Annual Drinking Water Quality Report

for Calendar Year 2021

SPRINGFIELD WATER AND SEWER COMMISSION

2021 Board of Commissioners

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The Board of Commissioners meets monthly. Please call 413-452-1300 for meeting dates and times or to obtain extra copies of this report.

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The Springfield Water and Sewer Commission provides this report to meet federal and state Safe Drinking Water Act Requirements.

Message from the Executive Director

Dear Customer,

The Springfield Water and Sewer Commission (Commission) takes great pride in delivering drinking water – a critical resource for daily life, public health, and economic development – to our 250,000 customers in the Lower Pioneer Valley.

In order to deliver on our mission to safely and reliably provide a high-quality supply of drinking water to the region, in 2021 the Commission initiated the Water and Wastewater Infrastructure Renewal Program: a comprehensive, $550 million investment to advance more than 20 capital projects that will replace end-of-life water infrastructure and modernize our system for the 21st century. The cornerstone project of the program is the construction of a new West Parish Filters Water Treatment Plant, which will help resolve regulatory compliance issues related to disinfection byproducts (see pages 5-6).

While advancing design and construction of the new treatment plant, the Commission continues daily drinking water operations to monitor the watershed, filter and treat raw water from Cobble Mountain Reservoir, analyze water quality data, maintain the transmission and distribution system, and respond to water emergencies.

The Springfield Water and Sewer Commission is pleased to share with you the 2021 Water Quality Report. This report summarizes the more than 52,000 water quality tests from the past year and provides information about the source of your drinking water, the filtration and treatment process, updates on the construction of the new drinking water treatment plant, and other useful information.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail. This report is available online at www.waterandsewer.org/waterqualityreport.

Joshua D. Schimmel
Executive Director

How We Treat Your Water

Water from Cobble Mountain Reservoir and Borden Brook Reservoir is filtered and treated at the West Parish Filters Water Treatment Plant in Westfield. After treatment, clean drinking water is delivered to retail customers in Springfield and Ludlow and wholesale customers in Agawam, East Longmeadow, and Longmeadow, at an annual average of 30 million gallons per day.

Protecting Your Water Source

Cobble Mountain Reservoir (Source ID 1281000-02S) and Borden Brook Reservoir (Source ID 1281000-04S) are the Commission's primary water supplies. The reservoirs are located in Blandford and Granville, Massachusetts and surrounded by 14,000 acres of protected forestland within the Little River Watershed. An untouched water supply surrounded by acres of pristine forestland and preserved from development is an important first step in the water treatment process and ensures a high-quality supply, from source to tap.

To protect your drinking water supply source the Commission maintains an active Watershed Management Program. As part of the program the Commission monitors for encroachment and potential sources of contamination, conducts maintenance of watershed infrastructure, including roads and culverts, and oversees other forest management activities to promote a healthy and resilient forest.

The Massachusetts Department of Environmental Protection (MassDEP) completed a Source Water Assessment that evaluates the susceptibility of public water supplies to contamination from surrounding land uses. A susceptibility ranking of moderate was assigned to the Commission's system using the information collected. Risks identified include residential land use, transportation rights of way, and agriculture. The complete Source Water Assessment Program report is available by contacting the Commission at 413-452-1300 or at https://www.mass.gov/doc/western-region-source-water-assessment-protection-swap-program-reports.

Water and Wastewater Infrastructure Renewal Program

(Left to right) Executive Director Josh Schimmel, Acting EPA Region 1 Administrator Deborah Szaro, Congressman Richard Neal (MA-1), EPA Assistant Administrator for Water Radhika Fox, Springfield Mayor Domenic J. Sarno, Commissioner Vanessa Otero (SWSC), MA DEP Commissioner Martin Suuberg, Commissioner Daniel Rodriguez (SWSC), and Commissioner William Leonard (SWSC) appear at the WIFIA funding announcement on Bondi's Island, September 16, 2021.

Commission crews replace a water main on Milford Street in Springfield (above). WIFIA financing will support additional water main improvement projects within the distribution system.

In 2021 the Commission announced it was selected to receive a $250 million low-interest loan from the U.S. EPA's highly competitive Water Infrastructure Finance and Innovation Act (WIFIA) program. WIFIA financing allows the Commission to advance the $550 million Water and Wastewater Infrastructure Renewal Program on an accelerated schedule while saving ratepayers approximately $60 million in borrowing costs. The program includes construction of more than 20 projects in the Commission's capital improvement program (CIP) that will improve drinking water quality, water and sewer service reliability, system modernization, and environmental protection for 250,000 residents across the Lower Pioneer Valley.

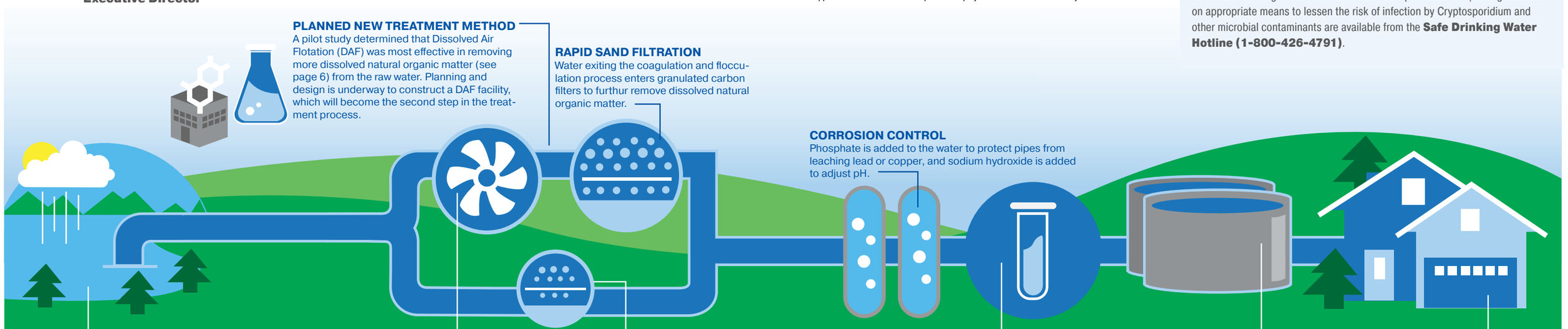
WIFIA financing is enabling the Commission to advance the $238 million new drinking water treatment plant at West Parish Filters and allow the majority of construction to occur simultaneously over the next six years.

The Water and Wastewater Infrastructure Renewal Program also includes more than $17 million in water distribution system upgrades to replace aging water mains in various neighborhoods in Springfield and Ludlow.

Learn more about all the projects included in the Water and Wastewater Infrastructure Renewal Program on our website: waterandsewer.org/wifia

Special Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the **Safe Drinking Water Hotline (1-800-426-4791)**.



2021 SWSC WATER QUALITY INFORMATION TABLE

The table below shows detections of regulated contaminants through water quality testing in 2021 (unless otherwise specified), and how they compare to state and federal standards. Approximately 52,000 water quality tests were analyzed using the Commission's own state-certified laboratory and private laboratories in 2021.

The testing results are from finished water in the distribution system. In 2021, sample results for one regulated contaminant exceeded regulatory limits. Information about this exceedance is also contained in this report.

PUBLIC WATER SUPPLY IDENTIFICATION #1281000							
DISINFECTANTS	**DATE**	**MRDLG**	**MRDL**	**HIGHEST QUARTERLY ANNUAL AVERAGE**	**RANGE DETECTED AT INDIVIDUAL SAMPLING SITES**	**VIOLATION**	**MAJOR SOURCES IN DRINKING WATER**
Residual Free Chlorine (ppm)	Daily	4.0	4.0	0.67	ND - 2.56	No	Water additive used to control microbes
BACTERIA	**DATE**	**MCLG**	**MCL**	**HIGHEST DETECTED LEVEL**	**RANGE DETECTED AT INDIVIDUAL SAMPLING SITES**	**VIOLATION**	**MAJOR SOURCES IN DRINKING WATER**
Heterotrophic Plate Counts (HPC)‡	Daily	N/A	TT	292	ND - 292 CFU/ml	No	HPC is an indicator method that measures a range of naturally - occurring bacteria in the environment.
INORGANICS	**DATE**	**MCLG**	**MCL**	**HIGHEST DETECTED LEVEL**	**RANGE DETECTED AT INDIVIDUAL SAMPLING SITES**	**VIOLATION**	**MAJOR SOURCES IN DRINKING WATER**
Nitrate (ppm)	Yearly	10	10	0.0595	N/A	No	Erosion of natural deposits, stormwater, fertilizer run-off
Barium (ppm)	Yearly	2	2	0.0060	N/A	No	Erosion of natural deposits
TURBIDITY *	**DATE**	**MCLG**	**TT**	**HIGHEST SINGLE MEASURMENT**	**LOWEST MONTHLY PERCENTAGE**	**VIOLATION**	**MAJOR SOURCES IN DRINKING WATER**
Rapid Sand Filtration ** (NTU)	Daily Compliance	N/A	1	0.23	N/A	No	Soil Runoff
Rapid Sand Filtration ** (NTU)	Monthly	N/A	TT: at least 95% of samples per month below 0.3	N/A	100%	No	
Slow Sand Filtration *** (NTU)	Daily Compliance	N/A	5	0.18	NA	No	
Slow Sand Filtration *** (NTU)	Monthly	N/A	TT: at least 95% of samples per month below 0.3	NA	100%	No	

‡ Heterotrophic Plate Count is not associated with health effects but is a method that measures the bacterial quality of water as an indicator of the adequacy of disinfection.

UNREGULATED****	DATE	ORSG/SMCL	MCL	HIGHEST SINGLE MEASUREMENT	RANGE DETECTED	VIOLATION	MAJOR SOURCES IN DRINKING WATER
Sodium (ppm)	Yearly	ORSG = 20	None	11.4	N/A	No	Natural sources; runoff from use of de-icing compounds on roadways
Manganese (ppb)	Yearly	SMCL = 50	None	5.5	N/A	No	Erosion of natural deposits
Chloroform (ppb)	Yearly	ORSG = 70	None	5.6	N/A	No	By-product of drinking water chlorination
Bromodichloromethane (ppb)	Yearly	None Established	None	0.73	N/A	No	

DID YOU KNOW?

Chlorine has been used to disinfect drinking water in the U.S. since 1908. Chlorination of drinking water contributed to the virtual elimination of waterborne disease across the Western world, and is considered one of the greatest public health achievements of the 20th century.

2021 SWSC WATER QUALITY INFORMATION TABLE (CONTINUED)

PUBLIC WATER SUPPLY IDENTIFICATION #1281000							
DISINFECTION BY-PRODUCTS	**DATE**	**MCLG**	**MCL**	**HIGHEST LRAA**	**RANGE DETECTED AT INDIVIDUAL SAMPLING SITES**	**VIOLATION**	**MAJOR SOURCES IN DRINKING WATER**
TTHMs (ppb) (Total Trihalomethanes)	Quarterly	N/A	80	75	36 - 97	No	By-product of drinking water chlorination
Haloacetic Acids (HAA5) (ppb) (Total Haloacetic Acids)	Quarterly	N/A	60	78	51 -101	Yes	By-product of drinking water chlorination
HAA5 (ppb) by site	**DATE**	**MCLG**	**MCL**	**HIGHEST LRAA**	**RANGE DETECTED**	**VIOLATION**	**MAJOR SOURCES IN DRINKING WATER**
833 Page Blvd.	9/2/21, 12/2/21	N/A	60	75	54 - 98	Yes	By-product of drinking water chlorination
Catalina Pump Station	9/2/21, 12/2/21	N/A	60	76	54 - 94	Yes	
1400 State St. - Vibra	9/2/21, 12/2/21	N/A	60	76	51 - 97	Yes	
Center St. Fire Station, Ludlow	3/2/21, 9/2/21, 12/2/21	N/A	60	76	59 - 95	Yes	
1043 Sumner Ave.	9/2/21, 12/2/21	N/A	60	78	54 - 101	Yes	
292 Main St.	9/2/21, 12/2/21	N/A	60	74	51 - 97	Yes	
North Main St. Fire Station	9/2/21, 12/2/21	N/A	60	76	55 -101	Yes	
Chapin St. Pump Station, Ludlow	12/2/21	N/A	60	65	52 - 73	Yes	

Important Information from U.S. EPA and MassDEP

What could be in the water before it is treated?
Sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, humans, and wildlife.

Inorganic contaminants, such as salts and metals, can be naturally-occurring or result from urban storm water runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, and farming.

Pesticides and herbicides may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.

Organic chemical contaminants include synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.

Radioactive contaminants can be naturally occurring or be the result of oil and gas production, and mining activities.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contamination. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).

In order to ensure that tap water is safe to drink, the Department of Environmental Protection (MassDEP) and U.S. Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

The Commission's primary drinking water supply source, the 22-billion gallon Cobble Mountain Reservoir, located in Blandford and Granville, MA, provides drinking water to 250,000 residents in the Lower Pioneer Valley.

Glossary of Terms

CFU (Colony Forming Unit)

LRAA (Locational Running Annual Average) - The average of four consecutive quarters of data taken at one location.

MCL (Maximum Contaminant Level) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant Level) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal) - The level of a drinking water disinfectant below which there is no known expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

N/A - Not Applicable

NTU (Nephelometric Turbidity Units) - A numeric value indicating the cloudiness of water.

ORSG (Massachusetts Office of Research and Standards Guideline) - The concentration of a chemical in drinking water, at or below which adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.

ppb (parts per billion)

ppm (parts per million)

SMCL (Secondary Maximum Contaminant Level) - The highest level of a contaminant that is allowed in drinking water for the secondary contaminants. These standards are developed to protect the aesthetic qualities of drinking water and are not health based.

TT (Treatment Technique) - A required process intended to reduce the level of a contaminant in drinking water.

*** Turbidity** - A measure of the cloudiness of water. We monitor turbidity because it is a good indicator of the effectiveness of our filtration system.

**** Rapid Sand Filtration** - The turbidity level of the filtered water shall be less than or equal to 0.3 NTU in 95% of the measurements taken each month and shall not exceed a maximum of 1.0 NTU in any single measurement.

***** Slow Sand Filtration** - The turbidity level of the filtered water shall be less than or equal to 1.0 NTU in 95% of the measurements taken each month and shall not exceed a maximum of 5.0 NTU in any single measurement.

****** Unregulated Contaminants** - Substances for which EPA has set guidelines but not established drinking water standards.

Modernizing Our Water System for the 21st Century

West Parish Filters Drinking Water Treatment Plant in Westfield, MA was originally built in 1909 and last modernized in 1974.

In 2021 the Commission broke ground on a new era of drinking water treatment at West Parish Filters. Phase 1 construction of the new water treatment plant is currently underway, with construction of the new Clearwell and Backwash Pump Station Replacement Project. Original 1909 slow sand filters were demolished to make way for a new filtered water clearwell.

Pictured above is a 1920s-era slow sand filter, still in use today to meet peak demand. All slow sand filters will be eliminated upon construction of the new treatment plant.

Conceptual rendering of the new water treatment plant. (Courtesy of AECOM.)

Public Notification - Haloacetic Acids (HAA5)

Maximum Contaminant Level (MCL) Exceedance

In 2021 the Commission reported three quarterly exceedances of the MCL for haloacetic acids to MassDEP. The MCL, or regulatory limit, for HAA5 is 60 parts per billion (ppb) for the locational running annual average (LRAA) at a sample station. The LRAA is determined by averaging the prior four quarterly samples at one location. In accordance with regulations, the Commission issued a Public Notification by direct mail, the news media, and the internet for each exceedance.

This was not an emergency, and there was no immediate health risk. Customers were and are still advised that they can drink and use their water as usual. HAA5 is a disinfection byproduct (DBP) and is regulated due the potential health risks if consumed at elevated levels over decades or a lifetime. Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.

The risk of illness from DBPs is much lower than the risk of illness from drinking most surface water and some groundwater sources that have not been disinfected. The major health risks from DBPs are from long-term exposures. (Source: https://matracking.ehs.state.ma.us/Environmental-Data/Water-Quality/disinfection.html)

More information and full 2021 HAA5 test results are available at: waterandsewer.org/dbps-faqs/.

Customers with further questions about this notice may call 413-452-1300.

How does HAA5 Form?

HAA5 forms when chlorine, required for disinfection, interacts with dissolved natural organic matter (NOM). NOM enters Cobble Mountain Reservoir, the main source of the Commission's drinking water supply, through rain and snow runoff from the surrounding forest. The amount and types of dissolved NOM require chlorine to maintain safe disinfection.

NOM levels in the reservoir fluctuate and are impacted by changing weather patterns and more intense, severe storms. In 2021 the region experienced record rainfall and two major hurricanes in the summer. These weather events, and annual reservoir turnover in fall 2021, during which the top layer of water and the bottom of the reservoir mix, contributed to unprecedentedly high amounts of NOM. The amount and types of dissolved NOM in Cobble Mountain Reservoir and necessary chlorine dosages required to maintain safe disinfection contribute to elevated HAA5 levels in the distribution system.

What is the Commission Doing to Reduce HAA5?

The Commission continues to modify its existing treatment process and system operations to reduce the levels of HAA5 in the distribution system as much as possible while maintaining safe chlorine levels. In 2015 the Commission initiated a planning process to modernize the existing 1970s-era West Parish Filters Water Treatment Plant to meet today's drinking water regulations and replace end-of-life infrastructure to improve system reliability.

The Commission is advancing a $238 million upgrade to West Parish Filters Water Treatment Plant. The new drinking water treatment plant will include the addition of a new treatment step - Dissolved Air Flotation (DAF) – which will remove more NOM from the raw water prior to filtration, limiting the formation of DBPs in the distribution system.

In 2021 Phase 1 construction of the treatment plant upgrades began (see page 5). These upgrades include a new clearwell and backwash pump station and upgrades to the chemical storage and feed systems. Design of the new water treatment plant, including the DAF facility, are currently underway and on schedule, with construction expected to be complete in 2027.

Learn more about the new treatment plant on the Commission's website: https://waterandsewer.org/projects/drinking-water-projects-2/west-parish-filters-facilities-plan/

Disinfection Byproducts (DBPs) - How Do They Form?

IMPORTANT WATER INFORMATION
INFORMACIÓN IMPORTANTE SOBRE EL AGUA

Este informe contiene información importante acerca de su aqua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

Ce rapport contient des renseignements très importants sur votre eau potable. Veuillez le traduire ou parler à quelqu'un qui le comprend.

Este relatório contém informações muito importantes sobre a sua água potável. Por favor, traduzir ou falar com alguém que entende.

Questo rapporto contiene informazioni molto importanti sulla vostra acqua potabile. Si prega di tradurlo o parlare con qualcuno che lo capisce.

Raport ten zawiera bardzo ważne informacje na temat swojej wody pitnej. Proszę przetłumaczyć lub porozmawiać z kimś, kto go rozumie.

Báo cáo này có chứa thông tin rất quan trọng về nước uống của bạn. Xin vui lòng dịch nó hoặc nói chuyện với một ai đó hiểu nó.

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Lead and Drinking Water

Lead is not present in the source water in Cobble Mountain Reservoir or treated water entering the distribution system. The most common sources of lead poisoning are paint and dust containing lead. In cases where lead is detected in drinking water, it is usually due to leaching from pipes that contain lead, such as lead service lines, or plumbing, fixtures, or solder in the home/building. Leaching is most likely to occur when the water is not moving, generally overnight or at other times when water is not used for several hours.

In 1992 the Commission began to proactively remove lead service lines from the distribution system. As of November 2005, all known lead service lines have been removed and replaced. At the treatment plant, water is treated with orthophosphate to inhibit the corrosion of home/building plumbing and to help prevent lead from leaching into water. Testing for the presence of lead and copper is regulated under EPA's Lead and Copper Rule. Testing takes place in three-year cycles.

Cross Connection Control Program

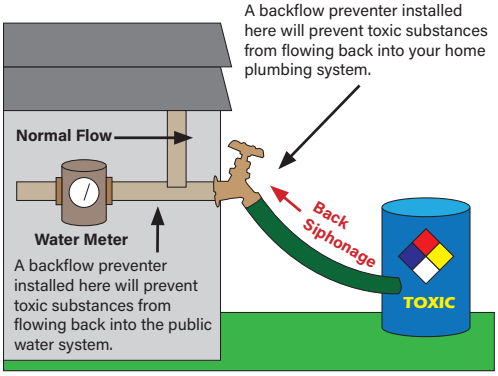
A cross connection is formed at any point where a drinking water line connects to a polluted source, such as boilers, air conditioning systems, fire sprinkler systems, irrigation systems, laboratory equipment, plating tanks, or chemical vats. In residences, a common cross connection is a garden hose attached to a fertilizer or chemical sprayer container, or a hose inserted into a pool. If water pressure drops, perhaps due to nearby fire hydrant use or a water main break, the resulting vacuum can pull pollutants back into the water system.

To prevent contamination through cross connections:

- *Never submerge a hose in soapy water buckets, pet watering containers, pools, tubs, sinks, drains, or chemicals.*
- *Never attach a hose to a chemical sprayer without a backflow preventer.*
- *Buy and install an inexpensive hose connection vacuum breaker on every threaded water fixture.*
- *Buy appliances and equipment with a backflow preventer.*

If you are an owner of industrial, institutional, or commercial property, you must have your facility's internal plumbing surveyed for cross connection hazards, install proper backflow devices, or eliminate cross connections entirely. For more information, contact the Commission's Cross Connection Control Program at **413-310-3501**.

Backflow Prevention



Health Risks of Lead in Drinking Water

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Commission is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the **Safe Drinking Water Hotline (1-800-426-4791)** or at **http://www.epa.gov/safewater/lead.**

LEAD AND COPPER SAMPLING TABLE - 2021

SUBSTANCE	MCLG	Action Level (AL)	90th PERCENTILE SAMPLE	SAMPLING SITES EXCEEDING THE ACTION LEVEL	VIOLATION	MAJOR SOURCES IN DRINKING WATER
Copper (ppm)	1.3	AL = 1.3	0.0909	0 out of 50	No	Corrosion of household plumbing systems
Lead (ppb)	0	AL = 15.0	0	2 out of 50	No	

The above table represents the latest round of lead and copper sampling that took place in the summer of 2021. The next required round of lead and copper sampling will take place in the summer of 2024 per regulatory requirements.

AL (Action Level) - The concentration of a contaminant that if exceeded, triggers treatment or other requirements that a water system must follow.

90th Percentile - Out of every 10 homes sampled, 9 were at or below this level.

MCL (Maximum Contaminant Level) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.