

Drinking Water Quality Report

Mailed June, 2007



■ **Portland's Drinking Water Quality**
 "...continues to meet all state and federal regulations."

■ **The Bull Run Watershed**
 "...80 -170 inches of rainfall a year."


 **From Commissioner Randy Leonard**

From forest to faucet, the Portland Water Bureau delivers the best drinking water in the world.

I am pleased to share the annual monitoring results for Portland's drinking water system. It is important that the city's drinking water customers know that they, their families and businesses receive high quality drinking water.

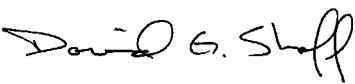
Portland protects this water supply through monitoring, treatment, investment and long-term planning. Working with citizens, the city implements programs and projects that maintain the Portland drinking water system and strengthen it.

The Bull Run water source and backup groundwater facilities are some of Portland's most valuable resources. Protecting these essential resources and maintaining the water system are vital public services — and top priorities for the Portland Water Bureau. The City of Portland is committed to continuing to provide the best drinking water in the world.


 Randy Leonard
 Commissioner-In-Charge

From the Administrator
The most important information contained in the report is that Portland's drinking water quality continues to meet all state and federal regulations.

If you have questions or comments about this report, please call Portland Water & Sewer Utilities Customer Services at 503-823-7770. We welcome your interest in Portland's water system.


 David G. Shaff
 Administrator


If this information looks familiar, it should.

The city has mailed similar information to customers each year since 1997. Why every year? Drinking water regulations require the city to produce and mail this information every year.

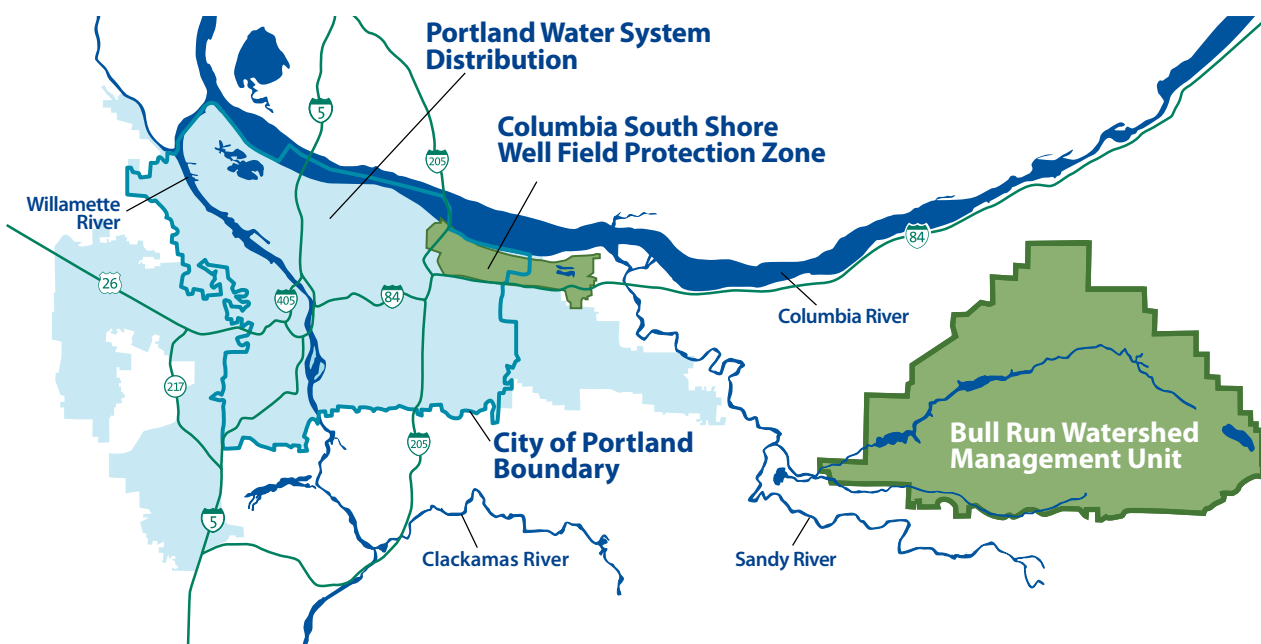
Most of the language is also required – Congress and the EPA want to be sure people know what is in their drinking water. The Portland Water Bureau agrees.

The Portland Water Bureau takes the effort to make this complex information readable at a low cost.

The Portland Water Bureau produced and mailed this report for 27 cents each.

 Printed on recycled paper

Portland's Water Sources



THE BULL RUN WATERSHED

The Bull Run watershed, within the Bull Run Watershed Management Unit, is a surface water supply located in the Mt. Hood National Forest. A geological ridge separates the watershed from Mt. Hood. Current regulations allow Portland to meet federal drinking water standards without filtering this high quality water supply. The watershed has an area of 102 square miles, and typically receives 80-170 inches of rainfall a year. The heaviest rains occur from late fall through spring. Two reservoirs store water for use year-round, particularly during the dry summer months.

The watershed is reserved solely for producing drinking water. Federal laws restrict human entry. No recreational, residential, or industrial uses occur within its boundaries. The Portland Water Bureau carefully monitors water quality and quantity. The Oregon Department of Human Services - Drinking Water Program regularly inspects the watershed and related treatment and distribution facilities.

The Portland Water Bureau has completed a Source Water Assessment for the Bull Run water supply to comply with the 1996 Safe Drinking Water Act amendments. The only known contaminants of concern for the Bull Run water supply are naturally occurring microbial contaminants such as *Giardia lamblia*, *Cryptosporidium*, fecal coliform bacteria, and total coliform bacteria. These organisms are found in virtually all freshwater ecosystems and are present in the Bull Run supply at very low levels. The Bull Run supply complies with all applicable state and federal regulations for source water, including the 1989 Surface Water Treatment Rule filtration-avoidance criteria. The Source Water Assessment report is available at www.portlandonline.com/water and by calling **503-823-7404**.

THE COLUMBIA SOUTH SHORE WELL FIELD

The Columbia South Shore Well Field provides high quality water from production wells located in four different aquifers. In 2006 the city supplemented the Bull Run supply with groundwater for 78 days beginning on August 14th. This provided more than 3.5 billion gallons of water to augment the summer water supply. Beginning on November 7 for 14 days, the Portland Water Bureau delivered an additional 1.1 billion gallons from the well field due to turbidity in Bull Run.

Portland actively protects its drinking water wells and manages programs to prevent groundwater pollution. Details about Portland's wellhead protection program are available at www.portlandonline.com/water/groundwater and by calling **503-823-7404**.



Bull Run Lake (top) and Bull Run River (bottom).

The Clackamas River Water District, City of Lake Oswego, Rockwood Water People's Utility District and the Sunrise Water Authority provide drinking water for some Portland customers who live near service area boundaries. Customers who receive water from these sources will also receive a detailed water quality report about these sources in addition to this report.



Drinking Water Quality Report



Frequently Asked Questions About Water Quality

Is my water treated by filtration?

No, Bull Run water is currently not filtered. The Bull Run source meets the filtration avoidance criteria of the Surface Water Treatment Rule. The state approved Portland's compliance with these criteria in 1992.

Does Portland add fluoride to drinking water?

Portland does not add fluoride to the water.

No fluoride is detected in Bull Run water, but it is a naturally occurring trace element in groundwater. The US Public Health Service and the Centers for Disease Control and Prevention (CDC) consider the fluoride levels in Portland's water sources to be lower than optimal for helping to prevent dental decay. You may want to consult with your dentist about fluoride treatment to help prevent tooth decay, especially for young children.

Is Portland's water soft or hard?

Portland's water is very soft. Hardness of Bull Run water is typically 6-11 parts per million (approximately 1/2 a grain of hardness per gallon). Portland's groundwater hardness is approximately 86 parts per million (about 5 grains per gallon), which is considered moderately hard.

What is the pH of Portland's water?

In the distribution system, pH typically ranges from 7.2 to 8.2.

Are sodium levels in Portland's drinking water affecting my health?

There is currently no drinking water standard for sodium. Sodium is an essential nutrient. Sodium in Portland's water ranges between 2 and 20 ppm, a level unlikely to significantly contribute to adverse health effects.

Who can I call about water quality or pressure concerns?

The **Water Line, 503-823-7525**, can answer your questions and concerns about water quality or pressure. The Water Line is available Monday-Friday from 8:30am-4:30pm. If you have an emergency after these hours, please contact the after-hours number at **503-823-4874**.

How can I get my water tested?

Call the **LeadLine** at **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 Department of Human Services, Oregon Environmental Laboratory Accreditation Program at **503-229-5505**.

www.leadline.org

Public Involvement Opportunities

The Portland Water Bureau sponsors a variety of public involvement and public outreach opportunities connected to its many projects and programs. The bureau posts public meeting times online. If you have questions about Portland Water Bureau meetings, projects, or programs, please contact Jimmy Brown, Community Involvement and Information Manager at **503-823-3028** or visit the Portland Water Bureau's website.

www.portlandonline.com/water

Visit the Water Blog for daily water news.
www.portlandonline.com/water/blog



Drinking Water Treatment

The Portland Water Bureau treats drinking water with chloramines. This process starts with chlorine to disinfect the water. Next the city adds ammonia to ensure that disinfection remains adequate throughout the distribution system.

The city also adds sodium hydroxide 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 the customers' home plumbing.



Water Testing

The Portland Water Bureau monitors for approximately 200 regulated and unregulated contaminants in drinking water, including pesticides and radioactive contaminants. All monitoring data in this report are from 2006.

If a health-related contaminant is not listed in this report, the Portland Water Bureau did not detect it in drinking water.

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/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 Drinking 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 Sources 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 stormwater 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 stormwater runoff, and septic systems.
- **Radioactive contaminants**, which can occur naturally.

In order to ensure that tap water is safe to drink, 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.

www.epa.gov/safewater/

Notes on Regulated Contaminants

Turbidity

Bull Run is an unfiltered surface water supply. 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). The typical cause of turbidity is tiny particles of sediment in the water during storm events. During large storm events the Portland Water Bureau may shut down the Bull Run system and serve water from the Columbia South Shore Well Field. Turbidity can interfere with disinfection and provide a medium for microbial growth.

Giardia

Wildlife in the watershed may be hosts to *Giardia lamblia*, the organism that causes giardiasis. Chlorine is effective in inactivating *Giardia*.

Total Coliform Bacteria

Coliform bacteria are naturally present in the environment. Their presence is an indicator that other potentially harmful bacteria may be present. The Portland Water Bureau uses chlorine to control these bacteria. Total coliform samples are collected from both the source water and the distribution system.

Fecal Coliform

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 control these bacteria.

Nitrate - Nitrogen

Nitrate can support microbial growth (bacteria and algae). Nitrate levels exceeding the standards can contribute to health problems.

Arsenic, Barium, Chromium and Fluoride

Metals and minerals are elements found in the earth's crust, and can dissolve into water that is in contact with soil or in groundwater aquifers.

Di(2-ethylhexyl)phthalate

Commonly known as phthalate, this is a common chemical used in the process of manufacturing plastics. While there are no known sources of phthalate in the Bull Run watershed, its widespread use and presence in the environment has resulted in its detection. The source of the detection can not be determined. Phthalate exposure at high levels over a continued period of time can be carcinogenic. It is unlikely to pose a health risk at the level found.

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. The disinfection process is carefully controlled to remain effective, while keeping byproduct levels low. Monitoring in Portland's system detected Trihalomethanes and Haloacetic Acids, regulated disinfection byproducts.

Total Chlorine Residual

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. Total chlorine residual is a measure of free chlorine and combined chlorine and ammonia in our distribution system.

Regulated Contaminants detected in 2006

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Contaminant Level (MCL) or Treatment Technique	Maximum Contaminant Level Goal (MCLG)	Sources of Contaminant
Source Water from Bull Run Watershed					
Turbidity	0.19 NTU	4.35 NTU	5 NTU	Not Applicable	Erosion of natural deposits
Giardia	Not Detected	Two samples of 50 liters had 2 <i>Giardia</i> cysts.	Treatment technique required: Disinfection to inactivate 99.9% of cysts	Not Applicable	Animal wastes
Total Coliform Bacteria	Not Detected	1 sample had 14 colonies (100% of samples had 100 or fewer bacterial colonies) per 100 milliliters of water.	At least 90% of samples measured during the previous six months must have 100 or fewer bacterial colonies per 100 milliliters of water.	Not Applicable	Found throughout the environment
Fecal Coliform Bacteria	Not Detected	1 sample had 16 colonies (100% of samples had 20 or fewer bacterial colonies) per 100 milliliters of water.	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
Entry Points to Distribution System — from Bull Run and the Groundwater Well Field					
NUTRIENTS					
Nitrate Nitrogen	Not Detected	0.10 parts per million	10 parts per million	10 parts per million	Erosion of natural deposits; animal wastes
METALS					
Arsenic	Not Detected	3 parts per billion	10 parts per billion	zero parts per billion	Erosion of natural deposits in groundwater aquifers
Barium	Not Detected	0.020 parts per million	2 parts per million	2 parts per million	Erosion of natural deposits in groundwater aquifers
Chromium	Not Detected	29 parts per billion	100 parts per billion	100 parts per billion	Erosion of natural deposits in groundwater aquifers
MINERALS					
Fluoride	Not Detected	0.14 parts per million	4 parts per million	4 parts per million	Erosion of natural deposits in groundwater aquifers
ORGANIC CONTAMINANTS					
Di(2-ethylhexyl) phthalate	Not Detected	0.99 parts per billion	6 parts per billion	zero parts per billion	Common chemical used to soften plastics. Discharge from rubber and chemical factories.
Distribution System of Reservoirs, Tanks and Mains					
DISINFECTION BYPRODUCTS					
TOTAL TRIHALOMETHANES					
Running Annual Average of all sites	17 parts per billion	26 parts per billion	80 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single result at any one site	9.2 parts per billion	22 parts per billion	Not Applicable		
HALOACETIC ACIDS					
Running Annual Average of all sites	22 parts per billion	33 parts per billion	60 parts per billion	Not Applicable	Byproduct of drinking water disinfection
Single result at any one site	Not Detected	32 parts per billion	Not Applicable		

Regulated Contaminant	Minimum Detected	Maximum Detected	Maximum Residual Disinfectant Level (MRDL)	Maximum Residual Disinfectant Level Goal (MRDLG)	Sources of Contaminant
Total Chlorine Residual	Not Detected	2 parts per million	4 parts per million	4 parts per million	Chlorine and ammonia are used to disinfect water.

Unregulated Contaminants

Regulated Contaminant	Minimum Detected	Average Detected	Maximum Amount Detected	Sources of Contaminant
Entry Points to Distribution System — from Bull Run and the Groundwater Well Field				
Nickel	Not Detected	< 4 parts per billion	5 parts per billion	Erosion of natural deposits in groundwater aquifers
Radon	131 picocuries per liter	204 picocuries per liter	277 picocuries per liter	Erosion of natural deposits in groundwater aquifers
Sodium	2.7 parts per million	8.5 parts per million	19 parts per million	Added to water during treatment Erosion of natural deposits

Cryptosporidium

Cryptosporidium is a microorganism (protozoan) naturally present in bodies of surface water throughout the world. Surface water supplies are particularly vulnerable if they receive runoff or are exposed to human or animal wastes. Since wildlife inhabit the Bull Run watershed, the Portland Water Bureau regularly monitors for *Cryptosporidium* and has done so for more than ten years. Occasionally, the Portland Water Bureau finds *Cryptosporidium* at low levels.

No *Cryptosporidium* oocysts were detected in water samples in 2006. The federal Environmental Protection Agency (EPA) has issued a drinking water rule establishing new national standards to further reduce the risks of illness from *Cryptosporidium*. These standards, as written, require additional treatment processes for unfiltered water systems such as Portland's by 2012. Because

of the protected status of Portland's Bull Run source, and the very low incidence of *Cryptosporidium* in Bull Run source water, the city has filed a legal challenge to the new federal rule seeking to establish alternative and less expensive methods of compliance. The status of this legal challenge is unresolved at this time.

Symptoms of *Cryptosporidium* infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immuno-compromised people have more difficulty and are at greater risk of developing severe, life threatening illness. *Cryptosporidium* must be ingested for it to cause disease, and may be spread through means other than drinking water.

www.epa.gov/safewater/crypto.html

Notes on Unregulated Contaminants

Unregulated contaminant monitoring helps EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants in the future.

Nickel and Sodium

There is currently no drinking water standard for sodium or nickel. Sodium and nickel are essential nutrients. At the levels found in drinking water, they are unlikely to significantly contribute to adverse health effects.

Radon

Radon is a naturally occurring radioactive gas that you cannot see, taste, or smell. Radon has never been detected in the Bull Run supply. It is detected at varying levels in the city's wells. For information about radon, call the EPA's Radon Hotline (800-SOS-RADON) or

www.epa.gov/safewater/radon.html



Maximum Contaminant Level Goal or 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 Contaminant Level or 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 Residual Disinfectant Level Goal or 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.

Maximum Residual Disinfectant Level or 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.

Treatment Technique

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

Action Level

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

Part Per Million

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 1000 parts per billion.

Part Per Billion

One part per billion corresponds to one penny in \$10,000,000 or approximately one minute in 2000 years.

CITY OF PORTLAND, OREGON
Portland Water Bureau
Commissioner Randy Leonard
Administrator David G. Shaff
1120 SW Fifth Avenue
Portland, Oregon 97204



About Your Drinking Water

Lead in Drinking Water

Easy steps to avoid possible exposure to lead from plumbing.

- ▶ **Run your water to flush out lead.** Before using water for drinking or cooking, run the water for 30 seconds to 2 minutes or until it becomes colder from each tap when it has not been used for several hours. This flushes water which may contain lead from household plumbing.
- ▶ **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.
- ▶ **Periodically remove loose debris** from the plumbing materials by removing and cleaning the faucet aerator from all taps and running the water for three to five minutes.
- ▶ **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.
- ▶ **Test your water for lead.** Call the **LeadLine** at **503-988-4000** to find out how to get a FREE lead in water test.
- ▶ **Identify if your plumbing fixtures contain lead.** New brass faucets, fittings, and valves, may contribute lead to drinking water. The law currently allows end-use brass fixtures, such as faucets, to contain up to 8% lead. These fixtures are labeled as “lead free.” Consumers should consider this when choosing fixtures and take appropriate precautions.

Lead in Household Plumbing

Lead was not detected in Portland’s water sources. 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.

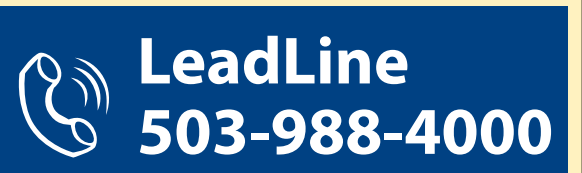
Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure. Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home’s plumbing. If you are concerned about elevated lead levels in your home’s water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the **LeadLine (503-988-4000)**.

People are exposed to lead in many other ways. **In the Portland area, dust from paint in homes built before 1978 is the most common source of exposure to lead.** Other sources include soil, pottery, traditional folk medicines or cosmetics, some sports equipment such as fishing weights and ammunition, and some occupations and hobbies.

Corrosion Treatment

The Portland Water Bureau’s corrosion control treatment reduces corrosion in plumbing by increasing the pH of the water. Comparison of monitoring results with and without pH adjustment shows over 50 percent reduction in lead at the tap with pH adjustment.

IMPORTANT INFORMATION



Call the LeadLine at 503-988-4000 or visit www.leadline.org for information about lead hazards, free lead in water testing, free childhood blood lead testing and referrals to other lead reduction services.



IMPORTANT INFORMATION

Water Testing

Call the LeadLine for information about free lead in water testing. The program targets testing the water in households most at risk from lead in water, including pregnant women or children age six or younger who live in homes built between 1970 and 1985.

Lead and Copper Samplings at Residential Water Taps

90th Percentile Values	Number of Sites Exceeding Action Levels	Action Level *	Maximum Contaminant Level Goal (MCLG)	Sources of Contaminant
LEAD				
17 parts per billion	17 /116 samples exceeded the action level	Exceeds Action Level if more than 10% of the homes tested have lead levels greater than 15 parts per billion	Zero parts per billion	Corrosion of household and commercial building plumbing systems
COPPER				
0.50 parts per million	None	Exceeds Action Level if 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

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

CONTACT INFORMATION

Portland Water Bureau
1120 SW Fifth Avenue
Portland, Oregon 97204
www.portlandonline.com/water
Public Water System #4100657

Portland Water & Sewer Utilities Customer Services
503-823-7770

Portland Water Bureau Water Line
503-823-7525

FOR ADDITIONAL INFORMATION

Oregon Department of Human Services – Drinking Water Program
971-673-0405
www.oregon.gov/DHS/ph/dwp/

The City of Portland will provide auxiliary aids/services to persons with disabilities. To request an ADA accommodation, please call 503-823-7404 or by TTY at 503-823-6868. Copies of this report are available in Braille, large format, and on the Portland Water Bureau’s website.

Spanish
Para obtener una copia de este reporte en español, por favor llame al **503-823-7770** o en el Internet vaya a www.portlandonline.com/water.

Russian
Для получения копии данного отчета на русском языке, пожалуйста, позвоните по телефону **503-823-7770** или посетите веб-сайт www.portlandonline.com/water.

Vietnamese
Để được một bản báo cáo bằng tiếng Việt, xin gọi số **503-823-7770** hoặc đến trang mạng tại www.portlandonline.com/water.