Journey of water to your tap and back

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1a Groundwater

- Source for 80 per cent of municipal drinking water
- Groundwater is rain, melted snow or surface water that soaks into the ground and fills the cracks and spaces between sand grains, gravel and rocks.
- Groundwater moves slowly through layers of these materials that make up the geological formation of an aquifer.

1b Grand River

Source for 20 per cent of municipal drinking water.

Weir

Low dam or barrier that redirects water into an intake pipe.

Screening

Water passes through a screen to remove branches and other debris.

Reservoir

- Allows time for sand and other debris to settle to the bottom.
- Provides extra storage in case of a chemical spill in the river. If a spill occurs, the intake pipe is closed until the spill is resolved.

2a Supply well

- Large pipe placed in a hole drilled into the aquifer.
- 100+ wells throughout Waterloo Region collect groundwater.
- Treated groundwater enters the Integrated Urban System (IUS).

2b Surface Water Treatment

- Water travels through an underground pipe to the Mannheim Water Treatment Plant to complete a complex multi-step treatment:
  1. Rapid mixing: a chemical is added to quickly moving water to make particles and impurities stick together.
  2. Flocculation: the water is gently stirred to create larger clumps of impurities called flocs.
  3. Sedimentation: the water flows through a series of metal plates from the bottom up leaving behind the flocs or particles that sink to the bottom of the tank.
  4. Ozonation: ozone gas is added to improve the water's taste, smell and colour.
  5. Filtration: the water slowly moves down through layers of granular activated carbon and sand to remove any remaining impurities.
  6. Ultraviolet (UV) disinfection: the water passes through UV light to inhibit harmful organisms found in surface water.
  7. Chlorine disinfection: chlorine added to the water stops the growth of bacteria as the water travels through underground pipes.
- Groundwater from nearby wells mixes with the treated surface water before entering the Integrated Urban System (IUS).

3 Integrated Urban System

- Network of underground pipes, water towers and booster pumps that move the water to homes and businesses.
- Water towers store water and help to maintain normal pressures.

4 Your home

- Trust your tap and the many water professionals to provide you with clean and safe water.
- What can you do to protect and use less water?

5 Wastewater treatment

- The water we use in our homes along with anything else that goes down the drain like shampoo, soap, laundry detergent, pee, poop and toilet paper is wastewater.
- After the wastewater leaves your home, it goes through another set of underground pipes to a wastewater treatment plant
- At the treatment plant, the wastewater goes through a complex multi-step treatment.

6a Grand River watershed

The liquids are now clean enough to return to the Grand River watershed to continue its journey through the water cycle.

6b Biosolids

The solids become treated biosolids we transport to provincially approved farms to fertilize fields or to closed mines to return tailing ponds to a naturalized environment.

Water testing

Every day the Region of Waterloo collects and test water samples throughout the distribution system to ensure municipal tap water is clean and safe to drink.

regionofwaterloo.ca/learnwater

Region of Waterloo

Ours to protect water and conserve