



# 2011 Port Townsend Annual Drinking Water Report

## Water Sources

The City of Port Townsend's water supply (System ID # 69000R) is surface water from the Big Quilcene and Little Quilcene Rivers (Source # 01 and 02) in the northeast corner of the Olympic National Forest. Water is stored in Lords Lake and City Lake Reservoirs. As with all surface water sources, the Washington Department of Health (DOH) rates the City's source water as highly susceptible to contamination. The City and U.S. Forest Service continue to cooperate in a joint effort to manage and protect the municipal watershed to maintain high quality drinking water as we have for the past 84 years.



## System Operation and Treatment

By minimizing opportunities for contaminants to enter the source water we continue to meet the stringent criteria required to remain an unfiltered surface water system. Water treatment consists of the addition of chlorine gas to provide protection from microbial contaminants. Our water system is operated and maintained by trained personnel certified by the State. Water quality sampling results are for the monitoring performed January 1 – December 31, 2011. We are pleased to report that the City's drinking water meets or exceeds all federal and state health standards.



CT compliance station, 1 million gallon standpipe,  
and 5 million gallon reservoir

## Water Use Efficiency Report

Efficient water use benefits the environment, water system operations, and our customers by maintaining more water in the streams and lowering operating costs. Last year an average of 896,000 gallons of water per day was delivered to 9,900 customers as well as thousands of visitors. Total City consumption was 327 million gallons with residential consumption averaging 59 gallons per person per day.

Of the total consumption, 7% or 23 million gallons was unaccounted for by customer meters or other measurement, while the 3 year average loss was 5.6%. Unaccounted for water is lost through such things as under-registering meters, use of fire hydrants, and leaking underground pipes. Port Townsend has an ongoing leak detection program to inspect the water system for leaks to reduce unaccounted for water. Since 2009 2/3rds of the 100 miles of distribution system piping has been surveyed for leaks.

## Potential Contaminants

*Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).*

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 source water include:

**Microbial contaminants**, such as viruses, protozoans, and bacteria, which may come from wildlife, people and pets visiting the watershed.

**Inorganic contaminants**, such as salts and metals, which can be naturally occurring.

**Pesticides and herbicides**, which may come from sources such as forestry management.

**Organic chemical contaminants**, including synthetic and volatile organic chemicals, which can come from vehicles in the watershed or that result from chlorine combining with naturally occurring organic matter.

*Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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. EPA/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).*

In order to ensure tap water is safe to drink, the Department of Health and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) and the Washington Department of Agriculture regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. While the City tests for more than eighty different contaminants, the substances listed in the following tables are the only ones detected in our drinking water. Sampling for certain contaminants occurs less than once per year because concentrations of these contaminants are not expected to vary significantly from year to year. All data shown were collected during the last calendar year unless otherwise noted in the tables.

## Port Townsend Annual Water Quality

Inorganic Constituents (Source Water)	MCL	MCLG	Port Townsend Water	Range of Detections	Year Sampled	Meets Standards	Typical Source of Contaminant
Arsenic (ppb)	10	0	1	One sample	2011	Yes	Erosion of natural deposits
Barium (ppm)	2	2	0.003	One sample	2011	Yes	Erosion of natural deposits
Copper (ppm)	NA	0	0.170	0.11-0.17	2011	NA	Erosion of natural deposits
Lead (ppb)	NA	0	22	6-22	2011	NA	Erosion of natural deposits

Your drinking water currently meets EPA's standard for arsenic. However, it does contain low levels of arsenic. There is a small chance that some people who drink water containing low levels of arsenic for many years could develop circulatory disease, cancer, or other health problems. Most types of cancer and circulatory disease are due to factors other than exposure to arsenic. EPA's standard balances the current understanding of arsenic's health effects against the cost of removing arsenic from drinking water.

Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.

Public water systems must monitor for lead and copper levels in drinking water. Unlike other contaminants, lead and copper do not commonly occur in source water but result from corrosion of building plumbing, faucets, and water fixtures. Monitoring is used to determine if the water system is distributing corrosive water. Regulatory compliance is based on water samples from a number of representative homes most vulnerable to lead and copper corrosion, generally, those built between 1982 and 1987 with copper pipes.

Residential Testing	MCL	MCLG	Port Townsend Water (90 <sup>th</sup> Percentile)	Number of Samples Exceeding AL	Year Sampled	Meets Standards	Typical Source of Contaminant
Copper (ppm)	AL=1.3	0	0.64	0 of 20	2010	Yes	Corrosion of household plumbing systems
Lead (ppb)	AL=15	0	7	1 of 20	2010	Yes	Corrosion of household plumbing systems

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. Port Townsend 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 thirty seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish 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 <http://www.epa.gov/safewater/lead>.

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short period of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's disease should consult their personal doctor.

Disinfection Constituents	MCL	MCLG	Range of Detections	Testing Frequency	Meets Standards	Typical Source of Contaminant
Chlorine (ppm)	MRDL=4	MRDLG=4	0.15-0.90	Continuous	Yes	Water additive used to control microbes
Haloacetic Acids (HAAs) (ppb)	60	NA	20.9	Once a year	Yes	By-product of drinking water chlorination
Total Organic Carbon (mg/L)	TT	NA	0.476 - 1.09	Quarterly	NA	Naturally present in the environment
Total Trihalomethanes (TTHMs) (ppb)	80	NA	31.2	Once a year	Yes	By-product of drinking water chlorination

Chlorine is used for microbiological disinfection of the drinking water. Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.

Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects and may lead to an increased risk of getting cancer.

Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.

Microbiological Constituents	MCL	MCLG	Range of Detections	Testing Frequency	Meets Standards	Typical Source of Contaminant
Turbidity (NTU)	TT 5	0	0.15-1.90	Continuous	Yes	Soil runoff

Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of water quality. High turbidity can hinder the effectiveness of disinfectants.

## Definitions:

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

**Lead and Copper 90th Percentile:** Out of every 10 homes sampled, 9 were at or below this level.

**Maximum Contaminant Level (MCL):** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

**Maximum Contaminant Level Goal (MCLG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**Maximum Residual Disinfectant Level (MRDL):** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant (chlorine, chlorine dioxide)

is necessary for control of microbial contaminants.

**Maximum Residual Disinfectant Level Goal (MRDLG):** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

**NA:** Not Applicable

**ND:** Not Detected or below State Reporting Limit.

**NTU:** Nephelometric Turbidity Units - a measure of the cloudiness of the water.

**ppb:** Parts per billion or micrograms per liter ( $\mu\text{g/L}$ ).

**ppm:** Parts per million or milligrams per liter ( $\text{mg/L}$ ).

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

## Public Comment

The public is invited to participate in decisions that affect drinking water through comment to the Port Townsend City Council. Information about scheduled meetings is available through the City Administration Office (379-5047) or via the City's web site: <http://www.cityofpt.us/calendar/events.asp?action=week&calendar=1>. If you have any additional questions about the drinking water or would like a complete list of substances we test for please call Ian Jablonski at the Port Townsend Department of Water Quality (379-5001). Information is also available on the City's web site: <http://www.cityofpt.us/waterquality.htm>.

## New Water Treatment Requirement

The Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) requires that surface water supplies either be filtered or disinfected to inactivate *Cryptosporidium*, an infectious protozoan. Chlorine, our current water disinfectant, does not effectively treat for *Cryptosporidium*. During 2011 Port Townsend pilot tested slow sand filtration and evaluated the cost and benefits of filtration versus ultra violet (UV) light disinfection as compliance options. After considering the alternatives Port Townsend City Council approved a new multiple-barrier disinfection approach that will consist of ultraviolet (UV) irradiation followed by free chlorination.

UV disinfection works by converting electrical energy into UV light. As water passes by the lamps in a reaction chamber, UV rays penetrates microorganism cell walls and disrupts the organism reproductive capability. Advantages of using UV include:

- No chemicals are added to the water;
- UV does not change the taste, odor, or other physical properties of the water;
- UV has lower capital and operating costs than other treatment technologies such as ozone or filtration.

Chlorine will continue to be used as a disinfectant to inactivate potential microorganisms and control biofilm growth in the distribution system pipelines.

## City Lake Outlet Pipe Replacement

Weld deficiencies, corrosion, and lack of seismic protection in the 24" steel outlet pipe between the City Lake reservoir outlet and downstream control valves requires the replacement of approximately 700' of the outlet pipe between the lake inlet at the bottom of the reservoir and the screen chamber. Repairs to the infrastructure will also incorporate improvements for control of the outlet flow, allow water to bypass City Lake, and provide seismic protection of the pipeline. The project has been divided into two phases with phase 1, installation of isolation and flow control valves occurring in 2012 and replacement of the pipe and other control improvements in 2013. A \$1.2 million Federal Emergency Management Agency Pre-Disaster Mitigation grant is helping fund the estimated \$3 million project.



Slow sand pilot filter columns