had your septic tank pumped in the last twelve months, it is recommended that you have it pumped prior to the inspection.
- Inspections are carried out by a qualified Ontario Building Code Part 8 Sewage Systems inspector.
- At no time during the inspection will you be asked for payment. The program is funded by a flat rate of \$55 on the annual tax bill of properties with a septic system.
- Once an inspection is completed, property owners are mailed an inspection report which includes an aerial photograph of the property outlining the location of the septic system.
- If you sell your property, please leave the inspection report for the new owners.

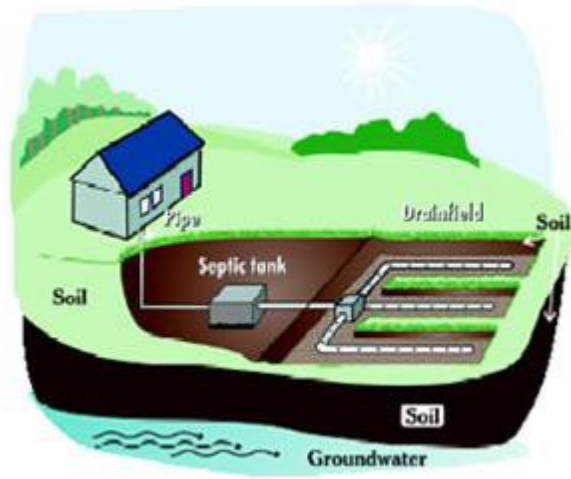
Visit our blog at hkcsi.blogspot.com for additional information or to post any comments you have.

The Huron-Kinloss septic inspection program represents a proactive step on the part of the Township and the citizens in addressing the possibility of septic systems affecting surface and groundwater quality. The project was developed as a response to requests from property owners throughout the Township and designed to complement the existing water quality monitoring program.

Septic systems are a common method of waste treatment and disposal within the Township; it is estimated that there are approximately 2800 private septic systems along the lakeshore and in the rural areas of the Township. Properly maintained systems are very effective in treating and disposing of wastes, however, poorly designed, installed or maintained systems can have serious environmental and health impacts. With these impacts in mind, the Township implemented a septic inspection program to identify systems with deficiencies and work with property owners to ensure that their septic system operates properly.

Module 8 – Other Obligations

On a 7 to 8 year inspection cycle, all septic systems in the Township will be inspected. Each year, between 300 and 400 tanks will be inspected. The inspection is a non-invasive, visual inspection carried out by a qualified Part 8 inspector. Pump outs are not mandatory, but are recommended. Also, if tank levels are too high during the inspection, the inspector can order a pump out. The inspector, when on site, will document the location of buildings, wells, watercourses and property lines in respect to the location of the septic system. Vegetation around the drainfield and any seepage leaks will also be noted. For inspections it is recommended that the property owner is present to answer any questions the inspector may have. After an inspection, the property owner will receive the results of the inspection and notice if any follow up actions are required.



Inspections will first be conducted on properties identified as high risk. High risk properties are those that have no record of an approved septic system or the existing system is greater than

20 years old. After the high risk systems have been inspected, moderate risk (systems between 10 and 20 years in age) and low risk (systems less than 10 years old) systems will be inspected.

The HK-CSI is funded by a flat rate of \$55, assigned per eligible property on the annual taxes. A flat rate is assigned to the annual taxes so that property owners will not be charged for anything at the time of inspection.

If you have any questions about the HK-CSI, please contact the Township of Huron Kinloss municipal office at 519-395-3735.

Program Statistics

2007-2012 Risk Rating Statistics							
Risk Assessment	2007	2008	2009	2010	2011	2012	TOTAL
Low	202 (75%)	214 (60%)	212 (58%)	198 (48%)	279 (46%)	155 (48%)	1260 (54%)
Medium	63 (23%)	129 (36%)	134 (35%)	195 (4%)	305 (50%)	149 (47%)	975 (42%)
High	5 (2%)	13 (4%)	17 (5%)	19 (5%)	21 (4%)	17 (5%)	92 (4%)
TOTAL	270	356	363	412	605	321	2327

Rating Definition:

Module 8 – Other Obligations

Low

Medium Age

Medium Minor Repairs

Medium Non-Conforming (to current Ontario Building Code standards)

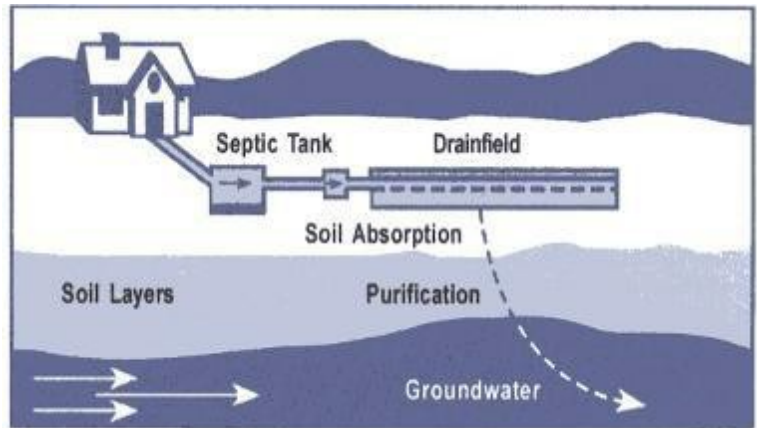
High - Environmental Hazard

High - Structurally Unsafe

Septic System Information

In many small communities and rural areas, septic systems are a common method of waste disposal and treatment. Septic systems are common in these areas because they are the most cost effective and efficient waste treatment technology. If properly designed, installed and maintained, a septic system can service a home for up to 25 years. However, poorly designed, installed or unmaintained systems may be a hazard to the environment and public health through inadequately treated wastes.

Septic systems treat household wastes onsite using a series of natural processes. These natural processes occur in the different components of the septic system. The two major components of septic system are the septic tank and the drainfield (which is also known as the leach field or a weeping bed). Some systems may include a distribution box between the septic tank and the drainfield. Distribution boxes are concrete or plastic structures that ensure effluent from the septic tank is evenly distributed to the drainfield.



A typical septic system with septic tank and drainfield

The septic tank is a watertight container that is either single or double chambered and buried beneath the ground. Most tanks are made of concrete, but fibreglass and plastic tanks are also available. Tanks are come in a variety of sizes; most homes will have tanks sized between 500 and 2500 gallons. All tanks have an inlet, which is connected to the sewer pipe from the house, and an outlet, which is attached to the drain field. At both the inlet and the outlet there is a 'Tee' or baffle, which keeps the waste flowing in the right direction. At the top of the tank there is an access port, which allows for top of the tank pumping. The access port should always be accessible, in case an emergency pump out is needed.

In the septic tank, the first stage of waste treatment occurs. When household waste enters the tank, the solid part of the waste separates from the liquid. The solids collect at the bottom forming a 'sludge' layer. On top the liquid, oil and grease collect and form the 'scum' layer. Bacteria in the tank then begin to naturally decompose the wastes in the sludge and scum layers. The wastewater that remains between the sludge and scum layers is gradually pushed out into the drain field for another stage of treatment.

Module 8 – Other Obligations

The drainfield consists of a series of trenches, typically 1 to 3 feet below the surface. In each trench is a length of perforated pipe, surrounded by either gravel or coarse sand. The size of the drainfield is dependent on the expected wastewater flow and soil quality. Wastewater flows into the drain field and is distributed throughout the series of pipes. Slowly, the wastewater percolates out of the pipes into the gravel or sand liner and then the soil below. The liner and soil filter out nutrients, bacteria, metals and other chemicals from the waste water. The treated water continues to move through the soil to enter the groundwater supply.



Regular pumping of the septic tank keeps the system functioning properly and prevents solids from entering and clogging the drain field. Septic tanks should be pumped every 3 to 5 years. Unpumped systems can allow excess nutrients and disease causing bacteria to move through the system and pollute groundwater. Signs of system failure include foul odour, soggy lawns, slow drains in the house and lush vegetation growth over the drainfield. If you see any of these signs, contact a septic professional to deal with the problem. Never try to inspect or repair a tank yourself, as the bacteria in the septic tank produce deadly gases.

Septic system maintenance, in addition to regular pumping includes conserving water and watching what goes into the septic system. Conserving water by fixing leaky taps and installing water-saving showerheads and faucets can reduce the total amount of waste water entering the system. This prevents the drainfield and septic tank from being overloaded. To maintain the environment within the tank and ensure that the sludge and scum layers do not accumulate to excess, care should be taken when disposing of household materials. Some materials, such as chemical cleaners, bleach, paint, cigarette butts, paper towels, kitty litter and coffee grinds, should never enter the septic system. Also, products advertised as septic system additives, enhancers, starters or rejuvenators are not necessary to maintain a septic system.

Maintaining your septic system is important, not only for the environment and public health, but also for your pocket book! Replacements or repairs can be very costly. The best way to avoid unnecessary costs and extend the lifetime of your septic system is to simply maintain it! As the old adage goes, an ounce of prevention is worth a pound of cure.

Septic System Maintenance

Septic system maintenance is important: it helps to prevent system failure which is beneficial for the environment and your pocketbook! Failed systems are expensive to repair or replace and can have serious environmental consequences. A few simple maintenance steps can help your septic system function longer and safer.

Conserve Water

- Using water wisely prevents saturation of the soil in the drainfield.
- Fix leaky faucets and running toilets
- Use washing machines and dishwashers when there's enough for a full load

Module 8 – Other Obligations

- Don't let the water run when washing hands or brushing teeth.
- Avoid taking long showers
- Install water saving faucets and shower heads
- Reduce water use by toilets by installing a low flow toilet or a toilet dam

Be gentle to the drainfield!

- Space out water use over a few days. Don't do all the laundry in one day.
- Divert roof drains, surface water and sump pumps away from the drainfield
- Don't plant anything but grass near your septic tank or drainfield. Roots can damage the pipes
- Don't let anyone drive anything over the drainfield – this includes snowmobiles and ATVs
- Don't build or plant any gardens or trees over the drainfield

Watch what you flush

Some chemicals and household products can harm your septic system

Avoid letting chemicals like paint, varnish, paint thinner, pesticides, nail polish remover, household cleaners and bleach go down drains or toilets.

Don't flush: coffee grinds, dental floss, cigarette butts, kitty litter, sanitary napkins, condoms, antibacterial soap, paper towels or kitchen wastes.

Pump it!

Get your tank pumped every 3-5 years by a professional – this may be the most important part of maintaining your septic system

Contacts

Township of Huron-Kinloss
21 Queen St., Ripley ON N0G 2R0
info@huronkinloss.com
519-395-3735 Fax: 519-395-4107

Matt Farrell
Chief Building Official
cbo@huronkinloss.com
519-395-3735

Module 8 – Other Obligations

Ramara Pump-out Certificate



NAME OF HOME OWNER: _____

ADDRESS OF PROPERTY: _____

DATE OF PUMPING: _____

TANK: CONCRETE: _____ STEEL: _____ PLASTIC: _____

SEPTIC TANK: _____ OR HOLDING TANK: _____

SIZE OF TANK: _____

T'S IN PLACE? YES _____ NO _____

EFFLUENT LEVEL: CORRECT HEIGHT _____

 ABOVE OUTLET _____

 BELOW OUTLET _____

OVERALL CONDITION OF TANK? GOOD _____ FAIR _____ POOR _____

LIDS? GOOD _____ FAIR _____ POOR _____

NOTES: _____

PUMPED BY: _____ (NAME OF
COMPANY)

Module 8 – Other Obligations

NAME OF PUMPER: _____ **(PRINT)**

SIGNATURE: _____

Ramara Notification Letter



THE CORPORATION OF THE
TOWNSHIP OF RAMARA
Proud History - Progressive Future

March 28, 2013

Dear Property Owner:

**Re: TOWNSHIP OF RAMARA
MANDATORY ON-SITE SEWAGE SYSTEM MAINTENANCE
INSPECTIONS**

As you learned through our previous notices effective on January 1st, 2011 and January 19th, 2012 the Ontario Building Code was amended by Ontario Regulation 315/10 to establish and govern mandatory on-site sewage system maintenance inspection programs to be administered by municipalities in Ontario. To satisfy this requirement, the Township chose to accept third party certificates as an alternative to municipal inspections. However due to the lack of response, that program has been discontinued. Moving forward the Township's consulting engineer, C.C. Tatham & Associates Ltd., has been retained to complete the inspection of the remaining properties over the next 3 years. Property owners that submitted a third party certificate up to March 28, 2013 will not be inspected under the new program until the next five year program.

There are two components of the -inspection program. The first is a visual surface inspection of your sewage system, which will be completed by C.C. Tatham & Associates Ltd. staff for the Township of Ramara. The property owner does not need to be in attendance for this inspection. The cost including the Township administration fee is \$150, payable to the Township of Ramara within 30 days of invoicing. If payment is not received by the Township of Ramara within 30 days of invoicing, the inspection fee will be added to the property tax bill. If a deficiency is noted during the inspection, the property owner(s) will be notified in writing by C.C. Tatham & Associates Ltd. and they must take the necessary steps to correct the deficiency within the timeline stipulated.

If your property is serviced by underground utilities, a locating company will be visiting your property prior to the inspection, at no cost to you. All lines will be located with small flags or paint for safety purposes. The ground will not be dug up or disturbed during the inspection, but soil probes will be used to locate the septic tank and leaching bed.

THE SECOND COMPONENT OF THE ...INSPECTION PROGRAM IS THAT YOU ARE RESPONSIBLE FOR ARRANGING TO HAVE YOUR SEPTIC OR HOLDINGTANK PUMPED OUT BY A LICENSED SEWAGE HAULER. You must

Module 8 – Other Obligations

Ramara Notification Letter *(continued)*

request the hauler provide a written report confirming the date of the pump-out and the condition

and size of the tank. We have provided the local sewage haulers with an appropriate report form. This report is to be completed and signed by the hauler. You **must** submit a copy of the report to the Township of Ramara no later than September 30 of the year of the inspection.

You will be advised by separate notice the year which your property will be inspected.

We appreciate your co-operation with this proactive program that is focused on protecting Ontario's drinking water, the natural environment and supports the implementation of the Ontario Clean Water Act, 2006.

**FOR FURTHER INFORMATION, PLEASE CONTACT OUR BUILDING
DEPARTMENT AT EXTENSION 234.**

2297 Highway 12
P.O. Box 130
Brechtin, ON L0K 1B0
Phone: (705) 484-5374
Fax: (705) 484-0441
Email: ramara@ramara.ca
Hours: 9:00 a.m. to 4:30 p.m. Monday to Friday

Appendix E: Spills Policy Examples

Module 8 – Other Obligations

The proposed Cataraqui Source Protection Plan (August 2012) includes five policies that either require or call for enhancements to spill prevention and response planning (see 4.3.1-NB, 4.3.2-CW, 4.3.3-NB, 7.2.17 (sewage hauling via barges), and 7.6.2-NB (MTO Wolfe Island ferry));

The implementation of this type of policy may include:

- a. Addition of vulnerable area maps to relevant documents;
- b. Consideration of key drinking water risks in the vulnerable area (e.g. highways, railways, large storages) as well as other “significant” risks that could leak and/or spill;
- c. Consideration of typical ground and surface water flow elevations/directions within the vulnerable area, with reference to the modeling used to define that area;
- d. Preparation of updated procedures and the development of additional capacity (i.e. equipment, consulting arrangements, staffing), as necessary, to properly account for (a), (b) and (c);

The review of spill prevention and response plans may also provide an opportunity for the water treatment plant operator to ensure that they have procedures in place for intake/well closures, notification of disruptions to service (e.g. hospitals, industry, media, public, and schools), alternate water sources/supplies, etc.

Some Source Protection Committees identified additional local threats and subsequently developed spills plan policies in the source protection plan. For example, the Director approved the following local threats in the Thames-Sydenham Source Protection Region, in vulnerable areas of the St. Clair Region Source Protection Area:

- Transportation of fuel and fertilizer along provincial highways, county and local roads, railways, and waterways passing through the various vulnerable areas in the St. Clair Region Source Protection Area; and
- Transportation of liquid petroleum products through pipelines that cross the St. Clair Region Source Protection Area and may result in a spill into the St. Clair River

The classification of these activities as either a significant, moderate or low drinking water threat is dependent on the location of the corridor as defined by the event based modelling exercise, the type of substance, and the volume or mass of the substance resulting from a spill.

Glossary

Glossary of Terms Defined in the *Clean Water Act* and Regulations

Drinking water threat: means an activity or condition that adversely affects or has the potential to adversely affect the quality or quantity of any water that is or may be used as a source of drinking water, and includes an activity or condition that is prescribed by the regulations as a drinking water threat. Activities that are prescribed as drinking water threats are listed in Section 1.1 (1) of Regulation 287/07. Moderate or low drinking water threats are designations based on the vulnerability of an area and the hazard rating of an activity, as identified in the Assessment Reports. Moderate and low threats may exist in any of the vulnerable areas. “Moderate drinking water threat” means a drinking water threat that, according to a risk assessment, poses or has the potential to pose a moderate risk; “Low drinking water threat” means a drinking water threat that, according to a risk assessment, poses or has the potential to pose a low risk.

Highly vulnerable aquifer (HVA): means an aquifer on which external sources have or are likely to have a significant adverse effect and include the land above the aquifer. Highly vulnerable aquifers could include areas where the bedrock is fractured.

Intake protection zone (IPZ): means an area that is related to a surface water intake and within which it is desirable to regulate or monitor drinking water threats. The areas around the surface water intake are determined through the Director’s Technical Rules based on the time it would take for a spilled substance to reach the intake. The times of travel have been standardized as follows:

- IPZ 1: A fixed radius from the municipal intake, radius varies from intake based on the type of source (e.g. Great Lake vs. Inland river source), generally there is no response time.
- IPZ 2: An area adjacent to IPZ-1 where there is limited response time in the event of a spill (minimum response time is 2 hours, some drinking water system operators delineated a longer response time).
- IPZ 3: Zone that captures all water courses in the watershed that contributes water to the source of the municipal intake. For specific municipal systems such as systems in great lakes or connecting channels, the IPZ-3 may be delineated to capture specific activities that have or will have an impact on the source in case of spills.

Risk Management Plans (Section 56 and Section 58): a Risk Management Plan is a policy implementation tool available under Section 58 of the *Clean Water Act* to manage

activities that are significant drinking water threats⁵ when enabled in an approved Source Protection Plan. A Risk Management Plan may contain operational procedures, requirements for physical barriers, incorporate best management practices, require staff training, etc. to ensure that a threat ceases to be significant. A Risk Management Official is responsible for negotiating and approving Risk Management Plans and ensuring that the measures in the Risk Management Plan are adequate to satisfy Section 22 of the *Clean Water Act*. A Risk Management Plan is tied to the individual undertaking the activity, is not registered on title, and cannot be transferred unless the Risk Management Official consents to the transfer.

A Risk Management Plan created under Section 56 of the *Clean Water Act* would contain the same information as one under Section 58 Risk Management Plans, but is available only to municipalities in the interim period between the approval of the Assessment Reports and the approval of a Source Protection Plan. For interim Risk Management Plans, the Risk Management Official must be satisfied that the measures will reduce the potential for the activity to adversely affect the raw water supplies.

Significant drinking water threat: means a drinking water threat that, according to a risk assessment, poses or has the potential to pose a significant risk. Areas where threats could be significant include all of WHPA-A and IPZ-1, as well as all of IPZ-2, and some parts of IPZ-3 and all or portions of WHPA-B, WHPA-C or WHPA-C1, depending on the assigned vulnerability score (8 or greater). DNAPLs are significant drinking water threats anywhere in WHPA-C or WHPA-C1 with a vulnerability score of 2-10. Significant drinking water threats can also occur in any part of a WHPA or IPZ if there are water quality issues in a drinking water system.

Significant groundwater recharge area (SGRA): means an area within which it is desirable to regulate or monitor drinking water threats that may affect the recharge of an aquifer. For example, SGRAs could include sand and gravel deposits.

Source Protection Committee (SPC): A committee established under Section 7 of the *Clean Water Act* and according to Regulation 288/07, mandated to prepare three documents to address the municipal residential drinking water systems in its watershed: 1 - Terms of Reference (workplan), and 2 - Assessment Report (scientific report), and 3 - Source Protection Plan (policies to address threats to drinking water).

Vulnerability score: A score that represents the inherent vulnerability of each part of the vulnerable areas that must be delineated in the Assessment Reports. The vulnerability

⁵ Except waste and sewage threats where a prescribed instrument is available or the Building Code Act applies

score is assigned based on scientific methodology outlined in the Director's Technical Rules and that represent the hydrogeological and hydrological characteristics of the vulnerable area. Vulnerability scores for wellhead protection areas and intake protection zones can range from 0.8 (low vulnerability) to 10 (highly vulnerable). All HVAs and SGRAs are designated a vulnerability score of 6.

Wellhead protection area (WHPA): means an area that is related to a wellhead and within which it is desirable to regulate or monitor drinking water threats. The area around a municipal wellhead is delineated through the Director's Technical Rules that determine the time of travel a substance entering the groundwater will reach the wellhead. The times of travel have been standardized as follows:

- WHPA-A: 100 m radius around a municipal wellhead,
- WHPA-B: 2 year time of travel,
- WHPA-C: 5 year time of travel or WHPA-C1: 10 year time of travel, and
- WHPA-D: 25 year time of travel