City of Beaverton
2008 Water Quality Report

Your Water Is Our First Priority

The City of Beaverton is pleased to present you with this 2008 Water Quality Report. The purpose of the report is:

To provide you with information about your drinking water and comply with the reporting requirements of the U.S. Environmental Protection Agency (EPA), Consumer Confidence Report Rule, 40 CFR, Part 141, Subpart O.

Using data collected in 2008, this report summarizes information about your water supply sources, the water system facilities that deliver water to your tap, and the quality of your drinking water. Also included is information about programs underway that are helping to ensure you have safe and dependable drinking water.

The City of Beaverton is proud of the high quality of our water supply, which meets or exceeds state and federal water quality requirements. If you have any questions regarding your water quality or about information presented in this report, please call us at (503) 350-4017.

Si Habla Español: Este informe contiene información muy importante. Tradúscalo ó hable con un amigo quien lo entienda bien.

Information in this report is available upon request in alternative formats by calling the City of Beaverton's Water Quality Report Hotline at (503) 350-4017.

www.beavertonoregon.gov

For information about opportunities for public participation with the Beaverton City Council regarding drinking water, visit **www.beavertonoregon.gov/council/meetings**

Water Quality Testing

The City is committed to providing safe drinking water to our water consumers. The City collects an average of 159 samples per month (1,902 samples per year) for testing by a State-certified laboratory to ensure that the City's drinking water meets state and federal drinking water standards. A table summarizing 2008 water quality data is provided on page 10 of this report.

For a fee, private laboratories will test your tap water for lead and other substances. Not all labs are certified to test for all contaminants. For information about water quality testing consult the Oregon Drinking Water Programs Web Site. Download a complete list of all laboratories certified by the Oregon Department of Human Services. You will need the FREE Adobe Acrobat Reader to view these files. http://oregon.gov/DHS/ph/dwp/docs/LabList.pdf

Beaverton's Drinking Water Sources

The primary source of filtered drinking water in Beaverton's service area is the Joint Water Commission (JWC) Water Treatment Plant located south of Forest Grove. The water treatment plant filters surface water pumped from the nearby upper Tualatin River. The water treatment plant can produce up to 75 million gallons a day (mgd) of finished drinking water. The City owns a 25 percent share in the water treatment plant, allowing the City up to 18.75 mgd of treated water.

The City is a member of the JWC, which is an intergovernmental water supply group whose owner-members include the Cities of Beaverton, Hillsboro, Forest Grove, and Tigard, and the Tualatin Valley Water District. The JWC was established to store, manage, treat, and convey drinking water for the owner- member agencies and supplies water to as many as 400,000 people.

During the summer, when drinking water demand is high and Tualatin River streamflow is low, water is released from Hagg Lake (Scoggins Reservoir) and Barney Reservoir (formed behind a dam on the Trask River in the Coast Range). The water spilled from the two dams is to compensate for the amount removed from the Tualatin River for Beaverton's summer use. Water released from Barney Reservoir is diverted by pipes from the Trask River basin into the upper Tualatin River.

The City of Beaverton owns yearly water rights of up to 1.3 billion gallons (4,000 acre-feet) in Scoggins Reservoir and 1.4 billion gallons (4,300 acre-feet) in Barney Reservoir. Water originating from Scoggins Reservoir and Barney Reservoir is the source of most of the City's raw water (before treatment) during the summer. Release of stored raw water from the two dams increases summertime streamflow in the Tualatin River, helping to sustain a healthy river ecosystem. Every winter and spring, the City uses its 16 mgd natural streamflow water right to

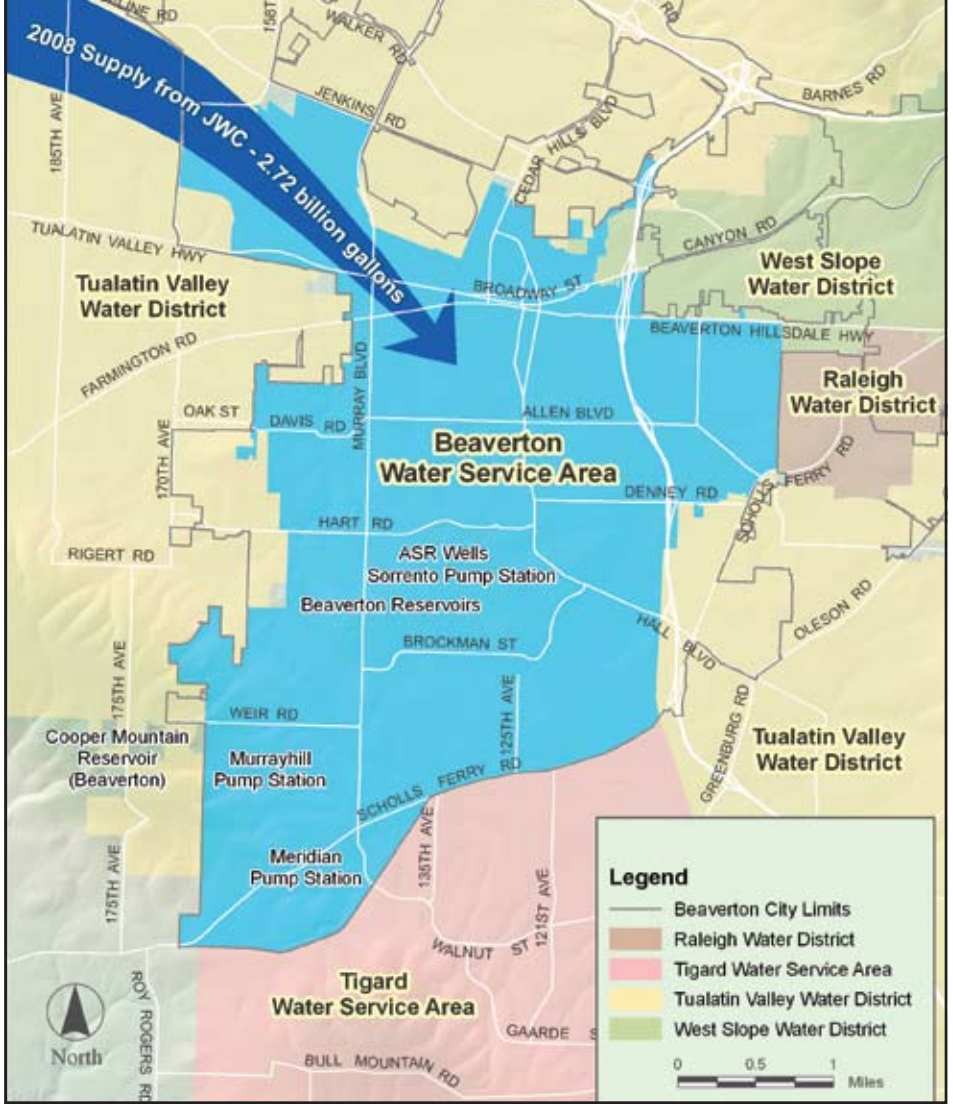
Photos: Henry Hagg Lake Southwest of Forest Grove.

meet daily water supply demands. Surface water from the Tualatin River is filtered in the JWC Water Treatment Plant before delivery to the City of Beaverton.

Finished drinking water from in the JWC Water Treatment Plant is pumped about one-half mile up to the Fern Hill Reservoirs, two 20-million-gallon (MG), aboveground storage reservoirs situated at 520 feet elevation. To transport water from the water treatment plant to Beaverton, the City owns 14 mgd capacity in the JWC South Transmission Line. The City also owns emergency backup capacity in the parallel JWC North Transmission Line. From the two Fern Hill Reservoirs, water travels about 20 miles by gravity through large-diameter transmission lines to Beaverton, where the City's two terminal water storage reservoirs are located in central Beaverton. The City's two terminal water storage reservoirs hold a combined total of 20 MG.

Since 1999, the City has used aquifer storage and recovery (ASR) to temporarily limit the purchase of new water supply facilities. During the winter and spring, Beaverton injects treated drinking water from the JWC Water Treatment Plant into natural underground basalt formations (aquifers), displacing native groundwater. During the summer months, treated water is recovered from ASR wells to supplement JWC surface water to help meet peak season demands (up to 17 mgd).

Acting as a conservation measure, ASR conserves surface water from primary sources (rivers and dams) during environmentally stressful summer seasons. Beaverton has reduced its diversion of limited summer river streamflow and water stored behind dams by substituting stored water recovered from ASR wells (for more on ASR, see **Storing Drinking Water Underground — ASR** in this report).



Your City Water System at a Glance

Drinking water is one of the most critical services that the City provides on a daily basis to the residents and businesses of Beaverton. In 2008, the City supplied drinking water to 69,000 residents, or about 80 percent of the total 86,205 residents who live within the City limits. The remaining 20 percent of our residents' water is supplied by the Tualatin Valley Water District, West Slope Water District, and Raleigh Water District.

Following are facts about the City's water system:

- The distribution system includes five local water storage reservoirs, with a combined total storage volume of 28.25 MG.
- The City owns additional reservoir storage of 10 MG near the JWC Water Treatment Plant.
- The distribution system (separate from the JWC supply system) consists of approximately 263 miles of pipe, ranging from 4 inches to 36 inches in diameter.
- In 2008, the City consumed an average of 7.46 mgd or a total of 2.72 billion gallons of water. On August 16, 2008, the City consumed 13.7 MG of drinking water, the highest demand day.
- The City has a 3- to 4-day supply of stored drinking water in its local reservoirs.
- The distribution system contains four pumping stations that lift water from the largest water service pressure zone on the valley floor to the nine other higher elevation water pressure zones within the City's water service area.
- The City's owned capacity in the JWC Water Treatment Plant is 18.75 mgd.
- The City has an additional water supply of 6 mgd available from ASR wells, commonly used only in the summer.
- In addition to the JWC and ASR wells, there is an emergency supply capacity of 8 mgd available from two adjoining public water providers (Tualatin Valley Water District and the City of Portland).

Drinking Water Fluoridation

The City fluoridates our drinking water to improve the dental health for consumers of Beaverton's water. The fluoridation system was completed, tested, and began service in mid-May 2004. Since then, the City's water has been fluoridated at a target level of 0.9 parts per million (ppm). Sodium fluoride is added to Beaverton's drinking water after it leaves the JWC Water Treatment Plant and before entering the City for distribution. The City's fluoride feed facility employs sensitive instruments to measure and maintain the desired level of fluoride in the drinking water system. In addition, seven online electronic fluoride analyzers are situated in different locations throughout the City to monitor fluoride levels in the drinking water 24 hours a day.

Tualatin Basin Water Supply Project (TBWSP)

As communities in the Tualatin Basin continue to grow, more water is needed for municipal drinking water and industrial uses. In addition, more water is needed to augment flow in the Tualatin River and its tributaries for water quality.

In 2001, water resource agencies in the Tualatin Basin formed a partnership to study and decide how to best serve the water needs of the future. Beaverton has financially participated in the TBWSP feasibility work since signing an agreement in 2001 with the other project partners.

The TBWSP involves raising the height of Scoggins Dam (which forms Hagg Lake); construction of a large pipeline from the dam to the JWC Water Treatment Plant; a large pumping station located below the dam to pump water from the Tualatin River into the lake during the winter; and expansion of the JWC Water Treatment Plant south of Forest Grove. Scoggins Dam and Hagg Lake are owned by the U.S. Bureau of Reclamation (USBR), which built the facility in 1970. The TBWSP will add approximately 53,000 acre-feet of water to Scoggins Reservoir (Hagg Lake) per year (1 acre-foot is the amount of water it takes to fill an acre of area with 1 foot of water). The City of Beaverton is a partner and has a 3.8 percent interest in the project to eventually own an additional 2,000 acre-feet (0.65 billion gallons). The City currently has a contract with the USBR that gives the City a right to use up to 4,000 acre-feet each year (1.3 billion gallons).

Hagg Lake (Scoggins Reservoir) on Scoggins Creek holds 53,000 acre-feet or 17.3 billion gallons

The TBWSP is a collaborative effort. Besides providing additional supply for municipal water needs, the project will provide environmental benefits and a stable water supply for agricultural uses. Clean Water Services is the lead agency for the project, providing project management and public involvement. Project partners include:

- Clean Water Services
- Tualatin Valley Water District
- City of Hillsboro
- City of Forest Grove
- City of Beaverton
- Lake Oswego Corporation
- Tualatin Valley Irrigation District
- U.S. Bureau of Reclamation (USBR)
- Washington County

Draft Planning Report/Environmental Impact Statement (PR/EIS)

The tentative schedule for completion of the project's Draft PR/EIS is fall/winter 2009. The Draft PR/EIS will be published by the USBR and distributed to interested parties. It also will be available for review on the City's website and at various local libraries.

USBR Title Transfer

TBWSP partners are working with the USBR to transfer ownership of Scoggins Dam, Hagg Lake (and adjoining federal lands), and irrigation facilities from the USBR to the TBWSP partners. The title transfer also would include operation and maintenance responsibilities, legal liability and regulatory requirements to the TBWSP.

Title transfer offers several potential benefits to both local water resource managers and the federal government:

- **Flexibility:** Local ownership and control of facilities and water rights would reduce decision-making complexity and improve flexibility of water management.
- **Efficiency:** Local ownership would allow for the more efficient management of water resources in the Tualatin Basin as decisions are made on a local basis.
- **Improved Integration:** Local ownership would allow regional water mangers to better integrate operations of Scoggins Reservoir (Hagg Lake) and Barney Reservoir to meet water needs of the basin.
- **Reduce Federal Obligations:** Title transfer would allow the federal government to divest itself of responsibility for ongoing operations, maintenance, replacement, and liability.
- **Time/Cost Savings:** Local ownership could offer significant time and cost saving for future improvements.

For more information about the TBWSP go to: **http://www.tualatinbasinwatersupply.org/**

Congressional Funding Brochures

Joint Water Commission Capital Improvements Master Plan

JWC Master Plan

As the largest supplier of drinking water in Washington County, the JWC has needed a continuous program of capital improvements to keep up with water demand. In June 2008, using a competitive process, the JWC, the City's water supply agency, selected an engineering consultant to complete an update of the last JWC water master plan from 2002. The purpose of the master plan was to evaluate and make recommendations for the following JWC subjects:

- Facility inventory, mapping, and hydraulics
- Water demand forecasting
- Update and calibrate transmission computer model
- Transmission system analysis and routing
- Storage system analysis
- ASR feasibility; storage, pipeline, and ASR tradeoffs
- Update water treatment plant facility plan
- Recommend 40-year capital improvement plan

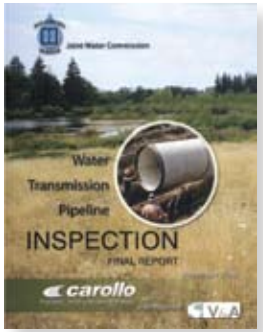
One of the most important outcomes of the master plan is the proposed future capital improvements plan through the year 2048 to the serve the urban portion of Washington County. The final JWC Master Plan report includes a comprehensive list of future capital improvements for expanding: water treatment; transmission mains and pumping stations to convey treated drinking water; and the JWC ASR program with a total of 20 groundwater wells. The projected cost of the capital projects needed to serve growth by 2048 is $491.6 million.

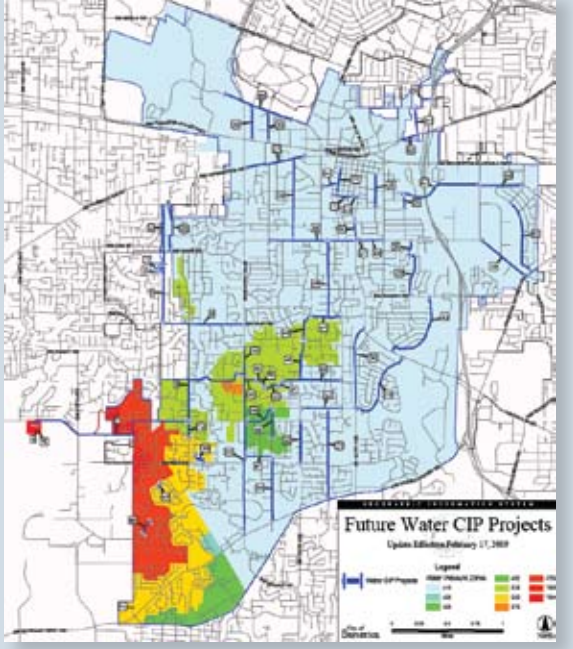
JWC Water Management and Conservation Plans

The Water Management and Conservation Plan (WMCP) fulfills the requirements of the Oregon Administrative Rules adopted by the Water Resources Commission in November 2002 (OAR Chapter 690, Division 86). It describes water management, water conservation, and curtailment programs to guide the wise use and stewardship of JWC's water supply. The WMCP was started in 2007 and will be submitted to the Oregon Water Resources Department by August 16, 2009. The 2009 WMCP will replace all previously submitted plans for both the JWC and City of Beaverton.

Transmission Line Inspection Project

In 2007, the JWC entered into a contract with a pipe corrosion consultant to conduct extensive field testing of the JWC's existing 13-mile-long South Transmission Line, and the City of Beaverton's 36-inch-diameter transmission line, which is approximately 8 miles long. A shorter 2-mile-long transmission line owned by the City of Forest Grove also was inspected. The JWC and Beaverton transmission lines were constructed in 1974 (7 miles of pipe) and 1979 (13 miles of pipe). The project also included excavation and physical inspection and testing of the pipelines at 15 locations at highest risk of corrosion. The findings in the overall inspection report: the existing pipelines were generally found to be in good condition, with no significant corrosion at any of the 15 inspections sites.





Future Water Main Projects

Beaverton's Water Master Plan

To predict future water use and the water system improvements (construction projects) required to serve new customer demand in the future, the City undertook a Water System Master Plan beginning in 2008. A master plan with periodic updates is required under Oregon Administrative Rules (OAR) for Public Water Systems, Chapter 333, and Division 61. A master plan is a comprehensive analysis of the water system to project future water demand and to generate a plan of recommended water system facility improvements to provide for future system expansion.

Included in the results of the completed Beaverton Water System Master Plan is a list of major capital improvements needed to support an increase in population served by the City's water system from the current 69,000 to nearly 84,000. The list includes expansion, over the next 35 years, of the following water system components: source water, water treatment, transmission lines to move water 20 miles from the point of treatment to City water customers, water reservoir storage, City water mains, pumping stations, and groundwater wells. The total estimated cost of future water projects to meet increased water demands is $67.9 million.

Important Information about Water and Your Health

Some people may be more vulnerable to contaminants in drinking water than the general population. Immune compromised people, such as those with cancer undergoing chemotherapy, those 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. The U.S. EPA Center for Disease Control (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).

Water Conservation

Of all the Earth's water, 99 percent is salt water, frozen, or too polluted for human consumption. Only 1 percent of the Earth's water is available for drinking.

Water. Save a little. Help a lot.

We think of the Pacific Northwest as a place of abundant rainfall and plentiful water. But, think about this: Our population is rapidly growing, urban areas are sprawling, our climate is changing, our summers are becoming warmer and drier, and our water demands continue to grow even though our water supply is limited.

During the summer months, our region relies primarily on water stored from precipitation in storage reservoirs, rivers, or groundwater. Since the average household consumes 100 to 400 gallons of water per day, reducing the demand on our existing water supply will help stretch available water resources.

Regional Water Conservation and Water Supply Planning

The City of Beaverton and other public water purveyors from Multnomah, Clackamas, and Washington Counties are members of the Regional Water Providers Consortium (Consortium). The Consortium provides a forum for collaboration on water supply issues and conducts activities that provide service to customers in and around the Portland metropolitan area.

www.conserveh2o.org

The need for regional water supply coordination brought Consortium members together in 1997. Now comprised of 22 water providers in the Portland metropolitan area and the regional government Metro, the Consortium works on critical water supply issues and is committed to being a good steward of our limited water resources.

The Consortium serves as a coordinating organization to improve the planning and management of municipal water supplies in the Portland metropolitan area. The Consortium provides a comprehensive, integrated framework of technical information, regional water conservation, resource strategies, and implementing actions to meet the water supply needs of the Portland metropolitan area to the year 2050.

Participation in the Consortium is voluntary and is funded through membership dues. Water providers retain full authority to manage their individual water systems. The Consortium is made up of a Board, Executive Committee, Technical Committee, Emergency Planning Committee, and Conservation Committee.

The City and the Consortium presented a new show, "What Do You Know About H2O?," which was performed by Mad Science during the 2008-09 school year. Geared toward 3rd–5th graders, the educational, interactive and entertaining show used science to highlight the unique and magical attributes of water through hands-on activities that encourage kids to do their part to conserve water. The photo above is from the Mad Science show performed at Vose Elementary School.

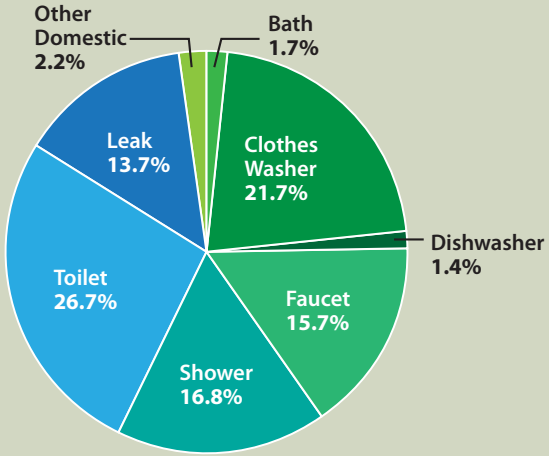
What Do You Know About H2O?

If everyone in the Beaverton's Water Service Area saved just 10 gallons of water a day, together we would save:

- 690,000 gallons per day!
- 4,830,000 gallons per week!
- 20,987,000 gallons per month!
- 251,850,000 gallons per year!!

Water Conservation:

Most of us don't even think about the fact we may use indoor water sources 20 or more times a day. But just consider all the ways you use water around the home: sinks, toilets, showers, dishwashers, and more.



Indoor Tips:

- **Take shorter showers** – Cut your 10-minute shower to 5 minutes, save 10.5 gallons per shower.
- **Check your toilets for leaks** – Replace older toilets with high efficiency models. Repair leaky fixtures. One drip per second can waste up to 2,400 gallons a year!
- **Turn the faucet off** – Turn the water off when brushing your teeth and/or shaving. You'll save 5 gallons a day.
- **Wash only full loads of laundry or dishes** – Save water by running dish and clothes washers only when full.
- **Don't drown the trash** – Using the toilet as a trash can wastes up to 5 gallons per flush.

Outdoor Conservation Tips:

- **Irrigation system** – Make sure sprinklers are pointed at your lawn and not the sidewalk or driveway.
- **Watering your lawn** – Water your lawn or garden in the early morning or late evening to combat the effects of evaporation.
- **An inch a week – That's all it takes!** – Avoid applying water at a faster rate than it can soak into the soil. If water puddles or runs off your lawn, divide your watering time in half.

Get your FREE watering gauge today!

Please contact Debbie Martisak at 503-350-4084 (dmartisak@ci.beaverton.or.us) for a free watering gauge.

Watering 101

Did you know that overwatering is the most common problem in home and commercial landscaping? Or that outdoor watering can cause water use to double or triple during the summer? This is often because people don't know how much water their landscape needs.

And, it's one reason why irrigation — whether it's a single sprinkler attached to a hose or a sophisticated underground system — is a key component to your water conservation efforts.

The first point to remember is that the greatest waste of water is watering too much, too often. Below are some basic tips to get you started.

Water When Temperatures Are Cooler and the Air is Calmer

Make sure you water before 10 a.m. or after 6 p.m. when temperatures are cooler and the afternoon winds have calmed so that evaporation is kept to a minimum.

Apply the Amount of Water Your Soil Can Absorb

The amount you water should be based on soil conditions and plant needs. Here in the Pacific Northwest, soils are typically clay or sandy loam, which may take longer for the water to penetrate. Run off and puddling are visible cues that water is being applied at a quicker rate than it can be absorbed.

If this occurs, you may want to use a "cycle and soak" pattern for watering so that you apply water for a shorter time period, let it soak in, and then repeat the process. For example, if your watering schedule is 40 minutes per week and you plan to water 2 days per week, your new "cycle and soak" schedule might be to water for 10 minutes at 6 a.m. and then again for 10 minutes at 8 a.m.

Water to Your Plants' Needs

On average, we recommend watering your lawn about an inch a week – a bit more during long, hot, dry spells and a bit less during the cooler spring and fall. Trees, shrubs, and perennials typically don't need water as frequently, however, they may require more volume at each cycle, so it is best to check with your local garden center or landscape professional about your plants' specific watering needs.

Amend Your Soil with Mulch

Mulches come in two forms — organic and inorganic. Organic mulches include aged manure, kitchen compost, and bark chips or wood chips. Organic mulches increase the soil's ability to store water by covering and cooling the soil thereby minimizing evaporation. Inorganic mulches, such as gravel and river rock, can provide interesting landscape textures; however they do absorb and re-radiate the sun's heat, increasing the amount of water surrounding plants will need to survive. Mulches also reduce erosion and help with weed control.

Use about 3 inches of organic mulch for weed control, but do not bury the crowns of plants because they may smother and rot. If the mulch is too deep, water will have a difficult time reaching the plant roots.

Group Plants with Similar Water Needs

Different plants need different amounts of water, sun, and shade to survive. Some microclimates of your yard are probably hotter and drier, or wetter and cooler, than others.

Create Watering Zones

In addition to your yard's microclimates, look at creating watering zones within your landscape. Inside each zone, all of the plants should have the same general watering needs, allowing you to give each plant the water it requires — not too much or too little. Watering zones help you avoid wasting water while helping to reduce the time and effort needed to maintain your garden.

Set It, but Don't Forget It

The key to efficient irrigation is to adjust watering schedules frequently during the season. If you set your automatic controller once for the hottest part of the summer and let it run all season, you're wasting a lot of water that could damage your plants along with your wallet. Most modern controllers allow you to easily adjust your watering schedule based on the weather.

Water Thoroughly, but Infrequently

Watering thoroughly, but infrequently, will help roots go deeper, resulting in more water-efficient, drought-tolerant plants. This is one reason the City recommends watering one or two times per week. It will also save you time.

Who Are You Going to Call?

Beaverton Can Answer All of Your Water Questions!

Water Billing Question?
Call 503-526-2257

Water Quality Question?
Call Beth Dolblow at 503-781-0704
Email bdolbow@ci.beaverton.or.us

Water Conservation Question?
Call Debbie Martisak at 503-350-4084
Email dmartisak@ci.beaverton.or.us

Backflow Prevention Question?
Call Ben Rosales at 503-526-2220
Email brosales@ci.beaverton.or.us

Water Pressure Question?
Call Rick Weaver at 503-526-2646
Email rweaver@ci.beaverton.or.us

Future Water Sources Question?
Call David Winship at 503-526-2434
Email dwinship@ci.beaverton.or.us

Water Emergency?
Call 503-526-2220

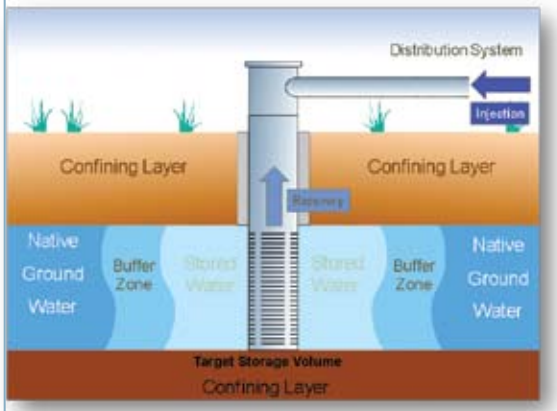
After-hours Water Emergency?
Call 503-526-2260

http://www.beavertonoregon.gov/departments/publicworks/Utilities/

Safe Drinking Water Hotline

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).

Storing Drinking Water Underground — ASR



Aquifer storage and recovery (ASR) is a way of storing drinking water underground, then pumping it out when it is needed. During the winter and spring, Beaverton injects treated drinking water from JWC Water Treatment Plant into natural underground basalt formations (aquifers), displacing native groundwater. Stored water in the aquifer is pumped out of the ASR wells during the summer when demand increases as customers drink more water and use it for outdoor activities, such as irrigation for landscaping and gardens. The City currently has three operating ASR wells (ASR Well Nos. 1, 2, and 4) that have a combined groundwater pumping capacity of 6 mgd.

Why Is ASR Important to Beaverton?

Beaverton uses ASR for the following reasons:

- ASR water is used to "bridge the gap" when peak summer drinking water demands (up to 17 MG on a single day) exceed available supply capacity (14 mgd in the water transmission system).
- ASR helps delay the need to purchase water from new sources and/or build new water improvements (pipelines, reservoirs, treatment plant expansion).
- ASR conserves surface water from primary sources (rivers and dams) during environmentally stressful summer seasons. Beaverton has reduced its diversion of limited summer river streamflow and/or water stored behind dams by substituting stored water recovered from ASR wells.

Ensuring ASR Water Quality

Although the water that is injected into City ASR wells has been treated, rigorous water quality testing and data collection are performed on water from the ASR wells to ensure that water quality meets state and federal standards. Data collected on the City's ASR program are reported each year to the Oregon Department of Human Services, Drinking Water Program.

ASR Statistics/Facts

- Stored water pumped out of the City's three ASR wells made up nearly 12 percent of the City's total annual drinking water distributed to customers in 2008.
- Using ASR, the City stored approximately 450 MG of drinking water in underground aquifers during the winter and spring of Fiscal Year (FY) 2007-08, with a total of 428 MG available for recovery after the State-mandated 5 percent reduction of the storage account.
- From June to October 2008, 328 MG of stored water were recovered from the ASR wells and pumped into City water mains to help meet summer customer demand.
- The City owns a fourth ASR Well (ASR No. 3), which is already drilled and is expected to be operational in 2011.


Department of Human Services
Drinking Water Program
This is to certify that the
City of Beaverton
has successfully met the criteria for
Outstanding Performance
during the last Water System Survey conducted on
October 1st, 2008
DHS
David E. Leland, P.E., Manager
Drinking Water Program
Department of Human Services

Beaverton Receives "Outstanding" Rating on Recent Water System Survey

The Oregon Department of Human Services (DHS) rated the City of Beaverton's surface water system "Outstanding" after conducting a review in October 2008. Water system surveys typically are performed every 3 years to evaluate the water system's capability to supply safe drinking water to the public. During the on-site review, DHS staff from the Drinking Water Program looked at the system's sources, treatment, storage facilities, distribution system, operations and maintenance procedures, etc.

Cross Connection Control Program

As a City of Beaverton customer, you expect your drinking water to be safe. We are committed to providing you the healthiest, highest quality water, but we need your help. Beaverton has a cross connection control program, as required by the Oregon Department of Human Services Drinking Water Program, and the EPA.

Weed killers, pesticides, or fertilizers back-siphoned through sprinkler heads or from the ground (saturated by irrigation water) can contaminate water inside irrigation pipes. Without a backflow prevention assembly, a cross connection between plumbing containing a harmful substance and a drinking water pipe could allow backflow of the harmful substance into your household plumbing or a public drinking water distribution main, where it could be accidentally consumed by you or other City water users. Protection of residential water systems can be accomplished by using a special backflow prevention valve (assembly or device) to prevent potential risk of contamination to the public supply as required by Oregon law.

When backflow occurs, water runs backwards through your pipes and into the drinking water system. When this happens, the water flowing backwards could contain something that could contaminate the drinking water supply.

Fortunately, there are many things you can do to help prevent contamination of the public water system due to backflow.

- **Irrigation systems:** Ensure an approved backflow assembly is installed, is in good working condition, and is tested annually.
- **Swimming pools and hot tubs:** Ensure that if a water hose is used to fill these units, it is protected with a hose bib vacuum breaker installed on the faucet.
- **Residential boilers:** Ensure an approved backflow assembly is installed, is in good working condition, and is tested annually.
- **Private wells:** Ensure that well systems are not connected to a public water system. If it is connected, it must have a backflow assembly at the meter, be in good working condition, and tested annually.

Oregon Administrative Rules Chapter 333-61-070 states that a water purveyor shall carry out a cross connection control inspection program, discontinuing water service to premises which fail to install an approved backflow assembly where a cross connection or potential cross connection may exist, and ensure the required backflow assembly is tested on an annual basis by a certified testing company and to be paid for by the homeowner. For assistance or advice in choosing a backflow assembly or if you are not sure which water provider serves you, please contact the City of Beaverton, Cross Connection Control Specialist, at 503-350-4042.

Thermal Expansion

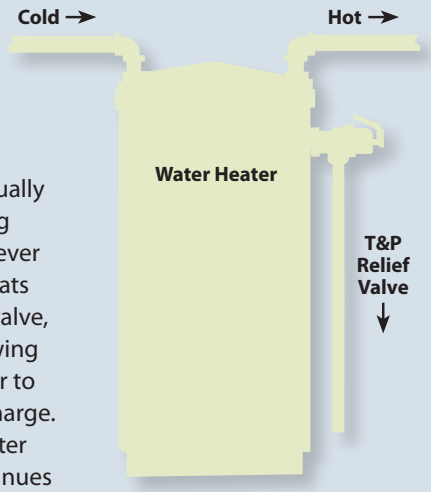
The City of Beaverton, as a public water provider, is required by the Oregon Department of Human Services to provide a notification about thermal expansion to all water users with hot water heaters.

Most homes and businesses are supplied with hot water from an electric or gas heated tank. However, if not properly maintained, a water heater can become a safety hazard. Water expands in volume as its temperature rises. The extra volume caused by thermal expansion must go somewhere. If not, the heated water creates an increase in pressure.

The temperature and pressure in the water heater is reduced when hot water is withdrawn from a faucet and cold water enters the tank. The increase in pressure from thermal expansion also can be reduced by water flowing back into the public water system. When a check valve, pressure-reducing valve, or backflow preventer is installed in the service pipe a "closed system" is created. Provisions must be made for thermal expansion in these cases.

What the Homeowner Should Do to Ensure Protection from Thermal Expansion

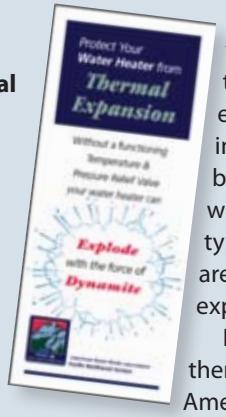
The home or business owner should check to see that an expansion tank and Temperature and Pressure Relief Valve (T & P Valve) are in place. If there is any doubt, the home or business owner should contact a licensed plumber. The T & P Valve should be inspected periodically to ensure that is operating properly. Some T & P Valves are equipped with a test level.



Manually lifting the lever unseats the valve, allowing water to discharge. If water continues to leak from the T & P Valve after closing, the valve may need to be replaced. A drain line must be installed to avoid water damage and scalding injury when the valve operates. The T & P Valve should be removed periodically and visually inspected for corrosion deposits and to ensure it has not been improperly altered or repaired. The above work can best be done by a licensed plumber.

Protection from Thermal Expansion

Protection from thermal expansion is provided in a plumbing system by the installation of a thermal expansion tank in the hot water system piping downstream of the hot water tank and a T & P Valve at the top of the tank. The thermal expansion tank controls the increased pressure generated by the hot water heater. Check with a licensed plumber for other types of expansion devices that are approved in lieu of a thermal expansion tank.



For more information regarding thermal expansion, consult the American Water Works Association, Pacific Northwest Section brochure: **http://www.src4.org/ed/thermal-exp.pdf**

City of Beaverton 2008 Water Quality Data

Major Sources: Joint Water Commission Treatment Plant, and Aquifer Storage and Recovery Wells

Regulated Contaminant	Regulatory Exceedence	Measured Concentration		Federal/State Water Quality Standard/Goal	Likely Source of Contamination
		Range	Average[a]		
MICROBIOLOGICAL AND GEOCHEMICAL PARAMETERS					
Total Coliform Bacteria	No	2 positive detections, all repeats ND	ND	No detection in 5% of monthly samples	Naturally present in the environment
Turbidity	No	0.046 to 0.51 NTU	0.048 NTU	0.3 NTU	Soil runoff
NUTRIENTS					
Nitrate	No	0.5 to 0.9 ppm	0.66 ppm	10 ppm	Natural erosion, fertilizers, septic tanks and sewage
METALS AND MINERALS					
Fluoride (Treatment Plan and ASR wells)	No	ND to 0.9 ppm	0.58 ppm	4 ppm	Water treatment additive, fertilizers and naturally occurring
Fluoride (City meter)	No	0.034 to 1.19 ppm	0.84 ppm	4 ppm	
COPPER AND LEAD SAMPLING AT JWC PLANT AND ASR WELLS — NEXT TAP TESTING IN 2010					
Copper	No	ND	NA	1.3 ppm (Action Level)	Natural erosion and corrosion of household plumbing
Lead[b]	No	ND	NA	15 ppb (Action Level)	
RADIOLOGICAL — ASR WELLS ONLY					
Gross Alpha	No	ND	NA	15 pCi/L	Natural erosion
Gross Beta	No	ND	NA	50 pCi/L	
DISINFECTION BYPRODUCTS AND RESIDUALS WITHIN THE DISTRIBUTION SYSTEM					
Total Trihalomethanes	No	30.5 to 36.4 ppb[c]	32.7 ppb[c]	80 ppb	Byproduct of drinking water chlorination and disinfection
Total Haloacetic Acids	No	18.2 to 30.2 ppb[c]	18.6 ppb[c]	60 ppb	
Chlorine	No	0.43 to 0.787 ppm	0.665 ppm	4 ppm	

Unregulated Contaminant	Secondary Regulatory Exceedence	Measured Concentration		Federal/State Water Quality Standard (MCL and MRDL)	Source of Contamination
		Range	Average		
Radon (ASR wells only)	NA	531 to 729 pCi/L	630 pCi/L	No Standard	Erosion from natural deposits
Sodium	No	8 to 12 ppm	10.8 ppm	20 ppm (advisory level)	Natural erosion and treatment additive
Chloride	No	4 to 38 ppm	13 ppm	250 ppm	Natural erosion and treatment additive
Sulfate	No	8 to 13 ppm	11 ppm	250 ppm	Common in water
Total Dissolved Solids	No	60 to 180 ppm	100 ppm	500 ppm	Natural - depends on dissolved constituents
Odor (ASR wells)	No	1-2 threshold	1.5 threshold	3 threshold	Organic matter

See page 11 for definitions and notes

Beaverton 2008 Water Quality Data table notes:

[a] Average calculations conservatively assume method detection limit value for each non-detect result.

[b] If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Beaverton is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by 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 may want to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at **www.epa.gov/safewater/lead.**

[c] Twenty samples were collected in 2008 from the distribution system and tested for trihalomethanes and haloacetic acids, which are byproducts of the disinfection process. The range in values represents the average values collected from multiple sites per quarter. The average value represents the rolling average calculated in the fourth quarter of 2008.

Definitions
ND – Not detected.
NTU – Nephelometric turbidity unit (measurement of cloudiness in water).
NA – Not applicable.

Part Per Million (ppm)
One part per million corresponds to one penny in $10,000 or approximately 1 minute in 2 years. One part per million is equal to 1,000 ppb.

Part Per Billion (ppb)
One part per billion corresponds to one penny in $10,000,000,000 or approximately 1 second in 32,000 years.

Picocuries Per Liter (pCi/L)
Picocurie is a measurement of radioactivity.

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.

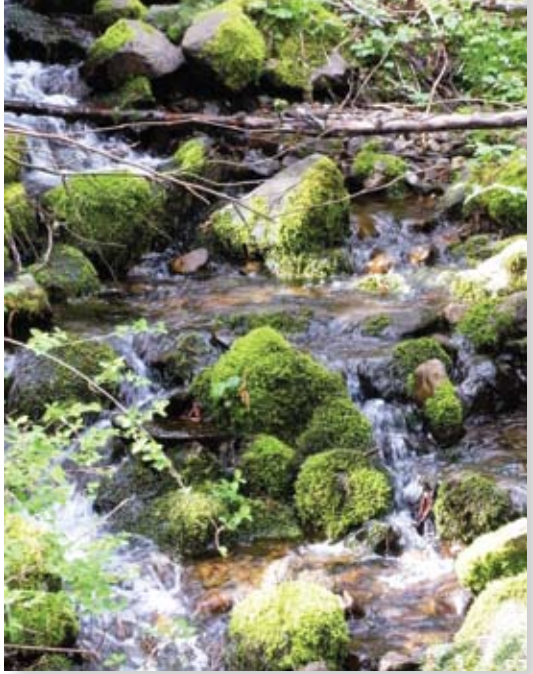
Maximum Contaminant Level (MCL)
The highest level of a contaminant that is allowed in drinking water based on federal and state regulations.

Maximum Residual Disinfectant Level (MRDL)
The highest level of a disinfectant allowed in drinking water based on federal and state regulations.

Action Level
The concentration of a contaminant that, if exceeded, triggers treatment or other requirements, which a water system provider must follow based on federal and state regulations.

Advisory Level
There is no standard for sodium in drinking water at the federal level, but the EPA recommends that drinking water sodium be held to 20 ppm or less because sodium is so common in other beverages and food.

Additional Water Quality Information from the U.S. EPA



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 that may be present in the water include:

- Microbial contaminants, such as Cryptosporidium, 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 stormwater 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 stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- Radioactive contaminants, which can be naturally occurring or result from oil and gas production and mining activities.

To ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water to provide the same protection for public health.

A source water assessment completed by the Oregon Departments of Environmental Quality (DEQ) and Human Services (DHS) in 2003 is available. The assessment report can be reviewed at:
http://www.deq.state.or.us/wq/dwp/docs/swasummary/pws00379985.pdf

Energy Efficiency Projects at Water Facilities

The FY 2008-09 Water Fund budget for electrical power is $383,329. Of that amount, conservatively 90 percent is for pumping water to customers from the valley floor (at 410 feet) to the City's reservoir at the top of Cooper Mountain (at 794 feet elevation above sea level). Major City water system facilities include four pumping stations, three ASR wells, and a fluoridation station. A status update on City efforts to improve sustainability at City water facilities follows:

Water System Efficiency Analysis (pumping energy)

A consultant working for the Energy Trust of Oregon (ETO) completed a comprehensive study of pumping facilities in 2008 and submitted the study to the ETO with an application for an energy efficiency grant. The City recently received an incentive offer from ETO to replace existing older pumps and motors with new higher efficiency models at two separate water facilities. ***With these improvements, an estimated annual savings of $64,000 could be realized.*** Note: An average U.S. household uses 8,900 kWh/year. These potential energy savings are equivalent to the energy consumed by nearly 102 households/homes.

Solar Generation (Renewable Energy Using Photovoltaics)

Oregon has a significant solar resource. In 2008, BacGen, working for ETO, inspected water storage reservoir sites to determine pre-feasibility for solar applications. One of the three City reservoirs sites was identified as a possible candidate for ground-mounted solar panels. A final feasibility study and coordination with Portland General Electric are necessary to determine how power generated could be sent back into the electrical grid to offset electrical power used at other project sites around the City. The City recently applied for an Economic Stimulus grant toward design and construction of solar panel installation at the candidate site.

Hydroelectric Energy Recovery

Hydropower possibilities in the City's water system consist of two specific areas: 1) recovery of energy currently lost through large pressure-reducing valves (PRV), which regulate pressures between water pressure zones, and 2) energy recovery from water injected in ASR wells.

A pre-feasibility cost share evaluation by ETO was completed in July 2008 and indicated likely consideration for a more detailed feasibility study to investigate three PRV sites preliminarily evaluated by ETO. The City submitted a grant application to the State of Oregon in 2008 and was awarded a $22,500 grant to help fund a formal feasibility study.

City staff has contracted with a local consultant (HDR) to perform a feasibility study to provide the necessary information to determine if a hydroelectric development project is viable. Project work has just started and is scheduled to be complete by August 2009.

For more information on the ETO, go to: **http://www.energytrust.org/business/index.html**

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