

ANNUAL WATER QUALITY REPORT



I am pleased to share with you the 2020 Annual Water Quality Report. The report once again indicates that PWD consistently produces high quality water that continues to surpass federal and state standards.

We are so fortunate to have a pristine water source, but what is more impressive to me as the General Manager is the passion and commitment of our staff. From operations, customer service, to watershed protection; dedicated staff work day and night to ensure service is reliable, quality is excellent, and investments are prudent. Even during the unprecedented response to the COVID-19 pandemic, staff adapted and focused on the same goal of maintaining quality water and essential services to our community.

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The Portland Water District oversees a \$47.5 million operating budget to provide water and wastewater services. This year we will invest \$16.5 million in our water systems which includes \$8 million in water main replacements. Continual investments in infrastructure and advances in services support quality products and service.



Portland Water District

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The Water Source

Your source of drinking water is Sebago Lake, Maine's deepest and second largest lake. By almost any measure, the quality of water in Sebago Lake is among the highest of any lake in the United States. It is so clean, in fact, that it doesn't need to be filtered before it is disinfected. **This is a designation that only about 50 of the 13,000 surface water suppliers in the country can claim.**

This means your water:

- is **cleaner** than most;
- **tastes better** than most since filtration typically involves chemical addition which can impart a taste;
- is **less expensive** than most since a filtration plant could cost upwards of \$150 million; and
- is **safer** than most since keeping contaminants out of the water is more effective than trying to remove them from a polluted lake.

MODERATE RISK OF CONTAMINATION

As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and radioactive materials and can pick up substances resulting from human or animal activity. Although Sebago Lake is very clean today, human activities on and around the lake can pose a risk to water quality. In 2003, the Maine Drinking Water Program (DWP) evaluated all public water supplies as part of a state-wide evaluation known as the Source Water Assessment Program (SWAP). The assessment considered things like geology, hydrology, land uses, water testing information, and the extent of land ownership or protection by local ordinance. These factors determine the likelihood of contamination by human activities for each Maine drinking water source. Their report on Sebago Lake concludes that the lake is at moderate risk of contamination.

The most significant risks to the long-term protection of Sebago Lake, according to state officials, are boating and ice fishing in Lower Bay and shoreland development. PWD maintains programs that are designed to minimize the risks of these activities. You can get a copy of the SWAP assessment for Sebago Lake by contacting PWD at (207) 761-8310 or by calling the Drinking Water Program at (207) 287-2070.

LOWERING THE RISK OF CONTAMINATION

Because the lake is used by so many for different purposes, our efforts to decrease the risk of contamination involve multiple approaches. Our Sebago Lake protection program involves:

- water quality monitoring;
- land and water security;
- shoreland zone inspections and pollution prevention actions;
- environmental education and outreach; and
- land acquisition, conservation, and management.





The Forest is the Filter— A Shared Responsibility

Keeping the land surrounding a lake forested is key to protecting the water quality of the lake since forests naturally clean water. The forests around Sebago Lake act as a natural water filtration system which means higher quality drinking water which is less expensive to treat. To conserve forest land, the Portland Water District purchases properties from willing sellers in select areas in Lower Bay and also works with local land trusts and others - a partnership known as Sebago Clean Waters (www.sebagocleanwaters.org) - to support local forest conservation near and around the lake. PWD contributes up to 25% of the cost of conserving these forests. This effort has helped protect more than 6,000 acres of watershed forest in the last 20 years. These forests will be naturally treating your water forever and many of them allow free public access. You can learn more about recreation opportunities on these conserved lands by contacting the Loon Echo Land Trust (www.loonecholandtrust.org) or the Western Foothills Land Trust (www.wflmaine.org).





Ensuring Water Quality

WATER PURIFICATION AND DISINFECTION

Delivering high quality water to our customers is our first priority. We know your water is safe because we regularly monitor and test it. Our water quality experts performed over 15,000 analyses last year. Many inorganic and synthetic volatile organic chemicals, and disinfection by-products are routinely monitored for and never detected.

Primary disinfection: ozone and ultraviolet light

Secondary disinfection: chloramine

Filtration: None, PWD holds a waiver from filtration due to the purity of Sebago Lake

pH adjustment: sodium hydroxide

Corrosion control: zinc orthophosphate

Dental health additive: fluoride (hydrofluorosilicic acid)

In 2019, your water met or surpassed every state and federal requirement. Water samples are tested by state-certified testing laboratories including two Portland Water District laboratories which are certified by the Maine Department of Health and Human Services.

MONITORING EMERGING CONCERNS: PFAS

PFAS (per- and poly-fluoroalkyl substances) are a large group of manmade fluorinated chemicals which include the widely used chemicals perfluorooctanoic acid or PFOA, and perfluorooctanesulfonate or PFOS. There are over 4,000 PFAS compounds that have been identified to-date. These pervasive chemicals are contained in everyday consumer products like non-stick cookware, flame retardant clothing, furniture and carpets, as well as other industrial products like firefighting foams.



Scientists are still learning about possible health effects from being exposed to these chemicals. Links to cancer, liver damage, and low birth rate are among the concerns listed. Interest over drinking water and wastewater contamination, in particular the land spreading of biosolids, has emerged as the public tries to more fully understand the issue.

Our most recent testing for PFAS in drinking water occurred in June 2019. Of the 14 compounds tested, only Perfluorooctanoic acid (PFOA) was detected at a level of 2 parts per trillion (2 ppt), a trace amount when compared to the EPA Health Advisory Limit of 70 ppt. We are very lucky to have a source as pristine and protected as Sebago Lake. Over 80% of the Sebago Lake watershed is forested, therefore potential sources of contamination are minimized. Still, we will continue to be vigilant to ensure water quality.



Water Quality Analysis

DETECTED REGULATED SUBSTANCES

Substance	Violation	Ideal Goal MCLG	Highest Level Allowed MCL	Amount Detected in 2019 (unless otherwise noted)	Source	
Radionuclides						
Alpha emitters (pCi/L) (2015)	No	0	15	2.5	Erosion of natural deposits	
Inorganic Chemicals						
Barium (mg/L)	No	2	2	0.0033	Erosion of natural deposits	
Copper (mg/L) ¹ 90 th Percentile	No	1.3	AL = 1.3	0.38	Corrosion of household plumbing systems; erosion of natural deposits	
Lead (µg/L) ² 90 th Percentile	No	0	AL = 15	4	Corrosion of household plumbing systems	
Fluoride (mg/L)	No	4	4	Average: 0.67 Range: 0.61 - 0.73	Water additive which promotes strong teeth; erosion of natural deposits	
Chloramine (mg/L)	No	MRDLG=4	MRDL=4	Average: 2.29 Range: 2.11 - 2.44	A water additive used to control microbes	
Turbidity (NTU)	No	None	5	Average: 0.23 Range: 0.12 - 0.43	Soil runoff	
Organic Compounds						
Total Trihalomethanes, TTHM (µg/L)						
Duck Pond Variety	No	0	80	Average	Range	By-product of drinking water chlorination
South Windham Post				1	0.6 - 1.0	
Cumberland Town Hall				1	0.7 - 1.4	
Mackworth Booster Station				2	0.9 - 1.7	
Total Haloacetic Acids, THAA (µg/L)						
Duck Pond Variety	No	0	60	Average	Range	By-product of drinking water chlorination
South Windham Post				8	5.9 - 9.9	
Cumberland Town Hall				11	7.2 - 14.0	
Mackworth Booster Station				10	8.1 - 9.8	
				9	7.7 - 10.0	



1 In 2017 the maximum value for copper was 0.48 mg/L.
2 in 2017 the maximum value for lead was 10.4 µg/L.

UNDETECTED CONTAMINANT LIST

The following is a list of contaminants that were tested for in 2019 and **not detected** in the drinking water produced at the Sebago Lake Water Treatment Facility.

INORGANIC CONTAMINANTS: Antimony, arsenic, beryllium, bromate, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, uranium, nitrate, nitrite, germanium **MICROBIOLOGICAL:** E. coli bacteria; Total Coliform bacteria **VOLATILE ORGANIC COMPOUNDS:** 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethylene, 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,4-Dichlorobenzene, Benzene, Carbon tetrachloride, Chlorobenzene, cis-1,2-Dichloroethylene, Ethylbenzene, Methyl t-butyl ether (MTBE), Methylene chloride, Styrene, Tetrachloroethylene, Toluene, Total xylenes, trans-1,2-Dichloroethylene, Trichloroethylene, Vinyl chloride **ALCOHOLS:** 1-butanol, 2-methoxyethanol, 2-propen-1-ol **SEMIVOLATILES:** butylated hydroxyanisole, o-toluidine, quinolone **PESTICIDES:** alpha-hexachlorocyclohexane, chlorpyrifos, dimethipin, ethoprop, oxyfluorfen, profenofos, tebuconazole, permethrin (cis & trans), tribufos **DBP:** bromodichloroacetic acid, chlorodibromoacetic acid, dibromoacetic acid, monobromoacetic acid, tribromoacetic acid, trichloroacetic acid, bromideroethylene; Toluene; Trichloroethylene; 1,2,4-Trichlorobenzene; 1,1,1-Trichloroethane; 1,1,2-Trichloroethane; Total xylenes; Vinyl chloride.

MINERAL CONTENT AND SECONDARY STANDARD

Substance	Maine Recommended Limit	Result	Likely Source
Chloride (mg/L)	250	9	Natural mineral, road salt
Color (PCU)	15	5	Natural characteristic
Hardness (mg/L as CaCO ₃)	150	7.5	Natural mineral
Iron (mg/L)	0.3	0.016	Natural mineral
Manganese (mg/L)	0.05	0.0020	Natural mineral
Sodium (mg/L)	100	9.3	Natural mineral, road salt
Sulfate (mg/L)	250	3	Naturally occurring
Magnesium (mg/L)	50	<1	Natural mineral
Calcium (mg/L)	500	3.0	Natural mineral
Zinc (mg/L)	5	0.105	Natural mineral, corrosion control additive

Secondary standards are non-mandatory guidelines to assist public water systems in managing their drinking water for aesthetic conditions such as taste, odor, or staining of laundry. According to the EPA, these contaminants do not pose a risk to human health. Results listed above are from 6/4/19 sampling event.



Definitions

MCL: Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water.

MCLG: Maximum Contaminant Level Goal. The level of a contaminant in drinking water below which there is no known or expected risk to health.

MRDL: Maximum Residual Disinfectant Level. The highest level of a disinfectant allowed in drinking water.

MRDLG: Maximum Residual Disinfection Level Goal. 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.

LRAA: Locational Running Annual Average. An annual average calculated at each monitoring site.

Variations and Exemptions: State permission not to meet MCL or a treatment technique under certain conditions.

AL = Action Level: The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow. Action Levels for Lead and Copper are measured at the tap of “high risk” homes. Ninety percent of tests must be equal to or below the Action Level.

Turbidity: The measurement of cloudiness or suspended colloidal matter (silt). As you can see from the table, all of the samples taken of our water system were well below 5 ntus.

Units:

ppm = parts per million or milligrams per liter (mg/L). pCi/L = picocuries per liter (a measure of radioactivity).

ppb = parts per billion or micrograms per liter (µg/L). NTU=Nephelometric Turbidity Units.

Notes

1) Total Coliform Bacteria: Reported as the highest monthly number of positive samples, for water systems that take less than 40 samples per month.

2) *E. Coli*: *E. Coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely-compromised immune systems.

3) Fluoride: For those systems that fluoridate, fluoride levels must be maintained between 0.5 to 1.2 ppm. The optimum level is 0.7 ppm.

4) Lead/Copper: Action levels (AL) are measured at consumer’s tap. 90% of the tests must be equal to or below the action level.

5) Gross Alpha: Action level over 5 pCi/L requires testing for Radium 226 and 228. Action level over 15 pCi/L requires testing for Uranium. Compliance is based on Gross Alpha results minus Uranium results = Net Gross Alpha.

6) TTHM/HAA5: Total Trihalomethanes and Haloacetic Acids (TTHM and HAA5) are formed as a by-product of drinking water chlorination. This chemical reaction occurs when chlorine combines with naturally occurring organic matter in water. Compliance is based on running annual average.

About the Regulations

The federal Safe Drinking Water Act directs the state, along with the EPA, to establish and enforce drinking water standards.

The standards set limits on certain biological, radioactive, organic and inorganic substances sometimes found in drinking water.

Two types of standards have been established. **Primary drinking water standards** set achievable levels of drinking water quality

to protect your health. **Secondary drinking water standards** provide guidelines regarding the taste, odor, color, and other aesthetic aspects of your drinking water, which do not present a health risk.



Health Notices

Drinking water, including bottled water, may reasonably be expected to contain impurities or contaminants. However, these contaminants do not necessarily indicate that water poses a health risk and 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 stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and can also come from gas stations, urban runoff, and septic systems.

Radioactive Contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

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) or at the following link: www.epa.gov/ccr/forms/contact-us-about-consumer-confidence-reports.

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. Portland Water District is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your 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 the following link: www.epa.gov/safewater/lead.

More Information

The Portland Water District Board of Trustees generally meet the second and fourth Monday of every month. Meetings are live-streamed and available On Demand: www.pwd.org/trustee-meetings. The public is welcome to attend meetings.

207.761.8310 (Monday through Friday between 8:00 a.m. and 4:30 p.m.)
225 Douglass Street | PO Box 3553 | Portland, Maine 04102
www.pwd.org | Customerservice@pwd.org

Environmental Protection Agency
800.426.4791 | www.epa.gov/safewater/

American Water Works Association
303.794.7711 | www.awwa.org

National Centers for Disease Control
404.639.3311 | www.cdc.gov

Maine Drinking Water Program
207.287.2070 | www.maine.gov

Steep Falls, Standish Supplemental Information

Steep Falls water system is separate from the Greater Portland water system. See below for components of the Water Quality Report that apply to the Steep Falls system only.

YOUR SOURCE OF WATER AND ENSURING WATER QUALITY

The Steep Falls well system (Standish) supplies approximately 300 people. Treatment includes liquid sodium hypochlorite addition for disinfection, sodium hydroxide addition for pH adjustment and corrosion control, aeration for radon removal, and fluoridation (sodium fluoride).

The state Drinking Water Program waived the requirement to sample for pesticide, herbicide, carbamate and PCB in the Steep Falls water system through 2019. The waiver was granted based on past water test results and the land uses in the proximity of the wells. Other testing for inorganic and volatile organic compounds continues at the required frequency.

DETECTED REGULATED SUBSTANCES

Substance	MCLG Ideal Goal	MCL Highest Level Allowed	Amount Detected in 2019 (unless otherwise noted)	Violation	Source
Radionuclides					
Alpha emitters (pCi/L) 2015	0	15	5.0	No	Erosion of natural deposits
Radium, Combined (pCi/L) 2015	0	5	0.7	No	Erosion of natural deposits
Radium-226 (pCi/L) 2015	0	5	0.7	No	Erosion of natural deposits
Radium-228 (pCi/L) 2015	0	5	0.6	No	Erosion of natural deposits
Radon (pCi/L)	4000	4000	2116	No	Erosion of natural deposits
Uranium (µg/L) 2017	0	30	3.5	No	Erosion of natural deposits
Organic Compounds					
Total Trihalomethanes (µg/L)	0	80	10	No	By-product of chlorination
Total Haloacetic Acids (µg/L)	0	60	1.7	No	By-product of chlorination
Inorganic Chemicals					
Barium (mg/L) 2017	2	2	0.007	No	Erosion of natural deposits; discharge of drilling waste and metal refineries
Copper (mg/L) ¹ 90 th Percentile	AL=1.3	AL=1.3	0.072	No	Corrosion of household plumbing systems
Chlorine (mg/L)	MRDL=4	MRDL=4	Average 1.27 Range 0.92 - 1.54	No	A water additive used to control microbes
Fluoride (mg/L)	4	4	Average 0.68 Range 0.55 - 0.90	No	Water additive which promotes strong teeth Erosion of natural deposits
Nitrate - Nitrogen (mg/L)	10	10	1.21	No	Fertilizer runoff; leaching septic tanks; erosion of natural deposits

¹In 2018 the maximum value for copper was 0.096mg/L

²Disinfection by product samples are collected at the Steep Falls School

Please refer to page 6 of the booklet for definitions

NOTES:

Nitrate: Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health provider.

Radon: The State of Maine adopted a Maximum Exposure Guideline (MEG) for Radon in drinking water at 4000 pCi/L, effective 1/1/07. If Radon exceeds the MEG in water, treatment is recommended. It is also advisable to test indoor air for Radon. Radon at a level of 2116 pCi/L was detected in Steep Falls' well water after aeration treatment. Radon is found in the soil and bedrock formations and is a water soluble, gaseous by-product of uranium. Most radon is released to the air moments after turning on the tap. Only about 1-2 percent of radon in the air comes from drinking water. Inhalation of radon increases the risk of lung cancer over the course of your lifetime.

UNDETECTED CONTAMINANT LIST

The following is a list of chemical contaminants that were tested for in 2019 and not detected in the drinking water produced at the Steep Falls Water Treatment Facility.

MICROBIOLOGICAL: Total coliform bacteria, *E. coli* bacteria.