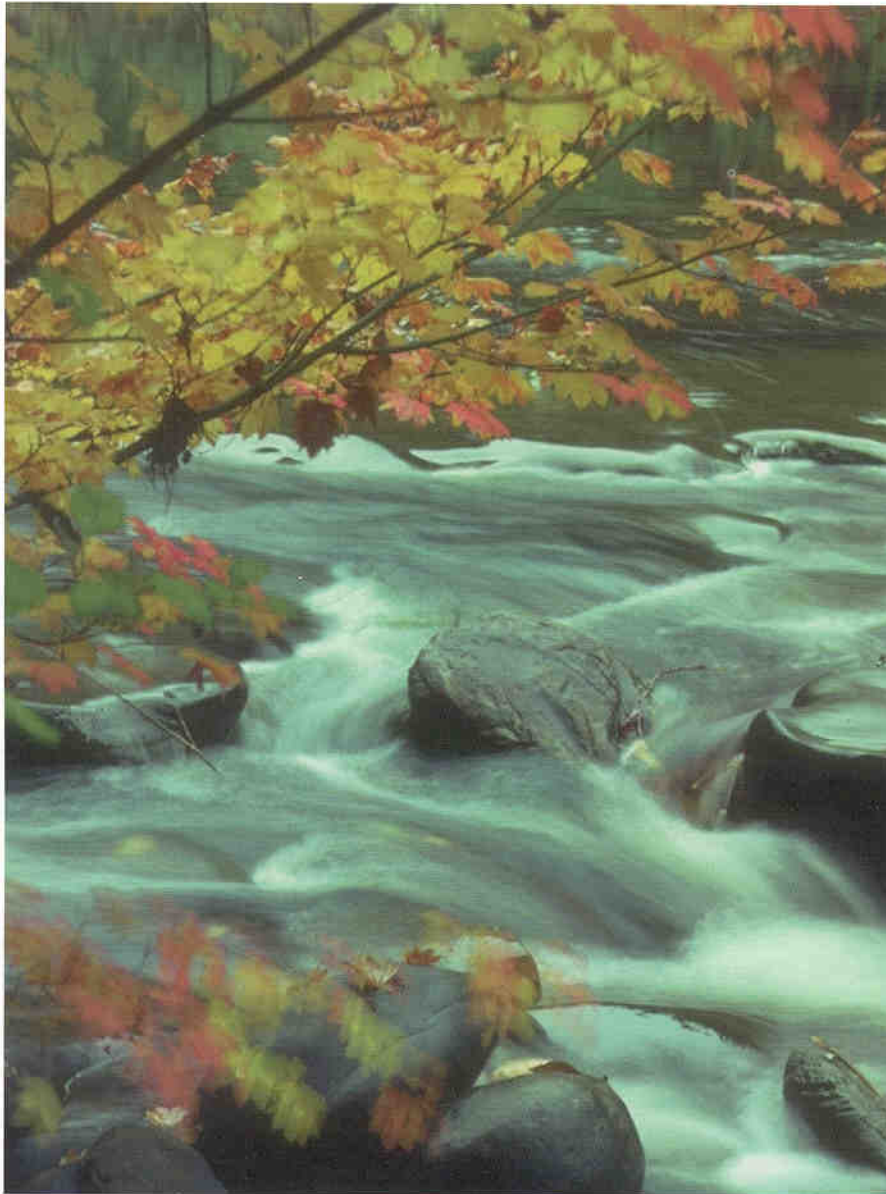


# QUALITY ON TAP

*The water we drink*



This report describes the City of Lake Oswego's water source and quality from data taken during the 1998 calendar year. This document conforms to the new Federal regulation requiring water utilities to provide the following information annually.

We welcome the opportunity to keep our customers well informed regarding our water quality. Safe drinking water is a vital concern to us all.



# OUR WATER

We are very pleased to provide you with our first Annual Water Quality Report. The City of Lake Oswego is presenting this report in order to bring our citizens the best available information about the water they drink, and the system that delivers it to them. We encourage you to take the time to become familiar with the information contained in this report.

The news is good. Lake Oswego water gets high marks according to government standards. The system which brings you your water is free of water quality violations and your water *meets or exceeds all State and Federal standards.*

We rarely consider the safe, abundant and inexpensive water we use, and the process which brings it to our homes. It's so easy for us to take our precious water for granted. Yet day after day, year after year, the City of Lake Oswego supplies clean, high quality water to the community. This report will provide information about this process.

*"I'm pleased to report that our drinking water is safe and meets all Federal and State requirements." -Joel Komarek, City of Lake Oswego Assistant City Engineer*

## WHERE OUR WATER COMES FROM

The City's source of water originates in the Clackamas River Basin. This basin encompasses about 940 square miles and drains the western slopes of Mt. Hood and Mt. Jefferson. Once withdrawn from the Clackamas River, our water is pumped through a pipeline buried deep beneath the Willamette River to the City's Water Treatment Plant located in West Linn. The City is permitted to withdraw over thirty-two million gallons per day (32 MGD) from the Clackamas River. Our Treatment Plant is currently capable of treating 16 MGD.

Before the construction of the Water Treatment Plant in 1968, Lake Oswego's water came from several wells and a small connection to the City of Portland's water supply. Currently the only well still in use is located on Iron Mountain Boulevard at Summit Drive. This well is only utilized during the hot summer months to augment our Treatment Plant production. The well water only accounts for one to two percent of our daily production in the summer.

The City of Lake Oswego has over two hundred miles of underground water pipe ranging in size from two to twenty-seven inches. These are the

lines that bring water into your home. The City regularly replaces old and undersized pipes with new, upgraded water lines. Over the last five years Lake Oswego has spent in excess of four million dollars on water system improvements. In response to changing regulations, our Water Treatment Plant has recently added corrosion control facilities and new disinfection chemicals. Future plans include construction of clarifying lagoons, filter bed improvements and building improvements to bring the plant into compliance with current building codes. Between 1995 and the year 2000, improvements to the City's Water Treatment Plant will total more than six million dollars.

The Water Treatment Plant is staffed with seven full-time licensed operators, keeping the plant running smoothly twenty-four hours a day, every day of the year. All our operators have at least an Oregon Health Division Grade 3 Water Treatment Plant Certification. Our operators are constantly upgrading skills and learning the newest treatment techniques through required continuing education.

# LAKE OSWEGO'S WATER SYSTEM

## CLACKAMAS RIVER WATERSHED

Lake Oswego's water system begins in the Clackamas River Watershed. The nearly 940 square mile watershed drains the western slopes of Mt. Hood and Mt. Jefferson.

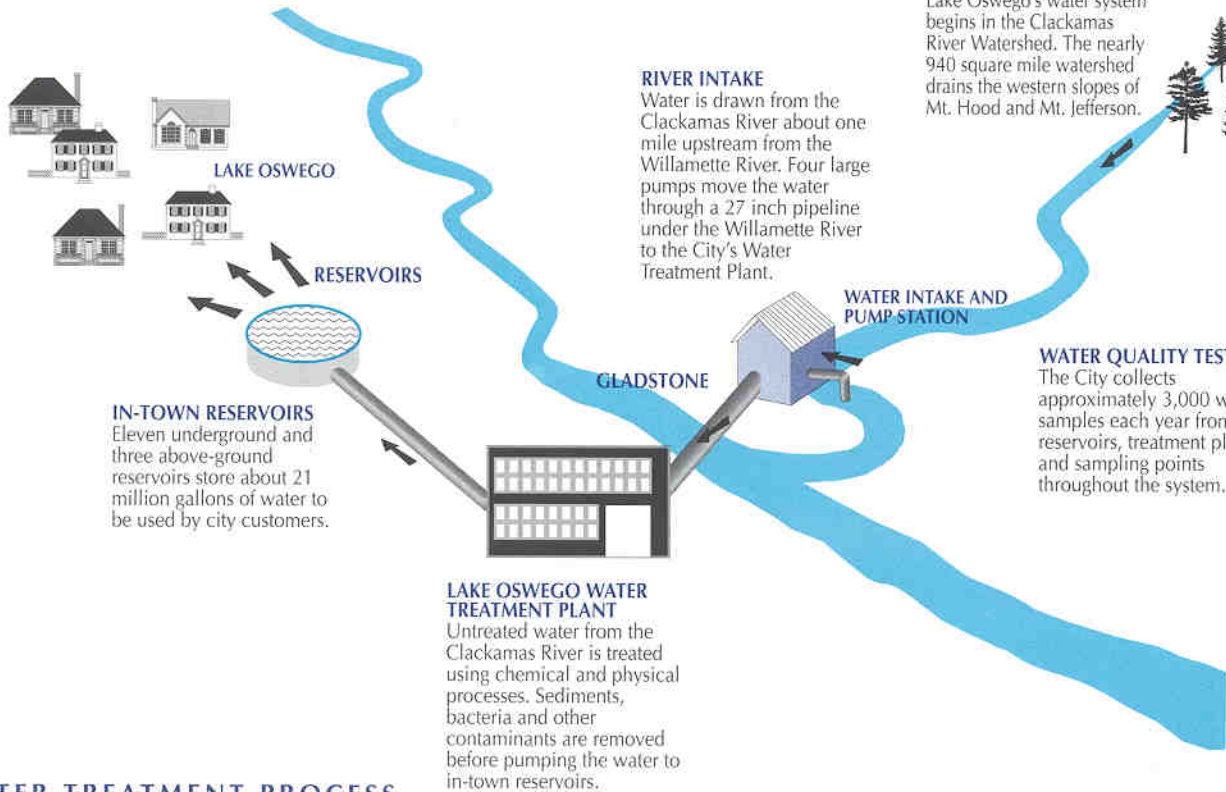
## RIVER INTAKE

Water is drawn from the Clackamas River about one mile upstream from the Willamette River. Four large pumps move the water through a 27 inch pipeline under the Willamette River to the City's Water Treatment Plant.

## WATER INTAKE AND PUMP STATION

## WATER QUALITY TESTING

The City collects approximately 3,000 water samples each year from its reservoirs, treatment plant and sampling points throughout the system.



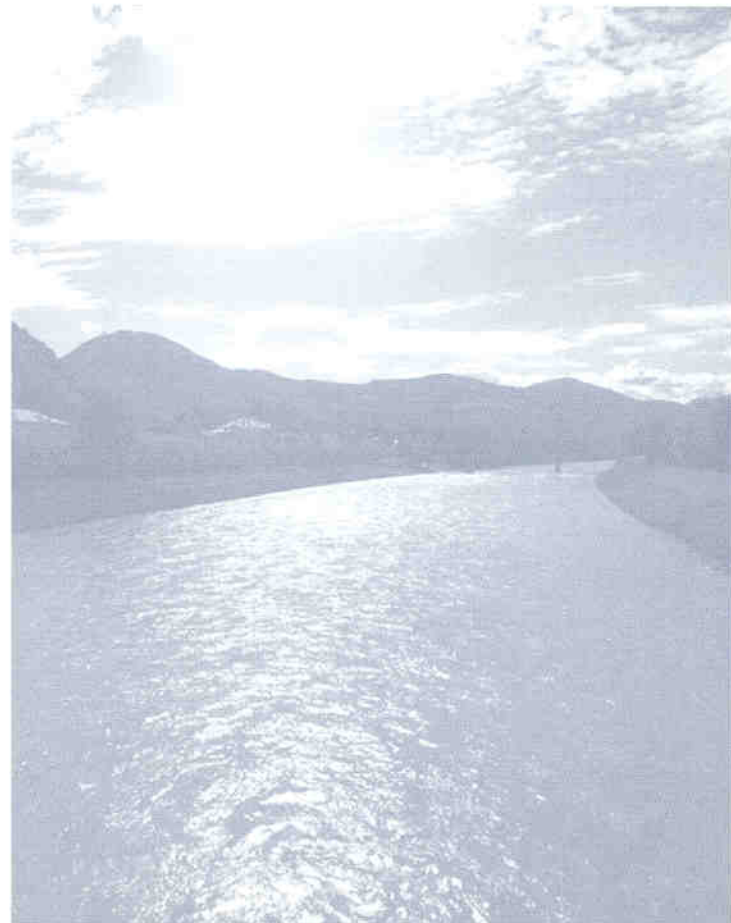
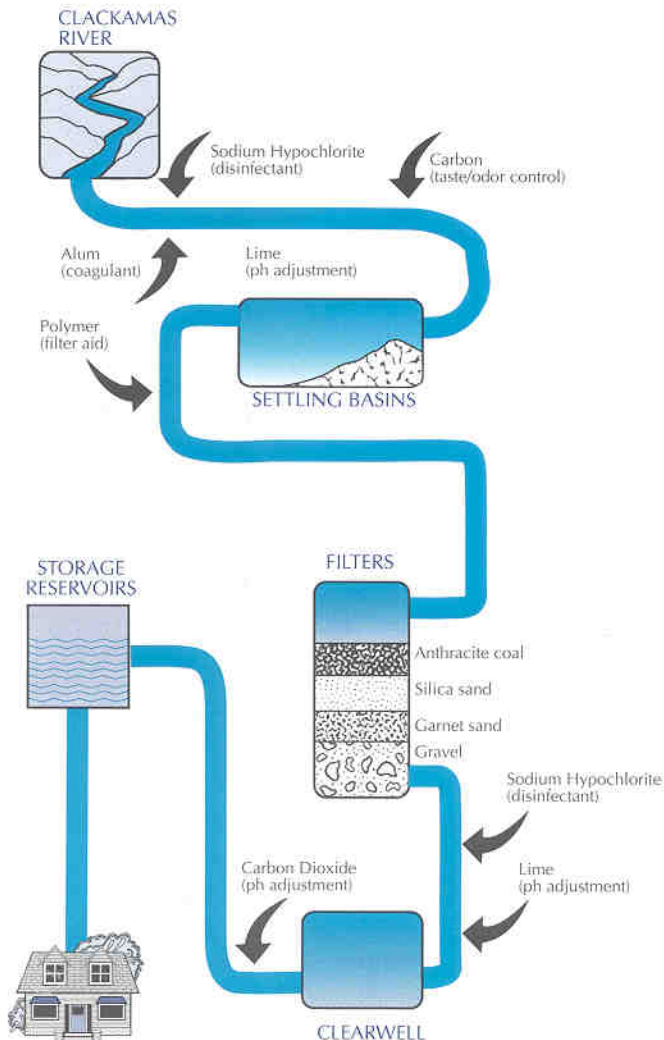
## IN-TOWN RESERVOIRS

Eleven underground and three above-ground reservoirs store about 21 million gallons of water to be used by city customers.

## LAKE OSWEGO WATER TREATMENT PLANT

Untreated water from the Clackamas River is treated using chemical and physical processes. Sediments, bacteria and other contaminants are removed before pumping the water to in-town reservoirs.

## WATER TREATMENT PROCESS



# D E F I N I T I O N S

*In order to help you understand the important and sometimes technical information in this report, we have provided the following definitions.*

**Milligrams per Liter (mg/L)** - Equal to parts per million (ppm).

**Parts per Million (ppm)** - Corresponds to one minute in two years or one penny in \$10,000.

**Parts per Billion (ppb)** - Corresponds to one minute in 2,000 years or a single penny in \$10,000,000.

**Parts per Trillion (ppt)** - Corresponds to one minute in 2,000,000 years or one penny in \$10,000,000,000.

**Parts per Quadrillion (ppq)** - Corresponds to one minute in 2,000,000,000 years or one penny in \$10,000,000,000,000.

**Picocuries per liter (pCi/L)** - A measure of the presence of radiological contaminants in water.

**Million fibers per liter (MFL)** - A measure of the presence of asbestos fibers that are longer than 10 micrometers (1 millionth of a meter).

**Nephelometric Turbidity Unit (NTU)** - A measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

**Treatment Technique (TT)** - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

**Action Level (AL)** - The concentration of a contaminant which, if exceeded, triggers a treatment technique or other requirement which a water system must follow.

**\*Maximum Contaminant Level (MCL)** - The highest level of a contaminant that is allowed in drinking water.

**Maximum Contaminant Level Goal (MCLG)** - The "Goal" is the level of a contaminant in drinking water below which there is no known or expected risk to health.

**Non-Detects (ND)** - Laboratory analysis indicates that the constituent is not present, or that it is present at levels too low for modern laboratory equipment to detect.

**Variance and exemption** - Both of these terms are defined as "State or EPA permission not to meet an MCL or a treatment technique under certain conditions".

**\*MCL's are set at very stringent levels. To understand the possible health effects for many regulated contaminants, we have provided the following example. A person would have to drink two liters of water every day at the maximum MCL for a lifetime to have a one-in-a-million chance of having the described health effect.**

# WHAT WE LOOK FOR IN OUR WATER

This list of chemicals and compounds is what we test for on a regular basis. Some of these chemicals are regulated (required testing), some are unregulated (testing optional). Next to the chemical names are the units of measure.

## NONE OF THE FOLLOWING CHEMICALS WERE DETECTED IN YOUR WATER SUPPLY.

### VOLATILE ORGANIC COMPOUNDS

*Volatile Organic Compounds are man-made chemical compounds such as cleaning fluids, degreasers and plastics.*

#### Contaminant (units)

Benzene (ppb)  
Carbon tetrachloride (ppb)  
p-Dichlorobenzene (ppb)  
1,2-Dichloroethane (ppb)  
1,1-Dichloroethylene (ppb)  
Trichloroethylene (ppb)  
1,1,1-Trichloroethane (ppb)  
Vinyl chloride (ppb)  
Dichloromethane (ppb)  
Chlorobenzene (ppb)  
o-Dichlorobenzene (ppb)  
cis-1,2-Dichloroethylene (ppb)  
trans-1,2-Dichloroethylene (ppb)  
1,2-Dichloropropane (ppb)  
Ethylbenzene (ppb)  
Styrene (ppb)  
Tetrachloroethylene (ppb)  
Toluene (ppb)  
Xylenes (total) (ppm)  
1,2,4-Trichlorobenzene (ppb)  
1,1,2-Trichloroethane (ppb)

### SYNTHETIC ORGANIC COMPOUNDS

*Synthetic Organic Compounds are man-made chemicals that include things like insecticides and herbicides.*

#### Contaminant (units)

2,4-D (ppb)  
Ethylene dibromide (ppt)  
Heptachlor (ppt)  
Heptachlor epoxide (ppt)  
Lindane (ppt)  
Methoxychlor (ppb)  
Pentachlorophenol (ppb)  
PCBs (ppt)  
Toxaphene (ppb)  
2,4,5-TP (ppb)  
Picloram (ppb)  
Simazine (ppb)  
Diquat (ppb)  
Endothall (ppb)  
Endrin (ppb)  
Glyphosate (ppb)  
Hexachlorobenzene (ppb)  
Hexachlorocyclopentadiene (ppb)  
Oxamyl (vydate) (ppb)  
PAHs [benzo(a)pyrene] (ppt)  
Phthalate[di(2-ethylhexyl)] (ppb)  
Adipate[di(2-ethylhexyl)] (ppb)  
Dalapon (ppb)  
Dinoseb (ppb)  
Carbofuran (ppb)  
Chlordane (ppb)  
Dibromochloropropane (ppt)  
Alachlor (ppb)  
Atrazine (ppb)

### INORGANIC COMPOUNDS

*Inorganic Compounds are naturally occurring minerals and chemicals that are present in water through erosion and leaching of mineral deposits.*

#### Contaminant (units)

Beryllium (ppb)  
Cyanide (ppb)  
Nickel (ppb)  
Thallium (ppb)  
Arsenic (ppb)  
Antimony (ppb)  
Asbestos (MFL)  
Barium (ppm)  
Cadmium (ppb)  
Chromium (total) (ppb)  
Mercury (inorganic) (ppb)  
Nitrite (ppm)  
Selenium (ppb)  
Fluoride (ppm)

*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 people, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791) or visiting their web site at [www.epa.gov/ow](http://www.epa.gov/ow)*

# OUR FINDINGS

We have learned through our testing and monitoring that some contaminants have been detected. The EPA has determined that your water is safe at these levels.

## Lead and Copper Corrosion

Contaminant	Maximum Amount Detected	Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Source of Contamination
Lead	100% of households tested were less than 14 ppb Avg. 3 ppb	Action Level: 90% of all households tested must be below 15 ppb	Zero ppb	Corrosion of household plumbing fixtures
Copper	100% of households tested were less than 0.85 ppm Avg. 0.28 ppm	Action Level: 90% of all households tested must be below 1.3 ppm	1.3 ppm	Corrosion of household plumbing fixtures

Due to the results of lead and copper sampling done in 1992 and 1993, the Water Treatment Plant was required by an Oregon Health Division variance of treatment technique to install state-of-the-art corrosion control equipment by January 1998. An extension of the variance was granted until August 1998 due to construction delays. All results for lead and copper testing in 1998 were below any action levels.

in excess of the action level could experience delays in their physical and mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems, high blood pressure, or may be at an increased risk of getting cancer.

**Copper** - Copper is an essential nutrient but people who drink water containing copper in excess of the action level over a relatively short time, could experience gastro-intestinal problems. Those, who for many years, drink water with a copper content well in excess of the action level could suffer liver or kidney damage.

**Copper** - Copper is an essential nutrient but people who drink water

## Radiological

Contaminant	Maximum Amount Detected	Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Source of Contamination
Alpha emitters Feb. 1996	0.05 pCi/L	15 pCi/L	Zero	Naturally occurring Radioactive Elements

**Alpha emitters** - Certain minerals are radioactive and emit a form of radiation known as alpha radiation. People who drink water containing these alpha emitters in excess of the MCL, over many years, may have an increased risk of cancer.

## Turbidity

Contaminant	Maximum Amount Detected	Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Source of Contamination
Turbidity	0.16 NTU*	< 0.5 NTU	< 0.3 NTU	Soil erosion and stream sediments

\*Average Turbidity for 1998=0.03 NTU

**Turbidity** is the measure of "cloudiness" or suspended particles in water. Turbidity can provide a growth medium for bacteria.

## Inorganics

Contaminant	Maximum Amount Detected	Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Source of Contamination
Nitrate	0.6 ppm	10 ppm	10 ppm	Erosion of soils and rock formations, agricultural runoff

**Nitrates** are a nutrient which can support microbial growth such as bacteria and algae. Nitrate and nitrite levels in excess of MCL's can contribute to methemoglobinemia (blue baby syndrome) in infants less than 6 months old. In adults, excessive levels can contribute to kidney or spleen problems.

## Disinfection By-Products

Contaminant	Maximum Amount Detected	Maximum Contaminant Level (MCL)	Maximum Contaminant Level Goal (MCLG)	Source of Contamination
Trihalomethanes (total)	26.2 ppb	100 ppb	0.0 ppb	By-product of drinking water chlorination
Haloacetic Acids	20 ppb	Not regulated at this time		By-product of drinking water chlorination

**Total Trihalomethanes (TTHM's) and Haloacetic Acids (HA's)** are the result of a chemical reaction between chlorine and naturally occurring organic matter in the water. Disinfection rates are carefully monitored to minimize the production of these by-products, while maintaining adequate disinfection.

All drinking water, including bottled drinking water, may reasonably be expected to contain at least small amounts of some contaminants. In order to assure that tap water is safe to drink, the United States Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. To protect public health, the EPA and Oregon Health Division set Maximum Contaminant Levels, Maximum Contaminant Level Goals and Action Levels for Contaminants. Drinking water regulations may also require water treatment techniques. The City of Lake Oswego routinely monitors for contaminants in your drinking water in accordance with Federal and State laws. The tables on this page show the result of our monitoring for the 1998 calendar year. It's important to remember that the presence of these contaminants does not necessarily pose a health risk.

# F R E Q U E N T L Y   A S K E D   Q U E S T I O N S

***“Does the 16 MGD (Million Gallons per Day) we draw from the Clackamas River affect the river’s flow?”***

No. Our usage is less than 1/10 of 1 percent of the lowest flow ever recorded on the Clackamas River. Our total water rights to the Clackamas River are twice what we currently withdraw.

***“Do we have fluoride in our water?”***

No. We do not add fluoride and there is only a trace of fluoride in the river water. Parents of young children may want to consult with their dentist about the need for fluoride treatments to prevent tooth decay.

***“Is there lead in our water?”***

There are no detectable levels of lead in the untreated water, and in most cases testing of customer water at the tap shows little or no detectable lead. When lead is detected, corrosion of household plumbing fixtures has been determined by the EPA to be the major source. Currently, manufacturers of faucets and other plumbing fixtures are required to limit the use of lead and alloys containing lead in materials used in production. The City of Lake Oswego has been altering the water chemistry to make it non-corrosive, and most recently, added state-of-the-art corrosion controls at the Water Treatment Plant. Most household levels of lead can be reduced by letting the water run for a few seconds when the tap hasn't been on for more than eight hours.

***“Is our water hard?”***

Surface water from the Pacific Northwest is some of the softest water in the country.

***“Our water has an unusual color or metallic taste. What could be causing this?”***

Metallic taste is generally caused by iron or copper plumbing. If your water has a reddish brown to yellow color, your problem is with rusty pipes. This rust can show up as chunks of rust on faucet aerator screens or even stains on laundry. The best solution for the problem is to clean aerator screens and let the water flow freely from the faucets until it clears up. Iron is rarely a health risk. Green stains on fixtures may be due to corrosion of copper pipes.

***“Our water is cloudy when it comes out of the tap, but then clears up. Is it safe to drink?”***

Yes. The cloudiness is usually dissolved oxygen that is being released. The oxygen is under pressure from the water system and when it comes out of the tap into a glass, the pressure is removed and the bubbles form. It is safe to drink.

***“Can we take a tour of the Water Treatment Plant?”***

We welcome the opportunity to further inform our customers with tours of our facility. Please call 635-0394 to arrange a tour.

***Opportunities For Public Participation***

We at the City of Lake Oswego Water Treatment Plant work around the clock to provide the highest quality water to every customer. We ask that all our customers help us protect our valuable water resource. Our community's future depends on a continuous supply of clean water. We invite interested citizens to attend Lake Oswego City Council meetings on the first and third Tuesdays of each month. Agendas are published in the *Lake Oswego Review* and posted at City Hall, 380 A Avenue, Lake Oswego, Oregon, 97034.

*If you have any questions about this report or your water utility,  
please contact Henry Thomson, Chief Plant Operator at 635-0393.*



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