# 20 Water 19 Quality

### TACOMA PUBLIC UTILITIES



### **Our Focus**

#### **Planning for the future**

I hope you and your loved ones remain safe and healthy during this unprecedented time in world history. The global COVID-19 crisis causes people to question a great many things. Rest assured, your drinking water remains safe due to water treatment that rids it of viruses and other impurities. I'm proud of the work our team performs daily to accomplish this for you – especially during times of crisis. Later in this report, you'll learn how we keep your water safe in the Green River Watershed, all the way to your tap.

In 2019, I shared our goal to develop a Strategic Plan; a year-long effort culminating in a plan that outlines three objectives for work ahead. We also reaffirmed and simplified our mission, "providing clean, reliable water." Our vision to be an exceptional community resource empowers and motivates us to deliver you value through life-sustaining drinking water.

The first objective in our Strategic Plan is to understand what you value most from our services and share information about them. In this report, you'll read about our collaboration with other large utilities to best manage the Green River Watershed on your behalf. The Swan Creek project might also interest you because it's an example of how we care for your water system through environmental and financial stewardship.

Our second objective is to prepare our workforce for the future. Like many organizations across the nation, we face significant turnover with waves of retirements and an increasingly competitive job market. Providing the training employees need to maintain and improve their skills helps them care for your water system and enhance the value you receive through your water services. Growing future leaders helps us maintain a strong legacy of fulfilling our mission for you.

Lastly, we're improving our work systems, processes, and use of resources. Operating more efficiently creates and ensures maximum value in the services we provide you.

I sincerely thank you for supporting Tacoma Water. Your utility is excited to provide your next glass of clean, reliable water.

Snepher

Scott Dewhirst, Tacoma Water Superintendent



### **Planning and Strategies**

### Learning new ways to protect our watershed and share information

The Green River Watershed is a body of land located in the Cascade mountains that collects and delivers water to the upper Green River where we treat your water at our Green River Filtration Facility. We manage and protect the watershed to ensure we deliver the high-quality water you depend on. Part of that work is learning from industry experts and the scientific community each year.

In June 2019, watershed managers from around the Pacific Northwest gathered in Tacoma to discuss emerging municipal watershed and watershed drinking water supply operation and management issues during the annual Pacific Northwest Watershed Managers meeting. Industry experts exchanged ways to better convey, through public outreach, where water originates. Members of the scientific community also shared new ways of protecting watersheds in changing climates among a variety of other topics.

Experts like Joshua Halofsky, a natural resource scientist with the Washington Department of Natural Resources, shared ways to reduce the risk of large wildfires in western Washington forests and manage post-fire recovery. Dr. Robert McKane, an ecologist with the U.S. Environmental Protection Agency (EPA), presented a unique approach for assessing how actions taken in forests can increase or decrease water availability during dry summer months when you and the environment rely on them most.

Utilities exchanged their experiences about effective public education through emerging and common digital tools such as social media. To learn more about the Green River Watershed and where your water originates, visit **MyTPU.org/Water** and follow Tacoma Public Utilities on social media.



#### New bridge protects natural resources and improves reliability of water supply infrastructure

In 2019 we built the water Pipeline No. 4 Support Bridge over Swan Creek in Pierce County, near the intersection of 72nd Street East and Waller Road. In 2014, Pierce County identified the Pipeline No. 4 crossing for correction because the culverts beneath the bridge rendered the stream impassible for migrating fish. In an earthquake, the pipeline would also have been vulnerable to damage, and in a flood, susceptible to failure. Our engineers designed the new bridge with several goals:

- 1. Repair environmental damage from the pipeline crossing and restore connections in the ecosystem by improving fish migration.
- 2. Create a robust, appropriate sized, and seismically safe crossing for Pipeline No. 4.
- **3.** Provide the opportunity for maintenance crews to access suspended sections of the pipeline.
- **4.** Make the bridge part of the Pipeline Trail to create access for pedestrians and cyclists.

The project took over a year to permit and several months to construct. Removing the culverts opened a channel for fish passage upstream and downstream. The bridge is designed to withstand the most severe earthquakes and will require little maintenance over the next 50 years. Removal of the concrete panels lining the bridge deck provides utility crews access to suspended portions of the pipeline for maintenance. Perhaps the most significant benefit is safe access to the trail over Swan Creek for the public.



**Scott Pries** 

Watershed Inspector

What I do as a Watershed

Inspector is important for

water quality because we

protect the natural resources

that keep the water source

pure. We work with many

different partners and the

quality standards are met

across 231 square miles of

weekly monitoring and

to our filtration facility.

forest lands. We also perform

measuring tests throughout

the watershed to assure only

natural and pure water flows

public to ensure high water

#### Celine Mina Water Quality Engineer

What I do as a Water Quality Engineer is important because I process and analyze information to better understand our system and how it relates to treatment, water quality monitoring, and maintenance. I make sure treatment and monitoring system designs and operations meet or exceed drinking water standards and support other staff in optimizing water treatment operations. I am thankful for the opportunity to serve our community and work with staff who care very much about providing customers with clean, reliable water.



#### Kelly Cooper Water Quality Specialist

What I do as a Water Quality Specialist is important because connecting with Tacoma Water customers and ensuring that their concerns are being answered and addressed is essential. Knowing that the details being relayed to customers instills confidence is very rewarding for me.

The second part of my job is the quality and reliability of our product, which is just as significant. Regulatory compliance is vital to understanding and confirming standards that protect public health. Knowing that my department makes this their highest goal, makes my job enjoyable. I get to do the right thing. What's not to love?

#### **2019 WATER QUALITY REPORT**

## **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 59 volatile organic chemicals and 73 synthetic organic chemicals we test for — including many industrial chemicals, herbicides, and pesticides — but did not find.

#### 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	6 ppb	0	0 - 6 ppb	Yes	Natural erosion
Nitrate	10 ppm	4.95 ppm	10 ppm	0 - 4.95 ppm	Yes	Agricultural uses, septic
Trichloroethylene	5 ppb	0.99 ppb	0	0 - 0.99 ppb	Yes	Industrial contamination
Unregulated at the groundwater sources   Chloroform N/R 0.77 ppb N/R 0 - 0.77 ppb N/R					Industrial contamination	
Regulated at our treatment plant						
Fluoride	4 ppm	0.97 ppm	4 ppm	0.12 - 0.97 ppm	Yes	Treatment additive
Turbidity	1 NTU	0.047 NTU	N/A	0.020 - 0.047 NTU	Yes	Soil erosion

#### 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	12.8 ppb average	N/A	7.3 - 26 ppb	Yes	Disinfection interaction
Haloacetic acids	60 ppb average	6.6 ppb average	N/A	3.1 - 10 ppb	Yes	Disinfection interaction
Bromate	10 ppb	0	0	0	Yes	Disinfection interaction
Chlorine residual	4 ppm (MRDL)	N/A	4 ppm (MRDLG)	0.2 - 1.84 ppm	Yes	Treatment additive
Total Coliform	< 5% positive	0.0%	0	0 of 2228 locations	Yes	Sampling technique

#### Regulated at your tap

Lead and copper sampled in 2019 (sampled once every three years)	90% of taps sampled must be below the action level (AL)	90% of taps sampled were at or below this level	MCLG	# of sites above the action level	Regulation met?	Potential sources of contaminant
Lead	15 ppb (AL)	ND	0	0 of 51 sites	Yes	Household plumbing
Copper	1.3 ppm (AL)	ND	1.3 ppm	0 of 51 sites	Yes	Household plumbing

#### Definitions

#### aximum Contaminan

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 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.

#### ITU

Nephelometric Turbidity Unit is a standard to measure water clarity.

#### AL

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

Minimum Reporting Level, also known as Method Reporting Limit (MRL): The smallest amount of a substance that can be reliably measured and reported in a sample.

#### ND

Not Detected, result was below the laboratory minimum detection level.

#### 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

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.)

#### **Reporting Chemicals in Your Water,** *continued*

#### **Sampling for Unregulated Contaminant Monitoring Rule 4**

We sampled for the Unregulated Contaminant Monitoring Rule 4 (UCMR4) to detect contaminants for which the EPA has not established drinking water standards. Sampling helps the EPA monitor the occurrence of certain compounds to determine whether they warrant regulation. Note that while we did detect some contaminants, the levels detected were well below those known or believed to be a health concern.

#### **Unregulated contaminants**

Constituent	Average level detected	Range of level detected	Potential sources of contaminant	
Manganese	15.5 ppb	1.0 - 40 ppb	Natural erosion	
Bromochloroacetic Acid	0.57 ppb	0.42 - 0.71 ppb	Disinfection interaction	
Bromodichloroacetic Acid	0.52 ppb	ND - 0.6 ppb	Disinfection interaction	
Dichloroacetic acid	3.2 ppb	2.2 - 4.7 ppb	Disinfection interaction	
Trichloroacetic acid	2.9 ppb	1.7 - 4.8 ppb	Disinfection interaction	
Total Organic Carbon	0.81 ppm	0.73 - 0.88 ppm	Natural erosion	

For more information about the UCMR4, visit **EPA.Gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule**.

#### 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 Cryptosporidum that might be present effectively with filtration. We have need no reported instances of Cryptosporidium-related he the 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. Like other water systems that use open surface water sources, 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 111 samples and tested them between 1992 and 2019. 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



To continue ensuring

we will continue to monitor and adjust corrosion in pipes. We will sample again for copper in 2022. Pregnant women and your can be more vulnerable to lead in drinking the general population. If you have concer levels in the water at your home, have you Running water for two minutes after it sit pipe for a few hours can help clean the ta amount of lead and copper in your wate temperature of water will also tell you when arrives. Information on lead in drinking methods, and steps you can take to minimi available from the Safe Drinking Water Hot 1-800-426-4791 or at **EPA.gov/SafeW** 

#### Sand and Silt

Because we take our water from the G prior to 2015, was an unfiltered water s shutdowns and fire flows from hydrants and silt that sits in the bottom of water the water supply system. Even the shut treated, turbid events like these character appear visually unpleasant, but it

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#### Treating your water

In addition to filtering your water, in 2019 we treated our Green River 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.

#### 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
- The amount of chlorine used to treat the water
- The amount of time it takes water to reach the customer

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.



#### An important message from the **Environmental Protection Agency**

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 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 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.

#### How to know your drinking water is safe

People often ask, "How do I know my water is safe?" Our state of the art water treatment plant at the Green River Filtration Facility ensures your water is safe to drink when it leaves the plant. That isn't the end of our work to ensure your water remains safe on its way to and once it arrives at your home. We also monitor our system continuously.

We monitor the chemistry of your water for quality throughout the water distribution system to ensure that when you turn on the tap, you can trust the water that comes out. Our Washington State certified Water Quality Specialists perform field analysis on more than 45 samples taken from over 65 locations throughout the system each week to ensure proper pH, chlorine, temperature, and fluoride levels. An independent State of Washington certified laboratory also analyzes our samples for bacteria.

Another essential part of assuring water quality is through cross-connection control efforts. Controlling cross-connections helps ensure that hazards associated with your personal water use don't contaminate the public water distribution system. We work to control cross-connections through periodic hazard surveys and by requiring the installation and testing of backflow prevention assemblies. Common hazards that require backflow prevention include irrigation systems, fire systems, boilers, commercial dishwashers, swimming pools, and carbonated beverage systems.

Conserving water makes it possible to use our existing water supplies more efficiently, develop our regional water supply, and enhance fisheries. Conservation helps ensure enough water remains available to meet your needs, as well as the needs of our community, wildlife, and the environment. The Washington State Department of Health requires municipal water suppliers to establish a water conservation goal and report on its progress annually. Our water conservation goal is to reduce peak (May - October) per-person water use by 6.65% between Jan. 1, 2018, and Jan. 1, 2028. With this goal, we will focus on the efficient use of water outdoors at homes, businesses, and other institutions.

#### **Keeping you healthy**

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

#### **Being water smart**

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, 1-800-426-4791.



# **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.

# 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 produced and mailed this report for about 45 cents per customer.

# **Contact information**

Water Quality 253-502-8207 • Water Quality@CityofTacoma.org

Conservation 253-502-8723 • MyTPU.org/WaterSmart Cross Connection Control / Backflow Preventic 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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