

**PEER REVIEW
of
VULNERABILITY ASSESSMENT**

***DRAFT* TERMS OF REFERENCE**

Version 1.2

November 2008

**Thames, Sydenham & Region
Source Water Protection**

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INTRODUCTION

Source Water Protection is a requirement under the Clean Water Act of Ontario in which Municipalities and Conservation Authorities (CAs) are working with other partners to help ensure sufficient supplies of safe drinking water for the future. The Clean Water Act, 2006 requires the identification of three types of “vulnerable areas” related to groundwater and one type of “vulnerable area” which applies to surface water. The three vulnerable areas associated with groundwater include: Highly Vulnerable Aquifers (HVA), Significant Groundwater Recharge Areas (SGRA) and Well Head Protection Areas (WHPA). The vulnerable areas associated with surface water intakes are referred to as Intake Protection Zones (IPZ's). The Province has developed guidance based on which these areas are delineated and the vulnerability of the areas is assessed. Since much of this work has been initiated the Province will release Director's Rules which will replace the guidance that much of this work was initially based on. It is important to perform this vulnerability analysis based on sound scientific principles. These areas will be subject to the requirements of the Source Protection Plan to reduce the risks associated with threats to drinking water sources.

The Thames-Sydenham & Region Source Protection Committee is proposing to conduct a peer review of surface and groundwater vulnerability assessment through a single peer review committee. These terms of reference are intended to guide this peer review process and the work of the peer review committee. A peer review process was developed as part of the water budget work and a similar format will be applied for the evaluation of the vulnerability assessment.

What is Peer Review?

Peer review has been encouraged as a way of ensuring that the work done through Drinking Water Source Protection is based on sound science. Although the province has yet to require that vulnerability assessment be subjected to a peer review process, source protection regions have been encouraged to proceed with such a process. Peer review, therefore, constitutes outreach to and participation by the broad scientific and engineering communities. Peer Review is aimed at an in-depth assessment of the assumptions, calculations, extrapolations, alternate interpretations, methodology, and conclusions pertaining to the vulnerability assessments and any supporting documentation.

The purpose of a peer review is to provide a scientific review of a draft technical document (or other work) by peers of the individual or group that undertook the work. A peer review has a specific purpose, scope, format, and duration. In the case of technical work being undertaken by professionals it is important that the peer review be completed by professionals with an equal or greater knowledge of the technical subject materials.

Peer review is undertaken to ensure and enhance the adequacy, completeness, consistency, accuracy, and quality of the project work products. The purpose of the peer review process is to identify errors, omissions, inconsistencies and short falls. Everything within this review process must be done openly. A Peer Review is commissioned; it has a formal beginning; it produces a report; and it is formally decommissioned.

The following are essentials of the peer review:

- The Peer Reviewers are independent of the peer being reviewed.
- The Peer Reviewers should know as much, or more, about the work than the peer being reviewed.
- The Peer Reviewers should have no stake in the outcome of their recommendations.
- Written procedures and a scope for the peer reviewers should be established before they begin their work.
- A written report on the review will be provided.

Peer reviewer comments will be incorporated into a peer review report along with the responses from the person or group that undertook the work and any revisions which may result from those comments.

Peer Review of Vulnerability Assessment

To incorporate the concept of the peer review process set out by the province, the Peer Review Water Budget Interim Direction, Version 2.0 (DRAFT) (dated August 9, 2005) was used as the basis for this terms of reference. The Province's Interim Direction describes the water budget Peer Review as the process whereby regional source water protection water budget teams engage experts from outside their project team in the development of the water budget..

For the peer review of the vulnerability assessment work the Thames-Sydeham and Region Source Protection Committee is establishing a peer review committee, to work together with the technical leads and their consultants, to complete the peer review process laid out in this terms of reference. In the case of this peer review, as with many peer reviews, the work has been largely completed and draft reports are available. In some cases the work has yet to be completed and will be subjected to this process once complete.

It is important to understand during this peer review process, that much of this work was initiated, completed and in some cases peer reviewed years ago. Dr. Theo Beukeboom, a hydrogeologist from the London district Ministry of the Environment (MOE) branch, coordinated a process which involved the review and approval of the Middlesex-Elgin, Perth, Oxford, Lambton and Essex Chatham- Kent municipal groundwater studies. Dr. Beukeboom and his team ensured standardized quality reports across the region and that the reports met or exceeded the requirements set out in the terms of reference established

by the Policy Branch of the MOE. It is also important to note that most, if not all of those studies also engaged a steering committee of municipal staff, politicians and public in directing the work undertaken in the original groundwater studies. That work has been relied upon by those who have undertaken the vulnerability assessment work as it relates to Drinking Water Source Protection. Work undertaken through those previous studies is not included in the focus of this process.

Objectives

The objectives of the Vulnerability Assessment Peer Review are:

- To ensure consistency with the expectations of the technical guidance, acknowledging the guidance that was available at the time the work was undertaken, but identifying technical deficiencies relative to the MOE Director's Rules and any current guidance
- To ensure that the work is scientifically defensible

The objectives of the peer review are aimed at an in-depth assessment of the assumptions, calculations, extrapolations, alternate interpretations, methodology, and conclusions pertaining to the vulnerability assessment and any supporting documentation. It is intended to identify any errors or omissions in the work which might affect the credibility of the work and the Source Protection Plan which the SPC will develop based on this technical work.

At the end of the Peer Review, it is expected that a documented review of the work will have been completed to help satisfy stakeholders that activities are technically adequate, competently performed, properly documented, and satisfy the technical guidance. The peer review process is not to consider the adequacy of the technical guidance and rules which are to be followed, but rather they are to focus on how the work meets that guidance and rules.

STUDY AREA

The peer review committee will conduct peer review of the vulnerability assessments being undertaken in the Thames, Sydenham & Region Source Protection Region.

The study area for the Thames, Sydenham & Region consists of the watersheds of the Upper Thames River, Lower Thames Valley and St. Clair Region Conservation Authorities (CAs). The study area and jurisdictions of each of these CAs are shown in Figure 1.

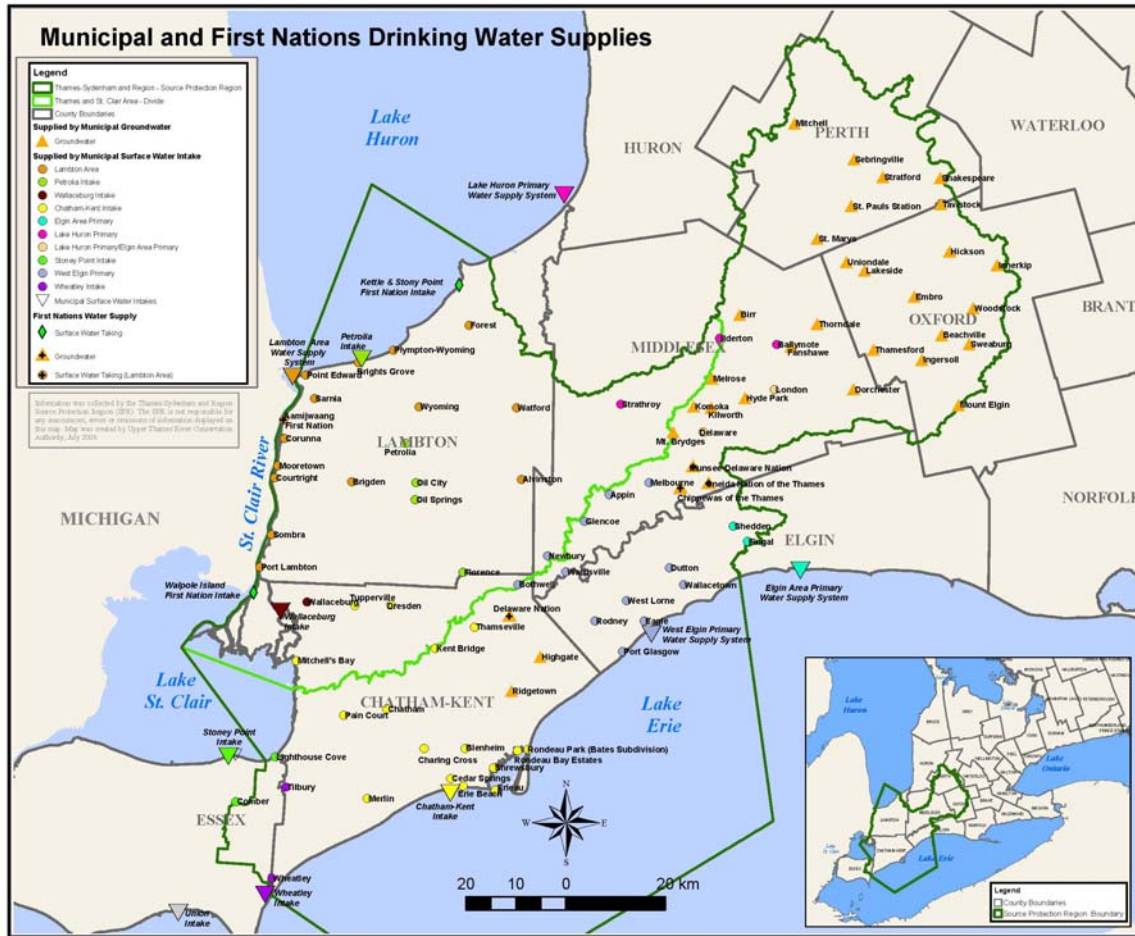


Figure 1 - Study Area. The study area includes the Lower Thames Valley, St. Clair Region and Upper Thames River Conservation Authorities and the municipal drinking water systems in the region

PROJECTS

Figure 1 -Study Area, shows the location of the drinking water intakes and the urban areas that receive treated water from them. Four of the intakes and treatment plants are located outside the watershed but supply water to systems that service communities in the source water protection region. The work related to those systems outside the region is being undertaken as part of the work of the neighbouring Source Protection Committee and therefore are not subject to this peer review process. Work of this peer review committee will focus on the drinking water sources, whether surface water intakes or wells located in this region

Surface water sources are used for drinking water by most of the community water supplies in the SWP region. Groundwater is also an important source in the SWP region. Most of groundwater supply systems are located the eastern portion of the watershed in Perth (6), Oxford (10), and Middlesex (7) Counties where there are 23 municipal and 3 First Nation systems using groundwater sources. There are 2 municipal groundwater source systems in Chatham-Kent. There are no municipal groundwater source systems in the parts of Elgin and Essex Counties that are in the SWP Region.

Surface Water: Intake Protection Zones (IPZs)

Table 1 Intakes Servicing Thames, Sydenham and Region SWP area

System	Intake Source
Lambton Area Water Supply System Town Of Petrolia (Bright's Grove) Water Treatment Plant Kettle And Stony Point First Nation Water Treatment Plant Lake Huron Primary Water Supply System**	Lake Huron
Walpole Island First Nation Water Treatment Plant	St. Clair River
Wallaceburg Water Treatment Plant	St. Clair River (Chenal Ecarte)
Chatham Water Treatment Plant* West Elgin Water Treatment Plant South Chatham-Kent Water Treatment Plant* Wheatley Water Treatment Plant Elgin Primary Area Water Supply** Union Water Supply System**	Lake Erie

** Located outside of the SWP area and therefore not subject to this peer review

* Combined intake

As part of the evaluation of surface water threats, a minimum radius of 1 km is recommended for an initial Intake Protection Zone (IPZ-1). The radius of the IPZ-1 can be extended based on local conditions and professional judgment.

A second larger Intake Protection Zone (IPZ-2) will be delineated by taking into consideration the magnitude of the threat delivery vectors and time for intake shutdown.

Delivery vectors include items like current, wave action, stream flow and drift.

The zones will be established in the Intake Protection Zone Delineation Studies as the first phase of the Surface Water Threats Studies. Studies are underway for all of the municipal surface water intakes supplying communities in the Thames Watershed & Region. The lead organization for each is summarized in Table Drinking Water Surface Water Threats Studies. The IPZ studies are at various stages of development.

Table 2 Intake Protection Zone studies

Intake	Lead Agency	Consultant
Petrolia Water Treatment Plant	St. Clair Region Conservation Authority	RVA (Baird)
Lambton Area Water Supply System	St. Clair Region Conservation Authority	RVA (Baird)
Wallaceburg Water Treatment Plant	Essex Region Conservation Authority	Stantec (Baird)
South Chatham-Kent & Chatham Water Treatment Plant	Essex Region Conservation Authority	Stantec (Baird)
Wheatley Water Treatment Plant	Essex Region Conservation Authority	Stantec (Baird)
West Elgin Water Treatment Plant	Municipality of West Elgin	OCWA (Stantec, Hall)

To consolidate work on the intakes, several plants have been grouped as part of the studies. The Lambton Area Water Supply System and the Petrolia Water Treatment Plant are grouped in one study with the St. Clair Region Conservation Authority as the lead. The Wallaceburg Water Treatment Plant has been included as part of a group of plants that take water from the St. Clair River, Lake St. Clair and the Detroit River. The Chatham Water Treatment Plant has been incorporated in a group of plants taking water from western Lake Erie. The Essex Region Conservation Authority is lead agency for both of these studies.

First Nation Intakes

At this time, there are no vulnerability studies underway or planned for the two First Nation intakes as part of Source Protection. If work is initiated on these systems the work of the peer review committee would be extended to include review of the vulnerability assessment of those systems as well. The Walpole Island IPZ delineation would be similar to the work being done for the Wallaceburg Water Treatment Plant. The Kettle Point and Stony Point First Nations Water Treatment Plant is located between the Petrolia WTP and LHPWSS intakes and the delineation work required would be similar to these studies. It is currently anticipated that the Kettle Point intake will be assessed in conjunction with work being undertaken with the Ausable Bayfield- Maitland Valley (ABMV) SPR and subject to the peer review process of that SPC.

Groundwater Vulnerability

Much of the work undertaken to assess the groundwater vulnerability was based on the county groundwater studies. These studies are listed below as references however this work has been the subject of a separate peer review process undertaken by MOE and as such are not the subject of the peer review process defined by this terms of reference.

Table 3 Groundwater Studies

Study	Lead Agency	Consultant
Middlesex-Elgin Groundwater Study, 2004	Middlesex County / UTRCA	Dillon Consulting and Golder Associates
Essex Region/Chatham-Kent Groundwater Study, 2004	Essex Region Conservation Authority	Dillon Consulting and Golder Associates
Lambton County Groundwater Management Study, 2004	Lambton County / SCRCA	Dillon Consulting and Golder Associates
Strathroy-Caradoc Groundwater Management Study, 2001	Town of Strathroy Caradoc	International Water Consultants Ltd
Perth County Groundwater Study, 2003	Perth County / UTRCA	Waterloo Hydrogeologic Inc.
Perth County Vulnerability (SWAT) Pilot Study, 2005	Perth County	Waterloo Hydrogeologic Inc.
Phase II, County of Oxford Groundwater Protection Study, 2002	Oxford County	Golder Associates Ltd.
County of Oxford Vulnerability (SWAT) Pilot Study, 2005	Oxford County	Golder Associates Ltd.

The groundwater vulnerability assessment includes:

- the identification of vulnerable areas associated with the municipal supplies
- mapping the relative vulnerability of the aquifers within each vulnerable area
- identifying highly vulnerable aquifers,
- identifying and assessing the vulnerability of significant groundwater recharge areas.

Consideration of Groundwater under the Direct Influence of surface water (GUDI) systems was not part of the work initiated and completed as part of the studies identified in Table 4. The methodologies and considerations for the delineation of the vulnerable areas associated with the GUDI systems are expected to be included director's rules. Once these rules are established work will be initiated on delineating the additional vulnerable areas associated with the surface water influence for the GUDI systems. In the discussion below the number of anticipated GUDI systems are outlined. The peer review of this work will be included in the peer review process described in this terms of reference once that work has been completed.

Wellhead Protection Areas (WHPA)

Wellhead Protection Areas have been delineated for all operating municipal systems in the region including the back-up wells in the City of London. This work was completed as part of the projects listed in Table 4 WHPA vulnerability assessment studies which are the subject of the peer review as outlined in these terms of reference.

In Oxford County, small communities, villages, towns and cities rely completely on groundwater for their potable water supply. The wells supplying ten of these municipal drinking water systems are in the Upper Thames River Conservation Authority (UTRCA) watershed. All of the municipal drinking water systems are administered by the county. The County of Oxford has completed both aquifer vulnerability (AVI) vulnerability and intrinsic susceptibility index (ISI) analysis for groundwater sources. Also, SWAT (surface to well advection time) for Woodstock, and Ingersoll (in the SPP region), Tillsonburg and Norwich are also available. Oxford operates 2 GUDI systems within the study area.

Perth County relies on groundwater to supply nearly all of its drinking water needs. There are ten municipal systems and the wells for six of the systems are located in the Upper Thames River Conservation Authority watershed. Each system is administered by the local municipality. The intrinsic susceptibility index (ISI) vulnerability analysis is complete for the County of Perth. One GUDI system is included in the study area.

In Middlesex County, there are currently six active municipal systems and a stand-by system of several back up well fields that are maintained by the City of London. The wells for all seven of the municipal systems are in the UTRCA watershed. Each system is administered by the local municipality. The intrinsic susceptibility index (ISI) vulnerability analysis is complete for the County of Middlesex. Two GUDI systems are included in the study area.

In Chatham-Kent, two groundwater-based municipal water systems exist. Both are in the Lower Thames River Conservation Authority watershed. The systems are administrated by Chatham-Kent Public Utilities Commission. The intrinsic susceptibility index (ISI) vulnerability analysis has been completed. One of these systems is considered a GUDI system.

First Nations Groundwater Supplies

There are also three First Nation systems that utilize groundwater sources in Middlesex County. These are located in the Lower Thames Valley Conservation Authority part of the SWP region. It is unknown if ISI or other vulnerability analysis has been done for the First Nation systems. At least one of these systems is considered a GUDI system.

Table 4 WHPA vulnerability assessment studies

Studies	Lead Agency	Consultant
Thorndale Threats, Issues and Preferential Pathways, 2007	Municipality of Thames Centre	Lotowater Technical Services Inc.
Dorchester Threats, Issues and Preferential Pathways, 2007	Municipality of Thames Centre	Lotowater Technical Services Inc.
Capture Zone Modelling Ridgetown Water Supply, 2007	Chatham-Kent Public Utilities Commission	Dillon Consulting Ltd.
Highgate Groundwater Studies,	Chatham-Kent Public	Dillon Consulting Ltd.

2008	Utilities Commission	
City of London, Middlesex Centre & Strathroy-Caradoc Source Protection Study- Interim Report, 2007	City of London	Dillon Consultanting Ltd.
Technical Memorandum: Vulnerability Assessment and Threats Inventory-Perth County Municipal Drinking Water Systems Project # 3060334, 2006	UTRCA	Waterloo Hydrogeologic, Inc. A Schlumberger Company
Oxford Vulnerability	County of Oxford	

Highly Vulnerable Aquifers

A highly vulnerable aquifer is delineated as an area identified as an area of high groundwater vulnerability, but does not include an area that is within a wellhead protection area. It is difficult to identify Highly Vulnerable Areas / aquifers due to data gaps related to the lack of subsurface mapping information. Four methods have been suggested in Part IV of the technical rules: Intrinsic Susceptibility Index (ISI), Aquifer Vulnerability Index (AVI), Surface to Aquifer Advection Time (SAAT) and Surface to Well Advection Time (SWAT). SAAT and SWAT are only available in select WHPA areas. AVI and ISI are similar products but ISI mapping (completed in the municipal groundwater studies) is the only product available throughout the source protection region. The ISI method depends on rating the units described in the water well drillers database such as the depth to water and a description of drill cuttings.

However, additional work was required to remove inconsistencies, data gaps and boundary issues between municipal groundwater studies. In general, the Thames-Sydenham & Region has large areas of generally thick overburden. Higher vulnerability areas occur where there are sand plains lending reliability to the use of the surficial geologic mapping information through the Ontario Geologic Survey. The UTRCA is working with Dillon to combine the ISI seamlessly across the region and Surficial Geologic mapping products using professional judgment, but relying primarily on the ISI designation. In areas of sparse data coverage, it may be necessary to use wells of lesser location reliability

Significant Groundwater Recharge Areas (SGRAs)

SGRAs are areas where the annual average rate of precipitation that replenishes groundwater in that area (recharge) is equal to or greater than the annual average recharge in the surrounding watershed. These vulnerable areas are being defined as part of the Water Budget work being undertaken. That work is subject to its own peer review process. Therefore delineation of the Significant Groundwater Recharge Areas is not part of the peer review process described in these terms of reference. The vulnerability

scoring of those areas may be added to these terms of reference once the areas have been delineated through the water budget process.

MATERIAL TO BE PROVIDED TO THE PEER REVIEWERS

The following information will be made available to the peer reviewers to facilitate the review of the work.

- a current copy of the vulnerability assessment reports
- Information on the process of peer review (In this ToR)
- General background information that might affect vulnerability will be supplied in electronic format (pdf) (WC Report– with summary of relevant figures or sections, Relevant materials from the County Groundwater Studies)

STATEMENT OF WORK

The vulnerability assessment peer review will consider both surface and ground water vulnerability assessment work in the region. The vulnerability assessment includes a description of all surface water and groundwater features and processes that may affect the quantity, movement, and accessibility of water. The areas are scored as a relative indication of the vulnerability of the areas. This vulnerability score will be used to assess the risks to drinking water sources posed by threats in these areas. The vulnerability assessment will be used to protect the drinking water source.

The peer reviewers should consider the following aspects of the vulnerability assessment in review of the work:

- Does the vulnerability assessment meet the expectations of the Directors Rules, the guidance applicable at the time of the assessment work and the needs of the Source Water Protection Region?
- Does the vulnerability assessment make use of all relevant and available data?
- Is the vulnerability assessment comparable to adjacent regions and other work completed in this region?
- Are the surface water framework and the hydrostratigraphic framework sufficiently described (i.e. stream connectivity, aquifer distribution)?
- Does the vulnerability assessment adequately consider the natural processes that may affect the quality of water
- Does the vulnerability assessment consider constructed pathways (i.e. abandoned wells, short cuts)?
- Are the surface and subsurface processes sufficiently considered?
- Is the range of uncertainty provided?

- Are the underlying assumptions reasonable and fully explained?
- Are the limitations of the vulnerability assessment clearly outlined?
- Is the level of detail provided in the vulnerability assessment sufficient to provide enough information?
- Are data gaps and/or information gaps summarized?
- Do the calculations (WHPA's and IPZ) seem reasonable?
- Do the maps meet the technical requirements and fulfill their purpose?
- Is there additional work or changes which should be considered in future assessment? Why?

These are intended to be sample questions which might aid the peer reviewers in meeting the objectives of this peer review.

COMPLETING THE PEER REVIEW

Performance of the formal peer review of the vulnerability assessment is an important stage in the developing the source protection areas. As a result, the peer review process closes with three major activities:

- Evaluating comments and recommendations,
- Incorporating peer review comments into final vulnerability assessment products, and
- Organizing and maintaining the Peer Review Record.

The peer review will be considered to be complete when peer review comments are incorporated into the source protection planning vulnerability assessment products, or reasons are stated why such comments are not to be incorporated.

In completing the peer review the peer reviewers will submit written comments following the review of the work. The peer reviewers will have an opportunity to interact with those responsible for undertaking the work. Both consultants and technical staff of the municipality and CAs involved in the work will participate with the peer reviewers in these meetings.

Written comments from the peer reviewers will be submitted following the meeting with those responsible for undertaking the work. Responses to those comments by those responsible for the work will be recorded, whether they be changes to the work, edits to the report, recommendations for future work or reasons why changes to the work/report will not be undertaken. These comments and responses will form the basis of the peer review record. These terms of reference will also form part of that peer review record. Once completed the peer reviewers will be requested to sign off on the peer review record indicating their acceptance of the peer review record as an accurate accounting of the peer review process. This peer review record will be submitted to the Source Protection Committee along with the technical work for the SPC's acceptance of the work as part of the Assessment Report.

ANTICIPATED SCHEDULE

Table 5 – Schedule outlines a rough schedule that the peer review process will follow. This schedule is based on assumptions as to when material will be ready for peer review. As such it may require adjustment from time to time. It is important, however, to realize with any adjustments to the schedule legislated due dates. The Clean Water Act, and the Regulations under the Act, require the submission of the Assessment Report, in early 2010. Subsequent to the peer review of this work it will be important to consult with the public on many aspects of the Assessment Report including work being peer reviewed through this process. It is therefore necessary to have the peer review process wrapping up in the summer of 2009 as indicated in the table.

As some of the work has yet to be initiated it will be necessary for individual aspects of the work to be submitted upon the completion of the peer review process related to that work. This will allow for the consultation on that work prior to the completion of other aspects. As an example, vulnerability assessment of WHPA is largely ready for peer review and can likely complete the peer review process before IPZ or GUDI based work.

Table 5 Schedule

December, 2008	Meeting #1: Kick off meeting Documents to be provided to the vulnerability Peer Review Committee Interim Direction on vulnerability Director's Rules Watershed description report- relevant portions for background Overview of the process Terms of Reference
late January 2009	Meeting #2: Consultant Presentation of Vulnerability Assessment: Chatham-Kent (GW) and Middlesex- Elgin (GW)
late of February	Meeting #3: Consultant Presentation of Vulnerability Assessment: Oxford and Perth GW
early March 8	Meeting #4: Consultant Presentation of Vulnerability Assessment: Highly Vulnerable Aquifers (HVA's)
late March	Meeting #5: Consultant Presentation of Vulnerability Assessment: Southern Lake Huron and Wallaceburg SW
late April	Meeting # 6 Consultant Presentation of Vulnerability Assessment: Lake Erie C-K Intakes, West Elgin Intake and IPZ3
May 2009	GUDI Review (Thamesford, St. Mary's, Sweaburg, Fanshawe, Dorchester, Highgate)
June 2009	Peer Review Report
July 19, 2009	SPC Review

LOGISTICS

Peer Review committee meetings will be held at the offices of the UTRCA (London), SCRCA (Strathroy), LTVCA (Chatham) or other suitable location. Travel costs of peer reviewers will be paid for by the UTRCA. Peer reviewers will include their travel costs in invoices submitted to the peer review leader.

Meetings will generally start by mid morning and will continue through lunch and be completed by late afternoon. A light lunch will be provided for all peer reviewers.

Peer reviewers will be paid a per diem. The rate is to be established in writing with the peer review leader prior to the initiation of the peer review process. Peer reviewers will be paid for their services including: attendance at meetings, meeting preparation, review of materials provided to the peer review committee, and preparation of written comments on the materials reviewed.

Materials will generally be provided to the peer reviewer in electronic formats such as MSword or Adobe Acrobat pdf. Materials will be provided a minimum 2 weeks prior to the planned peer review meeting.

PEER REVIEW COMMITTEE

The Peer Review Committee for the Vulnerability Assessment is proposed to include a mix of consultants and academics. The process is intended to allow for interaction between the peer reviewers and those involved in undertaking the work including the Consultants and CA and municipal staff.

Table 6 Peer Review Committee

Peer Review Role	Expertise	Responsibilities
Peer Review Leader (tbd)	SWP Project Manager or technical team designate	<ul style="list-style-type: none"> Meeting facilitation and overall administration of the peer review process
Peer Reviewer (tbd)	Academic Representative with Hydrogeology or Hydrology expertise	<ul style="list-style-type: none"> Peer review of the documents and related technical products
Peer Reviewer (tbd)	Consultant with expertise in Hydrogeology or Water Resource Engineering	<ul style="list-style-type: none"> Prepare for and attend peer review committee meetings
Peer Reviewer (tbd)	Other Surface water specialist	<ul style="list-style-type: none"> Submit written comments
Peer Reviewer (tbd)	Hydrogeology or Surface water specialist from neighbouring SPR	<ul style="list-style-type: none"> Peer review of the documents and related technical products with a view to consistency and difference with the products of the

		neighbouring region
Technical Leads (as appropriate for the work being reviewed)	Surface Water	<ul style="list-style-type: none"> • Provide technical and administrative support to peer reviewers and peer review leader • Compile comments of the peer reviewers and responses to the comments into the peer review record • Assimilate vulnerability work being peer reviewed into the Assessment Reports for the region
	Groundwater	
	GIS	
	Technical Coordinator	
Municipal Technical Lead (as appropriate for the work being reviewed)	Project Management and Technical Direction of the project related to their systems	<ul style="list-style-type: none"> • Participates in the review of work related to their systems • Provide local knowledge of the systems and previous work related to the systems and their water sources • Provide (or coordinate from their consultants) written responses to the comments of the peer reviews
Consultants (as appropriate for the work being reviewed)	Completion of the vulnerability assessment of the systems	<ul style="list-style-type: none"> • Participates in the review of the work which they undertook • Present their work, methodologies, assumptions, limitations and findings • Provide clarification and responses related to the peer reviewers comments • Consider ways of addressing peer reviewers comments through discussion with their client