

Chapter 8

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8 Data Gaps and Future Work

This Assessment Report has been prepared using the best data and knowledge available at the time the technical studies were completed, and where possible, at the time of publication. However, completing scientific assessment on the quality and quantity of water undoubtedly raises a number of questions and uncertainties regarding the methodologies used (as discussed in Chapter 6), availability of data, reliability of data and overall outcome. As new information arises, either from increased or continuous monitoring, improved models, or a change in methodology, the results from this report will have to be updated continually to reflect the additional information. The MOE will determine the review timeframe when they approve the Assessment Report.

This chapter provides information about known data gaps. The known data gaps are grouped into two separate categories, as follows.

Data Gaps for Inclusion in an Updated Assessment Report

This data is required in the Assessment Report but is not currently available. It is important that these data gaps be filled in a timely fashion so that the information available to the Source Protection Committee for use in developing the Source Protection Plan. These data gaps will be included in an updated Assessment Report to be submitted to the province in 2011.

Data Gaps for Continuous Improvement of Technical Studies

The Assessment Report has been prepared using best data and knowledge available at the time the technical studies were completed. Whenever possible, it is important to obtain better data and knowledge to improve the accuracy of the technical studies. Any improved data and knowledge will be incorporated into future Assessment Reports.

8.1 Data Gaps for Inclusion in an Updated Assessment Report

The following known data gaps should be included in an updated Assessment Report submitted to the MOE in mid 2011.

8.1.1 Future Lanark Water Supply

As noted in Chapter 5, the Township of Lanark Highlands is currently seeking construction funding and working on the design of a new municipal groundwater-based drinking water system for the Village of Lanark in Lanark County. This planned system has been studied in accordance with the environmental assessment process and is included in the Approved Terms of Reference for the Mississippi Valley Source Protection Area.

The following work plan has been developed for the Future Lanark Water Supply.

Task	Planned Completion Date
Delineation of wellhead protection areas, including vulnerability scoring	Spring 2011
Threats and Issues Evaluation, including managed lands and livestock density calculations	

Workplan tasks for future Lanark Water Supply

8.1.2 IPZ-3 Vulnerability Scoring

As noted in Chapter 6, no IPZ-3 vulnerability scores are included in this Assessment Report and it is recommended that provincial technical guidance be developed. Once developed, IPZ-3 vulnerability scoring can be completed.

The following work plan has been developed for completion of IPZ-3 Vulnerability Scoring.

Task	Planned Completion Date
Development of provincial technical guidance for surface water vulnerability scoring. This would be led by the Province with involvement of MRSPR staff.	Spring 2011
Completion of IPZ-3 vulnerability scoring and completion of significant threats evaluation, including managed lands and livestock density calculations	

Workplan tasks for Completion of IPZ-3 Vulnerability Scoring

8.1.3 Confirmation of IPZ-2 Delineation for the Britannia Intake

Based on public comments received in late March 2010, the IPZ-2 delineation in the vicinity of Moodie Drive and Carling Avenue is currently being assessed. A revised IPZ-2 for the Britannia intake will be included in the 2011 updated Assessment Report if the assessment results in a modified IPZ-2 zone for the Britannia Intake.

8.1.4 On-going Confirmation of Significant Threat Counts

Site visits were not carried out to confirm significant threats circumstances on each property. Instead, a conservative approach was generally taken for the identification of significant threats in accordance with the provincial threats tables. 'Significant Threats Notification' letters have recently been sent out

(June 2010) to all property owners who have been identified as a potential significant threat. If requested, staff from the MRSPR will work with property owners to obtain specific information with regard to significant threats. The updated significant threats count will be included in the 2011 updated Assessment Report.

8.2 Data Gaps for Continuous Improvement of Technical Studies

Some data gaps are very minor and were filled with conservative assumptions. Other gaps in data or information were more significant and may lead to further study and collection of more data. The following key data gaps were identified during the completion of the background technical studies. Where available, a more detailed list of data gaps is provided in each technical report.

8.2.1 Data Gaps for Chapter 2 – The Mississippi-Rideau Source Protection Region

Based on a review of the Watershed Characterization Report (see Appendix A-1), the following key data gaps were identified that if filled, would result in improved future technical studies.

Watershed Description

- Surficial geology mapping for a portion of Frontenac County and Lennox & Addington County is not available
- A database of Federal lands locations is not available
- Limited number of stream flow gauges in both the Mississippi Valley and Rideau Valley watersheds
- Limited coverage for shoreline conditions classification
- Limitations were identified with the provincial water well records (further discussed in Section 8.2.3)
- No active climate change stations are located at the north end of the Mississippi Watershed
- Limited population statistics to calculate the population of development areas, private services areas, and season residents
- Digital Official Plan mapping for Addington Highlands, North Frontenac and South Frontenac is not available
- Limitations were identified with the Permit To Take Water (PTTW) provincial database (further discussed in Section 8.2.2)

Surface Water Quality

- Lack of surface water quality monitoring stations/programs in close proximity upstream of the municipal surface water intakes

Groundwater Quality

- Lack of groundwater quality monitoring locations/programs beyond of the municipal groundwater systems

8.2.2 Data Gaps for Chapter 3 – Water Budget

Based on a review of the water budget technical studies (see Appendix A-1), the following key data gaps were identified that if filled, would result in improved future technical studies.

- Lack of actual water takings from Permit to Take Water (PTTW) database. For example, the current PTTW database only includes permitted (maximum) water taking data, and not actual takings
- Lack of water taking data from private wells, agricultural water users, and other non-permitted water users
- Limited number of stream flow gauges in both the Mississippi Valley and Rideau Valley watersheds, especially for the Tay River subwatershed and the Mississippi River downstream of Appleton
- Lack of information about groundwater recharge and discharge, and evapotranspiration
- Water discharged via sewers was reported to be significantly higher than water consumed via potable water systems. This issue warrants additional research as, over time, sewer drainage of groundwater resources can become a water budget demand that is significant in those areas facing water supply challenges.

8.2.3 Data Gaps for Chapter 5 - Groundwater Sources

Based on a review of the groundwater technical studies (see Appendix A-1), the following key data gaps were identified that if filled, would result in improved future technical studies.

Groundwater Studies for Highly Vulnerable Aquifers, Significant Groundwater Recharge Areas, and Wellhead Protection Areas

- Limitations were identified with the provincial water well records. For example, better static water levels, well locations and geologic descriptions would greatly improve the understanding of sub-surface conditions and calibration of groundwater models
- Lack of detailed information about aquifer properties such as hydraulic conductivity, porosity, transmissivity, storativity) and water levels in the aquifer
- Limited amount of information is known about the Nepean Aquifer system
- Lack of detailed information is known about the overburden conditions in Carp and Kemptville
- Limited amount of information is known about bedrock faults
- Lack of information about groundwater recharge and discharge, and evapotranspiration
- Additional research on the characterization of groundwater movement in fractured bedrock is recommended
- Lack of information about the location of abandoned wells

Managed Land and Livestock Density

- Limited amount of livestock density data available at local and regional scales.

Threats and Issues

- Limited documentation available to confirm conditions. For example, the provincial spills database may indicate that a spill has occurred on a property, but there is no additional information with regard to the status of the spill.

Data Gaps for Chapter 6 – Surface Water Sources

Based on a review of the surface water technical studies (see Appendix A-1), the following key data gaps were identified that if filled, would result in improved future technical studies.

Ottawa River Surface Water Studies for Intake Protection Zones

Although a preliminary delineation of IPZ-2 was carried out in the Ville de Gatineau in Quebec, the following additional information is required to complete the delineation:

- Identification of sewer catchments for individual sewer outlets
- Information on the hydrological/hydraulic conditions of local creeks

Inland Rivers Surface Water Studies for Intake Protection Zones

- Limited bathymetric (river bottom) information is available
- Limited raw water quality data available upstream of the intakes
- Additional review and 'ground-truthing' the transport pathways within IPZ-2 would be beneficial, especially on private land
- Limited information available for transport pathways in IPZ-3. For example, need to determine extent of drains, trenches, tile drains (also for IPZ-2), and karst features
- Incomplete hydrologic and hydraulic information upstream and in the vicinity of each intake

Managed Land and Livestock Density

- Limited amount of livestock density data available at local and regional scales.

Threats and Issues

- Limited documentation available to confirm conditions. For example, the provincial spills database may indicate that a spill has occurred on a property, but there is no additional information with regard to the status of the spill.

8.2.4 Data Gaps for Chapter 7 – Climate Change

- Flow projection information for Rideau watershed, similar to the Mississippi data
- Development of uncertainty analysis for available local level precipitation and temperature projections
- Effects of climate change on water budget (precipitation, ET) for Rideau watershed, similar to Mississippi data