Source Protection Plan

Approved

Mississippi-Rideau Source Protection Plan

Approval Date August 27, 2014
Effective Date January 1, 2015
Revised November 13, 2018

This document stands as the Source Protection Plans for the:
— Mississippi Valley Source Protection Area
— Rideau Valley Source Protection Area

DRINKING WATER SOURCE PROTECTION
ACT FOR CLEAN WATER

Mississippi Valley Conservation Authority

RIDEAU VALLEY CONSERVATION AUTHORITY

Acknowledgements

The Mississippi-Rideau Source Protection Committee is proud of the collaborative manner in which this Plan was prepared and we thank the following for their important contributions:

Staff
Many Conservation Authority staff contributed to the development of this Plan, including:
Sommer Casgrain-Robertson, Perry Ghioureliotis, Allison Gibbons, Tiffany Onesi, Brian Stratton

Municipalities
The seven counties and 24 lower and single-tier municipalities in the Mississippi-Rideau region provided tremendous knowledge and guidance throughout the creation of this Plan.

Ministries, Health Units and Sector Experts
Provincial ministries, federal departments, local health units and sector experts provided valuable information and advice during the creation of this Plan. The Government of Ontario also funded the development of Source Protection Plans across Ontario.

Residents, Businesses and Stakeholders
Local residents, businesses and stakeholders, many of whom attended our public open houses and responded to our letters, provided valuable input into this Plan.

Neighbouring Conservation Authorities
The Cataraqui, Quinte and Raisin-South Nation Source Protection Committees and their staff were valuable partners throughout the creation of this Plan.

For additional details about the development of this Plan see Section 2.6 and Appendix E.

Made possible through the support of the Government of Ontario

Effective Date and General Authority
The effective date of the Mississippi-Rideau Source Protection Plan is January 1, 2015. As of this date the policies in this Plan have legal effect as provided by the *Clean Water Act,* 2006. This Plan applies to the Mississippi Valley Source Protection Area and Rideau Valley Source Protection Area as designated in Ontario Regulation 284/07 and shown on Figure 2.

Reading this Plan
This Plan should be read in conjunction with all other applicable land use planning policy, regulations and standards. These documents include but are not limited to: the Provincial Policy Statement; ministerial zoning orders under section 47 of the *Planning Act;* other provincial land use plans; upper, lower and single-tier municipal official plans and zoning by-laws; and regulations where more specific provincial plans or regulations apply to lands within the Source Protection Areas.

Accompanying Explanatory Document
A companion document to this Plan outlines the reasons and rationale for each policy and how financial considerations and climate change were considered during policy development. This accompanying Explanatory Document can be found at www.mrsourcewater.ca.

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Table of Contents

Summary of Amendments

The Mississippi-Rideau Source Protection Plan was approved by the Ministry of the Environment, Conservation and Parks on August 27, 2014 and came into effect on January 1, 2015.

On March 11, 2019, the Ministry of the Environment, Conservation and Parks approved an Amendment to the Source Protection Plan pursuant to Section 34 of the *Clean Water Act*, effective March 25, 2019. The purpose of the Amendment is to provide information about a new groundwater-based municipal drinking water system for the Western Development Lands (also referred to as Richmond West) located in the Village of Richmond, Ontario (located in the City of Ottawa) and to provide this new system with the same protections as other municipal drinking water systems in the Source Protection Plan.

The following changes were made to the Source Protection Plan as part of this Amendment:

Version	Description	Effective Date
1.0	Initial Mississippi-Rideau Source Protection Plan, Approved August 27, 2014	January 1, 2015

1.1	Amendment to add the Richmond West municipal drinking water system to the Source Protection Plan, including the following changes:
	• Addition of an Amended date on the cover page
	• Re-named Schedule F as "Richmond Wellhead Protection Areas" in the Table of Contents
	• Addition of this covering letter following the Table of Contents
	• Correction to the box at the right of page 9 of the SPP, in Section 2.2 to account for the additional system
	  • As of 2018, there were eight wellhead protection areas
	  • Richmond (King's Park and Richmond West)
	• Replacement of Figure 2 to reflect changes
	• Correction to Schedules cover page item F "Richmond Wellhead Protection Areas"
	• Replacement of Schedule E to reflect changes
	• Replacement and renaming of Schedule F to reflect changes
	• Replacement of Appendices D1 and D11 to show WHPA changes
	
	Please note, The Amendment for the Source Protection Plan does not include any policy changes but rather simple updates to reflect the addition of new and revised wellhead protection areas in Munster and Richmond, including updated maps and schedules.
		March 25, 2019

User's Guide

For readers looking for a specific piece of information, this user's guide is designed to help people navigate through the Plan quickly and effectively. However, the Plan should be read in its entirety to ensure that all applicable policies are considered.

Structure of the Plan

Background information is provided in:

- **Section 1.0** – explains Ontario's source protection program under the *Clean Water Act*
- **Section 2.0** – explains policy development and information specific to the Mississippi-Rideau
- **Section 6.0** – explains policy implementation and future considerations

Policies are presented in:

- **Section 3.0** – policies that address specific drinking water threats and other permissible topics
- **Section 4.0** – policies that are education based
- **Section 5.0** – policies that monitor implementation (reporting requirements for implementers)

In each policy section the following information is provided:

- **Background** – explains why a policy is needed to protect source water
- **Policy Intent** – explains what the policy is intended to achieve
- **Key Concepts** – green boxes provide additional information where necessary
- **Threat Circumstances** – yellow boxes explain when and where policies apply
- **Policies** – blue boxes contain policy wording which outlines all policy requirements, when the policy applies, the implementing body, the policy tool and the compliance date. If no date is specified, the policy is in effect immediately upon the Source Protection Plan taking effect. Compliance dates for monitoring policies are either in the wording of the monitoring policy or the policy it corresponds to.

How to Use the Plan

To find which policies apply in a **specific location** (e.g., a specific property):

- You can use Appendix C1 and follow the instructions at the top of the table

To find which policies apply within a **specific municipality:**

- You can use Appendix C1 and follow the instructions at the top of the table

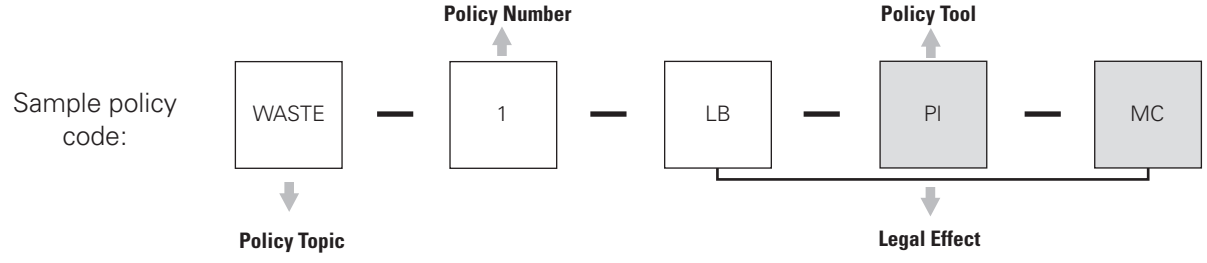
To find which policies affect a **specific activity:**

- Refer to Section 3 which organizes policies by threat activity and refer to Appendix B

For those readers proceeding directly to policies, the information below explains what the policy codes mean. All other readers are encouraged to read the introductory sections of this Plan which provide valuable background information for understanding the policies.

Policy Codes

Each policy has a unique code which identifies the following information:



Policy Topic
The first part of the policy code indicates what threat activity the policy addresses or the type of policy.

Policy Code	*Policy Topic*
ADMIN	Administrative
AQUA	Aquaculture
ASM	Agricultural Source Material
CORR	Transportation Corridors
DEICE	Aircraft De-icing
DNAPL	DNAPLs and Organic Solvents
EDU	Education and Outreach
FERT	Commercial Fertilizer
FUEL	Fuel
LIVE	Outdoor Livestock Areas
MON	Monitoring
NASM	Non-agricultural Source Material
PATH	Transport Pathways
PEST	Pesticide
SALT	Road Salt and Snow
SEW	Sewage Works
WASTE	Waste Disposal Sites

Sample Policy Code: WASTE-1-LB-PI-MC

- **WASTE** means the policy addresses waste disposal sites
- **1** means it is the first policy in the waste section
- **LB** means the policy is legally binding on the implementer
- **PI** means the policy tool is a prescribed instrument
- **MC** means PI decisions must conform with the policy

Policy Number
The second part of the policy code is a number assigned sequentially within each policy topic.

Legal Effect and Policy Tool
The remaining part of the policy code indicates the legal effect of the policy on the implementer.

- **LB** indicates the policy is **legally binding** on the implementer. In addition:
  - Policies that use Part IV tools under the *Clean Water Act* indicate if the activity is prohibited under Section 57 (**S57**) or requires a Risk Management Plan under Section 58 (**S58**).
  - Policies that use provincial prescribed instruments (**PI**) or the *Planning Act* (**PA**) indicate if decisions "must conform" (**MC**) or "have regard" (**HR**).
- **NLB** indicates the policy is **non-legally binding** on the implementer. While not mandatory, these policies are strongly encouraged as resources permit as they will contribute to the overall protection of source water.

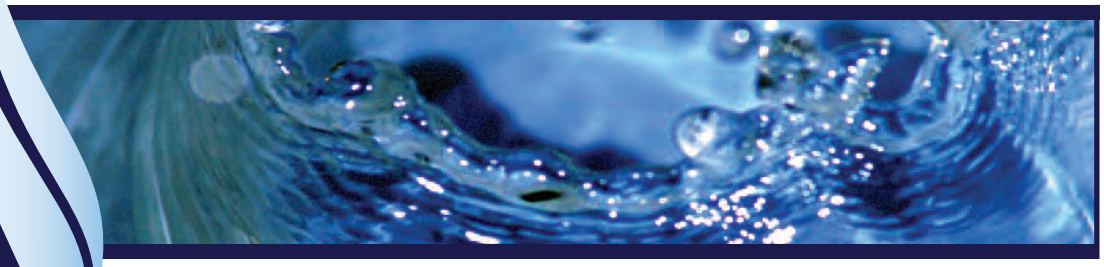
List of Acronyms

ASM	Agricultural Source Material
BTEX	Benzene, toluene, ethylbenzene, and xylenes
DNAPL	Dense Non-aqueous Phase Liquid
HR	Have regard
HVA	Highly Vulnerable Aquifer
IPZ	Intake Protection Zone
LB	Legally binding
MC	Must conform
MOECC	Ministry of the Environment and Climate Change
NASM	Non-agricultural Source Material
NLB	Non-legally binding
PCB	Polychlorinated Biphenyls
TSSA	Technical Standards and Safety Authority
WHPA	Wellhead Protection Area

Glossary
A glossary is included after Section 6.

1 Background

Explaining Source Protection in Ontario



Ontario, with its plentiful lakes and rivers and vast underground aquifers, is the envy of many jurisdictions around the world because it possesses abundant, clean, reliable sources of drinking water. However, with abundance comes responsibility. If not protected, water resources can become contaminated and potentially unusable as a source of drinking water. While this is often thought of as an environmental issue, it is actually a public health and economic priority because people, communities and economies need clean drinking water to survive.

Over the years there have been many incidents of contamination in Ontario, large and small. The results have been illness, costly clean-ups and stigmatized communities. These incidents remind us that in order to protect the drinking water sources we have, we must remain vigilant, now and in the future. This is the purpose of Ontario's *Clean Water Act.*

What You Will Find In This Section

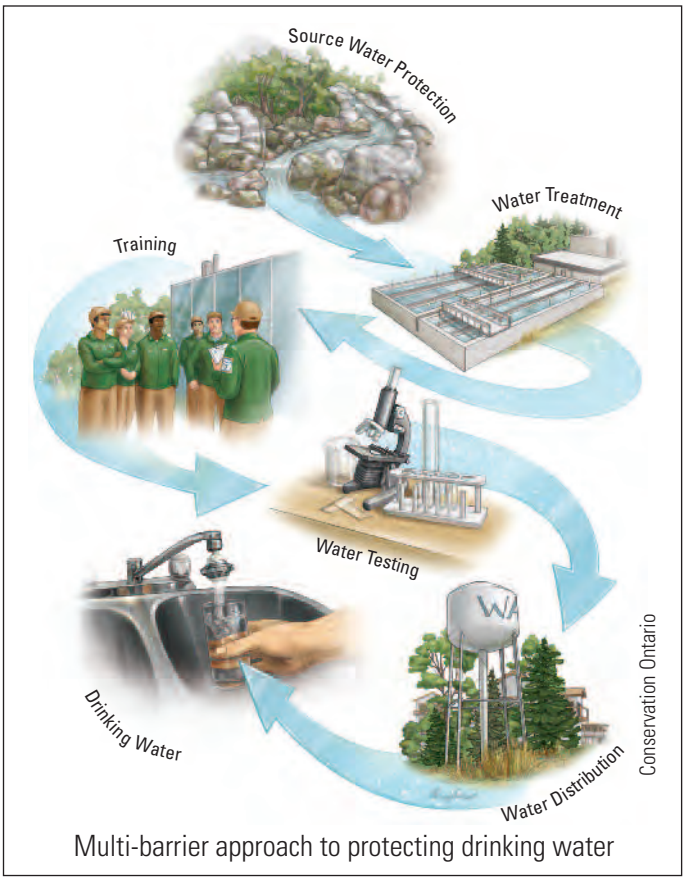
This section describes why sources of drinking water need to be protected and how this is being done in Ontario under the *Clean Water Act.* It also highlights the unique approach this Act is taking which involves:

- Watershed scale areas
- Science-based decisions
- Locally developed policies

1.1 Importance of Source Water Protection

The reality of what can happen when sources of drinking water become contaminated was no more apparent than in Walkerton Ontario in May 2000. After Walkerton's groundwater became contaminated with *E. coli*, multiple protection measures failed, and seven people died while thousands more were made ill.

Justice Dennis O'Connor led a public inquiry that looked into this tragedy. The inquiry made 121 recommendations to better protect Ontario's drinking water in the future. A key conclusion was the need to have multiple layers of protection in place, a concept commonly referred to as the "multi-barrier approach."



Multi-barrier approach to protecting drinking water

Protecting drinking water through a multi-barrier approach is not a new concept. For years, drinking water has been protected directly or indirectly, through a variety of regulations, policies and programs. These have been administered by federal, provincial and municipal governments, as well as Health Units and Conservation Authorities. What the Walkerton Inquiry highlighted was a need to ensure every barrier is robust so there is a strong safety net protecting Ontario's drinking water. The Ontario Government responded to the inquiry recommendations by strengthening existing legislation and introducing new legislation to fill regulatory gaps. A key part of this response was enacting the *Clean Water Act* in 2006 and funding the drinking water source protection program that followed.

The Need for Source Water Protection

- Water treatment is not always enough. Water treatment systems do not remove all contaminants from water, particularly chemicals such as fuels and solvents. The safest approach is to prevent contamination.
- Prevention saves money. It is much cheaper to keep water clean than it is to try and remove contaminants. A 2010 spill from a home heating oil tank in eastern Ontario cost about $1 million to clean up. The spill might have been avoided through a few preventative changes to the tank and supply lines.
- Contamination can ruin a water source forever. Sometimes contamination cannot be cleaned up and a water supply must be shut down. The community of Manotick, Ontario lost access to its groundwater in the 1990s when it was contaminated by chemicals from a dry cleaning business. Since then water has been piped into Manotick from urban Ottawa.
- Source protection has other benefits. Clean and plentiful sources of drinking water protect property values and support tourism and recreation, business development, and fish and wildlife habitat. All of which are important to local economies.

1.2 Ontario's *Clean Water Act*

Purpose

The *Clean Water Act* is not designed to protect water resources in general. Its purpose is to protect those water resources that are used as a source of drinking water. Specifically, it is focused on protecting rivers, lakes and groundwater where they supply municipal drinking water systems (the large systems that serve towns, villages and cities). Under the Act, sources of water for these municipal systems must be studied and policies created to protect them from contamination and depletion. Protecting "the source" is intended to complement the work of water treatment plant operators who ensure municipal drinking water is properly treated, tested and safely distributed to homes and businesses.

While the focus of the *Clean Water Act* is protecting sources of municipal drinking water, it does provide some opportunities to help protect regional groundwater. Under the Act, groundwater supplying private wells is studied at a regional scale and non-restrictive policies can be created to help protect it.

Approach

Unlike other legislation, the *Clean Water Act* does not apply a standard set of policies across Ontario. Instead, multi-stakeholder Committees create policies to protect their local sources of drinking water. The Act specified the list of drinking water threats that Committees had to write policies for, the tools they could use to manage or prohibit these threats and the technical studies that had to be undertaken to understand where policies would apply. Committees then had to create policies that were reasonable and effective for their watershed.

Funding

The Ontario Ministry of the Environment and Climate Change (MOECC) oversees the implementation of the *Clean Water Act* and has fully funded the source protection process up to the completion of Source Protection Plans. This included costs associated with technical studies, policy development, staff and Committees. In addition, many municipalities, Conservation Authorities, businesses, residents, farmers and members of the public generously contributed their time in support of local source protection work.

1.3 Source Protection Areas and Regions

The Walkerton Inquiry recognized that source protection should be undertaken at the watershed scale. This is because a source of drinking water often flows through many municipalities before it is drawn into a drinking water system. Being able to study the whole watershed and develop policies that cross political boundaries is the only way to truly protect a source of drinking water.

The *Clean Water Act* divided southern Ontario and parts of northern Ontario into 38 Source Protection Areas. These are watershed-based areas, most of which mirror Conservation Authority boundaries. Many of these areas were then grouped into regions so staff and resources could be shared to reduce costs. The result was 19 Source Protection Regions or individual Areas administering the source protection program across Ontario.

Mississippi-Rideau Source Protection Region

The Mississippi-Rideau Source Protection Region is 8,500 km^2 and is made up of the jurisdictions of the Mississippi Valley and Rideau Valley Conservation Authorities (see Figure 2). These jurisdictions encompass lands that drain into the Mississippi and Rideau Rivers and then into the Ottawa River. All or part of 31 municipalities fall within this jurisdiction (they are listed in Appendix C2).

Eastern Ontario was divided into the Cataraqui Source Protection Area, Quinte Source Protection Region, Mississippi-Rideau Source Protection Region and the Raisin-South Nation Source Protection Region. These areas and regions are shown on Figure 1.

1.4 Source Protection Authorities

While the MOECC oversees the *Clean Water Act* provincially, Conservation Authorities are tasked with administering the program at the local level. Their role is to manage the source protection budget, establish a Source Protection Committee, submit deliverables completed by the Committee to the MOECC for review and approval, and report annually to the MOECC on policy implementation. Conservation Authorities were selected because they already operate at the watershed scale and have experience protecting water resources. Officially, Conservation Authorities are referred to as Source Protection Authorities when undertaking their responsibilities under the *Clean Water Act.*

The Mississippi Valley Source Protection Authority (made up of the 15-member Board of Directors for Mississippi Valley Conservation) and the Rideau Valley Source Protection Authority (made up of the 22-member Board of Directors for the Rideau Valley Conservation Authority) jointly oversee the source protection program in the Mississippi-Rideau Source Protection Region.

1.5 Source Protection Committee

Under the *Clean Water Act,* a Source Protection Committee is required for each of the 19 Source Protection Regions / Areas. Committees are made up of:

- 1/3 municipal representatives
- 1/3 economic sector representatives
- 1/3 public sector representatives

Committee Chairs were appointed by the Minister of the Environment while Committee members were appointed by Source Protection Authorities. Each Committee also has three non-voting liaison members representing the MOECC, public health units, and the Source Protection Authorities.

These Committees were responsible for working with conservation authority staff to develop policies that would effectively protect local sources of drinking water. The composition of the Committees was intended to ensure that a variety of local interests were represented at the decision making table. While policy development was led by Source Protection Committees, they relied heavily on input and advice from all municipalities, health units, ministries, First Nations, business sectors, farmers, environmental groups, property owners and the public. Developing policies at the local level with broad involvement from all sectors and stakeholders ensured policies were reasonable, practical, cost-effective and had widespread support.

Mississippi-Rideau Source Protection Committee

In 2007, the Minister of the Environment appointed Janet Stavinga as Chair of the Mississippi-Rideau Source Protection Committee. The Mississippi Valley and Rideau Valley Source Protection Authorities then appointed 15 Committee members representing the following interests:

Municipal Interests:

- 2 representatives from the City of Ottawa
- 1 representative from municipalities with groundwater-based municipal drinking water systems
- 1 representative from municipalities with surface water-based municipal drinking water systems
- 1 representative from municipalities without municipal drinking water systems

Economic Interests:

- 2 agriculture representatives
- 2 industry representatives
- 1 small business representative

Public Interests:

- 1 First Nations representative
- 1 environmental representative
- 1 non-governmental organization representative
- 2 general public representatives

Member biographies can be found in Appendix F

1.6 Source Protection Process

Under the *Clean Water Act,* the process to develop science-based policies required Source Protection Committees to develop Terms of Reference, Assessment Reports and Source Protection Plans.

Terms of Reference — 2008

Terms of Reference outline how Assessment Reports and Source Protection Plans would be developed and who was responsible for each task. The Terms of Reference for the Mississippi Valley Source Protection Area was approved by the MOECC on February 5, 2009 and for the Rideau Valley Source Protection Area on March 16, 2009.

View Terms of Reference and Assessment Reports

Approved documents can be viewed online at:

- www.mrsourcewater.ca

Electronic copies can also be obtained by contacting:

- Mississippi Valley Conservation Authority at 613-253-0006
- Rideau Valley Conservation Authority at 613-692-3571 or 1-800-267-3504

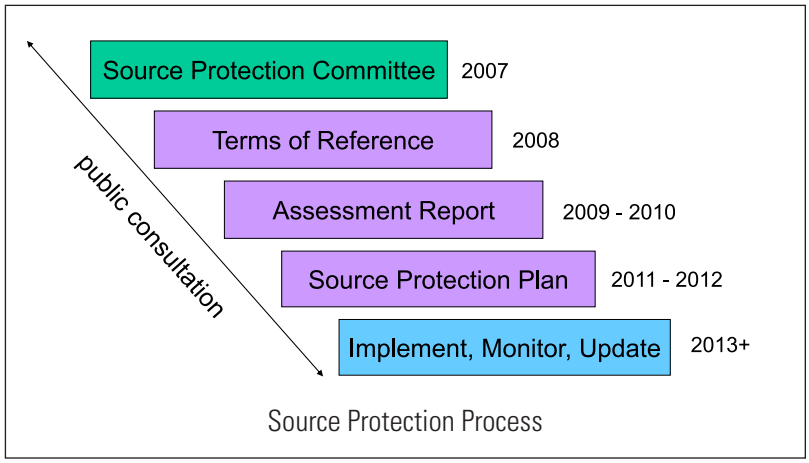
Assessment Reports — 2010

Assessment Reports identify where local drinking water comes from, the areas where it is most vulnerable to contamination and what potential sources of contamination might be in those areas. These technical findings were used to make source protection policy decisions and they determine the areas where policies apply. An Assessment Report for the Mississippi Valley Source Protection Area was approved by the MOECC on August 4, 2011 and one for the Rideau Valley Source Protection Area was approved on December 19, 2011.

Source Protection Plan — 2012

Source Protection Plans contain policies to protect local sources of drinking water from contamination and overuse. This Source Protection Plan for the Mississippi Valley and Rideau Valley Source Protection Areas contains:

- Required policies
- Other permissible policies
- Reasons for each policy
- Where each policy applies
- Body responsible for implementing each policy
- Date by which each policy must be implemented
- Policies to monitor implementation progress



Source Protection Process

Implementation and Updates — 2013+

Once approved, the policies in this Plan will be implemented by a variety of agencies including municipalities, provincial ministries and Conservation Authorities. There is also a requirement to monitor implementation progress and report on it annually. The source protection process is intended to continue over the long term and this Plan will be reviewed and updated as needed.

2 Policy Development

Creating A Local Plan

Everyone has an interest in drinking water source protection, from wanting to ensure their source of drinking water is protected to having input into source protection policies that may affect their property. The Mississippi-Rideau Source Protection Committee was committed to creating a Source Protection Plan in an open and consultative manner that provided many opportunities for everyone to be involved. The goal was to create policies that would effectively protect source water while at the same time be implementable and reasonable for local communities.

What You Will Find In This Section

This section explains the components of a source protection policy, how they pertain to the Mississippi-Rideau region and the process that was followed to create this Plan. Specifically the section describes:

- What activities are subject to policies (drinking water threats)
- Where policies apply (vulnerable areas)
- What policies are required or permissible (objectives)
- What effect policies have (policy tools, legal effect)
- How policies were created (development process, explanatory document)
- What future policies could address (future considerations)

2.1 Drinking Water Threats

The MOECC, in collaboration with a Technical Experts Committee, identified 21 land use activities that have the potential to contaminate or deplete sources of drinking water. These activities are designated as prescribed drinking water threats under the *Clean Water Act*. They are:

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 (aquaculture).
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** (DNAPLs).
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.

Threats Affecting Water Quality

Most of the prescribed drinking water threats listed above are land use activities that have the potential to contaminate drinking water. They are activities that through spills, leaks or mishandling would release chemicals or pathogens that could contaminate surface water or groundwater. Should this happen near a municipal well, municipal intake or in areas where groundwater is highly vulnerable to contamination, sources of drinking water could become contaminated. Identifying these activities and minimizing their risk is the purpose of source water protection and the primary focus of the policies in this Plan.

Threat Circumstances

For each prescribed drinking water threat, the MOECC specifies under what circumstances it is considered a significant, moderate and low drinking water threat. The circumstances depend on:

- Where the activity is taking place (relative to a source of drinking water)
- What the nature of the activity is (its contamination potential)

All circumstances are catalogued in a large document produced by the MOECC called "Provincial Tables of Circumstances." Appendix B of this Plan summarizes the significant threat circumstances for each activity, as well as moderate and low threat circumstances if a policy in this Plan addresses them. Most of the

policies in this Plan address activities when they are considered a significant drinking water threat (these policies are required under the *Clean Water Act).* A few policies also address moderate and low threats (these policies are allowed at the discretion of Source Protection Committees).

Threats Affecting Water Quantity

Prescribed drinking water threats 19 and 20 are activities that could deplete, not contaminate, sources of drinking water. Since the Assessment Reports for the Mississippi-Rideau region concluded that there are no significant water quantity threats in this region, this Plan does not contain policies to address these activities in accordance with the *Clean Water Act.* The Assessment Reports did however recognize that there are localized water quantity concerns of a seasonal nature and significant groundwater recharge occurring throughout much of the region, which should be considered by decision-makers. This technical information is therefore being used by provincial ministries and other agencies when reviewing applications for activities that could impact water quantity. In addition, the education policies in Section 4 of this Plan promote water conservation.

2.2 Drinking Water Sources and Vulnerable Areas

About three quarters of the population in the Mississippi-Rideau region live in an area that is serviced with municipal drinking water. The Assessment Reports studied the source of water supplying municipal systems and generated Wellhead Protection Areas for the groundwater systems and Intake Protection Zones for the surface water systems. These are vulnerable areas where pollutants on the surface could enter the source of municipal drinking water, potentially causing contamination.

Wellhead Protection Areas

Wellhead Protection Areas (WHPA) illustrate where groundwater is coming from to supply a municipal well and how fast it is travelling horizontally through the aquifer toward the well. A total of four areas are identified:

- WHPA-A is a 100 metre radius around the wellhead
- WHPA-B is the area within which groundwater could reach the well within two years
- WHPA-C is the area within which groundwater could reach the well within two to five years
- WHPA-D is the area within which groundwater could reach the well within five to 25 years

In This Region…

As of 2018 there were eight Wellhead Protection Areas:

- Almonte
- Carp
- Kemptville
- Westport
- Merrickville
- Richmond (King's Park and Richmond West)
- Munster

As of 2011 there were five Intake Protection Zones:

- Carleton Place
- Perth
- Ottawa (Britannia and Lemieux Island)
- Smiths Falls

Highly Vulnerable Aquifers characterize 89 percent of this region. Significant Groundwater Recharge Areas characterize 13 percent of this region.

For more information about how vulnerable areas were delineated refer to the Assessment Reports (see page 5 for more details). **To view vulnerable areas refer to the Schedules in this Plan.**

The Assessment Reports then looked at the type and depth of soil found in these areas. This determines how easily contaminants on the surface could reach the aquifer supplying the well. Deeper aquifers that are covered by thicker layers of impermeable soil (e.g., clay) are the least vulnerable to contamination while shallower aquifers covered by thinner layers of permeable soil (e.g., sand) are most vulnerable. The Assessment Report used this information to assign vulnerability scores in each area. Scores are

highest closest to the well and where the vulnerability is high.

- WHPA-A always receives a vulnerability score of 10 regardless of vulnerability
- WHPA-B can receive a vulnerability score of 6, 8 or 10 depending on the area's vulnerability
- WHPA-C can receive a vulnerability score of 4, 6 or 8 depending on area's vulnerability
- WHPA-D can receive a vulnerability score of 2, 4 or 6 depending on the area's vulnerability

Intake Protection Zones

Intake Protection Zones (IPZ) illustrate where surface water is coming from to supply a municipal intake at a water treatment plant and how fast it is travelling toward the intake. A total of three zones are identified:

- IPZ-1 is a 200 meter radius around or upstream of the intake (with a buffer on land)
- IPZ-2 is the area within which surface water could reach the intake within two hours (with a buffer on land)
- IPZ-3 is the remaining area within which surface water could reach the intake (with a buffer on land)

The Assessment Reports then looked at how vulnerable the intake was to contamination (in deep or shallow water, far or close to shore) and how easily surface contaminants could get into the watercourse (vegetated or hardened surfaces, sloped or flat). These factors, along with travel time from the intake, were used to assign vulnerability scores in each zone. Scores are highest closest to the intake and where the vulnerability is high.

- IPZ-1 can receive a vulnerability score of 9 or 10 depending on the vulnerability of the intake and the area
- IPZ-2 can receive a vulnerability score of 8, 8.1 or 9 depending on the vulnerability of the intake and the area
- IPZ-3 can receive vulnerability scores of 2 to 8 (scores decrease by one every four hour increment from the intake)

Highly Vulnerable Aquifers

In 89 percent of the Mississippi-Rideau region the soil is very thin or completely absent and the underlying bedrock contains large cuts and gaps called fractures. These features make the underlying groundwater very vulnerable to surface contaminants so these areas are called Highly Vulnerable Aquifers. This regional groundwater is the source of drinking water for nearly one quarter of the population who are on private wells.

- Highly Vulnerable Aquifers receive a vulnerability score of 6

Significant Groundwater Recharge Areas

In 13 percent of the Mississippi-Rideau region there are gravel deposits or soil features that allow a significant amount of rain and snowmelt to infiltrate down into groundwater. These areas are

What the Scores Mean…

Areas Scored 8 to 10

Activities can only be considered a "significant" drinking water threat in areas scored 8 to 10 (except for DNAPLs which are a significant threat anywhere in WHPA-A, B or C). Under the *Clean Water Act*, Source Protection Plans must include policies to address significant threats and only significant threats can be prohibited or made to require a Risk Management Plan. Since areas scored 8 to 10 cover less than 1.5 percent of the Mississippi-Rideau region, most properties will not be affected by the majority of policies in this Plan.

Areas Scored Less Than 8

No activities (except DNAPLs) can be considered a significant drinking water threat in areas scored less than 8. This means more restrictive policies like prohibition and Risk Management Plans cannot be used in these areas. The only policies in this Plan that apply in these types of areas are:

- Managing waste disposal sites in Highly Vulnerable Aquifers
- Encouraging the wise use of road salt
- Promoting best management practices through education

called Significant Groundwater Recharge Areas and they contribute to the quantity of groundwater available within the Mississippi-Rideau region. Groundwater can also be vulnerable to contamination in these areas depending on the depth and type of soil.

- Significant Groundwater Recharge Areas receive a vulnerability score of 2 to 6 depending on the area's vulnerability

2.3 Plan Objectives

Under the *Clean Water Act* the objectives of a Source Protection Plan are:

1. *Protect existing and future drinking water sources in the Source Protection Region.*

2. *Ensure that, for every area identified in the Assessment Report as an area where an activity is or would be a significant drinking water threat:*

   i. *the activity never becomes a significant drinking water threat, or*
   ii. *if the activity is occurring when the source protection plan takes effect, the activity ceases to be a significant drinking water threat.*

Section 22(1) of Ontario Regulation 287/07

Required Policies

The *Clean Water Act* therefore requires Source Protection Plans to include:

- Policies to address all significant drinking water threats

Other Permissible Policies

The *Clean Water Act* also allows Plans to include:

- Policies to address moderate or low drinking water threats
- General policies like education and incentive programs
- Policies to address transport pathways
- Policies to address Emergency Response Plans

In This Plan …

Education Everywhere

This Plan uses education to raise awareness about all vulnerable areas and drinking water threats. The policies in Section 4 promote awareness about vulnerable area locations, what people can do to help protect their community's source of drinking water, and what funding is available to help them do it.

Significant Threats

In general, the policies in this Plan that address significant drinking water threats:

- Prohibit future activities that pose too high a risk (e.g., DNAPLs) or are unnecessary to locate in a vulnerable area (e.g., gas station)
- Manage all other future activities and all existing activities (no existing activities are prohibited).

Moderate and Low Threats

Policies in this Plan address moderate and low threats pertaining to:

- Waste disposal sites because their magnitude warrants careful review in a region where groundwater is highly vulnerable to contamination
- Road salt application because this is an emerging issue that could affect regional groundwater
- Aquaculture because this cannot be considered a significant threat but warrants a policy in case a facility was proposed near a municipal intake

Other Permissible Policies

Policies also address:

- Transport pathways (wells, pits and quarries, and earth energy systems)
- Transportation corridors (roadways and recreational waterways)

2.4 Policy Tools

The *Clean Water Act* identifies a number of policy tools that can be used to protect source water in vulnerable areas. They range from education and incentives to requiring risk management measures to prohibition. Many of these are existing tools that are already used to regulate development and land uses. Other tools were created by the C*lean Water Act* to help fill regulatory gaps. The Act places limitations on the most restrictive tools (Risk Management Plans and prohibition) to ensure that they are only used to address significant drinking water threats. Below is a description of the policy tools used in this Plan to protect sources of drinking water.

Education and Outreach

Programs can educate property owners and businesses about how to address drinking water threats on their property. Such programs can be used to address one threat, a group of threats or all threats. Education policies can also be used to complement other policy tools.

Incentives

Financial incentives or recognition can be offered to those who address drinking water threats on their property. Such programs can also be used to address one threat, a group of threats or all threats and can complement other policy tools.

Existing Programs or Requirements

Policies can recognize and support existing regulatory programs that already effectively manage drinking water threats (e.g., Ontario's pesticide safety courses and septic maintenance inspection program). Policies can also request that changes be made to strengthen existing programs so that they could be used to address threats in the future (e.g., fuel tank inspections).

In This Plan…

The policies maximize the use of existing programs and tools to avoid regulatory duplication:

- **Existing Programs:** Where a drinking water threat was already well regulated in a manner that adequately protects source water, no requirements were added. Where there were opportunities to strengthen other regulatory programs so they could be used to adequately protect source water in the future, the Committee recommended such modifications. This could make some source protection policies unnecessary in the future.
- **Prescribed Instruments**: For those drinking water threats the Committee wanted to manage or prohibit, they did so through Prescribed Instruments wherever possible.
- **Section 57 and 58:** For those drinking water threats that could not be managed or prohibited through Prescribed Instruments, the Committee required Risk Management Plans through Section 58 or prohibited through Section 57 of the *Clean Water Act*.

To ensure applicants are aware of applicable source protection policies early in the planning and development processes two approaches are used:

- **Land Use Planning:** Where Prescribed Instrument policies prohibit future drinking water threats (waste disposal sites and some sewage works), a complementary policy requires municipal Official Plans and zoning by-laws to also prohibit the land use.
- **Restricted Land Use:** Where Section 57 or 58 policies prohibit or manage a drinking water threat, a complementary restricted land use policy applies.

Prescribed Instruments

A "prescribed instrument" is a permit or other legal document issued by the provincial government allowing an activity to take place. Examples include Nutrient Management Plans under the *Nutrient Management Act* and Environmental Compliance Approvals for sewage works under the Ontario *Water Resources Act.* These instruments usually contain provisions to protect human health and the environment. Source protection policies can require that an instrument be examined and amended, if necessary, to better manage a drinking water threat or policies can be prescriptive and specify content to be included in the instrument. Policies can also prohibit new instruments from being issued to prevent the creation of new significant threats.

Land Use Planning

Municipalities use *Planning Act* tools like Official Plans and zoning by-laws to direct new development to appropriate areas. Municipal planning documents can therefore be amended to prohibit or restrict certain types of new development in vulnerable areas that would create a new drinking water threat. For example, source protection policies could require a municipality to prohibit new waste disposal sites in certain vulnerable areas.

Risk Management Plans (Part IV, Section 58 of the *Clean Water Act)*

Requiring a Risk Management Plan is a new tool created by Section 58 of the *Clean Water Act.* A Risk Management Plan outlines how a person must manage significant drinking water threats on their property. Policies can specify the content of a Risk Management Plan or the content can be developed jointly by a Risk Management Official and the property owner. One plan can be used to address multiple threats on a single property but plans are only valid for the current property owner. Risk Management Plans recognize current practices that have already been implemented to decrease risk, such as agricultural best management practices. In the event that a property owner and Risk Management Official are unable to negotiate a Risk Management Plan, the Risk Management Official can impose one.

Prohibition (including Part IV, Section 57 of the *Clean Water Act)*

Policies can prohibit activities in vulnerable areas to eliminate or prevent significant drinking water threats. Prescribed Instruments, land use planning or Section 57 of the *Clean Water Act* can be used to prohibit an activity. Only significant drinking water threats can be prohibited and in the Mississippi-Rideau region, no existing activities (e.g., established businesses) are prohibited.

Restricted Land Uses (Part IV, Section 59 of the *Clean Water Act)*

This is a new administrative tool that was created by Section 59 of the *Clean Water Act*. It is used to flag applications made under the *Planning Act* or the Ontario Building Code that may be prohibited under Section 57 or require a Risk Management Plan under Section 58 of the *Clean Water Act.* These flagged applications are forwarded to the Risk Management Official to determine if the proposed activity is prohibited or requires a Risk Management Plan. If it is prohibited the application does not proceed, if it requires a Risk Management Plan, the proponent and the official need to establish a plan before the application can proceed.

KEY CONCEPT ...

Part IV Powers refer to new powers under Part IV of the *Clean Water Act* that allow municipalities to require a Risk Management Plan or prohibit activities that are drinking water threats. The municipality may enforce Part IV or they may delegate the enforcement responsibility to another body such as a Health Unit or Conservation Authority. The duties and powers are carried out by a Risk Management Official (similar to a Building Official.)

2.5 Legal Effect

The *Clean Water Act* specifies what legal effect each type of policy can have. Under the Act, some policies can be legally binding on implementing bodies while others cannot. The Source Protection Committee highly recommends that non-legally binding policies be given due consideration and be implemented as resources permit in the interest of source water protection. Appendix A contains a list that identifies the legal effect of each policy in the Plan.

In This Plan…

Policy codes were assigned to every policy and the last part of the code indicates the policy's legal effect:

- The third part of the policy code indicates if the policy is legally binding (**LB**) or non-legally binding (**NLB**) on the implementing body
- If the policy code has a fourth part it indicates if the implementing body must conform with (**MC**) or have regard to (**HR**) the policy.
- If the policy code has a fifth part it indicates what Part IV tool under the *Clean Water Act* is being used. An activity may be prohibited under Section 57 (**S57**), require a Risk Management Plan under Section 58 (**S58**), be subject to restricted land use under Section 59 (**S59**)

Legally Binding Policies

- Decisions made under the *Planning Act* "must conform with" significant threat policies and "have regard to" moderate and low threat policies.
- Decisions regarding Prescribed Instruments "must conform with" significant threat policies and "have regard to" moderate and low threat policies.
- All other significant threat policies that impose obligations on municipalities, Source Protection Authorities or local boards are legally binding.
- Most monitoring policies that are directed at municipalities, Source Protection Authorities or local boards are legally binding.
- Policies that use Part IV of the *Clean Water Act* to prohibit or manage significant threats are legally binding. Under these policies activities are designated prohibited under Section 57, designated as requiring a Risk Management Plan under Section 58 or designated as subject to Restricted Land Use under Section 59.

Non-Legally Binding Policies

- Policies that set out recommended actions that public bodies should take in order to meet the Plan's objectives are not legally binding.
- Significant threat policies directed at bodies other than Provincial Ministries (through Prescribed Instruments), municipalities, Source Protection Authorities or local boards cannot be legally binding.

2.6 Policy Development Process

The Mississippi-Rideau Source Protection Committee was committed to developing policies in an open, transparent and consultative manner. The goal was to develop policies that were not only effective at protecting drinking water sources but were practical and cost-effective to implement and had broad municipal and public support.

The Committee took the following steps to create the policies in this Plan. Additional details are provided in the Summary of Consultation Activities in Appendix E.

Step 1: Developing Draft Policies

The Source Protection Committee worked with municipal staff, sector experts and adjacent Source Protection Committees to generate initial policy ideas.

Municipal Staff Working Group

- All municipal staff in the Mississippi-Rideau region were invited to participate in a series of "Municipal Working Group" meetings. Five day-long meetings were held in December 2010 and January, February, March and June 2011.
- At these meetings municipal staff reviewed and discussed policy options and indicated their preferred approach for all required policies and some permissible policies.

Sector Experts

- Many of the policy ideas generated by the municipal working group were vetted through sector experts who are knowledgeable about the land use activity that would be affected (e.g., fuel suppliers, farmers, septic inspectors, municipal public works employees).
- These sector experts provided additional information about how the land use activity may already be regulated and how reasonable, effective and implementable the policy idea would be.

Adjacent Source Protection Committees

- Policy ideas were also shared with the three neighbouring source protection areas and regions (Cataraqui, Quinte and Raisin-South Nation). Staff from the four areas/regions met regularly to share background information and compare policy ideas.
- The intention was to provide a consistent level of information and where possible, a consistent policy approach for the benefit of those municipalities and other organizations that are shared between more than one source protection area.

The Source Protection Committee reviewed the policy ideas generated by municipal staff and considered the information provided by sector experts. They chose to share these initial draft policies with those who would be affected by them to determine what impact the policies would have and if the policies were reasonable.

Step 2: Feedback on Draft Policies

Draft policies were shared with Source Protection Authorities, municipalities, other agencies identified as possible policy implementers, industry associations and property owners who may be affected by policies and the general public. The goal was to solicit input early in the process so it could reshape, where necessary, the policies that would be included in the draft Source Protection Plan.

Source Protection Authorities

- Draft policies were presented to the Source Protection Authorities in batches as they were being developed. The policies were endorsed by the Authorities before being circulated to others for comment.

Municipalities

- In October 2011, all municipalities received a complete set of draft policies for review and comment. Background information and mapping explained how the policies could affect their specific municipality and its residents.
- Municipalities were encouraged to thoroughly review the policies and indicate support or recommend changes for each policy. Municipalities were also asked to indicate if they were willing to undertake the roles and responsibilities that would be assigned to them by the policies.
- Two day-long meetings were held to assist municipalities with their review. One was for members of council and one was for municipal staff. These meetings gave council members and staff an overview of the policies and an opportunity to ask questions and provide feedback.

- Presentations were also made to municipal councils and meetings held with municipal staff as requested. Municipalities were also encouraged to attend the open houses that were held for the general public.

Policy Implementers
- In October 2011, all other agencies identified as potential policy implementers (e.g., provincial ministries, federal departments, Health Units, Conservation Authorities) received a copy of the policies that they would be responsible for implementing. Background information and mapping explained how the policies could affect them.
- Implementing bodies were encouraged to review the policies thoroughly and indicate their support or recommend changes. They were also asked to indicate their willingness to implement the policies.
- A day-long meeting was also co-hosted with neighbouring Source Protection Committees, to assist these implementing bodies with their review. The meeting gave implementing bodies an overview of the policies and an opportunity to ask questions and provide feedback. Source protection staff was also available to meet with implementing bodies one-on-one.

Industry Associations
- In August 2011, Conservation Ontario mailed letters to a number of provincial and national industry associations who represent sectors that could be affected by source protection policies. These associations were encouraged to contact local Source Protection Committees if they wanted to receive draft policies for review.
- In November 2011, the Mississippi-Rideau Source Protection Committee sent draft policies to all associations who requested them.

Potentially Affected Property Owners
- In November 2011, a letter was sent to all property owners where there was the potential for a land use activity that could be considered a significant drinking water threat. The letter explained why and how policies were being developed, what activities could be affected by the policies and what affect the policies could have (e.g., new requirements or restrictions).
- Property owners were encouraged to indicate if activities on their property would be subject to the policies, how the policies would affect them, if they supported the policies or recommended changes, and how their activities may already be governed by other regulations or requirements.
- They were also strongly encouraged to take advantage of stewardship funding that was available to address many of the activities that would be subject to source protection policies.
- Property owners were also invited to contact staff to discuss the policies and/or attend the open houses for the general public.

General Public
- In November 2011, four public open houses were held to solicit input from all other interested groups and individuals, including the general public. An overview of the policies was provided and staff and Committee members were available to answer questions and record comments.

All comments received on the draft policies were reviewed and considered by the Source Protection Committee. A number of revisions were made to the policies to address concerns and integrate recommendations. A complete summary of comments received and how they were addressed can be found in Appendix A of the Explanatory Document.

Step 3: Draft Source Protection Plan

Revised policies were compiled into a draft Source Protection Plan. On March 29, 2012, it was posted for a 37 day public comment period.

- Municipalities, other implementing bodies and potentially affected property owners received a letter notifying them about the posting and how to review and comment on the Plan.
- Source protection staff were available to meet with municipalities, other implementers and property owners upon request.
- Four public open houses were held to solicit input and comments from the public and property owners.

All comments received on the draft Plan were considered by the Source Protection Committee who revised the Plan where possible to address concerns and integrate suggestions. A summary of all comments received and how they were addressed is included in Appendix B of the Explanatory Document.

Step 4: Proposed Source Protection Plan

A proposed version of this Source Protection Plan was posted on June 22, 2012 for a final 32 day public comment period.

- Municipalities, other implementing bodies and people who had submitted comments on the draft Source Protection Plan received a letter notifying them about the posting and how to review and comment on the Plan.

All comments received on the proposed Source Protection Plan were forwarded to the MOECC for their consideration when reviewing the Plan for approval. These comments are included in Appendix C of the Explanatory Document. Recommended revisions provided by the MOECC during their review of the proposed Source Protection Plan and final minor edits and improvements appear in Appendix D of the Explanatory Document.

2.7 Explanatory Document

The goal of the Mississippi-Rideau Source Protection Committee was to work with the local community to create policies that were:

- **Effective** at protecting source water;
- **Practical** to implement;
- **Cost-effective** to implement; and
- **Accepted** broadly.

In deciding whether or not a policy met these guiding principles, the Committee considered a lot of background information and took many factors into consideration. An Explanatory Document, which accompanies this Plan, captures what information and factors influenced policy decisions and the reasons behind each policy.

View the Explanatory Document

It can be viewed online at:

- www.mrsourcewater.ca

Electronic copies can also be obtained by contacting:

- Mississippi Valley Conservation Authority at 613-259-2421
- Rideau Valley Conservation Authority at 613-692-3571 or 1-800-267-3504

The explanatory document was prepared by the Source Protection Committee in accordance with Ontario Regulation 287/07. As required, the document describes:

- The process used to develop policies
- Consideration of climate change
- Consideration of financial implications
- Consideration of comments received
- Reasons for each policy

2.8 Future Considerations

When this Plan is reviewed and updated in the future the following items could be considered.

Ottawa River Watershed

While protecting the whole Ottawa River watershed is beyond the scope of this Plan, many initiatives have been undertaken to establish better information sharing and collaborative decision making among Ottawa River watershed agencies and stakeholders. The goal is to help protect the broader water quality, quantity, and the ecological integrity of the Ottawa River.

In This Region…

- The Mississippi-Rideau region makes up six percent of the Ottawa River watershed.
- Approved Intake Protection Zones for Ottawa's water treatment plants at Britannia and Lemieux Island end at the provincial boundary between Ontario and Quebec. This is because the *Clean Water Act* has no jurisdiction outside of Ontario. Modelled Intake Protection Zones for these systems extend into Quebec, a preliminary delineation of these areas is shown in the Assessment Reports.

Since the formation of the Mississippi-Rideau Source Protection Committee:

- Municipal staff along both sides of the Ottawa River have met to discuss protecting their shared source of municipal drinking water. Information and data have been shared among these municipalities to build a better understanding of vulnerable drinking water areas and potential threats in those areas.
- The Ministries of the Environment for both provinces have also discussed source protection. The ministries have facilitated meetings between ministry and municipal staff from both provinces as well as shared information about the legislative processes established in both provinces to protect drinking water sources. In December 2011, the Province of Quebec introduced a draft regulation that will strengthen source protection for surface water.

This Source Protection Plan will be shared with municipalities, agencies and ministries in Quebec and upstream in Ontario. These bodies will be encouraged to incorporate the information into their spill prevention and contingency plans, and to ensure that procedures are in place to notify the City of Ottawa of any water or land-based spills that could impact that City's drinking water.

Other Drinking Water Systems

There is a clause in the *Clean Water Act* that allows municipal councils or the Minister of the Environment to include two other types of drinking water systems in the source protection planning process:

In This Region…

- There are countless potential clusters of six or more private wells or intakes.
- There are over 600 drinking water systems that supply public and private facilities.

- Clusters of six or more private wells or intakes
- Systems that supply public and private facilities (schools, community centres, trailer parks)

Should the Minister of the Environment or local municipalities choose, future versions of the Assessment Report and Source Protection Plan could address these other types of drinking water systems.

Climate Change

Under the *Clean Water Act* the Committee could take one of three approaches to address climate change in this Plan:

1. Not addressed — Committees could state in their Explanatory Document that climate change was not considered.
2. Precautionary approach — Committees could err on the side of caution when making decisions about policies given the potential impacts of climate change.
3. Proactive approach — Committees could describe how the policies try to address the added stress climate change could create and state that the policy, as written, helps to proactively address projected climate change impacts on drinking water sources.

In This Region…

Climate change projections show this region will likely experience the following:

- A rise in temperatures in both warm and cold seasons
- Minimum temperatures increasing at a faster rate than maximum temperatures
- Changes in monthly precipitation patterns and amounts
- Increase in evapotranspiration rates
- Increase in weather variability with higher frequency of weather extremes and events

These changes could result in:

- Changes in the delineation of the Intake Protection Zones and Wellhead Protection Areas
- Increased importance of transport pathways
- Water quantity and water quality stresses on some subwatersheds

The Mississippi-Rideau Source Protection Committee chose the precautionary approach which means the policies in this Plan were developed with climate change considerations in mind (e.g., changing weather trends were discussed when developing the policy for road salt application). In addition, some non-required policies were also included in the Plan to help protect source water in a changing climate (e.g., certain moderate and low threat policies, transport pathways policies).

The Committee also had the ability to include policies governing climate change data collection. No policies were included in this Plan as the Conservation Authorities and a number of other agencies already collect climate related data on an ongoing basis (e.g., stream flow, snow depth and water content, rainfall, air and water temperature).

3 Policies That Address Specific Threats

Ensuring Source Protection

A clean source of drinking water is critical for the health of people and the viability of communities. It is therefore important to protect rivers and groundwater where they are a source of local drinking water. Policies must ensure that land use activities in these areas do not cause contamination. By addressing potential threats near drinking water sources, people and communities will be better protected.

What You Will Find In This Section

Ontario's *Clean Water Act* specifies human land use activities that have the potential to contaminate drinking water sources. The policies in this section will ensure that these activities are safely managed or restricted near sources of drinking water, primarily municipal drinking water.

For each set of policies the following information is provided:

- Why the activity is a drinking water threat
- What the desired outcomes of the policies are
- Where and under what circumstances the policies will apply

Each policy then identifies:

- The body responsible for implementing the policy
- The tool used to implement the policy
- All policy requirements
- The compliance date (if no date is indicated the policy is in effect immediately upon the Source Protection Plan taking effect)

Policy Topics

The policies in this section address the 19 prescribed drinking water threats that have the potential to contaminate a source of drinking water, as well as two other permissible threat topics — transportation corridors and transport pathways. Three types of administrative policies are also included to assist municipalities and other policy implementers with policy implementation. All of the policies are organized into the following subsections:

3.1 Waste Disposal Sites
3.2 Sewage Works
3.3 Road Salt and Storage of Snow
3.4 Dense Non-aqueous Phase Liquids (DNAPLs) and Organic Solvents
3.5 Fuel
3.6 Commercial Fertilizer
3.7 Pesticide
3.8 Outdoor Livestock Areas
3.9 Agricultural Source Material (ASM)
3.10 Non-agricultural Source Material (NASM)
3.11 Aquaculture
3.12 Aircraft De-icing
3.13 Transportation Corridors
3.14 Transport Pathways
3.15 Administrative Policies

General Policy Intent

The policies ensure that the activities listed above will not pose a significant threat of contamination near sources of municipal drinking water. The policies accomplish this by:

- **Supporting** existing programs that already ensure good management practices
- **Requiring** additional oversight or risk reduction measures where needed
- **Prohibiting** certain activities from being established in the future

Where additional risk reduction measures are required (usually through Prescribed Instruments or Risk Management Plans), the general expectation is that effective best management practices will be implemented. This means, those activities already adhering to good management practices may not require any additional measures, while those being undertaken without any measures in place will be brought up to industry standards.

KEY CONCEPT ...

An **existing** activity is one that:

- Is present or occurring on the date this Source Protection Plan takes effect; or
- Is established or commences on a date after the date this Source Protection Plan takes effect but meets the criteria of the Transition Policy in Section 3.15.3 of this Source Protection Plan; or
- Resumes after an interruption or expands after the date the Source Protection Plan takes effect but meets the criteria of the Interruptions / Expansions Policy in Section 3.15.3 of this Source Protection Plan.

A **future** activity is one that:

- Is established or commences on a date after the date this Source Protection Plan takes effect; and
- Does not meet the criteria of the Transition Policy or the Interruptions / Expansions Policy in Section 3.15.3 of this Source Protection Plan.

The Transition Policy and the Interruptions / Expansions Policy stipulate certain situations where an activity that commences, resumes or expands after the date the Source Protection Plan takes effect would be considered existing and therefore would be subject to policies addressing existing activities rather than policies addressing future activities. These policies can be found in Section 3.15.3 entitled Existing and Future — Special Provisions.

Where Policies Apply

Each policy only applies in a certain location and under certain circumstances. These circumstances are summarized in a yellow box in each subsection and are outlined in greater detail in Appendix B. The locations referred to in these circumstances are shown on the maps in Schedules A to L and are explained in Section 2.2. Some policies also distinguish between existing activities and those that will be established in the future. This distinction is explained in the Key Concept box on page 22.

Complementary Education Policies

Section 4 of this Plan contains additional policies to raise awareness about vulnerable drinking water areas and what people can do to help protect them. These education policies cover all drinking water threats, including the activities addressed by the policies in this section.

Corresponding Monitoring Policies

Section 5 of this Plan contains monitoring policies. They outline important information that implementing bodies need to provide to Source Protection Authorities so they can evaluate implementation progress and policy effectiveness.

KEY CONCEPT ...

An activity is considered a **significant threat** to drinking water if, according to a risk assessment, it poses or has the potential to pose a significant risk. For an activity to be considered a significant threat it must occur within a certain vulnerable drinking water area or zone and involve specific circumstances such as a certain volume of fuel stored. The risk assessments to determine significant threat activities and circumstances were conducted at the provincial level as part of the development of the *Clean Water Act* regulations and are prescribed in the legislation. Therefore, local Source Protection Committees and municipal Risk Management Officials do not have the legal authority to determine what activities are significant and therefore subject to the Source Protection policies.

KEY CONCEPT ...

What is a Risk Management Plan?

A Risk Management Plan is a document that outlines the actions required to address an activity that has the potential to contaminate drinking water. These actions manage the risk associated with the activity so that drinking water is better protected.

- ✓ The plan is site-specific — it is customized to fit the nature of the property, activity or business
- ✓ The plan includes and accounts for risk management measures that are already in place — some property owners will only need to document what they are already doing to protect drinking water
- ✓ The plan can include measures to address multiple activities so only one plan is needed for a property with fuel storage, manure storage and livestock for example

How is a Risk Management Plan Created?

The Risk Management Official works with the person engaging in the activity to decide on the components of the Risk Management Plan.

- ✓ The process provides significant opportunity for discussion, flexibility and agreement
- ✓ The property owner receives recognition of previous efforts and good stewardship actions
- ✓ The Risk Management Official receives formal assurance that the property owner will continue to engage in effective risk reduction measures
- ✓ Where new risk reduction measures are required, the property owner can be assured that these measures help to protect their property and assets from a potentially devastating contamination event

3.1 Waste Disposal Sites

Background

The storage or land disposal of waste has the potential to leach numerous contaminants into surface water and groundwater. These include petroleum hydrocarbons, heavy metals, nutrients like phosphorus or nitrogen, DNAPLs and pathogens. Pathogens, such as *E. coli,* are microscopic organisms capable of causing serious infections or infectious disease in humans. Pathogen contaminants from waste disposal are associated with the application of untreated septage to land.

Produced by Aero-Photo Inc. under Licence with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2008–2009

An aerial view of a landfill

Given the potential for waste disposal sites to contaminate drinking water sources, the *Clean Water Act* designated the following activity as a prescribed drinking water threat:

- The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the *Environmental Protection Act.*

As required by the *Clean Water Act,* this Plan includes policies to address this activity where it is considered a significant threat to sources of municipal drinking water. The Source Protection Committee also decided to include policies to address this activity where it is considered a moderate or low drinking water threat in Highly Vulnerable Aquifer areas.

The types of waste disposal sites that can be subject to the policies in this section are:

- Application of untreated septage to land
- Landfarming of petroleum refining waste
- Liquid industrial waste injection into a well
- PCB (polychlorinated biphenyl) waste storage
- Landfilling (hazardous waste)
- Landfilling (municipal waste)
- Landfilling (solid non hazardous industrial or commercial waste)
- Storage of hazardous waste at disposal sites
- Storage of waste described in clauses (p), (q), (r), (s), (t), or (u) of the definition of hazardous waste in Ontario Regulation 347 (General-Waste Management) made under the *Environmental Protection Act.*
- Storage, treatment and discharge of tailings from mines

The following types of waste activities are NOT subject to these policies:

- Domestic waste
- Waste that is regulated by the MOECC through means other than Certificates of Approval or Environmental Compliance Approvals (e.g., Director's Instructions)

Policy Intent

The policies for waste disposal sites recognize that these are hazardous, often large scale land uses that are best located outside of areas where they would be a significant threat to municipal drinking water. The policies also recognize that since regional aquifers in most of the Mississippi-Rideau region are highly vulnerable to contamination, any proposal to establish a new waste disposal site in these areas warrants careful consideration.

The 2011 Assessment Reports for the Mississippi-Rideau region did not identify any waste disposal sites in areas where they are considered a significant threat. Should one exist (operational or abandoned), the policies are intended to ensure that adequate measures are in place to protect municipal drinking water sources. For most waste disposal sites, this will be accomplished through amendments to the site's existing Certificate of Approval or Environmental Compliance Approval required by the MOECC under the *Environmental Protection Act* or the *Ontario Water Resources Act.* For waste disposal sites not governed by these Prescribed Instruments, this will be accomplished through a Risk Management Plan except where the waste is regulated by the MOECC through other means such as Director's Instructions, the waste generation reporting system or waste manifest system. For these types of waste, best management practices will be promoted through education policy EDU-1-LB outlined in Section 4.

Significant, Moderate and Low Threat Circumstances ...

Certain waste disposal sites (depending on their type, size and other characteristics) are considered a significant drinking water threat in:

- Wellhead Protection Areas with a vulnerability score of 8 or 10
- Intake Protection Zones with a vulnerability score of 8 to 10

They can also be considered a moderate or low drinking water threat in Highly Vulnerable Aquifers. For more details about significant, moderate and low threat circumstances see Appendix B.

The policies also intend to ensure that future waste disposal sites are never established in areas where they would be considered a significant threat. This will be accomplished by not issuing new Prescribed Instruments in these areas or through prohibition under Section 57 of the *Clean Water Act* for waste disposal sites that do not require an instrument except where the waste is regulated by the MOECC through other means such as Director's Instructions, the waste generation reporting system or waste manifest system. For these types of waste, best management practices will be promoted through education policy EDU-1-LB outlined in Section 4.

In areas where waste disposal sites would be considered a moderate or low drinking water threat to Highly Vulnerable Aquifers, the policies are intended to ensure that regulating agencies consider the potential impact to regional groundwater during the review and approval process. Special measures to protect groundwater should be implemented as deemed appropriate by the regulating agencies.

POLICIES

Policy: WASTE-1-LB-PI-MC

Existing Waste Disposal Site — Prescribed Instrument

Where an existing waste disposal site is a significant drinking water threat as described in Appendix B, the MOECC shall ensure that the Prescribed Instrument that governs the site (Certificate of Approval or Environmental Compliance Approval required under the *Environmental Protection Act* or the *Ontario Water Resources Act*) includes appropriate terms and conditions to manage the threat so that it ceases to be significant. Where the Director considers it appropriate, terms and conditions will include modern design, operational, monitoring and reporting requirements as well as requirements for eventual closure and abandonment. The MOECC shall review, and if necessary amend, the Prescribed Instrument within three years from the date the Source Protection Plan takes effect.

continued ...

Policy: WASTE-2-LB-S58

Existing Waste Disposal Site — Risk Management Plan

An existing waste disposal site that is not governed by a Prescribed Instrument (Certificate of Approval or Environmental Compliance Approval) is designated for the purpose of Section 58 of the *Clean Water Act,* requiring a Risk Management Plan in areas where it is a significant drinking water threat as described in Appendix B. Risk Management Plans for existing waste disposal sites shall be established within three years from the date the Source Protection Plan takes effect. This policy does not apply to waste that is registered with the MOECC waste generation reporting system or waste that is approved to be transported off-site using the MOECC manifest process or waste that is subject to Director's Instructions.

Policy: WASTE-3-LB-PI-MC

Future Waste Disposal Site — Prescribed Instrument

Future waste disposal sites are prohibited where they would be a significant drinking water threat as described in Appendix B. Accordingly, decisions to issue, otherwise create or amend Prescribed Instruments (Environmental Compliance Approvals under the *Environmental Protection Act* or the *Ontario Water Resources Act*) must conform with this policy.

Policy: WASTE-4-LB-S57

Future Waste Disposal Site — Section 57 Prohibition

Future waste disposal sites that are not governed by a Prescribed Instrument (Environmental Compliance Approval) are designated as prohibited under Section 57 of the *Clean Water Act* in areas where they would be a significant drinking water threat as described in Appendix B. This policy does not apply to waste that is registered with the MOECC waste generation reporting system or waste that is approved to be transported off-site using the MOECC manifest process or waste that is subject to Director's Instructions.

Policy: WASTE-5-LB-PI-HR

Future Waste Disposal Site in the Highly Vulnerable Aquifers — Prescribed Instrument

The MOECC shall consider the potential impact on drinking water sources during their review of applications for Prescribed Instruments (Environmental Compliance Approvals under the *Environmental Protection Act* and the *Ontario Water Resources Act)* for the establishment of new waste disposal sites where they would be a moderate or low drinking water threat in Highly Vulnerable Aquifers as described in Appendix B.

Policy: WASTE-6-NLB

Future Waste Disposal Site in the Highly Vulnerable Aquifers— Other Approvals

The MOECC and Environment Canada are strongly encouraged to consider the potential impact on drinking water sources during their review of applications for other approvals (that are not Prescribed Instruments) required for new waste disposal sites where the site would be a moderate or low drinking water threat in Highly Vulnerable Aquifers as described in Appendix B. Action to implement this policy should be initiated within one year from the date the Source Protection Plan takes effect.

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.2 Sewage Works

General Background

Various types of sewage works can contribute contaminants to local groundwater and surface water. They include acetone, lead, chloride, nitrogen, phosphorus and pathogens such as *E. coli*. Given the potential for sewage works to contaminate drinking water sources, the *Clean Water Act* designated the following activity as a prescribed drinking water threat:

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

As required by the *Clean Water Act,* this Plan includes policies to address this activity where it is considered a significant threat to municipal drinking water sources. The types of sewage systems (herein referred to as "sewage works") that are subject to these policies are:

- On-site sewage systems (mainly septic systems and holding tanks)
- Sanitary sewers and related pipes
- Stormwater management facilities
- Sewage treatment plant effluent discharges (including lagoons)
- Storage of sewage (such as in sewage treatment plant tanks)
- Combined sewer discharge from a stormwater outlet to surface water
- Sewage treatment plant bypass discharge to surface water
- Industrial effluent discharges

Overall Policy Intent

The policies recognize that sewage works are essential to communities and industry. It is infrastructure that treats sewage and manages stormwater so that it does not impair water quality. The policies therefore make a distinction between the types of sewage works that need to be located in vulnerable areas in order to service development (e.g., sanitary sewer systems) and the types of sewage works that, although important parts of the sewage and stormwater system, can be located outside of vulnerable areas (e.g., sewage treatment plants). As such, the policies prohibit the future establishment of the types of sewage works that can and should be located outside of vulnerable areas. For those works that already exist, and those that need to be located in vulnerable areas to provide servicing, the policies make provisions to ensure risks to drinking water are managed effectively.

3.2.1 On-Site Sewage Systems Regulated under the *Building Code Act*

Background

The most common types of on-site sewage systems are leaching bed systems (commonly called septic systems) and holding tanks. A holding tank retains sewage at the site where it is produced before it is collected by a sewage hauler and disposed of elsewhere. A properly functioning septic system also has a tank that stores sewage for collection by a sewage hauler, but it has an additional component that removes wastewater from the sewage and treats it on-site to a safe level before returning it to the groundwater system. Septic systems and

A septic tank and leaching bed

holding tanks that are leaking, inadequate or not functioning properly can contaminate surface water or groundwater. Potential contaminants include nitrogen and pathogens.

This section contains policies to address the following sewage works where they are considered a significant threat to sources of municipal drinking water:

- Sewage systems as defined in the Ontario Building Code (Section 1 of Ontario Regulation 350/06 made under the *Building Code Act)*

On-site sewage systems regulated under the *Ontario Water Resources Act* are addressed in Section 3.2.2.

Policy Intent

The policies recognize that if an on-site sewage system is functioning properly, contaminants from the system are greatly reduced or eliminated. A key part of protecting drinking water is therefore accomplished through the Mandatory On-Site Sewage System Maintenance Inspection Program. Through inspections, this program ensures that on-site sewage systems are functioning properly where they are considered a significant drinking water threat. It is also important that residents know what to do to keep their system functioning properly. This is accomplished through the education and outreach policies in section 4. As of 2012, it is estimated that there are fewer than three existing on-site sewage systems in areas where they are considered a significant threat.

Policies are also intended to ensure that the Principal Authorities (who are responsible for on-site sewage system approvals under the Building Code) have good information on which to base approvals for new systems and good procedures in place to assess if existing systems can support redevelopment or renovations.

Lastly, the policies recognize that while sanitary sewers also pose a threat to drinking water, they are a preferred option in vulnerable drinking water areas. The policies are therefore intended to ensure mandatory connection to municipal sewer services where they are available, but only when the existing on-site sewage system is at the end of its service life.

KEY CONCEPT ...

The ***Building Code Act*** regulates sewage systems that are located on one lot and have a design capacity of 10,000 litres per day or less (usually a residential system). All other on-site sewage systems are regulated by the ***Ontario Water Resources Act*** (usually larger systems designed to service public buildings or institutions).

KEY CONCEPT ...

Mandatory On-Site Sewage System Maintenance Inspection Program

The Ontario Building Code was amended in 2010 to require regular inspections of on-site sewage systems in locations where they are considered a significant drinking water threat. The first inspection must be completed within five years of the Assessment Report being approved (August 2016 in the Mississippi watershed and December 2016 in the Rideau watershed) and then systems must be inspected once every five years thereafter. If an inspection indicates that a system is not functioning as designed, inspectors can issue an order for maintenance, replacement or upgrading to ensure the system functions effectively.

Significant threat circumstances ...

On-site sewage systems are considered a significant drinking water threat in:

- Wellhead Protection Areas with a vulnerability score of 10
- Intake Protection Zones with a vulnerability score of 10

POLICIES

Policy: SEW-1-LB

Mandatory On-Site Sewage System Maintenance Inspection Program

The Principal Authorities shall implement the On-Site Sewage System Maintenance Inspection Program as required by and in accordance with the time frame set out in the Ontario Building Code where existing and future on-site sewage systems are or would be a significant drinking water threat as described in Appendix B.

Policy: SEW-2-LB

Redevelopment / Renovation Proposals

In areas where on-site sewage systems are a significant drinking water threat as described in Appendix B, the Principal Authorities shall establish a procedure to ensure that their review under the Ontario Building Code of redevelopment or renovation proposals using existing systems uses well-documented technical information to determine if the current system is adequate. The procedure should involve the careful consideration of such factors as depth to water table, soil type, size and age of system and lot size. The procedure must be established within six months from the date the Source Protection Plan takes effect.

Policy: SEW-3-LB

Lot Grade and Drainage Plans

In areas where on-site sewage systems would be a significant drinking water threat as described in Appendix B, the municipality shall require lot grade and drainage plans as part of the application materials for building permits where a new system is proposed as part of new development. New systems are only permitted where policy SEW-4-LB (Mandatory Connection to Municipal Sewer Services) does not apply. Lot grade and drainage plans must show existing grade and proposed final grade elevations referenced to a permanent benchmark. The new requirements must be established within six months from the date the Source Protection Plan takes effect.

continued …

Policy: SEW-4-LB

Mandatory Connection to Municipal Sewer Services

In areas where on-site sewage systems are a significant drinking water threat as described in Appendix B, the municipality through their powers under the *Municipal Act* must require connection to municipal services (capacity permitting and within designated serviced areas) where services are available at the property line in the following situations:

- Where an existing system has failed a Phase II Maintenance Inspection and/or an order has been issued to replace or do significant upgrades
- When the Principal Authority has deemed an existing system inadequate to service a proposed redevelopment / renovation
- For new development

The new requirements must be established within one year from the date the Source Protection Plan takes effect. This policy also applies to on-site sewage systems regulated under the *Ontario Water Resources Act.*

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.2.2 On-site Sewage Systems Regulated under the *Ontario Water Resources Act*

Background

As discussed in Section 3.2.1, on-site sewage systems such as holding tanks and septic systems that are leaking, inadequate or not functioning properly are potential sources of drinking water contaminants such as nitrogen and pathogens.

This section contains policies to address the following sewage works activity where it is considered a significant threat to sources of municipal drinking water:

- On-site sewage systems regulated by the MOECC under the O*ntario Water Resources Act*

Systems regulated under the *Ontario Water Resources Act* are usually larger and designed to service public buildings or institutions. These systems are subject to application requirements that provide information about the impact of the system on the receiving waterbody or aquifer such as:

- Background levels of contaminants in the groundwater
- Expected rate of contaminants discharge to the groundwater
- Proposed measures to reduce or prevent groundwater contamination
- A monitoring program to assess the effectiveness of these measures

On-site sewage systems regulated under the Building Code are addressed in Section 3.2.1.

Policy Intent

The policies recognize the rigorous nature of the existing regulations for on-site sewage systems regulated under the *Ontario Water Resources Act* and the fact that these systems are essential in areas where there are no municipal sewer services. For these reasons, the policies are intended to permit on-site sewage systems in areas where they are considered a significant threat subject to adequate risk reduction measures.

Significant threat circumstances ...

On-site sewage systems are considered a significant drinking water threat when located in:

- Wellhead Protection Areas with a vulnerability score of 10
- Intake Protection Zones with a vulnerability score of 10

The 2011 Assessment Reports for the Mississippi-Rideau region did not identify any on-site sewage systems regulated under the *Ontario Water Resources Act* located in areas where they are considered a significant threat. Should one exist, the policies require the MOECC to review and, if necessary, amend the terms and conditions of the existing approval to ensure adequate measures are in place to protect municipal drinking water sources. Similarly, when approving a new system, the policies require the MOECC to determine if anything beyond the standard requirements outlined in the background section (above) are required to ensure adequate protection of municipal source water.

Policy SEW-4-LB requiring connection to municipal sewer services in some situations, also applies to on-site sewage systems regulated under the *Ontario Water Resources Act*.

policies

POLICIES

Policy: SEW-5-LB-PI-MC

On-Site Sewage Systems — Prescribed Instrument

Where an on-site sewage system regulated under the *Ontario Water Resources Act* (existing and/or future) is or would be a significant drinking water threat as described in Appendix B, the MOECC shall ensure that the Prescribed Instrument that governs the system (Certificate of Approval or Environmental Compliance Approval) includes appropriate terms and conditions so that:

a) The system (existing) ceases to be a significant drinking water threat; or

b) The system (future) never becomes a significant drinking water threat.

The MOECC shall comply with part (a) of this policy within three years from the date the Source Protection Plan takes effect.

Policy SEW-4-LB also applies to on-site sewage systems regulated under the Ontario Water Resources Act.

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.2.3 Sanitary Sewers and Related Pipes

Background

This section contains policies to address the following sewage works activities where they are considered a significant threat to sources of municipal drinking water:

- Sanitary sewers and related pipes

A sanitary sewer system is a network of pipes that collects sewage within a community and conveys it to a treatment plant where the sewage can be treated before it is discharged to a surface water body. Sanitary sewer systems have the potential to contaminate surface water or groundwater as raw sewage can leak from degraded pipes or pipe joints.

Sanitary sewer pipe installation

Policy Intent

The 2011 Assessment Reports for the Mississippi-Rideau region identified that there are existing sanitary sewers that meet the circumstances of a significant threat. While municipal sewer systems are subject to periodic monitoring, maintenance and replacement, the policies are intended to ensure that sanitary sewer systems in areas where they are considered a significant threat are subject to a regular maintenance program. This program will identify sections of the sewer network that require remedial work to keep the system in good repair.

Significant threat circumstances ...

Sanitary sewers and related pipes are considered a significant drinking water threat when located in:

- Wellhead Protection Areas with a vulnerability score of 10
- Intake Protection Zones with a vulnerability score of 10

For more details about significant threat circumstances, see Appendix B.

The policies also recommend advanced sewer design standards for new sewers which will better protect drinking water sources and possibly reduce maintenance requirements for these sections in the future.

policies

POLICIES

Policy: SEW-6-LB

Sanitary Sewer Maintenance Program

In areas where sanitary sewers and related pipes are or would be a significant drinking water threat as described in Appendix B, the municipality shall implement a Sanitary Sewer Maintenance Program. Where possible, the program should include sewer pipe cleaning followed by a camera inspection focused on identifying areas of infiltration. Pressure testing of pipes may also be conducted in lieu of camera inspection. Remedial work is required if areas of discernible leakage are identified. The program shall be initiated within one year from the date the Source Protection Plan takes effect. Each portion of the sewer network shall be subject to the maintenance program at five year intervals.

continued ...

Policy: SEW-7-LB-PI-MC

Future Sanitary Sewers and Related Pipes — Prescribed Instrument

Where new or replacement sanitary sewers and related pipes would be a significant drinking water threat as described in Appendix B, the MOECC shall ensure that the Prescribed Instrument (Environmental Compliance Approval required under the *Ontario Water Resources Act*) includes appropriate terms and conditions to manage the threat so that it does not become significant. Where the Director considers it appropriate, terms and conditions will include requiring that new or replacement sanitary sewers and related pipes be constructed of watermain quality pipe and pressure tested in place at a pressure of 350 kPa (50 psi) using the testing methodology in Ontario Provincial Standard Specification 412 (OPSS 412).

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.2.4 Stormwater Management Facilities

Background

This section contains policies to address the following sewage works activities where they are considered a significant threat to sources of municipal drinking water:

- Stormwater management facilities including stormwater ponds, stormwater pipes and their discharges

The policies do not apply to simple conveyance systems such as gutters, ditches, swales and culverts.

A stormwater management facility is a facility for the treatment, retention, infiltration or control of stormwater. Stormwater is made up of rainwater runoff, water runoff from roofs, snowmelt and surface runoff, all of which can contain contaminants such as pathogens, heavy metals, pesticide and hydrocarbons. Stormwater management ponds, which capture excess runoff and allow time for suspended pollutants to settle, are the most common end of pipe treatment system.

Policy Intent

The policies recognize that while stormwater management facilities are designed to collect and treat runoff to help protect water quality, stormwater ponds and discharges should be located away from sources of municipal drinking water where possible.

Stormwater discharge outlet

Significant threat circumstances ...

Certain stormwater management facilities (depending on the size and predominant land use of the drainage area) are considered a significant drinking water threat in:

- Wellhead Protection Areas with a vulnerability score of 10
- Intake Protection Zones with a vulnerability score of 8 to 10

For more details about significant threat circumstances see Appendix B.

The 2011 Assessment Reports for the Mississippi-Rideau region did not identify any existing stormwater management facilities that meet the circumstances of a significant threat. Should one exist, the policies would require the MOECC to review, and if necessary, amend the Certificate of Approval or Environmental Compliance Approval to ensure approval conditions are adequate to protect municipal sources of drinking water.

The policies are intended to ensure no new stormwater management facilities are established within Wellhead Protection Area "A" (within 100 metres of a municipal well) or within an Intake Protection Zone scored 10. However, there is an exemption, subject to certain stipulations, when the municipality owns the entire Wellhead Protection Area"A" and maintains it in a natural state that protects the source of municipal drinking water. This exemption is designed to encourage municipal ownership of Wellhead Protection Area "A" for new developments. The result is an area within 100 metres of the municipal well with one municipally owned and managed drinking water threat (stormwater pond) versus an area that is fully developed containing multiple threats (e.g., sanitary sewers, on-site sewage systems, road salt use).

The policies are intended to permit the establishment of stormwater management facilities that would be a significant threat in Wellhead Protection Area "B" with a vulnerability score of 10 and Intake Protection Zones with a vulnerability score of 8 to 9. It is recommended that new facilities within these areas are designed and constructed in compliance with enhanced level protection standards as described in the Stormwater Management Planning and Design Manual, MOECC 2003.

These policies will be accomplished through Certificates of Approval or Environmental Compliance Approvals required by the MOECC under the *Ontario Water Resources Act*. For stormwater management facilities not governed by a Prescribed Instrument, the policies will be accomplished through a Risk Management Plan or prohibition under Section 57 of the *Clean Water Act*.

POLICIES

Policy: SEW-8-LB-PI-MC

Existing Stormwater Management Facility — Prescribed Instrument

Where an existing stormwater management facility is a significant drinking water threat as described in Appendix B, the MOECC shall ensure that the Prescribed Instrument that governs the facility (Certificate of Approval or Environmental Compliance Approval required under the *Ontario Water Resources Act*) includes appropriate terms and conditions to manage the threat so that it ceases to be significant. The MOECC shall review, and if necessary amend, the Prescribed Instrument within three years from the date the Source Protection Plan takes effect.

Policy: SEW-9-LB-PI/PA-MC

Future Stormwater Management Facility In Wellhead Protection Area "A" or Intake Protection Zone Scored 10 — Prescribed Instrument/*Planning Act* Decisions

Future stormwater management facilities that would be a significant drinking water threat as described in Appendix B are prohibited in the:

- Wellhead Protection Area "A"; and
- Intake Protection Zone with a vulnerability score of 10.

continued …

Accordingly, decisions to issue, otherwise create or amend Prescribed Instruments (Environmental Compliance Approvals required under the *Ontario Water Resources Act)* must conform with this policy. In addition, decisions made by planning authorities under the *Planning Act* must conform with this policy.
A stormwater management facility is exempt from this policy and instead subject to policy SEW-10-LB-PI-MC if:

- It is located within a Wellhead Protection Area "A" that is under municipal ownership and maintained in a natural state that protects source water;
- It is located at the outer perimeter of the Wellhead Protection Area "A" and a minimum of 30 metres from the municipal well; and
- It is located in an area where it can be demonstrated that there is no discernible hydrogeological connection between the surface and the aquifer supplying the municipal well.

Policy: SEW-10-LB-PI-MC

Future Stormwater Management Facility in Wellhead Protection area "B" Scored 10 or Intake Protection Zone Scored 8 to 9 — Prescribed Instrument

A future stormwater management facility that would be a significant drinking water threat as described in Appendix B is permitted in the:

- Intake Protection Zone with a vulnerability score of 8, 8.1 or 9
- Wellhead Protection Area "A" (under the exemption described in policy SEW-9-LB-PI/PA-MC)
- Wellhead Protection Area "B" with a vulnerability score of 10

The MOECC shall ensure that the Prescribed Instrument (Environmental Compliance Approval required under the *Ontario Water Resources Act*) that governs a stormwater management facility permitted to be established in these areas includes appropriate terms and conditions to manage the threat so that it does not become significant. Where the Director considers it appropriate, terms and conditions will include a requirement that a new stormwater management facility be built to Enhanced Level Protection Standards as described in the Stormwater Management Planning and Design Manual, MOECC 2003.

Policy: SEW-11-LB-S58

Stormwater Management Facility — Risk Management Plan

A stormwater management facility that is not governed by a Prescribed Instrument (Certificate of Approval or Environmental Compliance Approval) is designated for the purpose of Section 58 of the *Clean Water Act,* requiring a Risk Management Plan in the following situations:

a. An existing stormwater management facility that is a significant threat as described in Appendix B
b. A future stormwater management facility that would be a significant threat as described in Appendix B located within the:
    - Intake Protection Zone with a vulnerability score of 8, 8.1 or 9;
    - Wellhead Protection Area "A" (under the exemption described in policy SEW-9-LB-PI/PA-MC); and
    - Wellhead Protection Area "B" with a vulnerability score of 10.

Where the Risk Management Official considers it appropriate, risk management measures will require that a new stormwater management facility be built to Enhanced Level Protection Standards as described in the Stormwater Management Planning and Design Manual, MOECC 2003. Risk Management Plans for existing stormwater management facilities shall be established within three years from the date the Source Protection Plan takes effect.

continued …

Policy: SEW-12-LB-S57

Stormwater Management Facility — Section 57 Prohibition

A stormwater management facility that is not governed by a Prescribed Instrument (Environmental Compliance Approval) is designated as prohibited under Section 57 of the *Clean Water Act* in the following situation:

a. A future stormwater management facility that would be a significant drinking water threat as described in Appendix B located within:
   - Intake Protection Zone with a vulnerability score of 10; and
   - Wellhead Protection Area "A."

A stormwater management facility is exempt from this policy and instead subject to policy SEW-11-LB-S58 if:

- It is located within a Wellhead Protection Area "A" that is under municipal ownership and maintained in a natural state that protects source water;
- It is located at the outer perimeter of the Wellhead Protection Area "A" and a minimum of 30 metres from the municipal well; and
- It is located in an area where it can be demonstrated that there is no discernible hydrogeological connection between the surface and the aquifer supplying the municipal well.

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.2.5 Other Sewage Works

Background

This section contains policies to address the remaining sewage works activities where they are considered a significant threat to sources of municipal drinking water:

- Sewage treatment plant effluent discharges and bypass discharges
- Industrial effluent discharges
- Storage of sewage
- Combined sewer discharges

For sewage treatment plant effluent and industrial effluent, the MOECC sets criteria for the quality of the effluent and the effluent is discharged to water bodies that have sufficient assimilative capacity to receive it without adverse impacts. Nevertheless, pathogens and numerous chemicals can still pose a contamination threat if effluent is discharged near sources of drinking water. When the capacity at a sewage treatment plant is overwhelmed, bypass discharges can occur which is partially treated or untreated sanitary waste that is released directly into the receiving water body. The storage of sewage is also a threat because storage tanks can leak or spills may occur. Combined sewers also pose a risk because they may discharge sanitary sewage containing human waste directly to surface water.

Policy Intent

The 2011 Assessment Reports for the Mississippi-Rideau region identified one existing storage of sewage activity in areas where sewage works are considered a significant threat. The policies are intended to ensure that adequate measures are in place to protect municipal drinking water sources. This will be accomplished through amendments to the existing Certificate of Approval or Environmental Compliance Approval required by the MOECC under the *Ontario Water Resources Act*. If the activity is not governed by a Prescribed Instrument, this will be accomplished through a Risk Management Plan.

The policies are also intended to ensure that these sewage works are never established in the future in areas where they would be considered a significant threat to municipal source water. This will be accomplished by not issuing new Prescribed Instruments in these areas or through prohibition under Section 57 of the *Clean Water Act* for activities that do not require an instrument.

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An aerial view of a sewage treatment plant

KEY CONCEPT ...

Combined sewers collect sanitary sewage and stormwater in the same pipe. Under normal conditions all flow goes through the sewage treatment plant and gets treated before being discharged. However, during extreme wet weather events the system can become overwhelmed with too much water causing overflows. This is the discharge of untreated sewage that has bypassed the sewage treatment plant. Combined sewers are no longer permitted to be installed. Sanitary sewage and stormwater must be collected in separate pipes.

Significant threat circumstances ...

Other sewage works (depending on their type, designed flow rates and other characteristics) are considered a significant drinking water threat in:

- Wellhead Protection Areas with a vulnerability score of 8 or 10
- Intake Protection Zones with a vulnerability score of 8 to 10

For more details about significant threat circumstances see Appendix B.

POLICIES

Policy: SEW-13-LB-PI-MC

Existing "Other" Sewage Works — Prescribed Instrument

Where an existing sewage works is a significant drinking water threat as described in Appendix B, the MOECC shall ensure that the Prescribed Instrument (Certificate of Approval or Environmental Compliance Approval required under the *Ontario Water Resources Act)* that governs the sewage works includes appropriate terms and conditions to ensure that it ceases to be a significant drinking water threat. This policy applies where the types of sewage works include:

- Sewage treatment plant effluent discharges
- Industrial effluent discharges
- Storage of sewage (excluding storage associated with the sewer network)
- Combined sewer discharge from a stormwater outlet to surface water
- Sewage treatment plant bypass discharge to surface water

The MOECC shall review and amend the Prescribed Instrument within three years from the date the Source Protection Plan takes effect.

Policy: SEW-14-LB-S58

Existing "Other" Sewage Works — Risk Management Plan

An existing sewage works that is not governed by a Prescribed Instrument (Certificate of Approval or Environmental Compliance Approval) is designated for the purpose of Section 58 of the *Clean Water Act,* requiring a Risk Management Plan. This policy applies to the types of sewage works listed in policy SEW-13-LB-PI-MC in areas where the sewage works is a significant drinking water threat as described in Appendix B. Risk Management Plans shall be established within three years from the date the Source Protection Plan takes effect.

Policy: SEW-15-LB-PI/PA-MC

Future "Other" Sewage Works — Prescribed Instrument/*Planning Act* Decisions

Future sewage works of the types listed in policy SEW-13-LB-PI-MC are prohibited where they would be a significant drinking water threat as described in Appendix B. Accordingly, decisions to issue, otherwise create or amend Prescribed Instruments (Environmental Compliance Approvals required under the *Ontario Water Resources Act)* must conform with this policy. In addition, decisions made by planning authorities under the *Planning Act* must conform with this policy.

continued …

Policy: SEW-16-LB-S57

Future "Other" Sewage Works — Section 57 Prohibition

Future sewage works of the types listed in policy SEW-13-LB-PI-MC that are not governed by a Prescribed Instrument (Environmental Compliance Approval) are designated as prohibited under Section 57 of the *Clean Water Act* in areas where they would be a significant drinking water threat as described in Appendix B.

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.3 Road Salt and Storage of Snow

Road salt application

Road salt has the potential to contaminate groundwater and surface water with sodium and chloride. This has proven extremely problematic for communities that rely on groundwater as these contaminants are very difficult to remove. In addition, runoff from snow storage areas can contain road salt, oil, grease, heavy metals, litter and airborne pollutants.

Road salt use is increasing due to a variety of factors such as more roads and parking lots, climate change which increases the frequency of salt use and society's expectations regarding bare roads. Evidence is provided in a 2001 Environment Canada report that concluded that road salts are entering the environment in a quantity or concentration that have or may have an immediate or long-term harmful effect on the environment and that constitute or may constitute a danger to the environment on which life depends.

Given the potential for road salt and snow storage to contaminate drinking water sources, the *Clean Water Act* designated the following activities as prescribed drinking water threats:

- The application of road salt
- The handling and storage of road salt
- The storage of snow

As required by the *Clean Water Act,* this Plan contains policies to address these activities where they are considered a significant threat to municipal drinking water sources. The Source Protection Committee also decided to include policies to address these activities where they are considered a drinking water threat in Highly Vulnerable Aquifer areas.

Policy Intent

The policies recognize that road salt makes roads safe in northern climates and the accumulation of "snow piles" (where snow is pushed up into piles at the edge of a road or parking lot) is a result of necessary snow removal. Therefore these threats cannot be eliminated from vulnerable drinking water areas. Instead, the policies rely on two widely recognized tools to manage these threats where they are a significant drinking water threat:

- Road Salt Management Plans
- Smart Salt Practices

Large snow dump

The intent of these tools is to manage road salt application in a way that leads to less salt being used per weather event. This in turn addresses the threat posed by snow piles because less salt use will lower chloride and sodium levels in snow. The 2011 Assessment Reports for the Mississippi-Rideau region identify that road salt application can be considered a significant threat in small parts of Carleton Place, Kemptville, Perth and Smiths Falls.

The policies also recognize that due to the highly vulnerable nature of the region's aquifers and the increasing use of road salt, all municipalities should take steps to address this emerging environmental and drinking water issue. The recommendation is that all municipalities establish Road Salt Management Plans and promote smart salt practices in their communities.

The 2011 Assessment Reports for the Mississippi-Rideau region did not identify any existing road salt storages or "snow dumps" (where snow is hauled to a central location by the truckload) in areas where they are considered a significant drinking water threat. Should one exist, the policies are intended to ensure risk reduction measures are in place to protect municipal drinking water sources. Future road salt storages and snow dumps would be prohibited in these areas under Section 57 of the *Clean Water Act*.

KEY CONCEPT ...

Smart Salt Practices involve:

- Equipment calibration — ensures salt is being measured properly
- Application rates — ensures only the needed amount of salt is used
- Use of liquids — a technique that improves safety with less salt
- Plowing — mechanical removal is an important salt management tool
- Use of low or no-chloride materials — reduces the amount of chloride released into the environment
- Material tracking — needed to properly manage salt use
- Training — so that all personnel have the skills to implement smart salt practices

A **Road Salt Management Plan** documents what a municipality currently does for winter maintenance and identifies affordable actions they can take to improve their management of road salt. Short-term actions that involve little cost include benchmarking spreader routes, calibrating existing equipment, establishing/reviewing level of service policies and tracking material usage. Longer-term actions could include improvements to storage and handling facilities and equipment upgrades or replacement. Road Salt Management Plan templates are available from the Ontario Good Roads Association at www.ogra.org.

Significant threat circumstances ...

The **handling and storage of road salt** is a significant threat if it is stored in a manner that may result in exposure to precipitation or runoff and if:

- 5,000 tonnes is stored in a Wellhead Protection Area with a vulnerability score of 10
- 5,000 tonnes is stored in an Intake Protection Zone with a vulnerability score of 9
- 500 tonnes is stored in an Intake Protection Zone with a vulnerability score of 10

The **application of road salt** is a significant threat depending on the percentage of total impervious surface area (impenetrable surfaces like roads and parking lots). This circumstance is met at:

- The Kemptville Wellhead Protection Area with a vulnerability score of 10
- The Carleton Place, Perth and Smiths Falls Intake Protection Zones with a vulnerability score of 10

The **storage of snow** is a significant threat, depending on where it is stored (below, at or above grade) and the area of the storage in hectares in:

- Wellhead Protection Areas with a vulnerability score of 10
- Intake Protection Zones with a vulnerability score of 9 or 10

For more details about significant threat circumstances see Appendix B.

policies

POLICIES

Policy: SALT-1-LB-S58

Existing Storage of Road Salt and Snow (Snow Dumps) — Risk Management Plan

The existing storage of road salt and storage of snow (at snow dumps where snow is hauled from another location) are designated for the purpose of Section 58 of the *Clean Water Act,* requiring a Risk Management Plan in areas where the threat is significant as described in Appendix B. Risk Management Plans shall be established within three years from the date the Source Protection Plan takes effect.

Policy: SALT-2-LB-S57

Future Storage of Road Salt and Snow (Snow Dumps) — Section 57 Prohibition

The future storage of road salt and storage of snow (at snow dumps where snow is hauled from another location) are designated as prohibited under Section 57 of the *Clean Water Act* in areas where the threat would be significant as described in Appendix B.

continued ...

Policy: SALT-3-LB

Road Salt Management Plans — Significant Threats

Within one year of the Source Protection Plan taking effect, upper and lower tier municipalities with roads, sidewalks and municipally owned parking lots in the areas where road salt application and snow storage (snow piles) are or would be a significant drinking water threat as described in Appendix B, shall prepare and implement a Road Salt Management Plan for these areas in accordance with Environment Canada's *Code of Practice for the Environmental Management of Road Salts.* Areas outside of significant threat areas are subject to policy SALT-5-NLB.

Policy: SALT-4-LB

Smart Salt Practices — Significant Threats

Within one year of the Source Protection Plan taking effect, municipalities that have areas where road salt application and/or snow storage (snow piles) are or would be a significant drinking water threat as described in Appendix B shall begin to take the following action in these areas:

- Undertake initiatives such as a municipal staff training program to encourage smart salt practices for municipally owned parking lots, sidewalks and other public facilities
- Promote the Smart About Salt program to private contractors and encourage them to become Smart About Salt certified (Source Protection Authorities can assist with promotion)
- Promote the Smart About Salt program to managers of private facilities and encourage them to certify their sites and use certified contractors (Source Protection Authorities can assist with promotion)

Areas outside of significant threat areas are subject to policy SALT-6-NLB.

Policy: SALT-5-NLB

Road Salt Management Plans — Highly Vulnerable Aquifers

Within one year of the Source Protection Plan taking effect, upper and lower tier municipalities that apply road salt on roads, sidewalks and municipally owned parking lots in Highly Vulnerable Aquifers are strongly encouraged to prepare and implement a Road Salt Management Plan in accordance with Environment Canada's *Code of Practice for the Environmental Management of Road Salts.*

Policy: SALT-6-NLB

Smart Salt Practices — Highly Vulnerable Aquifers

Within one year of the Source Protection Plan taking effect, municipalities within Highly Vulnerable Aquifers are strongly encouraged to begin to:

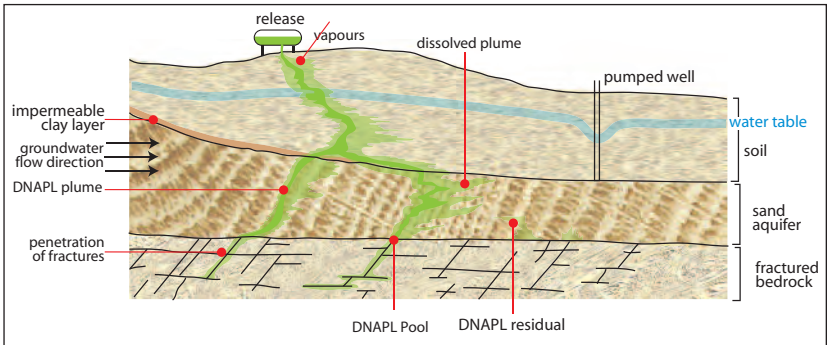
- Undertake initiatives such as a municipal staff training program to encourage smart salt practices for municipally owned parking lots, sidewalks and other public facilities
- Promote the Smart About Salt program to private contractors and encourage them to become Smart About Salt certified (Source Protection Authorities can assist with promotion)
- Promote the Smart About Salt program to managers of private facilities and encourage them to certify their sites and use certified contractors (Source Protection Authorities can assist with promotion)

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.4 Dense Non-aqueous Phase Liquids (DNAPLs) and Organic Solvents

Background

Dense non-aqueous phase liquids (DNAPLs) are chemical compounds that are denser than water and do not dissolve readily in water. Organic solvents are carbon-based substances that are capable of dissolving or dispersing other substances. Both are used in a variety of commercial and industrial settings and are found in such products as paints, adhesives, degreasing and cleaning agents and in the production of dyes, plastics, textiles, printing inks and pharmaceuticals.



An illustration of DNAPL migration

Based on illustration by B. Keuper, 2003

Many organic solvents are recognized as carcinogens, reproductive hazards and neurotoxins so they would pose a serious health risk if they contaminated drinking water sources. DNAPLs are particularly dangerous near sources of drinking water because:

- A small amount can cause toxic levels of contamination for human health
- They defy conventional cleanup methods because they sink in water (this means spilled DNAPLs travel quickly and deeply through rock and soil making them nearly impossible to find or remove from groundwater)
- They do not dissolve readily in water creating toxic pools that can remain for decades or centuries

Given the potential for DNAPLs and organic solvents to contaminate drinking water sources, the *Clean Water Act* designated the following activities as prescribed drinking water threats:

- The handling and storage of a dense non-aqueous phase liquid
- The handling and storage of an organic solvent

As required by the *Clean Water Act,* this Plan contains policies to address these activities where they are considered a significant threat to sources of municipal drinking water.

Policy Intent

The policies recognize that DNAPLs and organic solvents are highly hazardous substances and any future use should be located outside of areas where they are considered a significant threat. However, the policies acknowledge that the risks associated with the use of these substances can be managed through the implementation of risk management measures where necessary to accommodate existing businesses. As of 2012, it is estimated that there are 11 potential properties where DNAPLs/organic solvents may be in use in areas where they would be considered a significant threat.

The policies are therefore intended to ensure that where DNAPL and organic solvent use is considered a significant drinking water threat:

- Risk Management Plans are established for existing businesses to set out and ensure compliance with risk management measures. The policy does not stipulate risk management measures, instead these measures should be customized to suit the property, activity and business.

- The future handling and storage of the listed DNAPL and organic solvent substances is prohibited (thereby prohibiting the establishment of new businesses involving the use of these substances).

In addition, the education policies outlined in Section 4 will raise awareness about these substances, alternative products and proper disposal among all residents in vulnerable areas.

Significant threat circumstances ...

The handling and storage of certain types of **DNAPLs** is a significant threat in any quantity in:
- Wellhead Protection Area A, B, and C (any vulnerability score)
- Intake Protection Zones with a vulnerability score of 10

The reason DNAPLs are considered a significant threat in such a large area is because once they contaminate groundwater they are nearly impossible to capture and they do not dissipate. If DNAPLs contaminate a source of municipal drinking water, it is possible that a new municipal well or drinking water source would have to be established.

The handling and storage of certain types and quantities of **organic solvents** is a significant threat in:
- Wellhead Protection Areas with a vulnerability score of 10
- Intake Protection Zones with a vulnerability score of 10

For more details about significant threat circumstances see Appendix B.

POLICIES

Policy: DNAPL-1-LB-S58

Existing DNAPLs and Organic Solvents — Risk Management Plan

The existing handling and storage of DNAPL and organic solvent substances is designated for the purpose of Section 58 of the *Clean Water Act,* requiring a Risk Management Plan in areas where the threat is significant as described in Appendix B. Risk Management Plans shall be established within three years from the date the Source Protection Plan takes effect. This policy applies to these DNAPL and organic solvent substances in the quantities and at the locations listed in Appendix B:

DNAPLs	**Organic Solvents**
Dioxane-1,4	Carbon tetrachloride
Polycyclic Aromatic Hydrocarbons (PAHs)	Chloroform
Tetrachloroethylene (PCE) (or PERC)	Methylene chloride (dichloromethane)
Trichloroethylene (TCE)	Pentachlorophenol
Vinyl Chloride	

continued ...

Policy: DNAPL-2-LB-S57

Future DNAPLs and Organic Solvents — Section 57 Prohibition

The future handling and storage of the DNAPL and organic solvent substances listed in policy DNAPL-1-LB-S58 is designated as prohibited under Section 57 of the *Clean Water Act* in areas where the threat would be significant as described in Appendix B.

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.5 Fuel

Background

Spills or leaks during the handling or storage of fuel can result in surface water or groundwater becoming contaminated with BTEX and petroleum hydrocarbons. BTEX is an acronym for benzene, toluene, ethylbenzene and xylene. Benzene is a known carcinogen and ethylbenzene may be carcinogenic and could produce birth defects. BTEX are highly water soluble and can travel long distances in groundwater and surface water. Petroleum hydrocarbons are mixtures of organic compounds that occur in substances that originate in geological formations such as oil, bitumen and coal. Petroleum hydrocarbons can cause an array of negative health effects to the reproductive, respiratory, immune and nervous systems.

Given the potential for fuel to contaminate drinking water sources, the *Clean Water Act* designated the following activity as a prescribed drinking water threat:

- The handling and storage of fuel

As required by the *Clean Water Act,* this Plan includes policies to address these activities where they are considered a significant threat to municipal drinking water sources.

3.5.1 Fuel (Heating) Oil

This section contains policies to address fuel oil which is any fuel regulated by the Technical Standards and Safety Authority (TSSA) under the *Technical Standards and Safety Act,* Ontario Regulation 213/01 and the Ontario Installation Code for Oil Burning Equipment. The TSSA enforces Ontario's *Technical Standards and Safety Act* under the Ministry of Consumer Services. In general, this is fuel that is handled or stored for the purpose of heating buildings or powering standby generators. Home heating oil used to fuel furnaces is included in this category. Liquid fuel, such as fuel used in motor vehicles, is addressed in Section 3.5.2.

Policy Intent

The policies recognize that oil is the home heating fuel of necessity or choice for many residents. Therefore it is not reasonable to require conversions to other fuels since there are many measures that can be taken to greatly reduce the risk of leaks and spills. These measures also have the added benefit of protecting homes and private wells from contamination and protecting homeowners from the potentially devastating financial impacts of a spill. As of 2012, it is estimated that there are 300 potential properties with fuel oil storage in areas where this activity is considered a significant threat.

The policies are therefore intended to ensure risk management measures are in place in areas where fuel handling and storage is a significant drinking water threat. In this case, the policy recommends the minimum content of the Risk Management Plan to address specific risks such as old style single walled steel tanks with side feed and to standardize good stewardship practices such as annual inspections. Where fuel is being handled or stored at a municipal drinking water system (usually to fuel back-up generators in the event of a power outage), the risk management measures will be established through their existing Prescribed Instruments (licenses and approvals issued under the *Safe Drinking Water Act)* rather than through a Risk Management Plan.

The policies are also intended to promote the voluntary implementation of risk management measures where fuel handling and storage is a moderate threat to drinking water, especially where outdoor tanks are in use. Outdoor tanks are associated with a higher rate of leaks as they are exposed to harsh and changing weather conditions as well as other hazards. This will be accomplished through the Education and Outreach policies in Section 4.

The policies also encourage the TSSA and the Ministry of Consumer Services to consider source water protection in their code review process and promote the importance of regular maintenence.

Storage of fuel oil

Significant threat circumstances ...

The handling and storage of fuel is a significant threat if it is stored at a facility* and if:

- 250 litres is stored below or partly below grade in a Wellhead Protection Area with a vulnerability score of 10
- 2,500 litres is stored at or above grade in a Wellhead Protection Area with a vulnerability score of 10
- 2,500 litres is stored at or above grade in an Intake Protection Zone with a vulnerability score of 10

**"Facility" under Ontario Regulation 213/01 means an installation (including homes) where fuel oil is handled. This encompasses fuel oil storage for furnaces, boilers, water heaters and standby generators but excludes vehicles, lawnmowers and portable storage like jerry cans.*

For more details about significant threat circumstances see Appendix B.

POLICIES

Policy: FUEL-1-LB-S58

Fuel (Heating) Oil — Risk Management Plan

The existing or future handling and storage of fuel at a facility as defined in Section 1 of Ontario Regulation 213/01 except for the handling and storage of fuel regulated under the *Safe Drinking Water Act* is designated for the purpose of Section 58 of the *Clean Water Act,* requiring a Risk Management Plan in areas where the threat is or would be significant as described in Appendix B. Risk Management Plans shall have the following minimum content (except where alternate measures are determined to be as protective of drinking water sources):

- Single-walled steel tanks with side feed must be replaced at 10 years old
- Single-walled steel tanks with bottom-feed must be replaced at 15 years old
- Double-bottom steel tanks with bottom-feed must be replaced at 25 years old (or earlier if a leak detection device indicates a leak)
- Replacement tanks must not be side feed and must be more leak resistant than single-walled steel (e.g., fiberglass or double-bottomed steel for indoor; double-walled with leak detection for outdoor)
- Replacement or new tanks must be outfitted with a tank tray to capture fuel in the event of an overfill or small leak
- Oil lines must be installed and maintained in a manner that protects them from physical damage
- Annual inspections must be carried out by a certified Oil Burner Technician (or equally qualified person) as required under Section 13 of the Ontario Installation Code for Oil-Burning Equipment
- Prompt repairs or upgrades must be made to address deficiencies noted in the annual inspection
- Property owners are advised to hold pollution liability insurance
- Procedures to follow in the event of a spill
- Unused fuel oil tanks must be decommissioned in accordance with Section 6.16 of the Ontario Installation Code for Oil-burning Equipment

The Risk Management Plans for existing activities shall be established within three years from the date the Source Protection Plan takes effect.

Policy: FUEL-2-LB-PI-MC

Fuel (Heating) Oil — Prescribed Instrument

Where the handling and storage of fuel associated with the drinking water system (existing and/or future) is or would be a significant drinking water threat as described in Appendix B, the MOECC shall ensure that the Prescribed Instrument that governs the system (approvals issued under the *Safe Drinking Water Act*) includes appropriate terms and conditions so that:

a) The handling and storage of fuel (existing) ceases to be a significant drinking water threat; or
b) The handling and storage of fuel (future) never becomes a significant drinking water threat.

The MOECC should consider including in the terms and conditions the risk management measures listed in policy FUEL-1-LB-S58. The MOECC shall comply with part (a) of this policy within three years from the date the Source Protection Plan takes effect.

continued …

Policy: FUEL-3-NLB

Fuel (Heating) Oil — Recommendations to the TSSA and Ministry of Consumer Services

Where the handling and storage of fuel at a facility as defined in Section 1 of Ontario Regulation 213/01 is or would be a significant drinking water threat as described in Appendix B, the Ministry of Consumer Services and the Ministry of the Environment and Climate Change are strongly encouraged to consider source water protection during the next scheduled code review.

In addition, the TSSA is strongly encouraged to continue to include information regarding new code requirements and leak resistant technology in its communications products and request fuel suppliers to:

- Promote to their customers the importance of regular maintenance as described in Section 13 of the Ontario Installation Code for Oil-burning Equipment to increase awareness of and compliance with this requirement (this could be accomplished by printing a reminder on the fuel bill)

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.5.2 Liquid Fuel

This section contains policies to address liquid fuel. Liquid fuel is gasoline or an associated product used as fuel in motor vehicles and other equipment. Liquid fuel is primarily regulated by the Technical Standards and Safety Authority (TSSA) under the *Technical Standards and Safety Act,* Ontario Regulation 217/01 and the Liquid Fuels Handling Code, 2007. The TSSA enforces Ontario's *Technical Standards and Safety Act* under the Ministry of Consumer Services.

Storage of liquid fuel

The types of facilities where liquid fuel is handled or stored fall into three categories:

- Refineries (facilities that manufacture or refine fuel)
- Licensed facilities (bulk plant, retail outlet, marina, cardlock/keylock)
- Private outlets (such as fire stations, RV parks, municipal garages, farms)

Fuel oil (such as home heating oil) is addressed in Section 3.5.1.

Policy Intent

The policies make a distinction between fuel focused businesses (refineries and licensed facilities such as gas stations) and businesses or public services that store fuel on site to support their operations (private outlets such as farms or fire stations). Fuel focused businesses are usually associated with larger volumes of fuel and they do not have a need to be located in vulnerable drinking water areas.

There are no refineries in the Mississippi-Rideau region. Furthermore, the 2011 Assessment Reports for the Mississippi-Rideau region did not identify any existing licensed facilities in areas where they would be considered a significant threat. Should one exist, the policies allow them to continue to operate subject to the many mandatory risk management measures already required by the TSSA (measures such as leak prevention and detection technologies).

The policies also intend to ensure the future handling and storage of liquid fuel at refineries and licensed facilities is prohibited where it would be considered a significant drinking water threat. This will essentially prohibit the establishment of new fuel focused businesses in these vulnerable areas. This will be accomplished through prohibition under Section 57 of the *Clean Water Act.*

The policies are intended to allow existing and future storage and handling of liquid fuel at private outlets with the implementation of adequate risk management measures. This will not limit the storage of fuel necessary for non-fuel based businesses, public works and public services. This will be accomplished through a Risk Management Plan because private outlets are not monitored as regularly by the TSSA as licensed facilities. As of 2012, it is estimated that there are 10 potential properties that could be subject to this requirement.

Significant threat circumstances ...

The handling and storage of fuel is a significant threat if it is stored at a facility* or a premises that manufactures or refines fuel and if:

- 250 litres is stored below or partly below grade in a Wellhead Protection Area with a vulnerability score of 10
- 2,500 litres is stored at or above grade in a Wellhead Protection Area with a vulnerability score of 10
- 2,500 litres is stored at or above grade in an Intake Protection Zone with a vulnerability score of 10

**"Facility" under Ontario Regulation 217/01 means a permanent or mobile retail outlet, bulk plant, marina, cardlock/keylock or private outlet where gasoline or an associated product is handled other than in portable containers.*

For more details about significant threat circumstances see Appendix B.

POLICIES

Policy: FUEL-4-NLB

Liquid Fuel at Existing Licensed Facilities — The TSSA's Existing Procedures

Where the handling and storage of fuel at an existing bulk plant, cardlock/keylock or retail outlet including a marina (licensed facilities) as defined in Section 1 of Ontario Regulation 217/01 is a significant drinking water threat as described in Appendix B, this activity shall continue to be managed through existing regulatory requirements. The existing requirements under Ontario Regulation 217/01 and the Liquid Fuels Handling Code administered by the TSSA already manage this activity so that it is not a significant threat to drinking water.

continued ...

Policy: FUEL-5-LB-S57

Liquid Fuel at Future Licensed Facilities and Refineries — Section 57 Prohibition

The future handling and storage of fuel at a bulk plant, cardlock/keylock or retail outlet, including a marina (licensed facilities) as defined in Section 1 of Ontario Regulation 217/01 or at a facility that manufactures or refines fuel is designated as prohibited under Section 57 of the *Clean Water Act* in areas where the threat would be significant as described in Appendix B.

Policy: FUEL-6-LB-S58

Liquid Fuel at Private Outlets — Risk Management Plan

The existing or future handling and storage of fuel at a private outlet as defined in Section 1 of Ontario Regulation 217/01 is designated for the purpose of Section 58 of the *Clean Water Act,* requiring a Risk Management Plan in areas where the threat is or would be significant as described in Appendix B. Risk Management Plans shall have the following minimum content:

- New installations must be above ground if feasible and installed in accordance with Ontario Regulation 217/01 and the Liquid Fuels Handling Code
- Tanks and piping systems must be tested and monitored in accordance with Section 7 of the Liquid Fuels Handling Code
- Dispensing operations must be in compliance with Section 6 of the Liquid Fuels Handling Code
- Owner/operator is advised to hold pollution liability insurance
- Procedures to follow in the event of a spill
- Decommissioning of unused fuel tanks must be in accordance with the Liquid Fuels Handling Code

The Risk Management Plans for existing handling and storage of fuel at private outlets shall be established within three years from the date the Source Protection Plan takes effect.

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.6 Commercial Fertilizer

Background

Commercial fertilizer is a substance containing nitrogen, phosphorus and potassium (or other plant food intended for use as a plant nutrient) that is applied to land to improve the growth of crops. Commercial fertilizer can be a source of chemical contaminants, mainly nitrogen, if it is improperly applied to land or spilled during handling and storage.

Application of commercial fertilizer

Given the potential for commercial fertilizer to contaminate drinking water sources, the *Clean Water Act* designated the following activities as prescribed drinking water threats:

- The application of commercial fertilizer
- The handling and storage of commercial fertilizer

As required by the *Clean Water Act,* this Plan contains policies to address these activities where they are considered a significant threat to sources of municipal drinking water.

Policy Intent

The policies are intended to prohibit the future storage of commercial fertilizer for the purpose of retail sale where it would be considered a significant threat to municipal drinking water. Retail facilities are commonly associated with larger volumes of fertilizer stored for longer periods of time and it is unnecessary that new ones be located where they would pose a significant threat.

The policies are also intended to ensure that best management practices are being implemented when the land application, handling and storage of commercial fertilizer is taking place where it is considered a significant threat. This includes the existing storage of commercial fertilizer for retail sale. Best management practices will be documented and enforced through Risk Management Plans except for the application of commercial fertilizer already governed by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) through Nutrient Management Plans under the *Nutrient Management Act.* As of 2012, it is estimated that in the Mississippi-Rideau region there are four properties where commercial fertilizer use may require a Risk Management Plan.

Significant threat circumstances ...

The **handling and storage** of commercial fertilizer is considered a significant drinking water threat when more than 2,500 kilograms is stored for retail sale or in relation to its application within:

- Wellhead Protection Areas with a vulnerability score of 10
- Intake Protection Zones with a vulnerability score of 10

Any amount of commercial fertilizer **applied to land** is considered a significant drinking water threat in areas where the level of agricultural activity and other land management activities are already high (determined by livestock density and the percentage of managed lands). In the Mississippi-Rideau region, this circumstance is only met in the following area:

- Munster Wellhead Protection Area with a vulnerability score of 10 (2011 Assessment Reports)

Best management practices for residential use of commercial fertilizer will be promoted through education policy EDU-1-LB outlined in Section 4.

POLICIES

Policy: FERT-1-LB-PI-MC

Commercial Fertilizer — Prescribed Instrument

Where the application of commercial fertilizer (existing and/or future) that is or would be a significant drinking water threat as described in Appendix B is governed by a Prescribed Instrument (Nutrient Management Plan developed under General Regulation 267/03 of the *Nutrient Management Act*), this activity shall continue to be managed through these existing requirements. The existing regulatory requirements administered by the Ontario Ministry of Agriculture, Food and Rural Affairs and the corresponding compliance program enforced by the MOECC already manage this activity so that it is not a significant threat to drinking water.

Policy: FERT-2-LB-S58

Commercial Fertilizer — Risk Management Plan

The following activities related to commercial fertilizer are designated for the purpose of Section 58 of the *Clean Water Act,* requiring a Risk Management Plan in areas where the threat is or would be significant as described in Appendix B:

- Existing handling and storage for retail sale
- Existing and future non-residential handling and storage in relation to application
- Existing and future non-residential application

The Risk Management Plan should demonstrate and ensure compliance with Canadian Fertilizer Institute guidelines and codes of practice where appropriate. The Risk Management Plans for existing activities shall be established within three years from the date the Source Protection Plan takes effect. This policy does not apply to:

- Activities governed by Nutrient Management Plans developed under the *Nutrient Management Act*

Policy: FERT-3-LB-S57

Future Retail Storage of Commercial Fertilizer — Section 57 Prohibition

The future handling and storage of commercial fertilizer for retail sale is designated as prohibited under Section 57 of the *Clean Water Act* in areas where the threat would be significant as described in Appendix B.

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.7 Pesticide

Background

The term pesticide as defined under the *Pesticides Act* includes herbicides, insecticides and fungicides. These products contain numerous chemicals of concern that could make their way into surface or groundwater as a result of the application of pesticide to land or due to spills during handling and storage.

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Application of pesticide

Given the potential for pesticide to contaminate drinking water sources, the *Clean Water Act* designated the following activities as prescribed drinking water threats:

- The application of pesticide
- The handling and storage of pesticide

Under the Act, these activities are only a drinking water threat if the pesticide contains one of the following 11 chemicals (they are all active ingredients in herbicides except Dichloropropene-1,3 which is used to control nematodes and Metalaxyl which is a fungicide):

- Atrazine
- Metolachlor or s-Metolachlor
- Dichlorophenoxy Acetic Acid (D-2,4)
- Dichloropropene-1,3
- MCPB (4-(4-chloro-2-methylphenoxy) butanoic acid)
- MCPA (2-methyl-4-chlorophenoxyacetic acid)
- Glyphosate
- Mecoprop
- Metalaxyl
- Pendimethalin
- Dicamba

As required by the *Clean Water Act,* this Plan contains policies to address these activities where they are considered a significant threat to sources of municipal drinking water.

Significant threat circumstances ...

The **handling and storage** of a pesticide is a significant threat depending on the amount stored (in kilograms) and the purpose of the storage (stored at a manufacturing or processing facility or stored for retail sale or by end users) when located in:

- Wellhead Protection Areas with a vulnerability score of 10
- Intake Protection Zones with a vulnerability score of 9 or 10

The **application** of a pesticide is a significant threat depending on the pesticide used and the area in hectares to which it is applied when located in:

- Wellhead Protection Areas with a vulnerability score of 10
- Intake Protection Zones with a vulnerability score of 8.1 to 10

For more details about significant threat circumstances see Appendix B.

Policy Intent

Ontario has a Cosmetic Pesticides Ban which prohibits the application of pesticide for cosmetic purposes on lawns, gardens, patios, driveways, cemeteries, parks and school yards. Exempted users such as golf courses must become accredited for Integrated Pest Management and report annually to the public about how they have minimized their pesticide use. Commercial exterminators and operators must be licensed under the

Ontario Pesticide Training and Certification Program. Farmers and pesticide vendors must be certified under the Ontario Pesticide Education Program. The policies recognize the highly regulated nature of pesticide use in Ontario and simply:

- Encourage the MOECC to give consideration to inspections in areas where pesticide use is considered a
  significant threat.
- Request that the MOECC consider requiring training/certification for all pesticide use that is or would be a significant threat (currently the use of some types of pesticide that pose a significant threat do not require the course).
- Direct the MOECC to ensure adequate risk management measures are in place for pesticide use that is governed by instruments issued under the *Pesticides Act* (mainly aerial spraying).
- Promote the importance of adhering to the Cosmetic Pesticides Ban and the importance of complying with all content of the training and certification programs required for exempted uses (this will be accomplished through education policy EDU-1-LB outlined in Section 4.

As of 2012, it is estimated that there are nine properties in the Mississippi-Rideau region where application or non-commercial storage of pesticide is a significant drinking water threat.

The policies are also intended to prohibit the future establishment of commercial pesticide storage (manufacturing, processing or wholesaling facility, retail outlet or custom applicator's storage facility) where it would be a significant threat to drinking water. These activities are generally associated with larger volumes of pesticide stored for longer periods of time and it is unnecessary that new ones be located where they would pose a significant threat. The 2011 Assessment Reports for the Mississippi-Rideau region did not identify any existing commercial pesticide storage. Should one exist, the policies will require a Risk Management Plan to ensure best management practices are in place to protect municipal drinking water.

POLICIES

Policy: PEST-1-NLB

Pesticide Inspections

The MOECC is strongly encouraged to integrate source water protection information, such as the location of vulnerable drinking water areas, into the criteria used by program managers and inspectors to determine inspection priorities related to pesticide use in areas where the application, handling and storage of pesticide is or would be a significant drinking water threat as described in Appendix B. Action to implement this policy should be initiated within one year from the date the Source Protection Plan takes effect.

Policy: PEST-2-NLB

Pesticide Education Programs

continued …

Policy: PEST-2-NLB

Pesticide Education Programs

The MOECC is strongly encouraged to undertake a program analysis of the Ontario Pesticide Education Program and the Ontario Pesticide Training and Certification Program. The analysis should consider the need for training/certification to be required for all pesticide application, handling and storage that is or would be a significant drinking water threat as described in Appendix B. Action to implement this policy should be initiated within one year from the date the Source Protection Plan takes effect.

Policy: PEST-3-LB-PI-MC

Pesticide Use — Prescribed Instrument

Where the application of pesticide (existing and/or future) is or would be a significant drinking water threat as described in Appendix B, the MOECC shall ensure that the Prescribed Instrument that governs the activity (approvals issued under the *Pesticides Act*) includes appropriate terms and conditions so that:

a) The application of pesticide (existing) ceases to be a significant drinking water threat; or
b) The application of pesticide (future) never becomes a significant drinking water threat.

The MOECC shall comply with part (a) of this policy within three years from the date the Source Protection Plan takes effect.

Policy: PEST-4-LB-S58

Existing Commercial Storage of Pesticide — Risk Management Plan

The existing handling and storage of pesticide at a manufacturing, processing or wholesaling facility, retail outlet or custom applicator's storage yard is designated for the purpose of Section 58 of the *Clean Water Act,* requiring a Risk Management Plan in areas where the threat is significant as described in Appendix B. The Risk Management Plans shall be established within three years from the date the Source Protection Plan takes effect.

Policy: PEST-5-LB-S57

Future Commercial Storage of Pesticide — Section 57 Prohibition

The future handling and storage of pesticide at a manufacturing, processing or wholesaling facility, retail outlet or custom applicator's storage yard is designated as prohibited under Section 57 of the *Clean Water Act* in areas where the threat would be significant as described in Appendix B.

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.8 Outdoor Livestock Areas

Background

Nitrogen, total phosphorus and pathogens (such as *E. coli)* are contaminants that could make their way into surface water and groundwater from outdoor livestock areas. Pathogens are microscopic organisms capable of producing infections or infectious disease in humans. Pathogens such as Salmonella, Campylobacter and pathogenic *E. coli* (*E. coli* O157:H7 was the pathogen in the Walkerton tragedy) can be excreted from a range of livestock including cattle (dairy and beef), sheep, swine and poultry. Infected animals can excrete tens to thousands of these pathogens per gram of fecal matter. Surface water is especially vulnerable to contamination from pathogens.

Grazing and pasturing area

Given the potential for outdoor livestock areas to contaminate drinking water sources, the *Clean Water Act* designated the following activities as a prescribed drinking water threat:

- The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard (referred to as "outdoor livestock areas" in this Plan)

As required by the *Clean Water Act,* this Plan contains policies to address these activities where they are considered a significant threat to sources of municipal drinking water.

KEY CONCEPT ...

Outdoor livestock areas include:

- **Grazing and pasturing** which refers to forage crop production where animals do the harvesting. The animals are kept at low density (two to three animals per acre) often on a rotational basis.
- **Outdoor Confinement Areas** which are enclosures with no roof with a very high animal concentration (typically greater than 15 animals per acre) where animals are fed and watered and grazing provides less than 50 percent of their feed.
- **Farm-Animal Yards** which are enclosures with no roof and a high animal concentration where food and water are not provided. They are generally used as outdoor exercise areas or holding areas for when barns are being cleaned out.

Policy Intent

The policies to address outdoor livestock areas recognize that best management practices are the key to preventing livestock operations from contaminating drinking water sources. For large or expanding farms that are subject to the requirements of the *Nutrient Management Act,* best management practices for outdoor confinement areas and farm-animal yards are entrenched in the operations' customized Nutrient Management Strategies. For farms and outdoor livestock areas not addressed by this Act, a Risk Management Plan will ensure appropriate best management practices are in place to protect drinking water sources.

A Risk Management Plan recognizes a farm's existing good stewardship actions, identifies areas for improvement and provides formal assurance that action will be taken where needed. In the Mississippi-Rideau region (as of 2012) it is estimated that there are 23 properties with outdoor livestock areas that may require a Risk Management Plan.

Small, non-intensive farms are exempt from requiring a Risk Management Plan. Instead best management practices will be promoted through education policy EDU-1-LB outlined in Section 4.

Significant threat circumstances ...

The use of land as livestock grazing or pasturing, an outdoor confinement area or a farm-animal yard for one or more animals is considered a significant threat in:

- Wellhead Protection Areas with a vulnerability score of 10
- Intake Protection Zones with a vulnerability score of 8 to 10

The reason the use of land by one or more animals is considered a significant threat in these areas is because they pose a pathogen threat. Since pathogens can cause serious health problems, a minimum number of animals is not set, rather the presence of any farm animals is considered a significant threat within a certain proximity to a municipal drinking water source. Surface water is especially vulnerable to contamination from pathogens, which is why the policies extend out to an Intake Protection Zone scored 8.

POLICIES

Policy: LIVE-1-LB-PI-MC

Outdoor Livestock Areas — Prescribed Instrument

Where the use of land as an outdoor confinement area or a farm-animal yard (existing and/or future) that is or would be a significant drinking water threat as described in Appendix B is governed by a Prescribed Instrument (Nutrient Management Strategy developed under General Regulation 267/03 of the *Nutrient Management Act*), this activity shall continue to be managed through these existing requirements. The existing regulatory requirements administered by the Ontario Ministry of Agriculture, Food and Rural Affairs and the corresponding compliance program enforced by the MOECC already manage this activity so that it is not a significant threat to drinking water.

Policy: LIVE-2-LB-S58

Outdoor Livestock Areas — Risk Management Plan

The existing or future use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard is designated for the purpose of Section 58 of the *Clean Water Act,* requiring a Risk Management Plan in areas where the threat is or would be significant as described in Appendix B. The Risk Management Plans for existing activities shall be established within three years from the date the Source Protection Plan takes effect. This policy does not apply to:

- Small, non-intensive farms where the number of farm animals is not sufficient to generate five or more nutrient units of manure annually and the concentration is less than one nutrient unit per acre of cropland
- Activities that are governed by Nutrient Management Strategies developed under the *Nutrient Management Act.*

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.9 Agricultural Source Material (ASM)

Background

Agricultural source material (ASM) is material produced on a farm and applied to land, usually as a fertilizer. The most common example is manure. Before being applied, ASM may be stored in a variety of ways including above or below grade, temporary field storage or longer term lagoon storage.

The improper storage or application of ASM can contaminate surface water or groundwater with nitrogen, phosphorus or pathogens. Pathogens, such as *E. coli,* are microscopic organisms capable of causing serious infections or infectious disease in humans.

Given the potential for ASM to contaminate drinking water sources, the *Clean Water Act* designated the following activities as prescribed drinking water threats:

- The application of agricultural source material
- The storage of agricultural source material

As required by the *Clean Water Act*, this Plan includes policies to address these activities where they are considered a significant threat to sources of municipal drinking water.

Policy Intent

The policies are intended to ensure that the storage and land application of ASM, in areas where it is considered a significant threat, is undertaken in a way that provides effective protection of municipal drinking water sources. This can be accomplished through the establishment of Risk Management Plans which provide an opportunity for discussion, flexibility and agreement regarding suitable best management practices while providing the assurance that these practices will be implemented if they are not already in place.

Storage of agricultural source material

KEY CONCEPT ...

Agricultural Source Material (ASM) is material produced on a farm and applied to land to improve the growth of crops and for soil conditioning. ASM may include:

- Manure and bedding material
- Runoff from farm-animal yards and manure storages
- Wash water such as milking centre waste
- Anaerobic digestion output where at least 50 percent of the anaerobic digestion material were on-farm and does not contain sewage (anaerobic digestion is the process by which organic materials in an enclosed vessel are broken down by micro-organisms in the absence of oxygen; the process produces a liquid effluent called anaerobic digest output or digestate)

The policies recognize that some ASM activities are already regulated by the Ontario Ministry of Agriculture, Food and Rural Affairs under the *Nutrient Management Act.* For farms that already have Nutrient Management Strategies or Nutrient Management Plans in place that address the application and storage of ASM, a Risk Management Plan is not required. The policies also recognize that some ASM users pose a lower risk to drinking water and mandatory requirements would be unreasonable. Small, non-intensive farms, and other small users like gardeners, are exempt from requiring Risk Management Plans. Instead best management practices will be promoted through education policy EDU-1-LB outlined in Section 4.

In the Mississippi-Rideau region (as of 2012) it is estimated that there are 52 properties where ASM is applied or stored that may require a Risk Management Plan.

KEY CONCEPT ...

A **nutrient unit** (NU) is a unit of measurement developed to standardize the nutrients generated by different sizes and types of livestock. One nutrient unit represents the number of animals required to produce 43 kg of nitrogen or 55 kg of phosphorus annually. For example, 5 NUs equals 40 dairy goats, 3.5 large frame dairy cows or five medium frame horses.

Significant threat circumstances ...

The application or storage of any amount of ASM is considered a significant drinking water threat in:

- Wellhead Protection Areas with a vulnerability score of 10
- Intake Protection Zones with a vulnerability score of 8 to 10

The reason any amount of ASM is considered a significant threat in these areas is because it poses a pathogen threat. Since pathogens can cause serious health problems, no minimum quantity of material is specified. Rather any amount is considered a significant threat within a certain proximity to a municipal drinking water source.

POLICIES

Policy: ASM-1-LB-PI-MC

Agricultural Source Material — Prescribed Instrument

Where the land application or storage of agricultural source material (existing and/or future) that is or would be a significant drinking water threat as described in Appendix B is governed by a Prescribed Instrument (Nutrient Management Strategy or Plan developed under General Regulation 267/03 of the *Nutrient Management Act*), this activity shall continue to be managed through these existing requirements. The existing regulatory requirements administered by the Ontario Ministry of Agriculture, Food and Rural Affairs and the corresponding compliance program enforced by the MOECC already manage this activity so that it is not a significant threat to drinking water.

Policy: ASM-2-LB-S58

Agricultural Source Material — Risk Management Plan

The existing or future land application or storage of agricultural source material is designated for the purpose of Section 58 of the *Clean Water Act,* requiring a Risk Management Plan in areas where the threat is or would be significant as described in Appendix B. The Risk Management Plans for existing activities shall be established within three years from the date the Source Protection Plan takes effect. This policy does not apply to:

- Small, non-intensive farms where the number of farm animals is not sufficient to generate five or more nutrient units of manure annually and the concentration is less than one nutrient unit per acre of cropland
- Activities that are governed by Nutrient Management Strategies or Nutrient Management Plans developed under the *Nutrient Management Act*
- Residential use of ASM such as bagged manure applied to gardens

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.10 Non-agricultural Source Material (NASM)

Background

Non-agricultural source material (NASM) is material produced off-farm, such as biosolids, that is used as a fertilizer. The improper storage or application of NASM can contaminate surface water or groundwater with nutrients (such as nitrogen and phosphorus) or pathogens. Pathogens, such as *E. coli,* are microscopic organisms capable of causing serious infections or infectious disease in humans.

Application of non-agricultural source material

Given the potential for NASM to contaminate drinking water sources, the *Clean Water Act* designated the following activities as prescribed drinking water threats:

- The application of non-agricultural source material
- The handling and storage of non-agricultural source material

As required by the *Clean Water Act,* this Plan contains policies to address these activities where they are considered a significant threat to municipal drinking water sources.

KEY CONCEPT ...

Non-agricultural Source Material (NASM) is material other than commercial fertilizer that is not produced on a farm that is applied to land to improve the growth of crops and for soil conditioning. NASM may include:

- Pulp and paper biosolids
- Sewage biosolids (treated sewage from sewage treatment plants)
- Anaerobic digestion output where less than 50 percent of the anaerobic digestion material were on-farm
- Any other material that is not from an agricultural source that can be applied to land as nutrients (such as waste materials from food processing)

Policy Intent

Most application and storage of NASM requires a NASM Plan to be prepared pursuant to the *Nutrient Management Act* and Ontario Regulation 267/03. The NASM Plan ensures compliance with the NASM standards and includes measures to protect water such as separation distances from wells and surface water, maximum application rates, safe storage and contingency plans. However, there are some circumstances where a NASM Plan is not required but the activity is still considered a significant drinking water threat. The policies are intended to fill this regulatory gap by requiring that a Risk Management Plan be prepared to document the measures that will be taken to protect drinking water.

Some types of NASM are regulated by instruments issued under the *Environmental Protection Act.* In this situation, the policies are intended to ensure that the MOECC requires measures to protect sources of municipal drinking water through terms and conditions attached to these instruments.

The 2011 Assessment Reports for the Mississippi-Rideau region did not identify any existing handling, storage or application of NASM that are considered significant drinking water threats.

Significant threat circumstances ...

The **application or storage** of any amount of NASM that **contains material from a meat plant or sewage works** is considered a significant drinking water threat in:

- Wellhead Protection Areas with a vulnerability score of 10
- Intake Protection Zones with a vulnerability score of 8 to 10

This type of NASM poses a pathogen threat. Since pathogens can cause serious health problems, any amount of this NASM is considered a significant threat within a certain proximity to a municipal drinking water source.

The **application** of NASM that **does not contain material from a meat plant or sewage works** is only considered a significant drinking water threat in:

- The Munster Wellhead Protection Area with a vulnerability score of 10 (2011 Assessment Reports)

This type of NASM poses a nutrient threat. NASM applied to land is therefore considered a significant threat in areas where the level of agricultural activity and other land management activities are already high (determined by livestock density and the percentage of managed lands). These circumstances are only met at Munster.

The **storage** of NASM that **does not contain material from a meat plant or sewage works** is considered a significant drinking water threat depending on the location of storage (above or below grade), the type of storage (permanent or temporary field storage) and the mass of nitrogen in tonnes when the storage is located in:

- Wellhead Protection Areas with a vulnerability score of 10
- Intake Protection Zones with a vulnerability score of 9 or 10

POLICIES

Policy: NASM-1-LB-PI-MC

Non-agricultural Source Material — Prescribed Instrument (under the *Nutrient Management Act*)

Where the application, handling or storage of non-agricultural source material (existing and/or future) that is or would be a significant drinking water threat as described in Appendix B is governed by a Prescribed Instrument (NASM Plan developed under General Regulation 267/03 of the *Nutrient Management Act*), this activity shall continue to be managed through these existing requirements. The existing regulatory requirements administered by the Ontario Ministry of Agriculture, Food and Rural Affairs and the corresponding compliance program enforced by the MOECC already manage this activity so that it is not a significant threat to drinking water.

Policy: NASM-2-LB-PI-MC

Non-agricultural Source Material — Prescribed Instrument (under the *Environmental Protection Act*)

Where the application, handling or storage of non-agricultural source material (existing and/or future) is or would be a significant drinking water threat as described in Appendix B and is governed by a Prescribed Instrument (Certificate of Approval or Environmental Compliance Approval under the *Environmental Protection Act*) the MOECC shall ensure the instrument includes appropriate terms and conditions so that:

a) The application, handling and storage of non-agricultural source material (existing) ceases to be a significant drinking water threat; or
b) The application, handling and storage of non-agricultural source material (future) never becomes a significant drinking water threat.

The MOECC shall comply with part (a) of this policy within three years from the date the Source Protection Plan takes effect.

Note that if the material is untreated septage, the future application is prohibited through policies WASTE-3-LB-PI-MC and *WASTE-4-LB-S57.*

Policy: NASM-3-LB-S58

Non-agricultural Source Material — Risk Management Plan

The existing and future land application, handling or storage of non-agricultural source material is designated for the purpose of Section 58 of the *Clean Water Act,* requiring a Risk Management Plan in areas where the threat is or would be significant as described in Appendix B. The Risk Management Plans for existing activities shall be established within three years from the date the Source Protection Plan takes effect. This policy does not apply to:

- Activities that are governed by an approval issued under the *Environmental Protection Act*
- Activities that are governed by a NASM Plan developed under the *Nutrient Management Act*

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.11 Aquaculture

Background

Aquaculture involves farm-raising cultured fish in facilities that are located in water or on land. These operations generate fish manure and other by-products like uneaten feed and dead fish which are considered agricultural source material. This agricultural source material can be a source of pathogens which can contaminate surface water or groundwater.

Aquaculture facility

Given the potential for aquaculture to contaminate drinking water sources, the *Clean Water Act* designated the following activity as a prescribed drinking water threat:

- The management of agricultural source material — aquaculture.

Under the *Clean Water Act,* this activity is not considered a significant drinking water threat in any area. The Source Protection Committee decided to include policies to address this activity where it is considered a moderate threat to sources of municipal drinking water.

Policy Intent

To establish a new commercial aquaculture facility, approval is required from the Ontario Ministry of Natural Resources and Forestry. An aquaculture license must be obtained in accordance with the *Fish and Wildlife Conservation Act* and Ontario Regulation 664/98. The aquaculture license may have conditions pertaining to pathogens and diseases and require reporting of some disease organisms. Facilities would also typically require a Certificate of Approval or Environmental Compliance Approval under the *Ontario Water Resources Act* for discharge of water from the facility and a Permit to Take Water in some situations. Aquaculture is not currently regulated under the *Nutrient Management Act.*

Moderate threat circumstances ...

The use of land or water for aquaculture is considered a moderate drinking water threat in:

- Intake Protection Zones with a vulnerability score of 9 or 10

For more details about threat circumstances see Appendix B.

Local knowledge indicates there are no existing aquaculture facilities located in areas where they would be considered a moderate threat to municipal drinking water sources.

The policies are intended to ensure that agencies consider the potential impact of aquaculture on sources of municipal drinking water when amending existing instruments (should an existing facility be found) or issuing new instruments for aquaculture facilities. This includes approvals of the location for the initial establishment of the business and when issuing approvals for the withdrawing of water and managing of sewage during the operation of the business.

POLICIES

Policy: AQUA-1-LB-PI-HR

Use of Land or Water For Aquaculture — Prescribed Instrument

Where the use of land or water for aquaculture (existing and/or future) is or would be a moderate drinking water threat as described in Appendix B and requires a Prescribed Instrument (Certificate of Approval or Environmental Compliance Approval or Permit to Take Water under the *Ontario Water Resources Act),* the MOECC shall ensure:

a) Amendments to an existing instrument includes appropriate terms and conditions that address the threat and protect drinking water sources; or
b) The future instrument includes appropriate terms and conditions that address the threat and protect drinking water sources.

Policy: AQUA-2-NLB

Use of Land or Water for Aquaculture – *Fish and Wildlife Conservation Act* Approvals

The Ontario Ministry of Natural Resources and Forestry is strongly encouraged to consider the proximity to and potential impact on drinking water sources during their review of applications for future aquaculture facilities subject to approvals under the *Fish and Wildlife Conservation Act* and the aquaculture regulations. This policy applies where the use of land or water for aquaculture is a moderate threat to drinking water (an Intake Protection Zone with a vulnerability score of 9 or 10). When approving a location for a new facility, preference should be given to locations outside of these zones. Action to implement this policy should be initiated within one year from the date the Source Protection Plan takes effect.

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.12 Aircraft De-Icing

Background

Aircraft de-icing materials contain dioxane-1,4 and ethylene glycol. There are toxicity concerns associated with certain glycols and the additives that are mixed into glycol formulations. Runoff that contains these chemicals can contaminate groundwater and surface water.

De-iced aircraft

Given the potential for aircraft de-icing to contaminate drinking water sources, the *Clean Water Act* designated the following activity as a prescribed drinking water threat:

- The management of runoff that contains chemicals used in the de-icing of aircraft.

As required by the *Clean Water Act,* this Plan includes policies to address this activity where it is considered a significant threat to sources of municipal drinking water.

Policy Intent

The 2011 Assessment Reports for the Mississippi-Rideau region confirmed there are no national or regional airports in areas where de-icing runoff would be considered a significant threat. In future, it is unlikely that an airport could be established in these areas due to lack of space and incompatible existing land uses. The policies are therefore intended to ensure that aircraft de-icing runoff originating at a national or regional airport is prohibited under Section 57 of the *Clean Water Act* where it would be considered a significant threat.

Significant threat circumstances ...

Runoff containing de-icing materials that originates at a **national** airport is a significant threat in:

- Wellhead Protection Areas with a score of 10
- Intake Protection Zones with a score of 9 or 10

Runoff containing de-icing materials that originates at a **regional** airport is a significant threat in:

- Intake Protection Zones with a score of 10

policies

POLICIES

Policy: DEICE-1-LB-S57

Aircraft De-icing — Section 57 Prohibition

The future management of runoff that contains chemicals used in the de-icing of aircraft and originating at a national or regional airport is designated as prohibited under Section 57 of the *Clean Water Act* where it would be a significant threat as described in Appendix B.

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.13 Transportation Corridors

Background

Transportation corridors refer to roads, railways and shipping lanes. The transportation of dangerous or hazardous goods along these corridors is a concern because a spill could contaminate surface water or groundwater.

Spill response

Given the potential for drinking water sources to become contaminated along transportation corridors, the *Clean Water Act* allows policies to be developed that address this concern. Policies can recommend updating spill prevention and contingency plans or Emergency Response Plans. The Source Protection Committee decided to include policies in this Plan to address transportation corridors within Wellhead Protection Areas and Intake Protection Zones. These policies apply to highways as defined in subsection 1(1) of the *Highway Traffic Act* and railway lines.

Policy Intent

The policies are intended to reduce the impact of a spill by ensuring appropriate and effective spill response within Wellhead Protection Areas and Intake Protection Zones. Under the *Emergency Management and Civil Protection Act,* municipalities are already required to identify and assess hazards and risks to public safety that could give rise to emergencies and identify the facilities and other elements of the infrastructure that are at risk of being affected by emergencies. The Act also requires municipalities to have Emergency Response Plans but it does not specify that drinking water systems and associated vulnerable areas be included. The policies are intended to encourage municipalities to update their Emergency Response Plans to include this information.

The MOECC also plays an important role in spill response, primarily through their Spills Action Centre. It is imperative that they also integrate information about vulnerable drinking water areas into their procedures. The policies are intended to encourage the MOECC to ensure such steps have been taken. Complementary education policies in Section 4 are also intended to reduce the potential of spills in these vulnerable areas. The policies (EDU-2-NLB, EDU-3-NLB and EDU-4-NLB) strongly encourage the Ontario Ministry of Transportation and municipalities to install standardized signs along provincial and municipal roadways and recreational waterways. These signs would notify travellers when they enter the most vulnerable sections of a Wellhead Protection Area or Intake Protection Zone. This awareness is intended to motivate people to undertake precautions, and should there be a spill, report it quickly.

POLICIES

Policy: CORR-1-NLB

Municipal Emergency Response Plan Updates

Within one year of the Source Protection Plan taking effect, municipalities are strongly encouraged to ensure that local first responders have information about the Wellhead Protection Areas and Intake Protection Zones (which will be marked by road and waterway signs) and should update Emergency Response Plans to include:

- Maps to show the location of municipal drinking water systems and associated Wellhead Protection Areas and Intake Protection Zones.
- Requirements to contain water and chemicals used to suppress fires that occur in these areas, if appropriate.
- Spill contingency measures for spills of any potential contaminant (e.g., fuel, chemicals, septage) resulting from highway accidents and train derailments that occur in these areas, if appropriate.

This policy applies to railways and highways* as defined in subsection 1(1) of the Highway Traffic Act within Wellhead Protection Areas and Intake Protection Zones (all scores).

**a common and public highway, street, avenue, parkway, driveway, square, place, bridge, viaduct or trestle, any part of which is intended for or used by the general public for the passage of vehicles and includes the areas between the lateral property lines thereof.*

Policy: CORR-2-NLB

Ministry of the Environment and Climate Change Spill Response Procedure Updates

The MOECC is strongly encouraged to update spill response procedures for the purpose of protecting drinking water sources with respect to spills that occur within a Wellhead Protection Area or Intake Protection Zone along highways and railway lines. Action to implement this policy should be initiated within one year from the date the Source Protection Plan takes effect.

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.14 Transport Pathways

Background

The *Clean Water Act* regulations define 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." In essence, transport pathways provide a channel to an aquifer that bypasses the natural protection of the overburden layer resulting in greater potential risk of contamination from nearby threats. Transport pathways may facilitate the movement of contaminants vertically (a well or a quarry) or laterally (sewer lines) and result in faster or more widespread distribution of contaminants.

Policy Intent

The policies are intended to encourage agencies to enhance their monitoring and regulation of wells, pits, quarries and earth (geothermal) energy systems; activities that can act as transport pathways.

Complementary education policies in Section 4 raise awareness about the risks transport pathways can pose to groundwater and best management practices that can reduce these risks. The education initiatives will also promote funding that is available to assist property owners with the cost of projects that eliminate transport pathways such as properly decommissioning abandoned wells.

KEY CONCEPT ...

Earth (Geothermal) Energy Systems

Below a certain depth, ground temperature is relatively constant all year long. The ground is warmer than the air in winter and cooler in summer. An earth energy system harnesses this underground temperature to heat and cool buildings. An open loop system uses groundwater from a well or series of wells. A closed loop system uses heat transfer fluids and does not involve withdrawing and discharging groundwater. Both types of systems involve drilling and or excavating that may impact water quality by creating a pathway through which contaminants can reach groundwater (a transport pathway). The MOECC is now considering requiring an Environmental Compliance Approval for some types of earth energy systems.

POLICIES

Municipalities should note that Ontario Regulation 287/07 (under the *Clean Water Act*) already contains the following notification requirements pertaining to transport pathways:

27(3) If a person applies to a municipality for approval of a proposal to engage in an activity in a Wellhead Protection Area or a surface water Intake Protection Zone that may result in the creation of a new transport pathway or the modification of an existing transport pathway, the municipality shall give the Source Protection Authority and the Source Protection Committee notice of the proposal and shall include a description of the proposal, the identity of the person responsible for the proposal and a description of the approvals the person requires to engage in the proposed activity.

27(4) If a municipality gives a notice described in Subsection 27(3), the municipality shall give a copy of the notice to the person responsible for the proposal.

continued ...

Policy: PATH-1-NLB

Oversight of Earth (Geothermal) Energy Systems

In addition to their role under the *Building Code Act,* the municipality is strongly encouraged to require additional measures to ensure that new earth energy systems within Wellhead Protection Areas do not endanger the raw water supply of a municipal drinking water system. The municipality should:

- In Wellhead Protection Area "A," prohibit the installation of all types of earth energy systems.
- In Wellhead Protection Area "B," require a qualified hydrogeologist to oversee* the design and installation of new earth energy projects (with the exception of horizontal, closed loop systems) to ensure that the construction of the system meets the requirements of the Ontario Building Code and will not result in contamination of groundwater. For a residential system, the hydrogeologist should assess the potential of encountering problems (such as multiple aquifers, cross-connection of aquifers of differing water quality, high yield formations, gas, salty water) and make recommendations to mitigate them including alterations to the design of the system.
- Keep records of the location, size and other pertinent details of new earth energy systems within Wellhead Protection Areas.

Action to implement this policy should be initiated within one year from the date the Source Protection Plan takes effect.

* *The Canadian Standards Association standard already requires that a commercial/institutional system be designed and inspected by a professional engineer and requires a site survey by a hydrogeologist.*

Policy: PATH-2-NLB

Well Regulations

The MOECC is strongly encouraged to undertake an updated risk-based program analysis of the compliance program associated with the Wells Regulation[R.R.O., 1990 Regulation 903(Wells) as amended, made under the Ontario Water Resources Act, R.S.O., 1990, c. O. 40].

The program analysis should consider:

- Increased MOECC field presence with well contractors
- Complaint response prioritization where the presence of a transport pathway would endanger sources of municipal drinking water
- Focusing resources in areas where improperly constructed, maintained or abandoned wells may increase the potential threat to municipal drinking water sources

Action to implement this policy should be initiated within two years from the date the Source Protection Plan takes effect.

Policy: PATH-3-NLB

Approvals for Pits and Quarries

The Ontario Ministry of Natural Resources and Forestry is strongly encouraged to implement measures to ensure that new pits and quarries located within Wellhead Protection Areas do not endanger the raw water supply of a municipal drinking water system. Measures may include requiring proponents to conduct an assessment of potential impacts and if necessary develop plans to mitigate impacts and/or circulating proposals to the Ministry of the Environment and Climate Change or other agencies for review. Action to implement this policy should be initiated within one year from the date the Source Protection Plan takes effect.

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

3.15 Administrative Policies

Background

There are three types of administrative policies that need to be directed at municipalities and other implementers to help implement the source protection policies. They are:

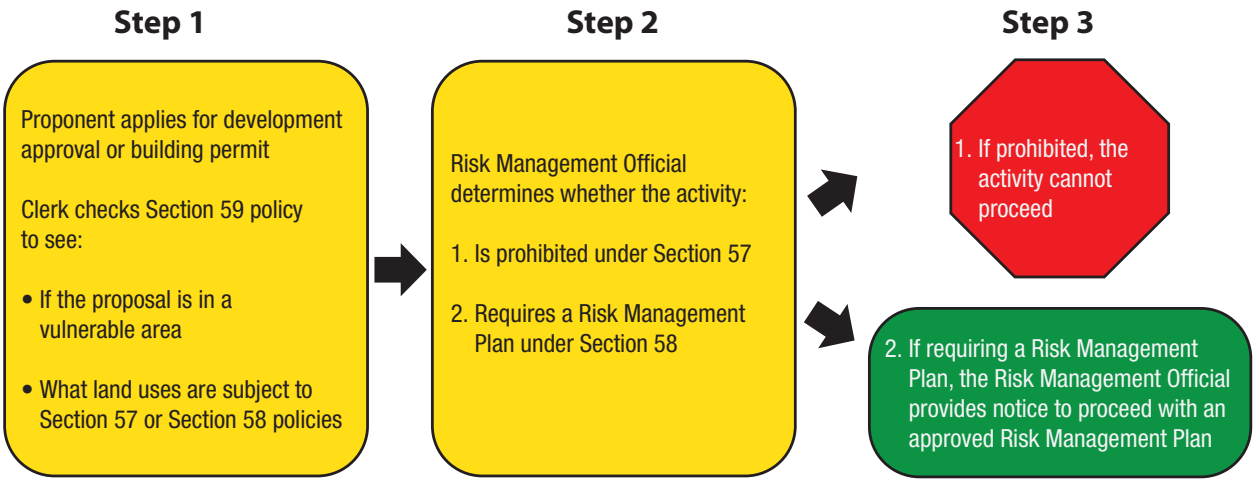
- Restricted Land Use policies which require a procedure to be established to help implement Section 57 (Prohibition) and Section 58 (Risk Management Plan) policies.
- An Official Plan and zoning by-law conformity policy which requires planning documents to be updated to help implement policies that affect decisions under the *Planning Act.*
- Existing and future special provisions which set out criteria to determine if an activity is considered existing or future.

3.15.1 Restricted Land Use

Policy Intent

Restricted Land Use policies require municipalities to screen planning applications and applications under the Building Code to determine if the proposed activities are subject to Section 57 (Prohibition) or Section 58 (Risk Management Plan) policies. The purpose is to help municipalities avoid inadvertently approving an application without complying with Source Protection Plan policies first. Restricted Land Use policies (through Section 59 of the *Clean Water Act)* reference the land use types and vulnerable areas where applications need to be screened. If an application is made for an activity that is prohibited by this Plan, then the application cannot proceed. If an application is made for an activity that is subject to a Risk Management Plan, then the proponent must work with the Risk Management Official to establish a Risk Management Plan before the application can proceed.

Section 59 Screening Process



POLICIES

Policy: ADMIN-1-LB

Restricted Land Use Policy — Intake Protection Zones and Wellhead Protection Areas Where the Vulnerability Score is 10

All land uses identified within the Official Plan and/or Zoning By-Laws are designated for the purpose of Section 59 of the *Clean Water Act* if they are located within:

- Intake Protection Zones with a vulnerability score of 10; or
- Wellhead Protection Areas with a vulnerability score of 10.

Within these designated land use categories and areas, a notice from the Risk Management Official in accordance with Section 59(2) of the *Clean Water Act* shall be required prior to approval of any *Planning Act* application (as prescribed in Ontario Regulation 287/07 section 62) or Building Permit application.

Despite the above policy, a site specific proposed land use that is the subject of an application for an approval under the *Planning Act* or for a permit under the *Building Code Act,* is not designated for the purposes of Section 59 if the applicant can demonstrate to the satisfaction of the planning authority or the building official that a significant drinking water threat activity designated for the purposes of Section 57 or 58 of the *Clean Water Act* will not be engaged in.

Policy: ADMIN-2-LB

Restricted Land Use Policy — Intake Protection Zones Scored 8 to 9 and Wellhead Protection Areas "B" and "C" Scored 4 to 8

All land uses, with the exception of solely residential land uses, identified within the Official Plan and/or Zoning By-Laws are designated for the purpose of Section 59 of the *Clean Water Act* if they are located within:

- Intake Protection Zones with a vulnerability score of 8, 8.1 or 9; or
- Wellhead Protection Areas "B" or "C" with a vulnerability score of 4, 6 or 8.

Within these designated land use categories and areas, a notice from the Risk Management Official in accordance with Section 59(2) of the *Clean Water Act* shall be required prior to approval of any *Planning Act* application (as prescribed in Ontario Regulation 287/07 section 62) or Building Permit application.

Despite the above policy, a site specific proposed land use that is the subject of an application for an approval under the *Planning Act* or for a permit under the *Building Code Act,* is not designated for the purposes of Section 59 if the applicant can demonstrate to the satisfaction of the planning authority or the building official that a significant drinking water threat activity designated for the purposes of Section 57 or 58 of the *Clean Water Act* will not be engaged in.

3.15.2 Official Plan and Zoning By-Law Conformity

Policy Intent

Municipalities regulate development through their powers under the *Planning Act.* Updating the Official Plan and zoning by-laws, which are the tools that municipal planning authorities use, will help to ensure that decisions on planning matters will be consistent with Source Protection Plan policies.

While decisions under the *Planning Act* must conform with significant threat policies as soon as a Source Protection Plan is in effect, Official Plans and zoning by-laws can be updated to reflect these policies at the time of the next scheduled review.

Under this Source Protection Plan, Official Plan and zoning by-law updates need to reflect the prohibition of the future establishment of certain types of sewage works consistent with policies:

- SEW-9-LB-PI/PA-MC
- SEW-15-LB-PI/PA-MC

Official Plans must also be updated to reflect the Restricted Land Use Policies, the Transition Policy and the Interruptions / Expansions Policy:

- ADMIN-1-LB
- ADMIN-2-LB
- ADMIN-4-LB
- ADMIN-5-LB

This conformity can be accomplished by adding maps showing the Wellhead Protection Areas and Intake Protection Zones and the list of land uses subject to Restricted Land Use policies (explained in section 3.15.1).

POLICIES

Policy: ADMIN-3-LB

Official Plan and Zoning By-Law Conformity

Where this Source Protection Plan specifies that Section 40 and 42 of the *Clean Water Act* apply (see Appendix A, List A), the municipality shall amend their Official Plan and Zoning By-Laws to conform with significant threat policies in this Source Protection Plan. Official Plans must be updated no later than the date of their next five-year review required under Section 26 of the *Planning Act* and zoning by-laws must be updated within three years of the Official Plan amendments to bring them into conformity with the Official Plan.

3.15.3 Existing and Future — Special Provisions

Policy Intent

Some policies in this Source Protection Plan manage existing drinking water threat activities but prohibit any new activities of the same type from being established in the future (this prevents additional significant drinking water threat activities from being created but allows existing activities to continue while being appropriately managed). Generally an existing activity is one that is occurring on the date this Source Protection Plan takes effect and a future activity is one that commences after the date the Source Protection Plan takes effect (see the definitions on page 22). However, the following Transition Policy and Interruptions / Expansions Policy stipulates circumstances when an activity that commences, resumes or expands after the date the Source Protection Plan takes effect can be considered existing and, therefore, subject to the policies for existing activities.

POLICIES

Policy: ADMIN-4-LB

Transition Policy

A drinking water threat activity that is established or commences after the date the Source Protection Plan takes effect is considered existing and is subject to policies addressing existing activities when:

- The activity is related to a development proposal where an application was made or an approval was obtained under the *Planning Act* or the *Condominium Act* on a date before the date this Source Protection Plan takes effect. (Note that the activity would also be considered "existing" with respect to any further applications under the *Planning Act, Condominium Act,* or Prescribed Instruments required to implement the development proposal).
- The activity is related to an application made or an approval was obtained under the *Building Code Act* on a date before the date this Source Protection Plan takes effect.
- The activity is related to an application made or an approval was obtained for the issuance or amendment of a Prescribed Instrument on a date before the date this Source Protection Plan takes effect.

Policy: ADMIN-5-LB

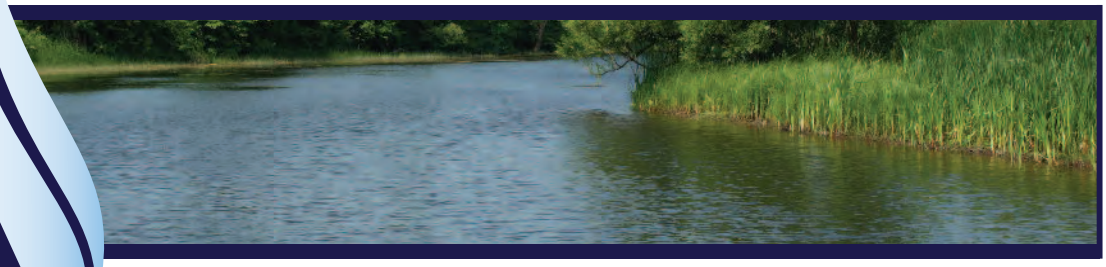
Interruptions / Expansions Policy

A drinking water threat activity that resumes after an interruption or expands after the date the Source Protection Plan takes effect is considered existing and is subject to policies addressing existing activities when:

- It is usually occurring on the property but has been interrupted for a maximum of 24 months due to temporary circumstances such as fire, renovation, change of ownership or due to the seasonal nature of the activity
- It involves an expansion of an existing activity but the expanded activity would be more protective of drinking water sources
- It involves an expansion of the existing physical space but does not result in an expansion of the existing activity (unless the expansion of the activity is more protective of drinking water sources)
- It involves an expansion of the existing activity that is minor such that:
  - it does not require regulatory or planning approvals; and
  - it is not part of, or was not preceded by, an expansion of the physical space that required regulatory or planning approvals.

4 Policies for Education & Outreach

Encouraging Source Protection



When it comes to protecting drinking water, everyone has an important role to play, big and small. The best protection is when everyone in a community is engaged in a collaborative effort to protect their local source of drinking water. Education and outreach programs are an effective way of raising awareness about where drinking water comes from, the importance of protecting it, and what residents, businesses and visitors can do to help.

What You Will Find in this Section

Three education and outreach initiatives form an integral part of protecting drinking water sources in the Mississippi-Rideau region. Two initiatives focus on protecting *municipal* sources of drinking water while the third helps protect *regional* drinking water. Each subsection includes:

- Policy intent which explains the need for each education and outreach program and its desired outcome
- Policy wording which describes each program, identifies the body responsible for implementing it and the compliance date

Corresponding Monitoring Policies

Section 5 of this Plan contains corresponding monitoring policies for each education and outreach initiative. These monitoring policies outline important information that Source Protection Authorities need to receive from implementing bodies in order to assess if implementation has been successful and if policies are achieving their objectives.

4.1 Living and Working in the Drinking Water Zone

Background

It is important that people who live and work near municipal drinking water sources know that they are in an area where their everyday actions could impact local drinking water. Knowing they are close to their community's source of drinking water and understanding the simple steps they can take to help protect it will prevent inadvertent contamination. An education and outreach initiative will 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 in these areas
- What incentive programs exist to help initiate these actions

Encouraging good stewardship

Policy Intent

Providing information to residents and businesses in the most vulnerable areas of a municipal drinking water source is intended to accomplish several goals:

- Complement mandatory policies. An example is to provide information on septic system care and maintenance in order to keep septic systems functioning properly between five year mandatory inspections.
- Address significant threats that have thresholds so low that mandatory measures would be impractical and unnecessary. Examples include spreading bagged manure on vegetable gardens or keeping one horse on a five acre upland pasture. Both activities can be considered a significant threat but addressing them through mandatory measures would be unreasonable.
- Address moderate threats that have a high level of risk but cannot be addressed through mandatory measures because they are not considered a significant threat under the *Clean Water Act*. An example is to encourage risk management measures for outdoor, above ground heating oil storage tanks. These measures are needed to truly safeguard drinking water as well as protect people's property and assets.
- Address threats at the "household" level where individually, activities may not constitute a significant threat but the cumulative impact of many households could be profound. An example of this is where 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 assistance programs that help property owners initiate these practices.

Promoting incentive programs

POLICIES

Policy: EDU-1-LB

Living and Working in the Drinking Water Zone

Within one year of the Source Protection Plan taking effect, the municipality shall initiate an education and outreach program targeted at residents and businesses located in the Wellhead Protection Areas with a vulnerability score of 10 and the Intake Protection Zones with a vulnerability score of 8 or higher. Source Protection Authorities will help develop materials that will raise awareness about these vulnerable areas and foster good stewardship practices within them. Municipalities will then use any means that effectively disseminates this information to residents and businesses in these areas such as a mail-out, participation in community events and partnering with other agencies to make use of existing programs. Once established, this education program shall be ongoing with materials being disseminated periodically as deemed appropriate by the municipality. The program may address any water quality or quantity topic but must include promotion of the following:

- Awareness of the vulnerable areas (will be marked by road and waterway signs)
- Best management practices for waste that is regulated by the MOECC through means other than Prescribed Instruments
- Proper septic system care and maintenance
- Awareness of the Mandatory On-Site Sewage System Maintenance Inspection Program
- Best management practices for storing and applying nutrients and for outdoor livestock areas
- Risk management measures for fuel storage
- Awareness of Ontario's Cosmetic Pesticide Ban and best management practices where pesticides are used under an exemption from the ban
- The importance of complying with all aspects of the pesticide training/certification and Integrated Pest Management programs
- Participation in the Environmental Farm Plan Program
- Awareness of DNAPL and organic solvent substances and the products that may contain them, alternative products that do not pose a threat to drinking water and proper disposal of unwanted products
- "Smart salt practices" for the use of road salt
- The importance of addressing existing transport pathways such as abandoned wells and ensuring new projects, such as geothermal installations, do not create new transport pathways
- Existing funding programs available to help property owners and businesses implement best management practices and Source Protection Plan policy requirements

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

4.2 Travelling Through the Drinking Water Zone

Background

The majority of policies in this Plan address activities that are taking place in a vulnerable drinking water area. However, a plan to protect drinking water would be incomplete without addressing threats that might travel through these areas. Policies to address the transportation of hazardous materials through Wellhead Protection Areas and Intake Protection Zones can reaffirm the importance of spill prevention and ensure appropriate spill response. It is also prudent to make the travelling public aware of when they have entered the most vulnerable areas of a municipal drinking water source.

Section 3.13 of this Plan contains two additional policies to help ensure spills along transportation corridors in vulnerable areas are adequately addressed:

- Municipalities are encouraged to update their Emergency Response Plans to ensure that spills in vulnerable areas are responded to appropriately.
- The MOECC is encouraged to ensure that their Spills Action Centre has access to the most current mapping of vulnerable areas so that reported spills are responded to appropriately.

Policy Intent

Three policies are intended to encourage the Ministry of Transportation and municipalities to install road and waterways signs that would make the travelling public and emergency responders aware of when they have entered the most vulnerable areas of a municipal drinking water source. Identifying these areas is intended to encourage good stewardship and prompt spill reporting and response.

An additional policy is intended to encourage municipalities to facilitate educational opportunities for local businesses that move hazardous materials through Wellhead Protection Areas and Intake Protection Zones. Employees should be made aware of:

- The location and sensitivity of these vulnerable areas (what the road signs signify)
- The importance of spill prevention and spill response in these areas

Transportation corridors in vulnerable areas

POLICIES

Policy: EDU-2-NLB

Signs Along Provincial Highways

The Ontario Ministry of Transportation, in collaboration with the MOECC as well as in consultation with Source Protection Authorities, is strongly encouraged to design a sign to the appropriate Provincial standards, to identify the locations of Wellhead Protection Areas and Intake Protection Zones. The Ministry of Transportation should manufacture, install and maintain the signs along Provincial Highways within the Wellhead Protection Areas with a vulnerability score of 10, and within the Intake Protection Zones with a vulnerability score of 8 or higher. This policy should be implemented within two years of the Source Protection Plan taking effect.

Policy: EDU-3-NLB

Signs Along Primary Municipal Roads

The municipality is strongly encouraged to purchase, install and maintain signs designed by the Ministry of Transportation in collaboration with the Source Protection Authorities to identify the locations of Wellhead Protection Areas and Intake Protection Zones. These signs should be placed, at a minimum, where municipal arterial roads are located within a Wellhead Protection Area with a vulnerability score of 10 and/or an Intake Protection Zone with a vulnerability score of 8 or higher (appropriate sign locations will ultimately be determined based on site-specific factors such as the size of the area scored 10). This policy should be initiated within two years of the Source Protection Plan taking effect.

Policy: EDU-4-NLB

Signs Along Recreational Waterways

The municipality is strongly encouraged to purchase, install and maintain signs designed by the Ministry of Transportation to identify the locations of Intake Protection Zones. These signs should be placed along recreational waterways where awareness of the Intake Protection Zones should be raised. Source Protection Authorities will collaborate with municipalities, the Ministry of Natural Resources and Forestry and Parks Canada to determine appropriate sign locations and secure any necessary approvals for the installation. This policy should be initiated within two years of the Source Protection Plan taking effect.

Policy: EDU-5-NLB

Transporting Contaminants Through the Drinking Water Zone

Within one year of the Source Protection Plan taking effect, the municipality is strongly encouraged to initiate an education and outreach program targeted at local fuel distributors, sewage haulers, lawn care companies and other businesses that transport potential drinking water contaminants in Wellhead Protection Areas and Intake Protection Zones with a vulnerability score of 8 or higher. The Source Protection Authority will assist with the identification of potential businesses and the development of educational materials. To the extent feasible, this initiative should use existing training opportunities offered within these sectors to promote:

- Awareness of vulnerable areas (will be marked by road and waterway signs)
- Spill prevention (emphasizing the importance of adhering to existing spill prevention guidelines when operating in vulnerable drinking water areas)
- Spill response (emphasizing the importance of adhering to or learning procedures to follow in the event of a spill in a vulnerable drinking water area)

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

4.3 Protecting Regional Groundwater

Background

Groundwater throughout most of the Mississippi-Rideau region is considered highly vulnerable to contamination because there is fractured bedrock and little soil cover. These conditions facilitate the movement of surface contaminants down into groundwater. For many people on private wells, highly vulnerable aquifers are their source of drinking water. It is therefore important to raise awareness about the vulnerable nature of groundwater in the Mississippi-Rideau region and promote ways for people to protect it.

A private well

Policy Intent

The policy is intended to encourage the Source Protection Authority to develop educational materials that promote actions people can take to help protect regional groundwater. Educational resources should be easily accessible to everyone, including the public and those agencies and groups who may wish to promote or disseminate the materials (municipalities, health units, environmental groups, lake associations). This could be achieved through website design.

POLICIES

Policy: EDU-6-NLB

Protecting Regional Groundwater

Within one year of the Source Protection Plan taking effect, the Source Protection Authority is strongly encouraged to develop materials about the highly vulnerable nature of the Mississippi-Rideau region's aquifers and actions that would help protect them. The materials should be accessible by all residents in the region, and should be disseminated when possible by the Source Protection Authority, municipalities, health units and other interested groups and agencies.

Implementing bodies should see Section 5 for corresponding monitoring policies which could contain reporting requirements.

5 Policies That Monitor Implementation

Evaluating Source Protection

This Source Protection Plan contains policies that encourage, and in some cases require, people to manage or prevent activities that could contaminate drinking water sources. These policies will be implemented by a number of different bodies including municipalities, provincial ministries and Conservation Authorities. To determine if the policies are having their desired effect it is essential to monitor how the policies are being implemented. It is also important to track changing circumstances that could affect where certain policies apply. This information will be used to generate annual progress reports for the MOECC, but more importantly, it will be used to improve future versions of this Plan.

What You Will Find In This Section

To ensure that the necessary feedback is received from implementing bodies and that policies are being implemented in required areas, this section contains monitoring policies that:

- Monitor policy implementation and progress
- Monitor changes in circumstances that affect where policies apply

5.1 Monitoring Policy Implementation

Background

Under the *Clean Water Act:*

- Monitoring policies must be written to track the implementation of all policies that address significant drinking water threats. Public bodies must comply with these monitoring policies (they are legally binding).
- If the Source Protection Committee feels it is warranted, monitoring policies may also be written to track the implementation of moderate or low threat policies and other permissible policies. These monitoring policies cannot be legally binding.

Have an idea to improve the policies?

In addition to the information being sought through the monitoring policies, implementers are encouraged to notify the Source Protection Authority at any time with ideas or recommendations to improve the policies. Implementers are in a unique position to be able to evaluate the reasonableness, practicality, level of acceptance and effectiveness of each policy as it is being implemented. Any insights implementing bodies can provide will help improve future versions of this Plan.

In addition to monitoring policies, Section 87 of the *Clean Water Act* also permits Source Protection Authorities to request additional information related to a drinking water threat from certain public bodies. This allows Source Protection Authorities to seek additional information if and when needed rather than weighing down annual reporting requirements for implementers with potentially unnecessary site specific details (e.g., copies of planning or development applications).

Policy Intent

The Mississippi-Rideau Source Protection Committee developed monitoring policies for significant threat policies, as well as moderate and low threat policies and all other permissible policies. The objective is to obtain feedback about the implementation of all policies. This will provide a complete picture for reviewing and improving this Plan in the future.

The monitoring policies are intended to provide the Source Protection Authority with information to:

- Determine if the implementing body has implemented the source protection policy (including compliance with any specific implementation dates);
- Determine if the persons engaged in the significant threat activity are complying with the policy if the policy is regulatory in nature, such as a Risk Management Plan;
- Track the uptake of a program if the policy is non-regulatory in nature, such as an education and outreach program; and
- Determine, where feasible, if the policy has achieved the desired outcome.

KEY CONCEPT ...

Annual Reporting

The Source Protection Authority must submit annual reports on the progress of Source Protection Plan implementation to the Ministry of the Environment and Climate Change. To meet the annual deadline specified in the *Clean Water Act,* policy implementers must provide their information relating to the previous calendar year to the Source Protection Authority by February 1 of each year. The Source Protection Authority will compile all this information into an annual progress report. The first report will cover the period beginning on the day when this Plan takes effect and ending on December 31 of the second calendar year following the year in which the plan takes effect.

To this end, implementers are strongly encouraged to comply with all monitoring policies, including those that are not legally binding. Reporting on the progress of all policies is the only way to evaluate the effectiveness of source protection efforts across the Mississippi-Rideau region. The Source Protection

Authorities will work with implementers to develop reporting templates where possible to make fulfilling the monitoring policy requirements as efficient as possible.

Monitoring policies are grouped by implementer in order to make it easier for each implementing body to see what monitoring requirements and requests they are subject to. Legally binding monitoring policies are listed first, followed by non-legally binding policies. Compliance dates for the monitoring policies are either in the policy or in the wording of the policy it corresponds to. For a listing of all policies by implementing body and compliance date see Appendix C2.

5.1.1 Monitoring Policies for Municipalities

POLICIES

Policy: MON-1-LB

Annual Report from the Risk Management Official

By February 1 of each year, the Risk Management Official shall provide a report to the Source Protection Authority with the information required in Section 65 of Ontario Regulation 287/07 related to the previous calendar year. This will provide administrative, enforcement and compliance results for the Section 58 Risk Management Plan and Section 57 Prohibition policies.

This monitoring policy corresponds to significant threat policies:

- *WASTE-2-LB-S58*
- *WASTE-4-LB-S57*
- *SEW-11-LB-S58*
- *SEW-12-LB-S57*
- *SEW-14-LB-S58*
- *SEW-16-LB-S57*
- *SALT-1-LB-S58*
- *SALT-2-LB-S57*
- *DNAPL-1-LB-S58*
- *DNAPL-2-LB-S57*
- *FUEL-1-LB-S58*
- *FUEL-5-LB-S57*
- *FUEL-6-LB-S58*
- *FERT-2-LB-S58*
- *FERT-3-LB-S57*
- *PEST-4-LB-S58*
- *PEST-5-LB-S57*
- *LIVE-2-LB-S58*
- *ASM-2-LB-S58*
- *NASM-3-LB-S58*
- *DEICE-1-LB-S57*

Policy: MON-2-LB

Annual Report from the Municipality — Legally Binding Policies

By February 1 of each year, the municipality shall provide the Source Protection Authority with a summary of implementation activities for the previous calendar year related to legally binding policies where the municipality is the implementer.

This monitoring policy corresponds to significant threat policies:

- *SEW-3-LB*
- *SEW-4-LB*
- *SEW-6-LB*
- *SALT-3-LB*
- *SALT-4-LB*
- *EDU-1-LB*
- *ADMIN-3-LB*
- *SEW-9-LB-PI/PA-MC*
- *SEW-15-LB-PI/PA-MC*

KEY CONCEPT ...

Suggested Content for Municipal Annual Report — Legally Binding Policies

- One-time confirmation that new requirements have been implemented regarding lot grade and drainage plans and mandatory connection to municipal sewer services
- One time confirmation that required Official Plan and zoning by-law amendments have been completed and notice of any future changes
- Documentation related to the Sanitary Sewer Maintenance Program such as method, schedule, remedial work planned and work carried out
- Documentation related to the Road Salt Management Plan such as a copy of the completed plan and subsequent revisions and a summary of action taken to reduce road salt use (or a copy of the yearly review report if one is prepared under Environment Canada's Code of Practice for the Environmental Management of Road Salts)
- Feedback related to the promotion of smart salt practices such as a description of the initiatives that were undertaken and an indication of the level of participation (e.g., numbers of contractors certified and sites certified)
- A copy of the results of the annual raw water testing for chloride (municipalities with groundwater systems only)
- Feedback related to the implementation, participation and suggestions to improve the effectiveness of the "Living and Working in the Drinking Water Zone" education program

Policy: MON-3-NLB

Annual Report from the Municipality — Non-legally Binding Policies

By February 1 of each year, the municipality is requested to provide the Source Protection Authority with a summary of implementation activities for the previous calendar year related to non-legally binding policies where the municipality is the implementer.

This monitoring policy corresponds to moderate/low threat or other permissible policies:

- *SALT-5-NLB*
- *SALT-6-NLB*
- *CORR-1-NLB*
- *PATH-1-NLB*
- *EDU-3-NLB*
- *EDU-4-NLB*
- *EDU-5-NLB*

KEY CONCEPT ...

Suggested Content for Municipal Annual Report — Non-legally Binding Policies

- Documentation related to the Road Salt Management Plan such as a copy of the completed plan and subsequent revisions and a summary of action taken to reduce road salt use (or a copy of the yearly review report if one is prepared under Environment Canada's Code of Practice for the Environmental Management of Road Salts)
- Feedback related to the promotion of smart salt practices such as a description of the initiatives that were undertaken and an indication of the level of participation (e.g., numbers of contractors certified and sites certified)

continued ...

- A summary of decisions or action taken related to updating Emergency Response Plans and implementing new requirements for earth (geothermal) energy systems
- One-time confirmation that signs to identify the Wellhead Protection Areas and Intake Protection Zones have been installed and annual confirmation that the signs are being maintained
- Feedback related to the implementation, participation and suggestions to improve the effectiveness of the "Transporting Contaminants through the Drinking Water Zone" education program

5.1.2 Monitoring Policies for Principal Authorities Responsible for On-site Sewage System Approvals

policies

POLICIES

Policy: MON-4-LB

Mandatory On-Site Sewage System Maintenance Inspection Program

By February 1 of each year, the Principal Authorities shall provide the Source Protection Authority with an annual report related to the previous calendar year on the results of the mandatory on-site sewage system maintenance inspection program. The report shall include number of inspections conducted, number of failures and remediation notices issued and any other pertinent details about the progress of the program. *This monitoring policy corresponds to significant threat policy SEW-1-LB.*

Policy: MON-5-LB

Redevelopment / Renovation Proposals

Within six months of the Source Protection Plan taking effect, the Principal Authorities shall provide the Source Protection Authority with a report outlining the procedures that will be followed to ensure existing on-site sewage systems (located where they are a significant threat as described in Appendix B) are adequate to service a proposed redevelopment or renovation project. New approval procedures shall include adding the Source Protection Authority to the distribution list when approvals or decisions are issued to keep the Source Protection Authority informed on an ongoing basis regarding redevelopment or renovation proposals using existing systems. *This monitoring policy corresponds to significant threat policy SEW-2-LB.*

5.1.3 Monitoring Policies for the Ministry of Agriculture, Food and Rural Affairs

POLICIES

Policy: MON-6-LB

Nutrient Management Act Legislation and Program Updates

The Ontario Ministry of Agriculture, Food and Rural Affairs shall keep the Source Protection Authority informed of changes to *Nutrient Management Act* legislation or programs.

This monitoring policy corresponds to significant threat policies:

- *FERT-1-LB-PI-MC*
- *LIVE-1-LB-PI-MC*
- *ASM-1-LB-PI-MC*
- *NASM-1-LB-PI-MC*

5.1.4 Monitoring Policies for the Ontario Ministry of the Environment and Climate Change

POLICIES

Policy: MON-7-LB

Annual Report from the MOECC — Legally Binding Policies

By February 1 of each year, the MOECC shall provide the Source Protection Authority with a summary of implementation activities for the previous calendar year related to significant/moderate/low threat policies where the MOECC is the implementer.

This monitoring policy corresponds to significant/moderate/low threat policies:

- *WASTE-1-LB-PI-MC*
- *WASTE-3-LB-PI-MC*
- *WASTE-5-LB-PI-HR*
- *SEW-5-LB-PI-MC*
- *SEW-7-LB-PI-MC*
- *SEW-8-LB-PI-MC*
- *SEW-9-LB-PI/PA-MC*
- *SEW-10-LB-PI-MC*
- *SEW-13-LB-PI-MC*
- *SEW-15-LB-PI/PA-MC*
- *FUEL-2-LB-PI-MC*
- *PEST-3-LB-PI-MC*
- *NASM-2-LB-PI-MC*
- *AQUA-1-LB-PI-HR*

Policy: MON-8-NLB

Annual Report from the MOECC — Non-Legally Binding Policies

By February 1 of each year, the MOECC is requested to provide the Source Protection Authority with a summary of implementation activities for the previous calendar year related to non-legally binding policies where the MOECC is the implementer.

This monitoring policy corresponds to other permissible policies:

- *WASTE-6-NLB*
- *PEST-1-NLB*
- *PEST-2-NLB*
- *CORR-2-NLB*
- *PATH-2-NLB*

5.1.5 Monitoring Policies for the Ontario Ministry of Natural Resources and Forestry

POLICIES

Policy: MON-9-NLB

Use of Land or Water for Aquaculture — *Fish and Wildlife Conservation Act* Approvals

The Ontario Ministry of Natural Resources and Forestry is requested to notify the Source Protection Authority on an ongoing basis of any applications received and the decisions rendered related to the future use of land or water for aquaculture where it would be a moderate drinking water threat as described in Appendix B. This can be accomplished by adding the Source Protection Authority to the distribution list of future notices or approvals issued regarding proposals that are located in Intake Protection Zones with a vulnerability score of 9 or 10.
This monitoring policy corresponds to moderate threat policy AQUA-2-NLB.

Policy: MON-10-NLB

Pits and Quarries in Wellhead Protection Areas

The Ontario Ministry of Natural Resources and Forestry is requested to provide a response to the Source Protection Authority recommendation to implement measures to ensure that new pits and quarries located within Wellhead Protection Areas do not endanger the raw water supply of a municipal drinking water system.
This monitoring policy corresponds to other permissible policy PATH-3-NLB.

5.1.6 Monitoring Policies for the Ontario Ministry of Transportation

POLICIES

Policy: MON-11-NLB

Signs Along Provincial Roads

The Ontario Ministry of Transportation is requested to notify the Source Protection Authority when and where signs to identify the Wellhead Protection Areas and Intake Protection Zones have been installed along provincial roads.
This monitoring policy corresponds to other permissible policy EDU-2-NLB.

POLICIES

Policy: MON-12-LB

Recommendations to the TSSA and the Ministry of Consumer Services

The Source Protection Authority will communicate annually with the MOECC and/or TSSA and/or the Ministry of Consumer Services to:

- Obtain an update on progress related to the recommendations outlined in policy FUEL-3-NLB
- Obtain information about changes to legislation or programs that would impact policy FUEL-4-NLB
- Identify opportunities to partner on consistent messaging to the fuel sector

This monitoring policy corresponds to significant threat policies FUEL-3-NLB and FUEL-4-NLB.

Policy:MON-13-LB

Recommendations to Environment Canada

The Source Protection Authority will communicate annually with Environment Canada to obtain an update on progress related to the recommendations outlined in policy WASTE-6-NLB as well as information about the status of the *Code of Practice for the Environmental Management of Road Salts* and related initiatives.
This monitoring policy corresponds to significant threat policy SALT-3-LB and low threat policies WASTE-6-NLB and SALT-5-NLB.

Policy: MON-14-LB

"Protecting Regional Groundwater" Education Program

The Source Protection Authority will provide information on the implementation of the "Protecting Regional Groundwater" education and outreach program in the annual progress report to the Director at the MOECC.
This monitoring policy corresponds to other permissible policy EDU-6-NLB.

5.2 Monitoring Changing Circumstances

Background

In addition to monitoring implementation progress, the *Clean Water Act* states that policies to monitor moderate and low threats be included in the Plan where advisable to assist in preventing activities from becoming significant drinking water threats.

There are three ways an activity currently considered a low or moderate threat could become a significant drinking water threat:

- The nature of the activity could change
- The vulnerability score of the area could change
- The threat circumstance for that activity could change

Activity Changes

A key step with any new regulatory program is informing people about new requirements and where they apply. This enables people to know which policies they have to adhere to. The education and outreach policies in Section 4, in addition to the consultation process that was undertaken during policy development (see Section 2), will raise awareness about the policy requirements in this Plan. It is then up to policy implementers to ensure that those who are subject to policies are in compliance. Since activities can change (draining stormwater from a larger area, applying a different type of pesticide, storing a larger volume of fuel) there needs to be ongoing monitoring and enforcement by implementers because activities once considered moderate or low could reach significant threat circumstances. This situation does not warrant a policy, rather it is an implementation issue that will be addressed by implementing bodies.

Vulnerability Score Changes

As new technical information becomes available and new municipal drinking water systems are established, vulnerability scores will change. This will affect the size, shape and number of areas where activities are considered a significant threat and ultimately where policies will apply. Source Protection Authorities, working with their partner municipalities, are responsible for identifying new technical information that warrants amending an Assessment Report. This could include bringing in a new Wellhead Protection Area or Intake Protection Zone or updating the delineations and vulnerability scores of an existing one. This situation does not warrant a policy, rather the Source Protection Authorities will work with the MOECC on an ongoing basis to identify information that warrants an Assessment Report revision.

Circumstance Changes

The MOECC created the Provincial Tables of Circumstances which describe under what circumstances and in what areas an activity is considered a low, moderate and significant threat. This table could be revised in future and if so, the process will entail public consultation just as it did when the tables were being developed.

In the tables there are three unique threat circumstances that are based on local characteristics in a Wellhead Protection Area or Intake Protection Zone, they are livestock density, percentage of managed lands and percentage of impervious surface. As these circumstances are subject to change and would not trigger an Assessment Report amendment, the Source Protection Committee decided a policy was warranted.

Policy Intent

The Source Protection Committee developed a policy to monitor land use factors that influenced three threat circumstance calculations which are responsible for determining the threat level of certain activities. The policy addresses:

- Monitoring changes to livestock density and managed lands which would impact where the application of commercial fertilizer and the application of NASM that does not contain material from a meat plant or sewage works would be considered a significant threat.
- Monitoring changes in the amount of impervious surfaces which would impact where the application of road salt would be considered a significant threat.

Land use changes such as a large increase in paved areas or more intensive farming operations would mean that these calculations should be regenerated. This may result in the identification of additional activities that have the potential to be significant drinking water threats. The appropriate significant threat policies could then be applied to prevent the activities from becoming significant drinking water threats.

POLICIES

Policy: MON-15-NLB

Review of Managed Lands, Livestock Density and Impervious Surface Calculations

On an annual basis, the Source Protection Authority shall consider the need to recalculate:

- The managed land and livestock density within the Wellhead Protection Areas with a vulnerability score of 10 and the Intake Protection Zones with vulnerability scores of 8 to 10.
- The impervious surface area within Wellhead Protection Areas with a vulnerability score of 10 and Intake Protection Zones with vulnerability scores of 9 or 10.

6 Implementing the Plan

Achieving Source Protection

The policies in this Plan were created in a collaborative and consultative manner that involved substantial input and guidance from municipalities, implementers, sector experts and affected residents and businesses. The result is effective policies that are also practical and cost-efficient to implement. This same spirit of collaboration, cooperation and shared dedication to protecting local sources of drinking water will be required for successful implementation of the policies.

What You Will Find In this Section

Successful implementation will depend on several important factors which are outlined in this section:

- A clear understanding of responsibilities
- Partnerships and collaboration
- Adherence to timelines
- An annual review of progress
- Future improvements to the Plan
- Provincial funding for implementation

6.1 Responsibilities

Most of the legally binding policies in this Plan are implemented by provincial ministries and municipalities. A variety of other non-legally binding policies that would greatly contribute to the protection of drinking water are also directed at provincial ministries, municipalities and other agencies and bodies. Source Protection Authorities will continue to oversee the source protection process by communicating with and supporting implementers as required. They are also responsible for compiling feedback from the monitoring policies and using it to prepare an annual progress report for the MOECC. Finally, for implementation to be truly successful, residents and businesses must take advantage of education and incentive programs and work with implementing bodies to ensure compliance with policies.

Below are summaries of key responsibilities for each type of implementer. For a complete list of the policies each individual implementer is responsible for (e.g., specific municipalities, provincial ministries) refer to Appendix C2. This Appendix lists policy codes by their implementing body and compliance or target date. An explanation of the legal effect of the policies can be found in Section 2.5 and in Appendix A.

Certain **Municipalities** are responsible for:

- Using their municipal planning tools (such as zoning by-laws) to prohibit future drinking water threat activities.
- Appointing a Risk Management Official to review Planning Act and Building Code applications, negotiate Risk Management Plans for existing and future drinking water threat activities and prohibit other future drinking water threat activities.
- Updating their Official Plans and zoning by-laws to conform with certain policies in this Plan.
- Updating other municipal documents as appropriate.
- Implementing or updating initiatives related to municipal operations such as Road Salt Management Plans, Sanitary Sewer Maintenance Programs and Emergency Response Plans.
- Undertaking education and outreach initiatives.
- Reporting on implementation progress as required by the monitoring policies.
- Informing the Source Protection Authority of new technical information that could warrant an Assessment Report amendment (e.g., new municipal drinking water system, changes that could alter vulnerability scores).

Additional Recommendations for Municipalities

In addition to the policies in this Plan, municipalities are also strongly encouraged to:

- Acquire land around sources of municipal drinking water (primarily Wellhead Protection Areas A and Intake Protection Zones scored 10) and manage it in a way that protects source water. Under Section 58 of the *Planning Act* municipalities can develop a land acquisition strategy.
- Acquire the 5 percent parkland when considering development near sources of municipal drinking water (primarily Wellhead Protection Areas and Intake Protection Zones scored 8 or higher) rather than cash-in-lieu. Such direction can be included in Official Plans.
- Ensure that the review process for new residential development and lot creation considers the protection of municipal drinking water sources (considerations should include lot size, configuration and characteristics).
- Maintain zoning that prohibits the establishment of drinking water threats.
- Maintain other municipal requirements that help achieve the objectives of this Plan.
- Promote low impact development such as permeable pavement and green roofs which help protect water quality and quantity.

continued . . .

- Consider the information in the technical Assessment Report as well as the policies in this Plan when selecting sites for new municipal wells.
- Provide low interest long-term loans to help property owners with the cost of connecting to municipal sewer services.
- Update/establish sewer use bylaw to limit the concentration of DNAPLs and organic solvents (see Appedix B) in sewage that is discharged to the municipal sewage/stormwater system.

Certain **Provincial ministries** are responsible for:
- Using their regulatory Prescribed Instruments (such as Certificates of Approval and Environmental Compliance Approvals) to manage existing drinking water threat activities and manage or prohibit future ones.
- Making changes to certain provincial programs and procedures to close regulatory gaps and improve compliance assurance.
- Reporting on implementation progress as required by the monitoring policies.

Source Protection Authorities are responsible for:
- Establishing a region wide education and outreach program and assisting municipalities with the implementation of more focused education initiatives.
- Working with municipalities, the Ministry of Natural Resources and Forestry and Parks Canada to identify appropriate locations for signs along municipal roads and recreational waterways and securing approvals for their installation.
- Assisting municipalities and other bodies with implementation upon request such as developing templates and standardized wording.
- Compiling the information received from the monitoring policies and preparing annual progress reports for the MOECC.

Other agencies and bodies are strongly encouraged to:
- Make changes to certain programs and procedures to close regulatory gaps and improve compliance assurance.
- Report on implementation progress as requested by the monitoring policies.

Certain **residents and businesses** are responsible for:
- Participating in education initiatives to become aware of where drinking water comes from, the importance of protecting it and how easily they can modify their own actions to help protect it.
- Taking advantage of incentive programs to implement good stewardship practices.
- Working with implementing bodies (ministries, municipalities, source protection authorities) to ensure they are in compliance with mandatory policies.

6.2 Partnerships and Collaboration

While each policy has an implementer who is responsible for ensuring that the intent of the policy is accomplished, implementing bodies are encouraged to forge partnerships and build on existing programs to find efficiencies. There are many agencies and groups who have existing resources such as expert staff, information and materials, and established networks that will be valuable during implementation. Leveraging these existing resources would not only save money and reduce duplication but would better serve people who are subject to policies. An example are staff at OMAFRA and MOECC who administer the *Nutrient Management Act.* These staff are knowledgeable about agricultural operations and best

management practices and they have established relationships with the local agricultural community. It seems appropriate that there would be a role for these experts in establishing Risk Management Plans for agricultural operations in the Mississippi-Rideau region. Education initiatives are another area where municipalities and Source Protection Authorities can work closely with existing programs and groups to efficiently reach residents, farmers and businesses.

6.3 Timelines

Every legally binding policy in this Plan has a date by which it must be implemented and every non-legally binding policy has a target date. These dates were established in consultation with implementing bodies to ensure that they are reasonable and achievable. Compliance and target dates in this Plan range from immediately upon the Source Protection Plan taking effect to within five years of the Plan taking effect. While the dates are usually indicated in the policy wording, where no date is indicated, the policy is in effect immediately when the plan takes effect. The effective date of this Plan can be found on the inside front cover and a summary of compliance timelines and target dates can be found in Appendix C2. Compliance and target dates for monitoring policies are either indicated in the wording of the monitoring policy or in the wording of the policy it corresponds to.

6.4 Annual Progress Report

By May 1 of each year, the Source Protection Authority must submit a progress report to the Director of the Source Protection Programs Branch of the MOECC. Subsection 46(1) of Ontario Regulation 287/07 sets out the following mandatory content for this annual progress report:

- Describe 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.
- Describe the results of any monitoring program (mandatory monitoring policies).
- Describe the extent to which the objectives set out in the Source Protection Plan are being achieved.
- Include other information such as descriptions of any failure to comply and a summary of the Risk Management Official's reports.

Most of the information needed to complete these progress reports will be generated by the monitoring policies outlined in Section 5. These policies require or request implementing bodies to provide feedback to the Source Protection Authority about their implementation progress. Additional information may also be considered by the Source Protection Authority when completing their progress report, information such as raw water intake data collected by municipalities under the *Safe Drinking Water Act.* In addition, Section 87 of the *Clean Water Act* includes provisions that allow the Source Protection Authority to request additional information (such as technical studies and records) related to a drinking water threat from certain public bodies if required.

6.5 Updating The Plan

Source Protection Plans are meant to be living documents that are reviewed and improved periodically. These reviews will be based on feedback received during implementation from implementing bodies, affected individuals and businesses, interested stakeholders and the public. Much of this feedback will be captured in the annual progress report which will begin to highlight policies that may need to be reviewed or amended. Any future revisions to policies or the Plan will be subject to consultation requirements and will follow the same transparent and participatory process that was used to develop this Plan. As outlined in the Explanatory Document, all available information, including input from experts, stakeholders and the public was used to create policies so they are effective, practical, cost conscious and widely accepted.

6.6 Provincial Funding for Implementation

While the MOECC funded the development of Assessment Reports and Source Protection Plans, the need for continued provincial funding is just as great as policy implementation begins. Municipalities have the responsibility of implementing most of the legally binding policies in this Plan and they have limited resources. While the Committee was diligent in creating cost-effective policies that are reasonable to implement, financial support is needed to help municipalities and Source Protection Authorities successfully fulfill their implementation responsibilities. The most critical need is short-term provincial funding to establish Risk Management Plans for existing activities within the first three years of the Plan taking effect.

Under the *Clean Water Act* the MOECC also created and funded the Ontario Drinking Water Stewardship Program. Since 2008, this program has provided millions of dollars to residents, businesses and farmers to undertake good stewardship practices near sources of municipal drinking water. Renewed funding for this program beyond 2012 is essential to help people implement new policy requirements and ensure that financial responsibility is shared among everyone who benefits from safer sources of drinking water. Most important is funding for people who must adhere to new standards for an existing activity. Provincial and federal funding of other education and incentive programs that promote stewardship, such as the Environmental Farm Plan and Well Aware, is also encouraged.

Glossary

Activity
An action that has the potential to contaminate or deplete a source of drinking water. Activities are prescribed in the Table of Drinking Water Threats: *Clean Water Act,* 2006 dated December 12, 2008 and in the Technical Rules: Assessment Report. Generally they include actions such as storage, handling and application of potential contaminants.

Agricultural Source Material (ASM)
See definition in section 3.9 on page 58.

Aquifer
A geological formation (typically porous material, such as sand or gravel, or fractured rock) that stores and is capable of transmitting water in sufficient quantities to serve as a sustainable source of water supply.

Assessment Report
A technical document that is prepared by a source protection committee under Section 15 of the *Clean Water Act,* 2006 to record its knowledge of a source protection area, and to rank risks to drinking water within that area. Each report is approved by the Ontario Ministry of the Environment and Climate Change.

BTEX
An acronym for benzene, toluene, ethyl benzene and xylene. These compounds are some of the volatile organic compounds (VOCs) found in petroleum derivatives such as gasoline.

Circumstances
Circumstances specify details about what makes an activity a threat. See Appendix B for a summary of the Drinking Water Threat Circumstances used to determine significant drinking water threats. The details included in the circumstances are often unique to the type of threat and can include several different factors such as chemical being used, storage volumes or application rates.

Committee
See Source Protection Committee.

Contaminant
Biological or chemical substances (normally absent in the environment) which, in sufficient concentration, can adversely affect living organisms through air, water, soil and food.

Contamination
The mixing of harmful elements, compounds or microorganisms with surface or groundwater. Contamination can occur naturally (e.g., an aquifer flowing through mineral deposits that contain heavy metals) or through human activity (e.g., sewer water flowing into a river). Nutrients, such as nitrogen and phosphorus, can also cause water contamination when they are present in excessive amounts.

Custom Applicator's Storage Yard
Custom farm work of any type refers to ownership or operation of farm equipment for hire on another person's farm. Custom Applicator refers to a person or business that applies pesticide for a fee. The Custom Applicator's Storage Yard where the pesticide is stored prior to application would store larger volumes of pesticide than a typical farm yard.

Dense Non-Aqueous Phase Liquid (DNAPL)
A liquid which is denser than water and does not dissolve in water. The term is most often used to describe contaminants in groundwater, surface water and sediments that sink below the water table when spilled and only stop when they reach impermeable bedrock. Their penetration into an aquifer makes them difficult to locate and remediate.

Drinking Water
Drinking water, or potable water, is water pure enough to be consumed or used with low risk of immediate or long term harm.

Drinking Water System
A system of works that is established for the purpose of providing users of the system with drinking water. It includes:
a) anything used for the collection, production, treatment, storage, supply or distribution of water;
b) anything related to the management of residue from the treatment process or the management of the discharge of a substance into the natural environment from the treatment system; and
c) a well or intake that serves as the source or entry point of raw water supply for the system.

Drinking Water Threat
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 drinking water threats.

Environmental Farm Plan
A program that is delivered locally through the Ontario Soil and Crop Improvement Association with expertise provided by the Ontario Ministry of Agriculture, Food and Rural Affairs. It is a voluntary educational program for farmers delivered through local workshops. Participants are provided instruction on how to progress through the risk assessment and action plan development contained in the farm plan workbook. Limited funds (either a 50/50 or 30/70 cost share depending on project) are available to help address areas identified in the plan as needing improvement.

Existing and Future Activity
See definition in Section 3 on page 22.

Groundwater
Water beneath the earth's surface, often between saturated soil and rock, which supplies wells and springs.

Highly Vulnerable Aquifer (HVA)
It is one of four types of vulnerable areas identified in the *Clean Water Act.* It is an aquifer on which external sources have or are likely to have a significant adverse effect, and includes the land above the aquifer. See section 2.2 on page 10 for more information.

Hydrogeologist
Is a Geoscientist who specializes in the flow dynamics of and solute transport in groundwater as these relate to the host geological media.

Intake Protection Zone (IPZ)
It is one of four types of vulnerable areas identified in the *Clean Water Act.* It is the area upstream of a surface water intake where land use activities have the potential to affect the quality of water that flows into the intake. See section 2.2 on page 10 for more information.

Integrated Pest Management
A process that uses a variety of tools, including best practices, mechanical and biological methods, along with pesticides when necessary, to manage pest populations. If not subject to Ontario's Cosmetic Pesticide Ban an organization must prepare an annual report on how they minimized their pesticide use and make the report accessible to the public. Also, they must hold a public meeting annually to present the report.

Liaison Member
Are those individuals who fulfill the intent of Section 19 of Ontario Reg. 288/07 to act as a liaison between the Committee and other bodies.

Low Drinking Water Threat
Is a drinking water threat that, according to a risk assessment under the *Clean Water Act,* poses or has the potential to pose a low risk to source water. See explanation in Section 2.1 on page 8.

Moderate Drinking Water Threat
Is a drinking water threat that, according to a risk assessment under the *Clean Water Act,* poses or has the potential to pose a moderate risk to source water. See explanation in Section 2.1 on page 8.

Municipal Residential Drinking Water System
A drinking water system or part of a drinking water system:
a) that is owned by a municipality or by a municipal service board established under the *Municipal Act,* 2001 or a city board established under the *City of Toronto Act,* 2006;
b) that is owned by a corporation established under sections 9, 10 and 11 of the *Municipal Act,* 2001 in accordance with section 203 of that Act or under sections 7 and 8 of the *City of Toronto Act,* 2006 in accordance with sections 148 and 154 of that Act;
c) from which a municipality obtains or will obtain water under the terms of a contract between the municipality and the owner of the system; or
d) that is in a prescribed class.

Nutrient
Something that nourishes and promotes growth.

Nutrient Unit
See definition in Section 3.9 on page 59.

Ontario Drinking Water Quality Standards
Is the Ontario Regulation 169/03 (Ontario Drinking Water Quality Standards) made under the *Safe Drinking Water Act,* 2002.

Pathogen
A microbe or microorganism such as a virus, bacterium, prion, or fungus that causes disease in its animal or plant host.

Permit to Take Water
A normal permit issued by the Ontario Ministry of the Environment and Climate Change under section 34 of the *Ontario Water Resources Act* (R.R.O. 1990) to provide permission for an individual or company to take more than 50,000 litres of water in one day.

Phase I Maintenance Inspection (for on-site sewage systems)
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;
   ii. Signs of hydraulic failure (breakout of sewage, wetting conditions in the leaching
   iii. bed area);
   iv. Condition of surface vegetation; and
   v. 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 Maintenance Inspection (for on-site sewage systems)
A Phase II Inspection is required when:

- The Phase I maintenance inspection has identified that the septic system is at risk of future malfunction or failure, or
- The Phase I inspection detected a malfunction or failure, but did not reveal the reason (e.g., location or nature) of malfunction or failure.

These inspections may include examinations of the following elements:

- The depth of the sludge layer and the distance from 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; and
- The condition of the effluent filter, if utilized.

Prescribed Instruments
Are provincially issued documents with specific rules that govern activities on a specific property. They often contain rules to protect human health and the environment and may include licenses, permits, approvals, orders or other legal provincial documents. They are listed in the *Clean Water Act,* 2006 (Ontario Regulation 287/07) and fall under six Acts (*Environmental Protection Act; Ontario Water Resources Act; Pesticides Act; Safe Drinking Water Act; Aggregate Resources Act;* and *Nutrient Management Act).* Prescribed instruments can be relied upon to achieve the desired outcome for addressing a threat because the *Clean Water Act,* 2006 mandates conformity of these instruments to certain policies in the Plan.

Principal Authority
Responsible for enforcing the administrative and technical requirements of Ontario's *Building Code Act,* 1992 and Building Code (including Part 8 which regulates on-site sewage systems). Principal authorities can include municipalities, Conservation Authorities and health units.

Provincial Tables of Circumstances
A document issued by the Ontario Ministry of the Environment and Climate Change that identifies the circumstances under which each prescribed drinking water threat is considered a significant, moderate and low drinking water threat.

Public Body
Public body is defined in the *Clean Water Act* as:
a) a municipality, local board or Conservation Authority;
b) a ministry, board, commission, agency or official of the Government of Ontario; or
c) a body prescribed by the regulations or an official of a body prescribed by the regulations.

Raw Water
Raw water is natural water found in the environment, such as groundwater and surface water, that has not been treated.

Risk Management Plan
See definition in Section 3 on page 23.

Sewage Works

Stormwater from a stormwater retention pond:
Rainwater runoff, water runoff from roofs, snowmelt and surface runoff. Stormwater ponds provide quantity and quality control by capturing this excess runoff and allowing time for settling of suspended pollutants.

Sanitary sewers and related pipes:
Pipes and related infrastructure (such as pumps) that collect sanitary waste from serviced buildings in an area.

Sewage treatment plant effluent discharges (including lagoons):
Sewage treatment plants release treated wastewater that is called effluent. Effluent can be directly released to a watercourse or waterbody. Effluent from a lagoon is usually scheduled for release during high flows.

Storage of sewage:
A treatment tank or storage tank that is part of a sewage works within the meaning of the *Ontario Water Resources Act;* the tank treats or stores sanitary sewage containing human waste.

Combined sewer discharge from a stormwater outlet to surface water:
See definition in Section 3.2.5 on page 37.

Sewage treatment plant by-pass discharge to surface water:
Sometimes the capacity at a sewage treatment plant is overwhelmed and partially treated or untreated sanitary waste is released into the receiving water body. This is generally as a result of an extreme wet weather event where the sanitary sewer network is not completely isolated from stormwater. Combined sewers or sewer networks with inflow or infiltration issues are the root causes of bypasses.

Industrial effluent discharges:
Industrial processes often produce industrial sewage requiring industrial sewage works to collect, transmit, treat or dispose of it. The resulting effluent, when discharged to surface water, can be a significant drinking water threat.

Septic system:
A system that stores and/or treats human waste on-site (not including a sewage treatment plant).

Significant Drinking Water Threat
Is a drinking water threat that, according to a risk assessment under the *Clean Water Act,* poses or has the potential to pose a significant risk to source water. See explanation in Section 2.1 on page 8 and Section 3 on page 23.

Significant Groundwater Recharge Area (SGRA)
It is one of four types of vulnerable areas identified in the Clean Water Act. It is the area where an aquifer is replenished through the infiltration of rainfall and snowmelt and the seepage from lakes, streams and wetlands, or from built structures such as storm water management systems. See section 2.2 on page 10 for more information.

Source Water Protection
A program of education, stewardship, planning, infrastructure, and regulation activities that together serve to help prevent the contamination or overuse of source water.

Source Protection Area
Those lands and waters that have been defined under Ontario Regulation 284/07 as the "study area" for an assessment report and a source protection plan under the *Clean Water Act,* 2006. See section 1.3 on page 3 for more information.

Source Protection Authority
A Conservation Authority or other person or body that is required to exercise powers and duties under the *Clean Water Act,* 2006. See section 1.4 on page 4 for more information.

Source Protection Committee
A group of multi-stakeholder individuals who have been appointed under the *Clean Water Act,* 2006 by a Source Protection Authority to coordinate source protection activities for a source protection area. See section 1.5 on page 4 for more information.

Source Protection Plan
A document that is prepared by a source protection committee under Section 22 of the *Clean Water Act,* 2006 to direct source protection activities in a source protection area. Each plan is approved by the Minister of the Environment.

Source Protection Region
Two or more source protection areas that have been grouped together under Ontario Regulation 284/07. See section 1.3 on page 3 for more information.

Source Water
Untreated groundwater or surface water that is used to supply a drinking water system.

Surface Water
Water that is present on the earth's surface, often found in rivers, lakes, wetlands, or ponds.

Time of Travel
An estimate of the time required for a particle in the water to move from a specific point into a well or intake.

Transport Pathways
These are natural or human-made routes where water can flow (e.g., sewer discharge pipes, drainage ditches, utility trenches, transportation corridors, small tributary channels, fractured rock, and sand lenses) towards a drinking water well or intake.

Vulnerable Area
There are four types of vulnerable areas identified in the *Clean Water Act:* significant groundwater recharge area, highly vulnerable aquifer, intake protection zone, and wellhead protection area.

Waste Disposal Sites

Application of untreated septage to land:
Hauled sewage applied to land includes wastes from septic tanks, holding tanks and portable toilets from residential, commercial and industrial sources.

Storage, treatment and discharge of tailings from mines:
Is the storage of "tailings," which may or may not be mixed with water that remains after processing of ore, ore concentrate or mined materials to extract marketable components such as metals, minerals or bitumen. This could include ground rock material, sand, clay, process chemicals or residual metals, minerals or bitumen, petroleum coke (petcoke) and sulphur.

PCB (Polychlorinated biphenyl) waste storage
The storage of PCB waste defined as PCB equipment, PCB liquid or PCB material.

Landfarming of petroleum refining waste
The biodegradation of petroleum refining wastes by natural occurring soil bacteria by means of controlled application of the wastes to land followed by periodic tilling.

Liquid industrial waste injection into a well
Is both liquid waste and industrial waste that has a slump of more than 150 millimeters using the test methods for the Determination of Liquid Waste (slump test) set out in Schedule 9 of Ontario Regulation 347.

Landfilling (hazardous waste)
Disposal of waste by deposit, under controlled conditions, on land or on land covered by water, and includes compaction of the waste into a cell and covering the waste with cover materials at regular intervals. Hazardous wastes includes the following: hazardous industrial wastes, acute hazardous waste chemical (includes commercial waste chemical), hazardous waste chemical, ignitable waste, corrosive waste, reactive waste (except radioisotope as per the Canadian Nuclear Safety Commission), pathological waste, leachate toxic waste or PCB waste.

***Landfilling* (municipal waste)**
Is any waste whether or not it is owned, controlled or managed by a municipality (except hazardous waste, liquid industrial waste or gaseous waste) and solid fuel derived in whole or in part from waste.

Landfilling (solid non-hazardous industrial or commercial waste)
Non-Hazardous industrial waste means industrial waste that is not liquid industrial, hazardous or asbestos waste. Commercial waste includes asbestos waste.

Storage of hazardous waste at disposal sites
Hazardous waste or liquid industrial waste stored at or below grade that has the potential to discharge waste into surface and groundwater.

Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste
Include small quantities of hazardous waste, storage of empty hazardous waste containers and the storage of residues or contaminated materials from the clean-up of a small spill.

Watershed
An area of land from which surface runoff, including water, sediments, nutrients and contaminants, drains into a common water body, such as a lake, river, stream, creek or estuary.

Well Aware
A program of Green Communities Canada that encourages Ontario's residential well owners to protect their wells and common groundwater supplies.

Wellhead Protection Area (WHPA)
It is one of four types of vulnerable areas identified in the *Clean Water Act.* It is the area around a wellhead where land use activities have the potential to affect the quality of water that flows into the well. See section 2.2 on page 9 for more information.

Figures (based on 2011 Assessment Reports)

Mississippi-Rideau Source Protection Plan 2013

Eastern Ontario Source Protection Areas / Regions

Figure 1

Québec

New York State

COUNTY OF RENFREW

CITY OF OTTAWA

UNITED COUNTIES OF PRESCOTT AND RUSSELL

UNITED COUNTIES OF STORMONT, DUNDAS AND GLENGARRY

COUNTY OF LANARK

UNITED COUNTIES OF LEEDS AND GRENVILLE

COUNTY OF FRONTENAC

COUNTY OF HASTINGS

COUNTY OF LENNOX AND ADDINGTON

CITY OF KINGSTON

CITY OF BELLEVILLE

CITY OF QUINTE WEST

CITY OF PRINCE EDWARD COUNTY

Arnprior, Fitzroy Harbour, Galetta, Dunrobin, Kinburn, Marathon, Carp, Pakenham, Almonte, Appleton, Ashton, Munster, Richmond, Carleton Place, Dwyer Hill, Manotick, Greely, Metcalfe, Vars, Clarence Creek, Bourget, Monkland, Avonmore, Finch, Cornwall, Lanark, Plevna, McDonalds Corner, Balderson, Perth, Glen Tay, Port Elmsley, Burritts Rapids, Oxford Mills, Kemptville, Bedell, Merrickville, Bishops Mills, Carretton, South Branch, North Augusta, Maberly, Scotch Line, De Witts Corners, Stanleyville, Sharbot Lake, Bolingbroke, Crow Lake, Oconto, Tichborne, Westport, Newboro, Crosby, Portland, Greenbush, Addison, Farmton, Fairfield, Maitland, Brockville, Elgin, Kingston, Belleville, Trenton

17, 417, 7, 36, 15, 43, 416, 401, 38, 29, 42

Source Protection Areas / Regions Contact Information

Cataraqui Source Protection Area
www.cleanwatercataraqui.ca
1-877-956-2722

Mississippi-Rideau Source Protection Region
www.mrsourcewater.ca
1-800-267-3504

Quinte Source Protection Region
www.quintesourcewater.ca
613-968-3434

Raisin-South Nation Source Protection Region
www.yourdrinkingwater.ca
1-866-938-3611

LEGEND

- City/Town
- Major Road
- Upper Tier Municipalities
- River / Stream
- Water
- Conservation Authority Boundary

0 5 10 20 30
Kilometres

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

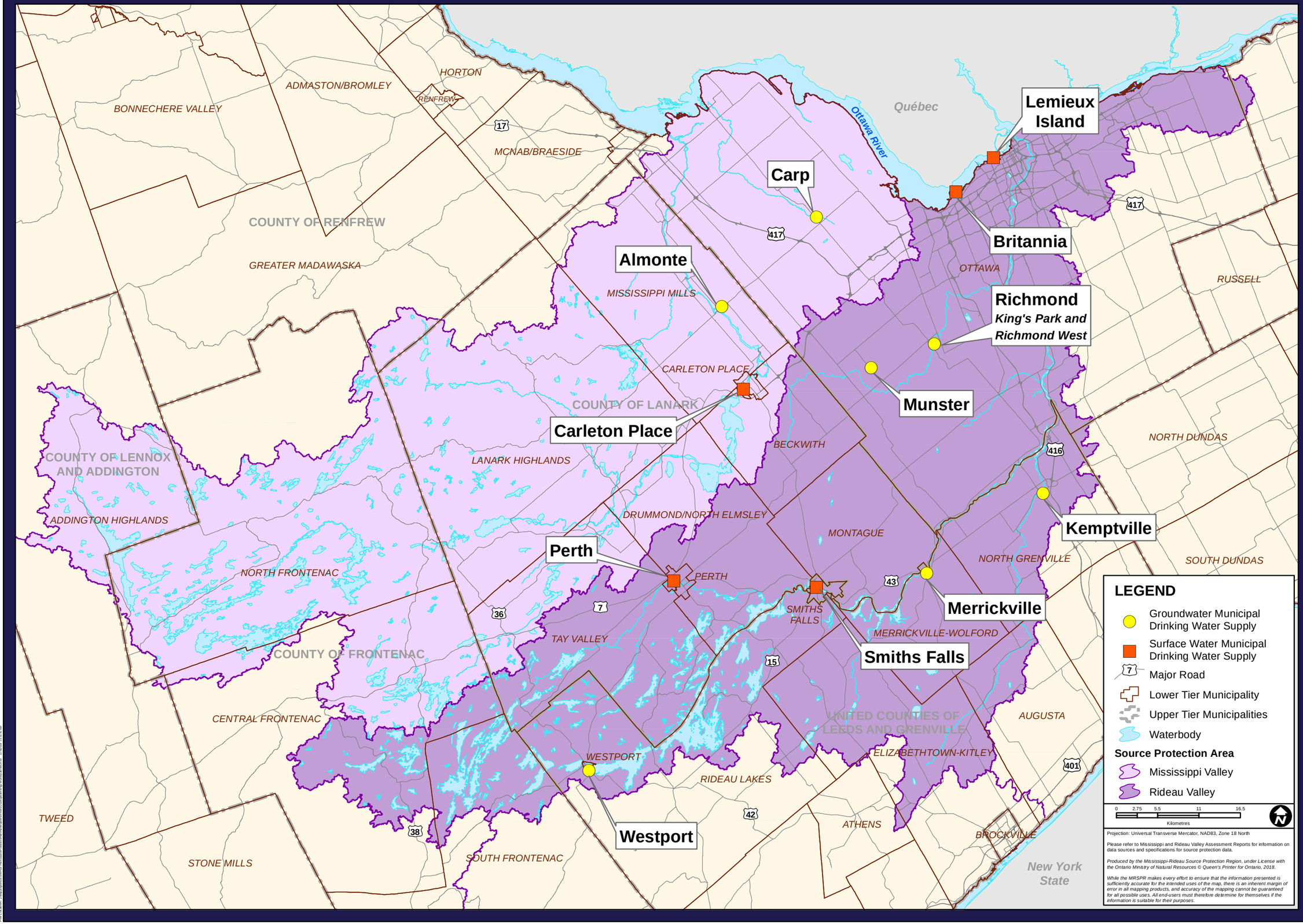
Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

While the MRSPR makes every effort to ensure that the information presented is sufficiently accurate for the intended uses of the map, there is an inherent margin of error in all mapping products, and accuracy of the mapping cannot be guaranteed for all possible uses. All end-users must therefore determine for themselves if the information is suitable for their purposes.

MAP LOCATION: Z:\Mapping\2013\SWS\13Plan\SourceProtectPlan\Maps\SP13_ECCA_SPArea_v2.mxd

Mississippi-Rideau Source Protection Plan 2013

Mississippi-Rideau Source Protection Region
Municipal Drinking Water Systems



LEGEND

- Groundwater Municipal Drinking Water Supply
- Surface Water Municipal Drinking Water Supply
- Major Road
- Lower Tier Municipality
- Upper Tier Municipalities
- Waterbody

Source Protection Area

- Mississippi Valley
- Rideau Valley

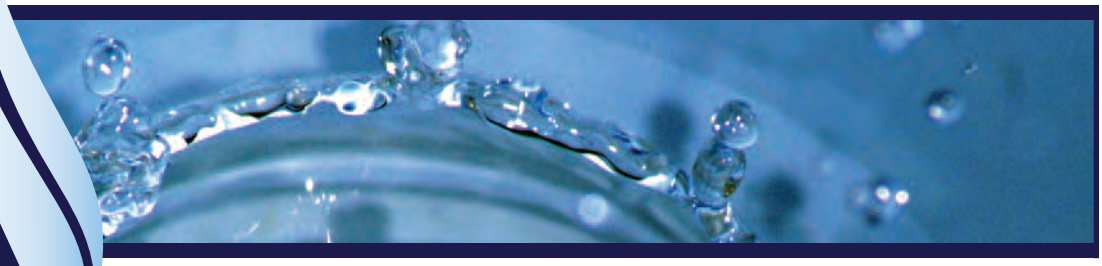
0 2.75 5.5 11 16.5
Kilometres

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

Figure 2

Schedules (based on 2011 Assessment Reports)



A Almonte Wellhead Protection Area
B Carp Wellhead Protection Area
C Kemptville Wellhead Protection Area
D Merrickville Wellhead Protection Area
E Munster Wellhead Protection Area
F Richmond Wellhead Protection Areas
G Westport Wellhead Protection Area
H Carleton Place Intake Protection Zone
I Ottawa Intake Protection Zones
J Perth Intake Protection Zone
K Smiths Falls Intake Protection Zone
L Highly Vulnerable Aquifers
M Significant Groundwater Recharge Areas

Mississippi-Rideau Source Protection Plan 2013

Almonte Wellhead Protection Area

Schedule A

TOWN OF MISSISSIPPI MILLS

WHPA-A

WHPA-B

WHPA-C

8

10

Mississippi River

James Naismith Way
Martin Street
County 29 Road
11A Road
March Road
Greystone Crescent
Greystone Drive
Stonehome Crescent
Golden Line Road
12 Road
Ottawa Street
Union Street
Houston Drive
Harold Street
Peterson Street
Princess Street
Main Street
Spring Street
Strathburn Street
Hope Street
Malcolm Street
Gleeson Road
Christian Street
Elgineria Street
Brae Street
Water Street
Ann Street
Old Almonte Road
8 Road
Naismith Drive
Jamieson Street
St. George Street
King Street
Country Street
Smart Street
Camelon Road
Old Perth Road
Wolf Grove Road
Duncan Drive
Country 29 Road

LEGEND

- Municipal Well
- Road
- Railway
- Town of Almonte Boundary
- Municipal Boundary
- Assessment Parcel
- Stream
- Water
- Almonte Sewage Lagoons

Wellhead Protection Area

- WHPA-A
- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored 8
- WHPA Scored less than 8

0 125 250 500 750
Meters

N

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

MAP LOCATION: Z:\Projects\WSSPP\SPP\Data\Source Protection Area\Maps\SDS\Almonte\Almonte.mxd

Mississippi-Rideau Source Protection Plan 2013

Carp Road
Shieldgrove Drive
Langstaff Drive
Cavanagh Drive
Glenricastle Drive
Robertlee Drive
Donald B. Munro Drive
Carp River

WHPA-C
WHPA-B
WHPA-A

8
10
8

LEGEND

- Municipal Well
- Road
- Railway
- Village of Carp Boundary
- Municipal Boundary
- Assessment Parcel
- Stream
- Water

Wellhead Protection Area

- WHPA-A
- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored 8
- WHPA Scored less than 8

0 35 70 140 210
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

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While the MRSPR makes every effort to ensure that the information presented is sufficiently accurate for the intended uses of the map, there is an inherent margin of error in all mapping products, and accuracy of the mapping cannot be guaranteed for all possible uses. All end-users must therefore determine for themselves if the information is suitable for their purposes.

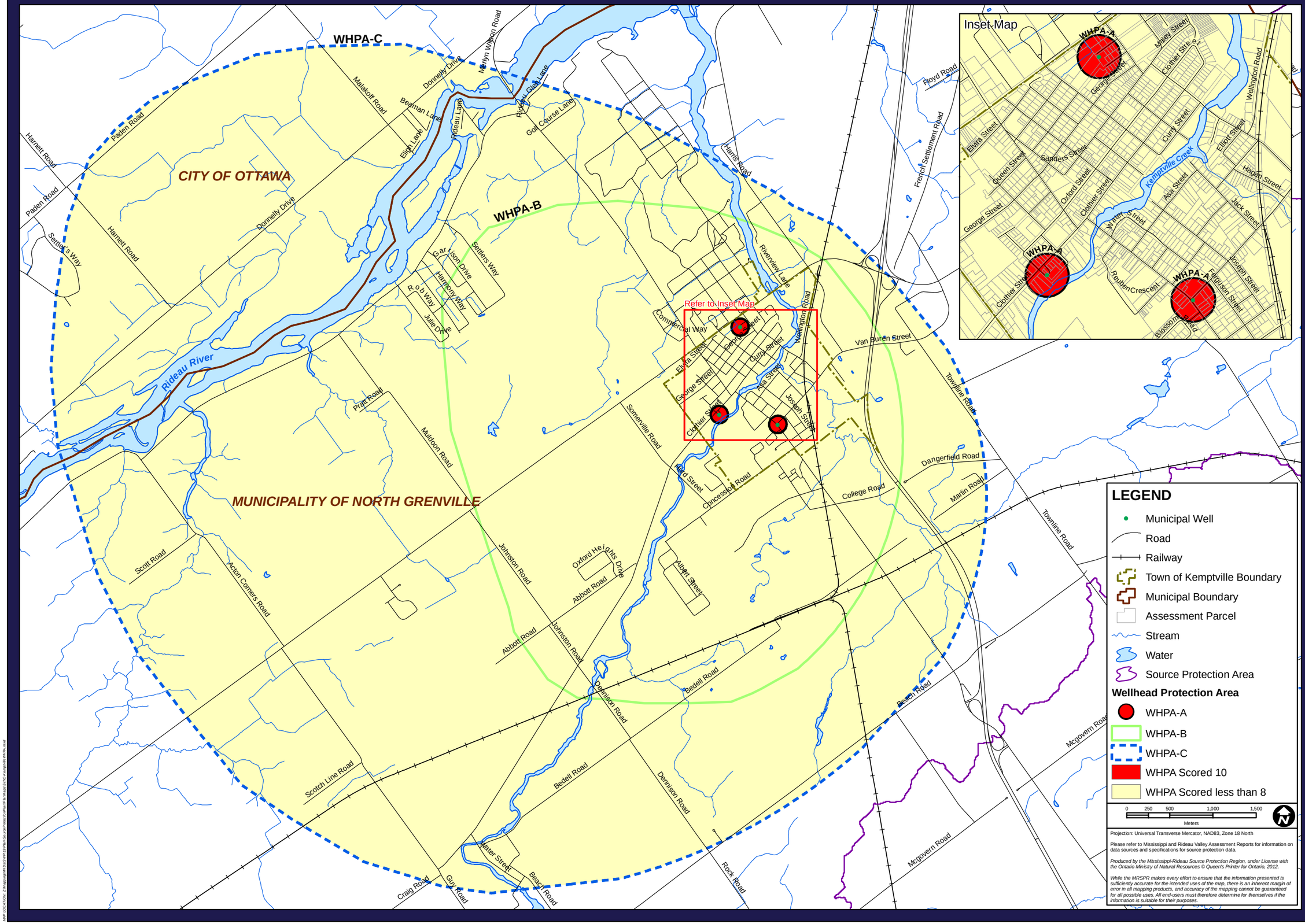
Carp
Wellhead Protection Area
Schedule B

\\GIS\GIS2_Projects\Mississippi Rideau\Source Protection Plan\Maps\Schedule B\Carp\Carp.mxd

Mississippi-Rideau Source Protection Plan 2013

Kemptville Wellhead Protection Area

Schedule C



LEGEND

- Municipal Well
- Road
- Railway
- Town of Kemptville Boundary
- Municipal Boundary
- Assessment Parcel
- Stream
- Water
- Source Protection Area

Wellhead Protection Area

- WHPA-A
- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored less than 8

0 250 500 1,000 1,500

Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

M:\MRSPR\GIS\ESRI\MXD\Kemptville\Kemptville_WHPA_Schedule_C.mxd

Mississippi-Rideau Source Protection Plan 2013

Merrickville Wellhead Protection Area

Schedule D

Inset Map

TOWNSHIP OF MONTAGUE

TOWN OF SMITHS FALLS

TOWNSHIP OF RIDEAU LAKES

VILLAGE OF MERRICKVILLE-WOLFORD

WHPA-C

WHPA-B

Rideau River

Refer to Inset Map

Present Road
Nolan's Road
Douglas Road
Van Exan Road
McConnell Road
Burchill Road
Buffam Road
Richardson Road
Roger Stevens Drive
Code Drive
Matheson Drive
Guthrie Road
Bolker Boulevard
Rosedale Road
Highway 15
Harper Condie Road
Bridge Street
Beckwith Street
Rideau Avenue
Lombard Street
Wiltsie Road
McCrea Road
Highway 43
Broad Street
Reid Street
St Lawrence Street
Hf Mclean Road
Old Slys Road
Jasper Avenue
Eric Hutcheson Road
Jasper Road
Acton Drive
Hutton Road
Hawley Road
Kilmarnock Road
Cottage Road
Rideau River Road
Beek Road
Jim Mar Lane
Corktown Road
Lloyd Landing Lane
Obrien Road
Putnam Road
Gemmell Road
Roses Bridge Road
Sturgess Road
Bevis Lane
Salmon Sideroad
Roseville Lane
Abbott Street
Old Main Street
Cedar Road
Merrick Street
Abel Street
Ross Street
Pearl Street

LEGEND

- Municipal Well
- Road
- Railway
- Village of Merrickville Boundary
- Municipal Boundary
- Assessment Parcel
- Stream
- Water

Wellhead Protection Area

- WHPA-A
- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored less than 8

0 300 600 1,200 1,800
Meters

N

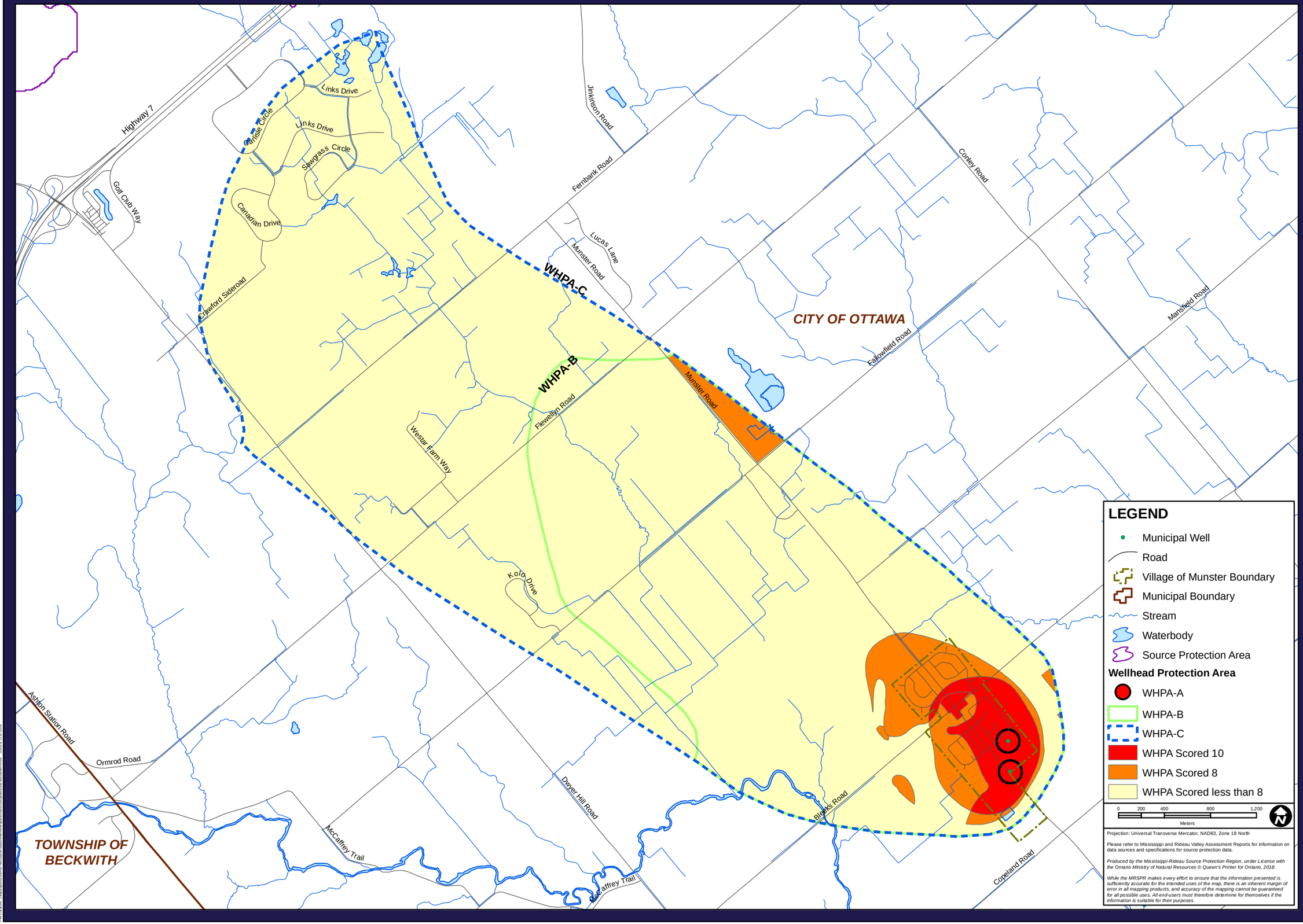
Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

Mississippi-Rideau Source Protection Plan 2013

Munster Wellhead Protection Area

Schedule E



LEGEND

- Municipal Well
- Road
- Village of Munster Boundary
- Municipal Boundary
- Stream
- Waterbody
- Source Protection Area

Wellhead Protection Area

- WHPA-A
- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored 8
- WHPA Scored less than 8

0 200 400 800 1,200

Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

Plot Date: 2018-11-15 - P:\GIS\Projects\Munster\Munster_Wellhead_Protection_Area_Schedule_E.mxd

Mississippi-Rideau Source Protection Plan 2013

Richmond Wellhead Protection Areas

Schedule F

Inset Map

Refer to Inset Map

WHPA-B

WHPA-C

LEGEND

- Municipal Well
- Road
- Railway
- Village of Richmond Boundary
- Stream
- Waterbody

Wellhead Protection Area

- WHPA-A
- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored 8
- WHPA Scored less than 8

0 295 590 1,180 1,770

Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

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Mississippi-Rideau Source Protection Plan 2013

Westport Wellhead Protection Area

Schedule G

Westport Pond

Upper Rideau Lake

VILLAGE OF WESTPORT

TOWNSHIP OF RIDEAU LAKES

TOWNSHIP OF RIDEAU LAKES

WHPA-A

WHPA-B

WHPA-C

8

10

8

Mountain Road

Centre Street

Bedford Street

Bedford Street

Main Street

Concession Street

Spring Street

George Street

Church Street

Rideau Street

Wheland Street

Lakeview Drive

Perth Road

Osprey Lane

LEGEND

- Municipal Well
- Road
- Railway
- Municipal Boundary
- Assessment Parcel
- Stream
- Water

Wellhead Protection Area

- WHPA-A
- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored 8
- WHPA Scored less than 8

0 40 80 160 240

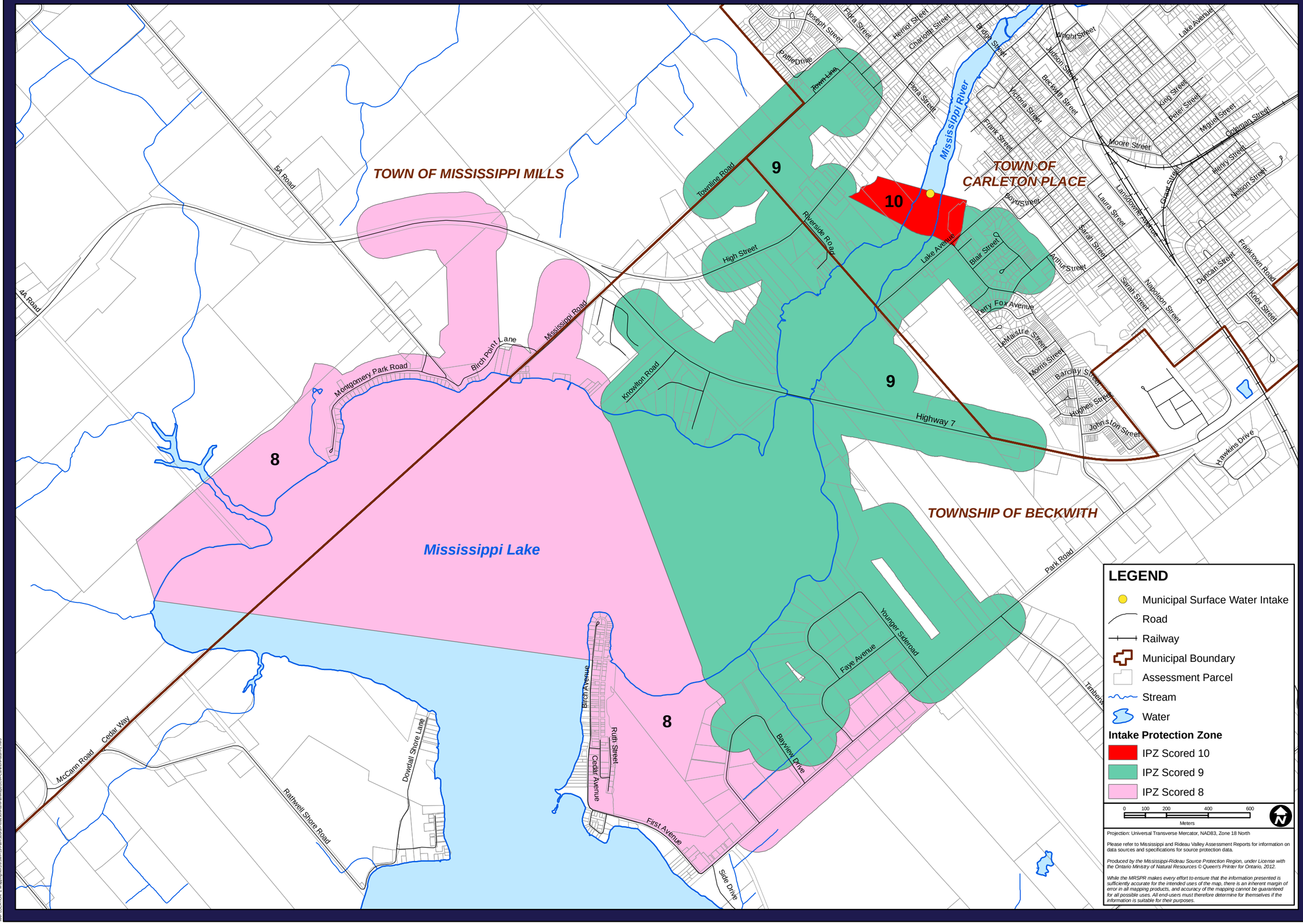
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

MAP LOCATION: Z:\Mapping\MXD\SWP\1Plan\SourceProtectionPlan\Appendices\Sch6-WestportWPA.mxd

Mississippi-Rideau Source Protection Plan 2013



Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

While the MRSPR makes every effort to ensure that the information presented is sufficiently accurate for the intended uses of the map, there is an inherent margin of error in all mapping products, and accuracy of the mapping cannot be guaranteed for all possible uses. All end-users must therefore determine for themselves if the information is suitable for their purposes.

Carleton Place Intake Protection Zone

Schedule H

Mississippi-Rideau Source Protection Plan 2013

Ottawa Intake Protection Zones

Schedule I

Québec

Ottawa River

Lemieux Island

Britannia

8.1

8.1

LEGEND

- Municipal Surface Water Intake
- Road
- Railway
- Provincial Boundary
- Stream
- Water
- Source Protection Area

Intake Protection Zone

- IPZ Scored 9
- IPZ Scored 8.1

0 305 610 1,220 1,830

Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

Ottawa River Parkway
Albert Street
Slater Street
Wellington Street
Flora Street
Linden Terrace
First Avenue
Young Street
Kippewa Drive
Echo Drive
Bronson Avenue
Besserer Street
Lanark Avenue
Ross Avenue
Java Street
Byron Avenue
Devercourt Avenue
Winding Lane
Anna Avenue
Morningside Lane
Fisher Avenue
Ash Lane
University Road
Heron Road
Cassels Street
Lauder Drive
Compton Avenue
Aaron Avenue
Regina Lane
Woodward Drive
Monsset Avenue
Mccooey Lane
Sanford Avenue
Kesler Avenue
Debra Avenue
Conroy Drive
Riverside Drive
Colman Street
Wallbey Road
Bel-Air Drive
Castle Hill Crescent
Tara Drive
Merivale Road
Beaver Ridge
Wigan Drive
Oriona Avenue
Shirley Boulevard
Hastings Street
Granton Way Road
Rifle Road
Carling Avenue
Conniston Avenue
Roche Place
Aero Drive
Holy Acres Road
Penny Drive
Queensview Drive
Severn Avenue
Cheshire Road
Baseline Road
Stanton Road
Queensline Drive
Richmond Road
Woodroffe Avenue
David Drive
Bayne Avenue
Fieldrow Street
Grant Carman Drive
Four Seasons Drive
Colonnade Road
Woodfield Drive
Jamie Avenue
Lawina Crescent
Moodie Drive
Corkstown Road
Bexley Place
Cedarview Road
Dexter Drive
Charing Road
Hunt Club Road
Revol Road
Slack Road
Pinegien Crescent
Gervin Street
Auriga Drive
Mayo Avenue
Hazeltine Drive
Timm Drive
Hadley Circle
Robertson Road
March Road
Skylon Court
Greenbank Road
Elstoke Drive
Colman Street
Hinan Street
Riverside Drive
Conroy Drive
Debra Avenue
Kesler Avenue
Sanford Avenue
Mccooey Lane
Monsset Avenue
Fisher Avenue
Ash Lane
Morningside Lane
Anna Avenue
Winding Lane
Devercourt Avenue
Byron Avenue
Java Street
Lanark Avenue
Ross Avenue
Young Street
Albert Street
Slater Street
Wellington Street
Flora Street
Linden Terrace
First Avenue
Kippewa Drive
Echo Drive
Bronson Avenue
Besserer Street
Ottawa River Parkway
Lauder Drive
Compton Avenue
Aaron Avenue
Regina Lane
Woodward Drive
Cassels Street

Mississippi-Rideau Source Protection Plan 2013

Perth Intake Protection Zone

Schedule J

TOWN OF PERTH

TOWNSHIP OF TAY VALLEY

TOWNSHIP OF DRUMMOND/ NORTH ELMSLEY

10

9

8

8

Highway 511
4A Road
6 Road
Clarchs Road
Harper Road
5 Road
Mutton's Road
Norris Road
Christie Lake Road
Tay Road
Highway 7
Tay Ridge Road
Tay River
Christie Lake Road
Somerville Drive
Miller Lane
Bowes Sideroad
Leonard Sideroad
Scotch Line
Orchard Crescent
Ferrier Road
Oity Lake Sideroad
Wild Life Road
Industrial Road
Carlton Drive
Roger's Road
Arthur Street
Elmsley Drive
Arnold Drive
Canal Bank Road
Mill Street
Pelet Street
Wilson Street
Bedwin Street
Chetwynd Street
Craig Street
Evans Road
Old Plank Road
Highway 43
1 Road
Spencer Road
2 Road
North Street
Perthmore Street
Garden Avenue
Railway Street
Duffy Street
Harris Street
Mather Avenue
Sunset Boulevard
Lesley Street
D'Arcy Street
Dufferin Road
Stamford Drive
Morris Road
Highway 7
Grant Street
Church Street
Scott Street

LEGEND

- Municipal Surface Water Intake
- Road
- Railway
- Municipal Boundary
- Assessment Parcel
- Stream
- Water
- Source Protection Area

Intake Protection Zone

- IPZ Scored 10
- IPZ Scored 9
- IPZ Scored 8

0 200 400 800 1,200
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

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MAP LOCATION: Z:\Projects\MRSPR\SPP\13Plan\Source Protection Area\Maps\MXD\Perth\Perth.mxd

Mississippi-Rideau Source Protection Plan 2013

Smiths Falls Intake Protection Zone

Schedule K

TOWNSHIP OF MONTAGUE

TOWNSHIP OF DRUMMOND/ NORTH ELMSLEY

TOWN OF SMITHS FALLS

TOWNSHIP OF RIDEAU LAKES

8

10

8

Porter Road
Glenview Road
Scholten Road
Carroll Road
Highway 15
Sturgess Road
Union Street
Ruthven Street
Orange Street
Code Drive
Roger Stevens Drive
Harper Condie Road
Highway 43
Matheson Drive
Mazie Street
Cornelia Street
McCann Street
Rideau Avenue
Beckwith Street
Victoria Avenue
Jubilee Street
Lila Street
Avenue Street
William Street
Poonamalie Sideroad
Old Mill Road
Abbott Street
Aberdeen Avenue
Lorne Street
Hershey Drive
Rideau River
Queen Street
Soper Drive
Old Slys Road
Ferrara Drive
Merrick Street
Altel Street
Cedar Road
Marsha Drive
Bell Avenue
Pearl Street
Brockville Street
Percy Street
Jasper Avenue
Bayview Crescent
Broadway Avenue
Armstrong Drive
Eric Hutcheson Road
Salter Lane
Wills Road
Poonamalie Road
Bacchus Island Road
Birch Lane
Cachet Drive
R1 Road
Lombard Street

LEGEND

- Municipal Surface Water Intake
- Road
- Railway
- Municipal Boundary
- Stream
- Water

Intake Protection Zone

- IPZ Scored 10
- IPZ Scored 8

0 150 300 600 900
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

\\MRT-GIS-FS01\...\Maps\MXD\SmithsFalls\SmithsFalls_IPZ_Schedule_K.mxd

Mississippi-Rideau Source Protection Plan 2013

Mississippi-Rideau Source Protection Region

Highly Vulnerable Aquifers

Schedule L

BONNECHERE VALLEY
ADMASTON/BROMLEY
HORTON
RENFREW
MCNAB/BRAESIDE
COUNTY OF RENFREW
GREATER MADAWASKA
Québec
Ottawa River
Fitzroy Habour
Arnprior
Galetta
Dunrobin
Kinburn
Marathon
Carp
Pakenham
Clarence Creek
Vars
RUSSELL
OTTAWA
Greely
Manotick
Metcalfe
Richmond
MISSISSIPPI MILLS
Almonte
Appleton
CARLETON PLACE
Ashton
Munster
Carleton Place
Dwyer Hill
Kars
Osgoode
North Gower
COUNTY OF LANARK
BECKWITH
NORTH DUNDAS
COUNTY OF LENNOX AND ADDINGTON
LANARK HIGHLANDS
Lanark
Kemptville
Bedell
Burritts Rapids
Oxford Mills
ADDINGTON HIGHLANDS
Plevna
McDonalds Corner
DRUMMOND/NORTH ELMSLEY
Balderson
MONTAGUE
NORTH GRENVILLE
SOUTH DUNDAS
NORTH FRONTENAC
Perth
PERTH
Port Elmsley
Smiths Falls
Merrickville
Glen Tay
SMITHS FALLS
Bishops Mills
Maberly
De Witts Corners
Scotch Line
TAY VALLEY
MERRICKVILLE-WOLFORD
Garretton
South Branch
COUNTY OF FRONTENAC
Stanleyville
Sharbot Lake
Bolingbroke
North Augusta
AUGUSTA
CENTRAL FRONTENAC
Crow Lake
Oconto
UNITED COUNTIES OF LEEDS AND GRENVILLE
Portland
Westport
Greenbush
ELIZABETHTOWN-KITLEY
Parham
Tichborne
WESTPORT
Crosby
RIDEAU LAKES
Newboro
Addison
Fairfield
Fornston
Maitland
TWEED
Elgin
ATHENS
BROCKVILLE
Brockville
STONE MILLS
SOUTH FRONTENAC
New York State

17 417 416 43 7 36 15 42 38 401

LEGEND

- City/Town
- Major Road
- Lower/Single Tier Municipalities
- Upper Tier Municipalities
- Water
- Source Protection Area
- Highly Vulnerable Aquifer

0 3 6 12 18
Kilometres

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

While the MRSPR makes every effort to ensure that the information presented is sufficiently accurate for the intended uses of the map, there is an inherent margin of error in all mapping products, and accuracy of the mapping cannot be guaranteed for all possible uses. All end-users must therefore determine for themselves if the information is suitable for their purposes.

MAP LOCATION: Z:\Maps\MXD\SWP\SPA\Plans\SourceProtectionPlan\HighVulnerableAquifers_HVA.mxd

This map is for reference only.
No policies apply within the Significant Groundwater Recharge Areas. See section 2.2 of this plan for more information

Mississippi-Rideau Source Protection Plan 2013

Mississippi-Rideau Source Protection Region
Significant Groundwater Recharge Areas

Schedule M

BONNECHERE VALLEY
ADMASTON/BROMLEY
HORTON
RENFREW
MCNAB/BRAESIDE
COUNTY OF RENFREW
GREATER MADAWASKA
Québec
Ottawa River
Fitzroy Habour
Arnprior
Galetta
Dunrobin
Kinburn
Marathon
Carp
Pakenham
MISSISSIPPI MILLS
Almonte
Appleton
CARLETON PLACE
Carleton Place
Ashton
Munster
Dwyer Hill
COUNTY OF LANARK
OTTAWA
Clarence Creek
Vars
RUSSELL
Greely
Manotick
Metcalfe
Richmond
Kars
Osgoode
North Gower
NORTH DUNDAS
SOUTH DUNDAS
COUNTY OF LENNOX AND ADDINGTON
ADDINGTON HIGHLANDS
Plevna
LANARK HIGHLANDS
Lanark
McDonalds Corner
Balderson
DRUMMOND/NORTH ELMSLEY
BECKWITH
MONTAGUE
Burritts Rapids
Oxford Mills
Kemptville
Bedell
NORTH GRENVILLE
NORTH FRONTENAC
Perth
PERTH
Glen Tay
Port Elmsley
Smiths Falls
SMITHS FALLS
Merrickville
Bishops Mills
Garretton
South Branch
MERRICKVILLE-WOLFORD
De Witts Corners
Scotch Line
Maberly
TAY VALLEY
Stanleyville
COUNTY OF FRONTENAC
Sharbot Lake
Bolingbroke
Crow Lake
Oconto
CENTRAL FRONTENAC
Tichborne
Parham
Westport
WESTPORT
Newboro
Crosby
RIDEAU LAKES
Portland
Elgin
UNITED COUNTIES OF LEEDS AND GRENVILLE
ELIZABETHTOWN-KITLEY
Greenbush
Addison
Fairfield
Farmton
Maitland
Brockville
AUGUSTA
North Augusta
ATHENS
BROCKVILLE
TWEED
STONE MILLS
SOUTH FRONTENAC
New York State

LEGEND

- City/Town
- Major Road
- Lower/Single Tier Municipalities
- Upper Tier Municipalities
- Water
- Source Protection Area
- Significant Groundwater Recharge Areas

0 3 6 12 18
Kilometres

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

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MAP LOCATION: Z:\Data\gis\MXD\SWP\3 Part\Schedules\SchPart3Map\SchM_SGRA.mxd

Appendix A

Legal Effect Provisions

Appendix A - Legal Effect Provisions

Part III of the *Clean Water Act* gives Source Protection Plans their legal effect. This appendix 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, as set out in subsection 34(1) to (3) of Ontario Regulation 287/07.

List A

Significant threat policies that affect decisions under the Planning Act and Condominium Act, 1998

Clause 39(1)(a), subsections 39(2),(4) and (6), and sections 40 and 42 of the *Clean Water Act*, 2006 apply to the following policies:

SEW-9-LB-PI/PA-MC
SEW-15-LB-PI/PA-MC
ADMIN-1-LB
ADMIN-2-LB
ADMIN-3-LB
ADMIN-4-LB
ADMIN-5-LB

List B

Moderate and low threat policies that affect decisions under the Planning Act and Condominium Act, 1998

Subsection 39(1)(b) of the *Clean Water Act*, 2006 applies to the following policies:

No Applicable Policies

List C

Significant threat policies that affect Prescribed Instrument decisions

Subsection 39(6), clause 39(7)(a), section 43 and subsection 44(1) of the *Clean Water Act*, 2006 apply to the following policies:

WASTE-1-LB-PI-MC
WASTE-3-LB-PI-MC
SEW-5-LB-PI-MC
SEW-7-LB-PI-MC
SEW-8-LB-PI-MC
SEW-9-LB-PI/PA-MC
SEW-10-LB-PI-MC
SEW-13-LB-PI-MC
SEW-15-LB-PI/PA-MC
FUEL-2-LB-PI-MC
FERT-1-LB-PI-MC
PEST-3-LB-PI-MC
LIVE-1-LB-PI-MC
ASM-1-LB-PI-MC
NASM-1-LB-PI-MC
NASM-2-LB-PI-MC
ADMIN-4-LB
ADMIN-5-LB

See Table at the end of this appendix for specific Prescribed Instruments

List D

Moderate and low threat policies that affect Prescribed Instrument decisions

Clause 39(7)(b) of the *Clean Water Act*, 2006 applies to the following policies:

WASTE-5-LB-PI-HR
AQUA-1-LB-PI-HR

See Table at the end of this appendix for specific Prescribed Instruments

List E

Significant threat policies that impose obligations on municipalities, source protection authorities and local boards

Section 38 and subsection 39(6) of the *Clean Water Act*, 2006 applies to the following policies:

SEW-1-LB
SEW-2-LB
SEW-3-LB
SEW-4-LB
SEW-6-LB
SALT-3-LB
SALT-4-LB
EDU-1-LB
ADMIN-4-LB
ADMIN-5-LB

List F

Monitoring policies referred to in subsection 22(2) of the Clean Water Act, 2006

Section 45 of the *Clean Water Act*, 2006 applies to the following policies:

MON-1-LB
MON-2-LB
MON-4-LB
MON-5-LB
MON-6-LB
MON-7-LB
MON-12-LB
MON-13-LB
MON-14-LB

List G

Policies related to section 57 of the Clean Water Act, 2006

The following policies related to section 57 (prohibition) of the Clean Water Act:

WASTE-4-LB-S57
SEW-12-LB-S57
SEW-16-LB-S57
SALT-2-LB-S57
DNAPL-2-LB-S57
FUEL-5-LB-S57
FERT-3-LB-S57
PEST-5-LB-S57
DEICE-1-LB-S57
ADMIN-4-LB
ADMIN-5-LB

List H

Policies related to section 58 of the Clean Water Act, 2006

The following policies relate to section 58 (risk management plans) of the *Clean Water Act*:

WASTE-2-LB-S58
SEW-11-LB-S58
SEW-14-LB-S58
SALT-1-LB-S58
DNAPL-1-LB-S58
FUEL-1-LB-S58
FUEL-6-LB-S58
FERT-2-LB-S58
PEST-4-LB-S58
LIVE-2-LB-S58
ASM-2-LB-S58
NASM-3-LB-S58

List I

Policies related to section 59 of the Clean Water Act, 2006

The following policies relate to section 59 (restricted land use) of the *Clean Water Act*:

ADMIN-1-LB
ADMIN-2-LB

List J

Strategic Action Policies

For the purposes of section 33 of Ontario Regulation 287/07, the following policies are identified as strategic action policies:

WASTE-6-NLB
SALT-5-NLB
SALT-6-NLB
AQUA-2-NLB
CORR-1-NLB
CORR-2-NLB
PATH-1-NLB
PATH-2-NLB
PATH-3-NLB
EDU-2-NLB
EDU-3-NLB
EDU-4-NLB
EDU-5-NLB
EDU-6-NLB
MON-3-NLB
MON-8-NLB
MON-9-NLB
MON-10-NLB
MON-11-NLB
MON-13-LB
MON-15-NLB

List K

Significant threat policies that represent a non-legally binding commitment

Section 34 of Ontario Regulation 287/07, applies to the following policies:

FUEL-3-NLB
FUEL-4-NLB
PEST-1-NLB
PEST-2-NLB

Prescribed Instruments which apply to Source Protection Plan policies in Lists C and D (ss 34(4) of O.Reg. 287/07)

Policy Code	Legal Effect (conform with, have regard to)	*Environmental Protection Act* – waste sites and systems	*Nutrient Management Act* - NASM plans	*Nutrient Management Act* - Nutrient Management Plans	*Nutrient Management Act* - Nutrient Management Strategies	*Ontario Water Resources Act* – permits to take water	*Ontario Water Resources Act* – sewage works	*Pesticides Act* - permits	*Safe Drinking Water Act* – permits, licences
WASTE-1-LB-PI-MC	CW	X					X		
WASTE-3-LB-PI-MC	CW	X					X		
WASTE-5-LB-PI-HR	HR	X					X		
SEW-5-LB-PI-MC	CW	X					X		
SEW-7-LB-PI-MC	CW	X					X		
SEW-8-LB-PI-MC	CW	X					X		
SEW-9-LB-PI/PA-MC	CW	X					X		
SEW-10-LB-PI-MC	CW	X					X		
SEW-13-LB-PI-MC	CW	X					X		
SEW-15-LB-PI/PA-MC	CW	X					X		
FUEL-2-LB-PI-MC	CW								X
FERT-1-LB-PI-MC	CW			X					
PEST-3-LB-PI-MC	CW							X	
LIVE-1-LB-PI-MC	CW				X				
ASM-1-LB-PI-MC	CW			X	X				
NASM-1-LB-PI-MC	CW		X						
NASM-2-LB-PI-MC	CW	X							
AQUA-1-LB-PI-HR	HR	X				X	X		

The Mississippi-Rideau Source Protection Plan does not have any policies in Lists C and D that apply to the following Prescribed Instruments:
Aggregate Resources Act - licenses, wayside permits
Environmental Protection Act - Renewable Energy Approvals

Appendix B

Drinking Water Threat Circumstances

Appendix B - Drinking Water Threat Circumstances

To Find Policies that Apply to a **Specific Activity:**

1. Refer to Section 3 of the Plan which organizes policies by threat activity
2. Use this appendix for additional details about where (vulnerable area and score) and under what circumstances (nature of the activity) each policy applies.

Prescribed Drinking Water Threat	Threat Level (Significant / Moderate / Low)	Subcategory	Vulnerable Area and Vulnerability Score	Summary of Circumstances Refer to the offical "Provincial Tables of Circumstances"' for a complete listing of circumstances web link: http://www.ene.gov.on.ca/environment/en/legislation/clean_water_act/STDPROD_081301.html This table is provided as a guide. Verification of relevant circumstance should be done using the 'Provinical Tables of Circumstances'
The establishment, operation or maintenance of a **waste disposal site** within the meaning of Part V, of the *Environmental Protection Act*	Significant	Application of Untreated Septage to Land	WHPA 10 IPZ 10, 9, 8, 8.1	Land application of hauled sewage in any quantity.
		Storage, Treatment and Discharge of Tailings from Mines	WHPA 10 IPZ 10, 9	Depends on the type of storage (e.g., pit or impoundment structure at the surface) as well as National Pollution Release Inventory (NPRI) reporting requirements. See 'Detailed Circumstances for Waste' at the end of this table for more information.
		Landfarming of Petroleum Refining Waste	WHPA 10 IPZ 10, 9	Depends on the size of the land disposal area in hectares. See 'Detailed Circumstances for Waste' at the end of this table for more information.
		Liquid Industrial Waste Injection into a Well	WHPA 10, 8	Depends on the combined rate of discharge of the wells in cubic metres per year. See 'Detailed Circumstances for Waste' at the end of this table for more information.
		PCB Waste Storage	WHPA 10 IPZ 10	Depends on above or below grade, outdoor area, not in a container. See 'Detailed Circumstances for Waste' at the end of this table for more information.
		Landfilling (Hazardous Waste)	WHPA 10 IPZ 10 or 9	Depends on the size of the fill area in hectares. See 'Detailed Circumstances for Waste' at the end of this table for more information.
		Landfilling (Municipal Waste)	WHPA 10 or 8 IPZ 10 or 9	Depends on the size of the fill area in hectares. See 'Detailed Circumstances for Waste' at the end of this table for more information.
		Landfilling (Solid Non Hazardous Industrial or Commercial)	WHPA 10 or 8 IPZ 10 or 9	Depends on the size of the fill area in hectares. See 'Detailed Circumstances for Waste' at the end of this table for more information.
		Storage of Hazardous Waste at Disposal Sites	WHPA 10 IPZ 10 or 9	Depends on the location of the storage (at or above grade, below or partially below grade). See 'Detailed Circumstances for Waste' at the end of this table for more information.
		Storage of Wastes described in clauses…of the definition of hazardous waste	WHPA 10 IPZ 10	Depends on the location of the storage (at or above grade, below or partially below grade). See 'Detailed Circumstances for Waste' at the end of this table for more information.
	Moderate	Landfilling (Municipal Waste) Landfilling (Solid Non Hazardous Industrial or Commercial)	HVA	Fill area is greater than 10 hectares.
		Liquid Industrial Waste Injection into a Well	HVA	Combined rate of discharge is greater than 380,000,000 cubic metres per year.
	Low	Application of Untreated Septage to Land	HVA	Depends on the size of the application area in hectares
		Storage, Treatment and Discharge of Tailings from Mines	HVA	Depends on the type of storage (e.g., pit or impoundment structure at the surface) as well as National Pollution Release Inventory (NPRI) reporting requirements. See 'Detailed Circumstances for Waste' at the end of this table for more information.
		Landfarming of Petroleum Refining Waste	HVA	Fill area is greater than 1 hectare.
		Liquid Industrial Waste Injection into a Well	HVA	Combined rate of discharge is greater than 380 cubic metres per year.
		PCB Waste Storage	HVA	Depends on above or below grade, outdoor area, not in a container. See 'Detailed Circumstances for Waste' at the end of this table for more information.
		Landfilling (Hazardous Waste) Landfilling (Municipal Waste) Landfilling (Solid Non Hazardous Industrial or Commercial)	HVA	Fill area is less than 1 hectare.
		Storage of Hazardous Waste at Disposal Sites	HVA	Hazardous waste or liquid industrial waste stored at or above grade, below or partially below grade.
		Storage of Wastes described in clauses…of the definition of hazardous waste	HVA	Stored below, at or above grade.

Appendix B - Drinking Water Threat Circumstances

To Find Policies that Apply to a **Specific Activity:**

1. Refer to Section 3 of the Plan which organizes policies by threat activity
2. Use this appendix for additional details about where (vulnerable area and score) and under what circumstances (nature of the activity) each policy applies.

Prescribed Drinking Water Threat	Threat Level: Significant	Threat Level: Moderate	Threat Level: Low	Subcategory	Vulnerable Area and Vulnerability Score	Summary of Circumstances Refer to the offical "Provincial Tables of Circumstances"' for a complete listing of circumstances web link: http://www.ene.gov.on.ca/environment/en/legislation/clean_water_act/STDPROD_081301.html This table is provided as a guide. Verification of relevant circumstance should be done using the 'Provinical Tables of Circumstances'
The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of **sewage**	■			Discharge of Untreated Stormwater from a Stormwater Retention Pond	WHPA 10	Depends on the size of the drainage area and the type of land use (e.g. rural, residential, industrial/commercial) in the drainage area. See 'Detailed Circumstances for 'Sewage Works' at the end of this table for more information.
					IPZ 10,9,8.1,8	
				Sanitary Sewers and Related Pipes	WHPA 10	Any size system that is part of a wastewater collection facility that collects or transmits sewage containing human waste. See 'Detailed Circumstances for 'Sewage Works' at the end of this table for more information.
					IPZ 10	
				Sewage Treatment Plant Effluent Discharges Including Lagoons	WHPA 10	Discharging to water: any size system.
					IPZ 10,9,8.1,8	Discharging to land: depends on the size of the system (average daily rate in cubic metres that the system is designed to discharge). See 'Detailed Circumstances for 'Sewage Works' at the end of this table for more information.
				Storage of Sewage (e.g. Treatment Plant Tanks)	WHPA 10, 8	Any size system except in WHPA 8 where the system must be designed for >50,000 m3 average daily rate.
					IPZ 10,9	Below grade storage is not a significant threat in IPZ 9. See 'Detailed Circumstances for 'Sewage Works' at the end of this table for more information.
				Combined Sewer Discharge from a Stormwater Outlet to Surface Water	IPZ 10,9,8.1,8	Any size system that may discharge sanitary sewage containing human waste to surface water other than by way of a designed bypass.
				Sewage Treatment Plant Bypass Discharge to Surface Water	IPZ 10,9,8.1,8	Any size system discharging via a designed bypass.
				Industrial Effluent Discharge	IPZ 10,9,8.1,8	System discharges to surface water. System has as its primary function the collection, transmission or treatment of industrial sewage. See 'Detailed Circumstances for 'Sewage Works' at the end of this table for more information.
				On-Site Sewage System	WHPA 10	On-site Sewage System subject to the *Building Code Act* or a sewage works subject to the *Ontario Water Resources Act* . See 'Detailed Circumstances for 'Sewage Works' at the end of this table for more information.
					IPZ 10	
The storage of **snow**	■			Storage of Snow	WHPA 10	Snow is stored below grade in an area greater than 0.01 hectares or snow stored at or above grade in an area greater than 1 hectare.
					IPZ 10	Snow stored at or above grade in an area greater than 0.1 hectares.
					IPZ 9	Snow stored at or above grade in an area greater than 1 hectares.
The application or road salt and the handling and storage **road salt**	■			Application of Road Salt	WHPA 10	Impervious surface area must be greater than 80 percent. This circumstance is only met in Kemptville.
					IPZ 10, 9	Depends on the percentage of impervious surface area (if vulnerabilty score is 10, must be greater than 8 percent; if vulnerabilty score is 9, must be greater than 80 percent).
			■	Application of Road Salt	HVA	Road salt applied anywhere in a Highly Vulnerable Aquifer.
	■			Storage of Road Salt	WHPA 10	Amount of road salt storage must be be greater than 5,000 tonnes.
					IPZ 10, 9	Depends on the amount of road salt stored (if vulnerabilty score is 10, must be greater than 500 tonnes. If vulnerabilty score is 9, must be greater than 5,000 tonnes).

Appendix B - Drinking Water Threat Circumstances

To Find Policies that Apply to a **Specific Activity:**

1. Refer to Section 3 of the Plan which organizes policies by threat activity
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Prescribed Drinking Water Threat	Threat Level (Significant / Moderate / Low)	Subcategory	Vulnerable Area and Vulnerability Score	Summary of Circumstances Refer to the offical "Provincial Tables of Circumstances"' for a complete listing of circumstances web link: http://www.ene.gov.on.ca/environment/en/legislation/clean_water_act/STDPROD_081301.html This table is provided as a guide. Verification of relevant circumstance should be done using the 'Provinical Tables of Circumstances'
The handling and storage of a **dense non-aqueous phase liquid (DNAPL)**	Significant	Storage and handling of DNAPLs	WHPA A, B and C (any score) - *Illustrated on the maps as "WHPA-C"*	The storage and handling (at, above or below grade) of any quantity of the following DNAPL substances: dioxane-1,4; polycyclic aromatic hydrocarbons (PAHs); tetrachloroethylene (PCE) (also called “PERC”); trichloroethylene (TCE); vinyl chloride.
		Storage and handling of DNAPLs	IPZ 10	The storage (at, above or partly below grade) and handling (above grade) of any quantity of the following DNAPL substances: Dioxane-1,4; polycyclic aromatic hydrocarbons (PAHs); tetrachloroethylene (PCE) (also called “PERC”); trichloroethylene (TCE); vinyl chloride.
The storage of an **organic solvent**	Significant	Storage of Organic Solvents	WHPA 10	1) Carbon tetrachloride: • greater than 25 litres stored in a container below or partly below grade • greater than 250 litres stored in a container at or above grade 2) Chloroform and methylene chloride (dichloromethane): • greater than 250 litres stored in a container below or partly below grade • greater than 2,500 litres stored in a container at or above grade 3) Pentachlorophenol: • greater than 2,500 litres stored in a container below or partly below grade
			IPZ 10	The storage of the following organic solvent substances: · carbon tetrachloride; chloroform; methylene chloride (dichloromethane); pentachlorophenol under the following conditions. · greater than 250 litres if stored at or above or partly below grade and in a container.
The handling and storage of **fuel** (heating oil)	Significant	Storage of Fuel	WHPA 10	Facility* storing: · greater than 250 litres of fuel – below or partly below grade. · greater than 2,500 litres of fuel – at or above grade. * “Facility” means installation (including homes) where fuel oil, or used oil when such oil is used as a fuel, is handled. This encompasses fuel oil storage for furnaces, boilers, water heaters and standby generators but excludes vehicles, lawnmowers or portable storage like jerry cans.
			IPZ 10	Facility* storing: · greater than 2,500 litres of fuel – partly below, at or above grade. * “Facility” means installation (including homes) where fuel oil, or used oil when such oil is used as a fuel, is handled. This encompasses fuel oil storage for furnaces, boilers, water heaters and standby generators but excludes vehicles, lawnmowers or portable storage like jerry cans.
		Handling of Fuel	WHPA 10	Handling of fuel oil in relation to the storage of: · greater than 2,500 litres of fuel – above or below grade.
			IPZ 10	Handling of fuel oil in relation to the storage of: · greater than 2,500 litres of fuel – above grade.

Appendix B - Drinking Water Threat Circumstances

To Find Policies that Apply to a **Specific Activity:**

1. Refer to Section 3 of the Plan which organizes policies by threat activity
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Prescribed Drinking Water Threat	Threat Level (Significant / Moderate / Low)	Subcategory	Vulnerable Area and Vulnerability Score	Summary of Circumstances Refer to the offical "Provincial Tables of Circumstances"' for a complete listing of circumstances web link: http://www.ene.gov.on.ca/environment/en/legislation/clean_water_act/STDPROD_081301.html This table is provided as a guide. Verification of relevant circumstance should be done using the 'Provinical Tables of Circumstances'
The handling and storage of **fuel** (liquid fuel)		Storage of Fuel	WHPA 10	Facility* storing: · greater than 250 litres of fuel – below or partly below grade · greater than 2,500 litres of fuel – at or above grade * “Facility” means a permanent or mobile retail outlet, bulk plant, marina, cardlock/keylock, private outlet or farm where gasoline or an associated product is handled other than in portable containers.
			IPZ 10	Facility* (not including a bulk plant) storing: · greater than 2,500 litres of fuel – partly below, at or above grade * “Facility” means a permanent or mobile retail outlet, bulk plant, marina, Cardlock/Keylock, private outlet or farm where gasoline or an associated product is handled other than in portable containers.
		Handling of Fuel	WHPA 10	Handling of fuel oil in relation to the storage of: greater than 2,500 litres of fuel – above or below grade.
			IPZ 10	Handling of fuel oil in relation to the storage of: greater than 2,500 litres of fuel – above grade.
The application of **commercial fertilizer** to land and the handling and storage of **commercial fertilizer**		Application of Commerical Fertilizer	WHPA 10	Depends on a combination of the managed land percentage and livestock density. This circumstance is only met at Munster.
			IPZ 10,9	
		Storage and handling of Commercial Fertilizer	WHPA 10	Amount stored is greater than 2,500 kg.
			IPZ 10	Stored for retail sale or in relation to its application.
The application of **pesticide** to land and the handling and storage of **pesticide**		Application of Pesticide	WHPA 10	Land area applied is greater than 1 hectare, chemicals used are MCPA, Mecoprop.
				Land area applied is greater than 10 hectares, refer to 'Provincial Tables of Circumstances' for chemicals.
			IPZ 10	Any land area applied, chemicals used are MCPA, Mecoprop.
				Land area applied is greater than 1 hectare, refer to 'Provincial Tables of Circumstances' for chemicals.
				Land area applied is greater than 10 hectares, refer to 'Provincial Tables of Circumstances' for chemicals.
			IPZ 9	Land area applied is greater than 1 hectare, chemicals used are MCPA, Mecoprop.
				Land area applied is greater than 10 hectares, refer to 'Provincial Tables of Circumstances' for chemicals.
			IPZ 8.1	Land area applied is greater than 10 hectares, chemical used is MCPA.
		Storage and handling of Pesticide	WHPA 10	Greater than 2,500 kg of MCPA or Mecoprop stored at a manufacturing or processing facility.
				Greater than 250 kg of MCPA or Mecoprop or greater than 2,500 kg of other chemicals (refer to 'Provincial Tables of Circumstances') stored for retail sale or by end users.
			IPZ 10	Greater than 2,500 kg of MCPA or Mecoprop stored at a manufacturing or processing facility.
				Greater than 250 kg of MCPA or Mecoprop or greater than 2,500 kg of other chemicals (refer to 'Provincial Tables of Circumstances') stored for retail sale or by end users.
			IPZ 9	Greater than 2,500 kg of MCPA or Mecoprop stored for retail sale or by end users.
The use of land as **livestock** grazing or pasturing land, an outdoor confinement area or a farm-anmial yard		Management or Handling of ASM Generation (grazing and pasturing, yards or confinement)	WHPA 10	The use of land as livestock grazing or pasturing, an outdoor confinement area or a farm-animal yard for one or more animals.
			IPZ 10,9,8.1,8	

Appendix B - Drinking Water Threat Circumstances

To Find Policies that Apply to a **Specific Activity:**

1. Refer to Section 3 of the Plan which organizes policies by threat activity
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Prescribed Drinking Water Threat	Threat Level (Significant / Moderate / Low)	Subcategory	Vulnerable Area and Vulnerability Score	Summary of Circumstances Refer to the offical "Provincial Tables of Circumstances"' for a complete listing of circumstances web link: http://www.ene.gov.on.ca/environment/en/legislation/clean_water_act/STDPROD_081301.html This table is provided as a guide. Verification of relevant circumstance should be done using the 'Provinical Tables of Circumstances'
The application **agricultural source material** to land and the storage of **agricultural source material**	Significant	Application and Storage	WHPA 10	Any amount applied to land.
			IPZ 10,9,8.1,8	Any amount stored in a permanent nutrient storage facility or at a temporary field storage site.
The application of **non-agricultural source material** to land and the handling and storage of **non-agricultural source material**	Significant	Application of NASM (contains material from a meat plant or sewage works)	WHPA 10	Any amount applied to land.
			IPZ 10,9,8.1,8	
		Application of NASM (does not contain material from a meat plant or sewage works)	WHPA 10	Depends on a combination of the managed land percentage and livestock density. This circumstance is only met at Munster (any amount applied).
			IPZ 10,9,8.1,8	
		Storage and handling of NASM (contains material from a meat plant)	WHPA 10	Any storage below, at or above grade.
			IPZ 10	
		Storage and handling of NASM (contains material from a meat plant)	IPZ 9,8.1,8	Any storage at or above grade.
		Storage and handling of NASM (does not contain material from a meat plant)	WHPA 10	Depends on location of storage (above or below grade), type of storage (permanent or temporary field) and the mass of nitrogen in tonnes.
			IPZ 10,9	
Aquaculture - The management of agricultural source material	Moderate	The Management of ASM	IPZ 10, 9	The use of land or water for aquaculture. The land use may result in the presence of one or more pathogens in surface water.
The management of runoff that contains chemicals used in the **de-icing** of aircraft	Significant		WHPA 10	Runoff containing de-icing materials that originates at a national airport.
			IPZ 10	Runoff containing de-icing materials that originates at a national or regional airport.
			IPZ 9	Runoff containing de-icing materials that originates at a national airport.

Detailed Circumstances for Waste

SIGNIFICANT THREAT CIRCUMSTANCES

Waste Disposal Site - Application of Untreated Septage to Land

Vulnerable Area	Significant Threat Circumstance
WHPA 10	Land application of hauled sewage in any quantity
IPZ 10, 9, 8.1, 8	

Storage, Treatment and Discharge of Tailings from Mines

Vulnerable Area	Significant Threat Circumstance
WHPA 10	Stored in a pit; is or is not part of a facility for which the NPRI Notice requires a person to report
	Stored in an impoundment structure at the surface;
	is part of a facility for which the NPRI Notice requires a person to report*
IPZ 10	Stored in an impoundment structure at the surface;
	is or is not part of a facility for which the NPRI Notice requires a person to report
IPZ 9	Stored in an impoundment structure at the surface;
	is part of a facility for which the NPRI Notice requires a person to report*

*The report must include information in relation to a substance listed in Group 1, 2, 3 or 4 of Part 1 of Schedule 1 or Part 2 of Schedule 1 of the notice

Waste Disposal Site - Landfarming of Petroleum Refining Waste*

Vulnerable Area	Significant Threat Circumstance
WHPA 10	> 10 ha
IPZ 10	> 1 ha
IPZ 9	> 10 ha

*The land disposal of petroleum refining waste within the meaning of clause (d) of the definition of "land disposal" in S. 1 of Reg. 347 (General - waste Management) RRO 1990 made under the *Environmental Protection Act*

Waste Disposal Site - Liquid Industrial Waste Injection into a Well*

Vulnerable Area	Significant Threat Circumstance
WHPA 10	Combined rate of discharge > 380 m^3 / year
WHPA 8	Combined rate of discharge > 380 million m^3 / year

*The land disposal of liquid industrial waste within the meaning of clause (c) of the definition of "land disposal" in S. 1 of Reg. 347 (General - Waste Management) made under the *Environmental Protection Act*

Waste Disposal Site - PCB Waste Storage*

Vulnerable Area	Significant Threat Circumstance
WHPA 10	Below grade in a facility or engineered cell
	Below or partially below grade in a storage tank
	Outdoor area and not in a container
IPZ 10	Outdoor area and not in a container

*The PCB waste is stored at a PCB waste disposal site as described in S. 3 of Reg 362 (Waste Management - PCBs), RRO 1990, made under the *Environmental Protection Act* or was delivered to a site under written instructions of a Director in accordance with clause 8(a) of that regulation.

Waste Disposal Site - Landfilling (Hazardous Waste)*

Vulnerable Area	Significant Threat Circumstance
WHPA 10	Any size fill area
IPZ 10	>1 ha fill area
IPZ 9	> 10 ha fill area

*The land disposal of hazardous waste, liquid industrial waste, or processed liquid industrial waste within the meaning of clauses (a) and (b) in S. 1 of Reg. 347 (General - Waste Management) made under the *Environmental Protection Act*

Waste Disposal Site - Landfilling (Municipal Waste)*

Vulnerable Area	Significant Threat Circumstance
WHPA 10	Any size fill area
WHPA 8	>10 ha fill area
IPZ 10	>1 ha fill area
IPZ 9	> 10 ha fill area

*The land disposal of municipal waste within the meaning of clauses (a) and (b) of the definition of "land disposal" in S. 1 of Reg. 347 (General - Waste Management) made under the *Environmental Protection Act*

Waste Disposal Site - Landfilling (Solid, Non-Hazardous Industrial or Commercial Waste)*

Vulnerable Area	Significant Threat Circumstance
WHPA 10	Any size fill area
WHPA 8	>10 ha fill area
IPZ 10	>1 ha fill area
IPZ 9	> 10 ha fill area

*The land disposal of industrial or commercial waste within the meaning of clause (c)) of the definition of "land disposal" in S. 1 of Reg. 347 (General - Waste Management) made under the *Environmental Protection Act*

Waste Disposal Site - Storage of Hazardous Waste at Disposal Sites*

Vulnerable Area	Significant Threat Circumstance
WHPA 10	Hazardous waste or liquid industrial waste stored at or above grade, below or partially below grade
IPZ 10, 9	Hazardous waste or liquid industrial waste stored at or above grade or partially below grade

*Hazardous waste or liquid industrial waste.

Waste Disposal Site - Storage of Wastes Described in Clauses…*

Vulnerable Area	Significant Threat Circumstance
WHPA 10	Stored below, at or above grade
IPZ 10	Stored at or above grade

*A site that is not approved to accept hazardous waste or liquid industrial waste but accepts a waste described in clause (p,q,r,s,t or u) of the definition of hazardous waste as defined in Reg. 347 (General - Waste Management) made under the *Environmental Protection Act* or in clause (d) of the definition of liquid industrial waste in that regulation.

MODERATE THREAT CIRCUMSTANCES IN THE HIGHLY VULNERABLE AQUIFER

Waste Disposal Site - Landfilling (Municipal Waste)*

Vulnerable Area	Moderate Threat Circumstance
HVA	>10 ha fill area

*The land disposal of municipal waste within the meaning of clauses (a) and (b) of the definition of "land disposal" in S. 1 of Reg. 347 (General - Waste Management) made under the *Environmental Protection Act*

Waste Disposal Site - Landfilling (Solid, Non-Hazardous Industrial or Commercial Waste)*

Vulnerable Area	Moderate Threat Circumstance
HVA	>10 ha fill area

*The land disposal of industrial or commercial waste within the meaning of clause (c)) of the definition of "land disposal" in S. 1 of Reg. 347 (General - Waste Management) made under the *Environmental Protection Act*

Waste Disposal Site - Liquid Industrial Waste Injection into a Well*

Vulnerable Area	Moderate Threat Circumstance
HVA	Combined rate of discharge > 38 million m^3 / year

*The land disposal of liquid industrial waste within the meaning of clause (c) of the definition of "land disposal" in S. 1 of Reg. 347 (General - Waste Management) made under the *Environmental Protection Act*

LOW THREAT CIRCUMSTANCES IN THE HIGHLY VULNERABLE AQUIFER

Application of Untreated Septage to Land

Vulnerable Area	Low Threat Circumstance
HVA	The application of hauled sewage to land. Any size area.

Storage, Treatment and Discharge of Tailings from Mines

Vulnerable Area	Low Threat Circumstance
HVA	Stored in a pit or stored in an impoundment structure on the surface;
	Is or is not part of a facility for which the NPRI Notice requires a person to report

*The report must include information in relation to a substance listed in Group 1, 2, 3 or 4 of Part 1 of Schedule 1 or Part 2 of Schedule 1 of the notice

Waste Disposal Site - Landfarming of Petroleum Refining Waste*

Vulnerable Area	Low Threat Circumstance
HVA	Any size fill area

*The land disposal of petroleum refining waste within the meaning of clause (d) of the definition of "land disposal" in S. 1 of Reg. 347 (General - waste Management) RRO 1990 made under the *Environmental Protection Act*

Waste Disposal Site - Landfilling (Hazardous Waste)*

Vulnerable Area	Low Threat Circumstance
HVA	Any size fill area

*The land disposal of hazardous waste, liquid industrial waste, or processed liquid industrial waste within the meaning of clauses (a) and (b) in S. 1 of Reg. 347 (General - Waste Management) made under the *Environmental Protection Act*

Waste Disposal Site - Landfilling (Municipal Waste)*

Vulnerable Area	Low Threat Circumstance
HVA	Any size fill area

*The land disposal of municipal waste within the meaning of clauses (a) and (b) of the definition of "land disposal" in S. 1 of Reg. 347 (General - Waste Management) made under the *Environmental Protection Act*

Waste Disposal Site - Landfilling (Solid, Non-Hazardous Industrial or Commercial Waste)*

Vulnerable Area	Low Threat Circumstance
HVA	Any size fill area

*The land disposal of industrial or commercial waste within the meaning of clause (c)) of the definition of "land disposal" in S. 1 of Reg. 347 (General - Waste Management) made under the *Environmental Protection Act*

Waste Disposal Site - Liquid Industrial Waste Injection into a Well*

Vulnerable Area	Low Threat Circumstance
HVA	Combined rate of discharge > 380 m^3 / year

*The land disposal of liquid industrial waste within the meaning of clause (c) of the definition of "land disposal" in S. 1 of Reg. 347 (General - Waste Management) made under the *Environmental Protection Act*

Waste Disposal Site - PCB Waste Storage*

Vulnerable Area	Low Threat Circumstance
HVA	Stored below grade in a facility or engineered cell
	Stored in drums at or above grade
	Stored in storage tanks below grade or partially below grade
	Stored in an outdoor area and not in a container

*The PCB waste is stored at a PCB waste disposal site as described in S. 3 of Reg 362 (Waste Management - PCBs), RRO 1990, made under the *Environmental Protection Act* or was delivered to a site under written instructions of a Director in accordance with clause 8(a) of that

Waste Disposal Site - Storage of Hazardous Waste at Disposal Sites*

Vulnerable Area	Low Threat Circumstance
HVA	Hazardous waste or liquid industrial waste stored at or above grade, below or partially below grade

*Hazardous waste or liquid industrial waste.

Waste Disposal Site - Storage of Wastes Described in Clauses…*

Vulnerable Area	Low Threat Circumstance
HVA	Stored below, at or above grade

*A site that is not approved to accept hazardous waste or liquid industrial waste but accepts a waste described in clause (p,q,r,s,t or u) of the definition of hazardous waste as defined in Reg. 347 (General - Waste Management) made under the *Environmental Protection Act* or in clause (d) of the definition of liquid industrial waste in that regulation.

Detailed Circumstances for Sewage Works

SIGNIFICANT THREAT CIRCUMSTANCES

Untreated Stormwater from a Stormwater Retention Pond*

Vulnerable Area	Significant Threat Circumstance
WHPA 10	>100 ha; drainage area is rural, agricultural, low or high density residential
	>10 ha; drainage area is industrial/commercial
IPZ 10	>10 ha; drainage area is rural, agricultural, low density residential
	> 1 ha; drainage area is high density residential or industrial/commercial
IPZ 9	>100 ha; drainage area is rural, agricultural, low or high density residential
	>10 ha; drainage area is industrial/commercial
IPZ 8.1, 8	>100 ha; drainage area is industrial/commercial

*The system is a storm water management facility designed to discharge storm water to land or surface water.
The drainage area associated with the facility is x ha and the predominant land uses in the area are...

Sanitary Sewers and Related Pipes

Vulnerable Area	Significant Threat Circumstance
WHPA 10	The system is part of a wastewater collection facility that collects or transmits sewage containing
	Does not include a sewage storage tank or a designed bypass
	Chemical circumstance: System is designed to convey >10,000 m^3/day
	Pathogen circumstance: Any size system
IPZ 10	The system is part of a wastewater collection facility that collects or transmits sewage containing
	Does not include a sewage storage tank or a designed bypass
	Chemical circumstance: None
	Pathogen circumstance: Any size system

Sewage Treatment Plant Effluent Discharges (Including Lagoons)*

Vulnerable Area	Significant Threat Circumstance
WHPA 10	Discharging to surface water - any size system
	Discharging to land; system is designed for >17,500 m^3 average daily rate
IPZ 10	Discharging to surface water - any size system
	Discharging to land; system is designed for >2,500 m^3 average daily rate
IPZ 9	Discharging to surface water - any size system
	Discharging to land; system is designed for >17,500 m^3 average daily rate
IPZ 8.1, 8	Discharging to surface water - any size system
	Discharging to land; system is designed for >50,000 m^3 average daily rate

*The system is a wastewater treatment facility that discharges directly to land or surface water through a means other than a designed bypass.

The system is designed to discharge treated sanitary sewage at average daily rate of x m^3 on an annual basis.

Storage of Sewage (E.G. Treatment Plant Tanks)*

Vulnerable Area	Significant Threat Circumstance
WHPA 10	Any size system; tanks at, above or below grade
WHPA 8**	System is designed for >50,000 m^3 average daily rate; tanks below or partly below grade (above grade tanks not significant)
IPZ 10	Any size system; tanks at, above or below grade
IPZ 9	Any size system; tanks at or above grade (below grade tanks not significant)

***Chemical Circumstance Wording:** The system is a treatment tank or storage tank that is part of a sewage works within the meaning of the *Ontario Water Resources Act* .

The tank treats or stores sanitary sewage containing human waste.

The system is associated with a wastewater treatment facility designed to discharge treated sanitary sewage at an average daily rate of x m^3 on an annual basis.

***Pathogen Circumstance Wording:** The system is a sewage treatment tank or storage tank in either a wastewater collection facility or wastewater treatment facility.

**No pathogen circumstance in WHPA 8

Combined Sewer Discharge from a Stormwater Outlet to Surface Water*

Vulnerable Area	Significant Threat Circumstance
IPZ 10	The system** is a combined sewer that may discharge sanitary sewage containing human waste to surface water
IPZ 9, 8.1, 8	

*Other than by way of a designed bypass.
**Any size system

Sewage Treatment Plant Bypass Discharge to Surface Water

Vulnerable Area	Significant Threat Circumstance
IPZ 10	Any size system* discharging via a designed bypass
IPZ 9, 8.1, 8	Any size system* discharging via a designed bypass

*The system is a wastewater treatment facility that may discharge sanitary sewage containing human waste via a designed bypass.

Industrlal Effluent Discharges

Vulnerable Area	Significant Threat Circumstance
IPZ 10	System discharges to surface water*
	System is or is not part of a facility for which the NPRI notice requires a person to report
IPZ 9, 8.1, 8	System discharges to surface water*
	System is not part of a facility for which the NPRI notice requires a person to report
IPZ 10, 9, 8.1, 8	System discharges to surface water**

*Primary function is the collection, transmission or treatment of industrial sewage.
**Primary functions include conveying sewage from a meat plant (pathogen circumstance).
***NPRI (National Pollution Release Inventory) is a publicly-accessible inventory of pollutant releases (to air, water & land), disposals and transfers for recycling .

On-Site Sewage Systems*

Vulnerable Area	Significant Threat Circumstance
WHPA 10	earth pit privy, privy vault, greywater system, cesspool, leaching bed or holding tank**
IPZ 10	earth pit privy, privy vault, greywater system, cesspool, leaching bed or holding tank**

*A sewage system as defined in O. Reg. 350/06 (Building Code) or a sewage works as defined in the *Ontario Water Resources Act* . Also referred to as On-Site Sewage Systems
**The system 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.

Appendix C

Policy Code Summaries

Appendix C1 - Policy Codes Summarized by Vulnerable Area and Policy Intent

To Find Policies that Apply in a **Specific Geographic Location:**

1. Use the maps in Schedules A through L to determine if the location you are interested in is located in a vulnerable area. Refer to the legend on the map to determine:
    a) The type of vulnerable area (WHPA, IPZ or HVA); and
    b) The vulnerability score (scores are not relevant for the HVA)
2. Find the table row below that corresponds to that vulnerable area and score. That row provides a list of all the policies (by code) that apply in that type of area. The table also categorizes the policies by the effect they have (prohibit an activity, manage an activity or encourage a change in practice).

3. Turn to Section 3 and 4 of the Plan to read the policies.

To Find Policies that Apply within a **Specific Municipality:**

1. Use the maps in Appendices D2 through D16 to see what vulnerable areas and scores exist in the municipality you are interested in. Then follow steps 2 and 3 above.

Vulnerable Area and Vulnerability Score	Policy Code		
	Prohibit	Manage	Encourage
Wellhead Protection Area (WHPA)			
WHPA A scored 10	WASTE-3-LB-PI-MC WASTE-4-LB-S57 SEW-9-LB-PI/PA-MC SEW-12-LB-S57 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 SALT-2-LB-S57 DNAPL-2-LB-S57 FUEL-5-LB-S57 FERT-3-LB-S57 PEST-5-LB-S57 DEICE-1-LB-S57	WASTE-1-LB-PI-MC WASTE-2-LB-S58 SEW-1-LB SEW-2-LB SEW-3-LB SEW-4-LB SEW-5-LB-PI-MC SEW-6-LB SEW-7-LB-PI-MC SEW-8-LB-PI-MC SEW-10-LB-PI-MC SEW-11-LB-S58 SEW-13-LB-PI-MC SEW-14-LB-S58 SALT-1-LB-S58 SALT-3-LB[1] SALT-4-LB[1] DNAPL-1-LB-S58 FUEL-1-LB-S58 FUEL-2-LB-PI-MC FUEL-4-NLB FUEL-6-LB-S58 FERT-1-LB-PI-MC FERT-2-LB-S58[3] PEST-3-LB-PI-MC PEST-4-LB-S58 LIVE-1-LB-PI-MC LIVE-2-LB-S58 ASM-1-LB-PI-MC ASM-2-LB-S58 NASM-1-LB-PI-MC NASM-2-LB-PI-MC NASM-3-LB-S58 EDU-1-LB	SALT-5-NLB SALT-6-NLB FUEL-3-NLB PEST-1-NLB PEST-2-NLB CORR-1-NLB CORR-2-NLB PATH-1-NLB PATH-2-NLB PATH-3-NLB EDU-2-NLB EDU-3-NLB EDU-5-NLB

Vulnerable Area and Vulnerability Score	Policy Code		
	Prohibit	Manage	Encourage
WHPA B scored 10	WASTE-3-LB-PI-MC WASTE-4-LB-S57 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 SALT-2-LB-S57 DNAPL-2-LB-S57 FUEL-5-LB-S57 FERT-3-LB-S57 PEST-5-LB-S57 DEICE-1-LB-S57	WASTE-1-LB-PI-MC WASTE-2-LB-S58 SEW-1-LB SEW-2-LB SEW-3-LB SEW-4-LB SEW-5-LB-PI-MC SEW-6-LB SEW-7-LB-PI-MC SEW-8-LB-PI-MC SEW-10-LB-PI-MC SEW-11-LB-S58 SEW-13-LB-PI-MC SEW-14-LB-S58 SALT-1-LB-S58 SALT-3-LB[1] SALT-4-LB[1] DNAPL-1-LB-S58 FUEL-1-LB-S58 FUEL-2-LB-PI-MC FUEL-4-NLB FUEL-6-LB-S58 FERT-1-LB-PI-MC FERT-2-LB-S58[3] PEST-3-LB-PI-MC PEST-4-LB-S58 LIVE-1-LB-PI-MC LIVE-2-LB-S58 ASM-1-LB-PI-MC ASM-2-LB-S58 NASM-1-LB-PI-MC NASM-2-LB-PI-MC NASM-3-LB-S58 EDU-1-LB	SALT-5-NLB SALT-6-NLB FUEL-3-NLB PEST-1-NLB PEST-2-NLB CORR-1-NLB CORR-2-NLB PATH-1-NLB PATH-2-NLB PATH-3-NLB EDU-2-NLB EDU-3-NLB EDU-5-NLB
WHPA B scored 8	WASTE-3-LB-PI-MC WASTE-4-LB-S57 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 DNAPL-2-LB-S57	WASTE-1-LB-PI-MC WASTE-2-LB-S58 SEW-13-LB-PI-MC SEW-14-LB-S58 DNAPL-1-LB-S58	CORR-1-NLB CORR-2-NLB PATH-1-NLB PATH-2-NLB PATH-3-NLB EDU-3-NLB EDU-5-NLB
WHPA C scored 8	WASTE-3-LB-PI-MC WASTE-4-LB-S57 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 DNAPL-2-LB-S57	WASTE-1-LB-PI-MC WASTE-2-LB-S58 SEW-13-LB-PI-MC SEW-14-LB-S58 DNAPL-1-LB-S58	CORR-1-NLB CORR-2-NLB PATH-1-NLB PATH-2-NLB PATH-3-NLB EDU-3-NLB EDU-5-NLB
WHPA C any score	DNAPL-2-LB-S57	DNAPL-1-LB-S58	No policies

Vulnerable Area and Vulnerability Score	Policy Code		
	Prohibit	Manage	Encourage
Intake Protection Zone (IPZ)			
IPZ scored 10	WASTE-3-LB-PI-MC WASTE-4-LB-S57 SEW-9-LB-PI/PA-MC SEW-12-LB-S57 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 SALT-2-LB-S57 DNAPL-2-LB-S57 FUEL-5-LB-S57 FERT-3-LB-S57 PEST-5-LB-S57 DEICE-1-LB-S57	WASTE-1-LB-PI-MC WASTE-2-LB-S58 SEW-1-LB SEW-2-LB SEW-3-LB SEW-4-LB SEW-5-LB-PI-MC SEW-6-LB SEW-7-LB-PI-MC SEW-8-LB-PI-MC SEW-13-LB-PI-MC SEW-14-LB-S58 SALT-1-LB-S58 SALT-3-LB[1] SALT-4-LB[1] DNAPL-1-LB-S58 FUEL-1-LB-S58 FUEL-2-LB-PI-MC FUEL-4-NLB FUEL-6-LB-S58 FERT-1-LB-PI-MC FERT-2-LB-S58[3] PEST-3-LB-PI-MC PEST-4-LB-S58 LIVE-1-LB-PI-MC LIVE-2-LB-S58 ASM-1-LB-PI-MC ASM-2-LB-S58 NASM-1-LB-PI-MC NASM-2-LB-PI-MC NASM-3-LB-S58 AQUA-1-LB-PI-HR EDU-1-LB	FUEL-3-NLB PEST-1-NLB PEST-2-NLB AQUA-2-NLB CORR-1-NLB CORR-2-NLB EDU-2-NLB EDU-3-NLB EDU-4-NLB EDU-5-NLB
IPZ scored 9	WASTE-3-LB-PI-MC WASTE-4-LB-S57 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 SALT-2-LB-S57 PEST-5-LB-S57 DEICE-1-LB-S57	WASTE-1-LB-PI-MC WASTE-2-LB-S58 SEW-8-LB-PI-MC SEW-10-LB-PI-MC SEW-11-LB-S58 SEW-13-LB-PI-MC SEW-14-LB-S58 SALT-1-LB-S58 SALT-3-LB[1] SALT-4-LB[1] PEST-3-LB-PI-MC PEST-4-LB-S58 LIVE-1-LB-PI-MC LIVE-2-LB-S58 ASM-1-LB-PI-MC ASM-2-LB-S58 NASM-1-LB-PI-MC NASM-2-LB-PI-MC NASM-3-LB-S58 AQUA-1-LB-PI-HR EDU-1-LB	SALT-5-NLB SALT-6-NLB PEST-1-NLB PEST-2-NLB AQUA-2-NLB CORR-1-NLB CORR-2-NLB EDU-2-NLB EDU-3-NLB EDU-4-NLB EDU-5-NLB

Vulnerable Area and Vulnerability Score	Policy Code		
	Prohibit	Manage	Encourage
IPZ scored 8, 8.1	WASTE-3-LB-PI-MC WASTE-4-LB-S57 SEW-15-LB-PI/PA-MC SEW-16-LB-S57	WASTE-1-LB-PI-MC WASTE-2-LB-S58 SEW-8-LB-PI-MC SEW-10-LB-PI-MC SEW-11-LB-S58 SEW-13-LB-PI-MC SEW-14-LB-S58 PEST-3-LB-PI-MC[2] LIVE-1-LB-PI-MC LIVE-2-LB-S58 ASM-1-LB-PI-MC ASM-2-LB-S58 NASM-1-LB-PI-MC NASM-2-LB-PI-MC NASM-3-LB-S58 EDU-1-LB	PEST-2-NLB[2] CORR-1-NLB CORR-2-NLB EDU-2-NLB EDU-3-NLB EDU-4-NLB EDU-5-NLB
Highly Vulnerable Aquifer (HVA)			
HVA	No policies apply	WASTE-5-LB-PI-HR	WASTE-6-NLB SALT-5-NLB SALT-6-NLB EDU-6-NLB

Administrative and monitoring polices are not included

[1]Policy applies in Carleton Place, Perth, Smiths Falls, and Kemptville

[2]Policy does not apply in an IPZ scored 8

[3]Commercial fertilizer **application** is only subject to this policy if it occurs in the Munster WHPA scored 10

Appendix C2 – Policy Codes Summarized by Implementing Body and Compliance/Target Date

(based on drinking water systems in the 2011 Assessment Reports)

Implementing Body	Compliance Date for Legally Binding Policies / Target Date for Non-legally Binding Policies						Monitoring Policies
	Immediate[1]	6 months	1 year	2 years	3 years[2]	5 years	
MUNICIPAL							
Beckwith Township Tay Valley Township *IPZ scored 8 & 9*	WASTE-4-LB-S57 SEW-11-LB-S58 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 SALT-2-LB-S57 PEST-5-LB-S57 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58 DEICE-1-LB-S57 ADMIN-1-LB ADMIN-2-LB ADMIN-4-LB ADMIN-5-LB	No policies	SALT-5-NLB SALT-6-NLB CORR-1-NLB EDU-1-LB EDU-5-NLB	EDU-3-NLB EDU-4-NLB	WASTE-2-LB-S58 SEW-11-LB-S58 SEW-14-LB-S58 SALT-1-LB-S58 PEST-4-LB-S58 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58	ADMIN-3-LB	MON-1-LB MON-2-LB MON-3-NLB
Drummond/North Elmsley, Township of *IPZ scored 8*	WASTE-4-LB-S57 SEW-11-LB-S58 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58 ADMIN-1-LB ADMIN-2-LB ADMIN-4-LB ADMIN-5-LB	No policies	SALT-5-NLB SALT-6-NLB CORR-1-NLB EDU-1-LB EDU-5-NLB	EDU-3-NLB EDU-4-NLB	WASTE-2-LB-S58 SEW-11-LB-S58 SEW-14-LB-S58 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58	ADMIN-3-LB	MON-1-LB MON-2-LB MON-3-NLB
Montague, Township of *IPZ scored 8* *WHPA-B & WHPA-C scored less than or = 6*	WASTE-4-LB-S57 SEW-11-LB-S58 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 DNAPL-2-LB-S57 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58 ADMIN-1-LB ADMIN-2-LB ADMIN-4-LB ADMIN-5-LB	No policies	SALT-5-NLB SALT-6-NLB CORR-1-NLB PATH-1-NLB EDU-1-LB EDU-5-NLB	EDU-3-NLB EDU-4-NLB	WASTE-2-LB-S58 SEW-11-LB-S58 SEW-14-LB-S58 DNAPL-1-LB-S58 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58	ADMIN-3-LB	MON-1-LB MON-2-LB MON-3-NLB
Carleton Place, Town of *IPZ scored 9 & 10* Perth, Town of *IPZ scored 8, 9 & 10* Smiths Falls, Town of *IPZ scored 8 & 10*	WASTE-4-LB-S57 SEW-9-LB-PI/PA-MC SEW-11-LB-S58 SEW-12-LB-S57 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 SALT-2-LB-S57 DNAPL-2-LB-S57 FUEL-1-LB-S58 FUEL-5-LB-S57 FUEL-6-LB-S58 FERT-2-LB-S58 FERT-3-LB-S57 PEST-5-LB-S57 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58 DEICE-1-LB-S57 ADMIN-1-LB ADMIN-2-LB ADMIN-4-LB ADMIN-5-LB	SEW-3-LB	SEW-4-LB SEW-6-LB SALT-3-LB SALT-4-LB SALT-5-NLB SALT-6-NLB CORR-1-NLB EDU-1-LB EDU-5-NLB	EDU-3-NLB EDU-4-NLB	WASTE-2-LB-S58 SEW-11-LB-S58 SEW-14-LB-S58 SALT-1-LB-S58 DNAPL-1-LB-S58 FUEL-1-LB-S58 FUEL-6-LB-S58 FERT-2-LB-S58 PEST-4-LB-S58 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58	ADMIN-3-LB	MON-1-LB MON-2-LB MON-3-NLB

Implementing Body	Compliance Date for Legally Binding Policies / Target Date for Non-legally Binding Policies						Monitoring Policies
	Immediate[1]	6 months	1 year	2 years	3 years[2]	5 years	
Westport, Village of *WHPA-A scored 10* *WHPA-B scored 10* *WHPA-B scored 8* *WHPA-C scored 8* *WHPA-C scored less than or = 6*	WASTE-4-LB-S57 SEW-9-LB-PI/PA-MC SEW-11-LB-S58 SEW-12-LB-S57 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 SALT-2-LB-S57 DNAPL-2-LB-S57 FUEL-1-LB-S58 FUEL-5-LB-S57 FUEL-6-LB-S58 FERT-2-LB-S58 FERT-3-LB-S57 PEST-5-LB-S57 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58 DEICE-1-LB-S57 ADMIN-1-LB ADMIN-2-LB ADMIN-4-LB ADMIN-5-LB	SEW-3-LB	SEW-4-LB SEW-6-LB SALT-5-NLB SALT-6-NLB CORR-1-NLB PATH-1-NLB EDU-1-LB EDU-5-NLB	EDU-3-NLB	WASTE-2-LB-S58 SEW-11-LB-S58 SEW-14-LB-S58 SALT-1-LB-S58 DNAPL-1-LB-S58 FUEL-1-LB-S58 FUEL-6-LB-S58 FERT-2-LB-S58 PEST-4-LB-S58 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58	ADMIN-3-LB	MON-1-LB MON-2-LB MON-3-NLB
North Grenville, Municipality of Merrickville-Wolford, Village of *WHPA-A scored 10* *WHPA-B & WHPA-C scored less than or = 6*	WASTE-4-LB-S57 SEW-9-LB-PI/PA-MC SEW-11-LB-S58 SEW-12-LB-S57 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 SALT-2-LB-S57 DNAPL-2-LB-S57 FUEL-1-LB-S58 FUEL-5-LB-S57 FUEL-6-LB-S58 FERT-2-LB-S58 FERT-3-LB-S57 PEST-5-LB-S57 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58 DEICE-1-LB-S57 ADMIN-1-LB ADMIN-2-LB ADMIN-4-LB ADMIN-5-LB	SEW-3-LB	SEW-4-LB SEW-6-LB SALT-3-LB[3] SALT-4-LB[3] SALT-5-NLB SALT-6-NLB CORR-1-NLB PATH-1-NLB EDU-1-LB EDU-5-NLB	EDU-3-NLB	WASTE-2-LB-S58 SEW-11-LB-S58 SEW-14-LB-S58 SALT-1-LB-S58 DNAPL-1-LB-S58 FUEL-1-LB-S58 FUEL-6-LB-S58 FERT-2-LB-S58 PEST-4-LB-S58 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58	ADMIN-3-LB	MON-1-LB MON-2-LB MON-3-NLB
Rideau Lakes, Township of *IPZ scored 8* *WHPA-C scored 8* *WHPA-C scored less than or = 6*	WASTE-4-LB-S57 SEW-11-LB-S58 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 DNAPL-2-LB-S57 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58 ADMIN-1-LB ADMIN-2-LB ADMIN-4-LB ADMIN-5-LB	No policies	SALT-5-NLB SALT-6-NLB CORR-1-NLB EDU-1-LB EDU-5-NLB	EDU-3-NLB EDU-4-NLB	WASTE-2-LB-S58 SEW-11-LB-S58 SEW-14-LB-S58 DNAPL-1-LB-S58 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58	ADMIN-3-LB	MON-1-LB MON-2-LB MON-3-NLB

Implementing Body	Compliance Date for Legally Binding Policies / Target Date for Non-legally Binding Policies						Monitoring Policies
	Immediate[1]	6 months	1 year	2 years	3 years[2]	5 years	
Mississippi Mills, Town of *WHPA-A scored 10* *WHPA-B scored 10* *WHPA-B scored 8* *WHPA-C scored 8* *WHPA-B & WHPA-C scored less than or = 6* *IPZ scored 8* Ottawa, City of *IPZ scored 8.1 & 9* *WHPA-A scored 10* *WHPA-B scored 10* *WHPA-B scored 8* *WHPA-B & WHPA-C scored less than or = 6*	WASTE-4-LB-S57 SEW-9-LB-PI/PA-MC SEW-11-LB-S58 SEW-12-LB-S57 SEW-15-LB-PI/PA-MC SEW-16-LB-S57 SALT-2-LB-S57 DNAPL-2-LB-S57 FUEL-1-LB-S58 FUEL-5-LB-S57 FUEL-6-LB-S58 FERT-2-LB-S58 FERT-3-LB-S57 PEST-5-LB-S57 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58 DEICE-1-LB-S57 ADMIN-1-LB ADMIN-2-LB ADMIN-4-LB ADMIN-5-LB	SEW-3-LB	SEW-4-LB SEW-6-LB SALT-5-NLB SALT-6-NLB CORR-1-NLB PATH-1-NLB EDU-1-LB EDU-5-NLB	EDU-3-NLB EDU-4-NLB	WASTE-2-LB-S58 SEW-11-LB-S58 SEW-14-LB-S58 SALT-1-LB-S58 DNAPL-1-LB-S58 FUEL-1-LB-S58 FUEL-6-LB-S58 FERT-2-LB-S58 PEST-4-LB-S58 LIVE-2-LB-S58 ASM-2-LB-S58 NASM-3-LB-S58	ADMIN-3-LB	MON-1-LB MON-2-LB MON-3-NLB
Lanark County Leeds & Grenville, United Counties of	SEW-9-LB-PI/PA-MC SEW-15-LB-PI/PA-MC ADMIN-4-LB ADMIN-5-LB		SALT-5-NLB SALT-6-NLB CORR-1-NLB EDU-1-LB EDU-5-NLB	EDU-3-NLB EDU-4-NLB		ADMIN-3-LB	MON-2-LB MON-3-NLB
Addington Highlands, TWP of Athens, TWP of Augusta, TWP of Central Frontenac Township Clarence-Rockland, City of Elizabethtown-Kitley, TWP of Frontenac, County of Greater Madawaska, TWP of Lanark Highlands, TWP of Lennox & Addington, County of North Dundas, TWP of North Frontenac TWP Prescott & Russell, United Counties of Renfrew, County of South Frontenac, TWP of Stormont, Dundas & Glengarry, United Counties of *Highly Vulnerable Aquifer (HVA)*	No policies	No policies	SALT-5-NLB SALT-6-NLB	No policies	No policies	No policies	MON-3-NLB
PRINCIPAL AUTHORITY							
Principal Authority	No policies	SEW-2-LB	No policies	No policies	No policies	SEW-1-LB	MON-4-LB MON-5-LB

Implementing Body	Compliance Date for Legally Binding Policies / Target Date for Non-legally Binding Policies						Monitoring Policies
	Immediate[1]	6 months	1 year	2 years	3 years[2]	5 years	
PROVINCIAL							
Ministry of Agriculture, Food and Rural Affairs	FERT-1-LB-PI-MC LIVE-1-LB-PI-MC ASM-1-LB-PI-MC NASM-1-LB-PI-MC	No policies	No policies	No policies	No policies	No policies	MON-6-LB
Ministry of the Environment and Climate Change	WASTE-3-LB-PI-MC WASTE-5-LB-PI-HR SEW-5-LB-PI-MC SEW-7-LB-PI-MC SEW-9-LB-PI/PA-MC SEW-10-LB-PI-MC SEW-15-LB-PI/PA-MC FUEL-2-LB-PI-MC PEST-3-LB-PI-MC NASM-2-LB-PI-MC AQUA-1-LB-PI-HR	No policies	WASTE-6-NLB PEST-1-NLB PEST-2-NLB CORR-2-NLB PATH-2-NLB	No policies	WASTE-1-LB-PI-MC SEW-5-LB-PI-MC SEW-8-LB-PI-MC SEW-13-LB-PI-MC FUEL-2-LB-PI-MC PEST-3-LB-PI-MC NASM-2-LB-PI-MC	No policies	MON-7-LB MON-8-LB
Ministry of Natural Resources and Forestry	No policies	No policies	AQUA-2-NLB PATH-3-NLB	No policies	No policies	No policies	MON-9-NLB MON-10-NLB
Ministry of Transportation	No policies	No policies	No policies	EDU-2-NLB	No policies	No policies	MON-11-NLB
Technical Standards and Safety Authority	FUEL-4-NLB	No policies	FUEL-3-NLB	No policies	No policies	No policies	No policies
Ministry of Consumer Services	No policies	No policies	FUEL-3-NLB	No policies	No policies	No policies	No policies
FEDERAL							
Environment Canada	No policies	No policies	WASTE-6-NLB	No policies	No policies	No policies	No policies
SOURCE PROTECTION AUTHORITY							
Source Protection Authority		No policies	EDU-6-NLB	no policies	No policies	No policies	MON-12-LB MON-13-NLB MON-14-LB MON-15-NLB

[1]Policies requring Risk Management Plans immediately apply to new activities (ie. a new activity may not proceed without an approved Risk Management Plan)

[2]Policies requiring Risk Management Plans to be established within 3 years of the Source Protection Plan taking effect apply to existing activities

[3]Policy only applies to Municipality of North Grenville

[4]Mandatory On-Site Sewage System Maintenance Inspection Program - Inspections must be completed within five years of the Assessment Report being approved (August 2016 in the Mississippi Watershed and December 2016 in the Rideau Watershed) and then be inspected once every five years thereafter

Appendix D (based on 2011 Assessment Reports)

Maps Showing Where Activities Can Be Considered a Significant Threat in Each Municipality

Mississippi-Rideau Source Protection Region
Mississippi-Rideau Source Protection Plan 2013
Significant Threat Areas
Appendix D1

Québec
Ottawa River
New York State

HORTON
RENFREW
ADMASTON/BROMLEY
BONNECHERE VALLEY
MCNAB/BRAESIDE
COUNTY OF RENFREW
GREATER MADAWASKA
MISSISSIPPI MILLS
OTTAWA
RUSSELL
CARLETON PLACE
COUNTY OF LANARK
BECKWITH
NORTH DUNDAS
COUNTY OF LENNOX AND ADDINGTON
LANARK HIGHLANDS
DRUMMOND/NORTH ELMSLEY
MONTAGUE
NORTH GRENVILLE
ADDINGTON HIGHLANDS
NORTH FRONTENAC
PERTH
SMITHS FALLS
MERRICKVILLE-WOLFORD
TAY VALLEY
COUNTY OF FRONTENAC
CENTRAL FRONTENAC
UNITED COUNTIES OF LEEDS AND GRENVILLE
AUGUSTA
ELIZABETHTOWN-KITLEY
WESTPORT
RIDEAU LAKES
TWEED
STONE MILLS
SOUTH FRONTENAC
ATHENS
BROCKVILLE

Clarence Creek
Fitzroy Habour
Galetta
Dunrobin
Kinburn
Marathon
Carp
Britannia
Lemieux Island
Vars
Pakenham
Greely
Manotick
Metcalfe
Almonte
Appleton
Richmond
King's Park and Richmond West
Ashton
Munster
Kars
Osgoode
Dwyer Hill
North Gower
Carleton Place
Kemptville
Bedell
Lanark
Burritts Rapids
Oxford Mills
Plevna
McDonalds Corner
Balderson
Perth
Smiths Falls
Glen Tay
Port Elmsley
Merrickville
Bishops Mills
Maberly
De Witts Corner
Scotch Line
Garretton
South Branch
Stanleyville
Sharbot Lake
Bolingbroke
North Augusta
Crow Lake
Oconto
Portland
Westport
Tichborne
Parham
Crosby
Newboro
Greenbush
Addison
Fairfield
Elgin
Farmton
Maitland

17 7 36 7 417 417 43 15 42 416 401 38

LEGEND

- Town/Community
- 7 Major Road
- Lower Tier Municipality
- Upper Tier Municipalities
- Source Protection Area
- Waterbody

Wellhead Protection Area

- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored 8
- WHPA Scored less than 8

Intake Protection Zone

- IPZ Scored 10
- IPZ Scored 9
- IPZ Scored 8 or 8.1

0 2.75 5.5 11 16.5
Kilometres

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

While the MRSPR makes every effort to ensure that the information presented is sufficiently accurate for the intended uses of the map, there is an inherent margin of error in all mapping products, and accuracy of the mapping cannot be guaranteed for all possible uses. All end-users must therefore determine for themselves if the information is suitable for their purposes.

Mississippi-Rideau Source Protection Plan 2013

Township of Beckwith Significant Threat Areas

Appendix D2

TOWN OF MISSISSIPPI MILLS

TOWN OF CARLETON PLACE

CITY OF OTTAWA

TOWNSHIP OF LANARK HIGHLANDS

TOWNSHIP OF BECKWITH

TOWNSHIP OF DRUMMOND/ NORTH ELMSLEY

TOWNSHIP OF MONTAGUE

Mississippi Lake

Wolf Grove Road
County 29 Road
7A Road
3A Road
Old Perth Road
1 Road
10B Road
10A Road
2 Road
Highway 7
Highway 15
9th Line
8th Line
7th Line
6th Line
Carleton Shore Road
McLachlin Road
Ferndale Road
Fallowfield Road
Mansfield Road
Copeland Road
Franktown Road
Purdy Road
King's Creek Road
Richmond Road
Brunton Sideroad
Montague Boundary Road
Pinery Road
Holbrook Road
Rosedale Road
Nolan's Road

LEGEND

- Municipal Surface Water Intake
- Road
- Railway
- Municipal Boundary
- Stream
- Water
- Source Protection Area

Intake Protection Zone

- IPZ Scored 10
- IPZ Scored 9
- IPZ Scored 8

0 600 1,200 2,400 3,600
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

While the MRSPR makes every effort to ensure that the information presented is sufficiently accurate for the intended uses of the map, there is an inherent margin of error in all mapping products, and accuracy of the mapping cannot be guaranteed for all possible uses. All end-users must therefore determine for themselves if the information is suitable for their purposes.

MAP LOCATION: Z:\Maps\MXD\SWP\SPP\Tech Source Protection Plan\Appendix D2\Beckwith\Beckwith.mxd

Mississippi-Rideau Source Protection Plan 2013

Town of Carleton Place
Significant Threat Areas

Appendix D3

TOWN OF MISSISSIPPI MILLS

TOWN OF CARLETON PLACE

TOWNSHIP OF BECKWITH

Mississippi Lake

Mississippi River

Quarry Road
Thomas Street
Julie Anne Crescent
Spruce Drive
5A Road
4A Road
Townline Road
High Street
Mississippi Road
Birch Point Lane
Montgomery Park Road
Knowlton Road
Scotch Corner's Road
McCann Road
Rathwell Shore Road
Dowdall Shore Lane
Birch Avenue
Cedar Avenue
First Avenue
Side Drive
Bayview Drive
Faye Avenue
Younger Sideroad
Park Road
Timberwood Drive
Gardiner Shore Road
Hawkins Drive
Megan Drive
10th Line
McGregor Drive
Highway 7
8 Road
Pick Road
Patty Place
Oakland Crescent
Industrial Avenue
Town Line
Lanark Street
Bridge Street
McNeely Avenue
Arklan Road
Metcalfe Lane
Crampton Drive
Lake Avenue
Francis Street
Mill Street
Pattie Drive
Frank Street
Moore Street
Coleman Street
Bond Street
Lansdowne Avenue
Franktown Road
Knox Street
Blair Street
Arthur Street
Napoleon Street
Terry Fox Avenue
Barclay Street
Johnston Street

LEGEND

- Municipal Surface Water Intake
- Road
- Railway
- Municipal Boundary
- Stream
- Water

Intake Protection Zone

- IPZ Scored 10
- IPZ Scored 9
- IPZ Scored 8

0 150 300 600 900
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

MAP LOCATION: Z:\Projects\MXD\SWP\Plans\SourceProtectionPlan\Appendix\D3 Carleton Place\TheatreAreas.mxd

Mississippi-Rideau Source Protection Plan 2013

Township of Drummond/North Elmsley Significant Threat Areas

Appendix D4

TOWNSHIP OF LANARK HIGHLANDS

TOWNSHIP OF BECKWITH

CITY OF OTTAWA

TOWNSHIP OF MONTAGUE

TOWNSHIP OF DRUMMOND/ NORTH ELMSLEY

TOWN OF PERTH

TOWN OF SMITHS FALLS

TOWNSHIP OF TAY VALLEY

TOWNSHIP OF RIDEAU LAKES

Mississippi Lake

Highway 511
Dobbie Road
2 Road
2 B Road
5A Road
3 Road
McDonalds Corners Road
Ashby Road
Iron Mine Road
10B Road
10A Road
9th Line
7th Line
6th Line
King's Creek Road
Purdy Road
Dwyer Hill Road
Brunton Sideroad
Montague Boundary Road
Pinery Road
Holbrook Road
McLaughlin Road
Highway 15
Rosedale Road
Nolan's Road
Roger Stevens Drive
Burchill Road
Tennyson Road
Highway 7
2 Road
Burns Road
Churchill Road
Highway 43
Matheson Drive
Bennett Lake Road
Anderson Sideroad
Ennis Road
7 Road
6 Road
5 Road
Clarchris Road
Highway 511
Chrisrie Lake Road
Dokken Road
Rutherford Sideroad
Highway 7
2 Road
Bay Road
Kitley Line 1 Road
Kitley Line 2 Road
Kitley Line 3 Road

LEGEND

- Municipal Surface Water Intake
- Road
- Railway
- Municipal Boundary
- Stream
- Water
- Source Protection Area

Intake Protection Zone

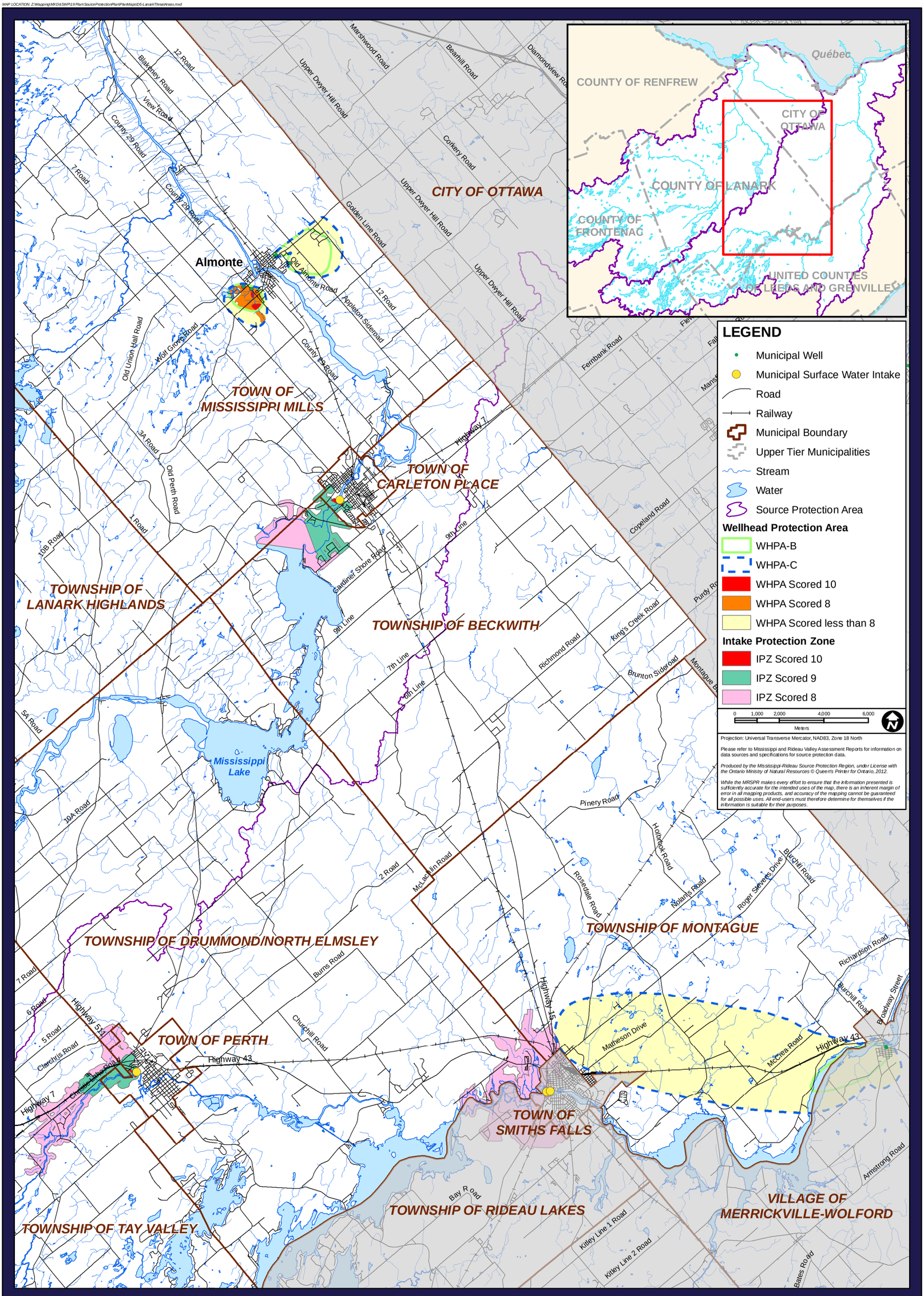
- IPZ Scored 10
- IPZ Scored 9
- IPZ Scored 8

0 800 1,600 3,200 4,800
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

MXD LOCATION: Z:\Projects\MRSPR\SPP\Work\Drummond_NE\Mxd\Appendix\D4 Drummond_NE Threatened.mxd



County of Lanark
Significant Threat Areas

Appendix D5

Mississippi-Rideau
Source Protection Plan
2013

Mississippi-Rideau Source Protection Plan 2013

United Counties of Leeds & Grenville Significant Threat Areas

Appendix D6

TOWNSHIP OF BECKWITH
CITY OF OTTAWA
TOWNSHIP OF DRUMMOND/NORTH ELMSLEY
TOWNSHIP OF MONTAGUE
MUNICIPALITY OF NORTH GRENVILLE
TOWN OF PERTH
TOWN OF SMITHS FALLS
Kemptville
Merrickville
TOWNSHIP OF TAY VALLEY
VILLAGE OF MERRICKVILLE-WOLFORD
TOWNSHIP OF ELIZABETHTOWN-KITLEY
VILLAGE OF WESTPORT
TOWNSHIP OF RIDEAU LAKES
TOWNSHIP OF ATHENS

7th Line
8th Line
Dwyer Hill Road
Paden Road
Donnelly Drive
Pinery Road
Holbrook Road
McLachlin Road
Rosedale Road
Nolan's Road
Roger Stevens Drive
Gilroy Road
Richardson Road
Burchill Road
McLean Road
Sanderson Road
Bedell Road
Highway 7
2 Road
Anderson Sideroad
Ennis Road
7 Road
6 Road
5 Road
Clarchris Road
Christie Lake Road
Rutherford Sideroad
Highway 511
Churchill Road
Highway 15
Highway 43
McCrea Road
Jig Street
Armstrong Road
Pioneer Road
Land O'Nod Road
Bay Road
Killley Line 1 Road
Killley Line 2 Road
Killley Line 3 Road
Killley S Elms Tline Road
Bates Road
Yule Road
Cedar Bridge Road
Merkley Road
Cooper Drive
Parish Road
Shore Road
Big Rideau Lake
Upper Rideau Lake
Old Kingston Road
Cedar Valley Road
Rells Road
Hossack Lane
Hanna Road
Plumhollow Road
Chant Road
Rudi Road
Toledo Road
Daytown Road
Mother Barnes Road
Drummond Road
Leacock Road
Killley Line 9 Road
Jellyby Road

LEGEND

- Municipal Well
- Municipal Surface Water Intake
- Road
- Railway
- Municipal Boundary
- Stream
- Water
- Source Protection Area

Wellhead Protection Area

- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored 8
- WHPA Scored less than 8

Intake Protection Zone

- IPZ Scored 10
- IPZ Scored 8

0 1 2 4 6
Kilometers

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

MAP LOCATION: Z:\Mapping\MXD\SWS\SP\Rideau\Rideau_WorkingPapers\Appendix_D\Leeds_Grenville\Threat_Areas.mxd

Mississippi-Rideau Source Protection Plan 2013

Village of Merrickville-Wolford
Significant Threat Areas
Appendix D7

TOWNSHIP OF MONTAGUE

MUNICIPALITY OF NORTH GRENVILLE

TOWN OF SMITHS FALLS

Merrickville

VILLAGE OF MERRICKVILLE-WOLFORD

TOWNSHIP OF RIDEAU LAKES

TOWNSHIP OF ELIZABETHTOWN-KITLEY

TOWNSHIP OF AUGUSTA

Highway 15
Highway 43
Nolan's Road
Burchill Road
Richardson Road
Broadway Street
Matheson Drive
McCrea Road
H/ McLean Road
Sanderson Road
J/g Street
Limerick Road
Armstrong Road
Pioneer Road
Land O'Nod Road
Bay Road
Kitley Line 1 Road
Kitley Line 2 Road
Kitley Line 3 Road
Bates Road
Weedmark Road
Yule Road
Branch Road
Woods Road
Leacock Road
Drummond Road
Jellyby Road

LEGEND

- Municipal Well
- Road
- Railway
- Municipal Boundary
- Stream
- Water
- Source Protection Area

Wellhead Protection Area

- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored less than 8

0 600 1,200 2,400 3,600
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

While the MRSPR makes every effort to ensure that the information presented is sufficiently accurate for the intended uses of the map, there is an inherent margin of error in all mapping products, and accuracy of the mapping cannot be guaranteed for all possible uses. All end-users must therefore determine for themselves if the information is suitable for their purposes.

MAP LOCATION: Z:\Mapping\SWS\SWS 3\Plan Source Protection Plan\Plan\Map\D7 Merrick Well Threat Areas.mxd

Mississippi-Rideau Source Protection Plan 2013

Town of Mississippi Mills Significant Threat Areas

Appendix D8

TOWNSHIP OF MCNAB/BRAESIDE

TOWNSHIP OF GREATER MADAWASKA

TOWNSHIP OF LANARK HIGHLANDS

TOWN OF MISSISSIPPI MILLS

CITY OF OTTAWA

TOWN OF CARLETON PLACE

TOWNSHIP OF BECKWITH

Almonte

Upper Dwyer Hill Road
Ivy Acres Road
Farmview Road
Diamondview Road
John Shaw Road
Carp Road
John Aselford Driveway
Second Line Road
Dunrobin Road
Kerwin Road
Donald B. Munro Drive
Shanna Road
Marshwood Road
William Hodgins Lane
Beaverhill Road
Huntmar Drive
McGee Sideroad
Golden Line Road
Old Almonte Road
Appleton Sideroad
12 Road
Highland Road
Carbine Road
Blakeney Road
View Road
County 29 Road
Bellamy Road
7 Road
Old Union Hall Road
Muir Grove Road
County 7/9 Road
7A Road
3A Road
Old Perth Road
1 Road
10B Road
10C Road
Darling Road
Lavant Darling Road
French Line Road
Tatlock Road
Black Creek Road
Lavant Road
Highway 511
Highway 7
Highway 15
9th Line
Corkery Road
David Manchester Road
Spruce Ridge Road

LEGEND

- Municipal Surface Water Intake
- Road
- Railway
- Municipal Boundary
- Stream
- Water
- Source Protection Area

Wellhead Protection Area

- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored 8
- WHPA Scored less than 8

Intake Protection Zone

- IPZ Scored 10
- IPZ Scored 9
- IPZ Scored 8

0 900 1,800 3,600 5,400
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

MAP LOCATION: Z:\Mapping\SWP\SWP3.0\Arc\SourceProtectionPlan\MapDocs\Mississippi\MississippiMain.mxd

Mississippi-Rideau Source Protection Plan 2013

Township of Montague Significant Threat Areas

Appendix D9

TOWNSHIP OF BECKWITH

CITY OF OTTAWA

MUNICIPALITY OF NORTH GRENVILLE

TOWNSHIP OF MONTAGUE

TOWNSHIP OF DRUMMOND/NORTH ELMSLEY

TOWN OF SMITHS FALLS

VILLAGE OF MERRICKVILLE-WOLFORD

TOWNSHIP OF RIDEAU LAKES

Merrickville

7th Line
6th Line
Richmond Road
Brunton Sideroad
Montague Boundary Road
Roger Stevens Drive
Dwyer Hill Road
Harnett Road
Paden Road
Flood Road
Donnelly Drive
Gilroy Road
Pinery Road
Hollbrook Road
Nolan's Road
Burchill Road
Broadway Street
Richardson Road
Hf Mclean Road
2 Road
McLachlin Road
Highway 15
Rosedale Road
Burns Road
Churchill Road
Matheson Drive
McCrea Road
Highway 43
Armstrong Road
Bay Road

LEGEND

- Municipal Well
- Municipal Surface Water Intake
- Road
- Railway
- Municipal Boundary
- Stream
- Water
- Source Protection Area

Wellhead Protection Area

- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored less than 8

Intake Protection Zone

- IPZ Scored 10
- IPZ Scored 9
- IPZ Scored 8

0 600 1,200 2,400 3,600
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

MAP LOCATION: Z:\Maps\MXD\SWP\TP\PlanSource\Policies\Policy\Policy\SWP\D9 Montague Threat Areas.mxd

Mississippi-Rideau Source Protection Plan 2013

Municipality of North Grenville
Significant Threat Areas

Appendix D10

CITY OF OTTAWA

TOWNSHIP OF NORTH DUNDAS

TOWNSHIP OF SOUTH DUNDAS

MUNICIPALITY OF NORTH GRENVILLE

TOWNSHIP OF MONTAGUE

VILLAGE OF MERRICKVILLE-WOLFORD

TOWNSHIP OF EDWARDSBURGH/CARDINAL

TOWNSHIP OF AUGUSTA

Kemptville

Roger Stevens Drive
Pierce Road
Cowell Road
Dwyer Hill Road
Flood Road
Paden Road
Donnelly Drive
Burchill Road
Gilroy Road
Richardson Road
Broadway Street
McCrea Road
Highway 43
H M Mclean Road
Sanderson Road
Jig Street
Limerick Road
Bedell Road
Armstrong Road
Pioneer Road
Land O'Nod Road
2nd Line Road
French Settlement Road
Kerrs Ridge Road
Spruit Road
Cayer Road
Shaw Road
Hyndman Road
Guy Road
Sandy Row
Campbell Road
Venthor Road
Groveton Road
Conlell Road
Hurley Road
Crowder Road
Pittston Road

LEGEND

- Municipal Well
- Road
- Railway
- Municipal Boundary
- Stream
- Water
- Source Protection Area

Wellhead Protection Area

- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored less than 8

0 800 1,600 3,200 4,800
Meters

N

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

MAP LOCATION: Z:\Mapping\MXDs\SWP\19 Plan\SourceProtectionPlan\PlanMaps\D11-OttawaThreatAreas.mxd

Québec

CITY OF OTTAWA

TOWNSHIP OF BECKWITH

TOWNSHIP OF MONTAGUE

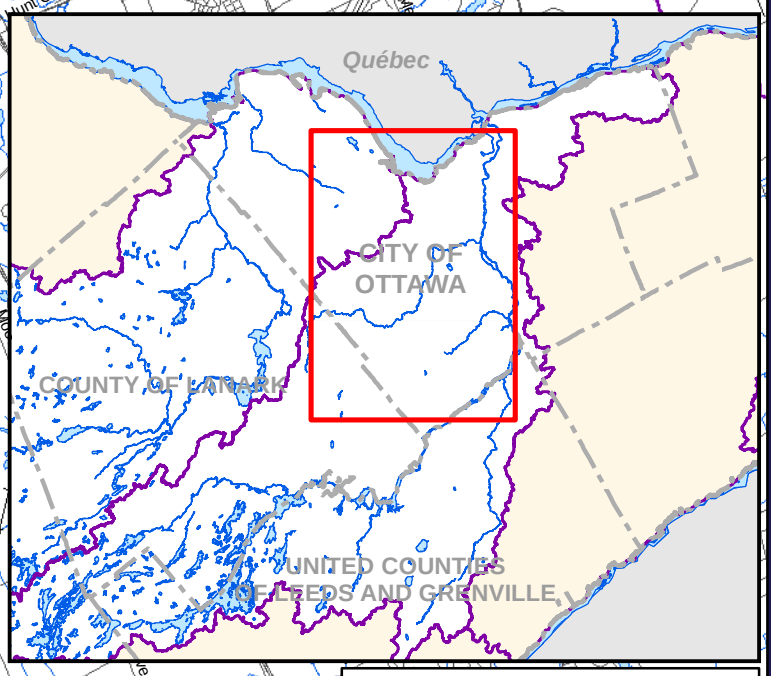
MUNICIPALITY OF NORTH GRENVILLE

Carp

Munster

Richmond
King's Park and Richmond West

Thomas A Dolan Parkway
Dunrobin Road
March Road
Carp Road
Carling Avenue
Highway 417
Robertson Road
Old Richmond Road
Terry Fox Drive
Hazeldean Road
Stittsville Main Street
Huntley Road
Fallowfield Road
Munster Road
Dwyer Hill Road
Frankton Road
Richmond Road
Roger Stevens Drive
Derry Sideroad
Highway 7
Highway 15
Eagleson Road
Century Road
Broughy Drive
McBean Street
Highway 416
Donnelly Drive
County Road 44
County Road 19
Hunt Club Road
Merivale Road
Baseline Road
Meadowlands Drive
Colonel By Drive
Riverside Drive
Bronson Avenue
Main Street
Somerset Street
Parkdale Avenue
Richmond Road
Island Park Drive
Maitland Avenue
Pinecrest Road
Highway 417
Airport Parkway



LEGEND

- Municipal Well
- Municipal Surface Water Intake
- Road
- Railway
- Municipal Boundary
- Upper Tier Municipalities
- Stream
- Waterbody
- Source Protection Area

Wellhead Protection Area

- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored 8
- WHPA Scored less than 8

Intake Protection Zone

- IPZ Scored 9
- IPZ Scored 8.1

0 800 1,600 3,200 4,800
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

City of Ottawa
Significant Threat Areas

Appendix D11

Mississippi-Rideau Source Protection Plan 2013

Mississippi-Rideau Source Protection Plan 2013

Town of Perth
Significant Threat Areas

Appendix D12

TOWN OF PERTH

TOWNSHIP OF DRUMMOND/NORTH ELMSLEY

TOWNSHIP OF TAY VALLEY

5 Road
Highway 511
4A Road
Clarchris Road
Stamford Drive
Highway 7
Morris Road
Dufferin Road
Dufferin Street
2 Road
Spence Road
North Street
1 Road
Moores Road
Old Plank Road
Highway 43
Evans Road
Railway Street
Garden Avenue
Perthmore Street
Harris Street
Isabella Street
Mather Avenue
Alan Avenue
Sunset Boulevard
Craig Street
Joy Avenue
Chetwynd Street
Wilson Street
Baldwin Street
Canal Bank Road
Rathwell Road
Tay River
Tay Ridge Road
Thom Street
Peter Street
Rogers Road
Mill Street
Harvey Street
Grant Street
Church Street
Cockburn Street
South Street
Arthur Street
Conlon Drive
Rogers Road
Industrial Road
Rideau Ferry Road
Rideau Ferry Road
Wild Life Road
Bernice Crescent
Robert Run
Highway 7
Christie Lake Road
Somerville Drive
Scotch Line
Orchard Crescent
Otty Lake Sideroad
Scotch Line
Tay Road

LEGEND

- Municipal Surface Water Intake
- Road
- Railway
- Municipal Boundary
- Stream
- Water

Intake Protection Zone

- IPZ Scored 10
- IPZ Scored 9
- IPZ Scored 8

0 150 300 600 900
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

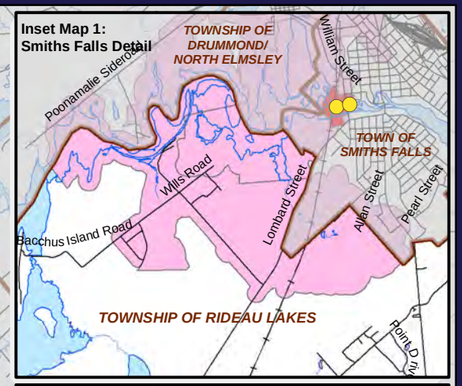
MAP LOCATION: Z:\Projects\MRSPR\SPA\Perth\Maps\Perth\Perth_D12.mxd

Mississippi-Rideau Source Protection Plan 2013

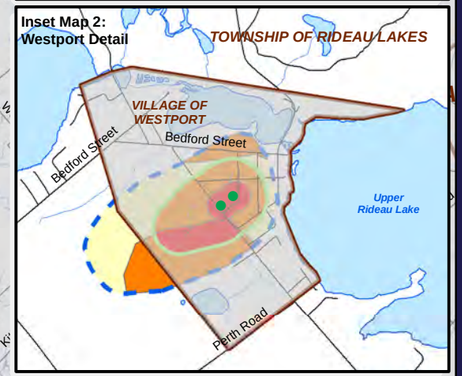
Township of Rideau Lakes
Significant Threat Areas

Appendix D13

Inset Map 1: Smiths Falls Detail



Inset Map 2: Westport Detail



TOWN OF PERTH

TOWNSHIP OF DRUMMOND/NORTH ELMSLEY

TOWN OF SMITHS FALLS

TOWNSHIP OF TAY VALLEY

TOWNSHIP OF ELIZABETHTOWN-KITLEY

TOWNSHIP OF RIDEAU LAKES

VILLAGE OF WESTPORT

TOWNSHIP OF SOUTH FRONTENAC

TOWNSHIP OF ATHENS

TOWNSHIP OF LEEDS AND THE THOUSAND ISLANDS

Highway 43
Highway 7
5 Road
Dokken Road
Rutherford Sideroad
Bennett Lake Road
Doran Road
11th Line
Fagan Lake Road
Old Brooke Road
2 Road
Amstrong Line
Cross Road
Cedar Bridge Road
Merkley Road
Cooper Drive
Parish Road
Shore Road
Big Rideau Lake
Upper Rideau Lake
Old Kingston Road
Cedar Valley Road
Rells Road
Hossack Lane
Hanna Road
Chant Road
Rudd Road
Bay Road
Killey Line 1 Road
Killey Line 2 Road
Killey Line 3 Road
Killey's Elms Tline Road
McNeil Road
Westport Road
McAndrews Road
Abrams Lane
Perth Road
Massasauga Road
Bedford Road
MacGillivray Lane
Opinicon Road
Fishing Lake Road
Battersea Road
Simpson Road
Sweets Corners Road
Long Point Road
Mountain Street
Charley's Lock Road
Hart's Gravel Road
Tolsto Road
Daytown Road
Plumhollow Road
Mother Barnes Road
Lake Street
Wreshburn Road
Hard Island Road
Eighth Line Road
Black Church Road
Sheartown Road
Summers Road

LEGEND

- Municipal Well
- Municipal Surface Water Intake
- Road
- Railway
- Municipal Boundary
- Stream
- Water
- Source Protection Area

Wellhead Protection Area

- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored 8
- WHPA Scored less than or = 6

Intake Protection Zone

- IPZ Scored 10
- IPZ Scored 8

0 1 2 4 6
Kilometers

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

While the MRSPR makes every effort to ensure that the information presented is sufficiently accurate for the intended uses of the map, there is an inherent margin of error in all mapping products, and accuracy of the mapping cannot be guaranteed for all possible uses. All end-users must therefore determine for themselves if the information is suitable for their purposes.

MAP LOCATION: Z:\Projects\SPA\2013\Maps\D13_RideauLakes_Threats.mxd

Mississippi-Rideau Source Protection Plan 2013

Town of Smiths Falls
Significant Threat Areas
Appendix D14

TOWNSHIP OF MONTAGUE

TOWNSHIP OF DRUMMOND/NORTH ELMSLEY

TOWN OF SMITHS FALLS

TOWNSHIP OF RIDEAU LAKES

Rideau River

Highway 15
Union Street
Ruthven Street
Roger Stevens Drive
Grange Street
Harper Condie Road
Carroll Road
Highway 43
Matheson Drive
Lorne Street
Rideau Avenue
Stephen Street
Ella Street
Maple Street
Elmsley Street
Maitland Street
Cornelia Street
Beckwith Street
Lansdowne Street
William Street
Victoria Avenue
Winnifred Street
Dunning Avenue
Robina Avenue
Parkland Court
Old Mill Road
Abbott Street
Roosevelt Drive
Jones Street
Hershey Drive
Air Care Drive
Alfred Street
Carss Avenue
Cedar Road
Catherine Street
Fergusson Drive
Lavinia Street
Merrick Street
Abel Street
Marsha Drive
Carol Crescent
Bell Avenue
Jasper Avenue
Old Slys Road
Davis Drive
Pearl Street
Brockville Street
Percy Street
Allan Street
Armstrong Drive
Van Horne Street
Broadview Avenue
Lombard Street
Poonamalie Road
Eric Hutcheson Road
Bayview Crescent
Jasper Road
Highway 43

LEGEND

- Municipal Surface Water Intake
- Road
- Railway
- Municipal Boundary
- Stream
- Water

Intake Protection Zone

- IPZ Scored 10
- IPZ Scored 8

Wellhead Protection Area

- WHPA-C

0 125 250 500 750
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

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MAP LOCATION: Z:\Mapping\MXD\SWS\Plan Source Protection Plan\Maps\2013 Submit\Draft\Town of Smiths Falls.mxd

Mississippi-Rideau Source Protection Plan 2013

Township of Tay Valley Significant Threat Areas

Appendix D15

TOWNSHIP OF LANARK HIGHLANDS

TOWNSHIP OF DRUMMOND/NORTH ELMSLEY

TOWN OF PERTH

TOWNSHIP OF TAY VALLEY

TOWNSHIP OF CENTRAL FRONTENAC

TOWNSHIP OF RIDEAU LAKES

TOWNSHIP OF SOUTH FRONTENAC

Mississippi Lake

Gemmills Road
Highway 509
Robertsville Road
Elphin Maberly Road
Clarendon Road
Kingston Line
2 Road
Bathurst Line
Ashby Road
McDonalds Corners Road
Iron Mine Road
10A Road
McLachlin Road
Highway 7
Tennyson Road
2 Road
Burns Road
Bennett Lake Road
Ennis Road
Anderson Sideroad
7 Road
6 Road
5 Road
Highway 511
Churchill Road
Highway 43
Clarchris Road
Christie Lake Road
Dokkern Road
Rutherford Sideroad
Highway 7
Bennett Lake Road
Dorard Road
Fagan Lake Road
11th Line
Old Brooke Road
2 Road
Armstrong Line
Bell Line Road
Zealand Road
Bay Road
Cedar Bridge Road
Merkley Road
Cooper Drive
Old Kingston Road
Crow Lake Road
Cross Road
Highway 38
Shore Road

LEGEND

- Municipal Surface Water Intake
- Road
- Railway
- Municipal Boundary
- Stream
- Water
- Source Protection Area

Intake Protection Zone

- IPZ Scored 10
- IPZ Scored 9
- IPZ Scored 8

0 800 1,600 3,200 4,800
Meters

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

While the MRSPR makes every effort to ensure that the information presented is sufficiently accurate for the intended uses of the map, there is an inherent margin of error in all mapping products, and accuracy of the mapping cannot be guaranteed for all possible uses. All end-users must therefore determine for themselves if the information is suitable for their purposes.

MAP LOCATION: Z:\Projects\MRSPR\2013\Plans\SourceProtectionPlan\Appendix\2013-TayValley-ThreatAreas.mxd

Mississippi-Rideau Source Protection Plan 2013

Village of Westport Significant Threat Areas

Appendix D16

TOWNSHIP OF RIDEAU LAKES

Westport Sand Lake

Westport Pond

Upper Rideau Lake

VILLAGE OF WESTPORT

Rebecca Lane
Bedford Road
Centre Street
Bedford Street
Main Street
Concession Street
Spring Street
George Street
Church Street
Rideau Street
Whelan Street
Bedford Street
Salem Road
Osprey Lane
Perth Road
8th Concession

LEGEND

- Municipal Well
- Road
- Railway
- Municipal Boundary
- Stream
- Water

Wellhead Protection Area

- WHPA-A
- WHPA-B
- WHPA-C
- WHPA Scored 10
- WHPA Scored 8
- WHPA Scored less than or = 6

0 75 150 300 450
Meters

N

Projection: Universal Transverse Mercator, NAD83, Zone 18 North

Please refer to Mississippi and Rideau Valley Assessment Reports for information on data sources and specifications for source protection data.

While the MRSPR makes every effort to ensure that the information presented is sufficiently accurate for the intended uses of the map, there is an inherent margin of error in all mapping products, and accuracy of the mapping cannot be guaranteed for all possible uses. All end-users must therefore determine for themselves if the information is suitable for their purposes.

MAP LOCATION: Z:\Mapping\MXD\SWS\Final Plan\SourceProtectionPlan\Appx2013\WestportThreatAreas.mxd

Appendix E

A Summary of Consultation Activities

Appendix E — A Summary of Consultation Activities

This appendix is intended to document and summarize the consultation activities undertaken by the Mississippi-Rideau Source Protection Committee regarding the Terms of Reference, Assessment Reports and Source Protection Plan with municipalities, provincial ministries, sector experts, stakeholders and the general public.

Terms of Reference

Draft Terms of Reference

Municipalities and the public were invited to comment on the draft Terms of Reference for the Rideau Valley Source Protection Area (RVSPA) and the Mississippi Valley Source Protection Area (MVSPA). They were posted on the Mississippi-Rideau Source Protection Region website on May 8, 2008 and comments were received until June 20, 2008. In addition, 10 public open houses were held to present the draft Terms of Reference and solicit public input. Approximately 90 people attended the open houses that were held in:

Almonte	*June 3, 2008*	Merrickville	*June 12, 2008*
Perth	*June 4, 2008*	Richmond	*June 16, 2008*
Carp	*June 9, 2008*	Carleton Place	*June 17, 2008*
Smiths Falls	*June 10, 2008*	Kemptville	*June 18, 2008*
Ottawa	*June 11, 2008*	Westport	*June 19, 2008*

Proposed Terms of Reference

All comments received were considered by the Source Protection Committee and the Terms of Reference were revised where possible to address these comments. Municipalities and the public were then invited to comment on the proposed Terms of Reference for the RVSPA and the MVSPA. They were posted on the source protection website on July 18, 2008 and comments were received until September 5, 2008. All comments received were forwarded to the MOE for their consideration when reviewing the Terms of Reference for approval.

MOE Approval

The MVSPA Terms of Reference were approved by the Minister of the Environment on February 5, 2009 and the RVSPA Terms of Reference were approved on March 16, 2009.

Assessment Reports

Preliminary Study Findings

Each preliminary Wellhead Protection Area and Intake Protection Zone study was presented to local residents in the affected area to solicit early public input and comments. A total of 293 people attended the public open houses that were held in:

Wellhead Protection Area Studies (open house date):

Carp	*June 8, 2009*	Richmond & Munster	*July 20, 2009*
Merrickville	*June 10, 2009*	Westport	*July 21, 2009*
Kemtpville	June 11, 2009	Almonte	*July 22, 2009*

Intake Protection Zone Studies (open house date):

Lemieux Island	*March 22, 2010*	Smiths Falls	*April 27, 2010*
Britannia	*March 31, 2010*	Carleton Place	*April 29, 2010*
Perth	*April 26, 2010*		

Draft Assessment Reports

After considering comments received on the preliminary study findings, the Mississippi-Rideau Source Protection Committee approved two draft Assessment Reports one for the RVSPA and one for the MVSPA on September 2, 2010. The Assessment Reports were posted on the source water website for public review and comment on September 29, 2010 and written comments were received until November 5, 2010.

In October 2010 a letter was mailed to property owners (notice under Ontario Regulation 287/07) who may be engaging in a significant threat on their property. They were asked to review and provide comments on the draft Assessment Reports. The draft findings were also presented and public input was solicited during four public open houses in:

Carp	*October 26, 2010*	Kemptville	*November 1, 2010*
Perth	*October 28, 2010*	Carleton Place	*November 2, 2010*

Proposed Assessment Report

After considering all comments received on the draft Assessment Reports, the Mississippi-Rideau Source Protection Committee approved two proposed Assessment Reports, one for the RVSPA and one for the MVSPA on November 15, 2010. They were posted for a final round of public review and comment on November 19, 2010 and written comments were received until December 20, 2010.

In August and November 2011, additional letters were sent to some potentially affected property owners. Most letters informed property owners that they were no longer in an area that would be subject to Source Protection Plan policies. This was primarily due to modifications that were made to the Kemptville and Merrickville wells which deepened the well casing ensuring the wells only draw water from a deeper, less vulnerable aquifer (this shrunk the size of the Wellhead Protection Area that was scored 8 and 10). A few letters were sent to property owners informing them that they were now subject to policies and added as a potential significant threat. This was a result of corrections made to the original inventory of potential significant threats.

MOE Approval

The MVSPA Assessment Report was approved by the MOE on August 4, 2011 and the RVSPA Assessment Report was approved on December 19, 2011.

Assessment Report Amendment: Richmond Well System

Rideau Valley Source Protection Authority (SPA) and Source Protection Committee (SPC) meetings	SPA meeting Oct. 27, 2016 SPC meeting Feb. 2, 2017
Early Engagement	Notice issued to City of Ottawa on June 1, 2018.
Municipal endorsement — council resolutions	Report presented to Agriculture and Rural Affairs Committee (ARAC) on July 5, 2018 (and resolution was carried) and City of Ottawa Council on July 11, 2018 (and resolution was carried).
Pre-consultation — with bodies responsible for implementing policies	Pre-consultation letters sent July 16, 2018

Public consultation —
• Website posting:
  • Mississippi-Rideau Source Protection Region's website www.mrsourcewater.ca
  • City of Ottawa's website (Public Engagement and Source Water Protection)
  • Rideau Valley Conservation Authority's website
• Social Media (Facebook and Twitter)
• Newspaper ad in the Manotick Messenger
• Letters to stakeholders
	Website posting dates: August 15, 2018, August 20, 2018 and August 24, 2018.
	
	Newspaper circulation August 24, 2018.
	
	Letters sent August 15, 2018 and August 24, 2018.

Rideau Valley Source Protection Authority & Mississippi Valley Source Protection Authority (SPA) and Source Protection Committee (SPC) meetings	SPC meeting Oct. 4, 2018 SPA meeting Oct. 17, 2018 and Oct. 25, 2018
Submission to the Ministry of the Environment, Conservation and Parks	November 13, 2018
Ministry of the Environment, Conservation and Parks approval of amendment	Approval March 11, 2019 Effective March 25, 2019

Source Protection Plan

Section 2.6 of this Plan describes the process that was undertaken to develop this Source Protection Plan. The Source Protection Committee would also like to recognize the significant contributions of the following groups and individuals who assisted in the creation of draft policies.

Municipal Working Group
All municipal staff in the Mississippi-Rideau region were invited to a series of Municipal Working Group meetings between 2010 and 2012. During these meetings they provided tremendous knowledge and guidance toward the creation of this Plan. Those who participated are:

Bryce, Scott	*Village of Westport*	Machan, Grant	*Town of Perth*
Crampton, Audrey	*Town of Perth*	MacHardy, Terry	*City of Ottawa*
Cooke, Sarah E	*Town of Smiths Falls*	MacMunn, Cathy	*TWP Central Frontenac*
Cosens, Eric	*Town of Perth*	Mallory, Elaine	*Town of Smiths Falls*
Defosse, Brenda	*TWP North Frontenac*	McEwen, Jeff	*City of Ottawa*
Dunlop, Troy	*Town of Mississippi Mills*	McKernan, Nicole	*Town of Smiths Falls*
Dwyer, Michael	*Township of Rideau Lakes*	McWilliams, Cheryl	*City of Ottawa*
Eagle, Jill	*Village of Merrickville-Wolford*	Mousseau, Sharon	*Beckwith Township*
Finley, Mike	*Municipality of North Grenville*	Neven, Jeremy	*TWP Central Frontenac*
Grenke, Karl	*TWP Drummond/North Elmsley*	Oddie, Niall	*TWP Beckwith*
Guèvremont, Lise	*City of Ottawa*	Phillips, Jim	*TWP North Frontenac*
Hackett, Murray	*Township of Montague*	Pol, Calvin	*TWP North Dundas*
Hakala, Kalle	*City of Ottawa*	Polkinghorne, Ryan	*City of Ottawa*
Hay, Sandy	*UC of Leeds & Grenville*	Reeve, Noelle	*Tay Valley Township*
Hayley, Matthew	*City of Ottawa*	Smithson, Diane	*Town of Mississippi Mills*
Joynt, Ted	*Town of Smiths Falls*	Stirling, Stephen	*Town of Mississippi Mills*
Kearney, Michel	*City of Ottawa*	Stow, Nicholas	*City of Ottawa*
Kirkham, Mary	*County of Lanark*	Symon, Forbes	*Municipality of North Grenville*
Knowles, Paul	*Town of Carleton Place*	Van de Lande, Robin	*City of Ottawa*
Laidlaw, Janie	*TWP Lanark Highlands*	Wittkie, Rob	*TWP Lanark Highlands*
Looby, Don	*Town of Smiths Falls*	Zander, Tracy	*TWP Drummond/North Elmsley*

Agricultural Working Group
A dedicated group of local farmers who are recognized for their knowledge and leadership within the agricultural community, worked with source protection staff to develop draft policies pertaining to agricultural activities. Background information was also provided by OMAFRA and MOE staff regarding the *Nutrient Management Act* and requirements regarding pesticide use in Ontario.

Sector Experts
Sector representatives regarding fuel, fertilizer and road salt activities worked with source protection staff to develop draft policies and provided background information about how these activities are currently regulated and managed.

Principal Authorities
Designated principal authorities who administer septic system approval programs across the Mississippi-Rideau region worked with source protection staff to develop draft policies pertaining to on-site sewage systems.

Source Protection Plan Amendment: Richmond Well System

Rideau Valley Source Protection Authority (SPA) and Source Protection Committee (SPC) meetings	SPA meeting Oct. 27, 2016 SPC meeting Feb. 2, 2017
Early Engagement	Notice issued to City of Ottawa on June 1, 2018.
Municipal endorsement — council resolutions	Report presented to Agriculture and Rural Affairs Committee (ARAC) on July 5, 2018 (and resolution was carried) and City of Ottawa Council on July 11, 2018 (and resolution was carried).
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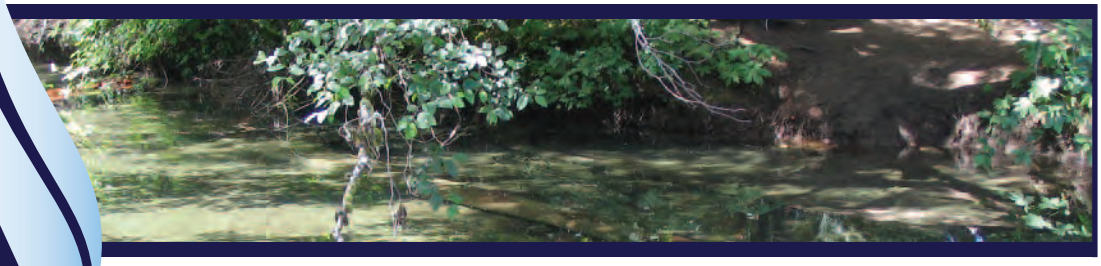
	Newspaper circulation August 24, 2018.
	
	Letters sent August 15, 2018 and August 24, 2018.

Rideau Valley Source Protection Authority & Mississippi Valley Source Protection Authority (SPA) and Source Protection Committee (SPC) meetings	SPC meeting Oct. 4, 2018 SPA meeting Oct. 17, 2018 and Oct. 25, 2018
Submission to the Ministry of the Environment, Conservation and Parks	Ministry of the Environment, Conservation and Parks approval of amendment March 11, 2019

Appendix F



Source Protection Committee Biographies

Appendix F: Source Protection Committee Biographies
Mississippi-Rideau Source Protection Committee

Committee Chair

Janet Stavinga
From 1994-2006, Janet Stavinga served as an elected municipal official, first as a Councillor for the former Township of Goulbourn, then as Mayor and, for the last six years, as an Ottawa City Councillor. In 2006, Janet announced a sabbatical from political life. Janet works, on a wide variety of issues, to strengthen public engagement and build strong healthy communities. She is passionate about community sustainability, civil society, and creating positive change. As City Councillor, Janet served as Vice-Chair on the RVCA Board of Directors and as Chair on the Steering Committee for the Renfrew County-Mississippi-Rideau Groundwater Study. Janet understands the diverse challenges within watersheds, the importance of decision-making based on natural systems, and the necessity of partnerships to implement sustainable solutions. Prior to becoming Mayor, Janet worked as a facilitator with extensive experience in multi-stakeholder forums with government, industry and community organizations. Janet holds a Master of Science Degree from McGill University and a Bachelor of Arts (Honours), Geography, Resource Management from University of Windsor.

Municipal Representatives

Scott Bryce (*Municipalities with groundwater-based municipal drinking water systems)*
Scott Bryce was raised in the Village of Westport and has resided there for most of the past fifty years. After attending Queen's and Carleton Universities, Scott has enjoyed work experiences in the federal, non-profit and private sectors before accepting a municipal staff appointment with the Village of Westport in 1992. Since Westport is a microcosm for urban municipal services, the full range of management challenges have been present for this municipality of under a thousand people, including provision of electrical distribution and water and sewer services. Scott is committed to providing a strong voice for those municipal stakeholders that are supportive of multiple barrier protection, but also must address issues of policy implementation and program cost. Scott is the Clerk/Treasurer for the Village of Westport.

Paul Knowles *(Municipalities with surface water-based municipal drinking water systems)*
Paul Knowles grew up and attended high school in Perth, Ontario. He earned a Bachelor of Science in Civil Engineering while attending Queen's University. From 1980-1989, Paul worked in the private sector as a Civil Engineer. In 1989, he joined the Town of Carleton Place as Town Engineer. As Town Engineer, he was responsible for all Public Works operations and development approvals. In 1996, Paul was promoted to Chief Administrative Officer for the Town. He continues in this position with responsibility for all municipal departments. Paul participates in several professional organizations and Chairs the Municipal Class Environmental Assessment Monitoring Committee, for the Municipal Engineers Association, and the Watermains Specialty Committee for Ontario Provincial Standards.

Eleanor Renaud ***(Municipalities without municipal drinking water systems*****)**
Eleanor Renaud is a Leeds County farmer who has served the community, county and province on various boards and committees for the past two decades. She is also a municipal councilor for Elizabethtown-Kitley currently serving her fourth term. During this time Eleanor has spent nine years as an AMO and ROMA board member. She also served as a member of TORC, AMO's Bill 170 task force, and the Eastern Ontario Smart Growth Panel. Eleanor served 15 years as an OFA board member representing Leeds County. She has proven herself to be an effective voice for rural Ontario municipalities as she understands their needs and challenges.

Tammy Rose ***(City of Ottawa)***
Tammy Rose is a professional engineer with over 17 years' experience in the drinking water industry. She is currently the Manager of Drinking Water at the City of Ottawa and oversees the treatment and distribution of drinking water to over 800,000 customers. Tammy graduated from the University of Ottawa with a Bachelor of Applied Science in Civil Engineering and has developed extensive expertise in the field of water systems security and emergency response planning.

Vacancy (City of Ottawa)

Economic Sector Representatives

Richard Fraser ***(Agriculture)***
Richard Fraser is a lifelong resident of rural Nepean and Goulbourn. He operates an 1800 acre dairy and cash crop farm with his wife Jean, two brothers John and David, his son Robert and two nephews. Richard is a graduate of South Carleton High School and Kemptville Agricultural College. He is a member of the Carleton Dairy Producer's Committee and chair of Ottawa's Rural Issues Advisory Committee. He's an active member of the Ottawa Federation of Agriculture and Soil and Crop Improvement Association. During his youth he was very involved in 4-H and Junior Farmers. A serious accident ten years ago left him confined to a wheelchair, but not ready to quit.

Peter McLaren ***(Agriculture)***
Peter McLaren is a descendant of the McLaren family who settled in Lanark around 1820 from Scotland. He graduated from Kemptville Agricultural College and is currently operating the McLaren family farm. His interests in agriculture led him to join several local committees, including the Lanark County Soil & Crop Improvement Association, the National Farmers Union, the Steering & Review Committee of the Rideau Valley Rural Clean Water Program and the Steering & Review Committee of the Mississippi Valley Rural Clean Water Program. Peter has been a member of these committees over the past ten years and remains an active member today. Peter is the Provincial Director for Ontario Soil & Crop Improvement Association representing the Ottawa Rideau Region. In November 2007, Peter McLaren was elected to The Township of Lanark Highlands Council and after serving one term was elected Mayor.

Scott Berquist *(Industry)*
Scott Berquist serves as the Manager of the Environmental Division at R.W Tomlinson Limited. The Division is responsible for the licensing, permitting and regulatory compliance for the company's core business operations, including quarries, construction and environmental services. One of Scott's key responsibilities is to ensure that the company's operations, of which a number are located in the Mississippi-Rideau Source Protection Region, do not adversely impact the quality and quantity of groundwater and surface water systems. Scott has served on the Board of Director's for the Ontario Hot Mix Producers Association and is currently a member of the Springhill Landfill Liaison Committee and the Orgaworld Public Liaison Committee. Scott holds a Bachelor Degree in Civil Engineering from the University of Manitoba. He has been a member of Professional Engineers Ontario since 1993. Scott grew up in Nepean on the Ottawa River and currently resides just outside the village of Merrickville and also on the Mississippi River in North Frontenac Township.

Drew Lampman *(Industry)*
Drew Lampman grew up in Munster and attended high school in Richmond. He earned a Bachelor of Applied Science in Civil Engineering degree from the University of Waterloo in 1995 and is a professional engineer. He currently resides in the Rideau Ferry area. From 1995 -1997 he worked in Guelph at a precast concrete plant and from 1997 to present at the Omya Canada Inc facility in the Perth area. He has been involved with ground and surface water monitoring and improvements since 1997. As the Environmental Health & Safety Manager, he has been involved with numerous air and water permit projects at the plant and quarry. He has worked with DFO, MNR, RVCA and MVCA on various projects. He is a trained ISO internal auditor and the Management Systems representative for ISO 14001 Environmental and OHSAS 18001 Health and Safety. He was elected as chair of the Ontario Mining Association Environmental Committee and was involved in the development of their Spill Prevention, Contingency Planning and Reporting for the Mining Sector document prior to regulations 222/07 and 224/07 coming into effect.

Beverly Millar *(Small Business)*
Bev Millar, an effective, experienced advocate for rural businesses has owned and represented businesses in both rural and urban settings and has a comprehensive understanding of the many issues facing rural residents and businesses. She currently co-owns MillarBaird Farm and Shale, Main Street Racing and Automotive Inc., Main Street Consulting and the Main Street Building. Bev is past president of the Rideau Chamber of Commerce, Past Chair of the National Capital Business Alliance (representing over 1500 rural and urban business interests) and a founding Director of ORCNet. She is also a member of the City of Ottawa's Business Advisory Committee, the Mayor's Task Force on Red Tape, the Property Tax Assessment Taskforce, The Ottawa Marketing Strategy, the BR+E Rural Tourism Pilot and a number of other initiatives that give her a broad experience base. Formal education includes a Baccalaureate in Political Science from Carleton University's School of Public Administration Public Service Studies Certification, the Federal PWGSC's IT Project Management and Carnegie Mellon University's Risk Management.

Public Interest Representatives

Randy Malcolm *(First Nations)*
Randy Malcolm was elected Chief of the Snimikobi (Ardoch) Algonquin First Nation. He represents the interests of the Algonquin people living throughout the Mississippi River Valley as well as the Algonquin Nation of Ontario. In May 2005, Randy was elected as an Algonquin Nation Representative (ANR) and sits with a team of 16 ANRs, a principal negotiator, a legal team and a Technical Advisory Group to work with the Governments of Canada and Ontario to negotiate a Land Claim Treaty for the Algonquin's of Ontario. The Mississippi-Rideau Source Protection Region falls within the Land Claim Area. Randy graduated from Algonquin College in Forestry and later in Electronics. He has spent several years working for the Ministry of Natural Resources and a number of years working in electronics repair in private industry. Randy is currently working full-time for the Algonquin Nation on many aspects of the Algonquin Land Claim.

Carol Dillon *(Environmental)*
Carol Dillon is a rural resident from the Perth area with a long standing interest in water. She has been an active member of the community-based Friends of the Tay Watershed since its inception and has served on the Board of Directors as co-chair, and as director of school programs and provincial liaison. Carol successfully used Ontario's Environmental Bill of Rights to draw attention to needed changes in water management in Ontario and in 2006 served on Ontario's Advisory Panel on the Ontario Drinking Water Stewardship Program. Carol has a Bachelor of Arts degree in Psychology and Sociology and a Master degree in Adult Education. She conducted a successful management consulting business across Canada for 35 years. Carol brings academic background, career skills, volunteer experience and a passion for good water management to this appointment.

Patricia Larkin *(Non-governmental Organization)*
Patricia Larkin has a broad range of experience with fostering sustainability in decision making by government, conservation groups, schools and in household settings. Her primary interests are issues related to water, energy and climate change, both as an educator of school-based special programming and as an environmental health specialist working on health risk assessments. She is principal and founder of Nature Works Learning, has been active with the Well Aware program and Mississippi Valley Field Naturalists, and enjoys living in the rural area outside Pakenham. Patricia has a Master Degree in Geography

George Braithwaite (*General Public)*
George Braithwaite is a retired Naval Officer, who lives in the Township of Lanark Highlands with his wife Judith. They have three adult children, all of whom live in Ottawa. Since his retirement, he has served as a municipal councilor, Chair of the Mississippi Valley Conservation Authority, Vice-Chair of Conservation Ontario and as a member of non-profit boards of directors in various capacities. He currently serves as a member of the Lanark Highlands' Police Services Board and is Past President of a provincial organization dedicated to serving the interests of People with Intellectual Disabilities and their families.

Pieter Leenhouts ***(General Public)***
Pieter Leenhouts is a professional engineer retired from Fisheries and Oceans Canada – Canadian Coast Guard and Small Craft Harbours responsible for electronic systems and harbour infrastructures respectively. He is currently interim chair of the Canadian Subcommittee - International Electrotechnical Commission TC 80 - Maritime Navigation and Radiocommunication Equipment and Systems. A concerned citizen, woodlot owner, father and grandfather, Pieter has a lifelong interest in environmental issues affecting our woodlots and forests. He is president of the Ontario Woodlot Association; founder/president of its local chapter – the Lower Ottawa Valley Chapter that covers much of the Mississippi and Rideau watersheds; and executive member of the Eastern Ontario Certified Forest Owners. He has been active on the board for the Boys and Girls Club of Ottawa; the Ottawa Forest Greenspace Advisory Committee; the Technical Advisory Committee for Tree Conservation in Ottawa; and the University of Calgary Geomatics Advisory Committee.

Liaison Members (Non-Voting)

Ministry of the Environment: Mary Wooding
Liaison Officer, Source Protection Programs Branch

Medical Officers of Health: Sherry Beadle
Program Manager, City of Ottawa Public Health

Source Protection Authorities: The Source Protection Authority Chairs and Vice-Chairs fill this liaison position on a rotational basis (see chart below).

	2007 to 2010	*2011*	*2012*
Chair, Mississippi Valley Source Protection Authority	Mark Burnham	Mark Burnham	Mark Burnham
Chair, Rideau Valley Source Protection Authority	Alan Arbuckle	Alan Arbuckle	Ken Graham
Vice-Chair, Mississippi Valley Source Protection Authority	Steve Hardaker	Phil Sweetnam	John Karau
Vice-Chair, Rideau Valley Source Protection Authority	Ken Graham	Ken Graham	Ed Hand