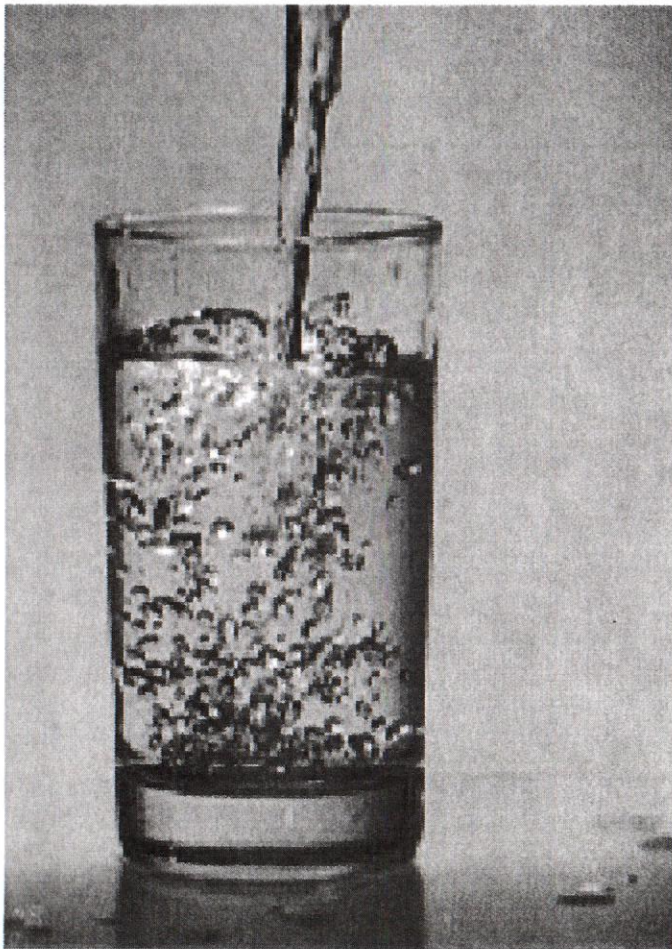

PALATINE HILL WATER DISTRICT
2016 DRINKING WATER QUALITY REPORT



FROM THE BOARD OF COMMISSIONERS

The Palatine Hill Water District Board of Commissioners is pleased to share the 2016 Drinking Water Quality Report with you. While this report is mandated by the federal government, the District prides itself in providing this comprehensive and accessible report.

To request additional copies of this report, please call **503-639-5096**.

Palatine Hill Water District works diligently to protect this essential resource, and to preserve and enhance the system that delivers water to your home or business. We urge you to take a minute to look through this report; learn about your water system and some of what goes into delivering water to your tap.

If you have questions or comments about this, please call Palatine Hill Water District at **503-639-5096**, or visit www.palatinehillwaterdistrict.com to learn more.

We welcome your interest in Palatine Hill's water system.

Ron Vandehey

Chairman

Palatine Hill Water District is pleased to report that the water we provide meets or exceeds Federal and State water quality standards. This annual Water Quality Report provides information about the source of your drinking water, the results of water quality monitoring for over 200 contaminants that were performed in 2015, and additional health information related to contaminants that may be reasonably expected to be found in drinking water. We want you to understand the efforts that are continually made to provide you a safe and dependable supply of drinking water. **If a known health-related contaminant is not listed in this report, it was not detected in the drinking water.**

Palatine Hill Water District purchases water from the City of Portland, who provides treated surface water from the Bull Run Watershed and groundwater from the Columbia South Shore Well Field located east of the Portland International Airport. The well field supplemented the Bull Run supply from 06/11 thru 06/30 and 07/11 thru 11/04 2015 with approximately 5.8 billion gallons of groundwater during the repair of a supply conduit and as additional supply during the long dry summer. This represents 15% of the total water provided by the City of Portland in 2015. The water is conveyed through Portland's water distribution system to Palatine Hill's main pump station on Highway 43 at Carey Lane and/or from the Upper Reservoir connection on Palatine Hill Rd. The Portland Water Bureau is also operating under a variance for the treatment requirements for *Cryptosporidium*, see **The Bull Run Treatment Variance** for more information.

DRINKING WATER TREATMENT

The first step in the treatment process for Portland's drinking water is disinfection using chlorine. Next, ammonia is added to form chloramines which ensure that disinfection remains adequate throughout the distribution system.

Finally, sodium hydroxide is added to increase the pH of the water to reduce corrosion of plumbing systems. This treatment helps control lead and copper levels at customers' taps, should these metals be present in commercial and household plumbing systems.

SPECIAL NOTICE FOR IMMUNO-COMPROMISED PERSONS

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 (EPA) and Centers for Disease Control and Prevention guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at **800-426-4791**.

WHAT THE EPA SAYS ABOUT WATER CONTAMINANTS

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 (EPA) Safe Drinking Water Hotline at 800-426-4791 or at www.epa.gov/safewater.

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.

CONTAMINANTS IN DRINKING WATER MAY INCLUDE:

- **Microbial contaminants**, such as viruses and bacteria, which may come from wildlife or septic systems.
- **Inorganic contaminants**, such as salts and metals, which can occur naturally or result from urban storm water runoff, industrial or domestic wastewater discharges or farming.
- **Pesticides and herbicides**, which may come from a variety of sources such as farming, urban storm water runoff and home or business use.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are byproducts of industrial processes, and can also come from gas stations, urban storm water runoff and septic systems.
- **Radioactive contaminants**, which can occur naturally.

In order to ensure that tap water is safe to drink, the EPA has regulations that limit the amount of certain contaminants in water provided by public water systems and require monitoring for these contaminants. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

FREQUENTLY ASKED QUESTIONS ABOUT WATER QUALITY

Is my water treated by filtration?

No. Neither the Bull Run nor groundwater source is filtered. The Bull Run source meets the filtration avoidance criteria of the Surface Water Treatment Rule. The State of Oregon approved Portland's compliance with these criteria in 1992. Portland continues to meet these criteria on an ongoing basis.

Is Fluoride added to the drinking water?

No. The Portland Water Bureau nor Palatine Hill Water District does not add fluoride to the water. Fluoride is a naturally occurring trace element in surface and groundwater. The U.S. Public Health Service and the Centers for Disease Control and Prevention consider the fluoride levels in Portland's water sources to be lower than optimal for the prevention of tooth decay. You may want to consult with your dentist about fluoride treatment to help prevent tooth decay, especially for young children.

Is the drinking water soft or hard?

Portland's water is very soft. The hardness of Bull Run water is typically 3-8 parts per million (ppm), or approximately 1/4 to 1/2 a grain of hardness per gallon. For short periods of time Portland may supplement the Bull Run supply with groundwater. Portland's groundwater hardness is approximately 80 ppm (about 5 grains per gallon), which is considered moderately hard.

What is the pH of the drinking water?

The pH of Portland's drinking water typically ranges between 7.5 and 8.5.

Are sodium levels in the drinking water affecting my health?

There is currently no drinking water standard for sodium. Sodium is an essential nutrient. Sodium in Portland's water typically ranges between 2 and 9 ppm, a level unlikely to contribute to adverse health effects.

Is there radon in the drinking water?

Radon is a naturally occurring radioactive gas that you cannot see, taste or smell. Radon has never been detected in the Bull Run surface water supply. Radon is detected at varying levels in Portland's groundwater wells. In 2015, groundwater was used to supplement seasonal supply during the summer. Based on the historical levels of radon in groundwater combined with the limited amount of groundwater used, radon is unlikely to contribute to adverse health effects. For more information about radon call the EPA's Radon Hotline 800-SOS-RADON or www.epa.gov/radon/rnwater.html.

How can I get my water tested?

Contact the LeadLine at www.leadline.org or 503-988-4000 for information about free lead-in-water testing. For more extensive testing, private laboratories can test your tap water for a fee. Not all labs are accredited to test for all contaminants. For information about accredited labs, call the Oregon Health Authority, Oregon Environmental Laboratory Accreditation Program at 503-693-4122.

Public involvement opportunities

The Palatine Hill Water District provides a variety of public information, public involvement and community outreach opportunities. If you have questions about Palatine Hill Water District programs, public meetings, or capital projects please contact Palatine Hill Water District at 503-639-5096 or visit www.palatinehillwaterdistrict.com to learn more.

Definitions

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

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 treatment 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.

Maximum Residual Disinfectant Level (MRDL) - 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.

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.

Nephelometric Turbidity Units (NTU) - The unit of measurement of turbidity or cloudiness in water as measured by the amount of light passing through a sample.

Part Per Million (ppm) - One part per million corresponds to one penny in \$10,000 or approximately one minute in two years. One part per million is equal to 1,000 parts per billion.

Part Per Billion (ppb) - One part per billion corresponds to one penny in \$10,000,000 or approximately one minute in 2,000 years.

Picocuries Per Liter - Picocurie is a measurement of radioactivity. One picocurie is one trillion times smaller than one curie.

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

Notes on Regulated Contaminants

Turbidity - Bull Run is an unfiltered surface water supply. The rules for public water systems have strict standards for unfiltered surface water supplies. Turbidity levels in unfiltered water must not exceed 5 NTU (nephelometric turbidity units) more than two times in a twelve-month period. The typical cause of turbidity is sediment suspended in the water. The sediment can interfere with disinfection and provide an environment for microbial growth. Large storm events can result in increased turbidity, causing the Portland Water Bureau to shut down the Bull Run system and serve water from the Columbia South Shore Well Field.

Fecal (*E. coli*) Coliform Bacteria - The presence of fecal coliform bacteria in source water indicates that water may be contaminated with animal wastes. The Portland Water Bureau uses chlorine to kill these bacteria.

Nitrate – Nitrogen - Nitrate, measured as nitrogen, can support microbial growth (bacteria and algae). Nitrate levels exceeding the standards can contribute to health problems. At the levels found in Portland's drinking water, Nitrate is unlikely to contribute to adverse health effects.

Arsenic, Barium, Chromium (total), Copper, Fluoride and Lead - These metals are elements found in the earth's crust. They can dissolve into water that is in contact with natural deposits. At the levels found in Portland's drinking water, they are unlikely to contribute to adverse health effects. There is no maximum contaminant level (MCL) for copper and lead at the entry point to the distribution system. Copper and lead are regulated at customers' taps. For more information see *Reducing Exposure to Lead*.

Total Coliform Bacteria - Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other potentially-harmful bacteria may be present. The Portland Water Bureau uses chlorine to kill these bacteria.

Disinfection Byproducts - During disinfection, certain byproducts form as a result of chemical reactions between chlorine and naturally occurring organic matter in the water. These byproducts can have negative health effects. Trihalomethanes and haloacetic acids are regulated disinfection byproducts that have been detected in Portland's water. The disinfection process is carefully controlled to keep byproduct levels low.

Total Chlorine Residual - Total chlorine residual is a measure of free chlorine and combined chlorine and ammonia in our distribution system. Chlorine residual is necessary to maintain disinfection throughout the distribution system. Adding ammonia to chlorine results in a more stable disinfectant and helps to minimize the formation of disinfection byproducts.

Radon - Radon is a naturally occurring radioactive gas that cannot be seen, tasted or smelled. Radon was not detected in the Bull Run water supply. It has been detected at varying levels in Portland's groundwater supply. For information about radon, call the EPA's Radon Hotline (800-SOS-RADON) or www.epa.gov/radon/rnwater.html.

Sodium - There is currently no drinking water standard for sodium. Sodium is an essential nutrient. At the levels found in drinking water, it is unlikely to contribute to adverse health effects.

Reducing Exposure to Lead - Lead is commonly found in a variety of places throughout our environment. While lead is rarely found in our source waters and there are no known lead service lines in the water system, lead can be found in some homes. In Portland, lead enters drinking water from the corrosion (wearing away) of household plumbing materials containing lead. These materials include lead-based solder used to join copper pipe - commonly used in homes built or plumbed between 1970 and 1985 - and brass components and faucets. Lead in household plumbing can dissolve into drinking water when water sits in those pipes for several hours, such as overnight or after returning from work or school.

If present, lead at elevated levels 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. The Portland Water Bureau is responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components in homes or buildings. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you can request a free lead-in-water test from the LeadLine. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the LeadLine, 503-988-4000, www.leadline.org or the Safe Drinking Water Hotline (800) 426-4791, www.epa.gov/safewater/lead.

In Portland, the most common sources of lead exposure are lead-based paint, household dust, soil, and plumbing materials. Lead is also found in other household objects such as toys, cosmetics and pottery. Portland has removed all known lead service connections from its distribution system. Exposure to lead through drinking water is possible if materials in a building's plumbing contain lead. The level of lead in water can increase when water stands in contact with lead-based solder and brass faucets containing lead.

Protecting Public Health

The Portland Water Bureau's Lead Hazard Reduction Plan program is a comprehensive approach to reduce exposure to lead.

Through this program the Portland Water Bureau:

- Corrosion Control Treatment.** Reduces corrosion of lead in plumbing by increasing the pH of the water. This pH adjustment has reduced lead in tap water by more than half.
- Lead in Water Testing.** Provides free lead in water testing to everyone, but targets testing the water in households most at-risk from lead in water. These are homes built between 1970 and 1985 with pregnant women or children ages six or younger in the home.

- Education, Outreach and Testing.** Funds agencies and organizations that provide education, outreach and testing on all sources of lead.

- Home Lead Hazard Reduction.** Supports the Portland Lead Hazard Control Program to provide grants to minimize lead paint hazards in homes.

Water Testing

Twice each year the Portland Water Bureau and regional water providers in the Bull Run service area monitor for lead and copper in tap water from a sample group of more than 100 homes. These are homes in the Bull Run service area where the plumbing is known to contain lead solder, and represent a worst-case scenario for lead in water. Samples are collected after the water has been standing in the household plumbing for more than 6 hours. A Lead and Copper Rule exceedance for lead occurs when more than 10 percent of these homes exceed the lead action level of 15 parts per billion. In the most recent round of testing, more than 10 percent of homes exceeded the lead action level. As a result of exceeding the action level the Portland Water Bureau has been informing customers and encouraging them to follow the easy steps to reduce exposure to lead in water.

If you are concerned that your home tap water may have lead, contact the LeadLine for a free lead-in-water test kit and to learn ways to reduce your exposure to all sources of lead. Services provided are free lead in-water testing, free childhood blood lead testing and free lead reduction services. **Call the LeadLine at 503-988-4000 or visit www.leadline.org**

Easy steps to avoid possible exposure to lead from household plumbing

- **Run your water to flush the lead out.** If the water has not been used for several hours, run each tap for 30 seconds to 2 minutes or until it becomes colder before drinking or cooking. This flushes water which may contain lead from the pipes.
- **Use cold, fresh water for cooking and preparing baby formula.** Do not cook with or drink water from the hot water tap; lead dissolves more easily into hot water. Do not use water from the hot water tap to make baby formula.
- **Do not boil water to remove lead.** Boiling water will not reduce lead.
- **Test your child for lead.** Ask your physician or call the LeadLine to find out how to have your child tested for lead. A blood lead level test is the only way to know if your child is being exposed to lead.
- **Test your water for lead.** Contact the LeadLine at www.leadline.org or 503-988-4000 to find out how to get a **FREE** lead-in-water test.
- **Consider using a filter.** Check whether it reduces lead – not all filters do. Be sure to maintain and replace a filter device in accordance with the manufacturer's instructions to protect water quality. Contact NSF International at 800-NSF-8010 or www.nsf.org for information on performance standards for water filters.
- **Regularly clean your faucet aerator.** Particles containing lead from solder or household plumbing can become trapped in your faucet aerator. Regular cleaning every few months will remove these particles and reduce your exposure to lead.
- **Consider buying low-lead fixtures.** As of January 2014, all pipes, fittings and fixtures are required to contain less than 0.25% lead. When buying new fixtures, consumers should seek out those with the lowest lead content.

The Bull Run Treatment Variance

In March 2012, the Oregon Health Authority (OHA) issued the Portland Water Bureau a variance from the state and federal drinking water rules requiring the treatment of raw water from the Bull Run Watershed for the parasite *Cryptosporidium*. A variance is state permission not to meet an MCL or a treatment technique under certain conditions. A state may grant a variance if a water system demonstrates that the required treatment is not necessary to protect public health because of the nature of the water system's raw water source. OHA issued Portland Water Bureau the treatment variance for *Cryptosporidium* based on substantial data and analyses presented in the *LT2 Treatment Variance Request* for the Bull Run drinking water source. The Portland Water Bureau is the only system in the United States to have received a variance to the treatment requirements for *Cryptosporidium* based on the high quality of its raw water and therefore does not provide treatment for *Cryptosporidium*.

As a result of the treatment variance, the following are among the state-mandated conditions that must be met in order to maintain the variance:

Watershed Protection: The Portland Water Bureau must maintain or strengthen all existing legal and operational protections for the Bull Run watershed, monitor the watershed on a routine basis in an effort to eliminate unauthorized entry, maintain strict controls for sanitary facilities, implement field inspections and monitor tributaries and wildlife scat in the watershed.

Raw Water Intake Monitoring: The Portland Water Bureau must conduct regular ongoing monitoring for *Cryptosporidium* where raw water first enters the drinking water system at least two days each week. If *Cryptosporidium* is detected in any one sample, the Portland Water Bureau must begin a much more intensive monitoring program to demonstrate whether the *Cryptosporidium* concentration is less than 0.075 oocysts per 1,000 liters of water. Additional detections of *Cryptosporidium* during this period of monitoring could result in OHA revoking the variance.

Reporting and Notification: The Portland Water Bureau must report the results of watershed and raw water monitoring to OHA. Any detections of *Cryptosporidium* must be reported to OHA within 24 hours. The Portland Water Bureau must notify the public through its website and issue a press release in the event of a *Cryptosporidium* detection at the raw water intake. The results of watershed field inspections and tributary and wildlife scat monitoring must be reported to OHA annually. The Portland Water Bureau must also notify OHA of any circumstances that may impact the conditions of the variance.

The treatment variance is valid for a period of 10 years from the date it was issued. OHA may revoke the variance if the conditions of the variance are not met.

2015 Results of *Cryptosporidium* Monitoring at the Raw Water Intake

Number of Samples	Total Volume	Detections
226	5,664.1 L	None

In 2015, there were no detections of *Cryptosporidium* during Raw Water Intake Monitoring. The most recent monthly intake reports can be found at www.portlandoregon.gov/water/BRTVIntakeReports.

The most recent annual Bull Run Treatment Variance Watershed Report summarizes the results of watershed field inspections and monitoring of tributaries and wildlife scat for Water Year 2015 (October 1, 2014 – September 30, 2015) and can be found at www.portlandoregon.gov/water/2015BRTVReport.

Additional information on Portland Water Bureau's treatment variance can be found at www.portlandoregon.gov/water/treatmentvariance.

Regulated Contaminants Detected in 2015

Untreated Source Water from Bull Run Watershed

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Contaminant Level (MCL), Treatment Technique or Maximum Residual Disinfectant Level (MRDL)	Maximum Contaminant Level Goal (MCLG) or Maximum Residual Disinfectant Level Goal (MRDLG)	Sources of Contaminant
Turbidity	0.2 NTU	2.99 NTU	Cannot exceed 5 NTU more than 2 times in 12 months	Not Applicable	Erosion of natural deposits
Fecal Coliform Bacteria	Not detected	100% of samples had 20 or fewer bacterial colonies per 100 milliliters of water (1 sample had 9 bacterial colonies per 100 milliliters)	At least 90% of samples measured during the previous six months must have 20 or fewer bacterial colonies per 100 milliliters of water	Not Applicable	Animal wastes

Treated Drinking Water from Bull Run Watershed and Columbia South Shore Well Field Entry Points to the Distribution System

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Contaminant Level (MCL), Treatment Technique or Maximum Residual Disinfectant Level (MRDL)	Maximum Contaminant Level Goal (MCLG) or Maximum Residual Disinfectant Level Goal (MRDLG)	Sources of Contaminant
Nutrients					
Nitrate – Nitrogen	0.02 parts per million	0.22 parts per million	10 parts per million	10 parts per million	Found in natural aquifer deposits; animal wastes
Metals and Minerals					
Arsenic	<0.50 parts per billion	0.87 parts per billion	10 parts per billion	0 parts per billion	Found in natural deposits
Barium	0.00081 parts per million	0.00684 parts per million	2 parts per million	2 parts per million	Found in natural deposits
Chromium (total)*	<0.50 parts per billion	0.2 parts per billion	100 parts per billion	100 parts per billion	Found in natural deposits
Copper	<0.00050 parts per million	0.00116 parts per million	Not Applicable	1.3 parts per million	Found in natural deposits
Fluoride	<0.025 parts per million	0.15 parts per million	4 parts per million	4 parts per million	Found in natural deposits
Lead	<0.05 parts per billion	0.25 parts per billion	Not Applicable	0 parts per billion	Found in natural deposits

*During the year, tests with varying method reporting limits (MRLs) were used to analyze chromium. The sample with a result of <0.50 ppb was analyzed by a test with less sensitive MRL and is why the minimum appears to be greater than the maximum.

Treated Drinking Water from Points throughout the Distribution System of Reservoirs, Tanks and Main Water Pipes

Microbiological Contaminants					
Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Contaminant Level (MCL), Treatment Technique or Maximum Residual Disinfectant Level (MRDL)	Maximum Contaminant Level Goal (MCLG) or Maximum Residual Disinfectant Level Goal (MRDLG)	Sources of Contaminant
Total Coliform Bacteria	0 samples in MONTH (0 out of 2) had detectable coliform bacteria	0 samples in MONTH (0 out of 2) had detectable coliform bacteria	Must not detect coliform bacteria in more than 1 sample in any month	0 samples with detectable coliform bacteria	Naturally present in the environment
Disinfection Byproducts					
Total Trihalomethanes					
Running Annual Average at Any One Site	12.5 parts per billion	12.5 parts per billion	80 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single Result at Any One Site	50.0 parts per billion	50.0 parts per billion	Not Applicable		
Haloacetic Acids					
Running Annual Average at Any One Site	8.15 parts per billion	8.15 parts per billion	60 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single Result at Any One Site	32.6 parts per billion	32.6 parts per billion	Not Applicable		
Disinfectant Residual					
Total Chlorine Residual at Any One Site	0.09 parts per million	2.64 parts per million	4 parts per million	4 parts per million	Chlorine and ammonia are used to disinfect water

Lead and Copper Sampling at High-Risk Residential Water Taps

Regulated Contaminant	90th Percentile Values	Number of Sites Exceeding the Action Level	Lead and Copper Rule Exceedance	Maximum Contaminant Level Goal (MCLG)	Source of Contaminant
Copper	0.34 parts per million	0% (0 of 114) of samples exceeded the copper action level of 1.3 parts per million.	More than 10% of the homes tested have copper levels greater than 1.3 parts per million	1.3 parts per million	Corrosion of household and commercial building plumbing systems
Lead	14 parts per billion	9.7% (11 of 114) of samples exceeded the lead action level of 15 parts per billion	More than 10% of the homes tested have lead levels greater than 15 parts per billion	0 parts per billion	Corrosion of household and commercial building plumbing systems

Treated Drinking Water from Bull Run Watershed and Columbia South Shore Well Field Entry Points to the Distribution System

Unregulated Contaminant	Minimum Detected	Average Detected	Maximum Detected	Source of Contaminant
Sodium	3.35 parts per million	6.55 parts per million	15.5 parts per million	Found in natural deposits
Radon	<16 picocuries per liter	202 picocuries per liter	370 picocuries per liter	Found in natural deposits