



*Cedar River Watershed*

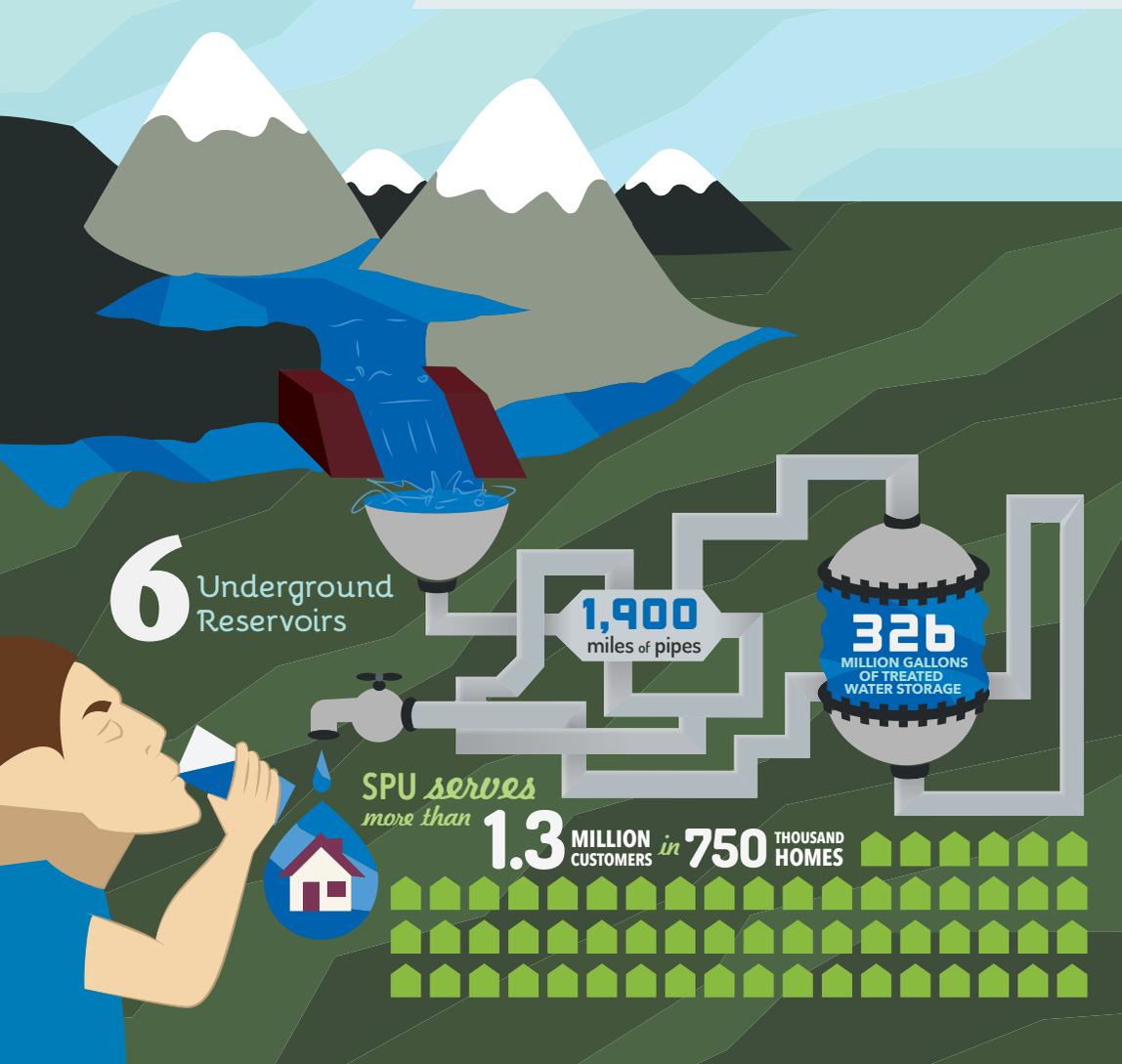
**SAFEGUARDING  
YOUR WATER**

Drinking Water Quality Report 2015

# BRINGING YOU SAFE, HIGH-QUALITY DRINKING WATER

Supplying our region with clean, safe water has been a City of Seattle priority for almost 125 years. Seattle Public Utilities has built safeguards into every step of our water system—from our pristine, protected watersheds to our state-of-the-art treatment plants to the pipes that deliver water to your home, we ensure that the water you use every day is some of the best water in the nation.

If you've been listening to the news about Flint, Michigan, and some other water systems, you may be wondering how your water measures up. In this report, we explain how we keep your Cascade-fresh water clean and safe, 24 hours a day, seven days a week.



**6** Underground Reservoirs

**1,900**  
miles of pipes

**326**  
MILLION GALLONS  
OF TREATED  
WATER STORAGE

*SPU serves  
more than*

**1.3** MILLION CUSTOMERS *in* **750** THOUSAND HOMES

**Here are some of the ways we safeguard your water:**

### **Protected Watersheds**

We operate two mountain watersheds supplied by rainfall and melting snowpack. The City of Seattle owns or controls more than 100,000 acres of watershed that are closed to general public access. We protect these watersheds from fire, toxic spills, invasive species, and human disturbance.

### **Testing and Treating**

Your tap water is more heavily regulated than bottled water. We test and treat it every day. SPU's expert testing and system engineering staff is committed to keeping your water clean. We test samples from the region between 10 and 100 times per day. Key points within the distribution system, including our Tolt and Cedar River drinking water treatment facilities, are monitored 24/7.

### **Corrosion Control**

In the early 1980s we began managing the chemical balance of your water to lessen pipe corrosion and have been optimizing our corrosion control program ever since. Corrosion control reduces the potential for contaminants to leach into the water, which is possible in homes with lead solder.

### **Managing Supply**

Our water sources include three deep wells to meet peak summer demand or for emergencies.

### **Infrastructure**

We build infrastructure that stands up to extreme weather. The new Chester Morse Lake pumping plant helps us meet supply needs during droughts and the Tolt Water Treatment Facility filters sediment after extensive flooding.

### **Predicting and Preventing Leaks**

Our water system's leakage rate is 25–50% lower than the national average, thanks to our proven method for predicting pipe and valve failure in our system's nearly 1,900 miles of pipe and 60,000 valves.

### **Celebrating Conservation**

You play a key part in the water supply, conserving when necessary and installing low-flow toilets, efficient washers, and smart irrigation systems. Thanks to you, Seattle is currently using the same amount of water, on average, as it did in the late 1950s—despite having more than double the population.

**“Some cities, such as Seattle and New York, are famous for the regulations and programs they put in place to protect their watersheds.”**

National Public Radio, Thursday, April 14, 2016

# CONSERVING EVERY STEP OF THE WAY

Your ongoing water conservation efforts benefit our important fish species. That's because the reservoirs that supply your drinking water also provide vital water to the Cedar and Tolt rivers. Healthy habitat for salmon, trout, and many other species depends on the quantity and quality of water in the rivers and streams that support them. Using water wisely helps ensure we'll have enough water to support freshwater habitat for generations to come. It's especially important to use water wisely in the summer and fall months, when stream flows are lowest.

Conservation starts long before the water reaches your tap. SPU produced 45.8 billion gallons of treated drinking water in 2015, 2.3 billion gallons of which were lost to leakage. While that seems like a lot of water, it amounts to only 4.9% of the total, which is considered relatively low.

To encourage more efficient water use, the Saving Water Partnership (SWP), composed of SPU and its 18 water utility partners, set a six-year conservation goal: reduce per capita use from current levels so that the SWP's total average annual retail water use is less than 105 mgd (million gallons per day) from 2013 through 2018, despite forecasted population growth. In 2015, even with a record hot summer, our customers met this goal, using 96.9 mgd.

Is conservation important to you? Take our water conservation survey at [www.savingwater.org](http://www.savingwater.org) and enter to win a free home energy and water conservation kit!

"At SPU, we're focused on researching how climate change will affect our water supply and preparing accordingly. Our goal is to ensure a clean and safe water supply now and for the future."

—Paul Fleming, Lead, Climate Resiliency Group



*Saving water benefits people, salmon, and local wildlife.*



By conserving water, you can play a vital role in keeping our environment healthy. Visit [www.savingwater.org](http://www.savingwater.org) for information on rebates, conservation tips, videos on fixing leaks and efficient landscaping practices, and other conservation resources.

## Planning for Tomorrow, Today

Preparation is essential for maintaining water quality and quantity. How are we getting ready for tomorrow?

**Continuing to make water quality our first priority.** We focus on the key elements of water quality: water source protection, treatment, filtration, testing, and system maintenance.

**Planning for future impacts.** We make careful, cost-effective investments to ensure a clean and safe water supply for decades to come. We use detailed climate and natural disaster scenarios to see where our system could be disrupted by earthquakes, drought, and climate change.

**Sharing expertise and best practices.** We formed the Water Utility Climate Alliance (WUCA), a national network of similar water systems, including Portland, San Francisco, Denver, Tampa Bay, and New York City. We're preparing for the future by sharing knowledge, forging strong connections with academic research communities and contributing to national climate policy discussions.

# WHERE YOUR WATER COMES FROM

Two surface water sources provide the majority of water for our system. In 2015, about 61% was provided by the Cedar River. Approximately 37% came from the South Fork Tolt River. In addition to these two protected Cascade Mountain watersheds, the system has access to wells located in Burien that are only used to meet peak summer demand. In 2015, the wells were used from July to November and provided approximately 1.6% of annual flow.

Washington's Source Water Assessment Program is conducted by the Department of Health (DOH) Office of Drinking Water. According to DOH, all surface waters in Washington are given a susceptibility rating of "high," regardless of whether contaminants have been detected or whether there are any sources of contaminants in the watershed. The Seattle wells have been given a susceptibility rating of "low" because of the type of aquifer, depth of well, and lack of contaminant detection. Information on the source water assessments is available from the DOH website at [www.fortress.wa.gov/doh/eh/dw/swap/maps/](http://www.fortress.wa.gov/doh/eh/dw/swap/maps/).

The sources of 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. Because Seattle's surface water sources are so well protected, there is little opportunity for contaminants to enter the water. Even so, we constantly test to ensure the water you drink is safe. Find more information on the following pages.

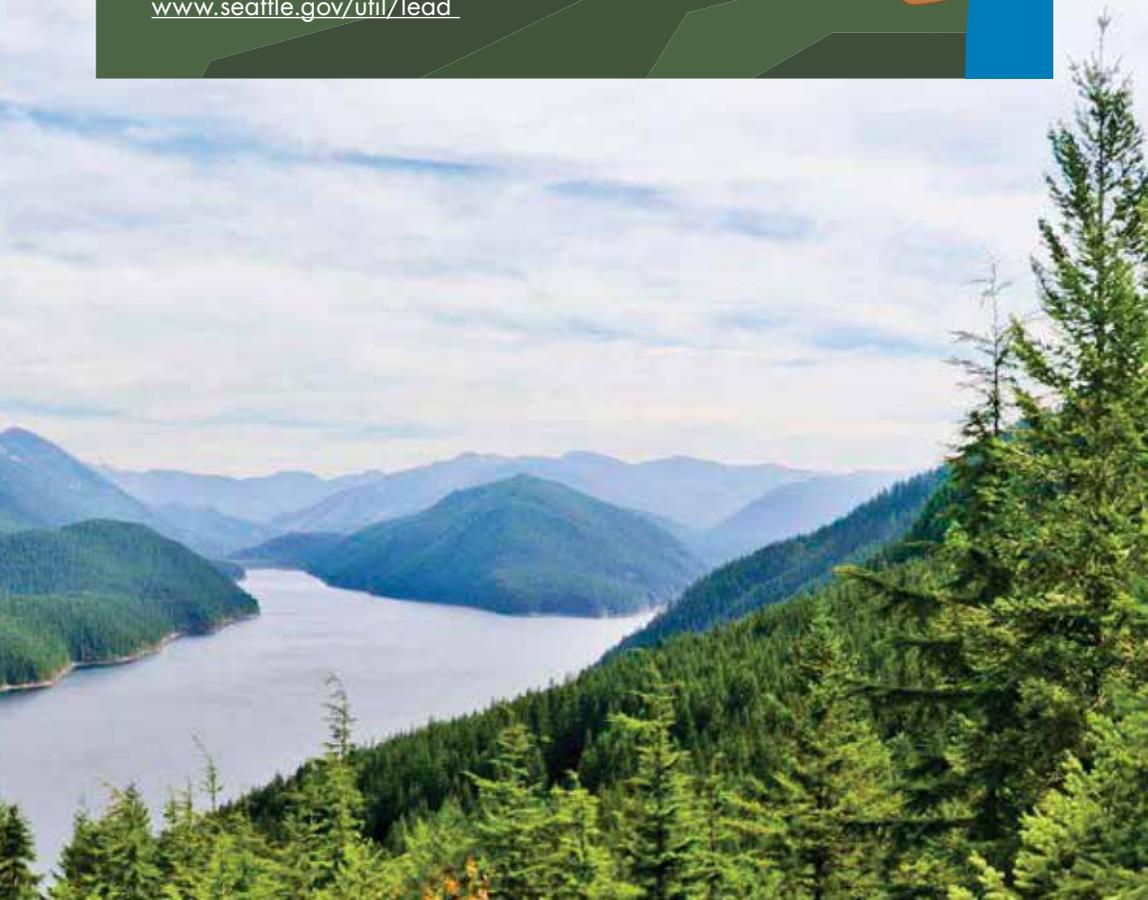


# Simple Ways to Protect Your Drinking Water

Thanks to high-quality water sources and SPU's ongoing corrosion optimization program, the potential for contaminants to leach into your water is very low. Nevertheless we understand that you might still be concerned about lead. Here are a few simple things you can do to protect your water if you have plumbing with lead components.

1. If you haven't used your water for more than six hours, run the tap for two minutes before drinking or cooking with it. (Don't forget to save! The water you run to flush your pipes can be used for watering plants or doing the dishes.)
2. Always use the COLD water tap for drinking and cooking—lead dissolves more quickly in hot water. Never make baby formula or other drinks or food for children from the HOT water tap.
3. Be sure to select low-lead or no-lead plumbing fixtures. SPU has worked to reduce lead and copper levels in home plumbing materials. Since January 2014 manufacturers can have only 0.25% lead in a fixture, reduced from 8% previously.

Find more information on things you can do here:  
[www.seattle.gov/util/lead](http://www.seattle.gov/util/lead)



# CONTAMINANTS WE LOOK FOR

In order to ensure that tap water is safe to drink, the Environmental Protection Agency and/or the Washington State Board of Health prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration and/or the Washington State Department of Agriculture regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

SPU vigorously safeguards its publicly owned watersheds through a comprehensive protection program. This program prohibits agricultural, industrial, and recreational activities in the watersheds, and no one is allowed to live there. This means there is



little opportunity for contaminants to enter the water. Even so, there is always some potential for natural sources of contamination. In Seattle's surface water supplies, the potential sources of contamination include:

- Microbial contaminants, such as viruses, bacteria, and protozoa from wildlife;
- Inorganic contaminants, such as salts and metals, which are naturally occurring; and
- Organic contaminants, which result from chlorine combining with the naturally occurring organic matter.

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. 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).

At SPU's Water Quality Laboratory, we help protect your health by testing the water system daily for things like bacteria, chemicals, and taste and odor. That's over 25,000 samples and 150,000 results each year!"

– Lynn Kirby, Water Quality Engineer



# OUR 2015 RESULTS

The results of monitoring in 2015 are shown in the table below. These results are for parameters regulated by federal and state agencies. For other water quality information, please visit [www.seattle.gov/util/waterquality](http://www.seattle.gov/util/waterquality) or call 206-615-0827. We can also send you a list of the more than 200 compounds for which we tested but did not find in our surface water supplies, including unregulated contaminants.

Water quality monitoring data can be difficult to interpret. To make all the information fit, we used many acronyms that are defined below the table.

DETECTED COMPOUNDS	UNITS	EPA'S ALLOWABLE LIMITS		LEVELS IN CEDAR WATER	
		MCLG	MCL	AVERAGE	RANGE
RAW WATER <i>(untreated water from the source)</i>					
Total Organic Carbon	ppm	NA	TT	0.7	0.5–1.5
Cryptosporidium <sup>A</sup>	#/100L	NA	NA	1	ND–8
FINISHED WATER <i>(treated water that is ready to drink)</i>					
Turbidity	NTU	NA	TT	0.4	0.1–1.2
Arsenic	ppb	0	10	0.5	0.4–0.7
Barium	ppb	2000	2000	1.6	(1 sample)
Bromate	ppb	0	10	ND	ND
Chromium	ppb	100	100	0.27	0.25–0.33
Fluoride	ppm	4	4	0.8	0.7–0.9
Nitrate	ppm	10	10	0.01	(1 sample)
Selenium	ppb	50	50	ND	ND
Uranium	ppb	0	30	ND	ND
Coliform, Total	%	0	5%		Highest
Total Trihalomethanes	ppb	NA	80	38	26–43
Haloacetic Acids(5)	ppb	NA	60	41	18–41
Chlorine	ppm	MRDLG = 4	MRDL = 4		

<sup>A</sup> *Cryptosporidium* was not detected in any samples from the Tolt supply (10 samples). It was detected in 2 of 9 samples from the Cedar supply.

<sup>B</sup> Values presented represent 100% well water. All well water was blended with Cedar supply water before delivery to customers.

<sup>C</sup> On December 29, 2015, turbidity for the Tolt supply exceeded 1.0 NTU for about 17 minutes. This water was not delivered to customers.

## Definitions

**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 that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

**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.

**MRDLG:** *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.

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

**NTU:** *Nephelometric Turbidity Unit*—Turbidity is a measure of how clear the water looks. The turbidity MCL that applied to the Cedar supply in 2015 was 5 NTU, and for the Tolt it was 0.3 NTU for at least 95% of the samples in a month.

When reading the chart, two important measures to look at are the MCLG (no known or expected risk) and MCL (highest level allowed in drinking water) and compare them to the averages and the sample ranges from our three water sources for each contaminant.

In Seattle, if you live south of Green Lake, your water probably comes from the Cedar River. Areas north of Green Lake usually receive Tolt River water. Each source can provide water to other areas in Seattle if needed.

LEVELS IN TOLT WATER		LEVELS IN WELL WATER <sup>B</sup>		TYPICAL SOURCES	HOW DID WE DO?
AVERAGE	RANGE	AVERAGE	RANGE		
1.5	1.2-1.8	NA	NA	Naturally present in the environment	✓
ND	ND	NA	NA	Naturally present in the environment	✓
0.07	0.04-1.4 <sup>C</sup>	0.2	0.1-0.3	Soil runoff	✓
0.6	0.4-0.7	3.9	1.7-7.9	Erosion of natural deposits	✓
1.3	(1 sample)	3.0	2.2-4.6	Erosion of natural deposits	✓
0.4	ND-2	NA	NA	Byproduct of drinking water disinfection	✓
0.2	ND-0.24	0.7	0.3-1.3	Erosion of natural deposits	✓
0.8	0.7-0.9	0.7	0.5-1.0	Water additive, which promotes strong teeth	✓
0.10	(1 sample)	ND	ND	Erosion of natural deposits	✓
ND	ND	0.7	0.1-1.1	Erosion of natural deposits	✓
ND	ND	0.4	ND-0.7	Erosion of natural deposits	✓
Month = 0.4% Annual Average = 0.035%				Naturally present in the environment	✓
62	26-91	NA	NA	Byproducts of drinking water chlorination	✓ *
48	26-68	NA	NA		✓ *
Average = 0.88 Range = 0-1.7				Water additive used to control microbes	✓

*Cedar supply. This monitoring is not required for the wells. The wells operated from July to November 2015. Customers in the Seattle Public Utilities direct service area. Your water was and continues to be safe to drink.*

99.96% of the samples from the Tolt in December 2015 were below 0.3 NTU. 100% of the samples for the remainder of the year were below 0.3 NTU.

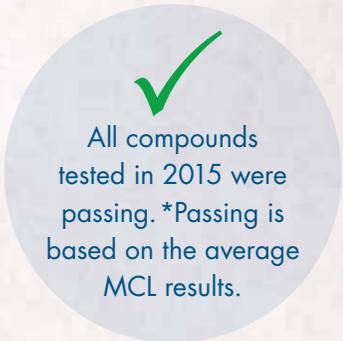
**NA:** Not applicable

**ND:** Not detected

**ppm:** 1 part per million = 1 mg/L = 1 milligram per liter

**ppb:** 1 part per billion = 1 ug/L = 1 microgram per liter

**1 ppm = 1,000 ppb**



All compounds tested in 2015 were passing. \*Passing is based on the average MCL results.

# WORKING TO KEEP YOU SAFE FROM LEAD

We take any potential lead exposure very seriously.

Your water starts its journey as rainfall or snowpack with no detectable lead. Eventually the water reaches your home or business through a pipe called a service line. Seattle does not have any lead service lines. Some homes—less than two percent—have very short lead connections between their service line and the water main. Even in these cases, lead levels in Seattle are well within regulatory limits.

It is possible to find detectable levels of lead in some home tap samples. This usually comes from corrosion of lead alloys (such as brass solder) in a home's plumbing. However, SPU successfully treats our water to reduce corrosion. Every three years, SPU tests 50 homes that have copper plumbing with lead-based solder, and results show levels of lead significantly below the federally designated Action Level (see table at right).

SPU works hard to make the water in our system less corrosive to lead plumbing:

- We optimized our corrosion control program in 2003.
- We continuously monitor water chemistry at our treatment facilities and collect routine samples throughout the distribution system to ensure it maintains water pH at a less-corrosive level.
- We monitor water quality indicators at 10 distribution system locations and report results monthly to the Washington State Department of Health.



“SPU has great protected water sources and continuous treatment which includes corrosion control. Lead does not typically come from the water source. However, it can come from some fixtures and plumbing materials. Corrosion control helps protect water from these potential sources of lead. If you have questions, please visit SPU’s website.”



– **Wylie Harper**, Drinking Water Quality Director

To learn more about water quality and lead, visit [www.seattle.gov/util/lead](http://www.seattle.gov/util/lead)

LEAD AND COPPER MONITORING RESULTS					
PARAMETER AND UNITS	MCLG	ACTION LEVEL <sup>1</sup>	2013 RESULTS <sup>2,3</sup>	HOMES EXCEEDING ACTION LEVEL	SOURCE
Lead, ppb	0	15	3	0 of 50	Corrosion of household plumbing systems
Copper, ppm	1.3	1.3	0.10	0 of 50	

<sup>1</sup> The concentration of a contaminant which, if exceeded, triggers treatment or other requirements, which a water system must follow.

<sup>2</sup> 90th Percentile: i.e., 90% of the samples were less than the values shown.

<sup>3</sup> We test every three years due to continued good results.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. SPU is responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by running your tap for two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (800-426-4791) or at [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

Lastly, remember that drinking water is typically only a minor contributor to overall exposure to lead. Other sources include paint, soil, and food.



Results for Seattle’s Unregulated Contaminants Monitoring Rule 3 (UCMR3) sampling are shown in the table below. We’ve included this section to keep you fully informed about new contaminants that may be regulated in the future. This monitoring is required by EPA regulation for contaminants that do not have defined health-based standards. The contaminants were selected through a data-driven process that considered adverse health effects (potency and severity) and occurrence (prevalence and magnitude) but additional health information is needed to know whether these contaminants pose a health risk. The UCMR3 program is used by EPA to determine the occurrence of contaminants in drinking water systems. For more information about the program, visit EPA’s website at [www.epa.gov/dwucmr/third-unregulated-contaminant-monitoring-rule](http://www.epa.gov/dwucmr/third-unregulated-contaminant-monitoring-rule).

SEATTLE’S 2015 UCMR3 MONITORING RESULTS		
Contaminant	Range	Average
Strontium, ppb	12–36	29
Vanadium, ppb	ND–0.76	0.5
Total Chromium, ppb	ND–0.33	0.24
Hexavalent Chromium, ppb	0.063–0.17	0.12
Chlorate, ppb	ND–61	17

*ND = not detected; ppb: 1 part per billion = 1 ug/L = 1 microgram per liter*

There were also 23 contaminants that were monitored for but not detected for UCMR3, shown in the following table.

CONTAMINANTS NOT DETECTED	
1,2,3-Trichloropropane	17-β-Estradiol
Chlorodifluoromethane (HCFC-22)	17-α-Ethynylestradiol
Bromomethane (methyl bromide)	Estriol
Chloromethane (methyl chloride)	Equilin
Bromochloromethane (Halon 1011)	Estrone
1,3-Butadiene	Testosterone
Perfluorooctanoic Acid (PFOA)	4-Androstene-3,17-Dione
Perfluorononanoic Acid (PFNA)	Molybdenum
Perfluorobutanesulfonic Acid (PFBS)	Cobalt
Perfluorohexanesulfonic Acid (PFHxS)	1,4-Dioxane
Perfluoroheptanoic Acid (PFHpA)	1,1-Dichloroethane
Perfluorooctanesulfonic Acid (PFOS)	

*Monitoring conducted in January, April, July, and October 2015.*

For more information about your water, contact Seattle Public Utilities at 206-684-3000 or visit our website at [www.seattle.gov/util/waterqualityreport](http://www.seattle.gov/util/waterqualityreport). For conservation information, visit [www.savingwater.org](http://www.savingwater.org).



*Cedar Falls*

“For decades, Seattle has had in place a comprehensive strategy designed to maintain the safety and quality of our water supply. Our water comes from protected watersheds in the Cascade Mountains. It is routinely tested and regularly surpasses all state and federal quality standards. Seattle Public Utilities works hard every day to ensure that the water you and I drink is among the best in the nation, in purity, safety, and taste.”



- **Edward B. Murray**, Mayor of Seattle



**Seattle Public Utilities**  
 700 Fifth Avenue, Suite 4900  
 P.O. Box 34018  
 Seattle, WA 98124-4018

Seattle water is clean, safe, and costs less than a penny a gallon.  
 For translation services please call 206-684-3000.

El agua de Seattle es limpia, segura y cuesta menos de un centavo el galón.  
 Para servicios de interpretación por favor llame al 206-684-3000.

Ang tubig sa Seattle ay malinis, ligtas, at mabahalaga ng wala pang isang sentimo ang bawat galon.  
 Para sa serbisyo ng tagapagpaliwanag, tumawag sa 206-684-3000.

Nguồn nước của Seattle sạch, an toàn và có giá chưa tới một xu một gallon.  
 Về dịch vụ phiên dịch xin gọi 206-684-3000.

저에 물의 수돗물은 깨끗하고 안전하며 또한 저렴합니다.  
 용역 서비스를 원하시면 206-684-3000으로 전화하세요.

西雅圖的水乾淨、安全，每加侖成本不到一分錢。  
 如需要口譯服務，請撥電話號碼206-684-3000

Biyaha Seattle waa madiif, waa amaan, qiimahana waa ka jaban yahay hal senti halkii galan.  
 Wixii turjubaan aha ah ku saabsan, Fadlan la soo xanir taleefoonka: 206-684-3000.

PRESORTED  
 STANDARD  
 US POSTAGE PAID  
 SEATTLE, WA  
 PERMIT NO. 6000

You're receiving this report as part of a federal requirement for municipal water systems. This report costs less than 31 cents to produce and mail to you. Printed on 30% post-consumer, 100% recycled paper using soy-based inks.