

COMBINED ANNUAL WATER QUALITY REPORTS

Summarizing test results from 2018

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ANNUAL Water quality Report

Summarizing test results from 2018

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 <u>nnva.gov/waterqualityreport</u>. Both online reports include additional test results. A paper copy of this report is available at all local libraries in the Waterworks service area, in our walk-in services lobby at 700 Town Center Drive in Newport News, 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 Tuesdays of each month at 7:00 pm, 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 <u>www.facebook.com/NewportNewsTV</u>. 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 continiene información importante acerca de la calidad del agua potable. Haga que algien 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 Chickahominy River. 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.

Very small amounts of treated brackish (slightly salty) 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 2018. 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.



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 (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 2018 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 lists additional test results, can be found on our website at <u>nnva.gov/waterqualityreport</u>. 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 (µg/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	0.071 ¹	0.009-0.088	YES	Corrosion of household plumbing			
Lead	ppb	0	AL = 15	<1.01	<1.0-3.1	YES	Corrosion of household plumbing			
Fluoride	ppm	4	4	1.02	0.66-1.02	YES	Added to promote strong teeth			
Barium	ppm	2	2	0.023	0.021-0.023	YES	Erosion of natural deposits			
Nitrate	ppm	10	10	0.105	0.057-0.105	YES	Erosion of natural deposits			
Nitrite	ppm	1	1	0.002	<0.001-0.002	YES	Erosion of natural deposits			
			DISINFECTIO	N BY-PRODUCTS	AND PRECURSORS					
Total Trihalomethanes (TTHM)	ppb	0	80	21 ²	4-46	YES	By-product of chlorination			
Haloacetic Acids (HAA5)	ppb	0	60	24²	2-32	YES	By-product of chlorination			
Total Organic Carbon (TOC) Removal		none	TT	1.02 ³	0.98-1.71	YES	Naturally present in the environment			
				MICROBIOLOGI	CAL					
Turbidity	NTU	none	TT	0.32 ⁴	0.02-0.32	YES	Soil runoff			
Total Chlorine (Chloramines)	ppm	MRDLG=4.0	MRDL=4.0	3.5 ⁵	< 0.02 - 5.25	YES	Water additive (disinfectant) used to control microbes			
RADIOLOGICAL (FROM TESTING COMPLETED IN 2016)										
Radium-228	pCi/L	0	5	0.6	<0.6-0.6	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 lead, copper, and radiological testing, which were all completed in 2016, the results reported in the table above are for samples taken in 2017-2018. Samples taken in 2017 are part of required four-quarter 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 2016. (2) The highest detected level of THM and HAA 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 2017. The range is for samples taken in 2018. (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 2017. The range is for samples taken in 2018. (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 2017. The range is for samples taken in 2018. (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 2017. The range is for samples taken in 2018.

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-amillion chance of having a possible health effect.

ADDITIONAL TESTING

In 2018, Waterworks participated in the EPA's fourth round of the Unregulated Contaminant Monitoring Rule (UCMR4). Unregulated contaminants are those that don't yet have a drinking water standard set by the EPA. The purpose of monitoring for these contaminants is to help the 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
Quinoline	μg/L	0.0200	<0.020	<0.020- 0.026	Used as a pharmaceutical (anti- malarial) and flavoring agent; produced as a chemical intermediate; component of coal
Manganese	μg/L	0.4	6.3	4.5-8.8	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					
Dicloroacetic Acid (DCAA)	µg/L	0.2	16.4	5.0-27.1	By-product of drinking water chlorination
Trichloroacetic Acid (TCAA)		0.5	3.5	1.4-6.3	By-product of drinking water chlorination
Dibromoacetic Acid (DBAA)		0.3	<0.3	<0.3-0.4	By-product of drinking water chlorination
Bromochloro- acetic Acid (BCAA)		0.3	2.4	0.4-3.1	By-product of drinking water chlorination
Bromodichloro- acetic Acid (BDCAA)		0.5	0.7	<0.5-1.1	By-product of drinking water chlorination
Chlorodibromo- acetic Acid (CDBAA)		0.3	<0.3	<0.3-0.30	By-product of drinking water chlorination

CYANOTOXIN (BLUE-GREEN ALGAE) MONITORING

Cyanobacteria, formerly called blue-green algae, are found naturally in lakes, rivers, ponds and other surface waters. When certain conditions exist, such as warm water containing an abundance of nutrients, they can rapidly form harmful algal blooms (HABs). Certain HABs are capable of producing toxins, called cyanotoxins, which can pose health risks to humans and animals.

As part of the UCMR4 program, Waterworks tested and analyzed for the presence of cyanotoxins. During the screening period, Waterworks detected cyanotoxins at very low levels in our source water. However, we never detected cyanotoxins above the EPA's detection level in any samples of our finished (drinking) water.

Nevertheless, as a precaution, Waterworks proactively implemented a comprehensive cyanotoxin management program in February 2019 to continue monitoring for cyanotoxins in our water supply reservoirs and, if needed, in our treatment facilities. To learn more about our monitoring program, see our fact sheet and FAQ at <u>https://www.nnva.gov/DocumentCenter/View/20439/Harmful-Algal-Blooms-Fact-Sheet-and-FAQ</u>.

For general information about cyanobacteria and cyanotoxins, you can visit <u>www.epa.gov/nutrient-policy-data/cyanobacterial-harmful-algal-blooms-water</u>, and for information on cyanotoxin-related illnesses, visit the website for the Centers for Disease Control at <u>www.cdc.gov/habs</u>.



An example of blue-green algae growth.

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WATER QUALITY TESTING RESULTS NON-REGULATED MICROBIALS MONITORED AT THE SOURCE*									
Contaminant Unit MCLG MCL Range of Test Amount Results Contaminant Unit MCLG									
Cryptosporidium	#/L	n/a	TT	0.041	ND-0.041	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. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* 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



Filter gallery pipes at our Lee Hall Water Treatment Plant.

(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.

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. The water is blended with treated surface water and sent out to our customers.

PUBLIC HEALTH PRECAUTIONS

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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. Immunocompromised 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 some 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 at <u>www.epa.gov/safewater/lead</u>.

ADDITIONAL INFORMATION OF INTEREST

Sodium - The 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 2018 was 13 mg/L, and the range was 10-18. Should you have a health concern, please contact your health care provider.





Water Hardness - The 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 2018 the average was 81 mg/L with a range of 62-114.

Fluoride - Fluoride is added to water to help prevent tooth decay. Newport News Waterworks adheres to drinking water regulations set by the EPA and guidance provided by the Virginia Department of Health (VDH). VDH has adopted the recommendation of 0.7 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 <u>www.cdc.gov/fluoridation</u>.





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	wwcs@nnva.gov
8 a.m 5 p.m., Mon Fri.	monitored 8 a.m 5 p.m., Mon Fri.
Walk-in Service Center	Walk-in Payment Center
700 Town Center Drive	2400 Washington Avenue
(City Center at Oyster Point)	(Newport News City Hall Annex)
8 a.m 5 p.m., Mon Fri.	8 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.nnww.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 our our website to see our extended water quality report, read fact sheets, and find other helpful information.

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> Louis Martinez, Director Yann A. Le Gouellec, P.E., Assistant Director Michael L. Hotaling, P.E., Facilities Manager Sherry L. Williams, Water Quality Manager

Waterworks Surface System Water Quality Report 2018 - 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	Maxiumum 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
ТТ	Treatment Technique
VOC	Volatile Organic Compound

2018 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%	0.0% - 0.0%	0 positive samples in 2018. 2184 samples collected 2018						
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	21	4 - 46	Max Conc- qt compliance avg at a specific site Range- individual samples collected in 2018						
HAA(5)	0	60	24	2 - 32	Max Conc- qt compliance avg at a specific site Range- individual samples collected in 2018						
Total Chlorine (Chloramines)	4	MRDL=4.0	4	<0.02 -5.5	Max Conc- mn compliance avg, includes 2017 data Range- individual samples collected in 2018						
TOC Removal		TT (Compliance removal ratio)	1.02 (Min % removal)	0.98-1.71	Min Conc- qt compliance avg, includes 2017 data Range- weekly samples collected in 2018						
Lead, ppb		AL=15 (>10% samples exceed AL)	<1.0 90% percentile	<1.0 - 3.1	2016 Sampling event; no sample exceeded the AL						
Copper, ppm		AL=1.3 (>10% samples exceed AL)	0.071 90% percentile	0.009 - 0.088	2016 Sampling event, no samples exceeded the AL						

2018 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	0.021 - 0.023	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	1	0.66-1.02		YES	NO	Fluoride is added to promote strong teeth
Mercury	ppb	2	2	<0.05			YES	NO	
Nitrate	N, ppm	10	10	0	0.057-0.105	Erosion of natural deposits	YES	NO	
Nitrite	N, ppm	1	1	0	<0.001- 0.002	Erosion of natural deposits	YES	NO	
Lead	ppb	n/a	15-AL	<1			YES	NO	2016 data
Selenium	ppb	50	50	<2			YES	NO	
Thallium	ppb	0	2	<1			YES	NO	
Bromate	ppb	0	10	<1			YES	NO	
Turbidity	NTU	n/a	TT	0	0.02 - 0.32		YES	NO	At least 95% of monthly samples had turbidity of < 0.30 NTU

2018 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-Dichlorpropane	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	2.6 - 6.0	By-product of drinking water chlorination	n/a	n/a
Dichlorobromomethane	ppb	n/a	n/a	2	1.7 - 2.9	By-product of drinking water chlorination	n/a	n/a
Dibromochloromethane	ppb	n/a	n/a	ND	ND	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

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	
Radium-228	pCi/L	0	5	0	<0.6-0.6		YES	NO	2016 samples	
Beta emitters	pCi/L	0	4	3	1.4-2.5	Decay of natural & man-made deposits	YES	NO	2016 samples	

2018 Regulated Nonhealth Risk Contaminants										
Contaminant, units	MCLG	MCL	AVERAGE	RANGE						
рН	n/a	6.5-8.2	8	6.6-8.6						
Chloride, ppm	n/a	250	13	16-35						
Color, color units	n/a	15	2	0-11						
Copper,ppm	n/a	1	0	ND - 0.004						
Iron, ppb	n/a	300	12	ND - 45						
Manganese, ppb	n/a	50	13	ND - 45						
Silver, ppb	n/a	100	<1	ND						
Sulfate, ppm	n/a	500 (pro- posed)	39	33-48						
Total Dissolved Solids, ppm	n/a	500	149	126-188						
Zinc, ppm	n/a	5	0	0.119 - 0.274						

2018 Miscellaneous Analyses of Finished Water at Water Treatment Plant										
Contaminant,	units	MCLG	MCL	AVERAGE	RANGE					
Alkalinity (CaCO3)	ppm	n/a	n/a	50	38-67					
Aluminum	ppb	n/a	50-200	50	29-111					
Ammonia	ppm	n/a	n/a	0	0.506-0.736					
Bromide	ppb	n/a	n/a	<0.010	<0.010 - 0.011					
Calcium	ppm	n/a	n/a	28	21 - 35					
Hardness (CaCO3)		n/a	n/a	81	62 - 114					
Lead	ppm	n/a	n/a	<1	<1					
Magnesium	ppm	n/a	n/a	1	1.0 - 1.5					
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	0.200 - 0.230					
Potassium	ppm	n/a	n/a	2	4					
Silica	ppm	n/a	n/a	3	1.3-6.1					
Sodium	ppm	n/a	n/a	13	9.6-18.5					
Specific Conductance	uhmo/cm	n/a	n/a	260	216-315					

2018 Microbial Monitoring of Source Water									
Substance	Unit	MCLG	MCL	MAX CONC	RANGE				
Giardia	#/L	0	n/a	0	<0.041 - 0.122				
Cryptosporidium	#/L	0	TT	0	<0.041 - 0.041				

Unregulated Contaminant Monitoring Regulation-4 (URMC4)										
Unregulated Contaminates	UNITS	MRL	MAX	Range						
UCMR4 - Trace Metals		•	•							
Geranium	µg/L	0	<0.3	<0.3						
Manganese	µg/L	0	9	4.5-8.8						
UCMR- Pesticides and Pesticide Manufacturing	Byprodu	ct	-	•						
alpha-Hexachlorocyclohexane	ug/L	0	<0.01	<0.01						
Chlorpyrifos	ug/L	0	<0.03	<0.03						
Dimethipin	ug/L	0	<0.02	<0.02						
Ethoprop	ug/L	0	<0.03	<0.03						
Oxyfluorfen	ug/L	0	<0.05	<0.05						
Profenofos	ug/L	0	<0.3	<0.3						
Tebicomazole	ug/L	0	<0.2	<0.2						
Permethrin, cis & Tran	ug/L	0	<0.04	<0.04						
Tribufos	ug/L	0	<0.07	<0.07						
UCMR4- Semi-Volatile Organic Compounds			-	•						
Buylated hydroxyanisole	ug/L	0	<0.03	<0.03						
o-Toluidine	ug/L	0	<0.007	<0.007						
Quinoline	ug/L	0	0	<0.02-0.026						
UCMR4- Orgaic Alcohols			-	•						
1-Butanol	ug/L	2	<2.0	<2.0						
2-Methoxyethanol	ug/L	0	<0.4	<0.4						
2-Propen-1-ol	ug/L	1	<0.5	<0.5						
UCMR4- Microcystin Congeners and Nodularin										
Microcyctin-LA	µg/L	0	<0.008	<0.008						
Microcyctin-LF	µg/L	0	<0.006	<0.006						
Microcyctin-LR	µg/L	0	<0.02	<0.02						
Microcyctin-LY	µg/L	0	<0.009	<0.009						
Microcyctin-RR	µg/L	0	<0.006	<0.006						
Microcyctin-YR	µg/L	0	<0.02	<0.02						
Nodularin	μg/L	0	<0.005	<0.005						

Unregulated Contaminant Monitoring Regulation-4 (URMC4) - Continued											
Unregulated Contaminates	UNITS	MRL	MAX	Range							
UCMR4- Cylindrospermopsin and Anatoxin											
Anatoxin-a	ug/L	0	<0.03	<0.03							
Clyindrospermopsin	ug/L	0	<0.09	<0.09							
UCMR4- Total Microcystin											
Total Microcystins	μg/L	0	<0.3	<0.3							
UCMR4- Haloacetic Acids											
Monocloroacetic Acid (MCAA)	μg/L	2	<2.0	<2.0							
Monobromoacetic Acid (MBAA)	μg/L	0	<0.3	<0.3							
Dicloroacetic Acid (DCAA)	μg/L	0	27	5.0-27.1							
Trichloroacetic Acid (TCAA)	μg/L	0	6	1.4-6.3							
Dibromoacetic Acid (DBAA)	μg/L	0	0	<0.3-0.4							
Bromochloroacetic Acid (BCAA)	μg/L	0	3	0.4-3.1							
Bromodichloroacetic Acid (BDCAA)	μg/L	0	1	<0.5-1.1							
Chlorodibromoacetic Acid (CDBAA)	μg/L	0	0	<0.3-0.3							
Tirbromoacetic Acid (TBAA)	μg/L	2	<2.0	<2.0							

NOTE: Unregulated contaminants are those that don't yet have a drinking water standard set by the U.S Environmental Protection Agency (EPA). The purpose of monitoring for these contaminants is to help the EPA decide whether the contaminants should have a standard.



ANNUAL Water quality Report

Summarizing test results from 2018

Mark

LIGHTFOOT Well System



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	wwcs@nnva.gov
8 a.m 5 p.m., Mon Fri.	monitored 8 a.m 5 p.m., Mon Fri.
Walk-in Service Center	Walk-in Payment Center
700 Town Center Drive	2400 Washington Avenue
(City Center at Oyster Point)	(Newport News City Hall Annex)
8 a.m 5 p.m., Mon Fri.	8 a.m 4 p.m., Mon Fri.

Emergency Service: 757-234-4800

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

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

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Louis Martinez, Director Yann A. Le Gouellec, P. E., Assistant Director Michael L. Hotaling, P. E., Facilities Manager Sherry L. Williams, Water Quality Manager

Waterworks Lightfoot System Water Quality Report 2018 - Expanded Version

TERM	DEFINITION
AL	Action Level
Finished Water	Treated water, drinking water
ICR	Information Collection Rule
MCLG	Maximum Contaminant Level Goal
MCL	Maximum Contaminant Level
MRDL	Maxiumum Residual Disinfection Level
ND	Not Detected. Does not equate to zero, but refers to an amount below analytical reporting limits.

TERM	DEFINITION
NTU	Nephelometric Turbidity Units
pCi/L	picocuries per liter (a measure of radioactivity)
ppb	parts per billion or micrograms per liter (ug/L)
ppm	parts per million or milligrams per liter (mg/L)
ICR	Information Collection Rule
Source Water	Water prior to being treated
ТТ	Treatment Technique
VOC	Volatile Organic Compound

2018 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%	2018	0 positive sample, 96 samples analyzed in 2018
E.Coli	0	A routine sample & a repeat sample are total coliform	0%	0%	2018	0 positive sample, 96 samples analyzed in 2018
		positive, and one is also fecal coliform or E.coli positive				
Total Trihalomethane THM, ppb	0	80	31	6 - 31	2018	
HAA(5)	0	60	7	0 - 7	2018	
Free Chlorine	4	MRDL=4.0	1.48	0.91- 1.73	2017-2018	Max Conc - mn compliance avg, includes 2017 data Range- individual samples collected in 2018 Range - individual samples collected in 2018
Lead, ppb		AL=15 (>10% samples exceed AL)	0.97 90% percentile	<1.0 - 2.6	2016	No sample exceeded the AL
Copper, ppm		AL=1.3 (>10% samples exceed AL)	0.047 90% percentile	0.008 - 0.059	2016	No sample exceeded the AL

2018 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	2018		
Barium	ppb	2000	2000	<1.0	<1.0	Erosion of natural deposits	YES	NO	2018		
Cadmium	ppb	5	5	<1.0	<1.0		YES	NO	2018		
Chromium	ppb	100	100	<1.0	<1.0		YES	NO	2018		
Lead	ppb	n/a	15-AL	<1.0	<1.0		YES	NO	2018		
Mercury	ppb	2	2	<0.2	<0.2		YES	NO	2016		
Selenium	ppb	50	50	<1.0	<1.0		YES	NO	2018		
Thallium	ppb	0.5	2	<1.0	<1.0		YES	NO	2018		
Antimony	ppb	6	6	<1.0	<1.0		YES	NO	2018		
Beryllium	ppb	4	4	<1.0	<1.0		YES	NO	2018		

Inorganics - Regulated at the Wells										
Substance	Unit	MCLG	MCL	MAX CONC	RANGE	Likely Source	Meets EPA Standards	Violations?	YR Tested	
Fluoride	ppm	4	4	0.76	0.49-0.76		YES	NO	2017	
Nitrate	N, ppm	10	10	0.091	ND-0.091	Erosion of natural deposits	YES	NO	2018	
Nitrite	N, ppm	1	1	<0.001	<0.001	Erosion of natural deposits	YES	NO	2018	

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	0.8	ND-0.8	Erosion of natural deposits	YES	NO	2016		
Beta emitters	pCi/L	0	50	7.6	5.3-7.6	Decay of natural & man-made deposits	YES	NO	2016		
Radium-228	pCi/L	0	5	0.6	ND-0.6		YES	NO	2016		

2018 Regulated Nonhealth Risk Contaminants

Regulated at the Wells											
CONTAMINANT, UNITS	MCLG	MCL	AVERAGE	RANGE	YEAR TESTED						
рН	n/a	6.5-8.5	8.1	8.1	2018						
Chloride, ppm	n/a	250	8.2	7.6 - 8.6	2018						
Color, color units	n/a	15	0	0	2018						
Copper,ppb	n/a	1300	<1	<1	2018						
Iron, ppb	n/a	300	<10	<10	2018						
Manganese, ppb	n/a	50	<1	<1	2018						
Sulfate, ppm	n/a	500 (proposed)	6.3	6.2 - 6.4	2018						
Total Dissolved Solids, ppm	n/a	500	229	206 - 252	2018						
Zinc, ppm	n/a	5	<0.001	<0.001	2018						

2018 Miscellaneous Analyses

CONTAMINANT	UNIT	MCLG	MCL	AVERAGE	RANGE	YR TESTED
Alkalinity (CaCO3)	ppm	n/a	n/a	157	135 - 179	2018
Aluminum	ppb	n/a	50-200	<50	<50	2018
Ammonia	ppm	n/a	n/a	<0.030	<0.030	2018
Calcium Hardness (CaCO3)	ppm	n/a	n/a	27	13-42	2018
Hardness	CaCO3 ppm	n/a	n/a	37	20-54	2018
Lead	ppm	n/a	n/a	<0.001	<0.001	2018
Nickel	ppb	n/a	n/a	<1	<1	2018
Sodium	ppm	n/a	n/a	50	35-66	2018
Specific Conductance	uhmo/cm	n/a	n/a	386	337 - 434	2018

2016 Regulated Health Risk Contaminants

Organics - Regulated at the Point of Entry

SUBSTANCE	UNITS	MCLG	MCL	MAX CONC	RANGE	LIKELY SOURCE	MEETS EPA STANDARDS?	VIOLATIONS?	YEAR TESTED
Regulated VOC									
Benzene	ppb	0	5	ND	ND		YES	NO	2016
Carbon Tetrachloride	ppb	0	5	ND	ND		YES	NO	2016
Chlorobenzene	ppb	100	100	ND	ND		YES	NO	2016
o-Dichlorobenzene	ppb	600	600	ND	ND		YES	NO	2016
p-Dichlorobenzene	ppb	75	75	ND	ND		YES	NO	2016
1,2-Dichloroethane	ppb	0	5	ND	ND		YES	NO	2016
1,1-Dichloroethylene	ppb	7	7	ND	ND		YES	NO	2016
cis-1.2-Dichloroethylene	ppb	70	70	ND	ND		YES	NO	2016
trans-1,2-Dichloroethylene	ppb	100	100	ND	ND		YES	NO	2016
Dichloromethane	ppb	0	5	ND	ND		YES	NO	2016
1,2-Dichlorpropane	ppb	0	5	ND	ND		YES	NO	2016
Ethylbenzene	ppb	700	700	ND	ND		YES	NO	2016
Styrene	ppb	100	100	ND	ND		YES	NO	2016
Tetrachloroethylene	ppb	0	5	ND	ND		YES	NO	2016
1,2,4-Trichlorobenzene	ppb	70	70	ND	ND		YES	NO	2016
1,1,1-Trichloroethane	ppb	200	200	ND	ND		YES	NO	2016
1,1,2-Trichloroethane	ppb	3	5	ND	ND		YES	NO	2016
Trichloroethylene	ppb	0	5	ND	ND		YES	NO	2016
Toluene	ppb	1	1	ND	ND		YES	NO	2016
Vinyl Chloride	ppb	0	2	ND	ND		YES	NO	2016
Xylene	ppb	10	10	ND	ND		YES	NO	2016

2016 Regulated Health Risk Contaminants - Continued

Organics - Regulated at the Point of Entry

Organics - Regulated at the Font of Entry										
SUBSTANCE	UNITS	MCLG	MCL	MAX CONC	RANGE	LIKELY SOURCE	MEETS EPA STANDARDS?	VIOLATIONS?	YEAR TESTED	
38 Unregulated VOC	ppb	n/a	n/a	ND	ND		n/a	n/a	2016	
Chloroform	ppb	n/a	n/a	2.1	1.4-2.1	By-product of drinking water chlorination	n/a	n/a	2016	
Dichlorobromomethane	ppb	n/a	n/a	1.6	1.0-1.6	By-product of drinking water chlorination	n/a	n/a	2016	
Dibromochloromethane	ppb	n/a	n/a	1.2	0.7-1.2	By-product of drinking water chlorination	n/a	n/a	2016	
Bromoform	ppb	n/a	n/a	ND	ND	By-product of drinking water chlorination	n/a	n/a	2016	