

2017 Drinking Water Quality Report

Published Spring 2018

This report is produced as a requirement of the Federal Safe Drinking Water Act. Note: Industrial and commercial customers, including hospitals, medical centers and health clinics, please forward this report to your Environmental Compliance Manager.

PWD's Public Water System
Identification #PA151001

**PHILADELPHIA
WATER**
— DEPARTMENT —





We continue to deliver safe, reliable, high-quality drinking water from source to tap.

Our drinking water quality is better than standards set by the EPA.



Table of Contents

4	Sharing This Report	11	Partnership for Safe Water	19	Glossary
4	People with Special Health Concerns	12	Pharmaceuticals and Source Water	20	Your Support Means More Green Milestones
5	A Message from the Philadelphia Water Department's Commissioner	12	Cryptosporidium and Giardia	21	Fairmount Water Works: Innovation and Education Continues...
6	Where Does Philadelphia's Drinking Water Come From?	13	Schuylkill and Delaware River Source Water Protection Plans	22	Clean Water Begins and Ends with You
7	Safeguarding the Water You Drink	14	Water Treatment Diagram		
8	Lead in Drinking Water	16	Monitoring Water Quality: What Do We Look For?		
		16	2017 Drinking Water Quality Results		

Sharing This Report

Please share this report with all 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 and mail.

To receive a printed copy of this report, please email: waterquality@phila.gov.

Para obtener una copia del informe en Español sobre los resultados más recientes de la calidad del agua publicado por el Departamento de Agua de Philadelphia, llame al 215.685.6300.

People With Special Health Concerns

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 and 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.

U.S. Environmental Protection Agency (EPA)/Centers for Disease Control (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: 800.426.4791.

A Message From the Philadelphia Water Department's Commissioner

Every hour of every day, we work to provide you with safe, reliable service and water that tastes good and that you can trust. Our staff of over 2,000 dedicated employees work to ensure that our water exceeds safe water standards and remains top quality.

This report, published in the spring of 2018, includes water quality information for the 2017 calendar year. The U.S. Environmental Protection Agency (EPA) requires all water utilities to produce and distribute water quality reports on an annual basis. We take this opportunity to introduce you to a variety of programs and operations that preserve and protect our drinking water sources – the Schuylkill and Delaware rivers.



Through continuous treatment, testing and monitoring, the water that leaves our treatment plants is better than what is required by the EPA. Our team of experienced scientists and engineers tests our water for nearly 100 compounds. This annual Drinking Water Quality Report explains what we look for, and what we found.

Water is one of life's essential resources, and we hope you take the time to look at all the information in the report. Please do not hesitate to contact us if you have any questions or would like to learn more about being a part of keeping our water and waterways clean.

A handwritten signature in blue ink, appearing to read 'Debra McCarty'.

Debra McCarty
Water Commissioner

The Philadelphia Water Department is an active member of:

American Water Resources Association

American Water Works Association

Partnership for Safe Water

American Public Works Association

Association of Metropolitan Water Agencies

National Association of Clean Water Agencies

Partnership for the Delaware Estuary

Schuylkill Action Network

Schuylkill River Restoration Fund

Tookany/Tacony-Frankford (TTF) Watershed Partnership

U.S. Water Alliance

Water Environment Federation

Water Environment Research Foundation

Water Research Foundation

Where Does Philadelphia's Drinking Water Come From?

Philadelphia's water comes from the Schuylkill and Delaware rivers.

Each river contributes one-half of the City's overall supply and approximately 230 million gallons of high-quality drinking water is produced for our customers on a daily basis.

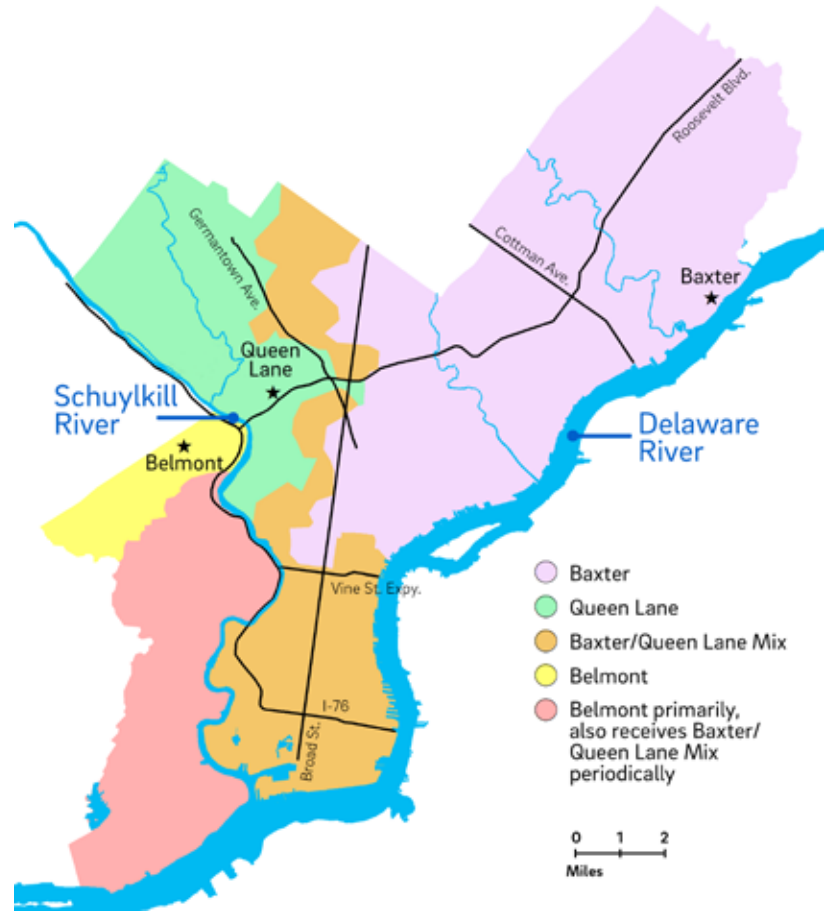
Rivers are surface water supplies. Philadelphia does not use groundwater.

The Philadelphia Water Department (PWD) has three water treatment plants that process untreated river water. Depending on where you live, you receive drinking water from one of these three plants:

The Queen Lane Plant is located in East Falls and its water comes from the Schuylkill River; its intake is located along Kelly Drive.

The Belmont Plant is located in Wynnefield and its water also comes from the Schuylkill River; its intake is located along Martin Luther King, Jr. Drive.

The Baxter Plant is located in Torresdale and its water comes from the Delaware River; its intake is located at the plant on the Delaware River.



Philadelphia is located in the Delaware River Watershed, which begins in New York State and extends 330 miles south to the mouth of the Delaware Bay. The Schuylkill River is part of the Delaware River Watershed.



Safeguarding The Water You Drink

How Do Drinking Water Sources Become Polluted?

Across the nation, rivers, lakes, streams, ponds, reservoirs, springs and wells are sources of drinking water (both tap water and bottled water). Rain and melting snow travels over the surface of the land or through the ground, dissolving naturally occurring minerals and picking up substances resulting from animal and human activity and carrying these pollutants to our drinking water sources.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals can be naturally occurring or come from urban stormwater runoff (streets and parking lots), industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides from a variety of sources such as agriculture, urban stormwater runoff and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, are byproducts of industrial processes and petroleum production. They can also come from gas stations, urban stormwater runoff and septic systems.
- Radioactive contaminants can be naturally occurring or can come from oil and gas production, mining activities or medical use.

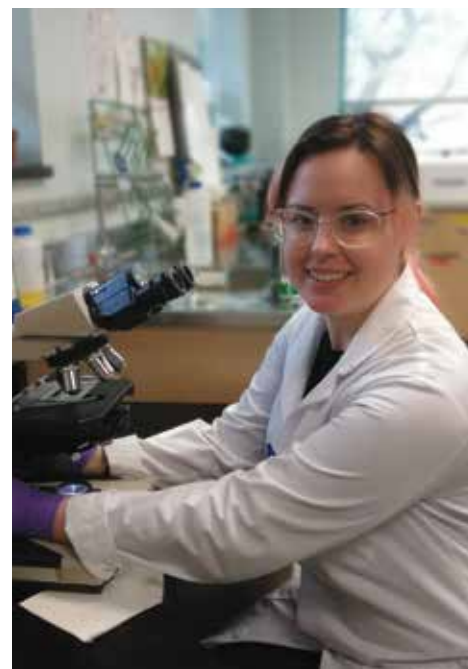
At their sources, the Delaware and Schuylkill Rivers are generally clean. But as the rivers flow downstream, they pick up contaminants from many sources — stormwater runoff washes pollutants on the land into the rivers, and communities and industries discharge used water back into the rivers. Today, Philadelphia enjoys watersheds that are cleaner and healthier than they have been in well over a century. Although we have seen a dramatic improvement in the water quality of the City's two major rivers since the passage of the Federal Clean Water Act in the early 1970s, there is still more work that needs to be done to protect our drinking water sources from pollution.

In order to ensure that tap water is safe to drink, the EPA has regulations that limit the amount of certain contaminants in water provided by water suppliers. The Food and Drug

Administration establishes limits for contaminants in bottled water that must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. 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, **800.426.4791**, or from their website:

www.epa.gov/safewater.



Today, Philadelphia enjoys watersheds that are cleaner and healthier than they have been in well over a century.



Lead in Drinking Water

The drinking water delivered to your home meets all state and federal water quality standards.

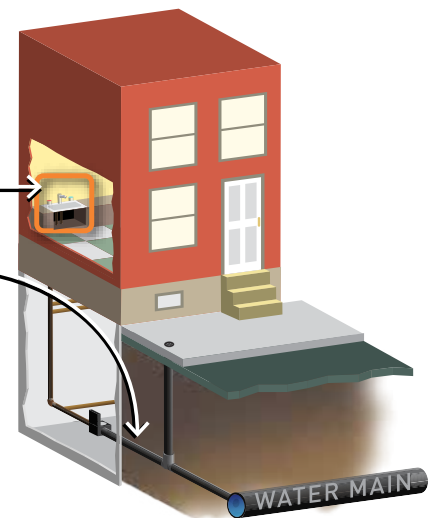
Our water mains are not made of lead. However, some homes built before 1950 may have service lines made from lead.

While lead was once a common building material, today we know lead is harmful to everyone. Pregnant women, infants, children under the age of six and adults with high blood pressure and kidney problems are at the most risk.

Lead can also be found in older brass fixtures and valves and in old solder, where pipes are joined.

Service Line:

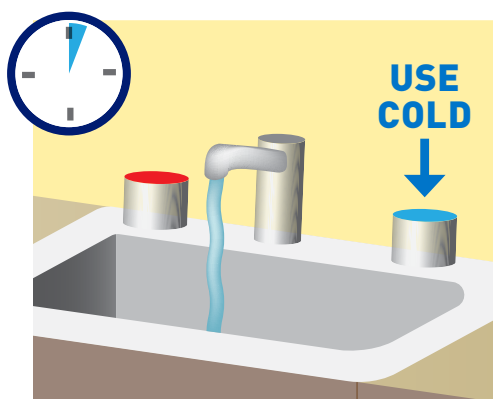
This pipe connects home plumbing to the water main in the street, and is the responsibility of the homeowner.



Whether you have lead pipes or not, all households should follow the tips below.

Instructions for daily pipe flushing

If you have not used your water for a few hours, turn on the cold water faucet at the sink that you drink from, and let the water run for **three to five minutes**.



Why Flush?

It's good to avoid drinking water that has been sitting in your home's pipes for several hours.

- Never drink hot water from the tap, or use that water for cooking. Water heaters aren't made for drinking water.
- Clean **aerators** (also called screens) to remove debris from any taps used for drinking water.

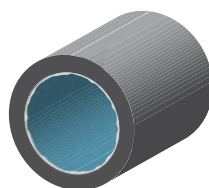
US EPA Guidance

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 material and components associated with service lines and home plumbing. The Philadelphia Water Department is responsible for providing high

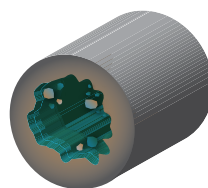
How We Manage Lead

We continuously monitor drinking water to make sure our treatment helps to keep lead out of water in buildings with lead plumbing. As a part of our testing efforts, we ask Philadelphia households with lead water pipes to participate in our free tap water sampling program.

Every three years, PWD samples at least 50 homes with lead plumbing and tests the water for lead levels. These samples are a required part of the EPA's Lead and Copper Rule, which was created in 1992 to make sure that our corrosion control treatment is working.



With corrosion control



Without corrosion control

Our corrosion control program, as mandated by federal law and optimized over the past two decades, minimizes the release of lead from service lines, pipes, fixtures, and solder by creating a coating designed to keep lead from leaching into the water.

To date, sampling results show that our treatment is controlling corrosion in our customers' plumbing.

quality drinking water, but cannot control the variety of materials used in plumbing components. If you haven't turned on your tap for several hours, you can minimize the potential for lead exposure by flushing your tap before using water for drinking and cooking. If you are concerned about lead in

Lead Testing: June – September 2017

The Philadelphia Water Department conducted a regulatory lead testing program from June through September 2017. PWD consulted with the EPA and PA DEP on the design and timeline of the testing with the intent of going above and beyond existing sampling requirements. Results from the 2017 round of testing can be found in the table on page 17. The next round of regulatory sampling will take place in 2019.



Concerned About Lead In Your Pipes?

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 on PWD's website at www.phila.gov/lead or from the Safe Drinking Water Hotline 1.800.426.4791, or at: www.epa.gov/safewater/lead.

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 (800.426.4791) or at: www.epa.gov/safewater/lead.

Lead in Drinking Water (continued)

PWD continues to educate customers about lead in drinking water. Programs introduced in 2016 have helped customers replace lead service lines:



Service line replacement during water main replacement work

When the Philadelphia Water Department replaces a water main, we will also replace any lead service line from the main all the way to the customer's meter. This will be done at no cost to the customer, but permission is needed to complete this valuable service.

All customers on blocks where water main replacement is scheduled will receive a letter approximately six months before construction work begins. In addition to alerting customers about construction, this letter lets them know their service line will be inspected for lead. To date, 324 customers have had lead service lines replaced through this program.

If you think water main work is being done on your street and you did not get any notification about service lines or flushing, please call our Customer Contact Center at 215.685.6300.



Let's learn about lead: Community Organization Presentations

The Philadelphia Water Department offers a 30-minute presentation about our programs and lead safety for Registered Community Organizations and civic associations. Our goal is to empower customers to address any issues with lead plumbing in their homes.

Educational materials, such as fact sheets and instructions for maintaining home plumbing, can be translated into a variety of languages to meet the needs of community members.

Since this program began, 25 Registered Community Organizations (RCOs) have participated in PWD's lead presentations. To schedule a presentation, interested organizations can call us at 215.685.6300 or email: waterinfo@phila.gov.



Updated website www.phila.gov/water/lead

Our website provides information about all Philadelphia Water Department efforts to assist and educate customers about lead in drinking water. You will find:

1. Options for getting water tested
2. How to check for lead pipes
3. Daily flushing tips to ensure fresh water
4. Tips on maintaining household plumbing
5. The most recent lead sampling results



HELP Loan for Lead Service Line Replacement

In the City of Philadelphia, water service lines are the responsibility of the homeowner. If you have a water service line made of lead and want to replace it, you may qualify for the Homeowner's Emergency Loan Program (HELP). HELP is a zero-interest loan for replacement of a lead service line, payable over a sixty-month (60) period.

To date, 120 Philadelphia residents have replaced their lead service lines with a HELP loan.

HELP Loan Eligibility Guidelines:

- The property must be a residential dwelling and cannot have any more than four units.
- The applicant cannot be delinquent on their monthly water bill(s) for more than two (2) billing cycles. If there is an arrearage, the payment agreement with the Water Revenue Bureau must be current for at least six (6) months.
- The property must have an operable water meter.

Partnership For Safe Water

The Philadelphia Water Department (PWD) consistently produces high quality drinking water, achieving Partnership for Safe Water quality standards that are far stricter than state and federal water quality regulatory requirements.

The Philadelphia Water Department voluntarily adopted the stricter water treatment quality goals, as a member of the Partnership for Safe Water in 1996. The average turbidity level (measure of water clarity) of Philadelphia's drinking water has been at or below 0.06 nephelometric turbidity units (NTU) since 1998.

The average turbidity of Philadelphia's drinking water in 2017 is 84 percent lower than the maximum level of 0.30 NTU allowed by state and federal regulations and is 53 percent less than the Partnership for Safe Water maximum turbidity goal of 0.10 NTU.



In 2013, the Baxter, Queen Lane and Belmont Water Treatment Plants were honored by EPA and PADEP with the Partnership for Safe Water 15-Year Director's Award in recognition of the Philadelphia Water Department's (decade) long commitment to achieving and maintaining the highest possible drinking water quality.

The Water Department extended its participation in the Partnership for Safe Water initiative by becoming a charter member in the new Distribution System Optimization Program in 2015. This self-assessment initiative extends our focus from the treatment process to ensuring delivery of high quality water by maintaining distribution system integrity.

The Partnership for Safe Water is a voluntary optimization program conceived and initiated by the EPA, the American Water Works Association, the Association of Metropolitan Water Agencies and advocated by the Pennsylvania Department of Environmental Protection. Pennsylvania leads the nation in participation in this program and the Philadelphia Water Department is one of Pennsylvania's leaders.



Why is chlorine used to disinfect the drinking water?

State and federal laws require the disinfection of all public water supplies. EPA and health agencies recognize that using chlorine is one of the most effective ways to protect public health from disease-causing organisms that can be found in rivers and streams. However, chlorine can chemically react with natural materials in rivers to form disinfection by products, such as trihalomethanes and haloacetic acids. We have been adjusting our treatment process over the years to reduce this chemical reaction, but we also ensure that the treated water that is distributed through the City's water mains to your homes has a "chlorine residual." This residual continues to protect your water against bacteria and other organisms on its journey to your home's tap. We use sodium hypochlorite, a safer form of chlorine similar to household bleach, to disinfect the water at our treatment plants.

Pharmaceuticals and Source Water

Pharmaceuticals get into drinking water because people use both prescription and over-the-counter medications. Only a portion of these substances is absorbed into the bloodstream. The rest is excreted by the body, making its way through wastewater treatment plants and back into the waterways that serve as our drinking water sources. Pharmaceuticals can also enter the waterways through the practice of improper disposal methods, such as flushing unused or expired medications down the toilet.

You can help keep unused pharmaceuticals out of the water supply by paying attention to how you dispose of unused medications. Look for take-back programs that may be established near you. The Drug Enforcement Agency (DEA) sponsors national take-back programs in coordination with State and local law enforcement agencies.

National take-back programs provide opportunities for the public to surrender expired, unwanted or unused pharmaceuticals and other medications to law enforcement officers for proper disposal. To find out about future take-back events, visit DEA's website at www.deadiversion.usdoj.gov/drug_disposal/takeback/.

How To Properly Dispose Of Your Medications At Home!



Protect Your Info

Peel off the label, or cross out all your personal information with a marker.



Seal the Meds

Put the pills or liquids in another container, then cover with items like coffee grounds or kitty litter.



Trash It!

Toss sealed meds in your household trash.

▶ Learn more: www.vimeo.com/78005190

Cryptosporidium and Giardia

***Cryptosporidium* and *Giardia* are microscopic organisms found in rivers and lakes throughout the United States.**

If ingested, *Cryptosporidium* and *Giardia* can cause diarrhea and abdominal cramps. However, these are also symptoms of intestinal diseases caused by many bacteria, viruses and parasites.

Most healthy individuals can overcome such illnesses within a few weeks; however, immuno-compromised individuals are at a greater risk of developing a life-threatening illness and are encouraged to consult with their doctors about taking appropriate precautions to avoid infections.

PWD carefully monitors water treatment processes and works closely with the Philadelphia Department of Public Health to ensure that our tap water is free of pathogens that can be found in rivers. The Department of Public Health monitors local hospital records in real time for symptoms consistent with waterborne illnesses and would contact PWD if there were any concerns that the drinking water may be contributing to illnesses.

The Philadelphia Water Department is one of the nation's leaders in *Cryptosporidium* research and was one of the first utilities in the U.S. to monitor

for the organism. The Philadelphia Water Department manages a source water protection program that looks at protecting the rivers in the City as well as farther upstream of Philadelphia. PWD continues source water *Cryptosporidium* research, in collaboration with Lehigh University. By identifying sources of *Cryptosporidium* in the watershed, PWD is taking a proactive approach in improving our rivers' water quality. Please refer to page 17 for results from 2017 *Cryptosporidium* monitoring.

Schuylkill & Delaware River Source Water Protection Plans

The Schuylkill and Delaware River Source Water Assessments and Protection Plans provide a comprehensive framework for a watershed-wide effort to protect the quality and quantity of Philadelphia's water supplies. The assessments identify and prioritize existing and potential sources of pollution while the plans outline several strategic approaches to reduce the impacts from these sources. Collectively, these documents serve as the foundation of the PWD Watershed Protection Program, a nationally recognized program that has been featured as an exemplary source water protection case study in AWWA industry guidance.

The comprehensive research and analyses completed as part of the Source Water Assessment and Protection Plans in the early 2000s identified the need for a regional partnership in the Schuylkill River Watershed to address priority contaminants through stakeholder workgroups. The resulting watershed partnership, the Schuylkill Action Network, will celebrate its 15th year of successful collaborative protection efforts in 2018.

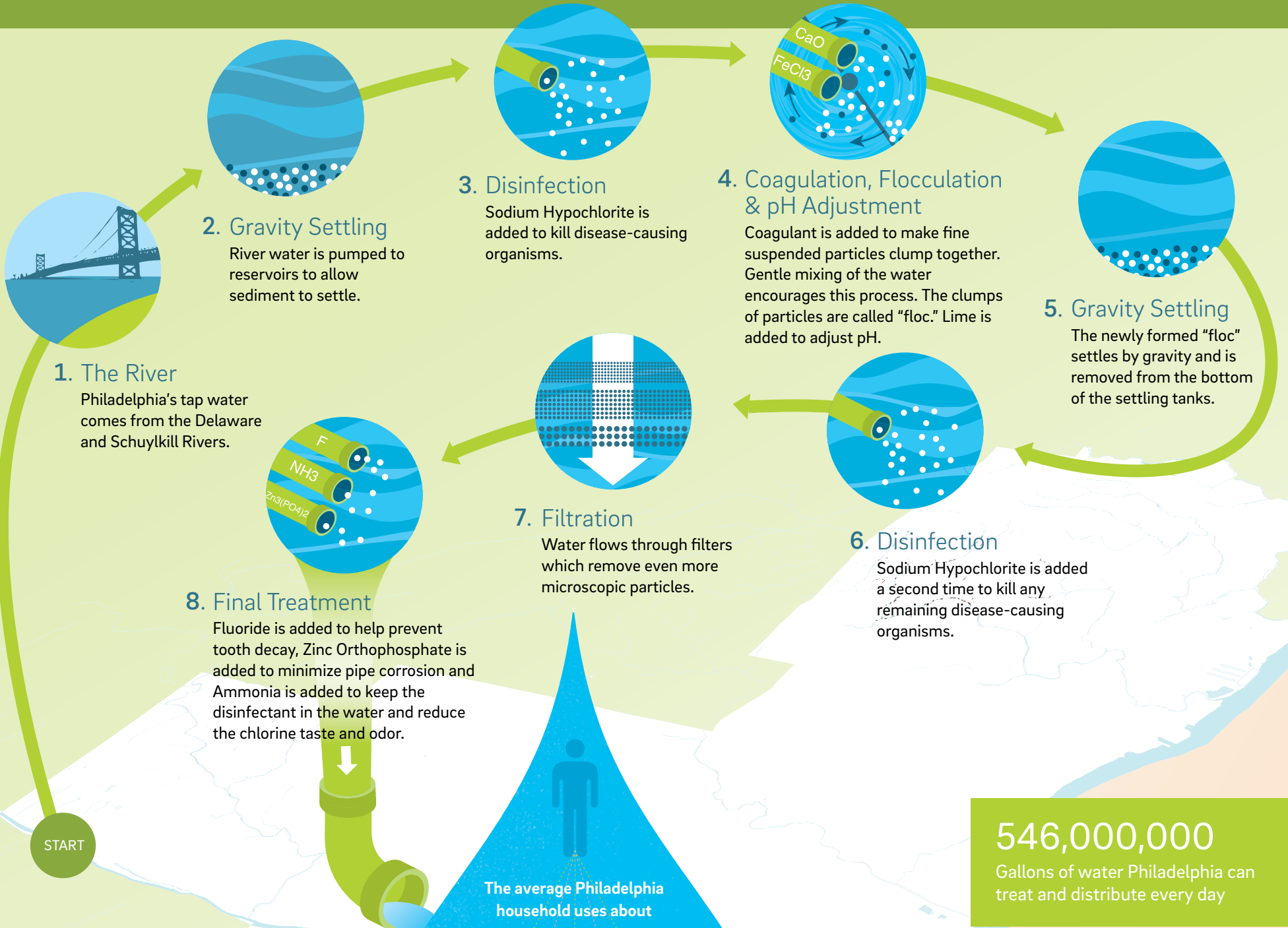
To address unanticipated sources of water pollution, PWD established the Delaware Valley Early Warning System, a private web-based emergency communication system. PWD continues to improve upon the system's technological capabilities and will launch a redesigned website with enhanced mobile compatibility in 2018.



The PWD Watershed Protection Program continues to collect, research, and analyze data to gain a better understanding of the risks to Philadelphia's water supplies, which further refine protection priorities and planning needs.

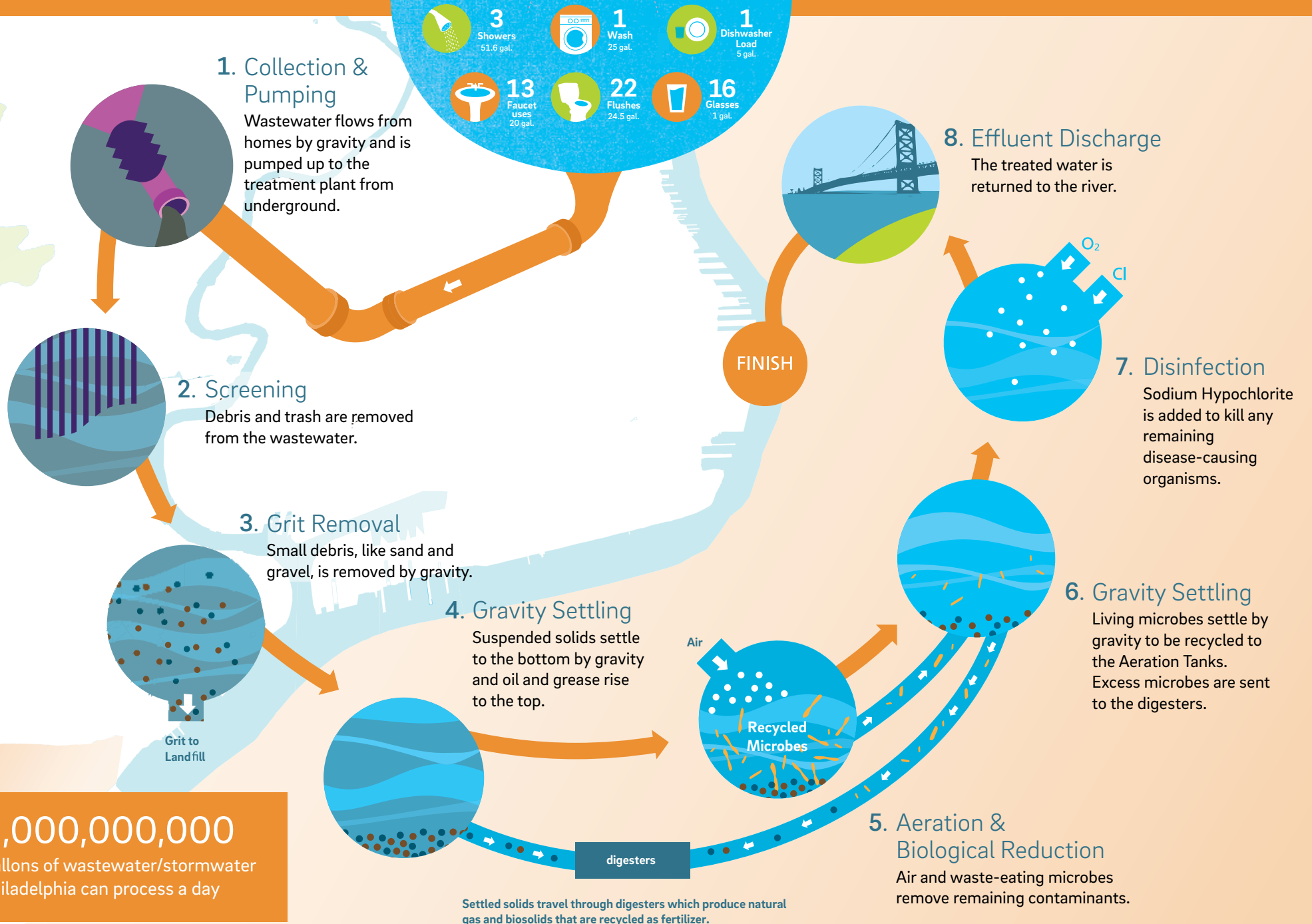
How Do We Make Water Drinkable?

Like the majority of water utilities in the U.S., we use a multi-step treatment process at all three of our drinking water treatment plants. This Water Treatment Process diagram provides a brief description of drinking water treatment in Philadelphia.



How Do We Process Wastewater?

After water is used, PWD is responsible for cleaning it before returning the water to the river. This is the Wastewater Treatment Process.



Monitoring Water Quality: What Do We Look For?

Public Drinking Water Systems monitor their treated drinking water for approximately 100 regulated contaminants.

These regulatory parameters are defined within federal rules such as the Total Coliform Rule, Surface Water

Treatment Rule, Disinfectants and Disinfection Byproducts Rules, Lead and Copper Rule and the Radionuclides Rule.

We monitor for the regulated parameters listed below. Tables on the following pages summarize monitoring results for parameters found at detectable levels. Please refer to the glossary of terms and abbreviations for more information.

Inorganic Chemicals:

Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Cyanide, Fluoride, Lead, Mercury, Nickel, Nitrate, Nitrite, Selenium, Thallium

Synthetic Organic Chemicals:

2,3,7,8 - TCDD (Dioxin) ,2,4 - D, 2,4,5 - TP (Silvex), Alachlor, Atrazine, Benzopyrene, Carbofuran, Chlordane, Dalapon, Di(ethylhexyl)adipate, Di(ethylhexyl)phthalate, Dibromochloropropane, Dinoseb, Diquat, Endothall, Endrin, Ethylene Dibromide, Glyphosate, Heptachlor, Heptachlor epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, Lindane, Methoxychlor, Oxamyl,

PCBs Total, Pentachlorophenol, Picloram, Simazine, Toxaphene

Volatile Organic Chemicals:

Benzene, Carbon Tetrachloride, 1,2-Dichloroethane, o-Dichlorobenzene, p-Dichlorobenzene, 1,1-Dichloroethylene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, Dichloromethane, 1,2-Dichloropropane, Ethylbenzene, Monochlorobenzene, Styrene, Tetrachloroethylene, Toluene, 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethylene, o-Xylene, m,p-Xylenes

Appealing to Your Senses

We also test for alkalinity, aluminum, chloride, color, hardness, iron, manganese, odor, pH, silver, sodium, sulfate, surfactants, total dissolved solids, turbidity and zinc to ensure that your water meets all water quality taste and odor guidelines. This is so that your water looks, tastes and smells the way it should.

Temperature and Cloudiness

The temperature of the Schuylkill and Delaware Rivers varied in 2017 seasonally from approximately 34 degrees to 81 degrees Fahrenheit. The Philadelphia Water Department does not treat the water for temperature.

Cloudiness in tap water most commonly happens in the winter, when the cold water from the water main is warmed up quickly in household plumbing. Cold water and water under pressure can hold more air than warmer water and water open to the atmosphere. When really cold winter water comes out of your tap, it's simultaneously warming up and being relieved of the pressure it was under inside the water main and your plumbing. The milky white color is actually just tiny air bubbles. If you allow the glass to sit undisturbed for a few minutes, you will see it clear up gradually.

Parameters listed below are not part of EPA's requirements and are provided for information purposes.

SODIUM IN TAP WATER			
	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average
Average (ppm)	25 ppm	45 ppm	45 ppm
Average (mg in 8 oz. glass of water)	6 mg	11 mg	11 mg
Range (ppm)	19 – 42 ppm	29 – 69 ppm	32 – 72 ppm
Range (mg in 8 oz. glass of water)	4 – 10 mg	7 – 16 mg	8 – 17 mg

HARDNESS IN TAP WATER			
	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average
Average	90 ppm or 5 gpg	142 ppm or 8 gpg	164 ppm or 10 gpg
Minimum	72 ppm or 4 gpg	108 ppm or 6 gpg	127 ppm or 7 gpg
Maximum	113 ppm or 7 gpg	167 ppm or 10 gpg	193 ppm or 11 gpg

Hardness defines the quantity of minerals, such as calcium and magnesium, in water. These minerals react with soap to form insoluble precipitates and can affect common household chores such as cooking and washing. Philadelphia's water is considered "medium" hard.

ALKALINITY IN TAP WATER			
	Baxter WTP One Year Average	Belmont WTP One Year Average	Queen Lane WTP One Year Average
Average	38 ppm	69 ppm	75 ppm
Minimum	23 ppm	45 ppm	53 ppm
Maximum	56 ppm	95 ppm	99 ppm

2017 Drinking Water Quality Results

Listed on pages 16 – 18 are our Drinking Water Quality Results for 2017. All results are better than the recommended federal levels designed to protect public health. By reporting these results in the tables below, we are meeting a requirement of the EPA. Please see the glossary on page 19 for definitions of abbreviations used in the tables. Some contaminants may pose a health risk at certain levels to people with special health concerns. Others are used as indicators for treatment plant performance. For more information, please visit our website at www.phila.gov/water or call us at 215.685.6300.

LEAD AND COPPER - Tested at Customers' Taps - Testing is done every 3 years. Most recent tests were done in 2017.						
	EPA's Action Level - for a representative sampling of customer homes	Ideal Goal (EPA's MCLG)	90% of PWD customers' homes were less than	Number of homes considered to have elevated levels	Violation	Source
Lead	90% of homes must test less than 15 ppb	0 ppb	2.0 ppb	3 out of 89	No	Corrosion of household plumbing; Erosion of natural deposits
Copper	90% of homes must test less than 1.3 ppm	1.3 ppm	0.23 ppm	1 out of 89	No	Corrosion of household plumbing; Erosion of natural deposits; Leaching from wood preservatives

CRYPTOSPORIDIUM - Tested at Source Water to Water Treatment Plants Prior to Treatment				
Treatment Technique Requirement	Baxter WTP One Year Range	Belmont WTP One Year Range	Queen Lane WTP One Year Range	Source
Total Number of Samples Collected	6	6	6	Naturally present in the environment.
Number of Cryptosporidium Detected	15	2	6	
	0.250 count/L	0.033 count/L	0.100 count/L	

Cryptosporidium is a microbial pathogen found in surface water throughout the U.S. Although filtration removes Cryptosporidium, the most commonly-used filtration methods cannot guarantee 100 percent removal. Our monitoring indicates the presence of these organisms in our source water. Current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease.

BACTERIA IN TAP WATER - Tested throughout the Distribution System. Over 460 samples collected throughout the City every month.						
	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Monthly % or Yearly Total of Positive Samples	Monthly Range (% or #)	Violation	Source
Total Coliform	5% of monthly samples are positive*	0	0.75%	0 – 0.75%	No	Naturally present in the environment
Fecal Coliform or E. coli		0	1	0 – 1	No	Human or animal fecal waste

Every sample that is positive for total coliforms must also be analyzed for E. coli. If a system has two consecutive total coliform positive samples, and one is also positive for E. coli then the system has an MCL violation. There were no Level 1 and Level 2 assessments required under Revised Total Coliform Rule in 2017.

INORGANIC CHEMICALS (IOC) - PWD monitors for IOC more often than required by EPA.						
Chemical	Highest Level Allowed (EPA's MCL)	Ideal Goal (EPA's MCLG)	Highest Result	Range of Test Results for the Year	Violation	Source
Antimony	6 ppb	6 ppb	0.4 ppb	0 - 0.4 ppb	No	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Barium	2 ppm	2 ppm	0.044 ppm	0.027 – 0.044 ppm	No	Discharges of drilling wastes; Discharge from metals refineries; Erosion of natural deposits
Chromium	100 ppb	100 ppb	1 ppb	0 – 1 ppb	No	Discharge from steel and pulp mills; Erosion of natural deposits
Fluoride	2 ppm*	2 ppm*	0.72 ppm	0.68 – 0.72 ppm	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Nitrate	10 ppm	10 ppm	4.15 ppm	0.71 – 4.15 ppm	No	Runoff from fertilizer use; Leaching from septic tanks; Erosion of natural deposits
Total Cyanide	200 ppb	200 ppb	36 ppb	0 – 36 ppb	No	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories

*EPA's MCL and MCLG is 4 ppm, but PADEP has set this lower MCL and MCLG which takes precedence.

2017 Drinking Water Quality Results (Continued)

TOTAL CHLORINE RESIDUAL - Continuously Monitored at Water Treatment Plants.					
Sample Location	Minimum Disinfectant Residual Level Allowed	Lowest Level Detected	Yearly Range	Violation	Source
Baxter WTP	0.2 ppm	1.10 ppm	1.10 – 3.52 ppm	No	Water additive used to control microbes
Belmont WTP		1.51 ppm	1.51 – 2.65 ppm		
Queen Lane WTP		1.84 ppm	1.84 – 3.59 ppm		

TOTAL CHLORINE RESIDUAL - Tested throughout the Distribution System. Over 460 samples collected throughout the City every month.					
Sample Location	Maximum Disinfectant Residual Level Allowed	Highest Monthly Average	Monthly Average Range	Violation	Source
Distribution System	4.0 ppm	2.25 ppm	1.45 – 2.25 ppm	No	Water additive used to control microbes

TOTAL ORGANIC CARBON - Tested at Water Treatment Plants.					
Treatment Technique Requirement	Baxter WTP One Year Range	Belmont WTP One Year Range	Queen Lane WTP One Year Range	Violation	Source
Percent of Removal Required	25 – 45%	25 – 35%	25 – 45%	n/a	Naturally present in the environment
Percent of Removal Achieved	35 – 72%	5 – 68%	0 – 88%	No	
Number of Quarters out of Compliance	0	0	0		

PWD achieved TOC removal requirements in all quarters of 2017 at all WTPs. Compliance is based on a running annual average computed quarterly. The numbers shown represent a range of TOC results in weekly samples.

SYNTHETIC ORGANIC CHEMICALS (SOC)						
Chemical	EPA's MCL	EPA's MCLG	Highest Result	Yearly Range	Violation	Source
2,4-D	70 ppb	70 ppb	0.7 ppb	0 – 0.7 ppb	No	Runoff from herbicide used on row crops
Atrazine	3 ppb	3 ppb	0.3 ppb	0 – 0.3 ppb		

TURBIDITY - A Measure of Clarity (Tested at Water Treatment Plants)					
	Baxter WTP	Belmont WTP	Queen Lane WTP	Violation	Source
Treatment Technique Requirement: 95% of samples must be at or below 0.300 NTU	100% below 0.300 NTU	100% below 0.300 NTU	100% below 0.300 NTU	n/a	Soil runoff, river sediment
Highest single value for the year	0.084 NTU	0.083 NTU	0.20 NTU	No	

DISINFECTION BY-PRODUCTS					
	Highest Level Allowed (EPA's MCL) - One Year Average	Running Annual Average 2017*	System Wide Range of Individual Results	Violation	Source
Total Trihalomethanes (TTHMs)	80 ppb	58 ppb	16 – 84 ppb	No	By-product of drinking water disinfection
Total Haloacetic Acids (THAAs)	60 ppb	45 ppb	11 – 78 ppb		

*Monitoring is conducted at 16 locations throughout the City of Philadelphia. This result is the highest locational running annual average in 2017.

Glossary

Some of the words we use in the following charts may not be familiar to you. Here are definitions of technical and other terms.

Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow. The action level is not based on one sample; instead, it is based on many samples.

Alkalinity: A measure of the water's ability to resist changes in the pH level and a good indicator of overall water quality. Although there is no health risk from alkalinity, we monitor it to check our treatment processes.

E. coli (Escherichia coli): A type of coliform bacteria that is associated with human and animal fecal waste.

gpg (grains per gallon): A unit of water hardness. One grain per gallon is equal to 17.1 parts per million.

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.

mg/L (Milligrams per liter): One milligram per liter is equal to one part per million.

MRDL (Maximum Residual Disinfection Level): The highest level of disinfectant that is allowed in drinking water. The addition of a disinfectant is necessary for the control of microbial contaminants.

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

Minimum Residual Disinfectant Level: The minimum level of residual disinfectant required at the entry point to the distribution system.

NTU (nephelometric turbidity units): Turbidity is measured with an instrument called a nephelometer. Measurements are given in nephelometric turbidity units.

Pathogens: Bacteria, virus, or other microorganisms that can cause disease.

pCi/L (Picocuries per liter): A measure of radioactivity.

ppm (parts per million): Denotes 1 part per 1,000,000 parts, which is equivalent to two thirds of a gallon in an Olympic-sized swimming pool.

ppb (parts per billion): Denotes 1 part per 1,000,000,000 parts, which is equivalent to half a teaspoon in an Olympic-sized swimming pool.

µg/L (Microgram per liter): One microgram per liter is equal to one part per billion.

ppt (parts per trillion): Denotes 1 part per 1,000,000,000,000 parts, which is equivalent to one drop in 20 Olympic-sized swimming pools.

SOC (Synthetic Organic Chemical): Commercially made organic compounds, such as pesticides and herbicides.

Total Coliform: Coliforms are bacteria that are naturally present in the environment. Their presence in drinking water may indicate that other potentially harmful bacteria are also present.

THAAs (Total Haloacetic Acids): A group of chemicals known as disinfection byproducts. These form when a disinfectant reacts with naturally occurring organic and inorganic matter in the water.

TOC (Total Organic Carbon): A measure of the carbon content of organic matter. This measure is used to indicate the amount of organic material in the water that could potentially react with a disinfectant to form disinfection byproducts.

TTHMs (Total Trihalomethanes): A group of chemicals known as disinfection byproducts. These form when a disinfectant reacts with naturally occurring organic and inorganic matter in the water.

Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

Turbidity: A measure of the clarity of water related to its particle content. Turbidity serves as an indicator for the effectiveness of the water treatment process. Low turbidity measurements, such as ours, show the significant removal of particles that are much smaller than can be seen by the naked eye.

VOC (Volatile Organic Chemicals): Organic chemicals that can be either man-made or naturally occurring. These include gases and volatile liquids.

WTP: Water Treatment Plant

Your Support Means More Green Milestones

How has Philadelphia integrated thousands of green tools into our neighborhoods, preventing more than 1.5 billion of gallons of polluted stormwater runoff from entering the City's waterways each year?

With the help of our most important partner: you.

It took the collaboration of state and federal environmental protection agencies, City departments, advocacy groups, and more, to establish our mold-breaking stormwater management plan back in 2011.

But you made *Green City, Clean Waters* what it is today.



Why Your Support Matters

What began as an innovative way to meet environmental regulations, has evolved into a community-driven initiative that's gained the attention and support of thousands of business owners, residents, students and civic groups.

From high school students like the Watershed Stewards who spend their summers protecting the Cobbs Creek watershed, to the dedicated homeowners who manage stormwater on their properties through the Rain Check program, nearly half a million residents have joined us since *Green City, Clean Waters* launched in building a greener future with vibrant, healthy waterways.

This robust support is so crucial because, unlike most water infrastructure, green tools like rain gardens are far from "out of sight, out of mind"—they become a visible, living part of our neighborhoods, parks, schools, businesses, houses of worship, and beyond.

Having a city like Philadelphia where communities are open to revolutionary ideas and people believe in the benefits of the nature-based solutions that drive *Green City, Clean Waters* is what has made the success of America's first large-scale green stormwater management program possible.

What We've Accomplished So Far

In October 2017, we joined Mayor Kenney and many partners to honor those who helped us hit a major *Green City, Clean Waters* milestone—our 1,000th Greened Acre. Hailed as 1,000 (Green) Thank Yous, the event celebrated the teamwork and individual support that makes continued water quality improvement possible.

Each Greened Acre—a measurement we use to track progress—can keep nearly 28,000 gallons of stormwater runoff out of the sewer system during a typical 1-inch rainstorm. With a constantly expanding green footprint, we're quickly approaching 1,100 Greened Acres in the city. That adds up to nearly 30 million gallons of runoff managed with green tools when we get an inch of rain.



Children's Hospital of Philadelphia worked with PWD, pioneering green stormwater management.

Improving Watersheds Together

The support and enthusiasm that our partners have for green infrastructure and clean water manifests itself in different, but equally important, ways.

Attending community meetings about upcoming projects, committing time to maintain neighborhood green tools through our Soak It Up Adoption program, and applying for grants to build green infrastructure projects are just some of the ways partners work with us to protect our shared watersheds.

Our fellow City agencies play a big role too. Their assistance lets us bring green infrastructure to parks, recreation centers, and even public transportation stops to help beautify neighborhoods while keeping our waterways clean.

We won't reach our final goal of 9,600 Greened acres until 2036, but with the help of civic and private partnerships, nonprofit organizations, City agencies, and residents like you, we know Philadelphia is up to the challenge.

How to Get Involved

Looking to participate in a *Green City, Clean Waters* program? Visit www.phillywatersheds.org to find a way that you can take part or head to www.pwdraincheck.org to find out how we can help you manage stormwater at home with free rain barrels and more.

Fairmount Water Works: Innovation & Education Continues...

In 2017, the Fairmount Water Works Interpretive Center (FWW) continued to maximize upon the previous year's momentum by expanding its programs. FWW provides family-friendly activities, on- and off-site guided public tours, and hands-on lessons for pre-K through college-age students.

FWW established and enhanced relationships with organizations with a similar mission, by serving as the event venue of choice for lectures and cocktail receptions, all while raising more than \$6,000 towards our educational programs.

Freshwater Mussel Hatchery



Thanks to the hard work of our partners, the

Mussel Hatchery Exhibition and Aquatic Field Station has successfully cultivated more than 30,000 baby mussels to help clean our watershed! Almost 18,000 visitors have come to see the hatchery since its February 2017 opening. Come see the Hatchery for yourself during our normal operating hours, or visit www.mightymussel.com for more information.

Visit Us: People of all ages are invited to join us in discovering the wonders of water in our world. Visit www.fairmountwaterworks.org or call 215.685.0723 for the latest program listings, tours, and events.

Tours

FWW participated in the Parkway Museum District's Parkway 100 Celebration, by bringing back its "Walk Along the Parkway" tour, perfect for history buffs and architectural mavens! More than a dozen attendees raved about the tour, led by Ken Hinde, who has more than 40 years of tour guide experience. As a result of feedback, FWW offered a "Behind-the-Scenes" and an "Inside & Out" tour, both with increased attendance. In keeping with this momentum, FWW has expanded its tour offerings and dates. Check our website for upcoming tours.

The Watershed is an Open Book

The Fairmount Water Works recently launched a new two-year, pre-K family program, "The Watershed Is an Open Book", in partnership with Mander Recreation Center (Mander) and Let's Go Outdoors. This pilot program is one of eight supported by the William Penn Foundation through its new Informal Learning Initiative. Each series of 12-week programs, offered four times a year to coincide with the seasons, is designed to connect neighborhood community participants to the watershed in which they live and to offer new learning opportunities at the FWW.



The activities, materials and training are designed to enhance reading readiness by simultaneously building the child's language development and the caregiver's informal "teaching" skills. This program highlights the significance of utilizing language learning opportunities "where they are" and developing environmental literacy "where they live". Since launching the program in fall 2017, many families return week to week for literacy skill building and environmental exploration.

Partnerships

The FWW partnered with various organizations with shared missions, including: GoPhillyGo, BioPhilly, Keep Philadelphia Beautiful, United by Blue and the Pennsylvania Department of Environmental Protection to help bring public awareness to caring for and becoming ambassadors for our environment.

We also invite you to connect with us on Facebook, Twitter, and Instagram (@FairmountWW).

The Fairmount Water Works also helped launch the Alliance for Watershed Education, a consortium of 23 environmental education centers in New Jersey, Pennsylvania, and Delaware.

Canoemobile 2017 (above)

FWW staff once again partnered with Wilderness Inquiry, playing a key role in helping area youth experience and learn about the river as a part of last year's Canoemobile!

In October 2017, 400 students from Philadelphia and surrounding areas enjoyed land-based watershed activities before canoeing on both the Delaware and Schuylkill Rivers. Activities included watershed modeling, learning the cultural history of the river, and water quality testing.

Water and Food: The Art of Irrigation

FWW hosted a three-month exhibition highlighting the vital connection between water, food, and agriculture. The exhibit was in partnership with the Global Water Alliance and UNAGP.

Clean Water Begins and Ends With You!



Don't Pollute!

Water that enters our storm drains often flows directly to our local streams and rivers. Do your part to help protect our waterways:

- Always recycle or dispose of household hazardous wastes properly.
- Don't pour motor oil, antifreeze or other toxic materials down storm drains, which connect to the city's sewer system.
- Don't flush paint thinners, insect sprays, herbicides and other harmful chemicals down the toilet or put them down the sink.

Contact the Streets Department to get a schedule of their Household Hazardous Materials Drop-off Events where you can dispose of these materials safely without polluting your drinking water supply.

We welcome your ideas and opinions



We participate in nearly 200 public and community events a year, including presentations made at schools, on-

going educational programs and other environmental celebrations. We offer ways for individuals, families, students, seniors, community groups and others to participate in learning about protecting water.

Contact us

Philadelphia Water Department
Aramark Tower
1101 Market Street, 6th Floor
Philadelphia, PA 19107-2994

Customer Contact Center:
215.685.6300

Important Telephone Numbers & Websites

Delaware River and Schuylkill River Source Water Assessments
www.phillyh2o.info/watersheds-plans-reports

Fairmount Water Works
215.685.0723
www.fairmountwaterworks.org

Philadelphia Streets Department
215.686.5560
www.philadelphiastreet.com

Philadelphia Water Department
215.685.6300
www.phila.gov/water

RiverCast
www.phillyrivercast.org

Schuylkill Action Network
800.445.4935
www.schuylkillwaters.org

U.S. Environmental Protection Agency Safe Drinking Water Hotline
800.426.4791
www.epa.gov/water

Water Revenue Bureau
215.686.6880
www.phila.gov/revenue

Get Involved

If you would like to help protect your water supply or watershed, please call the Philadelphia Water Department at 215.685.6300, visit our website at www.phila.gov/water, or see Table 2 on page 23.

Situation	Who to Call	Phone
Dead Fish	Fish & Boat Commission PADEP	717.626.0228 484.250.5900
Illegal Dumping & Related Pollution Activities	PADEP PWD	484.250.5900 215.685.6300
Sewage Spills	PADEP PWD	484.250.5900 215.685.6300
Oil & Gas Spills/Accidents	PADEP PWD	484.250.5900 215.685.6300

Organization	Activity Type	Phone	Website
Environmental Alliance for Senior Involvement	A, C, E, P, T	203.779.0024	www.easi.org
Friends of Fox Chase Farms	A, C, E, P	215.728.7900	www.foxchasefarm.org
Friends of the Manayunk Canal	A, C, E, P, T	N/A	www.manayunkcanal.org
Friends of Pennypack Park	A, C, E, P, T	215.934.PARK (7875)	www.friendsofpennypackpark.org
Friends of the Wissahickon	A, C, E, P, T	215.247.0417	www.fow.org
Lower Merion Conservancy	A, C, E, P, T	610.645.9030	www.lmconservancy.org
Partnership for the Delaware Estuary	A, B, C, E, P, S, T	800.445.4935	www.delawareestuary.org
Philadelphia Anglers Club	A, C, E, F	N/A	www.philadelphiaanglersclub.com
Philadelphia Canoe Club	F, R	215.487.9674	www.philacanoec.org
Schuylkill Action Network	A, B, C, E, L, P, T	800.445.4935x109	www.schuylkillwaters.org
Schuylkill Banks	B, E, L	N/A	www.schuylkillbanks.org
Schuylkill Center for Environmental Education	A, B, C, E, P, T	215.482.7300	www.schuylkillcenter.org
Senior Environment Corps	A, C, E, P, T	215.848.7722	www.centerinthepark.org
Tookany/Tacony-Frankford (TTF) Watershed Partnership	A, C, E, P, T	215.744.1853	www.ttfwatershed.org
U.S. Water Alliance	A, B, E	202.789.7751	www.uswateralliance.org
Wissahickon Restoration Volunteers	A, C, E, P, T	215.798.0044	www.wissahickonrestorationvolunteers.org
Wissahickon Valley Watershed Association	A, C, E, P, T	215.646.8866	www.wvwa.org

Activity Types

A: Environmental activism
B: Business-related protection and educational activities
C: Clean-up of trash and litter
E: Environmental education
F: Fishing or fish recreation activities

L: Land conservation and management
P: Planting trees and streambank repair/protection
R: Rowing, canoeing and related boating activities
S: Storm drain marking
T: Water quality testing



PHILADELPHIA
WATER
— DEPARTMENT —

Philadelphia Water Department

1101 Market Street

Philadelphia, PA 19107

215.685.6300

www.phila.gov/water