

2016



WATER
QUALITY

REPORT



TACOMA WATER
TACOMA PUBLIC UTILITIES

Providing clean, reliable water now and in the future.

Managing water supply with a planning focus

Tacoma Water is continuing its focus on providing you high-quality water now and for generations to come. We are updating two significant plans that help shape how we manage the water supply with the goal to continue to provide clean, reliable water to all of our customers.

The first plan, called an Integrated Resource Plan, will provide a detailed look at the potential future demands for water in our area and how the existing water supply matches up. We will examine our water supply options against a range of possible future conditions to identify ways to respond to whatever the future may hold.

We are also updating a longstanding document called the Water System Plan, which is required by the Washington State Health Department every 10 years. This plan covers the full scope of our drinking water system, from operations to supply to protecting our water sources and ensuring we meet the public health regulations that govern our work.

As we get further into the planning process, we will update you on ways you'll be able to learn more and provide input. Tacoma Water takes seriously our role and responsibility to provide you clean, reliable water long into the future.



Teaming up to prepare for an emergency

Tacoma Water has taken significant steps to better prepare for risks to the water supply in the region. The utility has been working with Everett, Seattle and Cascade Water Alliance to identify the greatest risks to the regional water systems, and the best opportunities to improve our resiliency against those risks.

The joint effort was driven by recognition that the central Puget Sound area is susceptible to a variety of natural threats, such as earthquakes, severe storms, wildfires and drought—any of which could disrupt the delivery of clean and reliable water to the region's 2.3 million people.

Although the region's water utilities currently manage their own systems for a variety of risks, the group recognized the importance of working together to prepare for potentially major water supply disruptions.

It's no surprise that our region is susceptible to significant earthquakes, which could damage the physical parts of the water system and cause long-term water outages. The team identified mitigation measures that could include relying on help from other water providers, infrastructure improvements and/or emergency response planning.

Another type of risk the team considered was severe impact to water quality, which could be caused by any number of events. The team prioritized several events, including wildfire, volcanic eruption, supply chain interruptions

and accidental contamination, for further evaluation. The utilities also identified a preliminary list of mitigation measures to help prepare for and respond to such events.

For that initial resiliency study, Tacoma Water and its partners were recognized by The Ash Center for Democratic Governance and Innovation at the John F. Kennedy School of Government, Harvard University. The group received one of the 2017 Bright Ideas in Government Initiative awards for government policies, initiatives and best practices.

What's next

Tacoma Water and its partners will continue their work by further evaluating risks and mitigation measures and developing an action plan to improve regional water supply resiliency.

Getting rid of lead in the system

How do you solve a problem like a lead pipe? Planning and follow through—and a bit of detective work.

Last year, Tacoma Water identified that about 1,200 short pieces of lead pipe may still exist in the water system. Called lead goosenecks, the pipes connect the water main to a pipe that leads to the water meter at customers' homes.

Tacoma Water generally has very little lead pipe in its system, and it employs effective corrosion control of its water sources to reduce the amount of lead in the water to levels well below EPA standards. That said, the utility is committed to removing all lead goosenecks from the water system because it's the right thing to do. Our highest priority is providing clean and reliable water.

Find and replace

Some of Tacoma's water system is old—so old that installation of some service connections weren't even recorded at the time. That presents a challenge in finding the lead goosenecks, but the utility is on the case.

Tacoma Water employees are narrowing the possibilities, both by digging for additional records inside the office and digging for actual pipe in the street to verify the type of pipe material. If they find a lead gooseneck, they remove and replace it.

The utility expects to remove all of the lead goosenecks, an estimated 1,200 of them, by the end of 2020.

Caring for the system

The most effective way to keep lead out of the water is by preventing pipe corrosion through a practice called corrosion control, which ensures that water does not degrade the piping material it flows through. It's an essential element to the quality of our water, and that of most water systems. Tacoma Water takes great care with its corrosion control program and has used it for 20 years on water from the Green River, the utility's primary water source.

In addition to replacing the lead goosenecks, the utility continues to offer all Tacoma Water customers free water testing by providing materials and delivering the water samples to an independent lab. Go to [TacomaWater.com/TestKit](https://www.tacomawater.com/TestKit) to order your free kit.

On your end, you can and should flush your pipes. Tacoma Water recommends people flush their pipes—running the water for a couple of minutes—after the water is shut off at the meter. It's also a good idea to flush pipes after prolonged periods without use, like after a vacation.

Who owns what?

Tacoma Water owns the pipe from the water main to the water meter, so when the utility replaces a service, it's done up to the water meter. The pipe from the meter to the home is owned by the property owner.

What does that mean for you? Since the pipes on the homeowner's side are usually the same age as the services the utility replaces, they may not be in great condition. As a result, Tacoma Water recommends that the pipe be inspected by a plumbing professional if you're concerned about its condition.

How you can help protect the water supply

Tacoma Water goes to great lengths to deliver safe and reliable drinking water to your home. Did you know that you have a role in that, too, once the water passes the water meter?

Through cross connections, people use water for a variety of purposes that can contaminate the public water supply. A cross connection is any physical connection between the water supply and any non-potable liquid, solid or gas that could contaminate the water. Some examples include lawn irrigation systems, boilers, fire sprinkler systems, swimming pools, portable hose connections, dishwashers and carbonated beverage machines.

Through an active cross-connection control program, Tacoma Water isolates and eliminates hazards by requiring installation and testing of backflow prevention assemblies. A properly installed and maintained backflow prevention assembly protects the water supply and those who drink the water; testing ensures that it's working properly.

To learn how you can help protect the water supply, contact Tacoma Water at (253) 502-8731 or backflow@cityoftacoma.org

Reporting chemicals in your water

The water quality table here shows substances we identified at the water source, treatment plant and distribution system during our most recent sampling. The table does not include the other 65 volatile organic chemicals and 75 synthetic organic chemicals we tested for—including many industrial chemicals, herbicides and pesticides—but did not find.

For more information, contact us at (253) 502-8215 or waterquality@cityoftacoma.org.

Definitions

(MCL) Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available 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. MCLG's 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 which a water system must follow. Action Levels are reported at the 90th percentile for homes at greatest risk.

MRL – Minimum Reporting Level, also known as Method Reporting Limit: 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.

(MRDL) Maximum Residual Disinfectant Level: Highest level of a disinfectant allowed in drinking water.

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

NA – Not applicable (Or not analyzed).

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

pCi/L – picocuries per liter (measure of radioactivity).

Constituent	Highest Level Allowed (MCL)	Highest Level Detected	Ideal Goals (MCLG)	Range of Level Detected or # exceed AL	Regulation Met?	Potential Sources of Contaminant
REGULATED AT THE GROUNDWATER SOURCES						
Arsenic	10 ppb	6 ppb	0	0 - 6 ppb	Yes	Natural erosion
Barium	2 ppm	0.05 ppm	2 ppm	0 - 0.05 ppm	Yes	Natural erosion
Chromium	100 ppb	2 ppb	100 ppb	0 - 2 ppb	Yes	Natural erosion
Nitrate	10 ppm	4.2 ppm	10 ppm	0 - 4.2 ppm	Yes	Agricultural uses, septic
Trichloroethylene	5 ppb	0.99 ppb	0	0 - 0.99 ppb	Yes	Industrial contamination

Constituent	Highest Level Allowed (MCL)	Highest Level Detected	Ideal Goals (MCLG)	Range of Level Detected or # exceed AL	Regulation Met?	Potential Sources of Contaminant
UNREGULATED AT THE GROUNDWATER SOURCES						
Chloroform	<i>not regulated</i>	0.76 ppb	<i>not regulated</i>	0 - 0.76 ppb Average 0.22 ppb	<i>not regulated</i>	Industrial contamination

Constituent	Highest Level Allowed (MCL)	Highest Level Detected	Ideal Goals (MCLG)	Range of Level Detected or # exceed AL	Regulation Met?	Potential Sources of Contaminant
REGULATED AT THE TREATMENT PLANT						
Fluoride	4 ppm	1.77 ppm	4 ppm	0.02 - 1.77 ppm	Yes	Treatment additive
Turbidity	1 NTU	0.041 NTU	<i>not applicable</i>	0.024 - 0.041 NTU	Yes	Soil erosion

Disinfection byproducts	Highest running annual average allowed	Our running annual average	MCLG	Range of level Detected	Regulation Met?	Potential sources of contaminant
REGULATED IN THE DISTRIBUTION SYSTEM						
Total Trihalomethane	80 ppb average	10.3 ppb average	<i>not applicable</i>	0 - 22 ppb	Yes	Disinfection interaction
Haloacetic Acid	60 ppb average	6.3 ppb average	<i>not applicable</i>	0 - 9.5 ppb	Yes	Disinfection interaction
Bromate	10 ppb	0	0	0	Yes	Disinfection interaction
Chlorine Residual	4 ppm	NA	4 (MRDLG)	0.11 - 1.37 ppm	Yes	Treatment additive
Total Coliform	<5% positive	0.000 %	0	zero of 2222 sites	Yes	Sampling technique

Lead & Copper: sampled in 2016; required once every 3 years	90% of taps sampled must be below action level	90% of taps sampled were at or below this level	MCLG	# of sites above the AL	Regulation Met?	Potential sources of contaminant
REGULATED AT THE CONSUMERS' TAP						
Lead	15 ppb AL	2.1 ppb	0	zero of 76 sites	Yes	Household plumbing
Copper	1.3 ppm AL	0.049 ppm	1.3 ppm	zero of 76 sites	Yes	Household plumbing

FINDING 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/or 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 another 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. Samples were collected and analyzed using the best available method approved by the EPA. We did not detect cryptosporidium in the untreated Green River during this period. We have had no reported instances of cryptosporidium-related health problems in our service area.

Giardia (GEE-are-DEE-uh)

Giardia lamblia is a 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 2016. Findings show an average of 291 picocuries per liter. Our largest single test shows 530 picocuries per liter.

Minerals

Lead & 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. The most recent sampling was completed in 2016. Results show our system met action levels for both lead and copper. Although lead was detected in a few homes, all were at levels below the 15 ppb action level. And although 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 2019.

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 or 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 (800-426-4791) or at www.epa.gov/safewater/lead.

Sand & Silt

Because we take our water from the Green River, which 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 this water is treated, turbid events like these can cause water to appear visually unpleasant, but it remains safe.

TREATING YOUR WATER

In addition to filtering the water, in 2016 we treated the Green River supply with chlorine, fluoride, caustic soda and ozone.

Treating water with chemical disinfectants, chlorine and ozone is important to protecting 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 the 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, to make it less corrosive on plumbing and reduce the amount of lead and copper that can dissolve into drinking water.

Ozone

We treat the Green River water supply with ozone. Algae and other organic material in the river can create objectionable taste and odor in drinking water. Ozone effectively destroys objectionable taste and odors that can occur in the water and provides disinfection benefits to help ensure water remains safe to drink.

Ozone gas is generated when pure oxygen gas is exposed to electricity in an ozone generator. After ozone gas is created, it is combined with water and injected into pipeline reactors at the Green River Headworks. 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 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 the 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.



A 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. EPA's 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. Tacoma Water owns 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.

Water smart

Water conservation makes it possible to use existing supplies more efficiently and provides opportunities to develop our regional water supply and fish enhancement programs. This helps ensure enough water remains available regionally to meet your needs and the needs of our community as well as those of 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. Tacoma Water's conservation goal is to reduce per capita water use by 8.4% between Jan. 1, 2011 and Jan. 1, 2018. Our focus on efficient use of water in homes, schools, and businesses is helping us make progress toward this goal.

Please see TacomaWater.com/Smart to learn ways you can use water more efficiently.

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 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. Environmental Protection Agency/ Centers for Disease Control 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).

TACOMA PUBLIC UTILITY BOARD

The Tacoma Public Utility Board is the governing and policy-making body for Tacoma Water. To become 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 43 cents per customer.

CONTACT INFORMATION

Water Quality

(253) 502-8207
waterquality@cityoftacoma.org

Conservation

(253) 502-8723
conservation@cityoftacoma.org

Cross Connection Control/ Backflow Prevention

(253) 502-8731
backflow@cityoftacoma.org

Rates

(253) 502-8913
National Radon Hotline
(800) 55-RADON
(800) 557-2366

Washington State Department of Health

doh.wa.gov/ehp/dw

U.S. Environmental Protection Agency

Safe Drinking Water Hotline
(800) 426-4791
epa.gov/safewater

The hotline and EPA website offer information about drinking water contaminants and their potential health effects as well as guidelines from the U.S. Centers for Disease Control about appropriate ways to reduce the risk of infection by cryptosporidium and other microbial contaminants. Both sources also offer information about lead in drinking water, testing methods and steps you can take to minimize exposure.

TACOMA  **WATER**
TACOMA PUBLIC UTILITIES

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