



Annual Water Quality Report

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**COMBINED ANNUAL
WATER QUALITY REPORT**
SUMMARIZING TEST
RESULTS FROM 2021



Annual Water Quality Report

SUMMARIZING
TEST RESULTS 2021
FOR THE
LOWER PENINSULA SYSTEM

ABOUT THIS REPORT

This annual water quality report or “Consumer Confidence Report” is written, prepared and distributed by the City of Newport News Waterworks Department (Newport News Waterworks) as required by the Safe Drinking Water Act. It is reviewed and approved by the Virginia Department of Health, Office of Drinking Water in Norfolk. This report explains where your water comes from, what our tests show about it and other things you should know about your drinking water.

This report and the water quality report for our Lightfoot System are available online at nnva.gov/waterqualityreport. Both online reports include additional test results. A paper copy of this report is available at all local libraries in the Waterworks service area and in city halls and county offices in our service area. If you would like to receive a copy of this report in the mail, please call Waterworks at 757-926-1000.

HOW CAN I GET INVOLVED?

Since Waterworks is a department of the City of Newport News, major decisions about your drinking water are made by Newport News City Council. They meet on the second and fourth Tuesday of each month at 7:00 p.m. and you are welcome to attend and participate. These meetings are broadcast live on the Newport News City Channel (in Newport News - Cox channel 48 and Verizon FIOS channel 19) and streamed live on Facebook at www.facebook.com/NewportNewsTV. They also can be viewed live or on-demand by all customers in our service area at www.nnva.gov/nntv.



NOTICIA EN ESPAÑOL

Este reporte contiene información importante acerca de la calidad del agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

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YOUR WATER UTILITY

Newport News Waterworks serves as a regional water provider for five jurisdictions: Newport News, Hampton, Poquoson, York County and part of James City County. We are committed to providing a reliable supply of high quality drinking water to our customers. Our drinking water is treated and tested using state-of-the-art equipment and advanced procedures, and it meets or surpasses state and federal standards. The bottom line: The quality of your water is excellent.

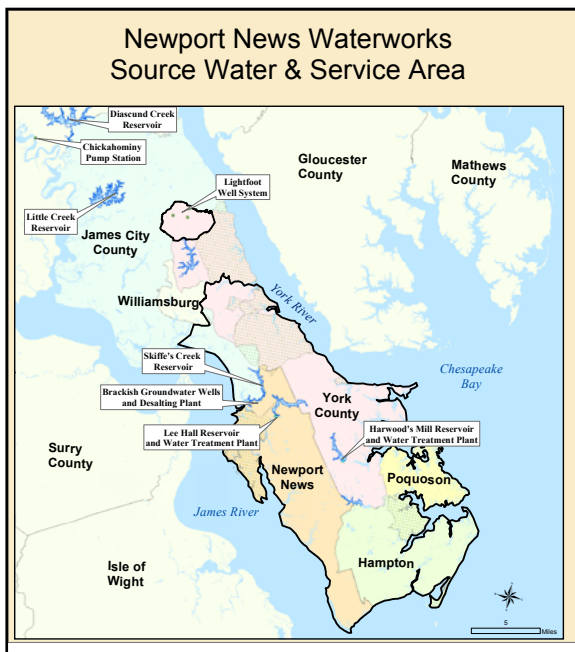


WHERE YOUR WATER COMES FROM

The primary source of your drinking water is surface water from the Diascund Creek Reservoir. When water is available, it is pumped from the river above Walkers Dam and transferred through pipes to our reservoirs for storage.

Waterworks owns and operates five reservoirs that store and supply water to our two treatment plants.

Small amounts of groundwater from deep wells in the Lee Hall area provide a second source of water. The two source waters are treated separately, then blended together before being distributed to the service area.



SOURCE WATER ASSESSMENT



The Virginia Department of Health (VDH) updated its Source Water Assessment of Waterworks' surface water sources in 2021. The report consists of maps showing the source water assessment area, an inventory of known land use activities, potential sources of contamination, a susceptibility explanation chart and definitions of key terms. Using the criteria developed by the state in its approved Source Water Assessment Program, Waterworks' surface water sources are rated as relatively high in susceptibility to contamination (which is one reason why water treatment is so important), while our deep groundwater wells are rated as low in susceptibility. The Source Water Assessment is available from Waterworks by calling Customer Service at 757-926-1000.

MORE ABOUT SOURCE WATER

WHAT'S IN MY WATER BEFORE IT'S TREATED?

Generally speaking, the sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and radioactive material and can pick up substances resulting from the presence of animals or from human activity. Substances that may be present in source water 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 runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- **Pesticides and herbicides** that may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organics, are by-products of industrial processes and petroleum production, and also can come from gas stations, urban stormwater runoff, and septic systems.
- **Radioactive contaminants**, which can be naturally-occurring or be the result of oil and gas production and mining activities.

HOW WE TEST YOUR WATER

To ensure that tap water is safe to drink, U.S. Environmental Protection Agency (U.S. EPA) regulations limit the amount of certain contaminants in water provided by public water systems. (The U.S. Food and Drug Administration is responsible for setting these limits on bottled water.) The water quality information listed here is based upon tests conducted in 2021 by Newport News Waterworks. Samples of finished water were taken at regular intervals from specific locations (the treatment plants, residences, and businesses) across the Waterworks service area.



Every regulated substance that we detected in the water, even in the smallest amounts, is listed in the table on pages 6 and 7. The table contains the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health (MCLG), the amount detected, the usual sources of such

contamination, and whether or not Waterworks meets the set regulation. For help understanding the tables, please see the key terms on the next page and the footnotes at the bottom of the table. Tables with the results of testing for unregulated substances and non-regulated microbials can be found on pages 8 and 10.

An expanded version of the tables in this report, which list additional test results, can be found on our website at nnva.gov/waterqualityreport. A separate water quality report is available for our Lightfoot well system customers in York County. That report also can be found on our website. To request that copies of these reports be mailed to you, call Newport News Waterworks Customer Service at 757-926-1000.

KEY TERMS

We've defined these water-quality terms and abbreviations, some unique to the water industry, to help you better understand the test results on the following pages.

AL: Action Level - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

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

MCLG: Maximum Contaminant Level Goal - 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.

MRDL: Maximum Residual Disinfectant Level - The highest level of a disinfectant allowed in drinking water. The addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG: Maximum Residual Disinfectant 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 contamination.

MRL: Minimum Reporting Level - Estimate of the lowest concentration of a compound that laboratories would report as a detection.

ND: Not detected - Does not equate to zero, but refers to an amount below analytical reporting limits.

NTU: Nephelometric Turbidity Unit - A measure of water clarity. Turbidity greater than five (5) NTUs is just noticeable to the average person.

pCi/L: Picocuries per liter - A measure of radioactivity. EPA considers 50 pCi/L to be the level of concern for beta particles.

ppb: Parts per billion or micrograms per liter ($\mu\text{g/L}$). Equivalent to one penny in \$10 million.

ppm: Parts per million or milligrams per liter (mg/L). Equivalent to one penny in \$10 thousand.

ppt: Parts per trillion or nanograms per liter [ng/L]. Equivalent to one penny in \$10 billion.

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

Turbidity: A measure of water clarity, which serves as an indicator of the treatment facility's performance.

WATER QUALITY TESTING RESULTS

REGULATED SUBSTANCES

Contaminant	Unit	EPA's Ideal Goal (MCLG)	Highest EPA Allowed Level (MCL)	Highest Reportable Result (what we found)	Range of Individual Test Results Low-High	Meets State & Federal Standards	Likely Source
INORGANICS							
Copper	ppm	0	AL = 1.3	0.062 ¹	0.008-0.319	YES	Corrosion of household plumbing
Lead	ppb	0	AL = 15	<1.0 ¹	<1.0	YES	Corrosion of household plumbing
Fluoride	ppm	4	4	0.77	0.71-0.77	YES	Added to promote strong teeth
Barium	ppm	2	2	0.025	0.020-0.025	YES	Erosion of natural deposits
Nitrate	ppm	10	10	0.074	0.033-0.074	YES	Erosion of natural deposits
Nitrite	ppm	1	1	0.003	0.002-0.003	YES	Erosion of natural deposits
DISINFECTION BY-PRODUCTS AND PRECURSORS							
Total Trihalomethanes (TTHM)	ppb	0	80	17 ²	3-24	YES	By-product of chlorination
Haloacetic Acids (HAA5)	ppb	0	60	18 ²	<2-19	YES	By-product of chlorination
Total Organic Carbon (TOC) Removal		none	TT	1.19 ³	0.68-1.69	YES	Naturally present in the environment
MICROBIOLOGICAL							
Turbidity	NTU	n/a	TT	0.237 ⁴	0.018-0.237	YES	Soil runoff
Total Chlorine (Chloramines)	ppm	MRDLG=4.0	MRDL=4.0	3.2 ⁵	<0.02-5.3 ⁵	YES	Water additive (disinfectant) used to control microbes
RADIOLOGICAL (FROM TESTING COMPLETED IN 2016)							
Combined Radium -226 & -228	pCi/L	0	5	0.8	0.2-0.8	YES	Erosion of natural deposits
Beta emitters	pCi/L	0	4	2.5	1.4-2.5	YES	Decay of natural & man-made deposits

Footnotes:

Except for radiological testing, which was completed in 2016, the results reported in the table above are for samples taken in 2020-2021. Samples taken in 2020 are part of required four-quarter or annual running averages. Lead and Copper results are from 2019, but are not part of quarterly or annual running averages.

(1) At least 90% of the samples were at or below this level. None of the individual samples exceeded the Action Level. Because our lead and copper levels are so low, we only have to test every three years. Lead and copper testing was completed in 2019. **(2)** The highest detected levels of THM and HAA are based on a specific location's four-quarter running average. The range numbers are the results from individual samples. The data in "Highest Result" column include samples from 2020. The range is for samples taken in 2021. **(3)** Compliance is based on a running four-quarter average. The range is the individual monthly ratio from both water treatment plants. TOC has no adverse health effects, but can be a critical component in the formation of disinfection by-products. The data in the "Highest Result" column includes samples from 2020. The range is for samples taken in 2021. **(4)** Turbidity is a measure of water cloudiness. It is a good indicator of the effectiveness of our filtration system. 100% of samples were within the turbidity limit. **(5)** For Chloramines, a system-wide annual running average is used. The range numbers are the results of individual samples. The data in the "Highest Result" column includes samples from 2020. The range is for samples taken in 2021.

MCLs are set at very stringent levels. To experience the possible health effects described for many regulated contaminants, a person would have to drink two liters of water at the MCL level every day for a lifetime to have a one-in-a-million chance of having a possible health effect.

ADDITIONAL TESTING

In 2019, Waterworks participated in the U.S. EPA's fourth round of the Unregulated Contaminant Monitoring Rule (UCMR4). Unregulated contaminants are those that do not yet have a drinking water standard set by the U.S. EPA. The purpose of monitoring for these contaminants is to help the U.S. EPA decide whether they need to be regulated in the future in order to protect public health. The results for contaminants we detected are shown in the table below.

UNREGULATED CONTAMINANT MONITORING REGULATION-4 (UCMR4)					
UNREGULATED CONTAMINANTS					
Contaminant	Unit	MRL	Average	Range of Test Results (Low-High)	Sources and Comments
Manganese	µg/L	0.4	9.6	2.91-24.1	Naturally-occurring element; commercially available in combination with other elements and minerals; used in steel production, fertilizer, batteries and fireworks; drinking water and wastewater treatment chemical; essential nutrient
Haloacetic Acids					
Dichloroacetic Acid (DCAA)	µg/L	0.2	11.6	1.6-27.1	By-product of drinking water chlorination
Trichloroacetic Acid (TCAA)	µg/L	0.5	3.0	0.7-11.7	By-product of drinking water chlorination
Dibromoacetic Acid (DBAA)	µg/L	0.3	<0.3	<0.3-0.4	By-product of drinking water chlorination
Bromochloroacetic Acid (BCAA)	µg/L	0.3	2.2	0.4-3.3	By-product of drinking water chlorination
Bromodichloroacetic Acid (BDCAA)	µg/L	0.5	0.8	<0.5-2.3	By-product of drinking water chlorination
Chlorodibromoacetic Acid (CDBAA)	µg/L	0.3	<0.3	<0.3-0.7	By-product of drinking water chlorination

WATER QUALITY TESTING RESULTS

NON-REGULATED MICROBIALS MONITORED AT THE SOURCE*

Contaminant	Unit	MCLG	MCL	Highest Amount Detected	Range of Test Results (Low-High)	Likely Source
<i>Cryptosporidium</i>	#/L	0	TT	0.05	0.00-0.05	Human or animal fecal waste

* Found in source water only, not in treated water.

IMPORTANT HEALTH INFORMATION

Cryptosporidium is a parasitic microbe found in surface waters throughout the U.S. Our monitoring indicates the presence of these organisms at very low levels in our source water but not in our treated water. Current test methods approved by the EPA do not allow us to determine if the organisms are dead or if they are capable of causing disease. Ingestion of *Cryptosporidium* may cause

cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps.



Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness.

We encourage immuno-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. U. S. 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 at 800-426-4791.

HOW WE TREAT YOUR WATER

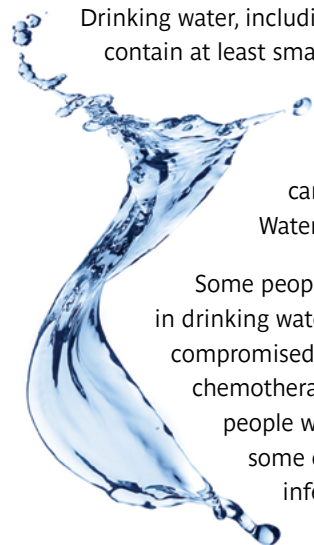
Untreated water is pumped to our treatment plants, where it passes through screens before aluminum sulfate (alum) and polymer are added. These chemicals cause tiny particles in the water to cling together (coagulation), making the particles easier to remove. After the water is clarified, ozone (disinfection) is added to kill micro-organisms such as bacteria and viruses. The water is then sent through filters to remove any remaining particles (filtration). Lime is added to adjust the pH, fluoride is added to prevent tooth decay, and zinc orthophosphate is added to control corrosion inside the pipes. Finally, chloramines, the secondary disinfectant, are added to maintain disinfection through the pipe system while the water travels to your home or business.



Filter gallery pipes at our Lee Hall Water Treatment Plant.

The brackish groundwater is pumped to the desalination plant located at our Lee Hall facility. Using a process called reverse osmosis, water is forced by high pressure through membranes that can remove the salt and other contaminants to produce very high quality water. When it is used, the finished water is blended with treated surface water and sent out to our customers.

PUBLIC HEALTH PRECAUTIONS



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

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

ABOUT LEAD

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. **We have not detected lead in the treated water tested monthly at either of Waterworks' treatment plants.**

Lead in drinking water comes primarily from pipe materials associated with service lines and home plumbing. Waterworks is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components.



To reduce the potential for lead exposure, Waterworks adds lime during the treatment process to adjust the pH of the water and reduce corrosion of plumbing. We also add zinc orthophosphate to the water as a corrosion inhibitor. Zinc orthophosphate forms a protective

layer on the inside of the pipes, which prevents lead and other metals from dissolving into the water. Lime and zinc orthophosphate are harmless to humans – especially in the quantities we use – and help prevent lead contamination.

Nonetheless, if your water has been sitting for several hours or longer, you can further minimize the potential for lead exposure by running cold water until it becomes as cold as it will get before using it for drinking or cooking. This could take from 30 seconds to 2 minutes or even longer. **Waterworks and the health department recommend that you use only cold water for drinking, cooking, and especially for making baby formula.** Information on lead in drinking water, testing methods, and steps you can take to minimize exposure are available from the Safe Drinking Water Hotline (800-426-4791) or at www.epa.gov/safewater/lead.

ADDITIONAL INFORMATION OF INTEREST

Sodium - The U.S. EPA has not set a standard for sodium in drinking water. However, sodium levels are usually low and unlikely to be a significant contribution to adverse health effects. The average level of sodium found in our treated water in 2021 was 11.8 mg/L and the range was 11.3-12.3. Should you have a health concern, please contact your health care provider.



Water Hardness - The U.S. EPA has not set a standard for hardness. Water treated by Newport News Waterworks is considered moderately hard (4-6 grains, which is equal to 70-120 mg/L as calcium carbonate or CaCO_3). In 2021 the average was 52 mg/L with a range of 40-64.

Fluoride - Fluoride is added to water to help prevent tooth decay. Newport News Waterworks adheres to drinking water regulations set by the U.S. EPA and guidance provided by the Virginia Department of Health (VDH). VDH has adopted the recommendation of 0.71 mg/L, set by the U.S. Department of Health and Human Services, as the optimum level of fluoride concentration in drinking water. This is the target Waterworks strives to achieve. Information about fluoridation, oral health, and current issues is available at www.cdc.gov/fluoridation.



ABOUT PFAS

Recent national news reports, books, and movies about a group of synthetic chemicals known as PFAS may have some Waterworks customers concerned about the safety of their drinking water. We want to assure you that we're aware of this issue and have been conducting water quality testing.

PFAS stands for perfluoroalkyl and polyfluoroalkyl substances. Two of these chemicals, Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS), have been used to make carpets, clothing, food packaging, non-stick cookware, and other materials. They're also found in firefighting foams, which have been used extensively on U.S. military bases.

For most people, consumer products and food are the main sources of exposure to these chemicals; however, drinking water can be a source in communities where these chemicals have contaminated the water supplies. Such contamination is typically localized and associated with a specific facility, for example, an industrial plant where these chemicals were produced or an airfield at which they were used for firefighting.

There have been no industrial PFAS manufacturers, in the watersheds of Waterworks' reservoirs (properties that drain to our reservoirs), and our screening program includes airports and military facilities in the watersheds.

At this time, there is no regulatory limit on the concentration of these chemicals in drinking water. The U.S. EPA has, however, established a "health advisory" and is currently considering regulations. The voluntary health advisory sets a limit for the sum of two of the PFAS chemicals, PFOS and PFOA at 70 ng/l. Waterworks has detected both PFOS and PFOA in the treated water, however, at levels an order of magnitude below the health advisory limit. EPA has stated that it may regulate PFOS and PFOA in the future and Waterworks will continue to monitor developments in this area.

Waterworks customers can be assured that their water meets all federal and state standards for safety. We are committed to protecting public health and will continue to monitor this issue closely to stay ahead of potential health risks.

	Unit	MRL	MAX CONC	RANGE
Perfluorooctanoic Acid (PFOA)	ppt	2.0	4.3	<2.0-4.3
Perfluorooctane Sulfonate (PFOS)	ppt	2.0	5.9	3.1-5.9
Total PFAS	ppt	2.0	9.1	4.4-9.1



CONTACT US

If you have questions or concerns about your water or water quality, please contact Waterworks Customer Service.

Here is some important contact information to keep handy:

757-926-1000 8 a.m. - 5 p.m., Mon. - Fri.	wwcs@nnva.gov monitored 8 a.m. - 5 p.m., Mon. - Fri.
Drop Box & Walk-in Payment Center 700 Town Center Drive (Oyster Point City Center) 8 a.m. - 5 p.m., Mon. - Fri.	Drop Box & Walk-in Payment Center 2400 Washington Avenue (Newport News City Hall Annex) 8:30 a.m. - 4 p.m., Mon. - Fri.

Emergency Service: 757-234-4800

For emergencies only, after normal business hours, on weekends and holidays.

CONNECT WITH US

<https://myservices.nnwww.nnva.gov>

Use our online portal to manage your account, pay your water bill, sign up for paperless billing, and choose automatic payment options, report an outage, and request certain services.

www.nnva.gov/waterworks

Check out our website to see our extended water quality report, read fact sheets, and find other helpful information.

www.facebook.com/nnwaterworks

Find us on Facebook to receive helpful tips, special announcements, and updates. Plus, we get to hear from you!

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Waterworks Lower Peninsula System Water Quality Report 2021 - Expanded Version

TERM	DEFINITION
AL	Action Level
Finished Water	Treated water, drinking water
ICR	Information Collection Rule
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MRDL	Maximum Residual Disinfection Level
ND	Nephelometric Turbidity Units
NTU	Nephelometric Turbidity Units

TERM	DEFINITION
ppb	parts per billion or micrograms per liter (ug/L)
ppm	parts per million or milligrams per liter (mg/L)
ppt	parts per trillion or nanograms per liter (ng/L)
pCi/L	picocuries per liter (a measure of radioactivity)
Source Water	Water prior entering the treatment plant, reservoir water
TT	Treatment Technique
VOC	Volatile Organic Compound

2021 Regulated Contaminants of the Distribution System

Contaminant, units	MCLG	MCL	MAX CONC	RANGE	COMMENTS
Total Coliform	0	Presence of coliform bacteria in >5% of monthly samples	0.00%	0.0% - 0.0%	0 positive samples in 2021. 2180 samples collected 2021
E.Coli	0	A routine sample & a repeat sample are total coliform positive, and one is also fecal coliform or E.coli positive	0%		
Total Trihalomethane THM, ppb	0	80	17	3 - 24	Max Conc- qt compliance avg at a specific site Range- individual samples collected in 2021
HAA(5)	0	60	18	<2 - 19	Max Conc- qt compliance avg at a specific site Range- individual samples collected in 2022
Total Chlorine (Chloramines)	4	MRDL=4.0	3.2	<0.02 -5.3	Max Conc- mn compliance avg, includes 2020 data Range- individual samples collected in 2021
TOC Removal		TT (Compliance removal ratio)	1.22 (Min % removal)	1.06-1.70	Min Conc- qt compliance avg, includes 2020 data Range- weekly samples collected in 2021
Lead, ppb		AL=15 (>10% samples exceed AL)	<1.0 90% percentile	<1.0	2019 Sampling event; no sample exceeded the AL
Copper, ppm		AL=1.3 (>10% samples exceed AL)	0.062 90% percentile	0.008 - 0.319	2019 Sampling event, no samples exceeded the AL

2021 Regulated Health Risk Contaminants									
Inorganics- Regulated at the Treatment Plant									
Substance	Unit	MCLG	MCL	MAX CONC	RANGE	Likely Source	Meets EPA Standards	Violations?	COMMENTS
Arsenic	ppb	none	50	<1			YES	NO	
Antimony	ppb	6	6	<1			YES	NO	
Barium	ppm	2	2	0.025	0.020-0.025	Erosion of natural deposits	YES	NO	
Beryllium	ppb	4	4	<1			YES	NO	
Cadmium	ppb	5	5	<1			YES	NO	
Chromium	ppb	100	100	<1			YES	NO	
Cyanide	ppb	200	200	<5			YES	NO	2018 data
Fluoride	ppm	4	4	0.77	0.71 - 0.77		YES	NO	Fluoride is added to promote strong teeth
Mercury	ppb	2	2	<0.2			YES	NO	
Nitrate	N, ppm	10	10	0.074	0.033- 0.074	Erosion of natural deposits	YES	NO	
Nitrite	N, ppm	1	1	0.003	0.002-0.003	Erosion of natural deposits	YES	NO	
Lead	ppb	n/a	15-AL	<1			YES	NO	2019 data
Selenium	ppb	50	50	<2			YES	NO	
Thallium	ppb	0.5	2	<1			YES	NO	
Bromate	ppb	0	10	<1			YES	NO	
Turbidity	NTU	n/a	TT	0.237	0.018-0.237		YES	NO	At least 100% of monthly samples had turbidity of < 0.30 NTU

Radiological- Regulated at the Treatment Plant

Substance	Unit	MCLG	MCL	MAX CONC	RANGE	Likely Source	Meets EPA Standards	Violations?	COMMENTS
Gross Alpha, inc Radon & Uranium	pCi/L	0	15	ND	ND	Erosion of natural deposits	YES	NO	2016 samples
Combined Radium (-226 & -228)	pCi/L	0	5	0.8	0.2-0.8		YES	NO	2016 samples
Beta emitters	pCi/L	0	4	2.5	1.4-2.5	Decay of natural & man-made deposits	YES	NO	2016 samples

2021 Regulated Nonhealth Risk Contaminants

Contaminant, units	MCLG	MCL	AVERAGE	RANGE
pH	n/a	6.5-8.2	7.6	7.5 - 7.6
Chloride, ppm	n/a	250	16	16
Color, color units	n/a	15	0	0
Copper, ppm	n/a	1.3	<0.001	0.000 - 0.001
Iron, ppb	n/a	300	4	0 - 8
Manganese, ppb	n/a	50	6.4	5.1 - 7.7
Silver, ppb	n/a	100	<1	ND
Sulfate, ppm	n/a	500 (proposed)	32	30 - 33
Total Dissolved Solids, ppm	n/a	500	111	103 - 119
Zinc, ppm	n/a	5	0.207	0.185 - 0.229

2021 Regulated Health Risk Contaminants								
Organics- Regulated at the Treatment Plant								
Substance	Units	MCLG	MCL	AVERAGE	RANGE	Likely Source	Meets EPA Standards	Violations?
Regulated VOC	ppb							
Benzene	ppb	0	5	ND	ND		YES	NO
Carbon Tetrachloride	ppb	0	5	ND	ND		YES	NO
Chlorobenzene	ppb	100	100	ND	ND		YES	NO
o-Dichlorobenzene	ppb	600	600	ND	ND		YES	NO
p-Dichlorobenzene	ppb	75	75	ND	ND		YES	NO
1,2-Dichloroethane	ppb	0	5	ND	ND		YES	NO
1,1-Dichloroethylene	ppb	7	7	ND	ND		YES	NO
cis-1.2-Dichloroethylene	ppb	70	70	ND	ND		YES	NO
trans-1,2-Dichloroethylene	ppb	100	100	ND	ND		YES	NO
Dichloromethane	ppb	0	5	ND	ND		YES	NO
1,2-Dichloropropane	ppb	0	5	ND	ND		YES	NO
Ethylbenzene	ppb	700	700	ND	ND		YES	NO
Styrene	ppb	100	100	ND	ND		YES	NO
Tetrachloroethylene	ppb	0	5	ND	ND		YES	NO
1,2,4-Trichlorobenzene	ppb	70	70	ND	ND		YES	NO
1,1,1-Trichloroethane	ppb	200	200	ND	ND		YES	NO
1,1,2-Trichloroethane	ppb	3	5	ND	ND		YES	NO
Trichloroethylene	ppb	0	5	ND	ND		YES	NO
Toluene	ppb	1	1	ND	ND		YES	NO
Vinyl Chloride	ppb	0	2	ND	ND		YES	NO
Xylene	ppb	10	10	ND	ND		YES	NO
38 Unregulated VOC	ppb	n/a	n/a	ND	ND		n/a	n/a
Chloroform	ppb	n/a	n/a	4.6	3.7-5.6	By-product of drinking water chlorination	n/a	n/a
Dichlorobromomethane	ppb	n/a	n/a	2.2	2.1-2.2	By-product of drinking water chlorination	n/a	n/a
Dibromochloromethane	ppb	n/a	n/a	0.8	0.6 - 0.9	By-product of drinking water chlorination	n/a	n/a
Bromoform	ppb	n/a	n/a	ND	ND-1	By-product of drinking water chlorination	n/a	n/a

2021 Miscellaneous Analyses of Finished Water at Water Treatment Plant					
Contaminant	Units	MCLG	MCL	AVERAGE	RANGE
Alkalinity	CaCO3 ppm	n/a	n/a	32	35 - 66
Aluminum	ppb	n/a	50-200	23	<25 - 186
Bromide	ppb	n/a	n/a	<0.010	<0.010 - 0.13
Calcium	ppm	n/a	n/a	20	22 - 42
Hardness	CaCO3 ppm	n/a	n/a	52	40 - 64
Lead	ppm	n/a	n/a	<1	<1
Magnesium	ppm	n/a	n/a	1.7	0.9 -2.6
Molybdate	ppb	n/a	n/a	<1	<1
Nickel	ppb	n/a	n/a	<1	<1
Ortho-Phosphorus	P, ppm	n/a	n/a	0.210	0.196 - 0.289
Potassium	ppm	n/a	n/a	1.4	1.1 - 3.6
Silica	ppm	n/a	n/a	2.0	1.0 - 4.0
Sodium	ppm	n/a	n/a	11.8	11.3-12.3
Specific Conductance	uhmo/cm	n/a	n/a	174	189 - 245

Analytee	Unit	MRL	MAX	RANGE	Comment
PFOA	ppt	2.0	4.3	<2.0 - 4.3	
PFOS	ppt	2.0	5.9	3.1 - 5.9	
Total PFAS	ppt	2.0	9.1	4.4 - 9.1	EPA Health Advisory= 70 ppt

2021 Microbial Monitoring of Source Water

Substance	Unit	MCLG	MCL	MAX CONC	RANGE
Giardia	#/L	0	n/a	0.050	0.00 - 0.05
Cryptosporidium	#/L	0	TT	0.050	0.00 - 0.05

Unregulated Contaminant Monitoring Regulation- UCMR4 (2018-2019)

Analytee	Units	MRL	AVG. CONC	RANGE	Sources and Comments
Manganese	ug/L	0.4	9.6	2.91 - 24.1	Naturally-occurring element; commercially available in combination with other elements and minerals; used in steel production, fertilizer, batteries and fireworks; drinking water and wastewater treatment chemical; essential nutrient
Haloacetic Acids					By-product of drinking water chlorination.
DCAA	ug/L	0.2	11.6	1.6 - 27.1	
TCAA	ug/L	0.5	3.0	0.7 - 11.7	
DBAA	ug/L	0.3	<0.3	<0.3-0.4	
BCAA	ug/L	0.3	2.2	0.4-3.3	
BDCAA	ug/L	0.5	0.8	<0.5 - 2.3	
CDBAA	ug/L	0.3	<0.3	<0.3-0.7	

Unregulated Contaminant Monitoring Regulation-4 (URMC4)				
Unregulated Contaminates	UNITS	MRL	MAX	Range
UCMR4- Trace Metals				
Geranium	µg/L	0.3	<0.3	<0.3
Manganese	µg/L	0.4	24.1	2.9 - 24.1
UCMR- Pesticides and Pesticide Manufacturing Byproduct				
alpha-Hexachlorocyclohexane	ug/L	0.01	<0.01	<0.01
Chlorpyrifos	ug/L	0.03	<0.03	<0.03
Dimethipin	ug/L	0.20	<0.02	<0.02
Ethoprop	ug/L	0.03	<0.03	<0.03
Oxyfluorfen	ug/L	0.05	<0.05	<0.05
Profenofos	ug/L	0.3	<0.3	<0.3
Tebicomazole	ug/L	0.2	<0.2	<0.2
Permethrin, cis & Tran	ug/L	0.04	<0.04	<0.04
Tribufos	ug/L	0.07	<0.07	<0.07
UCMR4- Semi-Volatile Organic Compounds				
Buylated hydroxyanisole	ug/L	0.03	<0.03	<0.03
o-Toluidine	ug/L	0.007	<0.007	<0.007
Quinoline	ug/L	0.02	<0.02	<0.02
UCMR4- Orgaic Alcohols				
1-Butanol	ug/L	2.0	<2.0	<2.0
2-Methoxyethanol	ug/L	0.4	<0.4	<0.4
2-Propen-1-ol	ug/L	0.5	<0.5	<0.5
UCMR4- Microcystin Congeners and Nodularin				
Microcystin-LA	µg/L	0.008	<0.008	<0.008
Microcystin-LF	µg/L	0.006	<0.006	<0.006
Microcystin-LR	µg/L	0.02	<0.02	<0.02
Microcystin-LY	µg/L	0.009	<0.009	<0.009
Microcystin-RR	µg/L	0.006	<0.006	<0.006
Microcystin-YR	µg/L	0.02	<0.02	<0.02
Nodularin	µg/L	0.005	<0.005	<0.005

Unregulated Contaminant Monitoring Regulation-4 (URMC4)				
Unregulated Contaminates	UNITS	MRL	MAX	Range
UCMR4- Cylindrospermopsin and Anatoxin				
Anatoxin-a	ug/L	0.03	<0.03	<0.03
Cylindrospermopsin	ug/L	0.09	<0.09	<0.09
UCMR4- Total Microcystin				
Total Microcystins	µg/L	0.3	<0.3	<0.3
UCMR4- Haloacetic Acids				
Monochloroacetic Acid (MCAA)	µg/L	2.0	2.9	<2.0 - 2.9
Monobromoacetic Acid (MBAA)	µg/L	0.3	0.3	<0.3 - 0.3
Dichloroacetic Acid (DCAA)	µg/L	0.2	27.1	1.6 - 27.1
Trichloroacetic Acid (TCAA)	µg/L	0.5	11.7	0.7 - 11.7
Dibromoacetic Acid (DBAA)	µg/L	0.3	0.4	<0.3 - 0.4
Bromochloroacetic Acid (BCAA)	µg/L	0.3	3.3	0.4 - 3.3
Bromodichloroacetic Acid (BDCAA)	µg/L	0.5	2.3	<0.5 - 2.3
Chlorodibromoacetic Acid (CDBAA)	µg/L	0.3	0.7	<0.3 - 0.7
Tribromoacetic Acid (TBAA)	µg/L	2.0	<2.0	<2.0



Annual Water Quality Report

SUMMARIZING
TEST RESULTS 2021
FOR THE
LIGHTFOOT SYSTEM

ABOUT THIS REPORT

This annual water quality report or “Consumer Confidence Report” is written, prepared and distributed by the City of Newport News Waterworks Department (Waterworks) as required by the Safe Drinking Water Act. It is reviewed and approved by the Virginia Department of Health, Office of Drinking Water in Richmond. This report explains where your water comes from, what our tests show about it and other things you should know about your drinking water.

The report provides details about the water you drink every day as a customer of Newport News Waterworks. We test our water for the presence of more than 100 substances, and this report includes a chart showing you the levels of several regulated and non-regulated substances we detected in 2021. Our goal is to meet your need for a clean, safe supply of drinking water at a reasonable cost, while providing long-term management of our water resources.

This report is available on our website at www.nnva.gov/waterqualityreport, where you also can find the water quality report for our surface water system and additional test results for both systems. A paper copy of this report is available at the Williamsburg Regional Library in Norge. If you would like to receive a copy of this report in the mail, please call Waterworks Customer Service at 757-926-1000.

HOW CAN I GET INVOLVED?

Since Waterworks is a department of the City of Newport News, major decisions about your drinking water are made by Newport News City Council. They meet on the second and fourth Tuesday of each month at 7:00 p.m. and you are welcome to attend and participate. These meetings are broadcast live on the Newport News City Channel (in Newport News - Cox channel 48 and Verizon FIOS channel 19) and streamed live on Facebook at www.facebook.com/NewportNewsTV. They also can be viewed live or on-demand by all customers in our service area at www.nnva.gov/nntv.



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YOUR WATER UTILITY

Newport News Waterworks serves as a regional water provider for five jurisdictions: Newport News, Hampton, Poquoson, York County and part of James City County. We are committed to providing a reliable supply of high quality drinking water to our customers. Our drinking water is treated and tested using state-of-the-art equipment and advanced procedures, and it meets or exceeds state and federal standards. The bottom line: The quality of your water is excellent.



HOW WE TEST YOUR WATER

To ensure that the water provided to you is safe to drink, the Virginia Department of Health (VDH) and the U.S. EPA set limits on the amounts of certain substances in water provided by public water systems. We routinely monitor for substances in your drinking water according to these federal and state laws. (The U.S. Food and Drug Administration is responsible for setting these limits on bottled water.) The table on pages 4 and 5 includes the monitoring results for samples collected by Newport News Waterworks. Every regulated substance that was detected in the water, even in the smallest amounts, is listed in the table.



The table contains the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health (MCLG), the amount detected, the usual sources of such contamination, and whether or not Waterworks meets the set regulation. For help understanding the table, please see the definitions on the next page and the footnotes at the bottom

of the table. More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's toll free Safe Drinking Water Hotline at 1-800-426-4791.

An expanded version of the tables in this report, which lists additional test results, can be found on our website at www.nnva.gov/waterqualityreport. (Be sure to view the Lightfoot Well System Report). A second water quality report is available on our website for our customers on the Lower Peninsula, who are served by our surface water supply system. To request that copies of these reports be mailed to you, call Newport News Waterworks Customer Service at 757-926-1000.

ADDITIONAL INFORMATION OF INTEREST

Sodium - The U.S. EPA has not set a standard for sodium in drinking water. However, sodium levels are usually low and unlikely to be a significant contributor to adverse health effects. The average level of sodium found in our treated water in 2021 was 52 mg/L, and the range was 36-67 mg/L. Should you have a health concern, please contact your health care provider.

Fluoride - No additional fluoride is added to your well water. Any fluoride detected is naturally occurring.



KEY TERMS

We've defined these water-quality terms, unique to the water industry, to help you better understand the test results on the following pages.

AL: Action Level - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

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

MCLG: Maximum Contaminant Level Goal - 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.

MRDL: Maximum Residual Disinfectant Level - The highest level of a disinfectant allowed in drinking water. The addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG: Maximum Residual Disinfectant 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 contamination.

MRL: Minimum Reporting Level - Estimate of the lowest concentration of a compound that laboratories would report as a detection.

ND: Not detected - Does not equate to zero, but refers to an amount below analytical reporting limits.

pCi/L: Picocuries per liter - A measure of radioactivity. EPA considers 50 pCi/L to be the level of concern for beta particles.

ppb: Parts per billion or micrograms per liter ($\mu\text{g/L}$). Equivalent to one penny in \$10 million.

ppm: Parts per million or milligrams per liter (mg/L). Equivalent to one penny in \$10 thousand.

ppt: Parts per trillion or nanograms per liter [ng/L]. Equivalent to one penny in \$10 billion.

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

WATER QUALITY TESTING RESULTS

REGULATED SUBSTANCES

Contaminant and Unit of Measurement	EPA Ideal Goal (MCLG)	Highest EPA Allowed Level (MCL)	Max Detected Level	Range Detected (Low-High)	Meets State & Federal Standards	Likely Source	Year Tested
LEAD AND COPPER							
Lead (ppb)	0	AL = 15	<1.18 ¹	<1.0-2.15	YES	Corrosion of household plumbing	2019
Copper (ppm)	1.3	AL = 1.3	0.039 ¹	0.012-0.062	YES	Corrosion of household plumbing	2019
INORGANICS - REGULATED AT THE WELLS							
Barium (ppb)	2	2	<1.0	<1.0	YES	Erosion of natural deposits	2021
Fluoride (ppm)	4	4	0.73	0.47-0.73	YES	Fluoride occurs naturally in groundwater	2021
Nitrate - Nitrite (ppm)	10	10	0.083	<0.023-0.083	YES	Erosion of natural deposits	2021
REGULATED CONTAMINANTS IN THE DISTRIBUTION SYSTEM							
Total Trihalomethanes THM (ppb)	N/A	80	42	7-42	YES	By-product of drinking water chlorination	2021
Haloacetic Acids HAA (ppb)	N/A	60	6	<2-6	YES	By-product of drinking water chlorination	2020
DISINFECTANTS							
Free Chlorine (ppm)	MRDLG = 4	MRDL = 4	Avg = 1.32 ²	0.55-1.75 ²	YES	Disinfectant added to control microbes	2020 & 2021
RADIOLOGICAL - REGULATED AT THE WELLS							
Alpha Emitters (pCi/L)	0	15	<0.42	<0.42 ³	YES	Erosion of natural deposits	2016
Beta/Photon Emitters (pCi/L)	0	50	6.5	6.4-6.5 ³	YES	Decay of natural and man-made deposits	2016
Combined Radium -226 &-228 (pCi/L)	0	5	1.4	0.7-1.4 ³	YES	Occurs naturally in rock, soil, water, plants and animals	2016

Footnotes:

(1) At least 90% of the samples were at or below this level. None of the individual samples exceeded the Action Level. Our low lead and copper levels require us to only test every three years. (2) The highest detected level is based on a running annual average, which includes data from 2019. The range numbers are the results of individual samples collected in 2021. (3) Radiological levels are tested every 6 years, next sampling in 2022.

WATER QUALITY TESTING RESULTS

UNREGULATED SUBSTANCES

Contaminant and Unit of Measurement	Max Detected Level	Range Detected (Low-High)	Likely Source	Year Tested
UNREGULATED ORGANICS - MONITORED AT THE WELL SITE				
Chloroform (ppb)	2.4	1.8-2.4	By-product of chlorination	2019
Dichlorobromomethane (ppb)	2.1	1.5-2.1	By-product of chlorination	2019
Dibromochloromethane (ppb)	1.5	1.2-1.5	By-product of chlorination	2019

Note: MCLs are set at very stringent levels. To experience the possible health effects described for many regulated contaminants, a person would have to drink two liters of water at the MCL level every day for a lifetime to have a one-in-a-million chance of having a possible health effect.

HOW HARD IS MY WATER?

No EPA standard is set. Water from the Lightfoot Well System is considered slightly hard at an average of 42 mg/L in a range of 27-58 mg/L as CaCO₃ or calcium carbonate.

WHERE YOUR WATER COMES FROM



Your drinking water comes from fresh water wells located in the Lightfoot area. These wells provide, on average, a little more than 360,000 gallons of water per day to our Lightfoot customers.

SOURCE WATER ASSESSMENT

The Virginia Department of Health (VDH) conducted its Source Water Assessment of the Lightfoot Wells in 2002. Using the criteria developed by the state in its approved Source Water Assessment Program, the VDH determined the susceptibility to contamination was high for one of the two wells. One way our well water customers can protect their drinking water is by keeping septic systems in good repair and ensure they are functioning properly.



The assessment report consists of maps showing: the Source Water Assessment area; inventory of known land use activities, potential conduits to groundwater, and potential sources of contamination of concern; susceptibility explanation chart; and definitions of key terms. The Source Water Assessment is available from Waterworks by contacting Customer Service at 757-926-1000.

HOW WE TREAT YOUR WATER

Groundwater usually requires little or no treatment. Waterworks adds a small amount of chlorine to your well water for disinfection purposes and to ensure a disinfection “residual” throughout the distribution system. The addition of chlorine to your water protects public health and helps us best comply with the U.S. Environmental Protection Agency’s (U.S. EPA’s) 2006 Groundwater Rule (www.epa.gov).



MORE ABOUT SOURCE WATER

WHAT'S IN MY WATER BEFORE IT'S TREATED?

Generally speaking, the sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and radioactive material and can pick up substances resulting from the presence of animals or from human activity. Substances that may be present in source water 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 runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides that may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organics, are by-products of industrial processes and petroleum production, and also can come from gas stations, urban stormwater runoff, and septic systems.
- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

IMPORTANT HEALTH INFORMATION



Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. U.S. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* or other contaminants are available from the Safe Drinking Water Hotline at 800-426-4791. Some people may be more vulnerable to contaminants in drinking water than the general population.

Immuno-compromised persons such as those with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers.

ABOUT LEAD

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. **We have not detected lead in the Lightfoot System water that we tested at the wells.** Lead in drinking water comes primarily from pipe materials and components associated with service lines and home plumbing. Newport News Waterworks is responsible for providing high quality drinking water but cannot control the variety of materials used in plumbing components.

If your water has been sitting for several hours or longer, you can minimize the potential for lead exposure by running cold water until it becomes as cold as it will get before using it for drinking or cooking. This could take 30 seconds to 2 minutes or longer. **Waterworks and the health department recommend that you use only cold water for drinking, cooking, and especially for making baby formula.**



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 any exposure is available from the Safe Drinking Water Hotline (1-800-426-4791) or at [epa.gov/safewater/lead](https://www.epa.gov/safewater/lead).



CONTACT US

If you have questions or concerns about your water or water quality, please contact Waterworks Customer Service.

Here is some important contact information to keep handy:

757-926-1000 8 a.m. - 5 p.m., Mon. - Fri.	wwcs@nnva.gov monitored 8 a.m. - 5 p.m., Mon. - Fri.
Drop Box & Walk-in Payment Center 700 Town Center Drive (Oyster Point City Center) 8 a.m. - 5 p.m., Mon. - Fri.	Drop Box & Walk-in Payment Center 2400 Washington Avenue (Newport News City Hall Annex) 8:30 a.m. - 4 p.m., Mon. - Fri.

Emergency Service: 757-234-4800

For emergencies only, after normal business hours, on weekends and holidays.

CONNECT WITH US

<https://myservices.nnwww.nnva.gov>

Use our online portal to manage your account, pay your water bill, sign up for paperless billing, and choose automatic payment options, report an outage, and request certain services.

www.nnva.gov/waterworks

Check out our website to see our extended water quality report, learn about smart meters and find other helpful information.

www.facebook.com/nnwaterworks

Find us on Facebook to receive helpful tips, special announcements, and updates. Plus, we get to hear from you!

Yann A. Le Gouellec, PhD, P.E., BCEE, Director
Rhonda Sturgis, Ed.D., Acting Assistant Director
Bruce Utne, Acting Facilities Manager
Sherry L. Williams, Water Quality Manager

Waterworks Lightfoot System Water Quality Report 2021 - Expanded Version

TERM	DEFINITION
AL	Action Level
Finished Water	Treated water, drinking water
ICR	Information Collection Rule
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MRDL	Maximum Residual Disinfection Level
ND	Nephelometric Turbidity Units

TERM	DEFINITION
NTU	Nephelometric Turbidity Units
ppb	parts per billion or micrograms per liter (ug/L)
ppm	parts per million or milligrams per liter (mg/L)
pCi/L	picocuries per liter (a measure of radioactivity)
Source Water	Water prior entering the treatment plant, reservoir water
TT	Treatment Technique
VOC	Volatile Organic Compound

2021 Regulated Contaminants of the Lightfoot Distribution System

Contaminant, units	MCLG	MCL	MAX CONC	RANGE	YR TESTED	COMMENTS
Total Coliform	0	Presence of coliform bacteria in >1 of monthly samples	0.00%	0%	2021	0 positive sample, 104 samples analyzed in 2021
E.Coli	0	A routine sample & a repeat sample are total coliform positive, and one is also fecal coliform or E.coli positive	0%	0%	2021	0 positive sample, 104 samples analyzed in 2021
Total Trihalomethane THM, ppb	0	80	42	7 - 42	2021	
HAA(5)	0	60	6	<2 - 6	2021	
Free Chlorine	4	MRDL=4.0	1.32	0.55 - 1.75	2020-2021	Max Conc- mn compliance avg, includes 2020 data Range- individual samples collected in 2021
Lead, ppb		AL=15 (>10% samples exceed AL)	1.18 90% percentile	<1.0 - 2.15	2019	No sample exceeded the AL
Copper, ppm		AL=1.3 (>10% samples exceed AL)	0.039 90% percentile	0.012 - 0.062	2019	No sample exceeded the AL

2021 Regulated Health Risk Contaminants

Metals- Regulated at the Wells

Substance	Unit	MCLG	MCL	MAX CONC	RANGE	Likely Source	Meets EPA Standards	Violations?	YR Tested
Arsenic	ppb	none	50	<2	<2		YES	NO	2021
Barium	ppb	2	2	<1.0	<1.0	Erosion of natural deposits	YES	NO	2021
Cadmium	ppb	5	5	<1.0	<1.0		YES	NO	2021
Chromium	ppb	100	100	<1.0	<1.0		YES	NO	2021
Lead	ppb	n/a	15-AL	<1.0	<1.0		YES	NO	2021
Mercury	ppb	2	2	<0.2	<0.2		YES	NO	2021
Selenium	ppb	50	50	<5.0	<5.0		YES	NO	2021
Thallium	ppb	0.5	2	<1.0	<1.0		YES	NO	2021
Antimony	ppb	6	6	<1.0	<1.0		YES	NO	2021
Beryllium	ppb	4	4	<1.0	<1.0		YES	NO	2021

Inorganics- Regulated at the Wells

Substance	Unit	MCLG	MCL	MAX CONC	RANGE	Likely Source	Meets EPA Standards	Violations?	YR Tested
Fluoride	ppm	4	4	0.73	0.47-0.73		YES	NO	2021
Nitrate	N, ppm	10	10	0.083	0.023 - 0.083	Erosion of natural deposits	YES	NO	2021
Nitrite	N, ppm	1	1	<1.0	<1.0	Erosion of natural deposits	YES	NO	2021

Radiological- Regulated at the Wells

Substance	Unit	MCLG	MCL	MAX CONC	RANGE	Likely Source	Meets EPA Standards	Violations?	YR Tested
Alpha emitters	pCi/L	0	15	<0.42	<0.42	Erosion of natural deposits	YES	NO	2016
Beta emitters	pCi/L	0	50	6.5	6.4-6.5	Decay of natural & man-made deposits	YES	NO	2016
Combined Radium (-228, -226)	pCi/L	0	5	1.4	0.7-1.4		YES	NO	2016

2021 Regulated Nonhealth Risk Contaminants					
Regulated at the Wells					
Contaminant, units	MCLG	MCL	AVERAGE	RANGE	YR Tested
pH	n/a	6.5-8.5	8.4	8.2 - 8.6	2021
Chloride, ppm	n/a	250	8.8	8.2 - 9.4	2021
Color, color units	n/a	15	0	0	2021
Copper,ppb	n/a	1300	<1.0	<1.0	2021
Iron, ppb	n/a	300	5.4	<5.0 - 10.7	2021
Manganese, ppb	n/a	50	<1	<1	2021
Sulfate, ppm	n/a	500 (proposed)	5.8	5.7 - 5.9	2021
Total Dissolved Solids, ppm	n/a	500	217	194 - 240	2021
Zinc, ppm	n/a	5	<0.002	<0.002	2021

2021 Regulated Health Risk Contaminants									
Organics- Regulated at the Point of Entry									
Substance	Units	MCLG	MCL	MAX CONC	RANGE	Likely Source	Meets EPA Standards	Violations?	YR Tested
Regulated VOC	ppb								
Benzene	ppb	0	5	ND	ND		YES	NO	2019
Carbon Tetrachloride	ppb	0	5	ND	ND		YES	NO	2019
Chlorobenzene	ppb	100	100	ND	ND		YES	NO	2019
o-Dichlorobenzene	ppb	600	600	ND	ND		YES	NO	2019
p-Dichlorobenzene	ppb	75	75	ND	ND		YES	NO	2019
1,2-Dichloroethane	ppb	0	5	ND	ND		YES	NO	2019
1,1-Dichloroethylene	ppb	7	7	ND	ND		YES	NO	2019
cis-1.2-Dichloroethylene	ppb	70	70	ND	ND		YES	NO	2019
trans-1,2-Dichloroethylene	ppb	100	100	ND	ND		YES	NO	2019
Dichloromethane	ppb	0	5	ND	ND		YES	NO	2019

2021 Regulated Health Risk Contaminants									
Organics- Regulated at the Point of Entry									
Substance	Units	MCLG	MCL	MAX CONC	RANGE	Likely Source	Meets EPA Standards	Violations?	YR Tested
1,2-Dichloropropane	ppb	0	5	ND	ND		YES	NO	2019
Ethylbenzene	ppb	700	700	ND	ND		YES	NO	2019
Styrene	ppb	100	100	ND	ND		YES	NO	2019
Tetrachloroethylene	ppb	0	5	ND	ND		YES	NO	2019
1,2,4-Trichlorobenzene	ppb	70	70	ND	ND		YES	NO	2019
1,1,1-Trichloroethane	ppb	200	200	ND	ND		YES	NO	2019
1,1,2-Trichloroethane	ppb	3	5	ND	ND		YES	NO	2019
Trichloroethylene	ppb	0	5	ND	ND		YES	NO	2019
Toluene	ppb	1	1	ND	ND		YES	NO	2019
Vinyl Chloride	ppb	0	2	ND	ND		YES	NO	2019
Xylene	ppb	10	10	ND	ND		YES	NO	2019
38 Unregulated VOC	ppb	n/a	n/a	ND	ND		n/a	n/a	2019
Chloroform	ppb	n/a	n/a	2.4	1.8-2.4	By-product of drinking water chlorination	n/a	n/a	2019
Dichlorobromomethane	ppb	n/a	n/a	2.1	1.5-2.1	By-product of drinking water chlorination	n/a	n/a	2019
Dibromochloromethane	ppb	n/a	n/a	1.5	1.2-1.5	By-product of drinking water chlorination	n/a	n/a	2019
Bromoform	ppb	n/a	n/a	ND	ND	By-product of drinking water chlorination	n/a	n/a	2019

2021 Miscellaneous Analyses						
Contaminant	Units	MCLG	MCL	AVERAGE	RANGE	YR Tested
Alkalinity	CaCO3 ppm	n/a	n/a	161	139 - 183	2021
Aluminum	ppb	n/a	50-200	<5	<5	2021
Ammonia	ppm	n/a	n/a	<0.030	<0.030	2021
Calcium	ppm	n/a	n/a	11.5	5.2 - 17.8	2021
Calcium Hardness	CaCO3 ppm	n/a	n/a	28	13 - 44	2021
Hardness	CaCO3 ppm	n/a	n/a	42	27-58	2021
Lead	ppm	n/a	n/a	<0.001	<0.001	2021
Magnesium	ppm	n/a	n/a	2.5	1.7 - 3.3	2021
Nickel	ppb	n/a	n/a	<1	<1	2021
Potassium	ppm	n/a	n/a	8.5	7.9 - 9.1	2021
Ortho-Phosphorus	ppm	n/a	n/a	0.028	0.023 - 0.033	2021
Silica	ppm	n/a	n/a	31	30 - 32	2021
Sodium	ppm	n/a	n/a	52	36 - 67	2021
Specific Conductance	uhmo/cm	n/a	n/a	318	269 - 368	2021