



Assessment Report Update

June 24, 2010

SPC Meeting

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Lake Simcoe Region Conservation Authority

Three Assessment Reports Required

1. Lake Simcoe and Couchiching-Black River Source Protection Area Assessment Report
 - Part 1: Lake Simcoe Watershed
 - Part 2: Lake Couchiching-Black River Watershed
2. Nottawasaga Source Protection Area Assessment Report
3. Severn Sound Source Protection Area Assessment Report

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Chapter format

- Short abstract
- Table of contents (web version)
- Required content – as dictated by the Technical Rules
- Figures – At the end of chapter or major section
- Appendix for more detailed information on methods, technical reports, information sources & limitations

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Executive summary

Content:

- Short summary of each chapter (<2p)
- Municipal chapters – 2p pull-out

Progress:

- Based on TWG requests and review
- 1st draft completed (provided)
- Update once enumeration completed

CITY OF BARRIE

Drinking Water Systems and their Vulnerable Areas

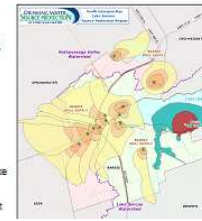
There are two (2) drinking water systems in City of Barrie servicing approximately 115,000 people. Areas that are vulnerable to contamination have been delineated, these are known as Well-Head Protection Areas (WHPA) for wells and Intake Protection Zones (IPZ) for surface water intakes. A WHPA is the area around the wellhead where land use activities have the greatest potential to affect the quality of the water flowing into the well. An IPZ is the area of water and land where activities have the potential to affect the quality of water being taken up by the surface water intake.

Barrie Water Treatment Plant:

- Located in Kempenfelt Bay on the south west shore of Lake Simcoe, in the City of Barrie
- IPZ extends along southern shoreline of the City of Barrie and inland, for a short distance, along Lover's and Hewitt's Creeks.

Barrie Well Supply:

- Fifteen wells are located in the City of Barrie, just west of Kempenfelt Bay of Lake Simcoe and services around 115,000 people
- The WHPAs are complex and cover most of the city core.



Issues

A drinking water issue interferes with or is anticipated to interfere with the drinking water supply.

Barrie WTP – No issues identified

Barrie Well Supply – No issues identified

Barrie Well Supply – No issues identified

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Barrie Well Supply – No issues identified

Threats (please see table below for full list of threats for each Drinking Water system)

Barrie WTP – XX significant threats were identified in association with XX land parcels. The significant threats reflect a variety of land uses, from residential to agriculture to commercial.

Barrie Well Supply – XX significant threats were identified in association with XX land parcels. Most of the threats identified are associated with septic tanks and storage of heating fuel.

Number of Significant Drinking Water Threats for the City of Barrie Drinking Water supply

Threat	Enumeration of Significant Threats (WHPAs)	
	Barrie WTP # threats	Barrie Well Supply # threats
1 The establishment, operation or maintenance of a waste disposal site within the meaning of Part V or the Environmental Protection Act		
2 The establishment, operation or maintenance of a system that collect, stores, transports, treats or disposes of sewage		
3 The application of agricultural source material to land		
4 The storage of agricultural source material		
5 The management of agricultural source material		
6 The application of non-agricultural source material to land (i.e. compost, biosolids)		
7 The handling and storage of non-agricultural source material (i.e. septic systems)		
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 dense non-aqueous phase liquid		
17 The handling and storage of 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 (i.e. food processing)		
20 An activity that reduces the recharge of an aquifer (i.e. increases its impervious surfaces)		
21 The use of land as livestock grazing or pasturing land, an outdoor confinement area, or a farm-animals yard		
Total Number of Significant Threats		
Total Number of Parcels		

Note: the number of parcels identified will typically be less than the number of significant threats as multiple threats can be observed in one parcel.

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1. Introduction

Content:

- Background
- Who's involved
- How the report is organized

Progress:

- TWG reviewed and endorsed
- Supplied to SPC (today)

Bay-Lake Simcoe (SGBLS) Source Protection Committee has been working with partners, stakeholders and residents to fulfill the requirements of the CWA.

1.2 THE SOURCE WATER PROTECTION PROCESS

The Source Water Protection process, as established within the CWA and resulting regulations, is a four stage process (Table 1-1). The information that needs to be included in the Assessment Report, and how it will be assessed, is prescribed within the Technical Rules (MOE, 2008a) in addition to the CWA and associated regulations. Once a draft Assessment Report has been completed it is required to undergo two periods of public consultation before being submitted to the Province. Following the completion of the Assessment Report, Source Protection Plans will be developed and implemented in the following years.

Table 1-1: SGBLS Region Source Protection Timeline

Source Protection Process Time	
Year 1 (2008-09)	Year 1-2 (2009-10)
Stage 1	Stage 2
Laying the foundation	Assessment of threats
Establish source protection authorities	Identify and assess threats to drinking water
Establish source protection committees	Prepare Assessment Report
Negotiate terms of reference	

1.2.1 The First Stage

The first stage of the process, which has Protection Areas, Source Protection Authority Protection Committee - these are all established, the preparation and approval of Source Protection Area was initiated. The essentially the work plans to be followed

- Broad scale assessment of Groundwater Vulnerability: This aspect of the Assessment Report requires both Highly Vulnerable Aquifers (HVA) and Significant Groundwater Recharge Areas (SGRAs) be identified; and
- Drinking water system assessment: For each drinking water system within the Terms of Reference, the Vulnerability of the supply wells or surface water intakes is assessed and any potentially Significant Threats to the water quality are identified.

The *Clean Water Act* requires the inclusion of Municipal Residential Drinking Water Systems in the Source Protection Planning process. The *Clean Water Act* also allows for a variety of systems that are not Municipal Residential Systems to be included either by the choice of the Municipal or First Nations councils. Systems can be excluded from the process if they are due to be decommissioned within a reasonable time frame. In the SGBLS region, and as described in the Terms of Reference for each Source Protection Area, there are a total of 108 drinking water systems that have been assessed, including 290 supply wells and 14 surface water intakes, of which 113 planned. These systems supply water to approximately 75% of the population in the Region. As highlighted in Table 1-4, within the Lake Simcoe Source Protection Area there are 84 municipal supply wells included in the ToR, 6 surface intakes (and 1 planned surface intake) providing water for 31 drinking water systems. As there are many drinking water systems in the Region, the majority of each Assessment Report is dedicated to reporting the Vulnerability and Threats of the drinking water systems.

Table 1-4: Number of Drinking Water Systems, Wells and Surface Water Intakes in the SGBLS Region

Source Protection Area	Number of drinking water Systems	Number of Municipal Supply Wells	Number of Municipal Surface Water Intakes
Lake Simcoe and Lake Couchiching - Black River	31	84	7
Black-Severn	9	9	5
Nottawasaga	35	107	1
Severn Sound	33	39	2
Total	110* (108)	290**	15

*Systems in Barrie and Orillia counted twice in the Total as the drinking water systems are in two Source Protection Areas.
** Number of wells in each SPA location, some wells are servicing communities in other SPAs.

1.6 HOW THIS REPORT IS ORGANIZED

This report represents one Assessment Report out of three required for the SGBLS Region. The Three Assessment Reports required are:

- 1) Lakes Simcoe and Couchiching-Black River Source Protection Area Assessment Report (This report);
- 2) Nottawasaga Source Protection Area Assessment Report; and
- 3) Severn Sound Source Protection Area Assessment Report

As the Source Protection Area covered by this Assessment Report includes two separate and very different watersheds - Lake Simcoe and Black Severn River - the

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2. Watershed Characterization

Content:

- Watershed and Subwatershed Boundaries
- Physical and Natural Geography
- Human Geography – population and land use
- Drinking Water Systems

Progress:

- TWG reviewed and endorsed (not SSEA)
- Supplied to SPC (today)

Upper Tier Municipality	Lower Tier Municipality	Total municipal Population	% of CCS area within Watershed	Population within Watershed	Density within Watershed (persons/km ²)
Regional Municipality of Peel	Town of Caledon	57,060	0.5	224	61
	Town of Aurora	47,629	93	44,490	953
Regional Municipality of York	Town of East Gwillimbury	21,069	100	21,069	85
	Town of Georgina	42,348	100	42,348	145
	Township of King	19,487	57	11,199	58
	Town of Newmarket	74,295	100	74,295	183
	Town of Whitchurch-Stouffville	24,390	65	13,513	117

2.4.2 Land use

It is important to consider land use measures because land cover, and budget including surface water run developed will have higher proportion parking lots and building roofs. This and reduced infiltration to recharge introduction of contaminants to bot consideration when a new land use

Land use within the Lake Simcoe v orban, non-intensive agricultural (p garden, orchard, row crop, sod farm classification is based on the Ecoc Section 2.3.1 (Natural Vegetation). The largest land use within the Lak comprising of 62% of the area. As woodlands, wetlands (including Lal use in the watershed is agriculture. These land uses are shown in Figu

Table 2-9: Land use in the Lake Simcoe

Land use
Natural Heritage
Intensive Agricul
Non-intensive Agr
Urban
Rural Developm

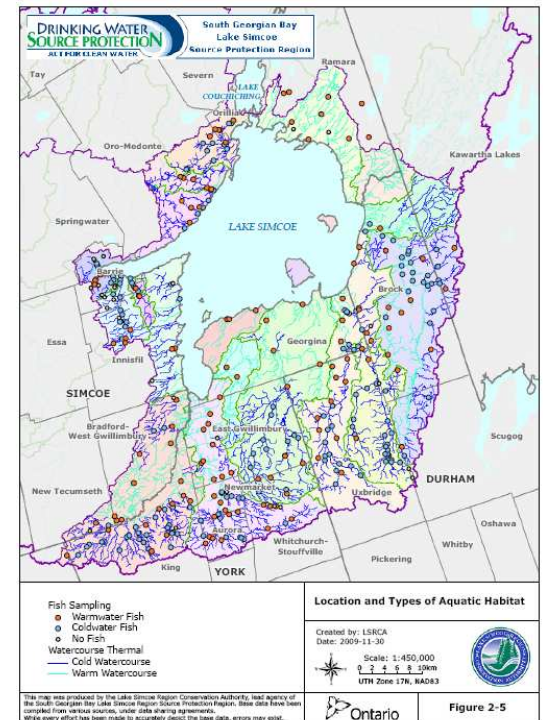


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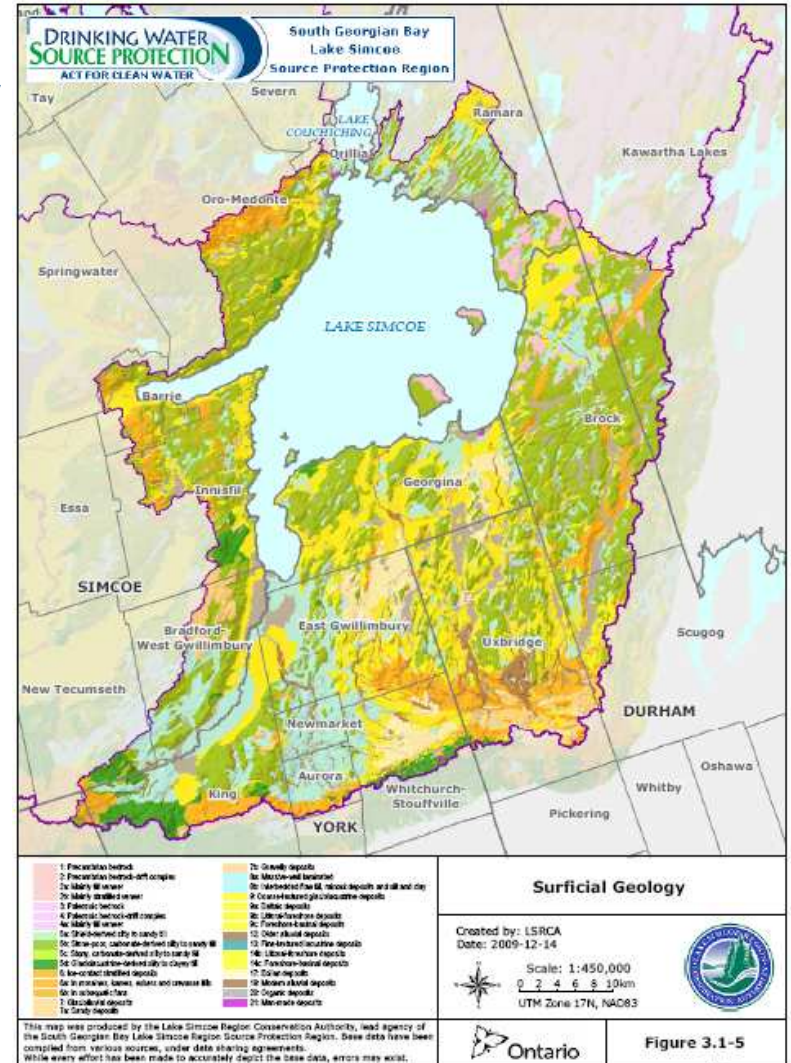
3. Water Budget

Approach:

- Section for each Tier
- Consistency between each section and assessment report
- Keep text short and precise
- Detailed information in appendix
- Simplifying technical information and using plain language as much as possible.

Content (Conceptual):

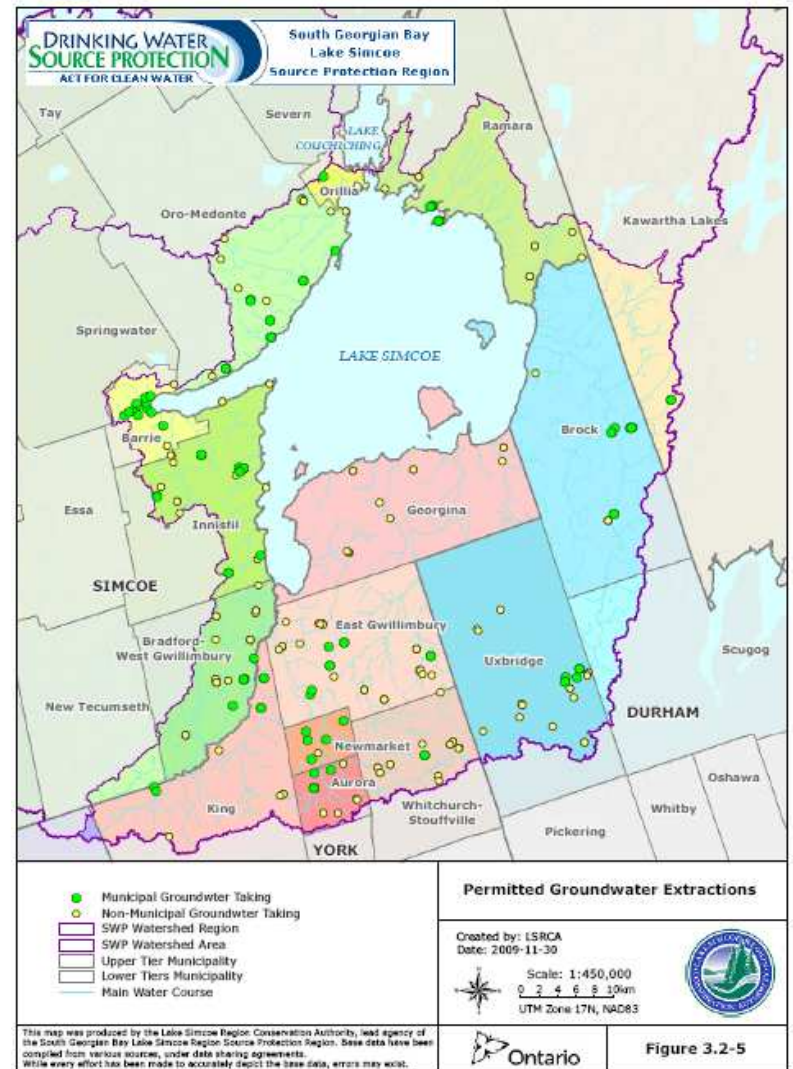
- Geology & physiography
- Surface water
- Groundwater
- Interactions between surface and groundwater
- Land use and land cover
- Climate and climate change
- Conclusions



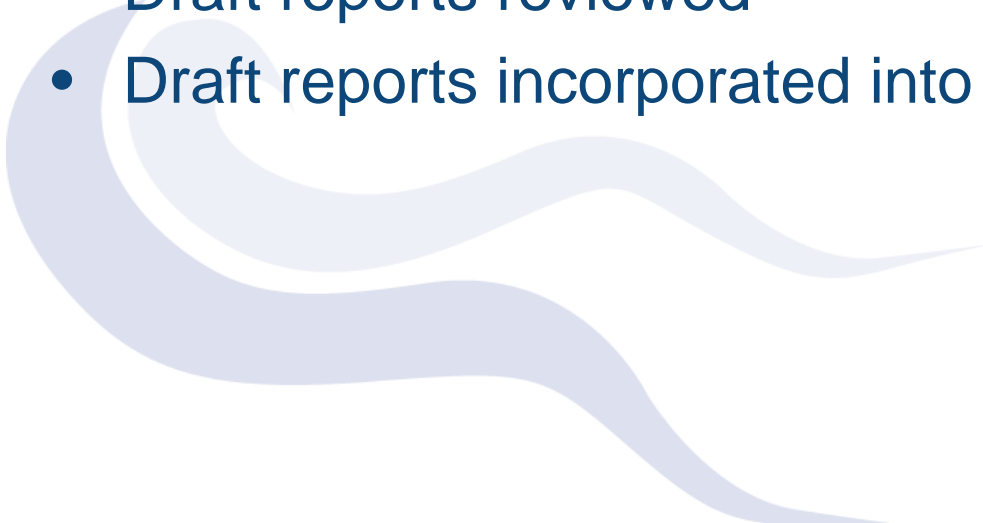
Content (Tier 1 & 2s):

- Study area
- Water supply
- Water demand
- Stress assessment
- Uncertainty
- Conclusions

*Tier 3s – Work Plan



Progress:

- Presentation on all water budgets provided
 - Draft reports for all water budgets provided (exception – Uxbridge Tier 2)
 - Draft reports reviewed
 - Draft reports incorporated into AR
- 

Report review

- SWP staff, Peer Review Committee and MNR:
 - Detailed review of
 - Methods
 - Compliance with technical rules
 - Water demand
- Others: TWG,
- SPA, CO

Page	Detailed Comments	Resolve
7 th page Page 5	In the section "Tier 2 – Watershed/Sub-Watershed" please also discuss that refinements will be made to the Tier 1 estimates of water demand and that an additional drought scenario will be evaluated in addition to refinements of current demand and future demand scenarios.	Text has been added to this section
10 th page Page 8	The equation used on this page to estimate recharge appears somewhat complex. Does the equation need to have all of these components (e.g. P, ET, SWO), all of which have their own inherent error associated with them. Is it possible that the baseflow term alone is representative of the recharge?	Although it is accurate that baseflow could be used, the attempt to understand and utilize recharge was included within this report to reduce generalized information and include the most specific data possible.
12 th page Page 10	The values of AET for this report appear to be slightly high. The EarthFx report of 2008 has lower AET between 517-558mm compared to the 580-589mm for this report. Using higher values of AET results in less supply (e.g. P-ET) and higher percent water demand calculations. Please confirm that the AET values used in this report are the most appropriate to use for this study.	Golder Associates South Simcoe Groundwater study used AET range of 580-600 mm/a (North Simcoe) and 480-600 mm/a (South Simcoe). It is acknowledge that this is a source of uncertainty.
13 th page	The report has duplicated Page 12 on this page.	Removed
14 th page Page 11	In the report it states, "For the purposes of estimating mean monthly streamflow to represent surface water supply (per the MOE guidance module)..." The guidance module actually recommends using median monthly stream flow to represent surface water supply. Please clarify if the calculations in the report have used 'mean' or 'median' stream flows to calculate surface water supply.	Median streamflow has been used to calculate surface water supply - the appropriate tables have been updated.
18 th page Page 15	In the report it states, "As previously mentioned, the statistical analysis and calculations completed on the data sets have been written into the WISKI program. All of the data provided by the MNR has been uploaded to the program. Baseflow separation results are presented in Table 5 [Now Table 2.5]. The presence of the analytical tools and storage of raw data within the program allow for future estimates to be relatively easily undertaken." It does not appear that this has been previously discussed or mentioned. Please make minor modifications to the text to clarify this paragraph.	Text has been added to Section 2.0

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4. Regional Groundwater Vulnerability

Content:

- Regional Groundwater Vulnerability
- Highly Vulnerable Aquifers
- Significant Groundwater Recharge Areas
- Drinking Water Threats Evaluation

Progress:

- Drafts reports received and reviewed (except SGRAs for NVCA & SSEA)
- Drafts incorporated into AR
- Draft provided to TWG

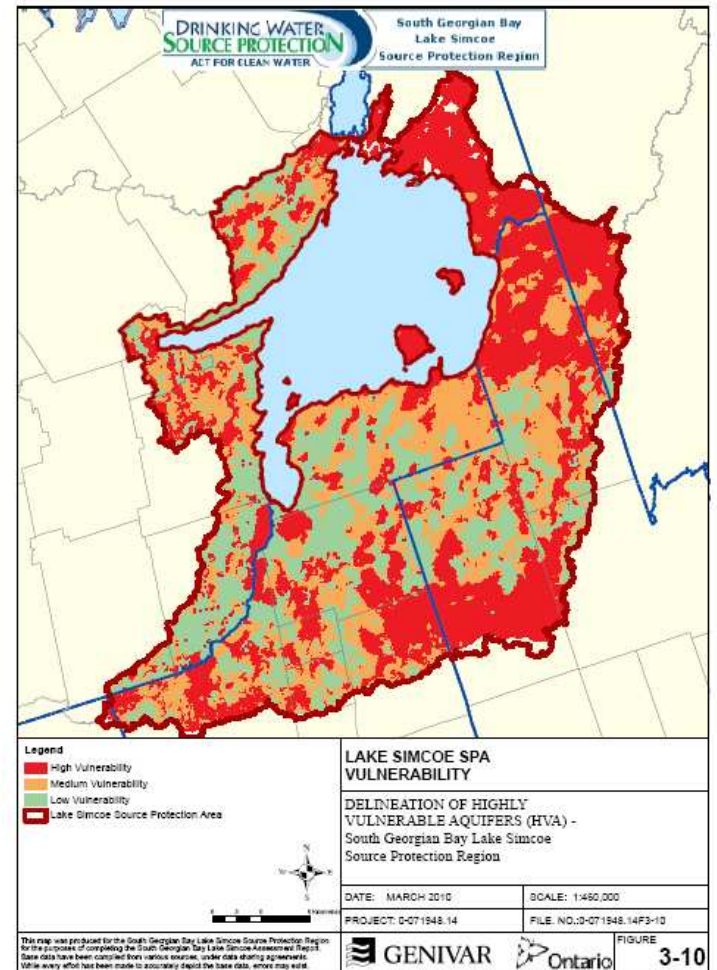


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5. METHODS AND RULES FOR ASSESSING DRINKING WATER VULNERABILITY, ISSUES AND THREATS

Content:

- Overview of Assessing Vulnerability, Issues and Threats
- Groundwater Vulnerability
- Drinking Water Issues Evaluation
- Drinking Water Threats Evaluation

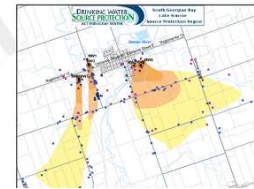
Progress:

- TWG reviewed and endorsed
- Supplied to SPC (today)

5.1 Overview of assessing vulnerability, issues and threats

5.1.1 Groundwater Vulnerability Analysis

There are three types of groundwater vulnerable areas, these being wellhead protection areas (WHPA), highly vulnerable aquifers and significant recharge areas. Chapter 4 discusses highly vulnerable aquifers and significant recharge areas, while this chapter and the following chapters focuses on vulnerability of the deeper municipal supply aquifer and the associated WHPA. This report delineates the WHPAs and assigns each with a vulnerability scores. An uncertainty assessment is also conducted to identify where improvement of the science in the Assessment Report may be necessary in future source protection planning cycles. The following section provides a summary of the main steps of delineating a WHPA and assigning a vulnerability score.



Step 1: Well Head Protection Area Delineation

A wellhead protection area (WHPA) is the area around the well that has the greatest potential to contribute to the well's water supply. The WHPA is delineated based on how long it takes for water to travel from the well to the aquifer (Travel Time, TOT). The WHPA is delineated based on the travel time around the well to the aquifer.

5.2.4 Vulnerability Scores within WHPA

A vulnerability score is determined for the area within the WHPA in accordance with Part VII.3 of the Technical Rules. The Vulnerability Score is assigned using the matrix provided in the Technical Rules that relates the delineated WHPA to the assigned groundwater vulnerability category (High, Medium, or Low). The matrix used to convert the vulnerability category to the vulnerability score differs slightly depending on whether the IS/AVI or the SWAT/SAAT method of assessing vulnerability were used – see Tables 5-3 and 5-4 based on that provided in the Technical Rules.

Table 5-3 WHPA Vulnerability Scores using the IS/AVI method of assessing vulnerability.

Groundwater Vulnerability Category for the Area	Location Within a Well Head Protection Area				
	WHPA-A	WHPA-B	WHPA-C	WHPA-C1	WHPA-D
High	10	10	8	8	6
Medium	10	8	6	6	4
Low	10	6	4	4	2

Table 5-4 WHPA Vulnerability Scores using the SAAT or SWAT method of assessing vulnerability.

Groundwater Vulnerability Category for the Area	Location Within a Well Head Protection Area				
	WHPA-A	WHPA-B	WHPA-C	WHPA-C1	WHPA-D
High	10	10	8	8	6
Medium	10	8	6	6	4
Low	10	6	2	2	2

In accordance with the technical rules the vulnerability score provided for the deep supply aquifer at this stage may be different from the shallow aquifer vulnerability score developed for the highly vulnerable aquifer assessment presented in Chapter 4 (Technical Rule 43.)

Conversion of vulnerability categories (high, medium and low) to vulnerability scores (10, 8, 6, 4 and 2) results in a new map that for each WHPA that expresses the relative degree to which a land use or activity could affect the drinking water supply aquifer. A higher value of vulnerability score will always be assigned to the immediate vicinity of the well and to any areas that are shown to be vulnerable. For example, WHPA-A is always assigned a vulnerability score of 10, and a WHPA-B is assigned a vulnerability of 10 where the vulnerability rating was determined to be high. Wells with good natural protection will demonstrate lower scores close to the wells. Any specific areas, such as natural or artificial recharge areas, where natural conditions would allow potential contaminants to reach the aquifer, will be reflected by a higher vulnerability score. Vulnerability Scores are also assigned to the WHPA-E or WHPA-F areas in accordance with Technical Rules 89 through 96. Vulnerability scores for WHPA-E or WHPA-F are based on the rules for establishing scores for an Intake Protection Zone (IPZ) 2, or IPZ-3 for a Type D Intake. Vulnerability scores for WHPA-E and WHPA-F reflect the relative potential for surface water to reach the area of interaction between a surface water flow regime and the groundwater flow system.

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14. ASSESSMENT REPORT IN CONTEXT

Content:

- Climate change
- How the Great Lakes were considered
- Additional items raised by the SPC

Progress:

- TWG reviewed and endorsed
- MOE review completed and incorporated (very minor)
- Supplied to SPC (today)

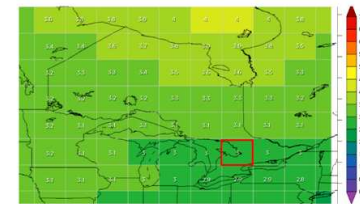


Figure 14-2: Projected increase in average annual temperature (°C) in the 2000s compared with 1961-1990 under HIGH GHG emissions (CCC SN, 2009). Area highlighted in red roughly corresponds to the Source Protection Region.

Figure 14-3 and Figure 14-4 display the projected change in average winter and summer air temperatures for 2050 (compared to 1961-1990) for Ontario, under high GHG emissions. Across Ontario there is a predicted temperature increase of 3.1°C to 7.6°C during the winter months and a 2.3°C to 3.2°C during the summer months. Specifically, in the Source Protection Region (highlighted in red), a 3.4°C increase in the winter months and a 2.9°C in the summer months is projected.

In summary, within the SGBLS Source Protection Region average annual air temperatures are projected to increase by 3°C by 2050, with similar projects for most seasons (Table 14-1).

Table 14-1: Summary of projected increase in Source Protection Region average annual temperature (°C) in the 2050s compared with 1961-1990 (CCC SN, 2009)

Season	Projected Change in Air Temperature (°C)		
	Low GHG emissions scenario	Medium	High
Annual			
Winter			
Spring			
Summer			
Autumn			

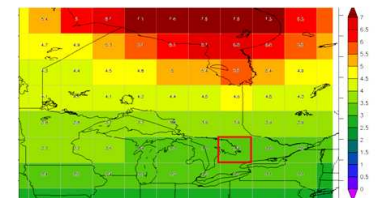


Figure 14-3: Projected change in average WINTER air temperature (°C) over Ontario for 2050s compared with 1961-1990 under HIGH GHG emissions (CCC SN, 2009). Area highlighted in red roughly corresponds to the Source Protection Region.

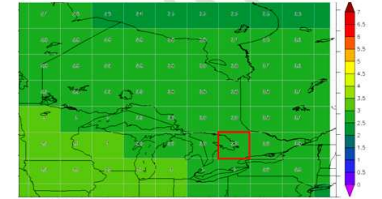


Figure 14-4: Projected change in average SUMMER air temperature (°C) over Ontario for 2050s compared with 1961-1990 under HIGH GHG emissions (CCC SN, 2009). Area highlighted in red roughly corresponds to the Source Protection Region.

Table of contents (LSRCA Part 1)

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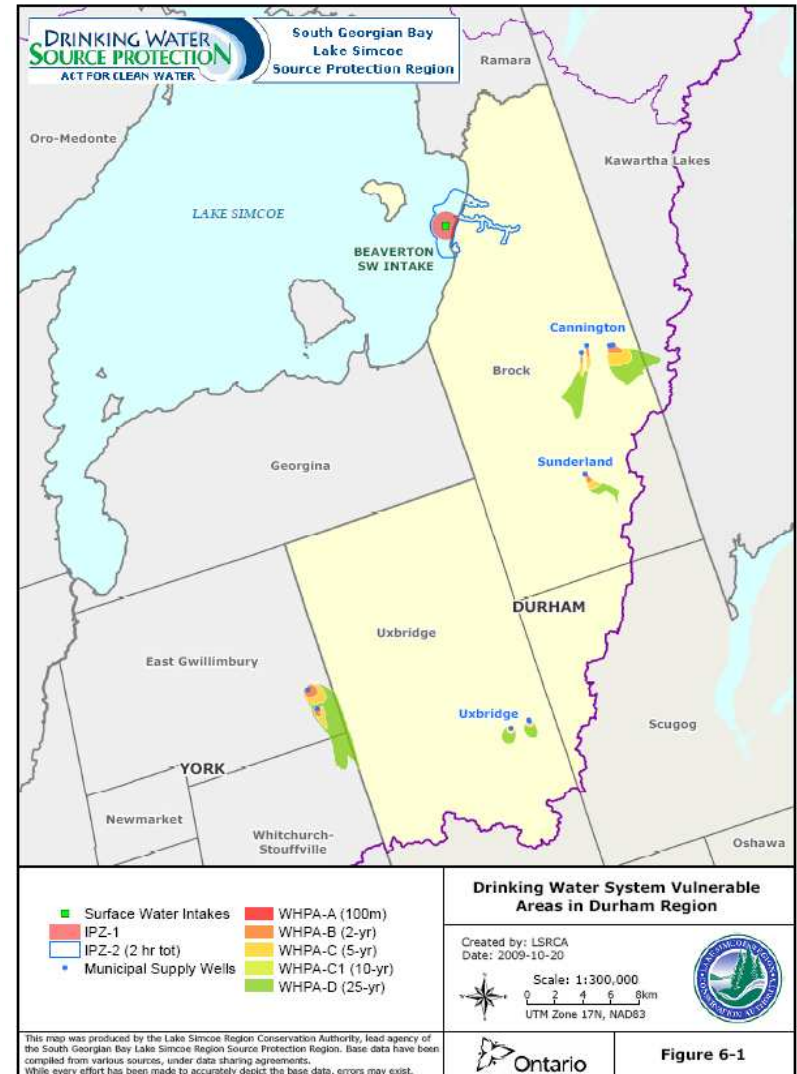
Municipal Chapters Approach

- Section for each drinking water system
- Keep main report short and precise
- More peripheral information in appendix
- Minimize repetition by referring to methods chapter and appendix

However, there will be differences between chapters completed by different consultants

Content

- Introduction
- Drinking water system sections
 - Vulnerable area
 - Issues
 - Threats (conditions and activities)
 - Enumeration



Progress

- Presentation on all systems provided
- Draft reports for systems provided
- Draft reports reviewed
- Draft reports incorporated into AR
- Threats enumeration consistency improvements and incorporation into reports
- Final draft reports currently being received and undertaking final review (required revisions very few and minor in nature).



South Georgian Bay
Lake Simcoe
Source Protection Region

Report review

- SWP staff:
 - Detailed review of
 - System characteristics (PTTW etc)
 - Methods
 - Compliance with technical rules
 - Review for enumeration consistency
 - All system reviewed (draft and final draft)
- Municipal Review:
 - Many completed (municipal led - e.g. Durham, Kawartha, Barrie, etc)
 - Municipal 'show and tell'
- MOE:
 - Chapter 5 (Durham Region)
- Others: TWG, SPA, CO,

Assessment Report Technical Studies Review

Report being reviewed: Town of Bradford-west Gwillimbury, Simcoe County and associated
Issues Memo (D1)
Report dated: March 3, 2010
Consultant: GeoLyar
Reviewers: SWP staff
Review Date: May 2010

Consultant Action:

#	Page	Section	Review Comment	Consultant action taken
Issues memo - appendix D1				
1	1	MW & A	"The permitted capacity for 2006, based on the operation of the 7 wells..... is 13226m ³ /day" When I calculate this out based on the database (2006 Bradford permit) I get 7462.08m ³ /day for all 7 wells. All wells are accounted for.	
2	4	Step 3	Need to revise statement that "most of the parameters identified..." should state that "all of the parameters," as no issues were identified.	
3	4	Step 3	Provide full name for <u>NDMA</u>	
4	5	Step 3 (first bullet point c page 5)	Since a significant trend in <u>TD5</u> was observed then should provide figure. Remove extra period.	
4	5	Step 3		
5	5	Step 3 (last bullet point)		
6	tables	tables		
7	tables	tables		

				coliforms is the Churchill system - is this correct?	
Chapter 5					
1	26	5.1.1	<u>WHPA</u> adjustment: In addition to changing source of adjustment - i.e. <u>LSRCA</u> to <u>SSGS</u> , need to provide indication of how large the adjustment was i.e. number of meters. This comment applies to all adjusted <u>WHPA</u> . We have spreadsheet of adjustment distances if needed.		
2	26	5.1.1	Insufficient information on the methods, information sources and limitations provided. Need to link to memo that provides more details as per Durham reports or provide short summary (i.e. cut and paste from original reports).		
3	26	5.1.2	Insufficient information on the methods, information sources and limitations provided. Need to link to memo that provides more details as per Durham reports. Lloyd mentioned that you are already working on a memo that describes the vulnerability analysis.		
4	26	5.1.5	Need to include statement that <u>WHPA</u> uncertainty was also completed as part of the Peer review process, and that the most conservative uncertainty applies. In this case all systems were given a "high" uncertainty rating.		
5	27	5.2	See comment above regards chloride and sodium trends - need to provide justification for assumption that trend is due to natural causes.		
6	28	5.3.3	Need to include discussion in regards to 'are or would be threats for conditions'. I've attached a summary text and table that can be edited used as you see fit.		
7	29	5.3.4	Many other consultants in the region have identified "potential conditions" as there was insufficient data / information to state that contamination exceeded criteria. Has your work also identified potential conditions that warrant presenting in the report with the notion that further investigations are required to confirm if an actual Condition?		
8	29	5.3.5	Assuming that Appendix A5 will be revised to reflect recent enumeration method changes.		
9	30	5.3.5	Suggest include statement that no significant threats related to issues or conditions.		



Enumeration Standardization Process

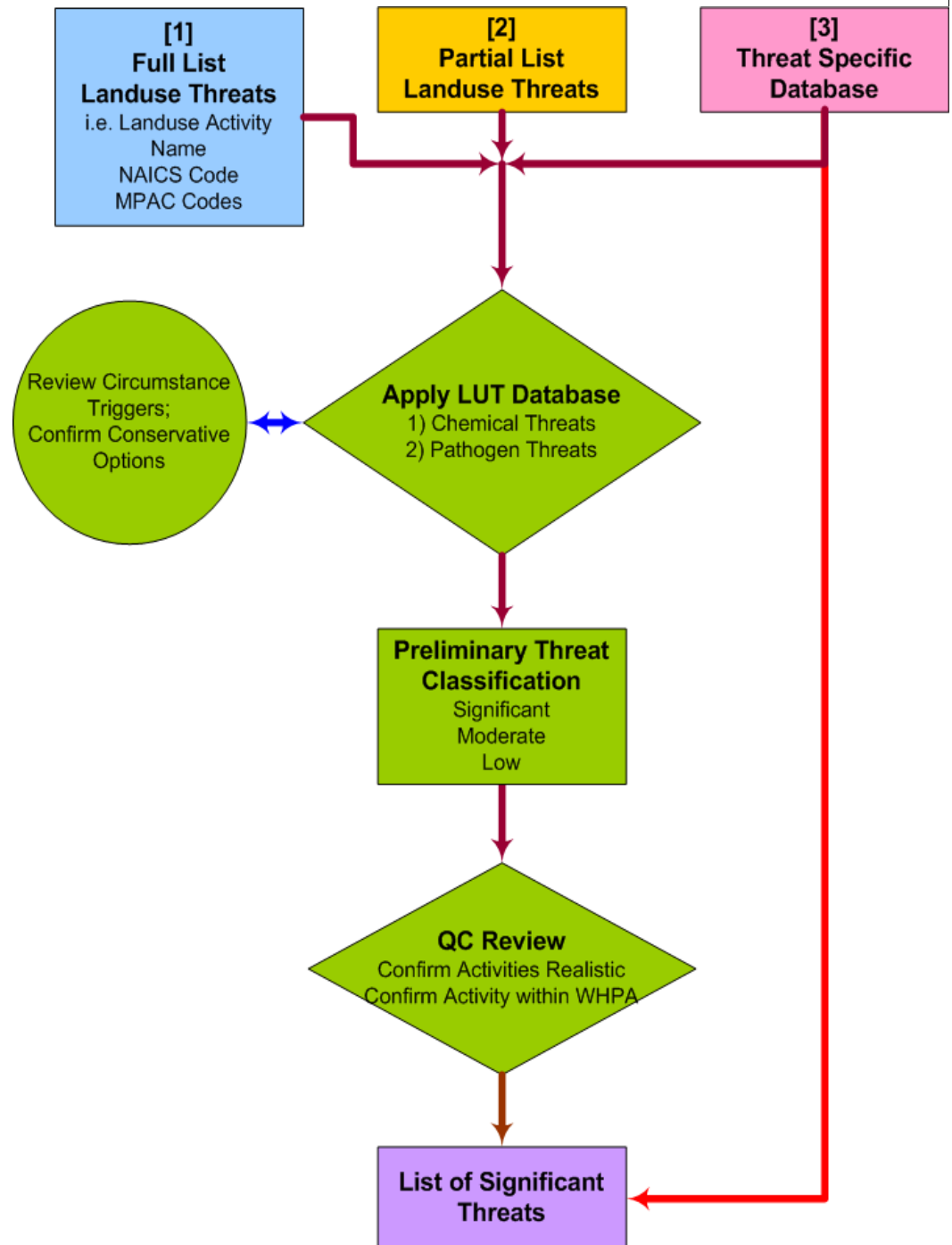


Process

1. Identified which threat sub-categories required attention
2. Developed approach / framework that identified key areas affecting consistency
3. Developed standards through workshops, conference calls, rank evaluations, email exchanges
4. Documented standards
5. Requested consultants to revise enumeration based on new standards
6. Revised reports now being recieved

Standards

- 1) **Defendable database:** Ensure threat specific databases have sufficient information (i.e. do not miss potential significant threat): default to full list approach if needed
- 2) **Consistent Lists:** Ensure consistency when assigning land use activities to threat subcategories (full or partial list approach)
- 3) **Similar circumstances:** If unknown, no local knowledge



Developing standards

- Workshop attendees
 - All consultants
 - Province: MOE and MNR
 - Other SWP Regions (CTC and Upper Thames)
 - Municipal representatives (York, Barrie, Durham)
 - Chair TWG, Chair SPC, SSEA
- Systematically worked through:
 - Each threat sub category identified as requiring input
 - Database, list of land use activities, circumstances
 - Follow-up calls and email to finalize list of land uses and waste disposal sub category

Developing standards

- Threat specific databases:
 - Very few circumstances where threat specific database alone was sufficient
 - Need to defend use: i.e. not miss potential threats (e.g. Fuel)
- Circumstances:
 - Standards adopted for situations where circumstances are not know
 - Default to most conservative (i.e. what ever makes it a significant threat)
- Consistent list of land use activities

Consistent list of potential land use activities

- Ensure all consultants using same list (from MOE look-up table)
- Modify list so that activities that are very unlikely to be a significant threat are removed (i.e. limit the number of false positive identifications)
- Developed system to rank likelihood of being a significant threat

Outcomes of enumeration exercise

- Approach significantly more standardized across region
- Adopted by other regions (CTC)
- Impact on initial enumeration:
 - Less conservative methods first applied: likely to add number of threats. E.g. Urban areas (York/Barrie) more activities related to DNAPLS, Solvents and fuels will be included
 - More conservative methods first applied: remove a number of threats: E.g. Genivar reports which used all land use activities in LUT



Assessment Report final steps and endorsement



- SWP staff review final drafts technical studies and response to review comments
- Very rapid turn-around for any changes
- Incorporate into Assessment Report
- Final TWG review
- Request TWG endorsement
- Final formatting and editing
- Request SPC endorsement

