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Town of Mono
2017
Municipal and Residential Water Quality Presentation
2016 Census
- Mono Population 8609
- Private Dwellings 3127

Town Provides drinking water to approx. 2172 people via 906 service connections

Approx. 6437 people on private wells or approx. 2221 private dwellings etc.

25% of Mono Residents Receive Municipal Water
2016/17 Background Information

- The Town has two Drinking Water Systems
  - **Cardinal Woods Drinking Water System**
    - In ground Four Cell Treated Water Reservoir
    - Has 3 wells
  - **Island Lake Drinking Water System**
    - Water Tower Treated Water Reservoir
      - Supplied by 2 wells
    - Direct Chlorination Contact Pipe
      - Supplied by 3 wells

- Combined they provide drinking water and fire protection via.
  - 27 km of watermain
  - With 225 Fire Hydrants
Coles Pumphouse and Water Tower
(2 wells 82.3 metres deep)
Island Lake Pumphouse
(3 wells 50, 58 and 60 metres deep)
Cardinal Woods Pumphouse and Reservoir (3 wells 35,36 and 67 metres deep)
MOECC Inspections

- Detailed or Focused Inspections occur yearly
- Available for viewing as requested
- Inspections occur to ensure the Town is in compliance with the applicable MOECC legislation and policies
- Safe Drinking Water Act, 2002
- Drinking Water Systems, Ontario Regulation 170/03
- In short the MOECC review our yearly operations of the following
- Source and Capacity Assessment (PTTW Compliance)
- Treatment and Treatment Process Monitoring
- Operations Manuals and Logbooks
- Security of Wellheads, Building and Reservoirs
- Certifications and Training
- Water Quality Monitoring and Water Quality Assessments
- Reporting and Corrective Actions should any arise
Other Guidelines

- Further to these we also have the Drinking Water Quality Management System (DWQMS)

- This Quality Management Systems governs the operations and maintenance of the Drinking Water Systems

- It ensures clean, safe and reliable drinking water directly related to the Operation Plan

- It ensures continual development, implementation and improvement of the system through operational guidelines to ensure that regulatory requirements are met
What do we really do?

- Test Raw Water, Treat and then Test again (Annual Report available at Municipal Office)
- The Town tests Microbiological makeup of raw water and treated point of entry water weekly for
  - E.Coli/Fecal Matter (Agriculture/Septic Systems)
  - Coliform (Soil/Vegetation)
  - HPC (Heterotrophic Plate Count)
    - Indicates General Bacteria in water and is a good tool to measure source quality and consistency
  - Turbidity (Usually appears from Human intervention, i.e. well cleaning, construction etc.)
- The Town tests distribution water every 5 out of 7 days plus Chlorine residuals in the distribution system
- Chlorine at point of entry is monitored mechanically over 8000 times per year (Walkerton)
As noted earlier we test on a regular schedule as legislatively required.

In addition to the Microbiological testing the Town tests the chemistry makeup of the water yearly.

From this Annual Reports are created, submitted, reviewed and studied for trending issues and changes from previous years results.

Example of Annual Report (USB)
Analysis results are put to graph and reviewed

Looking for increases or spikes in numbers

Especially those reaching the exceedance limit or over

For example Arsenic and Sodium
Coles Well 1 – Arsenic (As) Raw Water Samples

Max Level = 10ug/L
Coles Well 1 – Sodium (Na) Raw Water Samples

Max Level = 200,000ug/L
Sodium hypochlorite is added to raw water to control bacteria growth.

Water is then sent through an Ultra-violet light that penetrates the cells of bacteria and viruses in your drinking water, destroying their ability to reproduce. The process is simple but effective.

Finally prior to entering the reservoirs Chlorine is added and the four cells provide our required chlorine contact time to ensure all bacteria is gone.

Chlorine residuals are monitored when they leave the reservoir and at various points of the distribution system to ensure consistency.
Sodium hypochlorite is added to the raw water to control bacteria growth.

Iron Sequestration with sodium silicate is added due to high levels of Iron and Manganese in the groundwater and can lead to objectionable colour and turbidity in drinking water as well as staining of laundry and fixtures.

Prior to entering the system, Chlorine is added. Island Lake Pumphouse has 180m of underground pipe to provide our chlorine contact time to ensure all bacteria remains zero.

Chlorine residuals are monitored at point of entry and within the distribution system.
Coles Pumphouse and Tower

- Sodium hypochlorite is added to the raw water to control bacteria growth

- Prior to entering the system Chlorine is added

- Coles Pumphouse has 113m of underground pipe for providing our chlorine contact time to ensure all bacteria is gone

- Chlorine residuals are monitored when they leave the pipe and at various points in the Distribution System
Flushing the Watermains

- You may see us with Hydrants wide open and wondering why we are wasting water.

- Chlorine Residuals in low turnover areas may have dropped close to minimum legislative requirement

- Iron and Manganese will buildup on low flow areas and in bends/corners in lines and needs to be removed

- All done to ensure quality of water
Protecting our wells
How do we protect our wells

- Wells are secured inside locked gates
- Protected by bollards from vehicular damage
- Green Doghouse secures well head with lock and intrusion alarm to main pumphouse
- Well caps are sealed and secured from varmint entry (mice, silver fish etc.)
- Grading is situated in a way that all surface water is directed away from well casing
How do we protect our wells

- Source Water Protection Plans are in place for Municipalities

- Information contained in these documents is directly transferable to aid a home owner in steps to protect your well and its capture zone

- (The Clean Water Act 2006)

- Under the DWQMS the Town sits down every year to determine our risks and threats to our source water wells and our distribution system
How do we protect our wells

Some of these risks and threats that are reviewed include but are not limited to:

- Fuel spills – Emergency Response Plan
- Road salts – Best Management Practices
- Pesticide Uses – Neighbouring Farmlands
- Agriculture Uses – Manure Runoff
- Septic Systems – Failure
- Vandalism
- Power Failures – Full Generator Backup
The Town has two building that also receive treatment in similar ways to our Municipal systems but not as intense (closer to Private Systems)

- Mono Administration Building and Public Works
- Mono Community Centre

Public Facilities are covered by the Safe Drinking Water Act and the Drinking Water Ontario Regulation

- Testing is required every 3 months, we do it monthly
- The Town has redundancy of Ultra-violet and Chlorine injection
- One fails and we have a backup
Administration Building
(1 well)
Mono Community Centre
(1 well)
As you can see since the unfortunate event in Walkerton – Municipal Water Systems and Public Gathering Places are legislated to ensure drinking water is safe at a extreme cost.

This is still something homeowners need to do, not quite as intense as municipal.

Public Health tests for bacteria for free.

UV will remove most bacteria from water and not alter taste, does not remove chemicals.

If you think you have a chance for chemical contamination have it tested at a private accredited lab. MOECC website will help.
Bacteria should be tested for 3 times a year

Sampling Kits with instructions at Town Office

Wells should always be situated up gradient of contamination sources (i.e. septic beds, manure sources and fuel sources)

Wells should be sealed and graded properly to avoid runoff or surface water ponding

Well casing is the easiest point for entry of surface contaminants

Best Practice is to disinfect your well once a year with chlorine. This removes bacteria from the well and from the plumbing systems. Directions for this come with the water sampling kit
Some Best Practices

- Your water and the aquifer it pulls from is only as good as the person upstream treats it. If your neighbour is uphill and has leaking diesel tanks these will contaminate the aquifer and everyone's water down hill from it.

- Abandoned wells, wells that no longer produce water, good quality water or just are not used should be abandoned by a professional.

- Abandoned wells in disrepair are racetrack pathways for contaminants to enter the aquifer or the ground water.

- Filling a well with dirt is not correct see Ministry Guidelines for procedures.
Some Best Practices

- A good document to help Homeowners understand their well and water supply created by the Ministry of the Environment and Climate Change


https://www.ontario.ca/page/water-supply-wells-requirements-and-best-practices
Potentials for Contaminants

How contaminants can infiltrate the ground water

- Runoff
- Gas tanks
- Lawn care chemicals
- Oil tanks
- Drainage from chemicals, solvents, degreasers, paint oil, etc.
- Water treatment plant
- Infiltration

Contaminated water

Water Table

Sand & Gravel

Clay
END