

The background is a vibrant blue with several water droplets of varying sizes scattered throughout. In the lower half, a glass of water is shown, with a water droplet falling from the rim. The overall aesthetic is clean and refreshing, emphasizing water quality.

PROTECTING *your water*

2022 WATER QUALITY REPORT

TACOMA  **WATER**
TACOMA PUBLIC UTILITIES



We employ about 285 people.

A MESSAGE FROM YOUR *Water Superintendent*



Introducing your 2022 Water Quality Report

Everyone at Tacoma Water prioritizes public health as we meet our mission to provide clean, reliable water. In this report, you will learn more from some of our staff who strive for excellence to serve you.

One of the many ways we protect water quality is through cross-connection control. This is a fancy way of saying we protect the water system from contamination due to use after the water passes through your water meter. This report will help you understand the importance of this effective effort as we re-establish protocols adjusted during the COVID-19 pandemic.

Finally, we share details of a proposed regulation on a group of artificial compounds labeled PFAS (per- and polyfluoroalkyl substances) found in many consumer products and drinking water sources across the country. First and foremost, let me assure you that your water is safe to drink, and meets or exceeds, all current drinking water standards. In 2018, we proactively sampled our supplies to determine if these compounds were



To learn more about where our water comes from and how it gets to you, download our fun activity book at [MyTPU.org/HelloWater](https://MyTPU.org>HelloWater).

present. We did not detect them in the Green River, where we derive 95% of our drinking water during a typical year. However, the compounds were present in some of our groundwater wells. We removed two wells from service that had levels at or above advisory levels at that time. We plan to conduct additional testing in 2023 to better understand PFAS presence and any necessary removal treatment.

Thank you for the trust you place in our team. We are grateful for the opportunity to serve you and hope you enjoy this report and learn more about your drinking water.

Scott Dewhirst, Superintendent



PROTECTING WATER QUALITY

With Cross-Connection Control

We work hard to provide you with clean, reliable drinking water. One very important part of protecting water quality involves you and cross-connection control. A cross connection is any actual or potential connection between the drinking water system and any source of non-potable liquid, solid, or gas. Common ways you use your water could present a threat to its quality and safety. We ensure the water you use for drinking, cooking, bathing, and gardening remains safe through active cross-connection control.

Common examples of cross connections at your home



Irrigation systems



Fire suppression systems



Boilers



Radiant heat systems

Common cross connections at businesses



Carbonated beverage machines



Dishwashers



Medical and dental equipment



Chemical mixing systems

Our water quality specialists inspect and test a cross-connection control assembly.



We protect your drinking water from cross connections through backflow prevention methods and assemblies. There are several different types of these mechanisms, and each type is specific to the hazard level it provides protection against. One of the most common methods of backflow prevention is found at your kitchen sink. The separation between the faucet and the sink rim is known as an air gap. Air gaps provide the most positive means of backflow prevention since they do not allow any connection between the water system and the hazard. When the installation of an air gap is impractical, we require the installation of a mechanical assembly. High hazards or health hazards require a reduced principle backflow assembly (RPBA). The RPBA has two spring-loaded check valves and a relief valve to ensure positive isolation between the potable water system and the hazard. In the event one of the check valves fails, the relief valve discharges the hazardous water before it can get back to the potable side. Low or non-health hazards use a double-check valve assembly (DCVA). The DCVA has two spring-loaded check valves to provide positive, redundant isolation from the hazard. Other types of backflow prevention that may be used include pressure vacuum breakers, spill-resistant vacuum breakers, and atmospheric vacuum breakers.

All backflow prevention assemblies must be models approved by the State of Washington and must be tested at least annually by a State of Washington certified backflow assembly tester.

If you have questions about cross-connection control or backflow assembly testing, please email us at

Backflow@CityofTacoma.org or call **253.502.8215**.



EMPLOYEE SPOTLIGHT

Gary M.

Customer Services Representative

"My role at the water utility is a puzzle or a problem solver. I typically talk to you when you need help or might have a water issue that upsets or causes you stress. I work with you to identify the problem and find a solution. If the problem has to do with utility equipment or the quality of your water, I set up work orders to help ensure the problem is addressed in an efficient manner. If the cause of the issue is on your property side, I work with you to help identify the potential cause, such as a broken irrigation line. Either way, I'm solving different puzzles daily. I interact with utility staff and members of the community to help ensure everyone has access to clean water. I love to help people and can't think of a better place to do that than with Tacoma Water."

Well 11A located along South Tacoma Way in Tacoma.
We own 24 wells in and around the city.



What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a group of human-made chemicals manufactured and used worldwide since the 1940s. They are used in various non-stick, stain-resistant, and water-resistant consumer products, and certain types of firefighting foam.

PFAS are widespread and do not break down easily in the environment. Some PFAS can build up in the bodies of humans, animals, and fish, and create health concerns. There is much we still need to learn. Research is underway by the Environmental Protection Agency (EPA) and other organizations to better understand PFAS impacts on health.

In 2016, the EPA released initial Health Advisory Levels for two PFAS compounds. In 2021, the Washington State Department of Health adopted

State Action Levels for five PFAS compounds. The EPA continues to study PFAS and is working on a national drinking water standard for PFAS that we expect to see finalized by the end of 2023.

In 2018, we proactively tested all our sources for 14 different PFAS compounds. Most of the water you receive is from the Green River, where no PFAS have been detected. However, PFAS were detected in some of our back-up groundwater supply wells.

We continue to investigate potential sources of groundwater contamination in cooperation with the Washington State Department of Health. Throughout the country, PFAS contamination has been primarily discovered in areas near fire training facilities, military bases, and airports, that historically used PFAS-based firefighting foam.

Providing clean, reliable water is our mission. We will continue to monitor PFAS levels in all our water sources and track evolving federal and state regulatory requirements to determine a course of action to ensure our groundwater is safe. The next round of PFAS testing for Tacoma Water's sources is planned for mid-2023 and will monitor for additional PFAS compounds.

We are also in the early stages of planning for treatment to remove PFAS to prepare for future requirements.

You can find updated information at [MyTPU.org/PFAS](https://www.mytpu.org/PFAS).



One of our well pumps.



EMPLOYEE SPOTLIGHT

Lizzy K.

Utility Services Representative Maintenance & Cross Connection

"As an utility service representative, I answer your questions, including those concerning water quality. I process work orders so our crews will investigate or perform the maintenance needed on water utility infrastructure. When you call with concerns or inquiries, I gather all the details, provide information about next steps, and create a notification for a water quality specialist to follow up. If it's an emergency, I contact one of our water quality specialists so they can investigate the issue.

I also collaborate with our maintenance and construction crews and their supervisors, on planned and unplanned work, like water shutdowns or main breaks. This allows me to provide you information as soon as it becomes available, so you can prepare in case of a water shut down or water quality issue that may affect you.

Another part of my job is to maintain data about our distribution assets. I work with our GIS team and enter sizing, directional information, and more into our database to create the functional locations tied to services. This ensures that our planners and crews have current and accurate information to perform work on our system.

I enjoy my job because I always learn something new and it's satisfying to keep you updated about your water service."

REPORTING CHEMICALS in Your Water

The water quality table below shows substances we identified at the water source, treatment plant, and in the distribution system during our most recent sampling. The table doesn't include the other 35 inorganic, 67 volatile organic chemicals, and 73 synthetic organic chemicals we test for—including many industrial chemicals, herbicides, and pesticides—but did not find.

UNDERSTANDING ONE PART PER MILLION (PPM) AND ONE PART PER BILLION (PPB)



Visualizing 1 ppm

Four drops of water in a 55-gallon rain barrel



Visualizing 1 ppb

One drop of water in a 13,000-gallon swimming pool

One of our water plant maintenance workers checks filter valve operations.



Regulated at our groundwater sources

Constituent	Highest level allowed (MCL)	Highest level detected	Ideal goals (MCLG)	Range of level detected	Regulation met	Potential sources of contaminant
Arsenic	10 ppb	1.7 ppb (2021)	0	0-1.7 ppb	Yes	Natural erosion
Nitrate	10 ppm	4.22 ppm	10 ppm	0-4.22 ppm	Yes	Agricultural uses, septic
Trichloroethylene	5 ppb	1.4 ppb (2020)	0	0-1.4 ppb	Yes	Industrial contamination

Unregulated at our groundwater sources

Chloroform	N/R	0.72 ppb	N/R	0-0.72 ppb Average 0.111 ppb	N/R	Industrial contamination
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Regulated at our treatment plant

Fluoride	4 ppm	0.93 ppm	4 ppm	0.53-0.93 ppm	Yes	Treatment additive
Turbidity	1 NTU	0.037 NTU	N/A	0.013-0.037 NTU	Yes	Soil erosion

Unregulated at our treatment plant

Chloroform	N/R	1.6 ppb	N/R	1.6 ppb	N/R	Treatment
Bromodichloromethane	N/R	0.84 ppb	N/R	0.84 ppb	N/R	Treatment

Regulated in our distribution system

Constituent	Highest running annual average allowed	Our running annual average	MCLG	Range of level detected	Regulation met	Potential sources of contaminant
Total Trihalomethanes	80 ppb average	11.2 ppb average	N/A	4-23.4 ppb	Yes	Disinfection interaction
Haloacetic acids	60 ppb average	5.2 ppb average	N/A	<1-13 ppb	Yes	Disinfection interaction
Bromate	10 ppb	0	0	0	Yes	Disinfection interaction
Chlorine residual	4 ppm	N/A	4 ppm (MRDLG)	0.28-1.71 ppm	Yes	Treatment additive
Total Coliform	<5% positive	0.000%	0	0 of 2152 sites	Yes	Sampling technique

Regulated at your tap

Lead and copper sampled in 2022 (required once every three years)	90% of samples must be below the action level (AL)	90% of samples were at or below this level	MCLG	# of sites above the action level (AL)	Regulation met	Potential sources of contaminant
Lead	15 ppb (AL)	N/D	0	0 of 53 sites	Yes	Household plumbing
Copper	1.3 ppm (AL)	N/D	1.3 ppm	0 of 53 sites	Yes	Household plumbing

DEFINITIONS

Maximum Contaminant Level (MCL):

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 technology.

Maximum Contaminant Level Goal (MCLG):

The level of a contaminant in drinking water below for which there is no known or expected risk to health. MCLGs allow for a margin of safety.

ppm

One part per million.

ppb

One part per billion.

NTU

Nephelometric Turbidity Unit is a standard to measure water clarity.

AL

Action Level is the concentration which, if exceeded, triggers treatment or other requirements that a water system must follow. Action Levels are reported at the 90th percentile for homes at greatest risk.

N/D

Not Detected (result is below the laboratory minimum detection level).

Minimum Reporting Level, also known as Method Reporting Limit (MRL):

The smallest amount of a substance we can reliably measure and report in a sample.

TT

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

Maximum Residual Disinfectant Level (MRDL):

Highest level of a disinfectant allowed in drinking water.

Maximum Residual Disinfectant Level Goal (MRDLG):

The level of a 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.

N/A

Not Applicable.

N/R

Not Regulated (not currently subject to EPA drinking water regulations).

IDENTIFYING SUBSTANCES *in Your Water*

Tap water and bottled water sources include rivers, lakes, streams, reservoirs, springs, and wells. As water travels over or through the ground, it dissolves naturally occurring minerals and can pick up other substances resulting from the presence of animals or human activity. Those substances may include inorganic material such as salts and metals, synthetic and volatile organic material from industrial processes, storm water runoff and septic systems, and pesticides and herbicides from agriculture and residential uses. To ensure your drinking water is safe, the EPA and the Washington State Board of Health prescribe regulations that limit the amount of certain contaminants in public water systems.

Organisms

Cryptosporidium (KRIP-toe-spo-RID-ee-um)

Cryptosporidium is a microscopic organism commonly found in open surface water sources. Swallowing Cryptosporidium can cause diarrhea, fever, and other stomach and abdominal symptoms. We tested the Green River for Cryptosporidium on a monthly basis from 2015 – 2017. We collected and analyzed samples using the best available method approved by the EPA. We did not detect Cryptosporidium in the untreated Green River during this period. Federal and state regulations require us to treat Green River water for Cryptosporidium. We remove any Cryptosporidium that might be present effectively with filtration. We have had no reported instances of Cryptosporidium-related health problems in our service area.

Giardia (GEE-are-DEE-uh)

Giardia lamblia is another microscopic organism commonly found in open surface waters such as rivers, lakes, and streams. Federal and state regulations require us to treat Green River water for Giardia. We kill Giardia effectively with disinfecting chemicals like chlorine and ozone.

Gases

Radon

Radon is a naturally occurring radioactive gas. Breathing radon can cause lung cancer in humans. Ninety-eight percent of detected radon comes from indoor air generally released from soil beneath homes. Radon can release from tap water, but in much smaller quantities – only about 1% of radon exposure comes from drinking water. We test for radon in our groundwater sources. Federal guidelines require drinking water to contain no more than 4,000 picocuries per liter (a picocurie is a measure of radiation). We took 115 samples and tested them between 1992 and 2022. Findings show an average of 291 picocuries per liter. Our largest single test shows 530 picocuries per liter.

Minerals

Lead and Copper

Studies cited by the EPA show swallowing lead or copper can cause health problems, especially in pregnant women and young children. Lead and copper found in drinking water usually come from home plumbing. Some homes have higher levels than other homes. Water with a low pH can cause copper to dissolve directly from pipes into water and lead to dissolve

from solder used to join copper pipes. Lead-based solder was banned in 1986, but small amounts of lead can still be found in many brass-plumbing fixtures and can slowly dissolve into water after standing in pipes for a long time.

Federal and state drinking water rules establish “action levels” allowable for lead and copper in water samples collected from homes. At least 90% of samples may have no more than 15 parts per billion (ppb) of lead in one liter of water and no more than 1.3 parts per million (ppm) of copper per liter. Once every three years, we sample at least 50 homes for lead and copper.

We completed the most recent sampling in 2022. Results show our system met action levels for both lead and copper. Although we detected lead in a few homes, all were at levels below the 15 ppb action level. To continue ensuring we meet regulatory requirements, we will continue to monitor and adjust pH levels to reduce corrosion in pipes. We will sample again for lead and copper in 2025.

Pregnant women and young children can be more vulnerable to lead in drinking water than the general

population. If you have concerns about lead levels in the water at your home, have your water tested. Running water for two minutes after it sits stagnant in the pipe for a few hours can help clean the tap and reduce the amount of lead and copper in your water. A change in the temperature of water will also tell you when fresh water arrives.

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 [EPA.gov/SafeWater/Lead](https://www.epa.gov/safewater/lead).

Sand and Silt

Because we take our water from the Green River, which, prior to 2015, was an unfiltered water source, pipeline shutdowns and fire flows from hydrants can stir up sand and silt that sits in the bottom of water mains throughout the water supply system. Even though the water is treated, turbid events like these can cause water to appear visually unpleasant, but it remains safe.

One of our specialists prepares a sample to test water quality.



UNDERSTANDING PICOCURIES

The curie (Ci) is a standard measure for the intensity of radioactivity contained in a sample of radioactive material.

A picocurie (pCi) is a measure of the rate of radioactive decay of radon. **One pCi is one trillionth of a curie.**

1 pCi = 0.000000000001 Ci

TREATING *Your Water*

In addition to filtering your water, in 2022 we treated our Green River drinking water supply with chlorine, fluoride, caustic soda, and ozone. Treating water with the chemical disinfectants, chlorine and ozone is important to protect your health when water is drawn from a surface supply like the Green River. Placing disinfecting chemicals in water kills germs and microorganisms, making it safe to drink.

Fluoride

Tacoma voters approved fluoride treatment in 1988 and 1989 because of the dental health benefits it provides. The Tacoma City Council then enacted an ordinance directing fluoridation of our water supply. We currently fluoridate at a level of 0.7 ppm.

Caustic soda

We treat our Green River water supply with caustic soda to raise the pH (a measurement of acidity) of the water, making it less corrosive on plumbing and reducing the amount of lead and copper that can dissolve into your drinking water.

Ozone

Algae and other organic material in the Green River can create an objectionable taste and odor in your drinking water. We treat the Green River water supply with ozone, which effectively destroys any undesirable taste and smells that can occur and provides disinfection benefits to help ensure your water remains safe to drink. Ozone gas generates when we expose pure oxygen gas to electricity in an ozone generator. After creating ozone gas, we combine it with water and inject into pipeline reactors at the Green River Filtration Facility. Ozone only lasts for a few minutes in the water and is not present in the water supply when it leaves the treatment site.

After flocculation, water passes through plate settlers to filters.

Chlorine

Chlorine is our primary disinfection treatment. While it does an excellent job of killing the microorganisms that may be harmful to you, chlorine also reacts with the natural organic material commonly found in surface water sources like lakes, rivers, and streams. This reaction forms compounds called “disinfection byproducts.” We must meet drinking water standards for two groups of disinfection byproduct compounds.

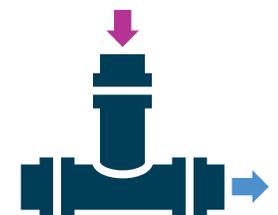
Byproduct levels found in water depend primarily on the amount of:



Natural organic material in the water.



Chlorine used to treat the water.



Time it takes water to reach you.

Byproduct levels vary throughout the year. Byproducts often increase during the warmest months when our water supply has its highest levels of natural organic material and chemical reactions happen faster. We work to minimize byproduct levels and have adjusted portions of our system operations.

Our sustainability analysts teach about water conservation at local events.



THE IMPORTANCE OF *Conserving Water*

When each of us uses only as much water as we need, we conserve water. Conservation makes it possible to plan and provide for residential and commercial development, only take what we need from reservoirs and wells, and leave more water in the river for fish. When we each do our part, we help ensure enough water remains available to meet the needs of wildlife and our growing community.

We are about halfway through our Water Conservation Plan, which you can read at [MyTPU.org/WaterSystemPlan](https://www.mytpu.org/WaterSystemPlan), and we are making good progress! Our water conservation goal is to reduce summer (May – October) water use by 6.65% per person from 2018 – 2028, and our community water use has been trending downward overall per person since 2018. We report our progress yearly to the Washington State Department of Health as required.

Every family and business that uses water outdoors—for gardens, yards, and landscaping—plays a part in helping us reach that goal. Want to learn more about saving water indoors and out? Would you like to apply for a new smart irrigation controller rebate? Need a free water savings kit? You can find all those and more at [MyTPU.org/WaterSmart](https://www.mytpu.org/WaterSmart).

An Important Message From The EPA

Your drinking water currently meets the EPA's revised drinking water standard for arsenic. However, it does contain low levels of naturally occurring arsenic not associated with known sources of industrial contamination. There is a small chance that some people who drink water containing low levels of arsenic for many years could develop circulatory disease, cancer, or other health problems. Most types of cancer and circulatory diseases are due to factors other than exposure to arsenic. The EPA standard balances the current understanding of arsenic's health effects against the costs of removing arsenic from drinking water.

DELIVERING *Your Water*

Most of your water comes from the Green River in South King County. The Green River Watershed is a 231-square-mile forested area that serves as a collection point for melting snow and seasonal rainfall in an uninhabited area of the Cascade Mountains between the Chinook and Snoqualmie Passes. We own land along the river, which is about 11% of the watershed.

Through agreements with other landowners, we limit watershed access and carefully control activities, such as recreation, road maintenance, and logging. We also own and operate seven wells on the North Fork of the Green River and take water from them during periods when the Green River water is turbid. We supplement the Green River supply with groundwater from more than 20 additional wells to meet peak summer demands. Most are in Tacoma city limits.

Keeping you healthy

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 Environmental Protection Agency's Safe Drinking Water Hotline **(800-426-4791)**.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as person 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 **(800-426-4791)**.



You can find our water bottle-filling stations at local parks and neighborhoods.

Tacoma Public Utility Board

The Tacoma Public Utility Board is the governing and policy-making body for Tacoma Water. To be involved in water quality decisions, you may participate in public meetings, held on the second and fourth Wednesdays of each month at 6:30 p.m. in the Tacoma Public Utilities Auditorium, 3628 S. 35th St. in Tacoma. Meetings are also held virtually via Zoom Meetings and televised live on TV Tacoma. For details, go to MyTPU.org.

Your Water Quality Report

This report contains information about your drinking water. Congress and the EPA require us to inform you annually about your drinking water and its impacts. Although most content in this report is required, we are pleased to share additional helpful information about your water and the work we do to get it to you. We produce and mail this report for about 45 cents per customer.

Contact information

Water Quality
253-502-8384 • WaterQuality@CityofTacoma.org

Conservation
253-502-8723 • MyTPU.org/WaterSmart

Cross-connection Control / Backflow Prevention
253-502-8215 • MyTPU.org/BackFlow

Rates
253-441-4942

National Radon Hotline
1-800-55-RADON • 1-800-557-2366

Washington State Department of Health
DOH.WA.Gov/ehp/dw

U.S. Environmental Protection Agency
Safe Drinking Water Hotline
1-800-426-4791 • EPA.Gov/SafeWater

MyTPU.org / WaterQuality

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