



# Valuing our RESOURCES

WATER QUALITY REPORT 2018 &  
WATER USE EFFICIENCY UPDATE

*Skagit*  
**PUD**  
PUBLIC UTILITY DISTRICT

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

Skagit River

## Dear Skagit PUD Customer,

At Skagit PUD, we are committed to providing you the safest and most reliable drinking water possible. This report is a snapshot of the quality of water that we provided in 2018. Included are details about where your water comes from, what it contains, and how it compares to Environmental Protection Agency (EPA) and state standards.



For information about your drinking water, please call Skagit PUD at (360) 424-7104. We welcome your comments and suggestions. We also invite you to attend Skagit PUD commission meetings. The commissioners hold open meetings every Tuesday of the month at 4:30 p.m. in our Aqua Room located at 1415 Freeway Drive, Mount Vernon.

# What's in your drinking water?

**D**RINKING 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).

To ensure that 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.



The Food and Drug Administration (FDA) and the Washington Department of Agriculture regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

### Assessing your health risk

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).

### Potential Contaminants

The sources of drinking water (both tap water and bottled water) include lakes, rivers, streams, ponds,

reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants in drinking water sources may include:

**Microbial contaminants**, such as viruses and bacteria, which may come from 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.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

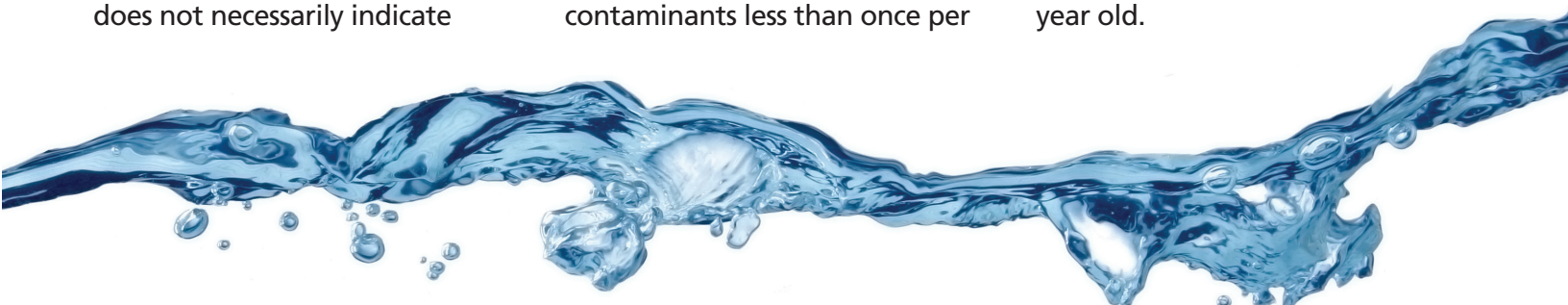


# Water Quality Data

The Drinking Water Results tables included within this report list all the drinking water contaminants that we detected during the 2018 calendar year. The presence of these contaminants in the water does not necessarily indicate

that the water poses a health risk. Unless otherwise noted, the data presented in the tables are from testing done January 1 to December 31, 2018. The state requires us to monitor for certain contaminants less than once per

year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, is more than one year old.



## [ glossary: water quality definitions ]

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

**Haloacetic Acids.** A disinfection by-product from chlorinating water that contains natural organic matter.

**Maximum Contaminant Level (MCL).** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLG 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 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 health benefits of the use of disinfectants to control microbial contaminants.

**Not Applicable (n/a).** Does not apply.

**Not Detected (n/d).** Indicates that the parameter was not detected above the Specified Reporting Limit.

**Nephelometric Turbidity Units (NTU).** A unit of measure for turbidity based on the amount of light that is reflected from the water.

**Part per million (ppm).** One part per million is equivalent to half of an aspirin tablet dissolved in a full bathtub of water (approximately 50 gallons).

**Part per billion (ppb).** One part per billion is equivalent to half of an aspirin tablet dissolved in 1,000 bathtubs of water (approximately 50,000 gallons).

**Total Coliforms.** A group of non-pathogenic bacteria used in testing water to indicate the presence of pathogenic bacteria. They are naturally present in the environment. If coliforms were found

in more samples than allowed, it would be a warning of potential problems.

**Trihalomethanes.** A disinfection by-product from chlorinating water that contains natural organic matter. The most common by-product is chloroform.

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

**Turbidity.** A measure of the cloudiness of water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

# Judy Reservoir Public Water System: ID# 79500E

## Source & Treatment

The Judy Reservoir system is located in Skagit County and serves around 70,000 people with the majority being in Mount Vernon, Burlington and Sedro-Woolley. The source water comes from the Cultus Mountain watershed via four creeks (Gilligan, Mundt, Salmon and Turner) into Judy Reservoir. We also have the ability to pump water up from the Skagit River to Judy Reservoir. Being surface water, Judy Reservoir can experience seasonal changes that can affect a number of parameters. Temperature, pH, alkalinity, color, turbidity, total organic carbon and others are all affected by warmer temperatures and high organic content. This can increase algae growth resulting in taste and odor issues, plus pose treatment challenges.

The treatment is a multi-step direct filtration process that meets water quality standards and provides four log, 99.99 percent, removal. A log is the percentage of microorganisms physically removed or inactivated by a given process. The raw water from Judy Reservoir is disinfected with chlorine dioxide then pumped to the water treatment plant where carbon dioxide and coagulant aids are added. This step is intended to provide initial oxidation (beneficial in reducing taste and odor caused by algae) and help coagulate small particles in the flocculation basin where bigger particles are then formed. This is followed by filtration, where the treated water passes through charcoal media and sand. The finished water is then disinfected and flows by gravity into three clear wells.

Before the water reaches the clear wells, caustic soda and ammonia are added to adjust pH and form chloramines for residual disinfection. Chloramines are used because it provides effective and long-lasting disinfection in the distribution system at low dosages. Chloramines are measured as both total chlorine and monochloramine. Their optimal formation and stability is at pH 8.5 and above, therefore the treated water leaving the treatment plant has pH of at least 8.7 and can be slightly higher in the distribution system. Alkaline (higher) pH and

alkalinity adjustment helps with corrosion control, because Judy Reservoir water is considered to be soft by nature.

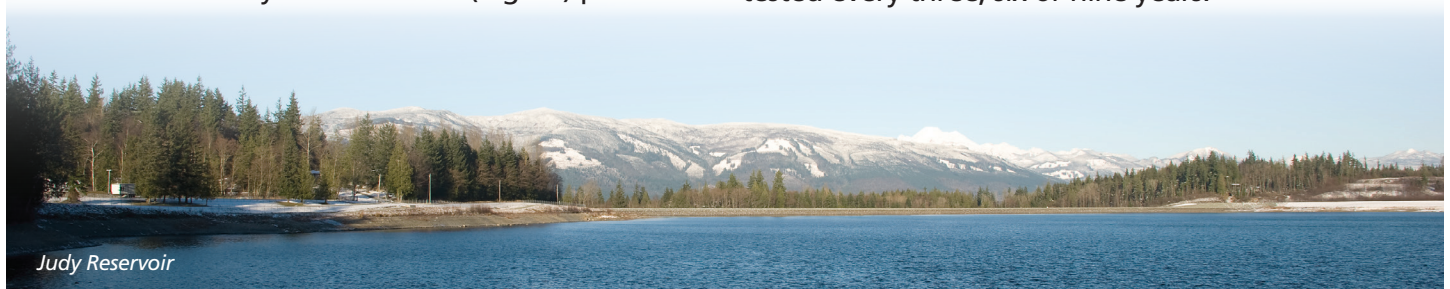
Total chlorine residual is maintained throughout the distribution system to provide sufficient disinfection.

## Water quality

Currently, the drinking water quality meets all primary and secondary drinking water standards. Judy Reservoir water is considered to be soft with hardness of 21 mg/l (as calcium carbonate). Throughout the day, the raw (untreated) water quality is monitored by online analyzers and lab tests to evaluate and provide sufficient treatment technique. Some of these daily tests include pH, temperature, color, turbidity, alkalinity, chlorite; as well as weekly tests for fecal coliforms, algae count and identification. Less frequent tests are conducted for *Cryptosporidium*, *Giardia* and other parasites.

In 2018, 80 routine samples per month from the distribution system are required to be tested for total coliforms and *E.coli*. The total chlorine residual levels leaving the water treatment plant are between 1.3 – 1.8 mg/l and a pH of 8.7. Monthly the water is tested for TOC (total organic carbon) and chlorite.

Quarterly, the treated water is tested for disinfection by-products from eight locations throughout the distribution system and results show disinfection by-products are below the established MCL. Once a year water is tested for nitrate, which is usually very low (< 1 mg/l). Every three years lead and copper samples are collected from customers with older homes to establish corrosive properties of the water. Thus far, the system has been in compliance with the established action levels for lead and copper. The Judy system is on a testing schedule of every six years for radionuclides. A reduced monitoring waiver has been granted by the DOH for pesticides, soil fumigants, volatile organics (VOC) and complete inorganics (IOC). These representative samples are tested every three, six or nine years.



# 2018 Drinking Water Results

The water quality information presented in the table(s) is from the most recent round of testing done according to the regulations. All data shown were collected during the last calendar year unless otherwise noted in the table(s).

Contaminants	MCLG	MCL	Judy Reservoir	Range of Detection		Sample Date	Violation	Typical Source of Contaminant
				Lowest	Highest			
<b>Raw Water</b>								
Total Organic Carbon (ppm)	N/A	TT	2	1.01	2.93	2018	NO	Naturally present in the environment
Cryptosporidium (oocyst/L)*	N/A	N/A	ND	ND	ND	2013-15	NO	Naturally present in the environment
*Total of 24 samples were collected and none had presence of Cryptosporidium or Giardia.								
<b>Finished Water</b>								
Turbidity (NTU)	N/A	TT	0.017	0.01	0.14	2018	NO	Soil erosion
Turbidity measures the cloudiness of the water and is a good indicator of the effectiveness of our filtration system at removing particulates from the water. Skagit PUD measures turbidity continuously throughout the treatment process. In 2018, no filter water turbidity results were above the EPA 0.3 NTU limit. For compliance purposes, combined filter effluent turbidity should be <0.3 NTU in 95% of the monthly samples.								
<b>Disinfectant Residual</b>								
Total Chlorine Residual (ppm)	4	4	1.35	0.02	1.82	2018	NO	Measure of disinfectant added to water
Skagit PUD uses chloramines for disinfection. To ensure disinfectant residual in the distribution system, total and free chlorine residual measurements are taken with each coliform sample. Additionally, monochloramine measurements are taken to establish chloramine formation.								
<b>Microbiological Contaminants</b>								
Total Coliform Bacteria	0	5% per month	0	0	0	2018	NO	Naturally present in the environment
Skagit PUD collects 80 compliance samples per month for total coliforms and <i>E.coli</i> from our distribution system. No total coliforms or <i>E.coli</i> were detected in 2018.								
<b>Disinfection By-Products</b>								
Chlorite (ppm)	0.8	1	0.57	0.38	0.78	2018	NO	By-product of chlorine dioxide
Total Trihalomethanes (ppb)	N/A	80	14.93*	5.3*	26.7**	2018	NO	By-product of drinking water chlorination
Haloacetic Acids (5) (ppb)	N/A	60	16.28*	7.4*	32.2**	2018	NO	By-product of drinking water chlorination
Chlorite samples are collected monthly from three locations. The TTHMs and HAA5 results are from the eight locations in Skagit County, which are monitored quarterly to comply with current regulations. *Highest locational running average of the eight sites. **Highest result from all eight locations measured.								
<b>Inorganic Contaminants</b>								
Nitrate (ppm)	10	10	0.10	N/A	N/A	2018	NO	Erosion of natural deposits
<b>Radionuclides</b>								
Gross Alpha (pCi/L)	0	15	ND	N/A	N/A	2015	NO	Erosion of natural deposits
Gross Beta (pCi/L)	0	50	ND	N/A	N/A	2015	NO	Erosion of natural deposits
Radium 228 (pCi/L)	0	5	ND	N/A	N/A	2015	NO	Erosion of natural deposits
<b>Detected Unregulated Contaminants*</b>								
Chlorate (ppb)	N/A	N/A	118	113	128	2015	N/A	Disinfection by-product
Chromium (ppb)	N/A	N/A	0.33	0.24	0.51	2015	N/A	Erosion of natural deposits
Strontium (ppb)	N/A	N/A	31	29	33	2015	N/A	Naturally occurring element
Hexavalent Chromium (ppb)	N/A	N/A	0.14	0.121	0.17	2015	N/A	Erosion of natural deposits Discharge from steel/pulp mills
*Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to help EPA determine their occurrence in drinking water and potential need for future regulation.								

# Judy Reservoir Public Water System: ID# 79500E

Continued

Monitoring Waivers*			
Contaminants	Frequency	Last Sampled	Violation
Volatile Organic Chemicals (VOC)	Every 6 years.	2017	NO
Inorganic Chemicals (IOC)	Every 9 years.	2011	NO
Synthetic Organic Chemicals (SOC)	Every 3 or 9 years.**	2015	NO

\*The Washington State Department of Health reduced the monitoring requirements for IOCs (28 contaminants), SOCs (40 contaminants) and VOCs (25 contaminants), because the source is not at risk of contamination. \*\*Pesticides are monitored every three years and herbicides every nine years, none of the two groups have been detected in our finished water.

Lead & Copper							
Contaminants	MGLG	AL	Judy Reservoir (90th %)	Sample Date	# Samples Exceeding AL	Violation	Typical Sources
Lead – lead at consumer’s tap (ppb)	0	15	2*	2018	0 of 30	NO	Corrosion of household plumbing systems; erosion of natural deposits
Copper – copper at consumer’s tap (ppm)	1.3	1.3	0.02*	2018	0 of 30	NO	Corrosion of household plumbing systems; erosion of natural deposits

\* The 90th percentile level is the highest result obtained in 90% of the samples collected when results are ranked in order from lowest to highest. Judy Reservoir is required to collect 30 samples for presence of lead and copper from household taps every three years. The Washington State Department of Health requires Judy Reservoir to provide corrosion control treatment by adjusting the pH and alkalinity with addition of caustic soda. pH leaving the treatment plant is 8.7 and is constantly monitored with online analyzers and lab tests every two hours. pH measurements are taken with every coliform sample throughout the distribution system.

Susceptibility rating of potential threats to the safety of our water supply: **High**

See Source Water Assessment Program (SWAP) data on WA Department of Health website—<https://fortress.wa.gov/doh/swap/index.html>



Judy Reservoir

# Alger Public Water System: ID# 01400K

## Source & Treatment

Alger water system is located 15 miles north of Mount Vernon and serves approximately 110 residential connections and 12 non-residential connections. Water is drawn from 51 foot deep, flowing, artesian well. The water is treated for iron and manganese removal via chlorine oxidation and filtration using manganese oxide media (ATEC). The source water has naturally occurring ammonia and with the addition of free chlorine for disinfection, it creates total chlorine residuals of 0.1-0.9 mg/l.

A monthly routine distribution sample is tested for total coliform and *E.coli*. Total chlorine residual levels are around 0.1- 0.9 mg/l with pH levels of 7.4-7.8. Quarterly, the untreated and treated water is tested for iron and manganese to evaluate their removal from the untreated water. Once a year the nitrate levels are measured and found to be non-detect. This system is on three year sampling schedule for lead, copper, arsenic (naturally occurring), manganese, disinfection by-products, and volatile organics. These parameters are below the established MCLs. Radionuclides are on a six year testing schedule and are also found to be below the established MCLs.

## Water Quality

Currently the drinking water quality meets all primary and secondary drinking water standards. The hardness of the water is 82.0 mg/l (as calcium carbonate).

The Alger water system has been granted waivers by Washington State Department of Health (DOH) for asbestos, complete inorganics, herbicides, pesticides and soil fumigants. These parameters are tested every three or nine years.

## 2018 Drinking Water Results

The water quality information presented in the table(s) is from the most recent round of testing done according to the regulations. All data shown were collected during the last calendar year unless otherwise noted in the table(s).

Contaminants	MCLG	MCL	Alger	Range of Detection		Sample Date	Violation	Typical Source of Contaminant
				Lowest	Highest			
<b>Disinfectant Residual</b>								
Total Chlorine Residual (ppm)	4	4	0.4	0.02	0.91	2018	NO	Measure of disinfectant added to water
Alger's water contains ammonia and when chlorine is added for disinfection, chloramines are formed. Total chlorine is measured with each coliform sample.								
<b>Microbiological Contaminants</b>								
Total Coliform Bacteria	0	1 Positive	0	0	0	2018	NO	Naturally present in the environment
Skagit PUD collects one compliance sample per month for total coliforms and <i>E.coli</i> from the distribution system. No total coliforms or <i>E.coli</i> were detected in 2018.								
<b>Disinfection By-Products</b>								
Total Trihalomethanes (ppb)	N/A	80	19.3	N/A	N/A	2017	NO	By-product of drinking water chlorination
Haloacetic Acids (5) (ppb)	N/A	60	5.5	N/A	N/A	2017	NO	By-product of drinking water chlorination
Disinfection by-product samples are collected once every three years.								
<b>Inorganic Contaminants</b>								
Arsenic (ppb)*	0	10	6	N/A	N/A	2017	NO	Erosion of natural deposits
Nitrate (ppm)	10	10	0.1	N/A	N/A	2018	NO	Erosion of natural deposits
Total Dissolved Solids (ppm)	500	500	122	N/A	N/A	2018	NO	Erosion of natural deposits

# Alger Public Water System: ID# 01400K

Continued

Contaminants	MCLG	MCL	Alger	Range of Detection		Sample Date	Violation	Typical Source of Contaminant
				Lowest	Highest			
<p>*Your drinking water currently meets EPA's standards for arsenic. However, it does contain low levels of arsenic. There is 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.</p>								
<b>Radionuclides</b>								
Gross Alpha (pCi/L)	0	15	ND	N/A	N/A	2015	NO	Erosion of natural deposits
Gross Beta (pCi/L)	0	50	ND	N/A	N/A	2015	NO	Erosion of natural deposits
Radium 228 (pCi/L)	0	5	ND	N/A	N/A	2015	NO	Erosion of natural deposits
<b>Volatile Organic Contaminants (VOC)</b>								
VOCs (ppb)*	0	0	ND	N/A	N/A	2016	NO	Discharge from factories
*VOCs include list of 25 contaminants.								

<b>Monitoring Waivers*</b>			
Contaminants	Frequency	Last Sampled	Violation
Inorganic Chemicals (IOC)	Every 9 years.	2017	NO
Synthetic Organic Chemicals (SOC)	Every 3 or 9 years.**	2017	NO
*The Washington State Department of Health reduced the monitoring requirements for IOCs and SOCs, because the source is not at risk of contamination. **Pesticides are tested once every three years and herbicides once every nine years.			

<b>Lead &amp; Copper</b>							
Contaminants	MGLG	AL	Alger (90th %)	Sample Date	# Samples Exceeding AL	Violation	Typical Sources
Lead – lead at consumer's tap (ppb)	0	15	1*	2018	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits
Copper – copper at consumer's tap (ppm)	1.3	1.3	0.06*	2018	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits
*The 90th percentile level is the highest result obtained in 90% of the samples collected when results are ranked in order of lowest to highest. Skagit PUD is required to collect five samples for presence of lead and copper from household taps every three years.							

Susceptibility rating of potential threats to the safety of our water supply: **High**

See Source Water Assessment Program (SWAP) data on WA Department of Health website—<https://fortress.wa.gov/doh/swap/index.html>



# Cedargrove Public Water System: ID# 119174

## Source & Treatment

Cedargrove water system is located on the south side of Skagit River near Concrete, serving nearly 200 residential connections. The source water is drawn from 170 foot deep well located inside a fenced and maintained property. The water is treated for iron and manganese removal through a chlorine oxidation and filtration system (ATEC) using manganese oxide media (pyrolusite). The water is pumped to a reservoir of 270,000 gallons for fire protection and system storage. Chlorine residual is maintained throughout the distribution system to sustain disinfection.

tested for total coliform and *E.coli*. The chlorine residual levels are 0.2-1.0 mg/l and pH is in the 7-8 range. Quarterly samples are taken of untreated and treated water to test for iron and manganese levels to evaluate their removal by the ATEC filtration system. Once a year nitrate levels are measured and are typically low (<1 mg/l). The system is on a three year standard monitoring routine for lead, copper, disinfection by-products, and manganese. All of these are found to be below the established MCLs (Maximum Contaminant Level). Radionuclides are on 6 year standard monitoring and are found to be below the established MCL as well.

## Water Quality

Currently the drinking water quality meets all primary and secondary drinking water standards. Over all, the water is consider to be moderately hard with hardness at 86.9 mg/l (as calcium carbonate). Once a month, a routine distribution sample is

The Cedargrove system has been granted waivers by Washington State Department of Health (DOH) for asbestos, complete inorganics, volatile organics, herbicides, pesticides and soil fumigants. It is tested for these every three, six, or nine years. Most of these contaminants are non-detected in the well water, therefore granted waivers by DOH.

## 2018 Drinking Water Results

The water quality information presented in the table(s) is from the most recent round of testing done according to the regulations. All data shown were collected during the last calendar year unless otherwise noted in the table(s).

Contaminants	MCLG	MCL	Cedargrove	Range of Detection		Sample Date	Violation	Typical Source of Contaminant
				Lowest	Highest			
<b>Disinfectant Residual</b>								
Total Chlorine Residual (ppm)	4	4	0.67	0.47	0.96	2018	NO	Measure of disinfectant added to water
<b>Microbiological Contaminants</b>								
Total Coliform Bacteria	0	1 Positive	1 Positive Sample	0	1	2018	NO	Naturally present in the environment
Skagit PUD collects one compliance sample per month for total coliforms and <i>E.coli</i> from the distribution system. One total coliform positive samples was detected in February 2018 and no <i>E.coli</i> . Within 24 hours the original sample site, source and up and downstream samples were collected and all four were absent for total coliforms and <i>E.coli</i> .								
<b>Disinfection By-Products</b>								
Total Trihalomethanes (ppb)	N/A	80	12.2	N/A	N/A	2017	NO	By-product of drinking water chlorination
Haloacetic Acids (5) (ppb)	N/A	60	7.7	N/A	N/A	2017	NO	By-product of drinking water chlorination
Disinfection by-product samples are collected once every three years.								
<b>Inorganic Contaminants</b>								
Manganese (ppm)*	0	0.05	0.014	N/A	N/A	2015	NO	Erosion of natural deposits
Nitrate (ppm)	10	10	0.35	N/A	N/A	2018	NO	Erosion of natural deposits
*Manganese sample is collected once every three years to establish removal from finished water.								
<b>Radionuclides</b>								
Gross Alpha (pCi/L)	0	15	ND	N/A	N/A	2015	NO	Erosion of natural deposits
Gross Beta (pCi/L)	0	50	ND	N/A	N/A	2015	NO	Erosion of natural deposits

# Cedargrove Public Water System: ID# 119174

Continued

Contaminants	MCLG	MCL	Cedargrove	Range of Detection		Sample Date	Violation	Typical Source of Contaminant
				Lowest	Highest			
Radium 228 (pCi/L)	0	5	ND	N/A	N/A	2015	NO	Erosion of natural deposits
<b>Synthetic Organic Contaminants (SOC)</b>								
Herbicides (ppb)*	0	0	ND	N/A	N/A	2016	NO	Run off from herbicides

\*SOCs include list of 11 contaminants.

<b>Monitoring Waivers*</b>			
Contaminants	Frequency	Last Sampled	Violation
Volatile Organic Chemicals (VOC)	Every 6 years	2013	NO
Inorganic Chemicals (IOC)	Every 9 years.	2010	NO
Synthetic Organic Chemicals (SOC)	Every 3 or 9 years.**	2016	NO

\*The Washington State Department of Health reduced the monitoring requirements for IOCs and SOCs, because the source is not at risk of contamination. \*\*Pesticides are tested once every three years and herbicides once every nine years.

<b>Lead &amp; Copper</b>							
Contaminants	MGLG	AL	Cedargrove (90th %)	Sample Date	# Samples Exceeding AL	Violation	Typical Sources
Lead – lead at consumer’s tap (ppb)	0	15	3.5*	2017	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits
Copper – copper at consumer’s tap (ppm)	1.3	1.3	0.17*	2017	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits

\*The 90th percentile level is the highest result obtained in 90% of the samples collected when results are ranked in order of lowest to highest. Skagit PUD is required to collect five samples for presence of lead and copper from household taps every three years.

Susceptibility rating of potential threats to the safety of our water supply: **Low**

See Source Water Assessment Program (SWAP) data on WA Department of Health website—<https://fortress.wa.gov/doh/swap/index.html>



# Marblemount Public Water System: ID# AA642

## Source & Treatment

The Marblemount water system is located on the North Cascades Highway, serving 18 residential and 14 non-residential services with customer population of around 30. Water is drawn from a 163 foot deep well and has a low susceptibility to contamination as determined by the Washington State Department of Health (DOH), so no treatment is required or in place at this time.

Once a month, a routine distribution sample is tested for total coliform and *E.coli*. Once a year nitrate levels are measured and found to be very low (below 0.5 mg/l). The system is on three year testing schedule for lead and copper, which are below the action level (AL). Radionuclides are on six year standard testing schedule and are found to be non-detect or below the MCLs.

## Water Quality

Currently the drinking water quality meets all primary and secondary drinking water standards. Marblemount water is considered soft with a hardness of 50.7 mg/l (as calcium carbonate) and a pH level of 7-7.5.

The Marblemount water system has been granted waivers by Washington State Department of Health (DOH) for asbestos, complete inorganics, volatile organics, herbicides, pesticides, and soil fumigants. These components are tested for every three, six, or nine years. Most of these contaminants are non-detect in the water, therefore granted waivers by DOH.

## 2018 Drinking Water Results

The water quality information presented in the table(s) is from the most recent round of testing done according to the regulations. All data shown were collected during the last calendar year unless otherwise noted in the table(s).

Contaminants	MCLG	MCL	Marblemount	Range of Detection		Sample Date	Violation	Typical Source of Contaminant
				Lowest	Highest			
<b>Microbiological Contaminants</b>								
Total Coliform Bacteria	0	1 Positive	0	0	0	2018	NO	Naturally present in the environment
Skagit PUD collects one compliance sample per month for total coliforms and <i>E.coli</i> from the distribution system. No total coliforms or <i>E.coli</i> were detected in 2018.								
<b>Inorganic Contaminants</b>								
Nitrate (ppm)	10	10	0.11	N/A	N/A	2018	NO	Erosion of natural deposits
<b>Radionuclides</b>								
Gross Alpha (pCi/L)	0	15	ND	N/A	N/A	2018	NO	Erosion of natural deposits
Gross Beta (pCi/L)	0	50	ND	N/A	N/A	2018	NO	Erosion of natural deposits
Radium 228 (pCi/L)	0	5	ND	N/A	N/A	2018	NO	Erosion of natural deposits
<b>Volatile Organic Contaminants (VOC)</b>								
VOCs (ppb)	0	0	ND	N/A	N/A	2016	NO	Discharge from factories

<b>Monitoring Waivers*</b>			
Contaminants	Frequency	Last Sampled	Violation
Inorganic Chemicals (IOC)	Every 9 years.	2017	NO
Synthetic Organic Chemicals (SOC)	Every 3 or 9 years.**	2012	NO

\*The Washington State Department of Health reduced the monitoring requirements for IOCs and SOCs, because the source is not at risk of contamination. \*\*Pesticides are tested once every three years and herbicides once every nine years.

# Marblemount Public Water System: ID# AA642

Continued

Lead & Copper							
Contaminants	MGLG	AL	Marblemount (90th %)	Sample Date	# Samples Exceeding AL	Violation	Typical Sources
Lead – lead at consumer’s tap (ppb)	0	15	1*	2017	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits
Copper – copper at consumer’s tap (ppm)	1.3	1.3	0.12*	2017	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits

\*The 90th percentile level is the highest result obtained in 90% of the samples collected when results are ranked in order of lowest to highest. Skagit PUD is required to collect five samples for presence of lead and copper from household taps every three years.

Susceptibility rating of potential threats to the safety of our water supply: **Low**

See Source Water Assessment Program (SWAP) data on WA Department of Health website—<https://fortress.wa.gov/doh/swap/index.html>



# Mountain View Public Water System: ID# 03744Y

## Source & Treatment

Mountain View water system is located east of Mount Vernon near Big Lake and serves 13 residential connections. Water is drawn from 380 foot deep well and is treated for iron and manganese removal using an ion exchange system and a softener. Chlorine disinfection is not provided at this time.

Monthly, a routine distribution sample is tested for total coliform and *E.coli*. Additionally a once a year nitrate level is tested, and is non-detect. This system is on a three year standard monitoring for lead, copper, and complete inorganics. These parameters have been below the established MCLs. Radionuclide testing is on a six year monitoring schedule and is below the MCL.

## Water Quality

Currently the water quality meets all primary and secondary drinking water system parameters. Overall the water is considered to be soft with a hardness (as calcium carbonate) being non-detect and a PH level of 7.5-8.

The Mountain View water system has been granted waivers by the Washington State Department of Health for asbestos, volatile organics, herbicides, pesticides, and soil fumigants. These components are tested every three, six, or nine years. Most of these contaminants are non-detect in the source water.

## 2018 Drinking Water Results

The water quality information presented in the table(s) is from the most recent round of testing done according to the regulations. All data shown were collected during the last calendar year unless otherwise noted in the table(s).

Contaminants	MCLG	MCL	Mountain View	Range of Detection		Sample Date	Violation	Typical Source of Contaminant
				Lowest	Highest			
<b>Microbiological Contaminants</b>								
Total Coliform Bacteria	0	1 Positive	0	0	0	2018	NO	Naturally present in the environment
Skagit PUD collects one compliance sample per month for total coliforms and <i>E.coli</i> from the distribution system. No total coliforms or <i>E.coli</i> were detected in 2018.								
<b>Inorganic Contaminants</b>								
Nitrate (ppm)	10	10	0.1	N/A	N/A	2018	NO	Erosion of natural deposits
Fluoride (ppm)	4	4	0.17	N/A	N/A	2016	NO	Erosion of natural deposits
Sodium (ppm)	N/A	N/A	60.4	N/A	N/A	2016	NO	Naturally occurring, water softeners, animal waste, road salts
<b>Radionuclides</b>								
Gross Alpha (pCi/L)	0	15	ND	N/A	N/A	2017	NO	Erosion of natural deposits
Gross Beta (pCi/L)	0	50	ND	N/A	N/A	2017	NO	Erosion of natural deposits
Radium 228 (pCi/L)	0	5	ND	N/A	N/A	2017	NO	Erosion of natural deposits
<b>Volatile Organic Contaminants (VOC)</b>								
VOCs (ppb)	0	0	ND	N/A	N/A	2016	NO	Discharge from factories

<b>Monitoring Waivers*</b>			
Contaminants	Frequency	Last Sampled	Violation
Synthetic Organic Chemicals (SOC)	Every 3 or 9 years.**	2012	NO
Inorganic Chemicals (IOC)	Every 9 years.	2016	NO
*The Washington State Department of Health reduced the monitoring requirements for IOCs and SOCs, because the source is not at risk of contamination. **Pesticides are tested once every three years and herbicides once every nine years.			

# Mountain View Public Water System: ID# 03744Y

Continued

Lead & Copper							
Contaminants	MGLG	AL	Mountain View (90th %)	Sample Date	# Samples Exceeding AL	Violation	Typical Sources
Lead – lead at consumer’s tap (ppb)	0	15	1*	2016	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits
Copper – copper at consumer’s tap (ppm)	1.3	1.3	0.5*	2016	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits
*The 90th percentile level is the highest result obtained in 90% of the samples collected when results are ranked in order of lowest to highest. Skagit PUD is required to collect five samples for presence of lead and copper from household taps every three years.							

Susceptibility rating of potential threats to the safety of our water supply: **Low**

See Source Water Assessment Program (SWAP) data on WA Department of Health website—<https://fortress.wa.gov/doh/swap/index.html>

# Potlatch Public Water System: ID# 69034L

## Source & Treatment

Potlatch water system is located on the west shore of Guemes Island and serves approximately 33 residential connections. The source of supply is seawater from Bellingham Channel. The treatment process consists of a multimedia filter, spiral-wound cartridge filters, reverse osmosis desalination membranes, calcite contactor, and then hypochlorite disinfection. Free chlorine is maintained throughout the distribution system to provide disinfection.

## Water Quality

Currently the drinking water quality meets all primary and secondary drinking water standards. Over all the water is considered to be soft with

hardness 19.6 mg/l (as calcium carbonate).

Once a month, a routine distribution sample is tested for total coliform and *E.coli*. Chlorine residual levels are between 0.1-0.8 mg/l and a pH of 7.5-8.5. An annual nitrate and chloride sample are measured and are below the established MLCs. The system is on a testing schedule every three years for lead, copper and disinfection by-products.

The Potlatch water system has been granted waivers by Washington State Department of Health (DOH) for complete inorganics, soil fumigants, pesticides, volatile organics, herbicides and asbestos. The system is tested for these contaminants every three, six or nine years.

## 2018 Drinking Water Results

The water quality information presented in the table(s) is from the most recent round of testing done according to the regulations. All data shown were collected during the last calendar year unless otherwise noted in the table(s).

Contaminants	MCLG	MCL	Potlatch	Range of Detection		Sample Date	Violation	Typical Source of Contaminant
				Lowest	Highest			
<b>Disinfectant Residual</b>								
Total Chlorine Residual (ppm)	4	4	0.35	0.21	0.59	2018	NO	Measure of disinfectant added to water
<b>Microbiological Contaminants</b>								
Total Coliform Bacteria	0	1 Positive	0	0	0	2018	NO	Naturally present in the environment
Skagit PUD collects one compliance sample per month for total coliforms and <i>E.coli</i> from the distribution system. No total coliforms or <i>E.coli</i> were detected in 2018.								
<b>Disinfection By-Products</b>								
Total Trihalomethanes (ppb)	N/A	80	4.1	N/A	N/A	2017	NO	By-product of drinking water chlorination
Haloacetic Acids (5) (ppb)	N/A	60	1.3	N/A	N/A	2017	NO	By-product of drinking water chlorination
Disinfection by-product samples are collected once every three years.								
<b>Inorganic Contaminants</b>								
Chloride	250	250	76	N/A	N/A	2018	NO	Saltwater intrusion
Nitrate (ppm)	10	10	ND	N/A	N/A	2018	NO	Erosion of natural deposits
Sodium (ppm)	N/A	N/A	33.7	N/A	N/A	2015	NO	Naturally occurring, water softeners, animal waste, road salts
Total Dissolved Solids (TDS) (ppm)	500	500	116	N/A	N/A	2015	NO	Erosion of natural deposits
<b>Radionuclides</b>								
Gross Alpha (pCi/L)	0	15	ND	N/A	N/A	2015	NO	Erosion of natural deposits
Radium 228 (pCi/L)	0	5	ND	N/A	N/A	2015	NO	Erosion of natural deposits
<b>Volatile Organic Contaminants (VOC)</b>								
VOCs (ppb)	0	0	ND	N/A	N/A	2016	NO	Discharge from factories

# Potlatch Public Water System: ID# 69034L

Continued

Monitoring Waivers*			
Contaminants	Frequency	Last Sampled	Violation
Synthetic Organic Chemicals (SOC)	Every 3 or 9 years.*	2013	NO

\*The Washington State Department of Health reduced the monitoring requirements for SOCs, because the source is not at risk of contamination. Pesticides are tested once every three years and herbicides once every nine years.

Lead & Copper							
Contaminants	MGLG	AL	Potlatch (90th %)	Sample Date	# Samples Exceeding AL	Violation	Typical Sources
Lead – lead at consumer’s tap (ppb)	0	15	3*	2017	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits
Copper – copper at consumer’s tap (ppm)	1.3	1.3	0.1*	2017	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits

\*The 90th percentile level is the highest result obtained in 90% of the samples collected when results are ranked in order of lowest to highest. Skagit PUD is required to collect five samples for presence of lead and copper from household taps every three years.

Susceptibility rating of potential threats to the safety of our water supply: **High**

See Source Water Assessment Program (SWAP) data on WA Department of Health website—<https://fortress.wa.gov/doh/swap/index.html>





# Rockport Public Water System: ID# 736006

## Source & Treatment

The Rockport water system is located along the North Cascades Highway serving around 54 residential and six non-residential connections. Water is drawn from a 344 foot deep well and treated for iron and manganese removal using an ATEC chlorine oxidation and filtration system. Chlorine residual is maintained throughout the distribution system to maintain disinfection.

are between 0.01-1.0 mg/l. Quarterly the untreated and treated water is tested for iron and manganese levels to evaluate their removal from the untreated water by the ATEC. Once a year routine nitrate samples are measured and found to be non-detect. The system is on three year testing schedule for lead, copper and disinfection by-products and all have been found to be below the established MCLs. Radionuclides are on a six year testing schedule and are also below the established MCLs.

## Water Quality

Currently, the drinking water quality meets all primary and secondary drinking water standards. Rockport water is considered moderately hard with hardness of 109 mg/l (as calcium carbonate), and pH levels are between 7.4-7.8.

The Rockport water system has been granted waivers by Washington State Department of Health (DOH) for asbestos, complete inorganics, volatile organics, herbicides, pesticides and soil fumigants. It is tested for these parameters every three, six, or nine years with these contaminants being non-detect in the source water, therefore granted waivers by DOH.

Once a month, a routine distribution sample is tested for total coliform and *E.coli*. Chlorine residual levels

## 2018 Drinking Water Results

The water quality information presented in the table(s) is from the most recent round of testing done according to the regulations. All data shown were collected during the last calendar year unless otherwise noted in the table(s).

Contaminants	MCLG	MCL	Rockport	Range of Detection		Sample Date	Violation	Typical Source of Contaminant
				Lowest	Highest			
<b>Disinfectant Residual</b>								
Total Chlorine Residual (ppm)	4	4	0.54	0.01	0.88	2018	NO	Measure of disinfectant added to water
<b>Microbiological Contaminants</b>								
Total Coliform Bacteria	0	1 Positive	1 Positive Sample	0	1	2018	NO	Naturally present in the environment
Skagit PUD collects one compliance sample per month for total coliforms and <i>E.coli</i> from the distribution system. One total coliform positive samples was detected in February 2018 and no <i>E.coli</i> . Within 24 hours the original sample site, source and up and downstream samples were collected and all four were absent for total coliforms and <i>E.coli</i> .								
<b>Disinfection By-Products</b>								
Total Trihalomethanes (ppb)	N/A	80	5.5	N/A	N/A	2018	NO	By-product of drinking water chlorination
Haloacetic Acids (5) (ppb)	N/A	60	4.2	N/A	N/A	2018	NO	By-product of drinking water chlorination
Disinfection by-product samples are collected once every three years.								
<b>Inorganic Contaminants</b>								
Nitrate (ppm)	10	10	0.1	N/A	N/A	2018	NO	Erosion of natural deposits
<b>Radionuclides</b>								
Gross Alpha (pCi/L)	0	15	ND	N/A	N/A	2015	NO	Erosion of natural deposits
Gross Beta (pCi/L)	0	50	ND	N/A	N/A	2015	NO	Erosion of natural deposits

# Rockport Public Water System: ID# 736006

Continued

Contaminants	MCLG	MCL	Rockport	Range of Detection		Sample Date	Violation	Typical Source of Contaminant
				Lowest	Highest			
Radium 228 (pCi/L)	0	5	ND	N/A	N/A	2015	NO	Erosion of natural deposits
<b>Synthetic Organic Contaminants (SOC)</b>								
Herbicides (ppb)*	0	0	ND	N/A	N/A	2016	NO	Run off from herbicides

\*SOCs include list of 11 contaminants.

<b>Monitoring Waivers*</b>			
Contaminants	Frequency	Last Sampled	Violation
Volatile Organic Chemicals (VOC)	Every 6 years.	2014	NO
Inorganic Chemicals (IOC)	Every 9 years.	2010	NO

\*The Washington State Department of Health reduced the monitoring requirements for IOCs and VOCs, because the source is not at risk of contamination.

<b>Lead &amp; Copper</b>							
Contaminants	MGLG	AL	Rockport (90th %)	Sample Date	# Samples Exceeding AL	Violation	Typical Sources
Lead – lead at consumer’s tap (ppb)	0	15	1.5*	2017	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits
Copper – copper at consumer’s tap (ppm)	1.3	1.3	0.22*	2017	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits

\*The 90th percentile level is the highest result obtained in 90% of the samples collected when results are ranked in order of lowest to highest. Skagit PUD is required to collect five samples for presence of lead and copper from household taps every three years.

Susceptibility rating of potential threats to the safety of our water supply: **Low**

See Source Water Assessment Program (SWAP) data on WA Department of Health website—<https://fortress.wa.gov/doh/swap/index.html>



# Skagit View Village Public Water System: ID# 968795

## Source & Treatment

Skagit View Village water system is located on the south side of the Skagit River near the town of Concrete, and serves around 70 residential connections. The source water is drawn from 54 foot deep well and has elevated levels of iron (up to 0.5 mg/l), manganese (up to 0.045 mg/l), and dissolved carbon dioxide. The water is treated with an ATEC oxidation pyrolusite media filtration system for the iron and manganese removal, and a calcite contactor is in place for corrosion control. Free chlorine residual is maintained throughout the distribution system to maintain disinfection.

Once a month distribution samples are tested for total coliform and *E.coli*. Chlorine residual levels are 0.02-1.3 mg/l with pH levels between 7-7.5. Quarterly the untreated and treated water is tested for iron and manganese to evaluate their removal. Once a year nitrate levels are measured and have been found to be very low (1 mg/l). The system is on 3 year standard monitoring for lead, copper and disinfection by-products. All are below the established MCLs (Maximum Contaminant Level). Radionuclides are on 6 year testing schedule and are non-detected or below MCL levels.

## Water Quality

Currently the drinking water quality meets all primary and secondary drinking water standards. Over all the water is considered to be moderately hard, with hardness of 109.9 mg/l (as calcium carbonate) and total dissolved solids are 152 mg/l.

The Skagit View Village system has been granted waivers by Washington State Department of Health (DOH) for asbestos, inorganics, volatile organics, herbicides, pesticides and soil fumigants. These components are tested for every three, six or nine years. Most of the contaminants are non-detect in the well water, therefore granted waivers by DOH.

## 2018 Drinking Water Results

The water quality information presented in the table(s) is from the most recent round of testing done according to the regulations. All data shown were collected during the last calendar year unless otherwise noted in the table(s).

Contaminants	MCLG	MCL	Skagit View Village	Range of Detection		Sample Date	Violation	Typical Source of Contaminant
				Lowest	Highest			
<b>Disinfectant Residual</b>								
Total Chlorine Residual (ppm)	4	4	0.67	0.02	1.29	2018	NO	Measure of disinfectant added to water
<b>Microbiological Contaminants</b>								
Total Coliform Bacteria	0	1 Positive	0	0	0	2018	NO	Naturally present in the environment
Skagit PUD collects one compliance sample per month for total coliforms and <i>E.coli</i> from the distribution system. No total coliforms or <i>E.coli</i> were detected in 2018.								
<b>Disinfection By-Products</b>								
Total Trihalomethanes (ppb)	N/A	80	1.5	N/A	N/A	2017	NO	By-product of drinking water chlorination
Haloacetic Acids (5) (ppb)	N/A	60	ND	N/A	N/A	2017	NO	By-product of drinking water chlorination
Disinfection by-product samples are collected once every three years.								
<b>Inorganic Contaminants</b>								
Barium (ppm)	2	2	0.006	N/A	N/A	2016	NO	Erosion of natural deposits
Nitrate (ppm)	10	10	0.6	N/A	N/A	2018	NO	Erosion of natural deposits
Sodium (ppm)	N/A	N/A	7.7	N/A	N/A	2016	NO	Naturally occurring, water softeners, animal waste, road salts
Total Dissolved Solids (TDS) (ppm)	500	500	152	N/A	N/A	2016	NO	Erosion of natural deposits

# Skagit View Village Public Water System: ID# 968795

Continued

Contaminants	MCLG	MCL	Skagit View Village	Range of Detection		Sample Date	Violation	Typical Source of Contaminant
				Lowest	Highest			
<b>Radionuclides</b>								
Gross Alpha (pCi/L)	0	15	ND	N/A	N/A	2015	NO	Erosion of natural deposits
Gross Beta (pCi/L)	0	50	ND	N/A	N/A	2015	NO	Erosion of natural deposits
Radium 228 (pCi/L)	0	5	ND	N/A	N/A	2015	NO	Erosion of natural deposits
<b>Volatile Organic Contaminants (VOC)</b>								
Chloroform (ppb)	80	80	1	N/A	N/A	2016	NO	By-product of drinking water chlorination
Bromodichloromethane (ppb)	80	80	0.7	N/A	N/A	2016	NO	By-product of drinking water chlorination
Chlorodibromomethane (ppb)	80	80	0.5	N/A	N/A	2016	NO	By-product of drinking water chlorination
Soil Fumigants (ppt)	0	200	ND	N/A	N/A	2018	NO	Runoff/leaching from soil; fumigant used on soybeans, orchards, etc.

<b>Monitoring Waivers*</b>			
Contaminants	Frequency	Last Sampled	Violation
Inorganic Chemicals (IOC)	Every 9 years	2016	NO
Synthetic Organic Chemicals (SOC)	Every 3 or 9 years**	2015	NO

\*The Washington State Department of Health reduced the monitoring requirements for IOCs and SOCs, because the source is not at risk of contamination. \*\*Pesticides are tested once every three years and herbicides once every nine years.

<b>Lead &amp; Copper</b>							
Contaminants	MGLG	AL	Skagit View Village (90th %)	Sample Date	# Samples Exceeding AL	Violation	Typical Sources
Lead – lead at consumer’s tap (ppb)	0	15	1*	2018	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits
Copper – copper at consumer’s tap (ppm)	1.3	1.3	0.8*	2018	0 of 5	NO	Corrosion of household plumbing systems; erosion of natural deposits

\*The 90th percentile level is the highest result obtained in 90% of the samples collected when results are ranked in order of lowest to highest. Skagit PUD is required to collect five samples for presence of lead and copper from household taps every three years.

Susceptibility rating of potential threats to the safety of our water supply: **Moderate**  
 See Source Water Assessment Program (SWAP) data on WA Department of Health website—<https://fortress.wa.gov/doh/swap/index.html>

# Fidalgo Island Public Water System: ID# 00932Y

## Source & Treatment

Fidalgo water system is located on Fidalgo Island in western Skagit County and serves around 717 residential and commercial connections. Water is purchased through an intertie with city of Anacortes, with their source being the Skagit River in Mount Vernon. Their water is filtered and chlorinated at the Anacortes water treatment plant on Riverbend Road. Free chlorine residual is maintained throughout our distribution system to provide sufficient disinfection.

Fidalgo water is considered soft with hardness of 23 mg/l (as calcium carbonate).

Two routine samples a month are tested for total coliform and *E.coli*. Chlorine residual levels are between 0.6-1.1 mg/l with pH levels between 7.5-7.9. Quarterly the water is tested for disinfection by-products and is on a 3 year testing schedule for lead and copper. All these contaminants are below the established MCLs. Additional water quality monitoring is performed by city of Anacortes and can be found on their website.

## Water Quality

Currently, the drinking water quality meets all primary and secondary drinking water standards.

## 2018 Drinking Water Results

The water quality information presented in the table(s) is from the most recent round of testing done according to the regulations. All data shown were collected during the last calendar year unless otherwise noted in the table(s).

Water is produced by the city of Anacortes Water Treatment Plant. A more detailed water quality report can be found on their website at <https://www.anacorteswa.gov/504/Water-Quality-Reports>.

Contaminants	MCLG	MCL	Fidalgo Island	Range of Detection		Sample Date	Violation	Typical Source of Contaminant
				Lowest	Highest			
<b>Disinfectant Residual</b>								
Total Chlorine Residual (ppm)	4	4	0.89	0.64	1.13	2018	NO	Measure of disinfectant added to water
<b>Microbiological Contaminants</b>								
Total Coliform Bacteria	0	1 Positive	0	0	0	2018	NO	Naturally present in the environment
Skagit PUD collects two compliance samples per month for total coliforms and <i>E.coli</i> from the distribution system. No total coliforms or <i>E.coli</i> were detected in 2018.								
<b>Disinfection By-Products</b>								
Total Trihalomethanes (ppb)	N/A	80	23.1	N/A	N/A	2018	NO	By-product of drinking water chlorination
Haloacetic Acids (5) (ppb)	N/A	60	16.8	N/A	N/A	2018	NO	By-product of drinking water chlorination

<b>Lead &amp; Copper</b>							
Contaminants	MGLG	AL	Fidalgo Island (90th %)	Sample Date	# Samples Exceeding AL	Violation	Typical Sources
Lead – lead at consumer's tap (ppb)	0	15	1*	2018	0 of 10	NO	Corrosion of household plumbing systems; erosion of natural deposits
Copper – copper at consumer's tap (ppm)	1.3	1.3	0.13*	2018	0 of 10	NO	Corrosion of household plumbing systems; erosion of natural deposits
*The 90th percentile level is the highest result obtained in 90% of the samples collected when results are ranked in order of lowest to highest. Skagit PUD is required to collect five samples for presence of lead and copper from household taps every three years.							

## Health Effects of Copper

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount 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.

## You Can Reduce Your Copper Exposure By Flushing

It is recommended that you let the water run before using it for cooking or drinking whenever the household water remains unused for more than six hours. This would include the times when you first get up in the morning or when you come home from work. The longer the water sits in your household pipes, the more copper it may contain.

Flushing the faucet means running the cold-water faucet until the water feels a cold as it can get, or for a period of about one minute. Also, avoid cooking with or consuming water from hot water taps as hot water dissolves copper more readily than cold water does.

## How You Can Reduce Lead Exposure?

In Washington State, lead in drinking water comes primarily from materials and components used in household plumbing. The more time water has been sitting in pipes, the more dissolved metals, such as lead, it may contain. Elevated levels of lead can cause serious health problems, especially in pregnant women and young children.

To help reduce potential exposure to lead: for any drinking water tap that has not been used for six hours or more, flush water through the tap until the water is noticeably colder before using for drinking or cooking. You can use the flushed water for watering plants, washing dishes, or general cleaning. Only use water from the cold-water tap for drinking, cooking, and especially for making baby formula. Hot water is likely to contain higher levels of lead. If you are concerned about lead in your water, you may wish to have your water tested.

Information on lead in drinking water is available from EPA's Safe Drinking Water Hotline at 1-800-426-4791 or online at <http://www.epa.gov/safewater/lead>.

## Source Water Protection

To achieve improved protection of public water supply sources and the health of Washington's citizens, the Washington State Department of Health has developed the Source Water Assessment Program (SWAP).

The SWAP program evaluates potential threats to the safety of our water supplies by assessing sources of contamination. The SWAP is designed to give you and your community more information about the source of your drinking water, and any threats to its long-term quality that we can identify and address through a pollution prevention approach.

To learn more about the SWAP, contact the Washington State Department of Health at (360) 236-3149 or visit [www.doh.wa.gov/ehp/dw](http://www.doh.wa.gov/ehp/dw).

## Cultus Mountain Watershed Purchase

In December 2017, Skagit PUD purchased a 250 acre parcel of forested land within the Cultus Mountain Watershed for \$1.5 million.

The property is located around Gilligan Creek, which provides 45 percent of the PUD's source water for the Judy Reservoir water system.

Until recently, timber companies and the Department of Natural Resources owned all the property around Gilligan Creek.

In 2012, the PUD went through a comprehensive updating of its watershed control program and determined that finding a way to protect the water quality of this stream was critical to the success of the Judy system. Recent increases in the rates of logging and road construction led to the concept that buying land near the area where water is withdrawn for the water system would work wonders to protect the long-term success of the Judy system.

A well-established relationship with the landowner helped the PUD start the complicated negotiations to buy the property in the spring of 2017. A \$1.5 million deal was struck by September, and the property became the ownership of Skagit PUD in December.



## What Can You Do To Protect the Water Supply?

Skagit PUD offers a program called Cross-Connection Control to help ensure that the water delivered to our customers remains a safe and reliable supply that we can all depend on. The program exists to prevent the reverse flow of water from a customer's plumbing back into the public water supply. This reversal of flow is called backflow. Cross-Connection Control is a mandated program under the Washington State Administrative Code.

One of the most effective ways to prevent backflow is the installation of a specialized plumbing assembly directly after the meter; this is called a Backflow Prevention Assembly.

However, as users of the water system, there are other ways to help prevent contamination due to backflow. Hose bibbs (outside faucets) that have been installed in the last few years now include an Atmospheric Vacuum Breaker (AVB). The AVB helps to re-direct potentially contaminated water onto the ground instead of entering your private plumbing system, in the instance of a backflow occurrence.

Common situations where this could occur is during the process of filling a bucket for washing a vehicle, filling a water trough, cleaning equipment, etc. Life is



*A garden hose submerged into a bucket, or inserted into your car's radiator to flush out antifreeze, or attached to a fertilizer sprayer, could siphon these contaminants back into our water mains.*

busy, so sometimes it is easier to leave the hose in the bucket while it is filling up and even leave it there once it is done. If there is a main break, or the fire department withdraws water from a close fire hydrant, the water from your private system could be sucked back into the public water supply. This means that anything that is connected to water, and especially the contents of that bucket, are pulled back into the

system. The effect is the same as if you suck a beverage through a straw.

It is not possible to identify and ensure protection from EVERY water hazard in the PUD's system, change is happening constantly. However, through information, education and by working together, protecting the water supply is truly the joint responsibility of the PUD and its customers.

For questions or more information about what you can do to help, please contact **Courtney Shilling**, Cross-Connection Control Coordinator, at (360) 848-2138 or [shilling@skagitpud.org](mailto:shilling@skagitpud.org).



# WATER USE EFFICIENCY UPDATE

In January 2008, Skagit PUD established measurable water saving goals for the six-year period from 2008 through 2013 for both the supply- and demand-side of the PUD's distribution system. These goals were established through a public process as required by the Municipal Water Law. The goals provide a benchmark for achievement and play a significant role in defining the success of Skagit PUD's Water Use Efficiency Program. The PUD re-established its six-year WUE goals in 2013 for the six-year period from 2014 through 2019. Our water use efficiency goals and the steps we are taking to meet those goals are as follows:

## Measures

Skagit PUD's conservation program for 2014–2019 consists of the 10 measures. All measures will be implemented during Years 1-6 of the plan. The program reflects a continuation and/or enhancement of many of the measures in the 2008–2013 program.

### 2014–2019 Water Use Efficiency Measures

- Public Outreach
- Indoor Retrofit Kits
- Shower Timers
- School Outreach
- Toilet Leak Kits
- Soil Moisture Meters
- Rain Barrel Program
- System Leak Detection & Repair
- Bill Showing Consumption History
- Large Meter Testing

## Goals

### 1. Save a cumulative total of 6 million gallons of water by 2019.

For 2018, Skagit PUD's goal for estimated annual water savings through the WUE program was 1,430,100 gallons. **Skagit PUD achieved an estimated 1,512,380 gallons saved.**

Skagit PUD continues to focus its public outreach efforts on providing customers with simple water-saving ideas to use at their home or business.

In 2018, Skagit PUD's public outreach activities included staffed informational booths at local community events, festivals and fairs. Skagit PUD staff shared ideas on how to identify and stop common leaks, conserve water, and

ways to use water more efficiently.

Over the years, Skagit PUD has offered school groups tours of Judy Reservoir and the water treatment plant. In 2012, Skagit PUD began piloting

to elementary classrooms a new program called *The Story of Drinking Water*—an exploration of water's role in our environment and society, with an emphasis on the importance of good water stewardship practices. In 2018, Skagit PUD hosted over 700 students and parents on field trips to Judy Reservoir. In May, PUD staff also hosted community tours in celebration of Drinking Water Week.

Hardware measures provide the most quantifiable method for calculating potential water savings as compared to behavioral measures. As a result, Skagit PUD sells low-cost indoor retrofit kits, which include one 1.5 GPM low-flow showerhead, plus a kitchen and bathroom aerator. The kits sell for \$11 at our main office. In 2018, Skagit PUD distributed 25 indoor retrofit kits with an estimated water savings of 265,020 gallons.

Back in 2010, Skagit PUD first introduced its rain barrel program to single family and commercial customers in order to create awareness and visibility around water use practices. In 2018, Skagit PUD placed 56 rain barrels into the community with an estimated water savings of 33,880 gallons, which is a 30 percent increase over 2017. Although the total is not a huge water savings compared to other hardware measures, the act of collecting rainwater can be an inspiration to find other ways to conserve water around the home and at work. The PUD sells ready to install rain barrels for \$60 plus tax.





Skagit PUD continues to focus on creating public awareness of the need to use water wisely. The PUD provides outdoor water-saving tips in our *Pipeline* newsletter.

## 2. Reduce distribution system leakage (DSL) to 10 percent or less of total water produced per year.

All water services in Skagit PUD's water systems are

metered. The PUD tracks high use meters to check on accuracy. All two-inch and larger meters are tested and calibrated on a three-year rotating schedule.

In 2018, the average water loss reported from distribution system leakage for all systems operated by Skagit PUD was **9.5 percent**. The three-year DSL rolling average for the Judy Reservoir system stands at 9.1 percent, which continues a downward trend from previous years.

Water System Performance 2018	
<b>Judy Reservoir Production</b>	2,940,619/Kgals Produced
Judy Reservoir Billed	2,606,301/Kgals Billed
% Distribution System Leakage	9.4% DSL
<b>Alger Production</b>	9,174/Kgals Produced
Alger Billed	7,679/Kgals Billed
% Distribution System Leakage	13.1% DSL
<b>Cedargrove Production</b>	9,337/Kgals Produced
Cedargrove Billed	8,702/Kgals Billed
% Distribution System Leakage	3.3% DSL
<b>Fidalgo Island Production</b>	63,606/Kgals Produced
Fidalgo Island Billed	49,869/Kgals Billed
% Distribution System Leakage	11.9% DSL
<b>Marblemount Production</b>	2,906/Kgals Produced
Marblemount Billed	1,599/Kgals Billed
% Distribution System Leakage	3.1% DSL
<b>Mountain View Production</b>	1,310/Kgals Produced
Mountain View Billed	1,329/Kgals Billed
% Distribution System Leakage	0.0%* DSL
<b>Potlatch Beach Production</b>	592/Kgals Produced
Potlatch Beach Billed	581/Kgals Billed
% Distribution System Leakage	1.8% DSL
<b>Rockport Production</b>	3,267/Kgals Produced
Rockport Billed	2,763/Kgals Billed
% Distribution System Leakage	8.6% DSL
<b>Skagit View Village Production</b>	3,740/Kgals Produced
Skagit View Village Billed	3,675/Kgals Billed
% Distribution System Leakage	0.4% DSL
<i>Numbers calculated in thousands of gallons.</i>	

*The chart at the left reports each system's water production performance for 2018. All water that is not authorized consumption is considered distribution system leakage (DSL). Some examples of water use considered leakage include: water main breaks, theft, meter inaccuracies, meter reading errors, data collection and calculation errors.*

*The DSL calculation also takes into account water that is produced but not billable, for example: backwash, customer leak adjustments, estimated fire suppression usage, estimated project line flushing, etc.*

*The total average DSL in 2018 for all systems is 9.5 percent. The DSL standard set by the state is 10 percent or less for the last three-year average.*

*\*Denotes meter inaccuracies.*







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