



What is a “Wellhead Protection Area” (WHPA)?

A wellhead is the physical structure of the well above ground. A wellhead protection area is the area around a wellhead where land use activities have the potential to affect the quality and quantity of water that flows into the well.

Time of Travel Zones

Time of travel zones determine how long it takes water to move underground to the well itself. The following factors are used to determine the speed and direction that groundwater travels to the well:

- ◇ The rise and fall of the land in the travel zones.
- ◇ The type of soil surrounding the well.
- ◇ The type of aquifer.
- ◇ The amount of water being pumped from the well.

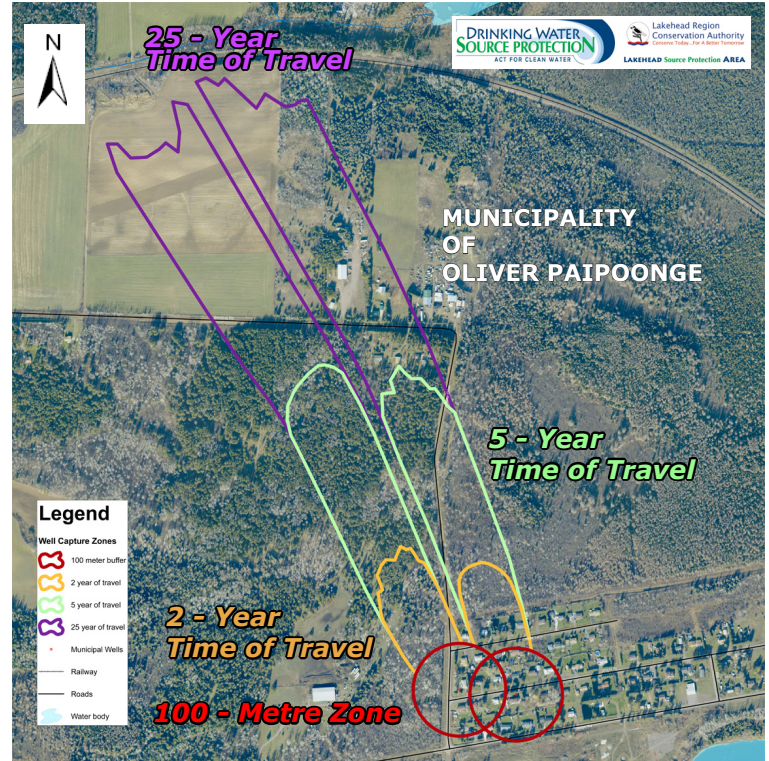
100 - Metre Zone

The 100-metre zone is the area around the wellhead where land use activities have the potential to pose the most significant threat to the groundwater source.

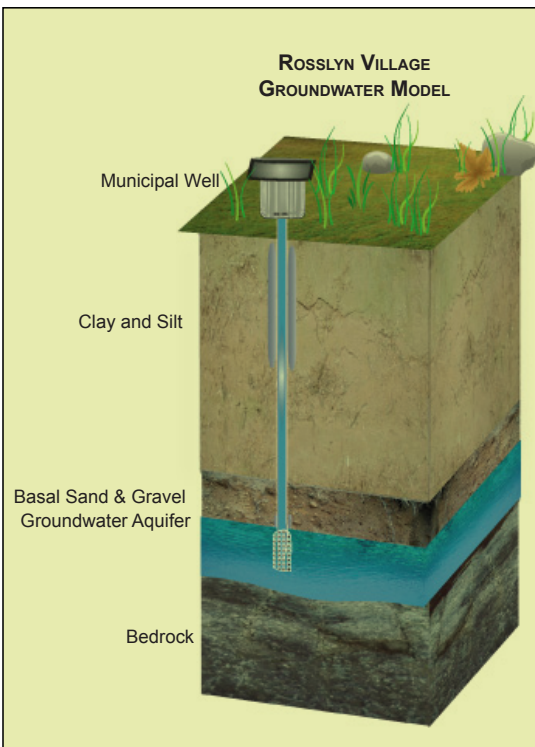
2 - Year Time of Travel (TOT)

5 - Year Time of Travel (TOT)

25 - Year Time of Travel (TOT)



Time of travel zones ranging from two to twenty-five years illustrate the recharge area and vulnerable zones for the two Municipal wells where land use activities have the potential to impact the quality and quantity of water.



Rosslyn Village Wellhead Protection Area

The municipal residential drinking water for Rosslyn Village comes from a groundwater aquifer that feeds two drilled municipal wells. The groundwater flow to the wells is determined by capture zones identified in technical studies to measure the recharge of the water supply. The zones that form the Wellhead Protection Area are delineated by a time of travel calculation taking into account the soil structure surrounding the wells.

The aquifer is confined by a thickness of approximately 27 metres of clay and silty soils. As clay is a fairly non permeable soil, this layer allows for some protection from contaminants penetrating the soil from the ground above.

The bedrock underlying the aquifer has a naturally high mineral content (sodium, sulphate, etc.) which may impact the colour and taste of the source water supply.

The Kaministiquia River is located about 2000 metres south of the two municipal wells. The river has no influence on the groundwater supply of the wells as the confined aquifer stops about 1200 to 1800 metres from the river.

The thickness of overlaying soil decreases to a thin veneer of till some 2 to 3 kilometres north of the wells with frequent bedrock outcroppings noted at the surface.

MUNICIPALITY OF OLIVER PAIPOONGE MUNICIPAL DRINKING WATER SYSTEM

Rosslyn Village Subdivision Well Supply

The Hamlet of Rosslyn Village, located about 17 kilometres west of the City of Thunder Bay, has a municipal residential drinking water system supplied by two groundwater wells.

The Municipality of Oliver Paipoonge owns the municipal drinking water system that serves 29 property owners in Rosslyn Village. The municipal system is operated by Water Quality Service under contract with the Municipality. The source water is piped to a single water treatment plant where it is chlorinated and distributed to the properties on the Municipal system. The same groundwater aquifer supplies untreated water to homes with private wells in the area.



Source Protection Committee Members, pictured above, examine a Municipal wellhead in Rosslyn Village.

The two Municipal wells were drilled in 1973 and historically supplied as many as 50 homes. The two wells are operated alternately with an average daily water use of 25,000 litres per day. The two wells have a combined operational capacity of 248,757 litres per day (L/d) as per the Permit to Take Water from the Ministry of Environment.

Land Use Activities

The land use in the Wellhead Protection Area is generally residential in the immediate vicinity of the wellhead. The far reaches of the capture zones are less populated, rural and agricultural with vacant forested land. The proper maintenance of septic systems and private wells are ways property owners can help ensure safe, clean drinking water from their groundwater supply.

QUICK FACTS

Location:

Rosslyn Village, Municipality of Oliver Paipoonge
125 Maple Street

Owner:

Municipality of Oliver Paipoonge

Operating Authority:

2017376 Ontario Ltd. (Water Quality Service)

Source of Water:

Two ground water wells drilled in 1973.
North Well - South Well

Population Served by System:

29 homes - Approximately 90 people.
Historically has served up to 50 homes.

Operational Capacity:

(Permit to Take Water - MOE)
248,757 L/d (litres per day)
124,378.5 L/d (litres per day) for each well

Average Daily Use:

25,000 L/d (litres per day)

Maximum Daily Use (Recorded):

50,000 L/d (litres per day)

Potential Drinking Water Threats

- * **Septic systems of homes and cottages.**
- * **Improper construction and maintenance of wells.**
- * **Establishment, operation and maintenance of waste disposal site.**
- * **Handling and storage of fuel.**
- * **Application, handling and storage of pesticides and fertilizers.**
- * **Handling and storage of industrial chemicals, solvents and liquids.**
- * **Application, handling and storage of agricultural source material.**
- * **Application, handling and storage of road salt.**
- * **Ships and cargos within the harbour.**
- * **Accidental spills along transportation routes.**



Aerial shot of properties in Rosslyn Wellhead Protection Area

Technical studies completed on the Wellhead Protection Area for the Rosslyn Village Subdivision Well Supply will be used in the development of the Assessment Report to identify significant threats and potential risks to the groundwater aquifer that supplies municipal residential drinking water to residents of Rosslyn Village. The Assessment Report will be used as a tool to assist in the preparation of policies and measures in a local Source Protection Plan.