Source Protection Guidance for Proposed Developments in Wellhead Protection Areas in The Regional Municipality of York

October 2014

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1.0 Introduction and Background

This guidance is provided in order to improve consistency and implementation of the legislated requirements related to drinking water source protection. It is intended for new land uses and for future potential significant threats to drinking water. The purpose of this document is to assist proponents of new developments to determine what is required by York Region's Risk Management Office to protect the Region's drinking water sources. It takes into consideration current requirements of the Regional Official Plan, Oak Ridges Moraine Conservation Plan, Provincial Policy Statement and Source Water Protection (i.e. Clean Water Act) initiatives as they relate to protection of municipal drinking water sources.

Under York Region's Official Plan, Source Water Impact Assessment and Mitigation Plans (SWIAMPs) are required in specified circumstances to develop a plan to manage risk of potential impacts associated with activities related to certain land uses. These activities could occur as a result of new land uses involving activities that may contaminate municipal groundwater supplies or threaten the quantity of water available in the municipal groundwater supplies. Reviews of site specific development applications for potential impacts to municipal wells are completed by York Region's Risk Management Office.

There are also activities outlined in the Clean Water Act (CWA) that pose a potential threat to municipal water supplies and require a Risk Management Plan (RMP). The purpose of the CWA is to protect existing and future sources of drinking water. The Act empowers specified groups to prevent threats from being or becoming significant, and it is the intention of the Region to work with proponents of development applications to ensure their sites are operated in a way that meets the requirements of the Act now and in the future. Using this type of approach will help protect the drinking water supply and reduce the impacts on proponents that could occur if risk management takes place later in the development process**.**

Source Water Impact Assessment and Mitigation Plans and Risk Management Plans, the "Plans", for the purposes of this document should be prepared by a hydrogeologist that is a licensed Professional Geoscientist or exempted Professional Engineer as set out in the Professional Geoscientists Act of Ontario.

Persons licensed by the Association of Professional Geoscientists of Ontario (APGO) or the Professional Engineers of Ontario (PEO) should sign and stamp a completed report which is submitted to York Region. For issues of professionalism and data integrity, the hydrogeologist should be directed to guidelines and codes of ethics maintained by their respective associations. Pre-consultation with the Risk Management Office at York Region is strongly encouraged.

2.0 Source Protection Regulatory Requirements

Legislation and Policies

Some policies and legislation that apply to the protection of drinking water supplies in York Region:

- **Provincial Policy Statement (2005)**
- **Oak Ridges Moraine Conservation Plan (2001)**
- **Regional Official Plan (2010)**
- **Clean Water Act (2006)**

Provincial Policy Statement (2005)

The Provincial Policy Statement (PPS) provides broad policy direction on matters of provincial interest related to land use planning and development. It sets the policy foundation for regulating the development and use of land. The PPS states that planning authorities shall protect, improve or restore the quality and quantity of water by implementing necessary restrictions on development and site alteration to protect all municipal drinking water supplies.

Oak Ridges Moraine Conservation Plan (2001)

The Oak Ridges Moraine Conservation Plan (ORMCP) provides land use and resource management direction for the land and water within the Oak Ridges Moraine (ORM). Municipal planning decisions must conform to the Plan, which takes precedence over municipal official plans. The Plan includes prohibitions of some new land uses within Wellhead Protection Areas (WHPAs) on the ORM.

Regional Official Plan (2010)

The Regional Official Plan (ROP) was updated in 2010 to expand ORMCP policies to off-moraine WHPAs and to cover any additional categories of threats outlined by the Clean Water Act (CWA). One of the objectives in the ROP is to ensure that municipal well water quality and quantity is protected from contamination from incompatible land uses. ROP policies prohibit or require SWIAMPs for specified land uses associated with groundwater quality and groundwater quantity threats.

The ROP has been updated and partially approved by the Province (some portions, not related to Source Protection are currently under appeal). ROP Amendment 5 (ROPA5) updated sections of the ROP relevant to Source Protection. Find updated information about York Region's ROP.

Clean Water Act (2006)

In October 2006, the Ontario government passed Bill 43, the *Clean Water Act, 2006,* (CWA) to protect drinking water at the source as part of an overall commitment to human health and the environment. The Act received royal assent on October 19, 2006 and the first phase of regulations came into force on July 3, 2007. The source water protection work stems from the Walkerton Inquiry recommendations in 2002 where Justice O'Connor indicated the "**first barrier to the contamination of drinking water involves protecting the sources of drinking water.**"

York Region, through continued collaboration with our Source Protection Watershed Region partners and the Province of Ontario, has undertaken a number of technical studies to provide the necessary background for the development of Source Protection Plans (SPP) for all the vulnerable drinking water protection areas, one for the Lake Simcoe watershed and one for the Toronto and Region watershed. Further information can be found at the following websites:

Credit Valley, Toronto and Region, and Central Lake Ontario (CTC) Source Protection Region (www.ctcswp.ca)

South Georgian Bay Lake Simcoe (SGBLS) Source Protection Region (www.ourwatershed.ca)

A SPP is a series of mandatory and voluntary policies developed in consultation with the local community to help prevent contamination of municipal drinking water sources. The CTC and SGBLS Source Protection Committees ensured municipalities, farmers, businesses, industries, property owners, First Nations, community groups, health officials, provincial ministries and the public all had an opportunity to be involved in policy development. SPPs must contain policies to address potentially significant drinking water threats. For an activity to be considered a significant threat, it must be taking place in a vulnerable area around a municipal well or a vulnerable area upstream of a municipal water treatment plant intake pipe.

Once the SPPs are approved by the Minister of Environment, all planning decisions must conform to it. York Region's ROP will be updated to reflect the SPP policies. In the interim, ROP policies were developed to protect municipal drinking water supplies. York Region Staff will work with proponents to identify all new requirements.

3.0 How to Determine Regulatory Conformity

The most recent version of the ROP and SPPs should be consulted for detailed information on what land uses and/or activities require a SWIAMP, RMP or are prohibited. At this point the proposed SPPs generally prohibit most future

activities that would be significant threats under the CWA. However, RMPs may be required for future activities such as:

- Application of agricultural source material to land
- Storage of agricultural source material
- Application of non-agricultural source material
- Handling and storage of non-agricultural source material
- Application of commercial fertilizer to land
- Handling and storage of commercial fertilizer
- Application of pesticide to land
- Handling and storage of pesticide
- Use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3

The ROP generally prohibits new land uses associated with activities listed above and below that occur in WHPAs on the ORM. Off the ORM, it generally requires SWIAMPs for many new land uses associated with activities above, and new land uses in WHPAs that involve the manufacture, storage and use of:

- Construction and agricultural equipment
- Inorganic chemicals
- Petroleum-based fuels or solvents
- Road Salt
- Hazardous or liquid industrial waste
- Waste disposal sites
- Contaminants identified by the Province
- Organic soil conditioning sites
- Snow
- Pathogen threats such as stormwater management ponds and rapid infiltration basins (prohibited within 100 metres of a municipal well)

Please refer to the relevant legislation for additional guidance on determining regulatory conformity and speak with York Region Water Resources staff.

4.0 Preparing a Plan - Identifying Risks

During the initial stage of preparing a SWIAMP or RMP, it is important to know what major land uses and activities are of concern for a particular property with

respect to York Region's interest in the maintenance and protection of the municipal water supply. An understanding of these issues will assist in completing the necessary information. It is also important for the municipal reviewer to have a means of identifying the major threats and circumstances associated with a particular property. Consultation between the York Region Risk Management Office and the proponent is an important part of the initial stage to ensure that the major threats are identified.

It is the objective of York Region to require a Plan, where applicable, during the earliest possible stage of the development review process (e.g. local Official Plan amendment). This requirement for a Plan will also be carried through other stages of the process (i.e. secondary plan, subdivision plan, zoning application and site plan, as applicable). The proponent could be asked to develop a conceptual Plan early in the plan review process since it is often difficult to finalize all aspects of the development until later. It could then be a condition of the site plan approval that the Plan be finalized before final approval of the site plan.

Plan Components

The following information is recommended for a complete SWIAMP or RMP and could be used to outline the report's table of contents. However, the information required may be dependent on the type of project. Plans should be accompanied with supporting documentation including figures, tables, charts, and supporting calculations and analysis. A reference list should also be provided at the end of the report to indicate the source of information relied upon and methods used. Sufficient information should be provided to facilitate a review of the hydrogeological analysis and conclusions.

The proponent should collect information using the following legislation and associated documents: York Region Official Plan, Clean Water Act and Oak Ridges Moraine Conservation Plan. The proponent should check with York Region staff in the Water Resources Group's Risk Management Office before preparing the documents so that all requirements are met.

Introduction/Background

- Identification of the site location including street address, UTM (or northing and easting), roll/tax number, township/municipality, lot, concession, size of property, area to be developed /disturbed
- Contact information for the land owner and/or person engaged in the activity or land use, if they are different people (e.g. tenant versus landlord)
- Summary of objectives and purpose of the Plan
- Description of the planning context and relevant policies and/or legislation
- Outline of the scope of the Plan and the specific issues

Site Description

- Identification of the study area
- Definition of the proposed undertaking or development
- Identification of the type of site servicing
- Description of construction/site disturbance activities
- Provision of the development plan or draft plan
- A map of the property identifying the location of relevant things (e.g. location of fuel tanks)

Local Setting

- Identification of existing and, if available, historic land uses including land cover types; if information from Environmental Site Assessments (ESAs) is available, this should be provided
- Description of site conditions; this could include things such as a description of buildings, ponds, chemical storage tanks, etc.

Identification of Vulnerable Areas

- Identification of the property with respect to municipal drinking water sources and their associated protection areas (Wellhead Protection Areas and Intake Protection Zones)[1]
    - Mapping of the property in relation to vulnerable areas (e.g. WHPA and IPZ maps)
- Identification of the property with respect to vulnerability scoring maps for the vulnerable areas[1]
    - Mapping of the property in relation to vulnerability scores (e.g. VS maps)
- Identification of the property with respect to the Oak Ridges Moraine Conservation Plan Area

Anthropogenic Transport Pathways

- Identification of anthropogenic (i.e. man-made) transport pathways from ground surface to the relevant aquifers (e.g. existing, unused or abandoned water wells; pits and quarries; sewers)

[1] See existing maps, they are available in York Region's Official Plan and/or in the Assessment Reports prepared by Toronto and Region Conservation Authority and Lake Simcoe Region Conservation Authority, under the Clean Water Act, 2006.

Summary of Potential Drinking Water Quality Impacts and Threats

- Summary of prescribed drinking water threats, as per the Clean Water Act, 2006, and/or ROP potential hydrological impacts will be occurring at the site (e.g. fuel storage)
- Summary of applicable drinking water threat circumstances, as per the Clean Water Act Tables of Drinking Water Threats (November 2009 or most recent version) (e.g. underground storage of more than 25 litres of organic solvent containing carbon tetrachloride)
- Rating of the identified threats as low, moderate, or significant, based on the Clean Water Act Tables of Drinking Water Threats[2].
- Preparation of a summary table to display the results of the threats assessment (see sample in Table 1).

[2] The Upper Thames River Conservation Authority has developed a web-based Threats Analysis Tool to simplify the use of Provincial Tables of Drinking Water Threats. Here is the link to website to access this tool: http://maps.thamesriver.on.ca/swpCAMaps/threatslookup/default.aspx)

Summary of Drinking Water Quantity Impacts and Threats

- Identification of water quantity threats, such as dewatering or reduction in recharge
- Results of any subsurface investigation to identify any need for dewatering and/or groundwater depressurization and where applicable, submit a detailed dewatering plan prepared by a qualified professional
- An evaluation of third party dewatering currently taking place around the site (using MOE well logs and Permits To Take Water), an evaluation of any potential contributions from the underlying aquifer, and an understanding of the geology and hydrogeology at the site (e.g. location of confining layers). It is recommended that the proponent arrange for a pre-consultation meeting with the applicable regulatory agencies, including York Region and the MOE to assist in this process
- The Plan should show any interpreted aquifer(s) in the vicinity of the development site, and an indication of the interpreted depth of the aquitard and local deep aquifer directly below the development site. Using available information including MOE water well records and pump test and/or modelling (e.g. YPDT Groundwater Management Study) results, provide an assessment of the competence of the aquitard(s) beneath the site and what the contribution (if any) to the dewatering from any pressurized aquifer below the aquitard(s) is expected to be
- Preparation of a summary table to display the results of the threats assessment

Table 1 – Sample Threats Determination Summary Table for CWA Water Quality Threats

WHPA (or IPZ) Zone on the Property	Vulnerabilty Score	Identified Prescribed Drinking Water Threat[3]	Short Form Name [3]	Type of Threat (Chemical or Pathogen)	Applicable Circumstances	Reference Number[3]	CWA Rating of the Drinking Water Threat [3]
WHPA-A	10	The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	Sewage System Or Sewage Works – Sanitary Sewers and related pipes	Pathogen	1. The system is a wastewater collection facility that collects or transmits sewage containing human waste, but does not include any part of the facility that is a sewage storage tank or works used to carry out a designed bypass.	1958	Significant
				Chemical	1. The system is part of a wastewater collection facility that collects or transmits sewage containing human waste, but does not include a sewage storage tank or a designed bypass. 2. The system is designed to convey not more than 250 cubic metres of sewage per day.	631, 632, 636-638	Moderate
						633 to 635, 639-642	Low
			Sewage System Or Sewage Works - Discharge Of Untreated Stormwater From A Stormwater Retention Pond	Chemical	1. The system is a storm water management facility designed to discharge storm water to land or surface water. 2. The drainage area associated with the storm water management facility is not more than 1 hectare and the predominant land uses in the area are rural, agricultural, or low density residential.	277 to 281, 284 to 286, 288, 289	Low
						282, 283, 287, 290 to 295	Not a threat
				Pathogen	1. The system is a storm water management facility designed to discharge storm water to surface water.	1949	Moderate
		The storage of snow.	Storage of snow	Chemical	1. The snow is stored at or above grade. 2. The area upon which snow is stored is at least 0.01, but not more than 0.5 hectares.	1445 to 1455	Moderate
WHPA-B	2	The storage of snow.	Storage of Snow	Chemical	1. The snow is stored at or above grade. 2. The area upon which snow is stored is at least 0.01, but not more than 0.5 hectares.	1445 to1455	Low
	6	The storage of snow.	Storage of Snow	Chemical	1. The snow is stored at or above grade. 2. The area upon which snow is stored is at least 0.01, but not more than 0.5 hectares.	1445 to 1450, 1454, 1455	Low
						1451 to 1453	Not a threat
WHPA-C	n/a	n/a	n/a				n/a
WHPA-D	n/a	n/a	n/a				n/a
IPZ-1	n/a	n/a	n/a				n/a
IPZ-2	n/a	n/a	n/a				n/a
IPZ-3	n/a	n/a	n/a				n/a

5.0 Preparing a Plan - Risk Mitigation

Every RMP and SWIAMP must include proposed measures to appropriately manage risks to drinking water as detailed in the sections below.

Proponents can also refer to the MOE's Risk Management Measures Catalogue for additional information at:
http://maps.thamesriver.on.ca/swpCAMaps/rmc/disclaimer.aspx

5.1 Risk Management Measures

- Development of Risk Management Measures (RMMs) for water quality impacts and threats that include:
    - Information on industry standards, regulations, best management practices, policies, etc. that are in place to help prevent contamination from the land use
    - Copy of proponent's environmental management policies and commitments
    - Details on how the chemical or material of concern will be stored so that it does not cause contamination
    - Information on how the site will be maintained to ensure it operates as intended/designed and spillage/contamination is prevented
    - Fire containment and prevention details
    - Security information
    - Procedures for proper disposal of dangerous/ hazardous/ contaminated materials
    - Procedures for training staff on how to implement the plan
    - Cost/benefit analysis that justifies risk management measure(s) chosen

- Development of RMMs for water quantity impacts and threats that include:
    - Dewatering plan
    - Low Impact Development techniques

Monitoring

Although not a requirement in every case, for some threats, a monitoring program may be a viable management measure.

- Development of a monitoring program and plan to keep records on-site and available upon request by York Region. For example, this could include sampling monitoring wells, procedure and schedule for qualified persons hired by proponent to inspect the site and all related contamination prevention measures to ensure they are functioning as intended/designed, etc.

- Definition of a schedule to review and update the monitoring plan on a regular basis

Communication and Implementation Plan

- Description of a Communication Plan for communications between proponent/consultant and York Region Environmental Services outlining submission timelines for documents (e.g. monitoring reports) to the Region
- Implementation schedule for measures

Appendices

- Well records and borehole logs
- Pump test and associated water level information
- In-situ hydraulic conductivity testing results
- Soil analysis
- Water balance calculations
- Supporting information for stored chemicals
- Copies of relevant planning policies, agency guidelines
- Document should be signed and dated by relevant people
- List references

5.2 Emergency Response Plan

- Develop an Emergency Response Plan to prevent adverse effects. For example, this should include information such as emergency contacts in the event of a spill, large dewatering or fire (e.g. companies that will conduct cleanups such as vacuum trucks, contact numbers for the Region, plan to remediate adverse effects, etc.)
- Definition of a schedule to review and update the Emergency Response Plan

5.3 Termination of Plan

Include a closure section outlining what will be done if the proponent moves and the Plan no longer applies. As part of the Plan, they would be required to provide York Region with notice that they are moving. If they are moving out of a WHPA, a termination of the Plan would occur, or if they are moving into another, then the Plan will be re-assessed for the new location and amended as needed. This way York Region is aware they are leaving, knows where they are going, and can put the site on a “for follow-up” list and the information will then be used for tracking purposes.

5.4 Reliance Statement

The Plan should be addressed to “The Regional Municipality of York”, or a reliance letter to the Region should be included with the Plan.

The following are suggestions for preparing reliance letters:

Send a draft first. Before sending a final reliance letter, send the Region a draft letter so that the Region can provide feedback. This will potentially avoid needing to amend or re-issue a reliance letter that has already been issued but is not acceptable to the Region.

Specify the subject matter. The Region requires the right to rely on the information and data, representations, assumptions, findings, opinions and recommendations . To satisfy this requirement, the letter must contain a statement to this effect and must list the Plan and the reports relevant to development of the Plan. The owner or consultant should summarize the information in the Plan into an opinion stating that the Plan will not result in harm to the source water.

Limitations. York Region will not accept any limitation of liability of the owner or consultant or any limitation on the legal remedies available to the Region. The reliance letter may not incorporate by reference limitations contained in previous reports or other documents without providing a copy of the limitations; all limitations must be specific and relate particularly to the Region's reliance.

Confidentiality. The information provided in the Plan is not considered confidential and will be handled in accordance with the *Municipal Freedom of Information and Protection of Privacy Act, 2001* and may be disclosed to the public upon request. .If you wish information to be considered confidential it must be marked as such at the time of submission. Please be aware that even information marked as confidential may still be subject to disclosure if it does not meet the exemptions under MFIPPA.

Adherence with the above guidelines will facilitate the Region's acceptance of reliance letters and minimize delays.

References

Department of Environment, Australia. 2009. Environmental Guidelines for Preparation of an Environmental Management Plan.

Gartner Lee Limited, 2004: Permit-to-Take-Water Application Feasibility and Effects Assessment of Yonge Street Aquifer, Draft Report, Prepared for the Regional Municipality of York, 57p. with four Appendices.

Ministry of Health. 2005: *A Framework on How to Prepare and Develop Public Health Risk Management Plans for Drinking-water Supplies*. Wellington, New Zealand: Ministry of Health.

Turner, M , 1977: Oak Ridges Aquifer Complex, Ministry of the Environment, Water Resources Branch, Major Aquifers in Ontario Hydrogeologic Map 78-2, Scale 1:100,000.

Sibul, U., K.T. Wang and D. Vallery, 1982:Groundwater Resources of the Duffins Creek-Rouge River Drainage Basins, Ministry of the Environment , Water Resources Branch, Water Resources Report 8, 109 p. with 16 Maps.

Vallery, D.J., K.T. Wang and V.I. Chin, 1982:

Water Resources of the Holland and Black River Basins-Summary, Ministry of the Environment, Water Resources Branch, Water Resources Report 15, nine p. with seven sheets.

Woerns, N. 2009: Hydrogeological review Guidance/Checklist Document, Prepared for the Regional Municipality of York, 11 p.

DISCLAIMER

THIS GUIDE ASSISTS READERS AS THEY CONSIDER DIFFERENT APPROACHES TO MANAGE OR REDUCE THE IMPACT OR PROBABILITY OF THE RISK POSED BY LAND USES AND/OR DRINKING WATER QUALITY THREATS TO A “RESIDUAL RISK” WHICH IS JUDGED TO BE “TOLERABLE” OR “ACCEPTABLE”.

IT IS UNDERSTOOD THAT THE RISK ASSOCIATED WITH A LAND USE AND/OR THREAT IS NOT ELIMINATED BY USING THIS GUIDE, BUT THE PROBABILITY OF IT BEING OR BECOMING SIGNIFICANT MAY LESSEN TO A CERTAIN DEGREE.

Users of this guide are encouraged to use their professional judgment and to consider local or site specific circumstances.

CONSULTATION WITH THE YORK REGION RISK MANAGEMENT OFFICE IS STRONGLY ENCOURAGED. WWW.YORK.CA/WATER

This Guide is intended to support in preparing a Plan to manage or reduce the risk from a land use and/or drinking water threat. This Guide is not intended to provide advice or recommendations in relation to any specific circumstance. The Regional Municipality of York assumes no liability for any actions taken by the users.

While every effort has been made to ensure the accuracy of the information in this Guide, it should not be construed as legal advice or relied on as a substitute for the Regional Official Plan, and/or the *Clean Water Act, 2006* and its associated regulations.

Appendix A - Abbreviations Used

Acronym	Full Words
ASM	Agricultural Source Material
CWA	Clean Water Act
MOE	Ontario Ministry of Environment
NASM	Non-Agricultural Source Material
ORM	Oak Ridges Moraine
ORMCP	Oak Ridges Moraine Conservation Plan
RA	Risk Assessment
RD	Risk Determination
RMM	Risk Management Measures
RMP	Risk Management Plan
ROP	Regional Official Plan
SPP	Source Protection Plan
SWIAMP	Source Water Impact Assessment and Mitigation Plan
WHPA	Wellhead Protection Area