

Point Anne Drinking Water Source - System Summary

Drinking Water from the Bay of Quinte

The Bay of Quinte is the main water source for the Hamlet of Point Anne located east of the serviced area of the City of Belleville. Point Anne which is on the north shore of the Bay of Quinte became part of the City during municipal amalgamations in Ontario. The small drinking water system serves 22 residences with a total population of about 55. The intake in the Bay of Quinte, draws water through a small diameter pipe projecting 80 m into the Bay. At this location the bay is shallow and depth of water over the intake is about 2.5 m. Water is taken to an inland well by gravity where it mixes with groundwater that infiltrates the well. This wet well, constructed with concrete well tile, has openings in the side reported to allow significant volumes of shallow groundwater to enter the well. This mixing of both ground and surface water means the system has been classified as a combined surface water/groundwater system. There is potential for local groundwater contamination so it is necessary to evaluate the location of the groundwater capture zones also called Wellhead Protection Areas around this well in addition to the Intake Protection Zones in the surface water.

Vulnerable Areas

Through the science of the Assessment Report (available at quintesourcewater.ca), zones were mapped that show which areas surrounding the water source are most vulnerable to pollution and contamination.

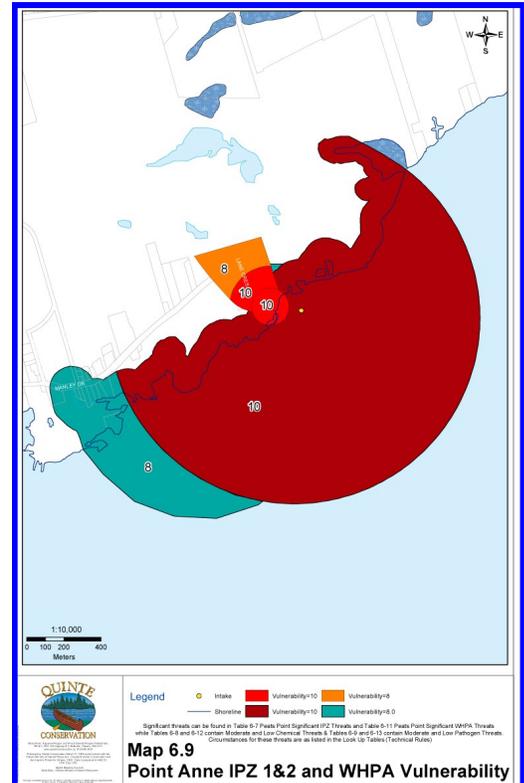
Intake Protection Zones (IPZs) were identified; each with different levels of vulnerability:

- **IPZ 1** is the area closest to the intake (dark red on map). This is the area of highest concern because contaminants entering this zone would reach the intake quickly with little or no dilution.
- **IPZ 2** is a secondary protection zone (aqua on map). It is calculated based on how far water can travel during a two-hour time period. The contributing area to IPZ 2 was determined by considering contributions from flows, wind and transport pathways.
- **IPZ 3** is the area of drainage that contributes to the intake. IPZ 3 includes tributaries along the Bay of Quinte such as Blessington and Bell Creeks, some portions of Prince Edward County and the entirety of the Moira River watershed. Since the IPZ 3 that is located in the Moira River watershed is a very extensive area, it was split into IPZ 3a and 3b. Intake Protection Zone 3a is the lower watershed and 3b includes the tributaries in the upper portion of the Moira River watershed. (See map on reverse.)

Wellhead Protection Areas (WHPAs) were identified and show the zone around a well that includes the land above and below ground where land use activities could affect the quality of water flowing towards the well. The location and size of a WHPA is determined in part by the direction the groundwater moves, the speed/rate it moves, and the volume of water that is pumped from the well. The **WHPA A** is a circle of 100 m radius (red on map), **WHPA B** is the 2 year time of travel zone (TOT) (also red on map), and **WHPA C** is the 5 year TOT zone (orange on map). The time of travel zones represent the number of years (or less) that a contaminant could take to reach the well.

Vulnerability Scores

Vulnerability scores help to quantify how vulnerable the drinking water source is to contamination. Scores are calculated based on the characteristics of the intake and IPZs and WHPAs around the intake, taking into account how contaminants might move through them. An area with a higher vulnerability score is more likely to allow contaminants from that area to reach the drinking water intake. The vulnerability score of the highest concern is 10. The vulnerability scores for the Point Anne IPZs are: **IPZ 1 = 10, IPZ 2 = 8.0, IPZ 3a = 7.0 and IPZ 3b = 3.0.** The vulnerability scores for the Point Anne WHPA A and B = 10, and WHPA C = 8.



Drinking Water Issues

Drinking water issues are chemicals or bacteria in the untreated water that exceed allowable values. The raw water quality data that represent conditions at the Point Anne Intake was screened to identify issues in the groundwater and the source water of the Bay of Quinte which may contribute to degraded water quality. Using a 4-step screening process it was confirmed that no issues in the raw water exist.

Drinking Water Threats

Threats to the drinking water source within the IPZs and WHPAs were evaluated. These threats are based on the categories prescribed by the Ministry of the Environment and Climate Change. Threats were inventoried by field observations, air photos and satellite images, existing databases and landowner contact. These threats were then ranked as significant, moderate or low.

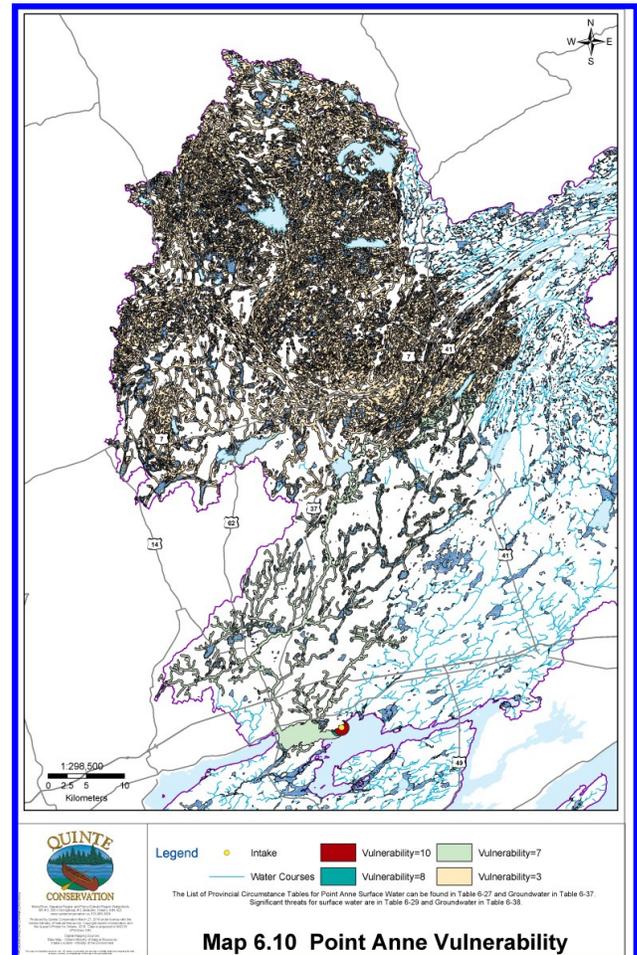
There was one type of significant threat found in the IPZ1 and none identified in the IPZ2. The threat type is:

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

There were 15 parcels in the WHPA B identified with two types of significant threat. These threat types are:

- septic systems
- handling and storage of fuels (home heating oil)

No threats have been identified based on the presence of any past land uses or pre-existing conditions. Moderate and low threats are shown in tables in the Assessment Report.



Source Protection Plan

The Approved Quinte Region Source Protection Plan includes policies, developed by the Source Protection Committee in consultation with the local community. The 63 policies in the plan address the drinking water threats identified in the science-based Assessment Report. The Assessment Report, identified the vulnerable areas surrounding the 11 municipal drinking water sources in the Quinte Region and ranked the threats as significant, moderate or low.

The source protection planning process is governed by the *Clean Water Act, 2006* and directed and funded by the Ontario Ministry of the Environment and Climate Change. The Quinte Region Source Protection Plan comes into effect January 1, 2015.

For more information, including the complete Assessment Report and the Source Protection Plan, visit:

www.quintesourcewater.ca



Made possible through the support of the Government of Ontario

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