

Annual Water Quality Report



Drinking Water Quality Data from 2021



To our valued customers,

I am pleased to present the 2022 Annual Water Quality Report for your review. The report contains essential information about your drinking water, including where it comes from, treatment techniques, and what, if any, contaminants it may contain. The Environmental Protection Agency (EPA) mandates many sections of the report; however, the City of Salem prides itself in providing a more comprehensive report that is accessible to all our customers.

In 2021, the City of Salem drinking water met or surpassed every public health requirement—more than 120 drinking water standards—set by the Oregon Health Authority and the EPA.

The City of Salem constructed a state-of-the-art ozone treatment system to remove algal toxins, known as cyanotoxins, as well as contaminants caused by wildfires. Once in full operation in 2022, ozone will be our robust, long-term insurance policy against cyanotoxins for the algae season beginning in May 2022.

Water is the most valuable natural resource in the world today, and the City of Salem is fortunate to have an extremely high-quality, reliable, and abundant source. It is easy to take this precious resource for granted until you learn about the troubles other areas of the United States and the world are experiencing with their water supply, and the quantity and quality of the water source. We often forget about the treatment process, hundreds of miles of underground water mains, pump stations, reservoirs, and dedicated staff it takes to deliver water to each residential customer for less than a penny a gallon.

As always, the City of Salem strives to deliver high-quality water to your tap, as well as provide prompt service to our valued customers.

For more information about Salem's drinking water, please visit <u>www.cityofsalem.net</u>.

Respectfully, Dwayne Barnes

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Utility Operations Manager City of Salem Public Works Department 503-588-6211

CITY OF CU YOUR SERVICE



City of Salem Continues with Electronic Delivery of Annual Water Quality Report



The City of Salem continues to provide the Annual Water Quality Report via electronic delivery as a favorable option for faster access and reduction in costs affiliated with printing and mailing.

If you prefer a hard copy, you can request one by calling (503) 588-6311.

The average person uses around 90 gallons of water per day, and around 32,850 gallons a year.

Important Information Regarding Drinking Water

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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. Environmental Protection Agency (EPA) Safe Drinking Water Hotline at 1-800-426-4791. You can also submit questions on the EPA Safe Drinking Water Act Hotline webpage.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as a person with cancer undergoing chemotherapy, a person who has undergone an organ transplant, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

The EPA and Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791.

Please Share!

If you are a manager or owner of a business or multifamily dwelling, please share this report with your employees or residents.

For additional copies, please call the City of Salem Public Works Dispatch at 503-588-6311

Español?

Este documento contiene información sobre su agua potable y su fuente. Si desea recibir una copia de este documento en español, llame al Despacho de Obras Públicas de la Ciudad de Salem al 503-588-6311 y solicite un informe de calidad del agua o visite nuestro sitio web <u>www.cityofsalem.net/water</u>.

This document contains information about your potable water and its source. If you would like to receive a copy of this document in Spanish, call the City of Salem Public Works Dispatch at 503-588-6311 and ask for a water quality report or visit our website at <u>www.cityofsalem.net/water</u>.

What the EPA Wants You to Know About Contaminants in Source Water

The sources of drinking water, both tap water and bottled water, include rivers, lakes, streams, ponds, reservoirs, springs, and groundwater wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals, and in some cases, radioactive materials, and can pick up contaminants resulting from the presence of animals or human activity. Contaminants that may be present in any source water include:

Sediments and turbidity, including loose dirt, topsoil, minerals, sand and silt from roads and highways, excessive removal of vegetation from grazing animals, forest practices, and farming practices.

Microbial contaminants, such as viruses and bacteria, which come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

Pesticides and herbicides, which may come from a variety of sources such as agriculture, road maintenance, individual homes and businesses, and urban stormwater runoff.

Organic chemical contaminants, including synthetic

and volatile chemicals, which are by-products of industrial processes, petroleum processes, wood processes and mills, gas and fueling stations, and auto and mechanical shops.

Inorganic contaminants, such as salts and metals, which can occur naturally in the geology, or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas productions, and mining or agriculture.

Radioactive contaminants, which can be naturallyoccurring or be the result of oil and gas production, and mining activities.

In order to ensure that the drinking water from your tap is safe, the EPA has regulations that limit the amount of certain contaminants in the water provided by public water systems. This requires monitoring for these contaminants. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Understanding Salem's Source Water Assessment

The City of Salem's Source Water Assessment was completed in 2003 with assistance from the Oregon Department of Environmental Quality (ODEQ). In 2018, ODEQ revised an Updated Source Water Assessment to all drinking water providers in the state of Oregon. As required by the Federal Safe Drinking Water Act, the original assessment identifies sensitive areas where the water supply may be more vulnerable to impact by potential contaminant sources. The North Santiam River is Salem's primary source for drinking water supply. The updated assessment provides more detailed information to assist drinking water providers and their community in implementing local drinking water protection efforts. This information may assist with supporting restoration projects within the watershed.

Contaminants in Drinking Water

Throughout the year, City employees routinely collect water samples, monitor and survey the water quality at various locations within Salem's drinking water distribution system, and in the watershed. This helps assure safe and high-quality water is treated and delivered to customers.

Salem's original and updated Source Water Assessment reports are available on the City of Salem website at: <u>www.cityofsalem.net/water</u>. The reports are also available by calling Public Works Dispatch at **503-588-6311**, or by emailing a request to <u>water@cityofsalem.net</u>.

Salem's Source for Drinking Water

For more than 80 years, the North Santiam River has served as the primary water supply for the City of Salem. This high-quality river source flows over 90 miles from the high ridges near Mt. Jefferson, through Detroit Reservoir and down toward the Mid-Willamette Valley where it meets with the Willamette River. The North Santiam River Watershed is an area of about 760 square miles that is surrounded primarily by state and national forest. It provides clean and pristine river water for many canyon communities along its route. Due to the river's high-quality water, it is suitable for a more natural filtering process called Slow Sand Filtration at the Geren Island Water Treatment Facility located near Stayton. The City of Salem has been using this process since the 1930s, while making improvements to the facility and processes over time.

In 2021, the City of Salem finished the construction of a state-of-the-art ozone treatment system to remove contaminants such as cyanotoxins. The new ozone treatment system will provide an additional treatment barrier to ensure high-quality water continues to be delivered to Salem water customers. This large improvement project created a more resilient drinking water system. To read more about the Ozone Treatment Facility, continue to read further into this report.

During normal operations, river water is diverted and the raw water moves through the ozone treatment process, which includes ozone, hydrogen peroxide, and acetic acid. Once the water is ozonated, all of the ozone that was injected is removed, and the water follows the slow sand filtration process. Tthen filtered water is disinfected by adding a regulated amount of sodium hypochlorite (liquid chlorine), fluorosilicic acid (liquid fluoride) for fluoridation, and sodium carbonate (soda ash). This treatment process adjusts the pH and minimizes the corrosion of lead and copper from household plumbing. From the treatment facility, the water is transported to Salem, distributed throughout the city and stored within the 17 reservoir systems located around the city.

As of 2018, the City has incorporated additional treatment barriers for mitigation and removal of emerging contaminants. When enhanced treatment is needed, water is treated using the same process as described above. The City can enhance with additional treatment options such as powdered activated carbon (PAC). PAC has chemical properties which allows the absorption of contaminants and cyanotoxins to the carbon. The carbon becomes too heavy, and settles out of the water column. Other treatment options include adjusting the dosage of acetic acid, which is a food source to keep the biological activity on the sand filters healthy; the boosting of chlorine, which further destructs any cyanotoxins that have possibly made its way past the filters; and chlorine reduction, after the previous action thus allowing the chlorine levels in the treated water to stabilize back to normal operating levels before entering customers homes.

Additionally, the City utilizes an Aquifer Storage and Recovery (ASR) system, located underground in south Salem, to store and recover finished water. During the winter months, when flows in the river are high and there is a low demand for water by customers, treated drinking water is injected into the ASR system. The water is stored in a naturally existing groundwater aquifer located 350 feet below Woodmansee Park. During the summer months, when the river is flowing low and customer water demand is high, water is pumped back to the surface, sampled for guality and recovered from the ASR system. The recovered water is treated with calcium hypochlorite (chlorine) for disinfection and then conveyed to the distribution system, serving the south Salem water customers. See illustration on page 19.

During the summer of 2021, updates began on the ASR treatment system, which will include corrosion control and a common treatment facility where water recovered from all ASR wells will be disinfected and caustic soda added for pH adjustment.

Please visit the City's Water webpage, under <u>www.cityofsalem.net/utilities</u> for more details about Salem's treatment process.





Where Does Salem's Water Come From?

The supply of Salem's water begins with a raindrop or snowflake that falls on the west side of the Cascade Range, near Mt. Jefferson and Three Fingered Jack. As that droplet of water moves downhill, it flows over land, through soil and rock to the mainstem of the North Santiam River. It is stored temporarily in Detroit Reservoir until it is released through the dam gates and flows downstream towards the canyon communities. A small portion of the river is diverted, treated, and distributed toward the City of Salem.



2021 Water Quality Data from Geren Island Treatment Facility, Distribution System, and Salem Water Customers									
Test	Date Tested	Unit	MCLG (MRDLG)	MCL (MRDL)	Detected Level	Ra Lowest	nge Highest	Violation	Major Sources
Inorganic									
Fluoride	2021	ppm	4	4	Average: 0.61	<0.20	0.71	NO	Erosion of natural deposits; water additive- promotes strong teeth
Copper ¹	2020	ppm	1.3	AL = 1.3	0.021	0.015	0.030	NO	Corrosion of household plumbing systems
Nitrate	2021	ppm	10	10	0.36	One S Coll	Sample ected	NO	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits
Nitrate-Nitrite	2021	ppm	10	10	0.36	One S Coll	Sample ected	NO	Runoff from fertilizer use; leaching from septic tanks; erosion of natural deposits
Barium	2021	ppm	2	2	0.0020	One S Coll	Sample ected	NO	Discharge of drilling wastes; discharge from metal refineries; Erosion of natural deposits
Copper ¹	2019	ppb	1.3	AL =1.3	90 th Percentile: 5.6; Homes exceeding: 1	<0.030	0.598	NO	Corrosion of household plumbing systems
Lead ¹	2019	ppb	0	AL-15	90 th Percentile: 5.6 Homes exceeding: 1	<0.1	20	NO	Corrosion of household plumbing systems
Microbiological									
Turbidity	2021	NTU	n/a	Π	100% of samples meet turbidity standards Average: 0.08	0.04	0.41	NO	Erosion and soil runoff
Total coliform	2021	no units	n/a	ττ	1,440 samples collected	None	0 positive of 120 samples or 0.0%	NO	Naturally present in the environment
E. coli bacteria	2021	no units	0	Routine and repeat samples are total coliform-positive and either E. coli-positive or the water supplier fails to collect repeat samples following E. coli-positive routine sample or system fails to analyze total coliform-positive repeat sample for E. coli	E. coli bacteria were not detected	None	None	NO	Human and animal fecal waste
Disinfection By-p	roduct	ts, By	-produc	t Precursors, and Dis	infectant Res	sidual			
Haloacetic acids	2021	ppb	0	60	Locational Running Annual Average: 28	18	38	NO	By-product of drinking water disinfection
Total Trihalomethanes	2021	ppb	0	80	Locational Running Annual Average: 29	20	47	NO	By-product of drinking water disinfection
Haloacetic acids ¹	2017	ppb	0	60	Entry Point: 12	One S Coll	Sample ected	NO	By-product of drinking water disinfection
Total Trihalomethanes ¹	2020	ppb	0	80	Entry Point: 6.3	12	19	NO	By-product of drinking water disinfection
Total Organic Carbon	2021	ppm	n/a	TT	Raw Water Annual Average: 0.96	0.87	1.1	NO	Naturally present in the environment
Chlorine Residual	2021	ppm	4	4	Entry Point Average: 1.43	1.02	2.77	NO	Remaining chlorine from disinfection process
Radioactive Cons	tituen	ts							
Gross Beta Particle Activity ¹	2020	pCi/L	40	50	4.2	One Sample Collected		NO	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta particle and photon radioactivity in excess of the MCL over many years may have an increased risk of getting cancer.
Organic Constitue	ents		70	70	0.01	115	0.01		
2,4-D	2020	ppb ate	70	70	0.21	ND	0.21	NO	Runoff from herbicide used on row crops
	2001			20.2	47	One s	sample	NO	Eropion of natural donasite
Soululli	2021	hhiii		20 -	4./	coll	ected	NU	erosion or natural deposits

2021 Water Quality Data from Aquifer Storage and Recovery Wells										
Inorganic										
Barium	2021	ppm	2	2	0.0029	One s colle	ample ected	NO	Discharge of drilling wastes; discharge from metal refineries; Erosion of natural deposits	
Fluoride	2021	ppm	4	4	0.67	One s colle	ample ected	NO	Erosion of natural deposits; water additive- promotes strong teeth	
Disinfection By-Products, Byproduct Precursors, and Disinfectant Residual										
Haloacetic acids ¹	2021	ppb	0	60	ND	One s colle	ample ected	NO	By-product of drinking water disinfection	
Total Trihalomethanes ¹	2021	ppb	0	80	4.1	One s colle	ample ected	NO	By-product of drinking water disinfection	
Total Organic Carbon ¹	2018	ppm	n/a	TT	0.33	One s colle	ample ected	NO	Naturally present in the environment	
Organic Constitue	ents									
Hexachlorocyclopentadien®1	2020	ppb	0	50	0.056	One s colle	One sample NO collected		Discharge from chemical factories	
Unregulated Constituents										
Sodium	2021	ppm		20 ³	8.3	6.7	9.3	NO	Erosion of natural deposits	

¹The City of Salem is required to report any detected contaminant within the last five years. ²EPA considers 50 pCi/L to be the level of concern for beta particles. ³EPA advisory level only.

UNITS OF MEASUREMENT

Parts per Million (ppm)

One part per million is equal to one cup of food coloring in an Olympic size swimming pool.

Parts per Billion (ppb)

One part per billion is equal to one drop of food coloring in an Olympic size swimming pool.

Nephelometric Turbidity Unit (NTU)

The standard unit of measurement used in water analysis to measure turbidity in water samples.

Picocuries per Liter (pCi/L)

One part per billion of a curie per liter of water, used to measure radiation at very low levels.

DEFINITIONS

Maximum Contaminant Level Goal (MCLG)

The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Contaminant Level (MCL)

The highest level of a contaminant allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Action Level (AL)

The concentration of a contaminant which, if exceeded, triggers treatment or other requirements a water system must follow.

Treatment Technique (TT)

A required process intended to reduce the level of a contaminant in drinking water.

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 benefits of the use of disinfectants to control microbial contamination.

Geren Island is the nation's largest slow sand filtration system.



Cyanotoxin Test Results*											
Site Location	Test	Test Date	Unit	Health Advisory Level for Vulnerable Population	Oregon DEQ Lab: Lowest Results	Oregon DEQ Lab: Lowest Results	Willow Lake Lab Lowest Result	Willow Lake Lab Highest Result	Advisory Issued?	Advisory Type	Advisory Dates
Raw Water - North	Microcystin	May -	May -	0.3	ND	ND	ND	0.402	- NO	None	None
Middle Intake	ddle Intake Cylindrospermopsin	2021	hhn	0.7	ND	ND	ND	ND			
Finished Water - Entry Point: Aldersgate Cy	Microcystin	May - October p 2021	May -	0.3	ND	ND	ND	ND	- NO	None	None
	Cylindrospermopsin		r ppb	0.7	ND	ND	ND	ND			

Notes: *The source of cyanotoxins are from a harmful algal bloom of cyanobacteria

Algal blooms are a natural process. Typically, algae blooms are regularly observed in Detroit Reservoir, Salem's drinking water source, from April or May through September or October. Algal blooms, which are large amounts of algae growth in a short time, occur when conditions – such as light, warm water, and nutrients – are just right. When triggered, these algal blooms can produce cyanotoxins as a defense mechanism. The City maintains a robust watershed monitoring program that tracks and monitors harmful algal blooms and cyanotoxins – toxins produced by harmful algal blooms.

Oregon Health Authority drinking water regulations require testing of two cyanotoxins – Total Microcystins, and Cylindrospermopsin annually from May 1 – October 31.

If the levels reach the Environmental Protection Agency (EPA) Health Advisory notification threshold, the City will issue an advisory. The City will continue to provide water quality updates on its website.

Definitions:

Harmful Algae Bloom means a dense colony of cyanobacteria that can rapidly multiply in surface waters when environmental conditions are favorable for growth.

Cyanobacteria are photosynthetic bacteria that share some properties with algae and are found naturally in freshwater and saltwater. Some species of cyanobacteria can produce toxins, which are known to be harmful to human health above certain concentrations.

Cyanotoxins means total microcystins and cylindrospermopsin produced by cyanobacteria.

ND refers to a non-detection meaning that the analytical result is less than the reporting limit for the analytical method being used to quantify the concentration.

Consuming water containing concentrations of cyanotoxins over the health advisory level for more than ten days may result in upset stomach, diarrhea, vomiting, as well as liver or kidney damage. Seek medical attention if you or your family members experience illness.

All daily water quality results of data collected during the year of 2021 specific to cyanotoxins are available on the City of Salem's website. For more detailed information on the monitoring program and the data results of cyanotoxins, please visit the City of Salem website under: www.cityofsalem.net/Pages/water-guality-test-data.aspx

Unregulated Contaminant Monitoring Rule

Round 4 (UCMR4) Detected Contaminant Results

The Unregulated Contaminant Monitoring Rule (UCMR) requires water providers nationwide to sample for unregulated contaminants once every five years. The EPA uses these sampling efforts to collect information about contaminants suspected to be present in drinking water, but which are currently not regulated by health-based limits under the Federal Safe Drinking Water Act. The UCMR4 – fourth round of UMCR, requires monitoring for 30 chemical contaminants including cyanotoxins, metals, pesticides, brominated haloacetic acid (HAA) disinfection groups, alcohols, and semivolatile organic chemicals. More information about the UCMR is available from the Safe Drinking Water Hotline at 1-800-426-4791.

The City of Salem began Unregulated Contaminant Monitoring Rule – Round 4 (UCMR4) sampling in July 2018. The City completed biweekly sampling for cyanotoxins from July through October 2018. All other samples were collected quarterly in July 2018, October 2018, January 2019, and April 2019.

The table below lists only those unregulated contaminants which were detected during the 2018 and 2019 sampling events.

		Unit	MRL ¹		Range		
Detected Analyte	Date lested		(ppb)	Detected Level	Lowest	Highest	
Total Organic Carbon (TOC)	2018-2019	ppm		Average: 1.15	0.89	1.4	
HAA5	2018-2019	ppb		Average: 30.97	1.3	51	
HAABr	2018-2019	ppb		Average: 1.79	ND	3.5	
HAA9	2018-2019	ppb		Average: 32.83	1.3	53	

¹MRL is the UCMR Minimum Reporting Level





The City of Salem has employees whose jobs are to assure that water in the distribution system meets the Safe Drinking Water Act standards by sampling at over 40 locations multiple times a month.

The 2020 Labor Day Fires: Two Years Later

What started as a small, stubborn 10-acre fire in mid-August of 2020, expanded into one of Oregon's largest wildfire disasters in history. A rare wind event that occurred during Labor Day shaped an extreme environment in which this small fire, known as the Beachie Creek Fire, was able to accelerate from 500 acres to over 130,000 acres in a matter of hours (USFS Information Incident System). Just to the east of the Beachie Creek Fire, the Lionshead Fire burned through the Warms Springs Reservation and Mount Jefferson Wilderness and eventually devastated the City of Detroit as it merged with the Beachie Creek Fire. The two fires burned almost 400,000 acres. and over 50% of the North Santiam Watershed. Since the fires, rebuilding the Santiam Canyon communities, creating safe access through the burned areas, and restoring the watershed have been top priority.

What are the post-fire impacts in relation to Drinking Water?

Wildfires can compromise water quality during active burning, and even for years after the fire has been contained. Wildfires increase susceptibility of watersheds to flooding and erosion that have both short- and long-term impacts on water supplies. Destabilization of terrain may result in landslides and debris flows in areas that were heavily burned, and with loss of vegetation. Movement of soils and debris can increase turbidity in the river water that may impact filtering and treatment processes at Geren Island Treatment Facility. Heavy rainfall events in burned areas of the watersheds are also likely to move large amounts of contaminants such as heavy metals, major ions, carbon and nutrients from landscapes, buildings and infrastructure impacted by fires into downstream water supplies. The potential impacts from past, current, and future wildfires on the quantity and quality of runoff are considerable, and may greatly impact water used for domestic, agricultural, and ecological water supplies. The U.S. Forest Service and NOAA actively monitor storm events to determine the severity and intensity of precipitation, and risks of flooding and debris movement within the burned areas.

What is the City of Salem's response to the wildfires?

All drinking water utilities strive to provide safe drinking water for their communities. The City of Salem is monitoring post-wildfire impacts and has increased its rigorous water sampling program in the watershed and in various processes of water treatment year-round in order to better understand the impacts of the wildfires, both short- and long-term. Results of these samples help manage the water treatment operations and decision to add additional treatment barriers to the drinking water process. The water treatment facility has the capabilities to shut the intake to Geren Island, a routine adjustment to the treatment process for historical turbidity events, from the river to allow the bypass of turbidity and potential contaminants. Additional treatment to remove potential contaminants, additional treatment barriers may include adding coagulation, flocculation and powdered activated carbon. Normal operations that assure the best water quality for drinking water includes letting the raw river water go through a pre-filtering process before it is ozonated, filtered again and then treated as mentioned on page 6.

The City continues to communicate and partner with groups, organizations and agencies who are actively involved with rebuilding the Santiam Canyon, it's communities and the surrounding impacted environment. There is a large water quality collaborative effort with agencies such as the United States Geological Survey, the U.S. EPA, U.S. Forest Service, U.S. Army Corps of Engineers, Oregon Department of Environmental Quality, researchers from both Oregon and Washington universities, Marion County, Natural Resource and Conservation Service, and the North Santiam Watershed Council (NSWC). All of these invested professionals provide valuable expertise to help understand the short- and long-term impacts, and ultimately restore a more resilient watershed and Santiam community.

Post Wildfire Monitoring Results - 2021 Primary Drinking Water Standards

		EPA Standard	Detected	
Inorganic Chemicals		LOVOI		
Barium (dissolved)	mg/L	2	0.0022	
Barium (total)	mg/L	2	0.0023	-
Copper (dissolved)	mg/L	1.3	0.019	
Copper (total)	mg/L	1.3	0.02	1
Nitrate	mg/L	10	0.15	
Secondary Drinking Water	Standards a	nd other Parame	ters	
Alkalinity	mg/L	n/a	29	
Bicarbonate Alkalinity	mg/L	n/a	35	
Calcium (total)	mg/L	n/a	5	
Calcium (dissolved)	mg/L	n/a	4.5	
Dissolved Organic Carbon	mg/L	n/a	0.72	
Specific Conductance	µmho/cm	n/a	80	
Total Hardness	mg/L	250	17	
Magnesium (total)	mg/L	n/a	1.2	le
Magnesium (dissolved)	mg/L	n/a	1.1	
Orthophosphate as P	mg/L	n/a	0.01	
Orthophosphate as PO4	mg/L	n/a	0.031	
Silica	mg/L	n/a	14	hid
Sodium	mg/L	n/a	9.4	Sta-
Strontium (total)	mg/L	4	0.01	K.
Strontium (dissolved)	mg/L	4	0.01	
Total Dissolved Solids	mg/L	500	53	25
Total Organic Carbon	mg/L	n/a	0.83	the kindig w

Primary Drinking Water Standards: legally enforceable standards and treatment techniques to protect public health.

Secondary Drinking Water Standards: non-enforceable guidelines for contaminants that cause aesthetic or cosmetic effects.

Spring 2021 Post-Fire Restoration Stats

- More than 41,000 trees and shrubs were distributed to over 140 landowners impacted by the Beachie Creek and Lionshead Fires.
- Plant and materials were donated or distributed by Bonneville Environmental Foundation (BEF), Arbor Day Foundation Grant, One Tree Planted, BLM, both Marion and Benton Soil and Water Conservation Districts (SWCD), Benton SWCD, the NSWC and other partners.
- The City of Salem and Marion SWCD provided funds to purchase 2,520 pounds of native grass seed mix to distribute to 92 landowners impacted by the fires and who live near the North Santiam streambank.
- NSWC reached out to 131 landowners and conducted 78 Early Detection Rapid Response (EDRR) weed surveys, within the fire perimeter.



2019 Lead and Copper Sampling results

Lead and copper sampling occurred during the summer of 2019. From June 1, 2019 through September 30, 2019, 77 water samples were collected from Tier 1 homes and analyzed for lead and copper. Of the 77 samples, only one sample exceeded the Action Level (AL) for lead and none of the samples exceeded the AL for copper.

When on reduced monitoring, the Oregon Health Authority requires that the City collect and analyze a minimum of 50 water samples from Tier 1 homes during the three-month monitoring period. Assessments made in the 1990s identified 147 Tier 1 homes in Salem that met the qualifications for ongoing lead and copper sampling. Tier 1 homes, built between 1983 and 1985, are considered most at risk because of lead or lead-based plumbing components used during construction.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is mostly from materials and components in services lines and home plumbing. The City of Salem 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 your exposure is available from the Safe Drinking Water Hotline at 1-800-426-4791 or at www.epa.gov/safewater/lead.



The addition of ozonation to the treatment process has triggered an increase in lead and copper sampling. In 2022, the City will conduct two 6-month rounds of sampling at the Tier 1 homes. Results from these sampling events will be available in the 2023 Annual Water Quality Report.



Free Lead Testing for Salem Water Customers!

The City of Salem offers free lead testing to its water customers. If you are concerned about the levels of lead in your home and would like to request a free test, please call the Water Quality Hotline at 503-588-6323.

Completion of the New Ozone Treatment Facility

In 2020, the City of Salem began the process of constructing a state-of-the-art ozone treatment system to remove cyanotoxins at its drinking water treatment facility near Stayton. In August 2021, a ribbon cutting and celebration marked the completion of this large capital improvement project as community leaders, special guests, and staff gathered at Geren Island in recognition of this important achievement and investment in Salem's drinking water. The new ozone treatment facility is named after the late Public Works Director, Frank Mauldin, who led the agency from 1988 to 2002 and wrote the locally known book "Sweet Mountain Water."

The \$48 million state-of-the-art facility will provide an added layer of protection against harmful impacts to water quality caused by events such as algae blooms, severe weather events, and wildfires. Ozone is one of the strongest disinfectants used to treat water—even stronger than chlorine. Ozone will ensure Salem has consistently high-quality water with improvement to its taste, removal of odors, and protection against cyanotoxins.

Ozone is a proven water treatment method used across the country and in neighboring communities like Lake Oswego, Tigard, Medford, and Wilsonville. Carollo Engineers, one of the nation's top water quality engineering firms, designed the ozone treatment system. AKS Engineering and Forestry provided project management and inspection services, and Slayden Construction of Stayton performed the construction, thus providing jobs in support of local economy in the time of Covid-19.



How Does It Work?

Water from the North Santiam River flows through an existing roughing filter, which is used as an initial pre-filter process. The roughing filter removes the cyanobacteria, which is a primary organism that is known to produce cyanotoxins, and other debris from the raw river water. Any cyanotoxins in the raw water will be destroyed by ozone treatment. The water is injected with ozone, which is created from the lightning chamber, and vigorously mixed. When the ozone treatment process is done, one hundred percent of the injected ozone is removed from the water. This water is then further filtered as it moves through the slow sand filters and the biological layers. The water is then finally chlorinated, fluoridated, and treated with soda ash before being piped to Salem for

distribution. With ozone added to the drinking water treatment process, less chlorine can be used.

Ozone promises to be a robust, longterm insurance policy against cyanotoxins and other emerging contaminants, and assures safe and resilient drinking water into the future. It is one of several strategic investments the City made to ensure the community has a safe and resilient drinking water system well into the future. For more information on ozone and to take a virtual tour of the new facility, please visit: <u>City of</u> <u>Salem—Geren Island - OnlineVoice.net - City</u> <u>of Salem—Geren Island WTP Improvements</u> <u>Project (online-voice.net)</u>



Treating Salem's Drinking Water with Ozone



Ozone treatment is one of several strategic investments to ensure long-term resiliency for safe drinking water. Another large-scale project is the improvement of the treatment process to the Aquifer Storage and Recovery (ASR) wells located in Woodmansee Park. The groundwater wells located at this park inside the Salem City limits provide supplementary drinking water during high-demand summer months or during emergencies. The ASR System consists of a large, natural underground reservoir, also known as an aquifer, which the City fills with drinking water during the winter months and then recovers when needed, usually during the dry summer months. Expansion of this aquifer and improvements to the wells, along with a new treatment facility at the park allows for increased storage of drinking water, which relieves stress on the natural environment during droughts as well as provides rapid delivery of safe water for longer periods of time, and to more Salem customers.

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The City of Salem is also investing in a new additional groundwater system on the Geren Island Water Treatment Plant. In 2021, the construction of a ranney groundwater collector well began and is planned to be completed in 2022. This groundwater well will provide a second source of water at the water treatment facility that is protected from cyanobacteria, storm events, and post-wildfires impacts that may deteriorate the North Santiam River water quality. For more information on the other drinking water investments, please visit: <u>Drinking</u> <u>Water Supply Improvements and Woodmansee Park</u> <u>Master Plan Update (cityofsalem.net)</u>





Did You Know?

Treated North Santiam River water is injected into the aquifer during high flows in winter and stored below in an aquifer made from an ancient lava flow.

Geologists have identified the basalt rock as being part of the Columbia River lava that flowed through South Salem 17 million years ago.

The aquifer is like a large cavern filled with fractured basalt rock. Water is stored in the rocks, and can store over 700 million gallons of water.

Detroit Dam and Lake Downstream Passage Project

The Army Corps of Engineers (Corps) is still in the process of planning and developing a largescale project to provide water temperature control and downstream fish passage for endangered salmon at Detroit Dam. The most recent update is that this federal project is currently delayed due to a lack of funding. The requested funds for planning and design were not allocated in Fiscal Year 2020 Budget or the President's Fiscal Year 2021 Budget. The Corps will continue to request funds in the agency's annual budget submissions, but an estimated construction start date is unavailable at this time. Underwater construction is still the preferred method for construction of the temperature control tower, which would minimize impacts to seasonal water storage operations at Detroit reservoir.

Given the uncertainty of funding to finish the design and construct the project and the ongoing Willamette Valley System Environmental Impact Statement, the Corps is examining its approach to ensure it is forward thinking in its compliance with the National Environmental Policy Act and the Endangered Species Act. The Corps anticipates incorporating the Detroit Down Stream Passage EIS into the Willamette Valley System (WVS) EIS, including consideration of public comments received. Stakeholders are encouraged to engage in the WVS EIS, which will evaluate both operational and structural solutions for downstream passage.

It's important to know that any impact to water quality and water quantity could have impacts on Salem's ability to produce reliable, highquality drinking water to Salem's customers. The City will continue to work hard with other stakeholders to address concerns, and will closely monitor the project as it progresses.

For more information on the Detroit Dam projects, visit www.nwp.usace.army.mil/ willamette/detroit/fish-passage/



Ways to Conserve Water

Water use peaks during the summer months when water resources are already stressed due to hotter temperatures and drier conditions. The summer water demand almost doubles its use and approaches close to 50 million gallons per day. Below are some ways you can help conserve water and learn about keeping our waterways clean:

Take the WE Pledge to Help Protect Local Waterways

You can pledge to conserve water, reduce stormwater pollution, increase recycling, reduce plastic waste, and more by taking the Clean Streams Initiative's WE Pledge. Together WE Pledge to keep stormwater clean, streams pollution free, and be good stewards of the environment. You can take the WE Pledge by visiting www. CleanStreamsSalem.org.

City Offers Free Conservation Kits to Salem Water Customers

Retrofitting existing fixtures can help reduce the amount of water used daily and save money on your utility bill. It also leaves more water in the river for wildlife and fish. The City offers free indoor and outdoor water conservation kits to Salem water customers. To request a free water conservation kit, please call the Water Quality Hotline at 503-588-6323, or email us at water@ cityofsalem.net.

Conservation Resources and Watershed Protection

Did you know that all Salem residents are eligible to receive grant funding to assist with local projects that protect or improve the health of our local watersheds? If interested, you can find more information on the City website under Community Resources – Financial Assistance & Grants. Additionally, there are many local agencies and organizations, like Marion Soil & Water Conservation District (SWCD), OSU Master Gardeners, Friends of Trees, and the Natural Resources Conservation Services (NRCS) that host events such as native plant sales, tree-planting events, workshops, and additional grants.



A City of Salem Initiative

There are many ways you can get involved in the City of Salem's Clean Streams Initiative and help protect stream water quality right from home.

- Join the Capital Canine Club by pledging to always pick up after your pet.
- Take the WE Pledge to reduce pollution and conserve water.
- Download a DIY guide for creating a rain garden on your property.
- Download the Clean Streams Superhero Activity book for youth.

You can find all of this and more on our website, www. CleanStreamsSalem.org

You can also sign up for the monthly e-newsletter, Stream Currents, for water-related news, a Clean Streams tip of the month, and to keep up to date on city water-related projects.

Visit the website to sign up today - <u>https://mailchi.mp/cityofsalem/</u> <u>cleanstreams</u>



Get a free one-inch-per-week rain gage or a home water audit booklet.

call the Water Quality Hotline at **503-588-6323**, or email: **water@cityofsalem.net**



Salem Utility Customers Benefit from Bill Assistance Programs

Having trouble paying your City of Salem utility bill?

We can help! The City partners with local service agencies to provide financial assistance to lowincome households or those in need of help due to short-term financial difficulties. Call our Utility Billing Customer Services Team at 503-588-6099, Monday through Friday, 8:00 a.m. to 5:00 p.m. or visit <u>www.cityofsalem.net/Pages/</u> <u>utility-bill-assistance.aspx</u> to learn more about these programs:

Payment Arrangements

Need a little extra time to pay your current utility bill? You may be eligible to set up a payment arrangement that extends the due date of your current bill.

Emergency Utility Assistance Program

Experiencing a short-term need for help with your single-family residential utility bill? You may be eligible for up to \$500 of assistance toward your utility bill every 12 months. This program is supported by donations from our customers and the community with matching funds from the City. To learn how you can help support the Emergency Utility Assistance Program, visit <u>cityofsalem.net/Pages/donate-to-low-income-</u> <u>utility-assistance-program.aspx</u>

Utility Rate Relief Program

Customers 60 and older or disabled, with household income at or below 60% of State Median Income, may be eligible for a monthly discount on their City of Salem single-family residential utility bill and may also qualify for discounts on their garbage bill.

Low-Income Household Water Assistance Program (LIHWA)

A federally funded program to help households pay their water, wastewater (sewer), and stormwater utility bills. LIHWA assistance is a one-time payment that is paid directly to your utility provider on your behalf to reconnect services, prevent shutoff, and pay past due amounts and current charges. The City of Salem is partnering with Mid-Willamette Valley Community Action Agency to provide LIHWA assistance to Salem customers.



Ways to Get Involved

Salem City Council

Salem City Council is the policy-making body for Salem's water system. Meetings are held to allow Council to conduct business, make decisions in a public forum, and formulate policy. These meetings also provide an opportunity for you to give input on issues and policies under consideration by the City. The Council meets on the 2nd and 4th Monday of each month at 6 p.m. In December, it is the 1st and 2nd Monday at 6 p.m. You can access meeting agendas online and learn more about how you can participate in a Council meeting. Watch the Council meetings live on CCTV, channel 21, with replays during the week, or stream the meeting live on Facebook or YouTube, or in archive form online. Feel free to call at 503-588-6255, or visit <u>www.cityofsalem.net/city-council</u> for more information.

North Santiam Watershed Council

The North Santiam Watershed Council (NWSC) is a 501(c)(3) non-profit made up of local volunteers who act together to provide opportunities for stakeholders to cooperate in promoting, improving, and sustaining the health and economy of the North Santiam River Watershed and its communities. This organization facilitates large and small-scale restoration projects and hosts project tours, tree plantings, and river clean-ups. Each year, the NWSC receives a grant from the City to help with operational costs and tree plantings. In 2021, the City of Salem provided a grant to the NSWC for purchasing erosion control weed-free straw at no cost to landowners to assist with those impacted by the Beachie Creek and Lionshead fires in the Santiam Canyon. The NSWC hosts virtual meetings that are open to the public and are held every 2nd Tuesday of each month (except December) at 6 p.m. via Zoom. Feel free to call 503-930-8202 if interested in participating in a meeting, or visit www.northsantiam. org for more information.



Want to learn more?

US EPA

Safe Drinking Water Hotline 1-800-426-4791 www.epa.gov

Oregon Health Authority

Drinking Water Program 971-673-0405 public.health.oregon.gov/HealthyEnvironments/DrinkingWater (Salem's ID# 00731)

City of Salem Public Works Department

City of Salem Website www.cityofsalem.net

Water Quality Hotline 503-588-6323 water@cityofsalem.net

Water Conservation Hotline 503-588-6323 water@cityofsalem.net

Water Outreach and Education Program To arrange a classroom presentation, field trip, or community service project, call 503-588-6211 THE FEDERAL SAFE DRINKING WATER ACT requires this annual water quality report be made available to every customer to provide information regarding the quality of the community's drinking water.

If you would like to receive a printed copy of this report, please call 503-588-6311. If you have any questions or comments, please email <u>water@cityofsalem.net</u> or call the Water Quality Hotline at 503-588-6323.

AT YOUR SERVICE

Public Works Department

1410 20TH STREET SE BLDG 2 SALEM OR 97302-1200



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It is the City of Salem's policy to assure that no person shall be discriminated against on the grounds of race, religion, color, sex, marital status, familial status, national origin, age, mental or physical disability, sexual orientation, gender identity, and source of income, as provided by Salem Revised Code Chapter 97. The City of Salem also fully complies with Title VI of the Civil Rights Act of 1964, the Americans with Disabilities Act of 1990, and related statutes and regulations in all programs and activities. Special accommodations are available, upon request, for persons with disabilities or those needing sign language interpretation or languages other than English. To request accommodations or services, please call 503-588-6211.