



PITTSBURGH WATER AND SEWER AUTHORITY

ANNUAL DRINKING WATER
QUALITY REPORT 2020



PWSA DELIVERS SAFE, HIGH QUALITY DRINKING WATER

We are proud to announce that our 2020 Water Quality Report shows a clean bill of health for the quality and safety of our drinking water. Our drinking water customers can have confidence in the safety and security of their water and rest assured that we are providing Pittsburgh residents and businesses with the highest quality water.

This annual report outlines our treatment process, the effectiveness of our water quality testing, and the sample results of the various contaminants found in our source drinking water – the Allegheny River. Each day, we test for approximately 100 different chemical and microbial constituents before, during, and after the treatment process and work tirelessly to maximize their reduction and removal from your drinking water.

All the contaminants we test for are regulated by the Environmental Protection Agency and Pennsylvania Department of Environmental Protection and our latest report shows that we are meeting or exceeding state and federal regulations.

Effective water quality testing is only one aspect of our work that determines the safety and reliability of our drinking water. The quality of your drinking water is also determined by our water treatment process and the infrastructure that distributes water to your tap.

This past year, we announced that **lead levels** came into compliance with federal regulatory standards and are the lowest levels we've recorded in 20 years. The **Highland Park Microfiltration Plant**, which provides a second layer of treatment to water leaving the open Highland I Reservoir, was brought back into service last year and fully restored to meet stricter water quality standards. Decreased **turbidity levels** are a testament to our water treatment process. We are effectively filtering out the suspended solids found in our source drinking water during the treatment process. As more of this material is filtered it produces clearer water or lower turbidity - a direct measure of water quality.

Over the next several years, PWSA will implement its **Water Reliability Plan**, a series of once-in-a-generation projects to renew key components of our water production and distribution systems. These projects, which culminate with the complete restoration of the Clearwell, a large, century old water storage facility, will strengthen our water system, add needed redundancy, and ensure an uninterrupted supply of quality water to our drinking water customers.

PWSA's 2020 Water Quality Report, also referred to as the Consumer Confidence Report, is a requirement of all water systems by the Environmental Protection Agency. It can be accessed online at pgh2o.com/2020WaterQuality.

We encourage you to read the 2020 Water Quality Report and if you have questions, please contact our Water Treatment Plant at (412) 782-7552 (Press 1). If you prefer to have a hard copy sent by mail, please call Customer Service at (412) 255-2423 (Press 5) to request a copy.



WATER TREATMENT

WHERE DOES YOUR WATER COME FROM AND HOW IS IT TREATED?

PWSA draws its water from the Allegheny River. We do not use ground or well water. On average, 70 million gallons of water are treated each day at our drinking water treatment plant. The plant is capable of producing over 100 million gallons of water per day. The treatment process takes three full days and consists of three separate stages:

STAGE



CLARIFICATION

River water passes through a process called clarification, in which silts and clays are removed. This stage involves the addition of treatment chemicals (coagulants), which form clumped particles called floc that are then physically removed by gravity sedimentation.



STAGE



FILTRATION

The clarified water next passes slowly through anthracite and sand filters in order to remove the fine particles and microorganisms.



STAGE



DISINFECTION

The filtered water is treated with chlorine to ensure removal of any harmful microorganisms. During this process, several additional chemicals are added to complete treatment. These include sodium carbonate to adjust the pH of the water and fluoride to prevent cavities in teeth.



WATER TREATMENT

SECONDARY TREATMENT OF RESERVOIR WATER

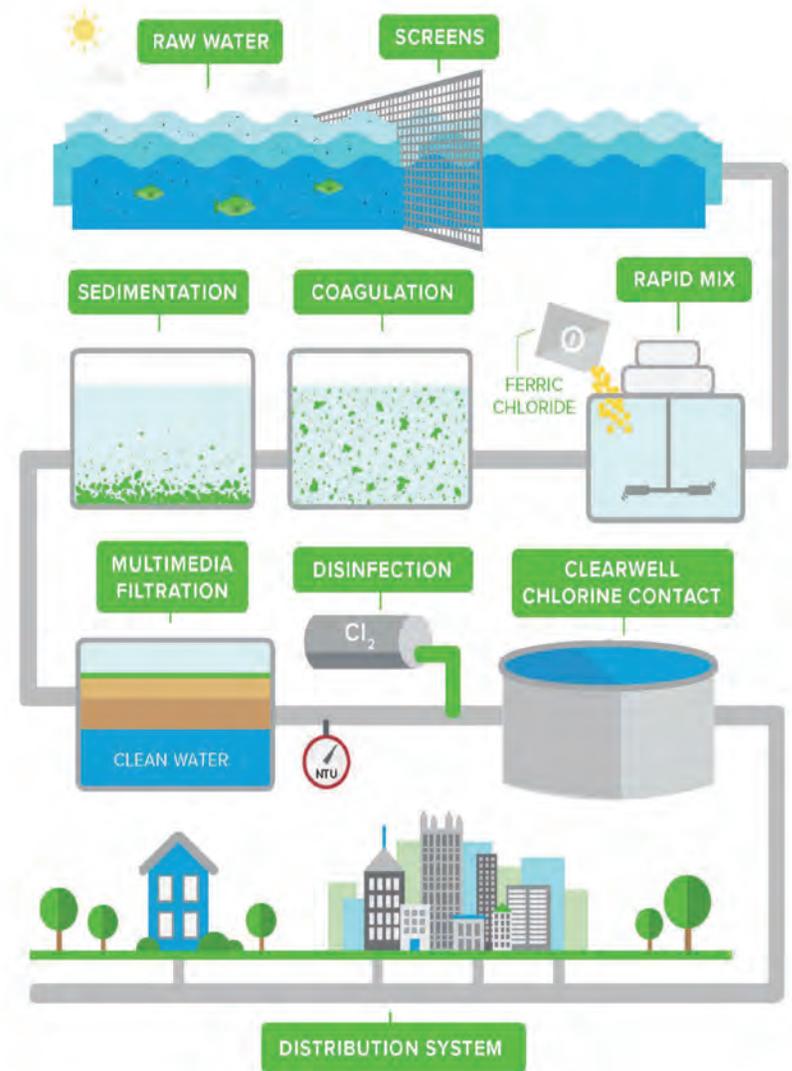
In addition to our primary water treatment plant located near Aspinwall, PWSA operates a secondary treatment plant known as the Microfiltration Plant in Highland Park.

All of the water stored in the open-air Highland Reservoir #1 is originally treated in our primary plant. Then, before the Highland Reservoir #1 water is distributed to the public, it is retreated in our secondary plant.

This membrane filtration plant utilizes state-of-the-art microfiltration and chlorination to remove any impurities that may have entered the water during storage in the reservoir.



WATER TREATMENT PROCESS



STORMWATER

Stormwater pollution affects water quality. PWSA draws water from the Allegheny River. Anything that enters a storm sewer is ultimately released, untreated, into the rivers and streams. In addition to the Allegheny River being used as the source of our drinking water, it is also used for swimming, boating, and fishing.

The PWSA system is made up of sanitary, dedicated stormwater, and combined sewers. All new development is required to have separate storm sewers. As an older city, only about 25 percent of the system has separate storm sewers.

RESIDENTS CAN HELP PREVENT STORMWATER POLLUTION BY:

Disposing of trash properly.



Do not litter. You can help reduce cost and keep our rivers clean by properly disposing of waste.

Using fertilizer sparingly.



During rain events, fertilizer runs down the street and may enter the storm sewers and eventually end up in the river. Do not fertilize before a rain storm.

Considering where you wash your car.



If you are washing your car in the driveway, all the soap is running into the street and may enter the storm sewers and eventually end up in the river.

Stopping oil leaks immediately.



Leaking oil runs down the street and may enter the storm sewers and eventually end up in the river. Check for oil leaks regularly and dispose of oil properly.

Properly disposing of pet waste.



If pet waste is not properly disposed of during rain events, the bacteria may enter the storm sewers and eventually end up in the river.

WATER QUALITY

PWSA continuously monitors your drinking water in accordance with Federal and State regulations. On the following pages, the tables show our monitoring results for the period of January 1, 2020, to December 31, 2020. While we conducted more than 100,000 analyses for approximately 100 different chemical and microbial constituents last year, we only found detectable levels of the contaminants listed in the water quality tables. It should be noted that none of the test results exceeded federal or state maximum contaminant levels (MCLs).

SOURCE WATER PROTECTION

PWSA continuously monitors your drinking water in accordance with Federal and State regulations. On the following pages, the tables show our monitoring results for the period of January 1, 2020, to December 31, 2020. While we conducted more than 100,000 analyses for approximately 100 different chemical and microbial constituents last year, we only found detectable levels of the contaminants listed in the water quality tables. It should be noted that none of the test results exceeded federal or state maximum contaminant levels (MCLs). PWSA's source water protection plan is approved by the Pennsylvania Department of Environmental Protection (PADEP). This report identifies the most likely sources of pollution affecting the Allegheny River.

These include accidental release of contaminants from industrial processes; cumulative impact of discharge from power plants; cumulative release of petroleum products from pipeline ruptures; stormwater runoff from lands adjacent to the river and Combined Sewer Overflows (CSOs). A summary of the Source Water Assessment is available on the PADEP website at dep.state.pa.us.

PWSA realizes the importance of protecting our source water and is actively involved with organizations that aid the Authority in accomplishing this goal. PWSA is a member of River Alert Information Network (RAIN), which is an early-warning spill detection monitoring network along the Allegheny, Monongahela, and their tributaries. For more information please visit their site at rainmatters.org. PWSA is also a member of the Ohio River Valley Water Sanitation Commission (ORSANCO) and is enrolled in their organic detection program. For more information please visit their site at orsanco.org.

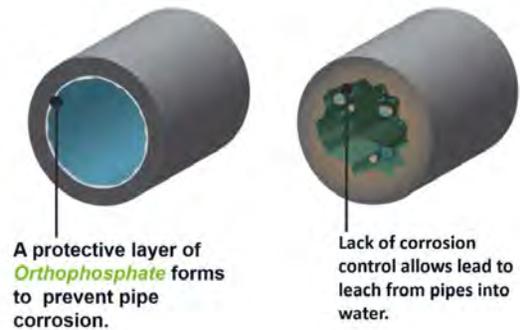
LEAD IN DRINKING WATER

LEAD LEVELS LOWEST IN 20 YEARS

In July 2020, PWSA met one of its most impactful milestones of the Community Lead Response. After years of planning, testing, and implementation of an improved corrosion control treatment called orthophosphate, PWSA's lead testing levels were at a 20-year low, bringing the water system back into state regulatory compliance. PWSA will continue to replace lead lines throughout the water system, but this will take time. Implementing an effective corrosion control reduces lead levels for all customers while this important work can be completed.

ORTHOPHOSPHATE EFFECTIVENESS IMPROVES OVER TIME

In April 2019, we began adding orthophosphate to reduce lead levels in drinking water while continuing to replace thousands of lead service lines. Orthophosphate is a food-grade additive that forms a protective layer inside of lead service lines, creating a barrier between the lead pipes and the water flowing through them. It is approved by the Environmental Protection Agency and successfully used in water systems across the country. Orthophosphate was selected by PWSA and approved by DEP after a comprehensive, year-long study of treatment alternatives. To read more about orthophosphate, visit www.lead.pgh2o.com/understanding-lead-and-water/orthophosphate.



◀ The graph shows the consecutive rounds of regulatory lead compliance testing from 2016 to 2020. With the addition of orthophosphate in April 2019, we are seeing a consistent reduction in lead levels.

LEAD IN DRINKING WATER

LEAD SERVICE LINE REPLACEMENTS

PWSA's Community Lead Response is our dedicated program for lead line replacement, corrosion control optimization, and public education around lead in drinking water. In 2020, the program replaced a total of 2,216 public lead service lines and 1,572 private lead service lines, exceeding state requirements in efforts to replace all lead service lines by 2026. Even with shut-downs in the first half of 2020 due to the COVID-19 Pandemic, PWSA project managers, Lead Help Desk Staff, and construction crews worked diligently to resume work and meet our goals.

PWSA completed lead service line replacements through two methods in 2020 – neighborhood-based lead line replacements and water main replacement projects throughout our service area. In the first half of 2020, PWSA was wrapping up its neighborhood-based program, which targeted just lead service lines for replacement. When this project was complete, PWSA adjusted its strategy to a more holistic approach that replaces both lead services lines and the water main in the street. Through water main replacements, we can replace lead service lines as well as the aging water mains that serve them. For all these programs, PWSA used historical service line data, demographic information, and blood-lead levels from the Allegheny County Health Department to target sections of neighborhoods that indicated high concentrations of lead.

REIMBURSEMENT PROGRAM

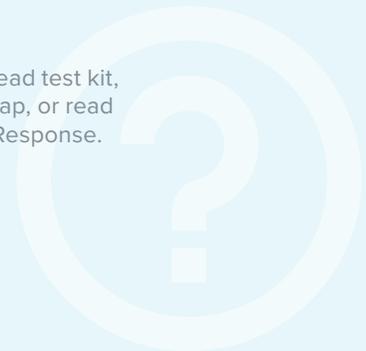
PWSA unveiled a new lead line assistance program in November of 2020. The Lead Line Reimbursement Program will assist customers with the cost of private lead service line replacement if customers choose to proactively hire a plumber and complete the work. In partnership with Dollar Energy Fund, PWSA will verify your income and determine the level of reimbursement you qualify for. This program is available to anyone in our water service area who has replaced their private lead service line since January 2019 or is planning to do so now. For more information on this program, visit www.lead.pgh2o.com/leadreimbursement.



WHAT'S NEXT?

PWSA will continue to replace lead lines throughout the water service area via the water main replacement program and will continue to provide free water testing, pitchers and filters at homes with elevated lead, reimbursement for private lead line replacement, and a dedicated Lead Help Desk staff to answer questions and concerns.

Visit www.lead.pgh2o.com to request a free lead test kit, check for lead at your property on our lead map, or read past press releases on the Community Lead Response.



WHAT DOES PWSA TEST FOR?

In general, the sources of all 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 or raw water include:

- **Microbial contaminants** such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- **Inorganic contaminants** such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- **Pesticides and herbicides** which may come from a variety of sources, such as agriculture, urban stormwater runoff, and residential uses.
- **Organic chemical contaminants** including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, can come from gas stations, urban stormwater runoff, and septic systems.
- **Radioactive contaminants** which can be naturally-occurring or the result of oil and gas production and mining activities.

In order to assure that tap water is safe to drink, the EPA and PADEP regulate the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and PADEP regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

PWSA tests for contaminants that may be present in the source water prior to treatment. Results of the tests enables PWSA to adjust the treatment process in order to maximize the reduction and removal of contaminants. Tests are also conducted during the treatment process and on the finished water. Additional samples for testing are collected on a regular basis from our storage facilities, various points in the distribution network, and customers' taps.

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 at 1.800.426.4791.



LONG TERM SURFACE WATER ENHANCEMENT TREATMENT RULE ROUND 2 (LT2)

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.

Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people are at greater risk of developing life-threatening illness.

We encourage immuno-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. *Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water.*



SPECIAL INFORMATION FOR IMMUNO-COMPROMISED INDIVIDUALS

Some people may be more vulnerable to contaminants in drinking water than others.

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 may be particularly at risk from infections.

These people should seek advice about drinking water from their health care providers. Environmental Protection Agency (EPA) and 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 at 1.800.426.4791.

ABBREVIATIONS & DEFINITIONS

When reviewing the tables and information on the following pages, reference this abbreviations and definitions list to understand the terms being used.

(ND) Non-Detect

Laboratory analysis indicates that the contaminant is not present at a detectable level.

(Mrem/year) Millirems Per Year

A measure of radiation absorbed by the body.

(pCi/L) Picocuries Per Liter

A measure of radioactivity.

(NTU) Nephelometric Turbidity Unit

Measurement of the clarity of water. Turbidity in excess of 5 NTU becomes just barely noticeable to the average person.

(AL) Action Level

The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

(TT) Treatment Technique

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

(N/A) Non-Applicable

Does not apply.

(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.

(MCL) Maximum Contaminant Level

The highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as feasible, using the best available treatment technology.

(MRDLG) Maximum Residual Disinfectant Level Goal

The level of drinking water disinfectant 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.

(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.

(MinRDL) Minimum Residual Disinfectant Level

The minimum level of residual disinfectant required at the entry point to the distribution system.

Level 1 Assessment

A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

Level 2 Assessment

A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

Entry Point

The entry points (101, 102 and 104) refer to the Water Treatment Plant (WTP - 101) and Microfiltration Plant (MFP - 102 (Zone 5 Police Station) and 104 (New Highland Pump Station)) where water is monitored.

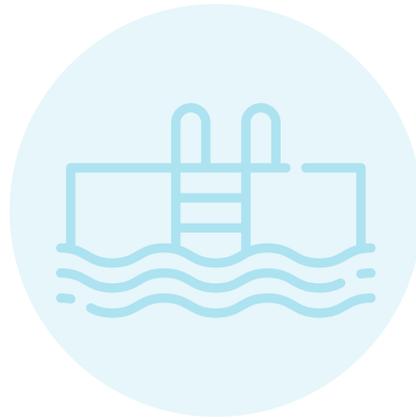
ABBREVIATIONS & DEFINITIONS

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Part Per Million (ppm)

One part per million corresponds to one minute in two years or **one drop of water in a hot tub.**



Part Per Billion (ppb)

One part per billion corresponds to one minute in 2,000 years or **one drop of water in an Olympic size swimming pool.**



Part Per Trillion (ppt)

One part per trillion corresponds to 30 seconds in one million years or **one drop of water in a six acre lake.**

WHAT ARE DRINKING WATER CONTAMINANTS?

In reference to drinking water, a contaminant is any physical, chemical, biological, or radiological substance or matter in water – *essentially anything other than water molecules*. Some contaminants may be harmful at certain levels while others are harmless. **The presence of contaminants in drinking water does not necessarily indicate a problem or health risk.**

DETECTED SAMPLE RESULTS

Chemical Contaminants: Water Treatment Plant

CONTAMINANT	ENTRY POINT	HIGHEST LEVEL ALLOWED (MCL)	IDEAL GOAL (MCLG)	LEVEL DETECTED	RANGE OF DETECTIONS	UNITS	SAMPLE DATE	VIOLATION Y/N	SOURCE OR PURPOSE OF CONTAMINANT
Calcium	101 102 104	-	-	29 35 35	21-37 32-37 32-38	ppm	2020	-	-
Fluoride	101 102	2*	4	0.79 0.88	-	ppm	05.05.20 10.18.20	N	Water additive that promotes strong teeth
Nitrate	101 102	10	10	0.61 0.34	0.49-0.76 -	ppm	2020 09.30.20	N	Runoff from fertilizer use; leaching septic tank sewage; natural deposit erosion
Barium	101 102	2	2	0.30 0.37	-	ppm	05.30.19	N	-
Orthophosphate	102 104	-	-	1.78 1.77	1.73-1.83 1.71-1.83	ppm	2020 2020	N	-
Nickel	102	-	-	0.0022	-	ppm	10.19.20	N	-
Copper	102	1.3	1.3	0.0053	-	ppm	12.20.16	N	-

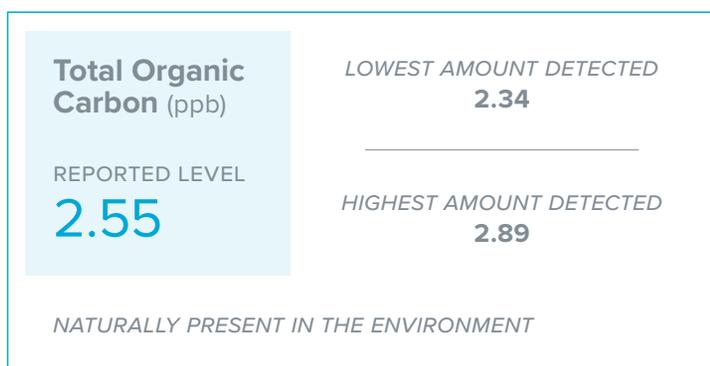
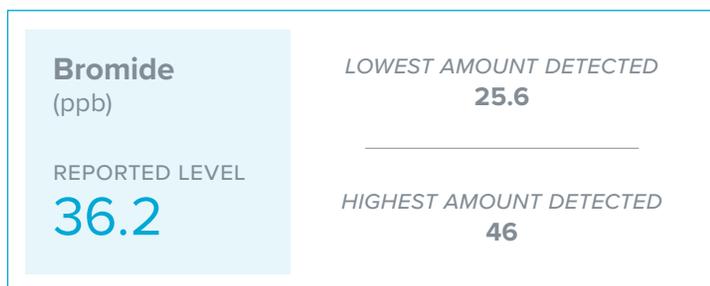
* EPA's MCL for fluoride is 4 ppm. However, Pennsylvania has set a lower MCL to better protect human health.

UNREGULATED CONTAMINANT MONITORING RULE 4 (UCMR4)

Unregulated contaminants are contaminants that EPA has not established drinking water standards for. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted. Any unregulated contaminants detected are reported on this page.

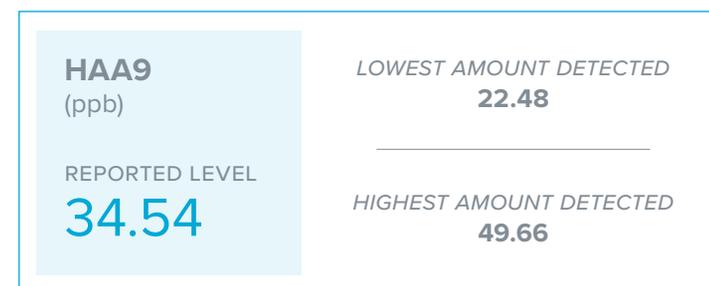
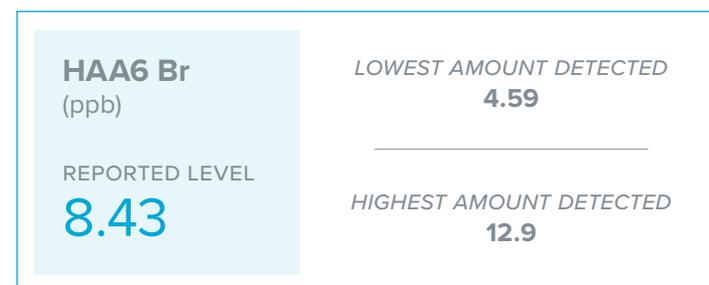
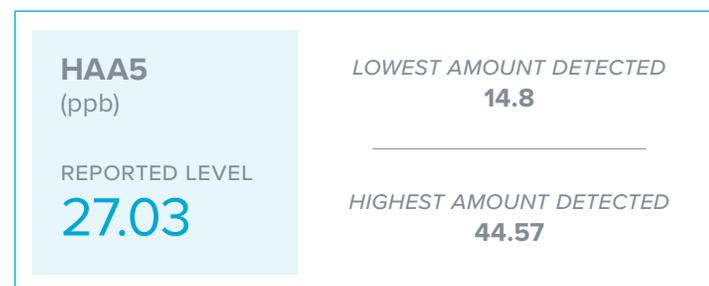
CHEMICAL CONTAMINANTS: UCMR4 ALLEGHENY RIVER

Sample Date: 2019



CHEMICAL CONTAMINANTS: UCMR4 DISTRIBUTION

Sample Date: 2019



For additional information and data visit epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule or call the Safe Drinking Water Hotline at (800) 426-4791.

CHEMICAL CONTAMINANTS

Chemical Contaminants: Distribution System

A small amount of water was purchased from Pennsylvania American Water (PAW)

CONTAMINANT	HIGHEST LEVEL ALLOWED (MCL)	IDEAL GOAL (MCLG)	LEVEL DETECTED	RANGE OF DETECTIONS	UNITS	SAMPLE DATE	VIOLATION Y/N	SOURCE OR PURPOSE OF CONTAMINANT
Free Chlorine	4	MRDLG-4	1.15	0.57-1.15	ppm	2020	N	Water additive used to control microbes
Calcium	-	-	28	22-34	ppm	2020	N	-
HAA5	60	N/A	18	15-24	ppb	2020	N	By-product of water disinfection
TTHM	80	N/A	55	18-107	ppb	2020	N	By-product of water disinfection
Orthophosphate	-	-	1.76	1.71-1.82	ppm	2020	N	-

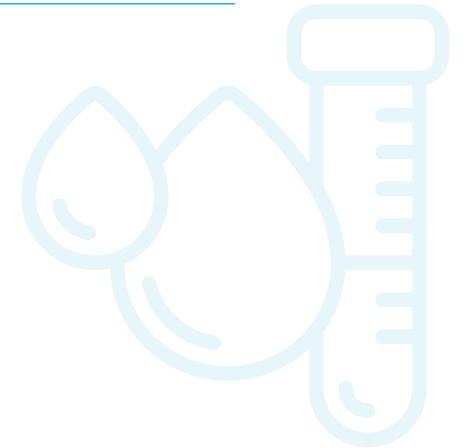
Entry Point Disinfectant Residual

CONTAMINANT	ENTRY POINT	MINIMUM DISINFECTANT RESIDUAL	LOWEST LEVEL DETECTED	RANGE OF DETECTIONS	UNITS	SAMPLE DATE	VIOLATION Y/N	SOURCE OR PURPOSE OF CONTAMINANT
Chlorine	101	0.20	0.51	0.51-1.24	ppm	2020	N	Water additive used to control microbes
	102	0.20	0.76	0.76-1.01				
	104	0.20	0.61	0.61-1.02				

CHEMICAL CONTAMINANTS

Lead and Copper

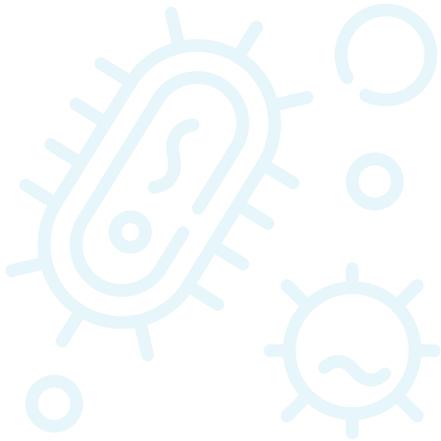
CONTAMINANT	ACTION LEVEL (AL)	IDEAL GOAL (MCLG)	90 TH PERCENTILE VALUE	UNITS	# OF SITES ABOVE AL OF TOTAL SITES	VIOLATION Y/N	SOURCE OR PURPOSE OF CONTAMINANT
Lead 2020	15	0	5.13	ppb	2 of 158	N	Household plumbing corrosion; natural deposit erosion
Copper 2020	1.3	1.3	0.075	ppm	0 of 158	N	Household plumbing corrosion; natural deposit erosion; leaching from wood preservatives



MICROBIAL CONTAMINANTS

Microbial: LT2 Allegheny River

CONTAMINANT	HIGHEST LEVEL ALLOWED (MCL)	IDEAL GOAL (MCLG)	LEVEL DETECTED	RANGE OF DETECTIONS	UNITS	SAMPLE DATE	VIOLATION Y/N	SOURCE OR PURPOSE OF CONTAMINANT
Cryptosporidium	-	-	0.190	-	Oocysts/L	2017	-	Naturally present in the environment



CONTAMINANTS

Turbidity

CONTAMINANT	HIGHEST LEVEL ALLOWED (MCL)	IDEAL GOAL (MCLG)	LEVEL DETECTED	SAMPLE DATE	VIOLATION Y/N	SOURCE OR PURPOSE OF CONTAMINANT
Turbidity	TT = 1 NTU for a single measurement	0	0.082	7/20/20	N	Soil runoff
	TT = at least 95% of monthly samples ≤ 0.3 NTU		N/A	N/A	N	
MFP	TT = 1 NTU for a single measurement	0	0.074	8/23/20	N	Soil runoff
	TT = at least 95% of monthly samples ≤ 0.3 NTU		100%	N/A	N	

Total Organic Carbon (TOC)

CONTAMINANT	RANGE OF % REMOVAL REQUIRED	RANGE OF % REMOVAL ACHIEVED	# OF QUARTERS OUT OF COMPLIANCE	VIOLATION Y/N	SOURCE OF CONTAMINANT
TOC	35%	42%-53%	0	N	Naturally present in the environment

VIOLATIONS

A Source Water Assessment of PWSA's intake water (located on the Allegheny River) was completed in 2010 by the PADEP. The Assessment has found that our source water is potentially most susceptible to road deicing materials, accidental spills along railroad tracks, and leaks from submerged pipelines and storage tanks. Overall, the Allegheny River Watershed has a moderate risk of significant contamination. Summary reports are available on the PADEP website at: depgreenport.state.pa.us/elibrary/GetFolder?FolderID=4492 and then selecting "Pittsburgh Water and Sewer Authority.pdf" file in the list or by writing to the PADEP at 400 Waterfront Dr., Pittsburgh, PA 15222.

Complete reports were distributed to municipalities, water supplier, local planning agencies and PADEP regional Office, Records management Unit at 412.442.4217.

WHAT DO THE RESULTS MEAN?

We are proud that your drinking water meets or surpasses all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected but are below the recommended minimum contaminant level (MCL) and therefore meet the regulatory requirements.

STAY INFORMED

Update your contact information and stay informed. It's important that your contact information is up to date so that we can notify you about planned construction, water emergencies, extended water outages, and provide other safety information. PWSA encourages all customers to provide updated contact information by going to our website at pgh2o.com/pay or by calling PWSA Customer Service at 412.255.2423 (press 5). This information ensures that we are able to make direct contact in the event of an emergency.



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