



Weird Stuff in Water!



Department of Municipal Affairs and Environment



When You Think of Potable Water.....

You may think of:

- Water distribution system?
- Water supply?
- Chemical and physical properties (Iron and Manganese)?
- Microbiological parameters (Coliforms/Turbidity)

But you may not think of.....



This.....

- Orange gook in public water supply?
- Length of wood in a 12" DI water main?
- Truck in a public water supply?
- Rug-like material on intake screens?
- Decorative Fire Hydrants?
- Fish kill in Waterford River?



Orange Gook in Water Supply (2011)

- August 13 – 8pm: orange particulate matter was noticed in and around the Town's water supply. Rainfall had been reported that day from 6-8 am, and thunderstorms and rain showers from 12-1 pm and again from 7-9 pm.
- August 14: Town Manager for Labrador City contacted the Water Resources Management Division (WRMD) concerning a neon orange particulate matter that appeared in the surface of Beverly Lake, the water supply for Labrador City, and Wahnahnish Lake, the water supply for Wabush.





Orange Gook in Water Supply

- According to the Environment Canada, Wabush Lake weather station, 2.2 mm of rain fell and winds were gusting up to 37 km/h that day.
- The orange substance was also found in several other lakes in the area spanning a radius of 20 km.
- Labrador City and Wabush both issued Boil Water Advisories. A Non-Consumption Order was considered, but was not felt warranted at the time until further information became available.
- A sample of the orange substance was sent to Environment Canada for testing.



Orange Gook in Water Supply

- August 15 - WRMD staff traveled to Happy Valley-Goose Bay
- The orange substance was noticeable on the shoreline of waterbodies during the flight from the Northern Peninsula northwards
- The orange substance had already noticeably dissipated by the time the WRMD staff arrived
- A portion of the sample was sent to the Biology Department at Memorial University for further analysis



Orange Gook in Water Supply

- The substance was identified as biological in nature, ruling out a mineral or chemical source
- Staff at the Biology Department were able to make a positive identification of fungus rust spores
- The spores found in the water supplies are part of the natural life cycle of the rust fungus
- Staff with Environment Canada considered that the water quality event had all the characteristics of an airborne pollen release.



Orange Gook in Water Supply

- Expert opinions were that there was no toxicity associated with the rust spores. There was some concern that people with a general allergy to fungal spores may suffer from allergic reactions.
- The rust spores were considered to be more of an irritation than a public health issue.
- WRMD staff collected water quality samples for analysis of inorganics and total suspended solids at the water supplies and tap locations in the Towns.
- The laboratory results noted nothing unusual with water quality readings.



Orange Gook in Water Supply

- The towns also sent bacteriological samples to the public health laboratory in Happy Valley-Goose Bay from August 15-17 and again on August 23.
- All samples tested satisfactory and the BWA was lifted on Friday, August 26.



- Pictures taken on August 15th of surrounding vegetation indicate rust spores on spruce needles and on a green leaved tree (possibly a type of willow).



Orange Gook in Water Supply

- There are four possible identifications of the fungus rust spores:
 - Inland Spruce Cone Rust
 - Spruce Needle Rust
 - Spruce-Labrador Tea Needle Rust
 - Hemlock-Willow Rust
- Generally speaking, rust fungus over winter on an alternate host, such as the leaves of the Labrador tea plant.
- In early summer a spore that develops on the plant/tree is wind blown to the primary host, such as spruce trees. The spores then infect the needles, cones or leaves of the tree.
- These spores then spread the fungus back to the alternate host.
- Heavy infection tends to occur when wetter conditions exist.
- Reports show that the 2011 spring and summer at the Wabush Lake climate station has been wetter than normal.



Orange Gook in Water Supply Summary

- The fungus rust event that occurred in August 2011 was an unusual event, particularly given the magnitude of the rust spores that accumulated in waterbodies in the area.
- An event of this nature in a drinking water source had never been reported to the WRMD before
- Given recent climate trends, conditions may be appropriate for more events of this nature to occur in the future.
- The multi-agency cooperation in identifying the orange substance and determining if there was any toxicity associated with it with respect to drinking water use was commendable and a model for future events of this nature.



Length of Wood in a 12" DI Water Main



4x4 timber posts



Fence posts



12" DI Water Main Repair



Water main repairs



Section of 12" DI water main
removed



Ruptured Section of Main



Close-up of ruptured main and
piece of timber



Length of Wood in a 12" DI Water Main Summary

- 12" DI water main installed in 1983.
- The piece of timber was originally a 4x4 about 5-6 feet long.
- Water pressure and flow had reduced it to about a 3x3
- Water pressure in the area – 145 psi
- It was hardwood.... the same used when stacking the DI water mains during storage.
- It was assume to be already in the pipe on install. Cannot pinpoint the origin.



Length of Wood in a 12" DI Water Main Summary

- During any install of water and sewer pipe, always be sure to inspect the inside of pipe before installation and remove any objects.
- Pigging and swabbing of a water main would reveal any obstructions that may be present inside the pipe.



Truck in a Public Water Supply

- October 2016 – Burin – Big Pond Water Supply
- Services approximately 1500 with a hospital





Watershed Signage





Unauthorized Activity Within the Watershed



Partially submerged truck
in the water supply



Close-up of truck in the water supply



Truck in a Public Water Supply Summary

- October 2016 - 4x4 truck was driven into the Protected Public Water Supply Area.
- Truck was driven along the shoreline, in approximately 20 inches of water, until it hit an embankment and became stuck.
- Big Pond Water Supply had adequate signage to and around the protected public water supply area
- Non-Consumption Order was issued October 31 and removed November 1 when the truck was moved to adjacent land





Truck in a Public Water Supply Summary

- Chemical and Physical Sampling was conducted by Department Staff, petroleum hydrocarbons at the intake and the truck location was LTD
- March 2-2017 – Pick-up truck was removed from the Protected Pubic Water Supply Area
- Owner of the vehicle was charged under the Water Resources Act
- If any unauthorized activity is observed in the protected Public Water Supply area, please contact the Department of Municipal Affairs and Environment immediately
- If a community requires additional Protected Pubic Water Supply Area signage, please contact the Drinking Water Section of the Department



Rug-like Material on Intake Screens

- Gull Pond – Public Water Supply for the Town of Rocky Harbour
- Gull Pond services a population of 979
- Chlorine gas is used as primary and secondary disinfectant.
- Turbidity and color have been an issue in the past



Rug-like Material on Intake Screens



Samples of surface water
source intake screen





Rug-like Material on Intake Screens



May 2005 -Intake Screen
Build-up



Rug-like Material on Intake Screens Summary

- There was no analysis completed to pinpoint the composition of the buildup, but the elevated levels of turbidity and colour in the source water were likely a contributing factor
- It's imperative that the intake screens/screen chambers be inspected and cleaned on a regular basis
- Regular basis will be dependent on the water quality of the source. This could be semi-annually, annually, etc. based on source water quality.



Decorative Fire Hydrants

- Hydrants serve as a point of attachment for a supply of water for firefighters when fighting a fire
- Serves as an outlet to flush a water distribution system to provide better water quality
- Should be inspected regular and maintained for when needed
- Below is a photo of a fire hydrant you will see in the field...most of the time.



- You may also see.....

Decorative Fire Hydrants





Decorative Fire Hydrants Summary

- While painting the fire hydrant body and bonnet, like in the photos we just seen, is aesthetically pleasing, it can pose problems for fire fighters and operators.
- Hydrants are usually painted in the summer by summer relief students
- In larger towns and cities hydrant bonnets are painted a certain colour to reflect system pressure in the area.
- Hydrant operating nuts are made of brass and should not be painted.



Fish Kill in the Waterford River



Dead Fish





Fish Kill in the Waterford River Summary

- September 10, 2016 – City of St. John’s Parks and Open Spaces Division notified of a large number of dead fish in the Waterford River and the Bowring Park Duck Pond.
- City staff investigated and found the likely cause was a water main which expelled significant quantities of drinking water into a river that feeds into the Waterford River.
- Chlorine levels in the drinking water were within the Guidelines for Canadian Drinking Water Quality



Fish Kill in the Waterford River Summary

- Chlorine levels were safe for human consumption but not safe for fish.
- City staff consulted with the Federal Department of Natural Resources and Water Resources Management Division and both agreed this was the likely cause.
- September 12, 2016 – No traces of chlorine residual were found in the Waterford River and the fish have returned to the affected areas.



More Weird Stuff in Water

- Quarter of a moose hid in air release valve chamber
- Alcohol hid in a manhole somewhere in the Burin Peninsula
- Rare Earth Elements in homeowners tub - harbor pond drinking water supply



If you see this.....



.....Run faster than your buddy

Acknowledgments

- Town of Conception Bay South
- Town of Burin
- Town of Rocky Harbour
- Town of Wabush
- City of St. John's
- Labrador City
- WWW