AQUARION Water Company
Stewards of the Environment

Aquarion Water Company
Ponds of Plymouth Water System
Open House
October 2, 2024

Aquarion is committed to providing high-quality water to our valued customers in the Ponds of Plymouth

- John Walsh, VP, Operations (MA&NH), Water Quality, Environmental Management

- Yesher Larsen, Director, Water Quality
- Sarah Trejo, Water Quality Compliance Coordinator

- Andrea Millard, Director, Customer Services
- April Burggraf, Manager, Customer Experience
- Martina LaMarca, Customer Advocate

- Rob Kehlhem, Water System Field Operator
- Sean Sullivan, Utility Worker

- George Logan, Director of Community Relations (Moderator)

System Infrastructure / Assets

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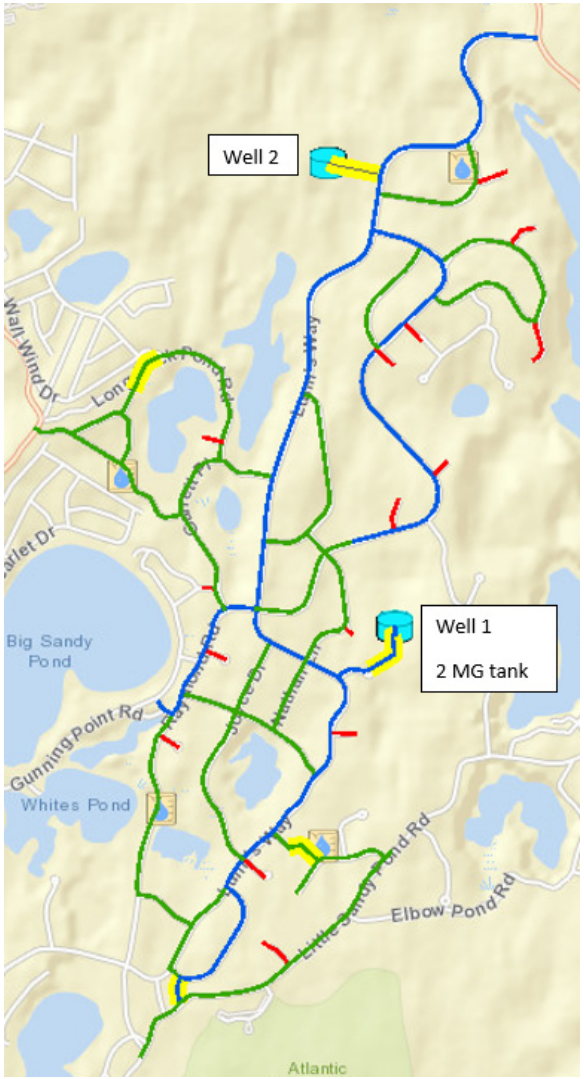
- Two wells, each with water treatment facilities
- 2 million gallon water storage tank at Well 1
- Booster pump station at Well 1
- 15 miles of water main
- 841 service connections
- 147 hydrants



Cause of Discolored Water

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- Naturally occurring **manganese (Mn) and iron (Fe) in the well waters** are the cause of discolored water.
- Evidence of years of accumulation and build-up of manganese and iron on the inside of the water mains.
- Build-up is shedding off and causing discoloration.
- Particularly when flow through pipes increases or changes direction, these accumulated minerals can be disturbed and discolor the water.
- Chlorination that began in May 2023 may be accelerating this shedding.

Aquarion actions

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Evaluations

- Investigated potential sources of discoloration (including testing of iron and manganese levels from sample stations we added throughout the system)
- Inspected water storage tank
- Observing water quality through sampling in distribution system

System-Wide Flushing

- System-wide flushing of the water mains - Nov '23, May '24, and Sept '24
- Involves controlled hydrant flushing to remove sediments and build-up from our mains
- Flushing typically performed once per year in water systems
- With evidence of build-up inside the mains, we've increased the flushing frequency

MassDEP states that flushing is critical to the overall maintenance of a distribution system and is one of the most important practices carried out by public drinking water systems to maintain high water quality, improve the carrying capacity of pipes, and ensure proper operation of distribution system components, such as hydrants and valves. To learn more, visit MassDEP's Water Main Flushing FAQ for Consumers.

Manganese (Mn) Concentrations

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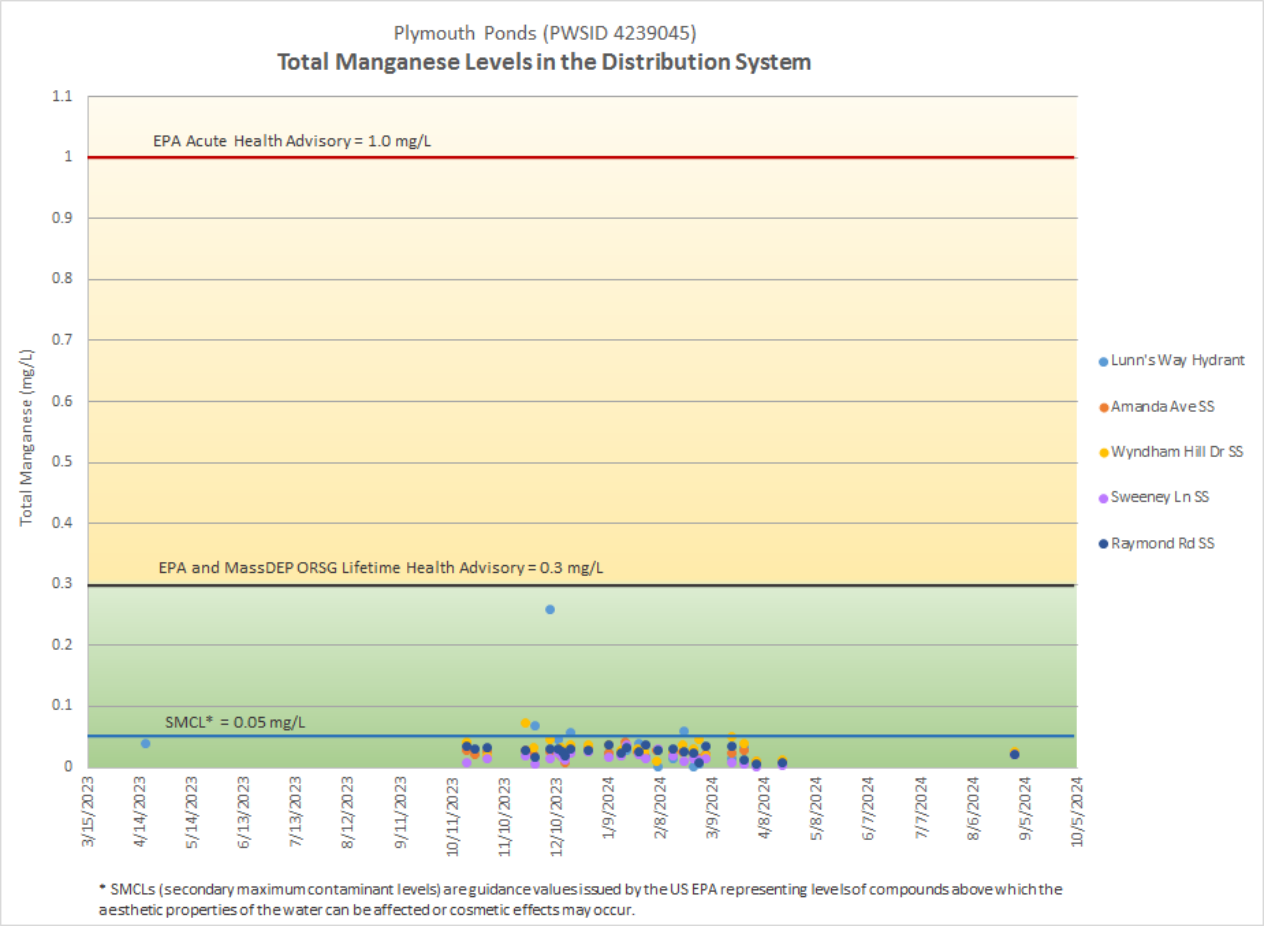
Mn concentrations in the water in the distribution system are well below health advisory levels defined by health regulators (USEPA and MassDEP), and generally below the aesthetic limit referred to as the **S**econdary **M**aximum **C**ontaminant **L**evel.



Manganese Information

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From the 2023 Water Quality Report (aka Consumer Confidence Report) for Ponds of Plymouth water system.

https://www.aquarionwater.com/water-quality/water-quality-reports/ma-water-quality-reports

Health Effects

Manganese: Manganese is a naturally occurring mineral found in rocks, soil, ground water and surface water. It is necessary for proper nutrition and is part of a healthy diet, but it can have undesirable effects on certain sensitive populations at elevated concentrations. The EPA and the Massachusetts Department of Environmental Protection (MassDEP) have set an aesthetics-based Secondary Maximum Contaminant Level (SMCL) for manganese of 50 ppb (parts per billion or micrograms per liter). In addition, MassDEP's Office of Research and Standards (ORS) has set a drinking water guideline for manganese (ORSG), which closely follows the EPA public health advisory for this mineral. Drinking water may naturally have manganese and, when concentrations are greater than 50 ppb, the water may be discolored and taste bad. Over a lifetime, the EPA recommends that people drink water with manganese levels less than 300 ppb and, over the short term, it recommends that people limit their consumption of water with levels over 1,000 ppb, primarily due to concerns about possible neurological effects. Children up to 1 year of age should not be given water with manganese concentrations over 300 ppb, nor should formula for infants be made with that water for more than a total of 10 days throughout the year.

Iron (Fe) Concentration

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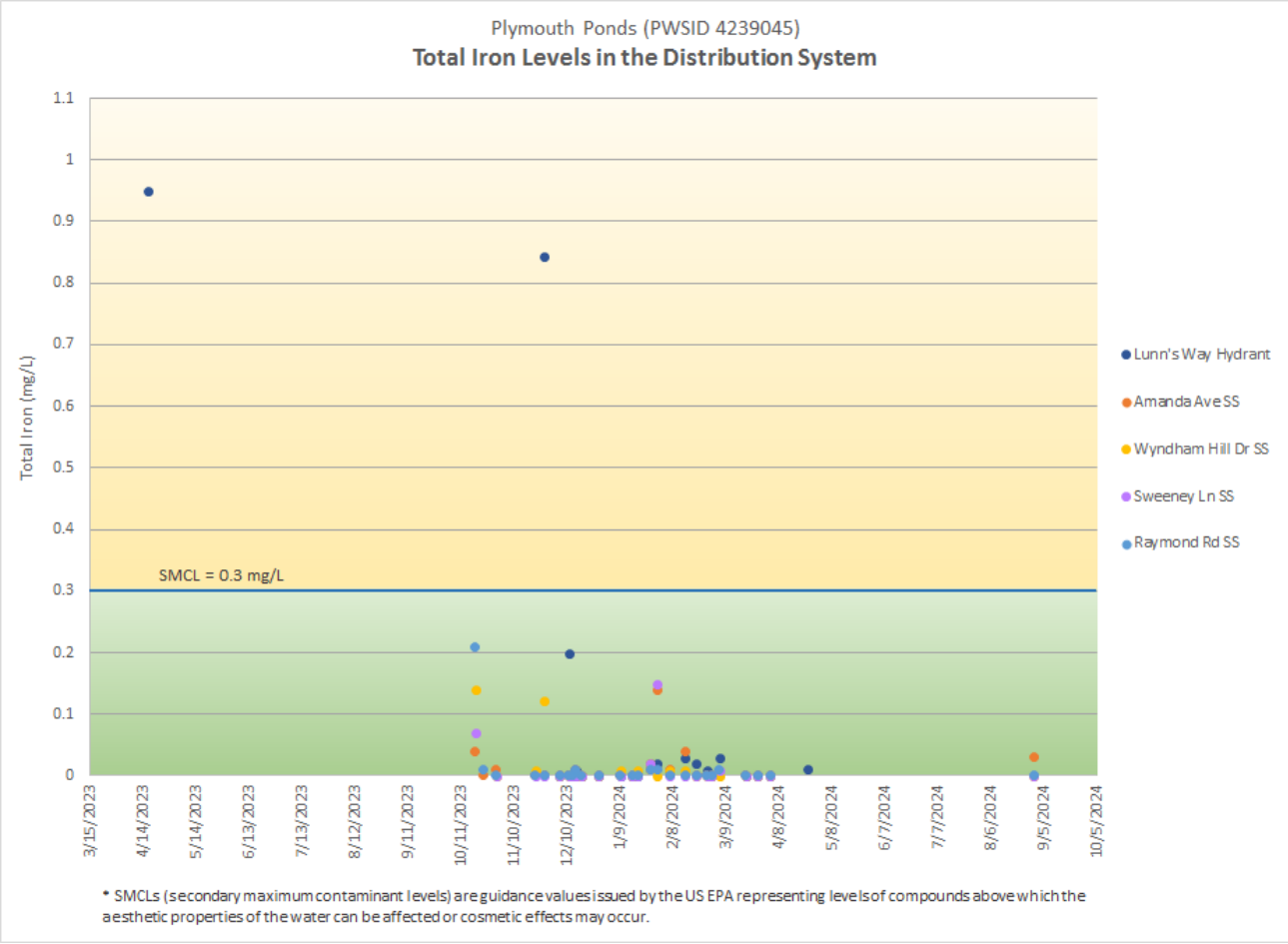
Iron concentrations in the water in the distribution system are well below the aesthetic limits referred to as the **S**econdary **M**aximum **C**ontaminant **L**evel. There are no health advisory levels for iron defined by health regulators.



Purpose of Chlorination

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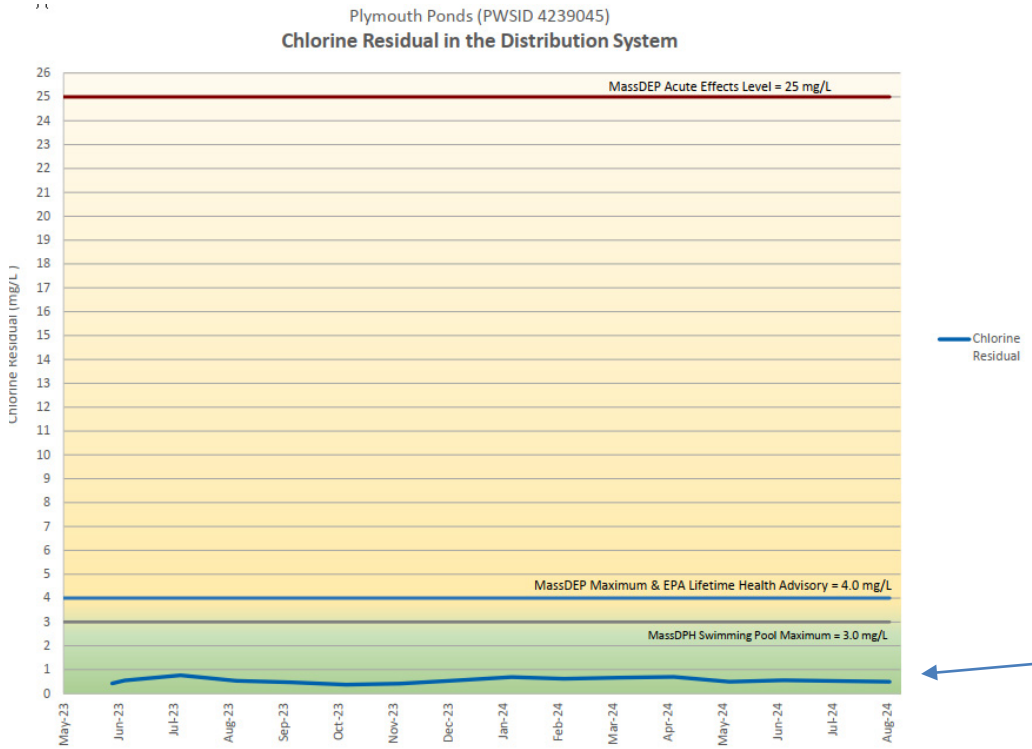
- Detected coliform bacteria in the water in four months in 2022. Coliform bacteria was also detected seven times between 2017 and 2021. This indicates a bacteriological risk. Most reliable approach to addressing this risk is chlorination.
- Chlorination is a standard practice and is one of the most important advances in public health protection. Chlorine kills harmful microorganisms that can cause disease and immediate illness.



Chlorine levels are well below the maximum level allowed by MassDEP.

Aquarion Actions – Moving Forward

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- System-wide flushing at least twice per year until build-up is removed.
- Continue testing iron and manganese levels. Information will be available on MassDEP website.
- Add sample hydrants, particularly in central part of system. Will simplify our continued testing of water quality throughout the system.
- Perform complete discoloration study to document findings to-date, fully evaluate composition of build-up, identify risks (for example, further/future build-up), and develop solutions to mitigate risks.

Q&A

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Aquarion is here to answer your questions, open communications, and build a partnership with you

- John Walsh, VP, Operations (MA&NH), Water Quality, Environmental Management

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