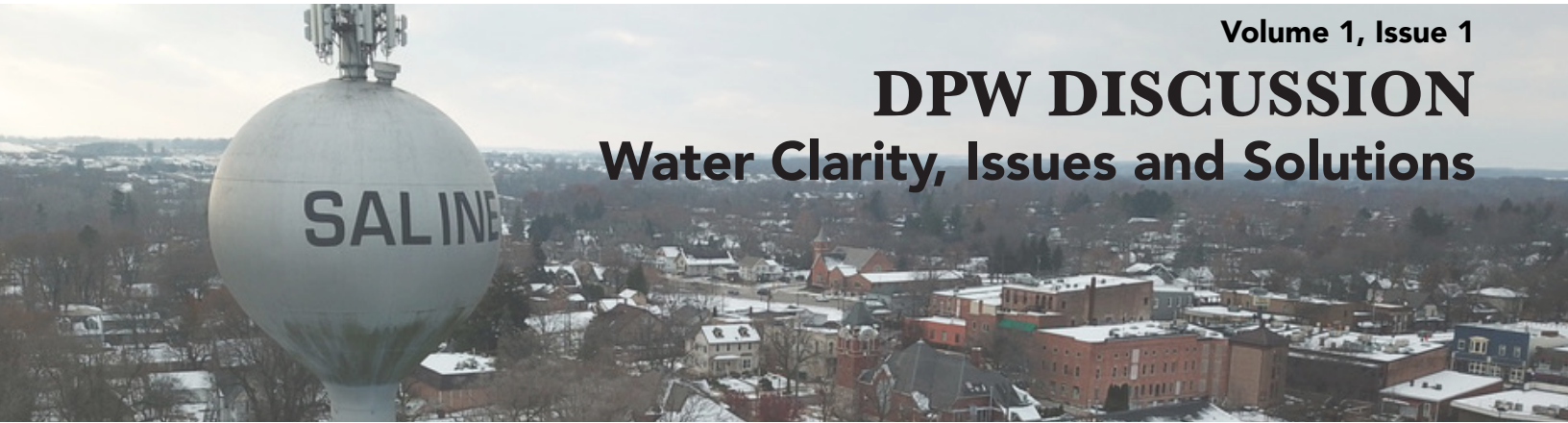


DPW DISCUSSION

Water Clarity, Issues and Solutions

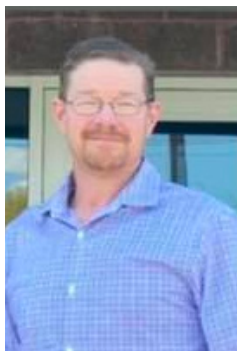


Letter from Larry

Hello Saline!

DPW Director Larry Sirls here.

We at DPW realize that there are many concerns regarding water clarity. We are working as hard and as quickly as we can to fix these issues.



This will take time.

We are working to identify all of the contributing factors related to water clarity concerns, and we want to keep you up to date on what we are doing, planning to do and give you some insight as to how the water distribution system works.

If you have any questions or concerns, I am happy to help. My email is lsirls@cityofsaline.org. This is the best way to contact me.

Our goal is to deliver **safe high-quality and clean water to every Saline water customer**. We are working diligently to figure this out, until then, we want to provide you with as much information as we can.

-- Larry Sirls
DPW Director
lsirls@cityofsaline.org

Saline's Water Distribution System: the Ins and Outs

Water distribution systems may seem simple, but in reality they are highly complex systems that take a lot of finesse and care.

Saline's water distribution system consists of:

- A water treatment plant
- 2 water towers
- System piping with associated main line valves, hydrants, and service laterals.

Water Treatment Plant: The City's Reverse Osmosis Water Treatment Plant began full operation in May 2005. The plant removes iron and manganese using greensand filters. Hardness, which consists mainly of calcium and magnesium, is removed using reverse osmosis membranes. This softened water is then blended with

raw water to produce optimal hardness.

Storage Tank: Pressures in the distribution system are maintained by two elevated towers, located on E. Henry Street and N. Industrial Dr.

Distribution System: The first water mains in Saline were constructed in the early 1900s, but few of those remain. More than 50% of the current water main in the system have been constructed since 1994. Pipes installed prior to 2005 were exposed to hard water - before our current plant started operations. Saline's distribution system consists of:

- 49 miles of pipe
- 554 main line valves
- 8,800 customers

Water Distribution Systems

Water distribution systems consist of an interconnected series of components. They include:

- Pipes
- Storage facilities
- Components that convey drinking water

Water distribution systems meet fire protection needs for:

- Cities
- Homes
- Schools
- Hospitals
- Businesses
- Industries
- Other Facilities

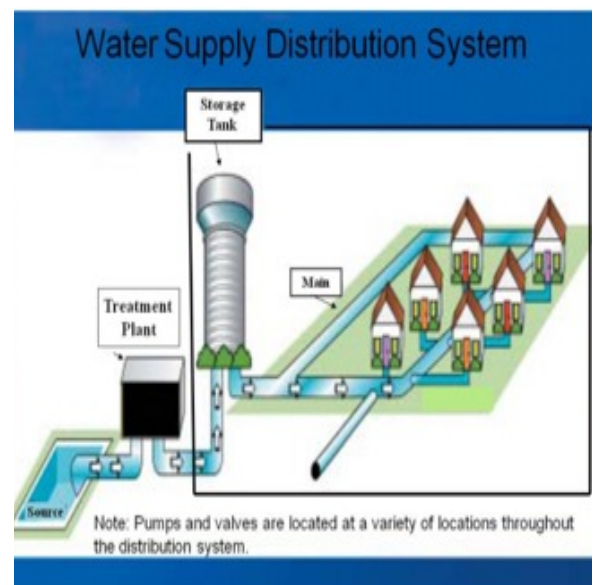
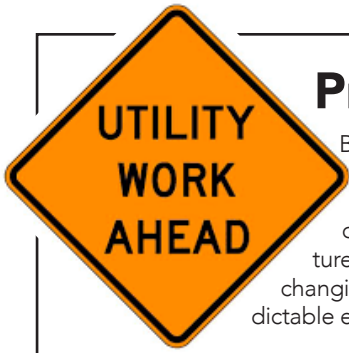


Image courtesy of epa.gov



Project Corner

Below is a list of projects that have been completed or are in the works to help remedy the situation. Dates on future projects may change due to changing circumstances and unpredictable emergencies.

Completed projects

Full Flushing Fall 2021 -

The water distribution system was fully flushed October 4 - 21, 2021.

Data Collection - We began tracking complaints through Survey Monkey.

Reinstitute Dead End Flushing - Dead end flushing helps to remove stagnant water from the distribution system.

Data Collection During Hydrant Flushing -

the Fall 2021 hydrant flushing was the first in which an electronic map was utilized to record the flushing process.

Limited Reactive Flushing - DPW staff has performed additional flushing of some areas of the system in response to resident complaints.

Short term projects

(to be completed in 2022)

Data Evaluation - Compile and review results of the Survey Monkey. Staff is evaluating data to look for patterns. We will present more information on this in Issue 2 of the newsletter.

System Inventory and Valve Exercising - This program was awarded at the December 6 City Council meeting and includes data collection for system inventory and valve exercising. This is a necessary step prior to instituting data driven flushing.

Improved Communication - This newsletter will be a great place to find information regarding the water system.

Complete First Pipe Lining Project - This is currently scheduled for Winter 2022 and will occur along the eastern portion of Michigan Ave.

Improve Data Driven Flushing - Scheduled for Spring 2022, we will use data from valve exercising and water model calibration to institute a more aggressive targeted flushing plan.

Water Reliability Study - Currently underway, this project will be used to calibrate the hydraulic water model.

Long term projects

Water System Master Plan
Continue Bi-Annual Flushing
Private plumbing inventory

Why Hydrant Flushing Helps

Hydrant flushing is routine maintenance that improves water quality by removing minerals that have collected in the water mains. We typically flush our system twice a year, once in the spring and then again in the fall.

The Main Suspect of the Water Quality Issues

Saline's water distribution system is complex and consists of numerous components. Initial analysis suggests that a combination of the following factors is the cause of our current discoloration issue:

- Historic distribution of unsoftened water (through 2005)
- Aging pipe with internal corrosion (tuberculation)
- An increase in system development, which stresses the existing infrastructure
- An increase in emergency breaks, which increases the velocity in the system
- A decrease in frequency of hydrant flushing, due to DPW staff shortages

What is Tuberculation?

Tuberculation is the formation of nodules rich in iron oxides due to the corrosion of steel and cast



Above is an example of tuberculation iron water main piping. This scale builds up over time. Tuberculation traps and holds sediment that can later be flushed out by line breaks, maintenance, etc.

The tuberculation in the pipe can become dislodged due to many factors which include:

- High water velocities (undersized pipe)
- Water main breaks
- Hydrant flushing
- Fighting fires
- Extreme demands (flow reversal)

Bumps in the Road

We have experienced a number of issues this year that have contributed to the problems we are having with our water quality. These issues are not the cause of the problem but certainly don't help to solve it.

The City experienced 12 water main breaks in 2021, the most recent being November 1 and 2 on Industrial Dr, Maple Rd, and Harris St and again on December 6 on Harris St with breaks in two separate locations.

November 2021, City staff

spent nearly one week to isolate the Henry Tower for repairs. This consisted of locating and exercising several valves only to learn they were not in working order. This caused an increase in water discoloration, specifically on the south side of the system.

Lastly, as part of the hydraulic water model calibration, hydrant flow tests were completed on December 28 and 29, 2021, which caused an increase in discoloration.

Resident's Spot

We hope this newsletter will be one tool to help keep the residents informed. We ask that you keep up to date on these newsletters by visiting the city's website. The newsletter will take a place on the front page of the site.

If you are experiencing rust colored water, please fill out our survey at www.surveymonkey.com/r/salinewater.

Posting photos to social media doesn't help us solve the problem.

If you would like to speak with someone about your water, please call the Water Quality Hotline at (734) 429-5624 ext 2622.

Someone from DPW will return your message within 72 hours.