



# 2011 WATER QUALITY REPORT

Important Information  
About the Water YOU Drink

Monitoring Data from 2010

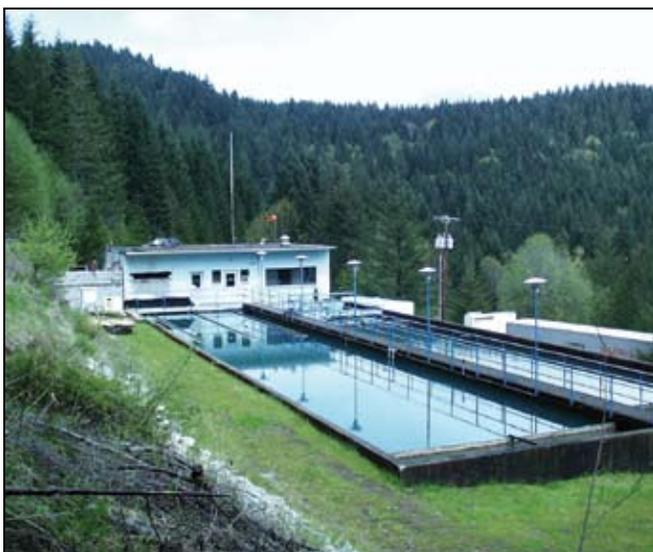
The Corvallis Water System consistently provides a reliable supply of high quality drinking water that surpasses all state and federal drinking water quality requirements. The City of Corvallis strives to provide you with the best water possible. This report provides results of water quality monitoring for 2010.

## Water Sources

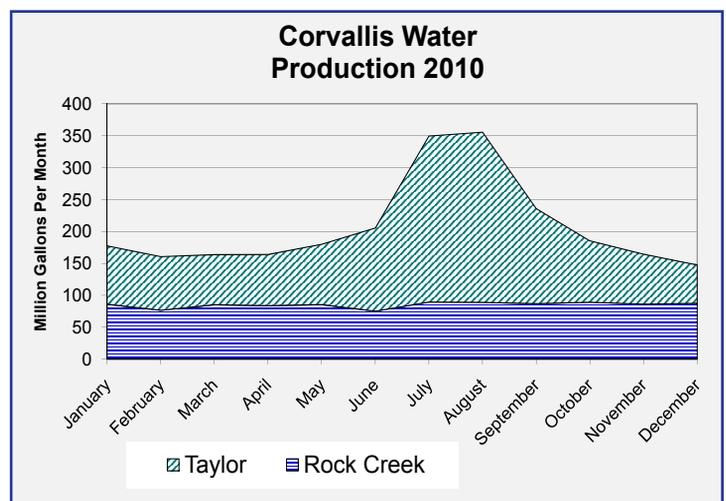
Corvallis drinking water comes from two surface water sources. Three creeks in the Rock Creek Watershed on the east flank of Marys Peak (north and south forks of Rock Creek as well as Griffith Creek) supply water for the Rock Creek Water Treatment Plant. The Willamette River supplies the Taylor Water Treatment Plant located in south Corvallis near Willamette Park.



H. D. Taylor Water Treatment Plant



Rock Creek Water Treatment Plant



# Water Production & Treatment

The City of Corvallis operates two water treatment plants to ensure that the water supply is safe to drink. Plant staff monitor all of the treatment systems to make certain they are working properly. The treatment plant operators are certified by the state to assure their technical competence.

The two plants treated approximately 2.49 billion gallons of water in 2010 -- 100 million gallons less than 2009 and less than any year in the past generation. The Rock Creek Plant supplied 41% of Corvallis drinking water (about 1.02 billion gallons), and the Taylor Plant supplied the remaining 59% (about 1.47 billion gallons).

**OPERATORS ADJUST THE  
TREATMENT PROCESS TO  
OBTAIN THE HIGHEST QUALITY  
DRINKING WATER**

At peak production, the Rock Creek Treatment Plant can supply approximately 3 million gallons per day (MGD). The Taylor Treatment Plant can supply 21 MGD.

The Rock Creek Plant runs 24 hours a day, 364 days a year and generally shuts down one day per year to clean the sedimentation basins.



The Taylor Plant is a peaking plant and runs long enough each day to meet the water demand that Rock Creek can not supply.

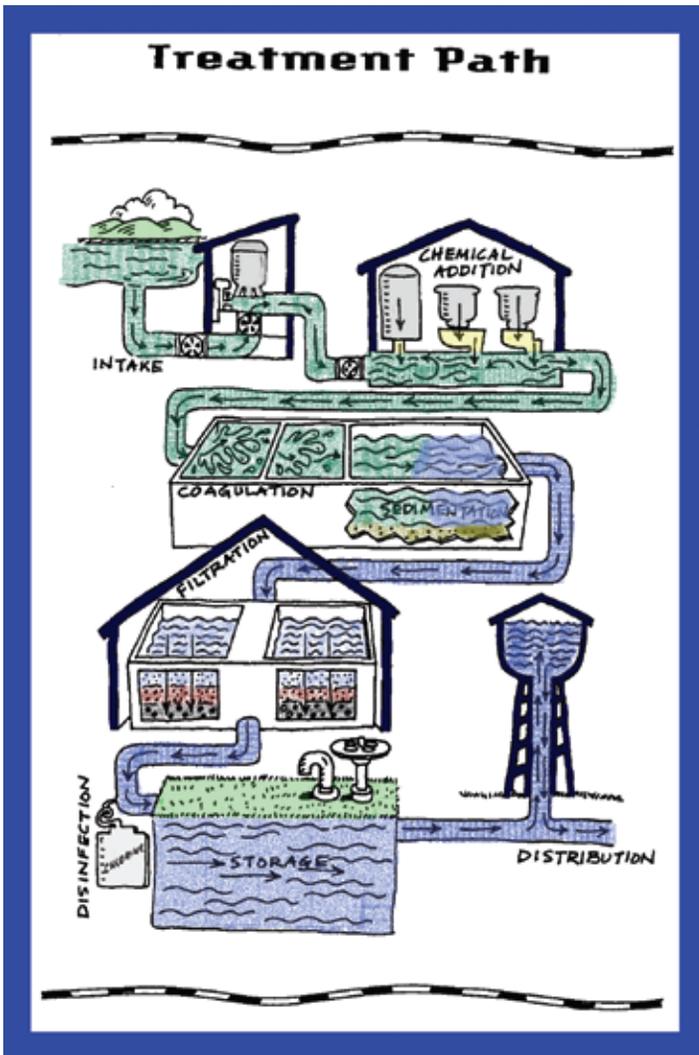
Both the Rock Creek and the Taylor Plants are known as conventional water treatment plants. Water from the Rock Creek Watershed and the Willamette River undergoes the same process.

**Water Treatment Plant Operator Jonathan Rader monitors the water treatment process to assure quality**

## **A Note for People With Special Health Concerns; The following statement is required by the United States Environmental Protection Agency (EPA):**

*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) / Centers for Disease Control and Prevention (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).*





Clarified water is filtered as it passes through approximately three feet of layered media including carbon, sand, and garnet. These materials physically trap any remaining small particles in the water, and the carbon also adsorbs many chemical contaminants.

The Rock Creek Plant uses anthracite as a carbon source. The Taylor Plant uses granular activated carbon (GAC). Activated carbon is more effective at removing chemical contaminants from water than anthracite.

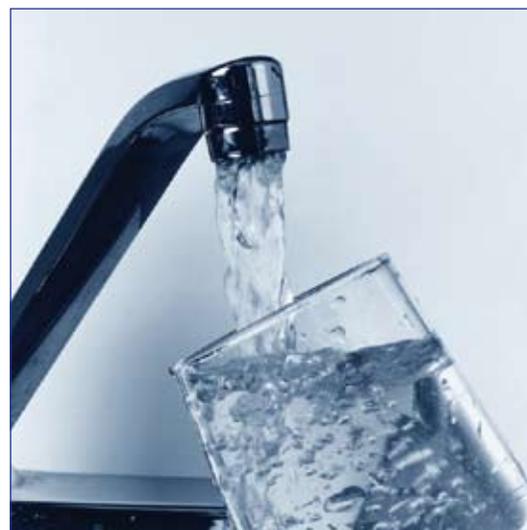
Chlorine is added to keep water safe in the distribution system as it travels to your tap. Once disinfected, the water is called finished water. Fluoride is added to the finished water to help prevent tooth decay, and soda ash is added to adjust pH to control corrosion in the distribution system.

Many indicators of water quality are monitored continuously during water treatment. Much of the monitoring is automated and computer-controlled. Information on pH, hardness, chlorine content, and turbidity allows operators to optimize the treatment processes to obtain the highest quality finished water for distribution to your tap.

Aluminum sulfate (alum) added to untreated (raw) water makes impurities clump together (coagulate) into larger particles called floc. The water is stirred to encourage floc particles to grow. Soda ash adjusts the pH to the ideal range for treatment.

Water flows to sedimentation basins. Floc is heavier than water, so it settles to the bottom (floculates) for removal.

***THE FOUR STEP WATER TREATMENT PROCESS INCLUDES COAGULATION, FLOCCULATION, SEDIMENTATION, AND FILTRATION.***



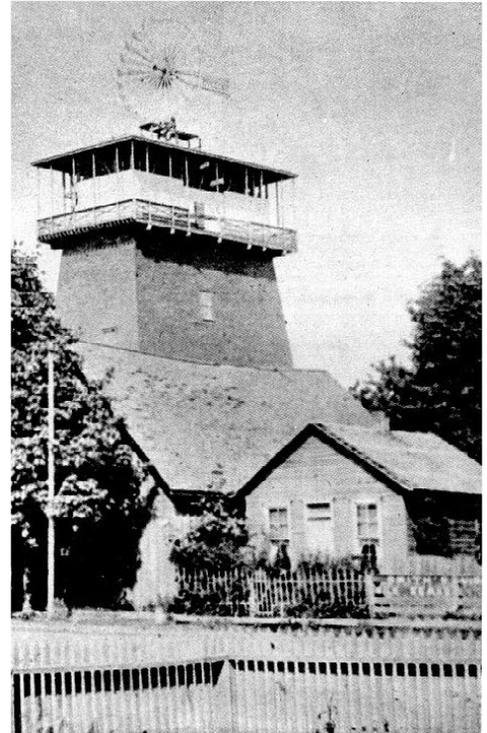
**Clean, clear, delicious drinking water**

# Water Distribution & Storage

Finished water from both treatment plants is combined in the distribution system, which consists of about 245 miles of water pipes, 7,055 control valves, eight covered storage reservoirs, and ten pumping stations. The reservoirs and piping system are interconnected with both water sources, so customers generally receive a blend of water from both water treatment plants.

The Rock Creek and Taylor Water Treatment Plants produce water at a fairly constant rate, but demand for water can fluctuate from day to day and from hour to hour. In order to ensure there is enough water available for everyone's needs and to provide for fire protection, the eight covered reservoirs located throughout the city store up to 23 million gallons of finished water.

**Historic water pump and storage tank located at First Street and Adams Avenue, downtown Corvallis (no longer in existence)**



Ten pumping stations move finished water to the higher elevation storage tanks where it flows by gravity to about 16,006 homes and businesses. Pumps provide water pressure to a few areas not served by gravity flow from reservoirs.



Water system operators monitor water levels in the reservoirs and can move water within the system and among the reservoirs to ensure the water remains fresh. Each reservoir is cleaned routinely to remove sediments and to check for structural integrity. Firefighters and crews that flush water lines access the system through 2,040 fire hydrants.

City staff monitor the distribution system for leaks using sophisticated listening devices. Workers deploy automatic data loggers to listen for the distinctive sound of water leaking from high-pressure pipes during the wee hours of the morning when little water is being used. The data loggers focus crews on specific parts of the system to examine closer. In 2009, crews inspected about 129 miles of water

pipe (79 with ground-microphones & 50 with dataloggers) and discovered 44 leaks. Most (40) of the leaks were from fire hydrants and required only routine maintenance. The other four leaks required repairs. Finding and repairing leaks when they are small saves water and money by preventing large catastrophic leaks that require emergency repairs.

***Save water and money;  
Identify and repair leaks  
at your home and office!***

# Water Quality & Testing

Drinking water is perishable. That is why the City of Corvallis takes steps to prevent water quality degradation from the time the water leaves the treatment plant until it gets to your tap.

Laboratory professionals take samples regularly from 33 sampling stations in the distribution system and from the eight reservoirs. Routine sampling lets the staff be sure that the water is free from harmful bacteria and that there are sufficient levels of chlorine for continued disinfection in the piping system. Automated, continuous water quality monitoring stations also take real-time samples from the distribution system throughout the entire day, every day, all year long. The data are continuously relayed to water system staff to assist them in optimizing water quality.



**Water Quality Lab Director Debbie Schaller collects a sample from the distribution system**



**Marty Snow flushes water lines to maintain water quality**

Technicians routinely flush water mains to remove rust or other sediment that might be trapped in the distribution system. Flushing also allows crews to make sure all the valves and fire hydrants are operating as they should. To help protect the environment, the chlorine is removed from this water before it is discharged into the storm drain system. The chlorine in the water could be harmful to aquatic life, and most storm drains discharge directly into Corvallis' urban streams.

## Microbiological Testing of Corvallis Drinking Water

The City of Corvallis tests for microbiological contamination in the water distribution system and also in the raw water sources that supply the water treatment plants. During 2010, city staff collected 841 samples from the distribution system pipes and over 168 samples from reservoirs. The Water Quality Lab tested all samples for total coliform and *E. coli* bacteria. No total coliform or *E. coli* were found in any of the 1009 samples.

The City also tested water from the Willamette River and from the three creeks that supply water to the Rock Creek Water Treatment Plant for *Giardia lamblia* and *Cryptosporidium*. *Giardia* is present in the Willamette River in very low concentrations. The water treatment plants are designed to remove contaminants such as *Giardia* and *Cryptosporidium*. Neither *Giardia* or *Cryptosporidium* has ever been detected in treated water leaving the treatment plants. Immuno-compromised people may wish to speak to their doctor about appropriate precautions. Any *Giardia* in the raw water sources are removed by filtration, and even if they were not, the chlorination process would kill them.

## Rock Creek Watershed

About a third of the Corvallis water supply comes from the Rock Creek Watershed on the east slope of Marys Peak. Corvallis began drawing water from Rock Creek in 1906 after a concerted local effort established a waterline from Rock Creek to downtown Corvallis.

Congressional action in 1920 designated 1700 acres of federal lands within the Rock Creek drainage as a municipal watershed. Purchases and exchanges by both the City and the Forest Service have created the current ownership pattern of a 2,350 acre Corvallis Forest and 7,500 acres of National Forest within the watershed boundary.



Corvallis manages its Forest according to the Corvallis Forest Stewardship Plan (CFSP), a multi-resource plan promoting forest health and biodiversity. The Watershed Management Advisory Commission identified several priority projects and supported grant applications to offset project costs.

Fish and wildlife habitat and forest structural diversity improvement projects were a focus in 2010. Project partners completed wildlife diversity prescriptions to create snags, bored cavities, bat roosting, and owl sites on over 600 trees. Stream and fish monitoring occurred on the main stem of Rock Creek and tributary streams. The City is interested in assessing the long term effectiveness of large wood placement and upcoming riparian planting projects on the summer stream temperatures and fish populations in Rock Creek. Additional 2010 projects included: upland meadow restoration and expansion, the reshaping and planting of reservoir dredge spoils, invasive weed monitoring, development of a natural resources inventory, and reviewing and refining the CFSP standards and guidelines was initiated. Future efforts will include projects to control invasive weeds, habitat enhancement, a rare plant restoration plan, and diversity thinning operations. Harvest thinnings will provide nest sites, greater stand diversity and improve general forest health.

For more information, see the annual report at: <http://www.ci.corvallis.or.us/downloads/pw/StateOfTheForest.pdf>



## Fluoride

Fluoride is added to Corvallis tap water to prevent dental carries (cavities). Corvallis citizens voted to add fluoride in 1952 and again in the 1960s to continue the practice. Fluoride protects teeth by reducing demineralization from the effects of plaque. The U.S. Department of Health and Human Services, the U.S. Centers for Disease Control, the American Dental Association and other leading public health authorities continue to recommend optimal water fluoridation as a significant health benefit. Fluoride protects both adults and children; it is especially important for children as permanent teeth grow.

Corvallis uses sodium fluorosilicate as a fluoride source. The US EPA guidelines for drinking water limit fluoride concentration to 4.0 ppm. For many years, the US Public Health Service recommended water fluoridation at rates between 0.7 and 1.2 ppm. Corvallis followed these guidelines. In January, 2011, the US Department of Health and Human Services (HHS) recommended lowering the concentration to the low end of the effective range (0.7 ppm) due in part to the recognition that people get fluoride from sources other than drinking water (e.g., toothpaste, apple juice, and tea leaves) and in part due to the recognition that different people drink different amounts of water.

When HHS issued its new recommendation, Corvallis responded by reducing fluoride to 0.7 ppm. The Corvallis water utility is committed to the health & safety of its customers and is ready to respond to regulatory changes as they develop.

## Tap Water: Safe, reliable, and a good value

Safe, delicious Corvallis tap water is an excellent value. While the cost of water varies depending on your elevation and the amount you use, a reasonable average is less than a half-cent per gallon. Compare this to some other common beverages or liquids you may purchase:

Bottled iced tea: 16 oz for \$1.19 = \$9.52 per gallon  
Diet juice tea blend: 16 oz for \$1.29 = \$10.32 per gallon  
Bottled water: 24 12-oz bottles for \$6 = \$2.66 per gallon  
Premium bottled water: 16 oz for \$1.59 = \$12.72 per gallon  
Oregon microbrewed beer: 6 12-oz bottles for \$7.59 = \$13.49 per gallon  
Fresh Oregon milk: 64 oz for \$1.59 = \$3.18 per gallon  
Blended Canadian whiskey: 59.3 oz for \$30 = \$64.76 per gallon  
Pink bismuth (e.g., Pepto-Bismol): 4 oz for \$3.85 = \$123.20 per gallon  
Corvallis tap water (average\*): 748 gallons for \$2.968 = \$0.00397 per gallon



Best of all, unlike all the other products listed, Corvallis tap water is delivered directly to your house.

\* The average rate for a single-family home using 8 units (800 cubic feet, or 5984 gallons) per month in the first pressure level: \$12.60 base fee, 7 units at \$1.34 and one unit at \$1.76. Actual cost varies based on your elevation (a higher rate to pump to a higher level) and the amount you use (you pay a higher marginal rate as your water use exceeds set thresholds). With wastewater charges added, tap water is still a bargain at \$0.0096 per gallon.

## Chromium

In December the Environmental Working Group (EWG) released a report suggesting that 74 million Americans may have hexavalent chromium in their water supply. Hexavalent chromium, also called chromium-6, is a chemical that is likely carcinogenic in humans and was made famous in the movie Erin Brockovich. Corvallis tap water is tested routinely for chromium and it has never been detected.

You may have even thought that chromium is good for you. Well, it is. Sort of. There is more than one type of chromium. Trivalent chromium, or chromium-3, is an essential nutrient that enhances the action of insulin and that may be involved in metabolizing carbohydrate, fat, and protein. The National Academy of Sciences recommended daily allowance (RDA) of chromium-3 is 25 micrograms for adult women and 35 micrograms for adult men. Chromium-6 is an industrial pollutant that can come from plants that produce steel, textiles, leather, or anti-corrosion coatings (i.e., chrome plating). Chromium-3 and chromium-6 are two oxidation forms of the same element, and while they can transform back and forth, chromium-3 is the more stable form.

The US EPA requires all water systems to test for total chromium, which includes both chromium-3 and chromium-6. The EPA does not currently require testing for the different forms. Chromium of any type has never been detected in Corvallis' tap water. The EWG report looked at cities where chromium was detected and performed testing to determine the presence and concentration of chromium-6.

Some scientists find the study flawed. Samples were collected from home taps, not the water systems. Chromium-6 might have come from chrome-plated fixtures or even the brass or stainless steel that the fixtures are made from. The study also relied on single samples to categorize an entire city.

The US EPA is currently considering adding a requirement for all water utilities to test for chromium-6.

# Water Treatment Plants: Detected Levels of Primary Standards

*(see glossary of abbreviations and definitions on page 11 )*

**NOTE: Test results from different sites or times are averaged; some values in the range may be higher than the maximum reported value.**

Taylor Treatment Plant data are not shaded.

Rock Creek Treatment Plant data are shaded

Parameter	MCL	MCLG	Maximum Reported	Range	Likely Source	Meets Regs?
Turbidity <sup>1</sup>	TT = 95% of samples < 0.3 NTU	N/A	0.03 NTU	0.01 - 0.09 NTU	Soil runoff and stream sediment	Yes
			0.03 NTU	0.02 - 0.05 NTU		
Fluoride <sup>2</sup>	4 ppm	4 ppm	1.06 ppm	0.00 - 1.33 ppm	Added to promote dental health	Yes
			1.01 ppm	0.00 - 1.10 ppm		
TOC, Raw Water	TT = 4 ppm	N/A	1.41 ppm	1.19 - 1.70 ppm	Naturally occurring carbon, often from leaves or other organics	Yes
			0.79 ppm	0.51 - 1.32 ppm		
TOC, Finished Water	TT = 2 ppm	N/A	0.58 ppm	0.50 - 0.68 ppm		Yes
			0.57 ppm	0.50 - 0.79 ppm		
Nitrate <sup>3</sup>	10 ppm	10 ppm	0.40 ppm	0.10 - 0.41 ppm	Fertilizer; septic tanks; sewage; erosion	Yes
Sodium	20 ppm	N/A	10.5 ppm	N/A	Chlorination with Sodium Hypochlorite	Yes
			6.98 ppm	N/A		
Alpha Particles	15 pCi/L	Zero	0.18 pCi/L	N/A	Erosion of natural deposits	Yes
			0.16 pCi/L	N/A		
Radium 226 & 228	5 pCi/L	Zero	0.14 pCi/L	N/A		Yes
			0.27 pCi/L	N/A		

1. Turbidity has no health effects but can interfere with disinfection and provide a medium for microbial growth. "TT" means a treatment technique is required if the limit is exceeded.

2. Fluoride is added to City drinking water and has been since 1952. Known for its cavity-fighting benefits, fluoride is of special interest to parents with young children. The U.S. Public Health Service revised its recommendation in 2010 from a range of 0.7 to 1.2 ppm in drinking water to the low end of the range (0.7 ppm ). See article on page 6.

3. Nitrate was NOT DETECTED from water produced at the Rock Creek Water Treatment Plant.



***Routine water quality testing and continuous water quality monitoring ensure a safe water supply for the City of Corvallis.***

# Water Distribution System: Detected Levels of Primary Standards

(see glossary of abbreviations and definitions on page 11 )

**NOTE: Test results from different sites or times are averaged; some values in the range may be higher than the maximum reported value.**

Parameter	MCL	MCLG	Maximum Reported	Range	Likely Source	Meets Regs?
Total Trihalo-methanes <sup>4</sup>	80 ppb	0 ppb	Baldy Reservoir (Rock Creek) 9.6 ppb	6.4 - 16.0 ppb	By-products of disinfection process	Yes
			North Hills Reservoir (Taylor) 20.8 ppb	16.3 - 24.8 ppb		
Haloacetic Acids <sup>4</sup>	60 ppb	N/A	Baldy Reservoir (Rock Creek) 13.5 ppb	10.0 - 20.8 ppb	By-products of disinfection process	Yes
			North Hills Reservoir (Taylor) 20.3 ppb	17.5 - 21.6 ppb		
Copper <sup>5</sup>	Action level: 90% of homes tested have less than 1.3 ppm	1.3 ppm	90% of homes tested had less than 0.242 ppm	No homes tested were above 1.3 ppm	Corrosion of household plumbing	Yes
Lead <sup>5</sup>	Action level: 90% of homes tested have less than 15 ppb	0 ppb	90% of homes tested had less than 3 ppb	One home tested was above 15 ppb	Corrosion of household plumbing	Yes

4. This test is performed on a quarterly basis at both Baldy and North Hills Reservoirs.

5. This test is performed in homes most likely to have lead and copper; if lead or copper levels reach the action level in 10% of homes sampled, a water provider must begin extra water treatment steps. **Lead and copper have never been detected in the City's raw water sources.** Testing was performed in 2008. Operators at Corvallis' two water treatment plants adjust the treatment process to achieve optimized corrosion control. This significantly reduces the chances that lead will get into your water. If you have lead solder or plumbing fixtures and are concerned about lead leaching, flush the water from your pipes if you haven't used water for several hours. This is the best way to avoid high lead levels. Simply run the tap until the water feels noticeably colder (30 seconds to two minutes). Note that this method may not be effective in large apartment buildings. Remember also to drink only water that comes from the cold water tap since hot water is more effective at leaching metals such as lead. If you are concerned about lead leaching from your plumbing fixtures or from lead solder in your home, you can have your water tested for lead. Please be sure to use a certified laboratory. Testing costs between \$20 and \$100. To find a certified lab, contact the Oregon Department of Human Services Drinking Water Program or download a current list of accredited labs at: <http://oregon.gov/DHS/ph/orelap/docs/acclab.pdf>. Additional information on testing methods and steps you can take to minimize exposure is available from EPA's Safe Drinking Water Hotline at 1-800-426-4791 or at <http://www.epa.gov/safewater/lead>. More information about lead and copper are on page 14.

## Detected Levels of Secondary Standards

Parameter	MCL (non-enforceable)	Taylor Plant Reported	Rock Creek Plant Reported
Calcium	none	6.00 ppm	8.39 ppm
Chloride	250 ppm	3.7 ppm	4.4 ppm
Sulfate	250 ppm	19.3 ppm	6.26 ppm
Hardness	250 ppm	22 ppm	28 ppm
pH	6.5 - 8.5 pH units	7.0 - 7.3 pH units	6.9 - 7.20 pH units
Total Dissolved Solids	500 ppm	84.0 ppm	66.0 ppm

The following substances were tested for but not detected in Corvallis drinking water:

**Synthetic Organic Chemicals**

2,4-D  
 2,4,5-TP (Silvex)  
 Bis (2-ethylhexyl) adipate  
 Alachlor (Lasso)  
 Atrazine  
 Benzo (a) pyrene  
 BHC-gamma Lindane  
 Carbofuran  
 Chlordane  
 Dalapon  
 Dibromochloropropane (DBCP)  
 Dinoseb  
 Dioxin <sup>6</sup>  
 Diquat dibromide  
 Endothall  
 Endrin  
 Ethylene dibromide (EDB)  
 Glyphosate  
 Hepthachlor epoxide  
 Heptachlor  
 Hexachlorobenzene  
 Hexachlorocyclopentadiene  
 Methoxychlor  
 Pentachlorophenol  
 Bis (2-ethylhexyl) phthalate  
 Picloram  
 Polychlorinated biphenyls (PCBs)  
 Simazine  
 Toxaphene  
 Vydate (Oxamyl)  
 3-Hydroxycarbofuran  
 Aldicarb  
 Aldicarb sulfoxide  
 Aldicarb sulfone  
 Aldrin  
 Butachlor  
 Carbaryl  
 Dicamba

Dieldrin  
 Methomyl  
 Metolachlor  
 Metribuzin  
 Propachlor

**Explosives & Flame Retardants**

1,3-dinitrobenzene<sup>7</sup>  
 2,4,6-trinitrotoluene (TNT) <sup>7</sup>  
 Tetrabromodiphenyl ether<sup>7</sup>  
 Pentabromodiphenyl ether<sup>7</sup>  
 Hexabromobiphenyl (HBB)<sup>7</sup>  
 Hexabromobiphenyl ether <sup>7</sup>  
 Pentabromodiphenyl ether<sup>7</sup>  
 Dimethoate<sup>7</sup>  
 Terbufos slfone<sup>7</sup>

**Inorganic Chemicals**

Aluminum  
 Antimony  
 Arsenic  
 Asbestos <sup>8</sup>  
 Barium  
 Beryllium  
 Cadmium  
 Chromium  
 Cyanide  
 Iron  
 Manganese  
 Mercury  
 Nickel  
 Nitrite as N  
 Nitrate + Nitrite as N  
 Selenium  
 Silver  
 Thallium  
 Zinc

**Volatile Organic Chemicals**

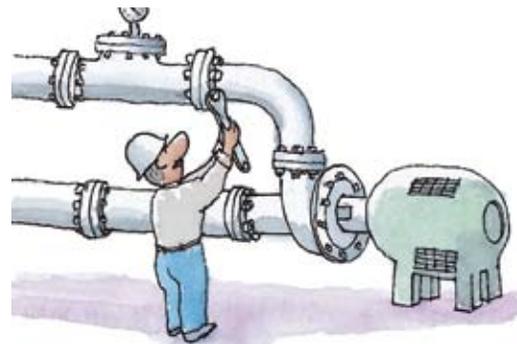
1,1-Dichloroethylene  
 1,1,1-Trichloroethane  
 1,1,2-Trichloroethane  
 1,2-Dichloroethane  
 1,2-Dichloropropane  
 1,2,4-Trichlorobenzene  
 1,2-Dichlorobenzene  
 1,4-Dichlorobenzene  
 Benzene  
 Carbon Tetrachloride  
 Chlorobenzene  
 Cis-1,2 Dichloroethylene  
 Ethylbenzene  
 Methylene chloride  
 Styrene  
 Tetrachloroethylene  
 Toluene  
 Total Xylenes  
 Trans-1,2-Dichloroethylene  
 Trichloroethylene  
 Vinyl chloride  
 Dibromochloromethane  
 Bromoform  
 Chloromethane  
 Bromomethane  
 Chloroethane  
 2,2 Dichloropropane  
 1,1 Dichloropropene  
 1,1 Dichlorethane

Dibromomethane  
 Cis-1,3 Dichloropropene  
 Trans 1,3 Dichloropropene  
 1,3 Dichloropropane  
 1,1,1,2 Tetrachloroethane  
 1,1,2,2 Tetrachlorethane  
 1,2,3 Trichloropropane  
 Bromobenzene  
 2 Chlorotoluene  
 4 Chlrotoluene  
 1,3 Dichlorobenzene



**Microbiological and Radiological**

Total coliform bacteria  
*E. coli* bacteria  
 Combined Uranium



6. Because there are no bleached pulp mills upstream from the Rock Creek Plant, the City of Corvallis was granted a waiver for dioxin testing from that plant. Water from the Taylor Plant is tested for compliance every three years. The last required sample was in 2010 . In 2000, the City of Corvallis began testing voluntarily for dioxin twice every year, and dioxin has not been detected in any samples.
7. The City of Corvallis tested for a group of chemicals in 2010 as part of the EPA Unregulated Contaminant Monitoring Rule (UCMR). The UCMR required water providers to test for certain chemicals to help determine if they should be regulated in the future. None of the candidate chemicals were detected in Corvallis water.
8. A waiver has been granted by the Oregon DHS-DWP for the testing of asbestos. The waiver was based on no risk of asbestos in the source water and the absence of asbestos pipe in the City's water distribution system.

# Glossary

Action Level	The concentration of a contaminant which, if exceeded, triggers a treatment technique or other requirement which a water system must follow.
<i>Crypto-sporidium</i>	A tiny organism commonly found in lakes, rivers, and streams that can cause the disease cryptosporidiosis. The disease can be transmitted by swallowing contaminated water or food, by person-to-person contact, or through other exposure routes. Symptoms include diarrhea, nausea, and stomach cramps.
<i>E. coli</i> bacteria	<i>Escherichia coli</i> are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. See also <b>Total Coliform</b> .
<i>Giardia</i>	<i>Giardia lamblia</i> is a tiny organism frequently found in lakes, rivers, and streams. Swallowing this organism in contaminated food or water, exposure from person-to-person contact, or other exposure routes may cause giardiasis. If not treated, <i>Giardia</i> can cause diarrhea, fatigue, and cramps.
Hardness	An indication of the amount of dissolved minerals in water. There are different scales of hardness, but the Environmental Protection Agency (EPA) uses the following scale: less than 75 ppm = soft; 75-150 ppm = moderately hard; 150-300 ppm = hard; over 300 ppm = very hard. The Oregon Department of Human Services Drinking Water Program requires that hardness not exceed 240 ppm. Corvallis tap water is considered soft at 25 to 40 ppm.
Inorganic Chemicals	Examples include metals, minerals, and salts.
MCL	<b>Maximum Contaminant Level.</b> The highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology. MCLs are set at stringent levels. A person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.
MCLG	<b>Maximum Contaminant Level Goal.</b> 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.
NTU	<b>Nephelometric Turbidity Unit.</b> Unit of measure used to describe water clarity. The smaller the number, the clearer the water. See <b>Turbidity</b> .
pCi/L	<b>Picocuries per liter:</b> a measure of radioactivity. One curie is the radioactivity of one gram of radium. There are a trillion (1,000,000,000,000) picocuries in one curie.
pH	Indicates whether a liquid is acidic or alkaline (basic). Acids have pH values below 7, and bases have pH values above 7. A pH value of 7.0 is considered neutral. Strong bases, like drain cleaners, are called <i>caustics</i> .
ppb	<b>Parts per billion.</b> One ppb is roughly equivalent to 1 microgram per liter. A one part per billion solution would be about one third of a teaspoon of sugar diluted in the indoor swimming pool at Osborn Aquatic Center. One part per billion is also equal to one second in about 32 years.
ppm	<b>Parts per million.</b> One ppm is roughly equivalent to 1 milligram per liter. A one part per million solution would be about one teaspoon of sugar divided equally among about two dozen 55-gallon drums of water. One part per million is equivalent to one penny in ten thousand dollars.
Primary Standards	Legally enforceable standards issued by the U.S. Environmental Protection Agency. Primary standards limit the levels of specific contaminants that are allowed to be present in public drinking water supplies. Water that meets primary standards is considered safe to drink.
Secondary Standards	Non-enforceable guidelines regarding contaminants that may cause cosmetic effects such as tooth discoloration or aesthetic effects such as taste, color, or odor in drinking water.
SOC	<b>Synthetic Organic Chemicals.</b> Examples include herbicide and insecticide.
TOC	<b>Total Organic Carbon.</b> Carbon is a precursor to disinfection by-products.
Total Coliform	A group of bacteria that are naturally present in the environment and are used as an indicator that other potentially harmful bacteria may be present. See also <i>E. coli</i>
Treatment Technique	A required process intended to reduce the level of a contaminant in drinking water. A treatment technique may be required by the EPA or the Oregon Department of Human Services.
Turbidity	A measure of how cloudy water is – the smaller the number, the clearer the water. Turbidity has no health effects, however, it can interfere with disinfection and provide a medium for microbial growth. See <b>NTU</b> .
Unregulated Contaminants	Contaminants that water providers are not required to test for. However, Corvallis tests for many unregulated contaminants, and to provide the most complete information for our customers, the City of Corvallis reports the incidence of these contaminants in the annual water quality report.
VOC	<b>Volatile Organic Chemicals.</b> Examples include petroleum-based chemicals, industrial by-products, and dry-cleaning solvents.



# WATER CONSERVATION

Water conservation lowers your utility bill. It also helps the environment, especially in summer, by leaving more water in the river for fish and other aquatic organisms. Conserving water also reduces greenhouse gas emissions by reducing chemicals and energy used to treat and pump water and wastewater. **Take the Water Conservation Challenge; how many ways can YOU conserve water?**

## Indoors

Find and fix leaks! A dripping faucet can waste over 1,500 gallons per month.



Install aerators on faucets and efficient showerheads.

Upgrade to a High Efficiency Toilet (HET) that uses no more than 1.28 gallons per flush -- a 20% savings over a standard 1.6 gallon toilet.



Only run the dishwasher or clothes washer when you have a full load.

Call 766-6916 to arrange a water audit for your home or business.



## Outdoors

Adjust irrigation systems to provide uniform coverage. Water only during the late evening or early morning to reduce evaporation and drift.



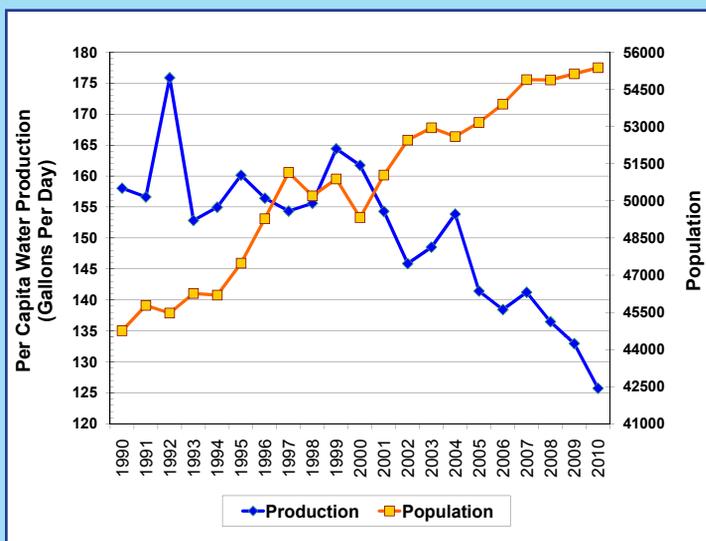
Check out the new Water Efficient Plant Guide for the Willamette Valley to plan a landscape that sips rather than gulps. The guide is available from [www.ci.corvallis.or.us/conserves](http://www.ci.corvallis.or.us/conserves), or request a hard copy at Public Works.

Water your lawn in short cycles to maximize infiltration and minimize runoff.

If you wash your car at home, do it on the lawn; give the lawn a drink and keep automotive chemicals out of storm drains. Better yet, find a commercial car wash that recycles their water.



## Local Water Use Trends are Encouraging



Citizens of Corvallis are conserving water! The plants treated less water in 2010 than any year in the past generation. Considering Corvallis population growth of over 23% since 1990 (see chart to left), per capita water use is definitely on a downward trend.

Conserving water helps make Corvallis a more sustainable community. Thank you for doing your part. Challenge yourself to see if you can reduce your family's water use even more in the coming year.

# Frequently Asked Questions

***Sometimes my water tastes or smells like chlorine. Why is that?  
Can I get rid of the smell?***

Laws require that water systems maintain a disinfectant residual throughout the distribution system. This assures that our drinking water remains safe until it comes out of the tap. Prior to chlorination, waterborne disease was a serious health problem in the United States. Cholera, typhus, polio, hepatitis and other diseases are transmitted through contaminated drinking water sources. In many countries, the water still is not safe to drink.

Although many tests have shown that the amount of chlorine found in treated water is safe to drink, some people are sensitive to the smell and taste of chlorine. If you are, here are some suggestions: Fill a pitcher or bottle of water and keep it loosely capped; the chlorine will dissipate within a few hours. Because water is a perishable product, consider keeping your pitcher in the refrigerator. This will also let you have a cool glass of water without running the tap. Another way to dissipate chlorine is to pour water back and forth between two glasses or pitchers. This aeration will help the chlorine escape.

Point-of-use water filters (those that filter water at the tap where you use it) may make tap water more aesthetically pleasing. Filters, however, will not make your water safer. In fact, if they are not maintained properly, filters can actually make water less safe to drink. Refer to your owner's manual for the filter change frequency and filter compatibility. If you do choose to purchase a point-of-use water filter, be sure to select one that is approved by the National Sanitation Foundation (NSF) and always follow maintenance instructions fully and carefully.



***Should I drink bottled water?  
Is it safer than tap water?***

Bottled water is generally safe. It is not safer than Corvallis tap water. If you read the labels carefully, you will find that many brands of bottled water come from a municipal water supply.

There is no requirement that bottled water have a disinfectant residual. Water is perishable, and bottled water should not be stored more than a few months. Bottled water is significantly more expensive than tap water, but it generally does not provide additional safety or health benefits. Consider that for the price of a single serving of bottled water, you could purchase almost a thousand gallons of Corvallis tap water.

Creating bottles also uses resources such as petroleum and energy. Even the disposal of bottles presents a concern that should be considered when you choose whether or not to purchase and drink bottled water. Fill your own bottle with Corvallis tap water and take it with you. You may find you have a few extra dollars in your pocket.

***How would I know about a problem with the water supply?***

The City of Corvallis keeps close watch on your water supply. The law requires that you be informed if there is a problem with your water. Potential sources for

this news are the radio, television, newspapers, the Benton County Environmental Health Department, the Oregon Department of Human Services Drinking Water Program, or directly from the City of Corvallis.

***My drinking water sometimes looks cloudy or discolored when it comes out of the faucet. Is it safe to drink?***

Small air bubbles can get trapped in the pressurized water system and can make a fresh glass of water look cloudy. Just as with bubbles in carbonated beverages like beer or soda, these gas bubbles will dissipate in a short time. This type of cloudiness occurs more often in the winter when the drinking water is cold

because cold water can hold more dissolved air. The water is safe to drink, cook with, and bathe in. If the cloudiness settles into white particulate matter on the bottom of your glass, your water heater may have a faulty internal pipe called a dip tube; many water heaters

were recalled several years ago for this problem.

Rust from old iron or galvanized plumbing inside your home can cause brown, red, or yellow discoloration and a metallic “off” taste. While the EPA still considers this water safe to drink, the color is disturbing to many people. Running the water for a short time should help flush the rust from your system. Wait until the water is clear before doing laundry, as the rusty water can stain your clothes. If you have rust in your home’s water pipes, some of this rust can accumulate in the bottom of your water heater tank and eventually can cause damage to the water heater. Please don’t forget to drain the bottom of your water heater periodically to remove this potentially damaging rust from the tank.



***Should I be concerned about lead or copper in the Corvallis water supply?***

Lead is a naturally occurring metal that was used in a number of industrial capacities for most of the 20th century including paint, pipes, solder, brass, and as a gasoline additive. We no longer use lead in many of these products, but lead from older products remain. The EPA and Centers for Disease Control and Prevention (CDC) report that lead paint is a leading source of lead exposure in older homes.

Lead is rarely found in rivers, wells or reservoirs and has **NEVER been detected in the Corvallis water supply or distribution system.** Some water pipes are still made of copper, but Congress banned lead solder, pipes, and fittings in 1986.

How do metals get into water? If standing water is in contact with lead for several hours, some lead may leach into the water and potentially may become a health concern. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. The most common sources of lead in a home’s drinking water are lead-based solder in the joints of older copper pipe, faucets made of brass or chrome-plated brass, and in some cases, water service lines. There are no lead water service lines in Corvallis.

Homes most likely to have contamination (primarily based on age) are selected for sampling. Water is allowed to sit in the pipes for an extended time and sampled first thing in the morning. If levels of lead or copper reach the action level in 10% of sampled homes, additional water treatment measures are required.

Operators at Corvallis’ two water treatment plants adjust the treatment process to achieve optimized corrosion control. This significantly reduces the chances that lead will get into your water. If you have lead solder or plumbing fixtures and are concerned about lead leaching, flush the water from your pipes if you haven’t used water for several hours. This is the best way to avoid high lead levels. Simply run the tap until the water feels noticeably colder (30 seconds to two minutes). Note that this method may not be effective in large apartment buildings. Remember also to drink only water that comes from the cold water tap since hot water is more effective at leaching metals such as lead.

If you are concerned about lead leaching from your plumbing fixtures or from lead solder in your home, you can have your water tested for lead. Please be sure to use a certified laboratory. Testing costs between \$20 and \$100. To find a certified lab, contact the Oregon Department of Human Services Drinking Water Program or download a current list of accredited labs at: <http://oregon.gov/DHS/ph/orelap/docs/acclab.pdf>. Additional information on testing methods and steps you can take to minimize exposure is available from EPA’s Safe Drinking Water Hotline at 1-800-426-4791 or at <http://www.epa.gov/safewater/lead>.

***I was told not to put a brick in my old toilet tank to save water. Why not?***

Toilets constitute the largest indoor use of water (about 27% of all indoor use). Modern toilets use no more than 1.6 gallons per flush; installing one will reduce toilet flushing to about 18% of indoor water use. You can put something in an older toilet's tank that takes up space, like a toilet dam, a water-filled jug, or other displacement device to reduce flush volumes, sometimes by a gallon per flush. Early-closing flappers can also reduce the amount of water used to flush. Putting a brick in the tank is a bad idea. Bricks tend to disintegrate when left underwater, and the brick fragments can damage your toilet. Contact Public Works at 766-6916 for more information on toilet displacement devices and early-close flappers. We have a limited number available free to our customers. To save the most water, consider upgrading to a modern toilet. The City of Corvallis currently offers a rebate of up to \$75 if you replace your old toilet with one of a selection of approved efficient models. For more information and approved models, see [www.ci.corvallis.or.us/conserves](http://www.ci.corvallis.or.us/conserves).



***I have heard that lawns need one inch of water per week. Is this true? How much water should I put on my garden or landscape plants?***

In the early spring, the soil has all the water it can hold. As the temperatures warm and the daylight hours lengthen, plants increase the amount of water they remove from the soil, and the amount of water that evaporates from the soil also increases. The amount of water that you apply to your lawn or landscape should equal the amount of water lost through evaporation and transpiration, often called evapotranspiration, or simply ET.

Corvallis averages about 34 inches of rain and 34 inches of ET each year. Theoretically, nobody should ever have to water their lawn at all! Of course the rain comes when plants are not growing as rapidly, so many people irrigate.

While one inch per week is a good average for the growing season, the amount of irrigation you apply should change from week to week. Your plants need more water in July than in May or September.

Call the conservation hotline at 766-6733 to find out the recommended amount of water to apply each week. If you have an irrigation controller, reset it at least once per month to avoid water waste.

**The EPA requires the following statements by all water providers regardless of whether there are contaminants in the water supply. Corvallis water is safe and fulfills all EPA requirements.**

*“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 EPA’s Safe Drinking Water Hotline (1-800-426-4791).”*

*“The sources of our nation’s drinking water include surface sources, such as rivers, streams, lakes and reservoirs, and groundwater sources, or wells. As water moves through the ground or over surfaces, it dissolves naturally occurring minerals and, in some cases, radioactive material. Water can also pick up substances from the presence of human or animal activity. Contaminants that may be present in drinking water include: Microbial contaminants, such as viruses and bacteria which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses; Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems; Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.”*

Este informe contiene información importante sobre su agua potable. Tradúzcalo o hable con alguien que entienda esta información.

Corvallis Public Works  
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**I want to be here for you.**

If only our water infrastructure could talk to us. The corner hydrant might remind us that only tap water protects us against the threat of fire, and that the pipes below our streets need constant attention to keep life-saving water flowing at the right pressure, 24/7, without fail.

We are all stewards of the water infrastructure generations before handed down to us, and our water bills keep that system strong and reliable.

**Only Tap Water Delivers**

Presented in cooperation with  
 American Water Works Association

**Be a Water Superhero!  
 Read this report to find out:**

- Where your water comes from
- How drinking water is treated to make it safe
- How water is delivered to your tap
- Any contaminants in your drinking water
- How to conserve water



**IMPORTANT PHONE NUMBERS**

Billing and Customer Service .....	541-766-6949
Maintenance or Emergency Assistance .....	541-766-6916
Rock Creek Water Treatment Plant.....	541-929-2636
Taylor Water Treatment Plant .....	541-766-6932
Water Pressure Information.....	541-766-6916
Quality, Taste, or Odor Concerns .....	541-766-6932
Emergencies after 5 p.m. or on weekends.....	541-766-6913
Conservation Hotline & Irrigation Information.....	541-766-6733
EPA Safe Drinking Water Hotline.....	1-800-426-4791
Oregon Department of Human Services Drinking Water Program (DHS-DWP) .....	1-971-673-0405

**Financial Statement**

The cost to print and mail this report to you is approximately \$0.284

**NEED MORE INFORMATION?  
 Call the Public Works Department at 541-766-6916!**