2020 WATER QUALITY REPORT

Based on 2019 Testing Data

THE CITY OF NORFOLK UTILITIES

Department of Utilities
P.O. Box 1080
Norfolk, Virginia 23510-1080

The City of Norfolk Department of Utilities is committed to providing residents and businesses throughout the City with top quality water service. Utilities' employees are on call 24 hours a day, 365 days a year to ensure that you always have access to healthy Norfolk drinking water. The Water Quality Report is distributed annually to inform our customers that we are meeting all water quality guidelines set forth by the Environmental Protection Agency.

Once again in 2019, Norfolk tap water met all federal requirements.

City of Norfolk Department of Utilities
Contact Information:

Business/Customer Service Address
401 Monticello Ave.
Norfolk, VA 23510

Mailing Address:
P.O. Box 1080
Norfolk, VA 23501

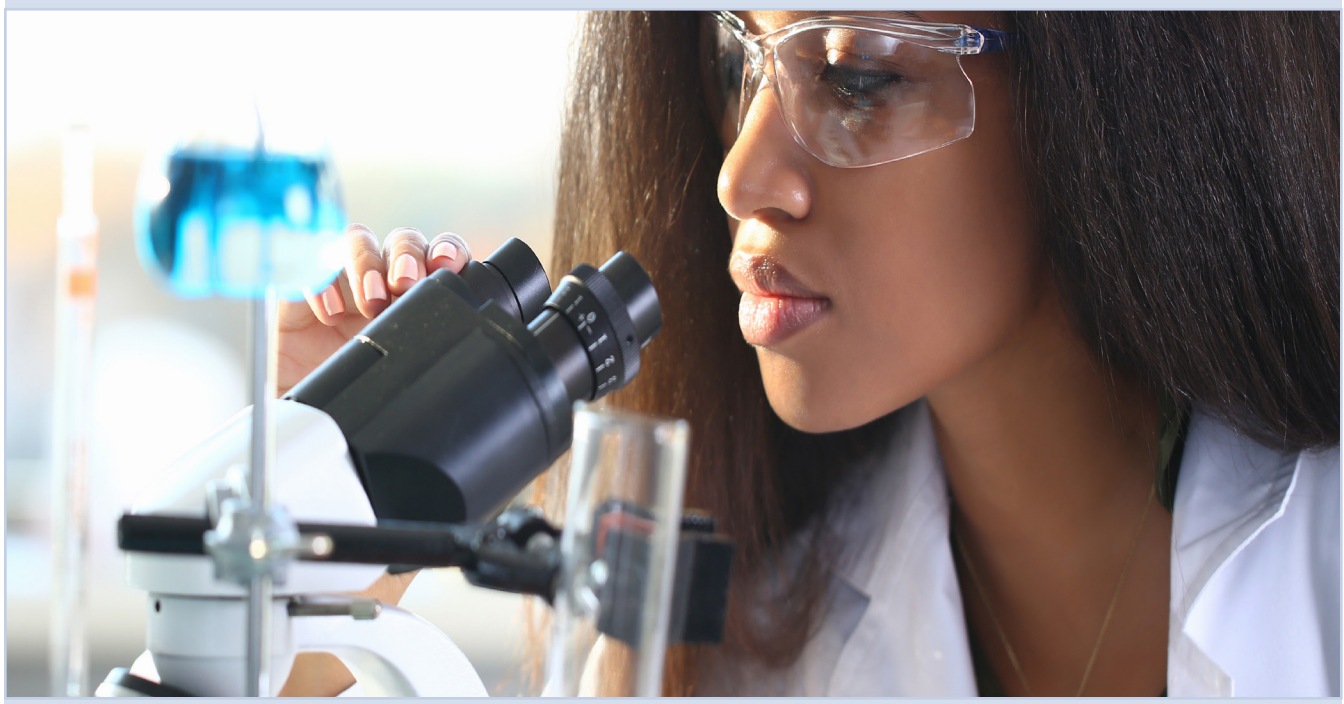
Customer Service: 757-664-6700
Water & Sewer Emergencies: 757-823-1000
Water Quality Lab: 757-441-5678

www.norfolk.gov/utilities

Please share this information with people who drink this water, especially those who may not have received this notice directly. You can do this by posting this notice in a public place or by distributing copies by hand or by mail.

#ValueWater

HIGH-QUALITY & SAFE - Tested over 85,000 times annually



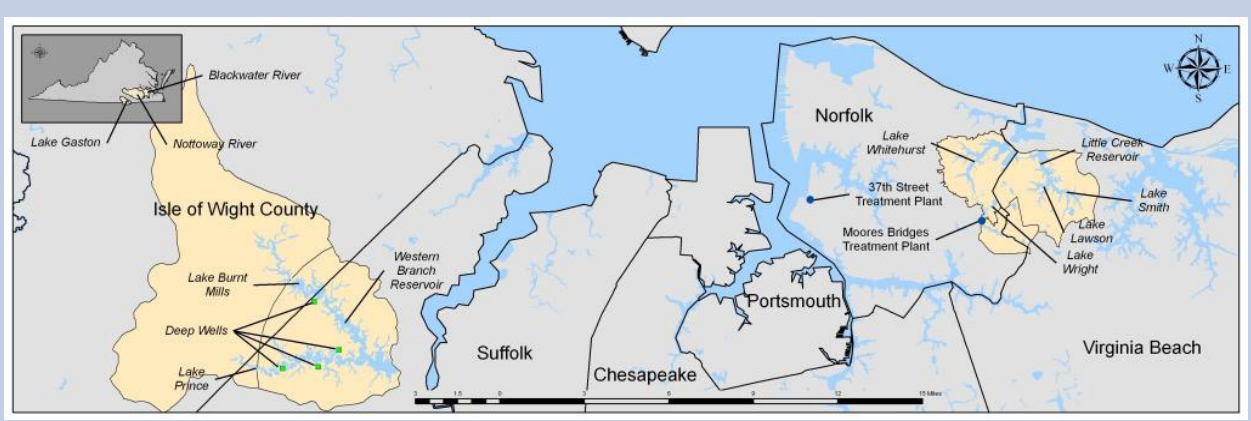
ECONOMICAL - Tap water costs less than a penny per gallon

CONVENIENT - Available 24/7 and it's as easy as turning on the tap

TOP-QUALITY - Norfolk tap water meets or exceeds federal standards

If you have any questions about this Water Quality Report, please contact the Water Quality Lab at 757-441-5678.

The City of Norfolk obtains its raw (untreated) water from eight reservoirs, two rivers and four deep wells. The map at right shows the location of each of your water sources. From these sources, raw water is pumped to one of the Department of Utilities' two water treatment plants, where it is filtered and disinfected. Once tested to meet water quality standards, Norfolk drinking water is pumped on demand to your tap.



Definitions

- **AL (action level)**, the amount required to trigger treatment or other action
- **LIKELY SOURCE**, where it could come from
- **MCL (maximum contaminant level)**, the highest level allowed by regulation
- **MCLG (maximum contaminant level goal)**, the ideal goal
- **MRDL (maximum residual disinfectant level)**, the highest level of a disinfectant allowed in drinking water
- **MRDLG (maximum residual disinfectant level goal)**, the level of a drinking water disinfectant below which there is no known or expected risk to health
- **Norfolk's Average Level**, the average level of a detected compound or water quality parameter
- **Norfolk's Highest Level**, Norfolk's single highest level of a detected compound or water quality parameter
- **REGULATED SUBSTANCES** are regulated by the EPA and are not permitted to be above the MCL
- **SMCL (Secondary Maximum Contaminant Levels)** are recommendations
- **TT (treatment technique)**, a required process intended to reduce the level of a substance in drinking water
- **TURBIDITY** is a measure of the cloudiness of water, which is not necessarily harmful, but can interfere with the disinfection of drinking water
- **UNREGULATED MONITORED SUBSTANCES** are not regulated by the EPA, but they must be monitored so information about their presence in drinking water can be used to develop limits

Table Key

ppm – One part per million (equivalent to 1 minute in 2 years)
ppb – One part per billion (equivalent to 1 minute in 2,000 years)
pCi/L– Picocuries per liter (measure of radioactivity)
NTU – Nephelometric Turbidity Unit (measure of very small particulate matter in drinking water)
ND – Not detected in the water

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 in some cases, radioactive material. It can also pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source (raw) 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 water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- ***Pesticides and herbicides***, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.
- ***Radioactive contaminants***, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In 2001 the Hampton Roads Planning District Commission conducted a study on all the raw water sources in the area, including Norfolk's, to determine the susceptibility of reservoirs, rivers, and wells to contamination. Norfolk's susceptibility has been rated high. Norfolk's water treatment process ensures you receive high quality treated tap water that meets all Federal Safe Drinking Water Act requirements. For a copy of this study contact Norfolk's Water Quality Lab at 757-441-5678.

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limitations for contaminants in bottled water which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small (trace) amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. **Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS, or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from:**

Environmental Protection Agency's Safe Drinking Water Hotline 800-426-4791

For questions regarding this report contact Norfolk's Water Quality Lab at 757-441-5678. For more information about decisions affecting your drinking water quality, you may attend Norfolk City Council meetings. For times and agendas, call the City Clerk's office at 757-664-4253.

Regulated Substances

Substance	Likely Source	Norfolk's Measured Range	Norfolk's Highest Level	Norfolk's Average Level	National MCL	National MCLG	Unit	Meets EPA Standards
Atrazine	Agricultural Runoff	ND – 0.06	0.06	ND	3	3	ppb	☑
Antimony	Agricultural Runoff	ND - 0.001	0.001	ND	0.006	0.006	ppm	☑
Arsenic	Agricultural Runoff	ND – 0.001	0.001	ND	0.010	0	ppm	☑
Barium	Erosion of natural deposits	ND – 0.10	.10	0.04	2	2	ppm	☑
Beryllium	Coal dust in runoff	ND – 0.001	0.001	ND	0.004	0.004	ppm	☑
Cadmium	Erosion of natural deposits	ND – 0.001	0.001	ND	0.005	0.005	ppm	☑
Chloramine	Drinking water disinfectant	1.6 – 4.3	3.4[1]	3.4	4[2]	4[3]	ppm	☑
Copper	Erosion of natural deposits	ND – 0.43	0.43	ND	1.3	1.3	ppm	☑
Fluoride	Added to prevent tooth decay	0.1 – 0.9	0.8[1]	0.6	4	4	ppm	☑
Gross Beta	Erosion of natural deposits	2 - 3	3	3	50[4]	0	pCi/L	☑
Nitrate as Nitrogen	Erosion of natural deposits, runoff	0.05 – 0.20	0.20	0.15	10	10	ppm	☑
Selenium	Coal dust in runoff	ND – 0.005	0.005	ND	0.050	0.050	ppm	☑
Thallium	Coal dust in runoff	ND – 0.001	0.001	ND	0.0020	0.0005	ppm	☑
Total Organic Carbon	Occurs naturally in environment	1.6 – 3.1	2.8[5]	2.2	TT	n/a	ppm	☑

[1] Highest monthly average for calendar year [2] MRDL [3] MRDLG
[4] EPA considers 50 pCi/L to be the level of concern for Beta particles
[5] Running Annual Average, calculated quarterly

Substance	Likely Source	Norfolk's Measured Range (Individual Results)	Norfolk's Average Level (Individual Results)	Norfolk's Highest Quarterly Locational Running Annual Average	Quarterly Running Annual Average: National MCL	Quarterly Running Annual Average: National MCLG	Unit	Meets EPA Standards
Haloacetic Acids (HAA5)	Byproduct of disinfection process	15 – 44	28	33	60	0	ppb	☑
Trihalomethanes (TTHM)	Byproduct of disinfection process	32 – 60	45	48	80	0	ppb	☑

Turbidity

Substance	Likely Source	Norfolk's Lowest Monthly % of Samples Meeting Limit	Norfolk's Highest Level (NTUs)	National MCL	National MCLG	Unit	Meets EPA Standards
Turbidity	Soil runoff	100%	0.30	<1.0 maximum, and ≤0.3 95% of the time	n/a	NTU	☑

Water Utilities are required by Waterworks Regulations to continuously monitor the turbidity levels of the water leaving each of the filters in the treatment plant, and to record this information every 15 minutes. On August 14, 2019, 1 of the 29 filters at Norfolk's treatment facilities gave an inaccurate reading for a period of 17 hours and 44 minutes. In such cases, facilities are required to manually analyze a turbidity sample from that filter every four hours until the meter is repaired. Since the erroneous readings were not immediately detected, the required monitoring was not conducted. There is no indication that water quality was affected. However, this is considered a violation of facility operations monitoring standards. To avoid a recurrence, additional alarm set points were added.

Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.

Lead and Copper in Customers' Homes *(data from 2017 triennial sampling)*

Norfolk has extremely low lead levels in its drinking water system. Because of this, the EPA has placed Norfolk on a reduced monitoring schedule. No lead was detected at the monitoring level during this monitoring period.[1]

Substance	Likely Source	Norfolk's Results[1]	Norfolk Homes Exceeding Action Level	National Action Level	Unit	National MCLG	Meets EPA Standards
Lead	Household plumbing corrosion	< 2.5	0	15	ppb	0	☑
Copper	Household plumbing corrosion	0.08	0	1.3	ppm	1.3	☑

[1] Lead and copper compliance is measured at the 90th percentile of all samples taken during the triennial sampling period.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Norfolk Department of Utilities is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (800-426-4791) or at http://www.epa.gov/safewater/lead.

Secondary and Unregulated Monitored Substances

Substance	Likely Source	Norfolk's Range	Norfolk's Highest Level	Norfolk's Average Level	National SMCL	Unit
Aluminum	Erosion of natural deposits; also from the use of chemicals at water treatment plant	ND – 0.03	0.03	0.02	0.20	ppm
Chloride	Natural in environment	12 - 19	19	16	250	ppm
Diethylphthalate	Agricultrual Runoff	ND – 6.4	6.4	ND	n/a	ppb
Foaming Agents	Natural in environment	5 – 15	15	11	500	ppb
Iron	Natural in environment	ND – 0.01	ND	ND	0.3	ppm
Molybdenum	Coal dust in runoff	ND – 0.009	0.009	ND	n/a	ppm
Nickel	Corrosion of plumbing material	ND – 0.005	0.005	ND	n/a	ppm
pH	Adjusted during the water treatment process	7.3 – 8.0	7.7[1]	7.7	6.5 – 8.5	pH units
Sodium	Natural in environment; also from the use of chemicals at water treatment plant	9 – 18	18	13	n/a[2]	ppm
Sulfate	Natural in environment; also from the use of chemicals at water treatment plant	22 – 27	27	25	250	ppm
Total Dissolved Solids	Natural in environment	79 - 95	95	89	500	ppm
Vanadium	Coal dust in runoff	ND – 0.004	ND	ND	n/a	ppm
Zinc	Natural in environment; also from the use of chemicals at water treatment plant	0.02 – 0.25	0.25	0.18	5	ppm

[1] Highest monthly average for calendar year
[2] For physician-prescribed "no salt diets," a limit of 20 ppm is suggested

Additional Information

Substance	Norfolk's Range	Norfolk's Average Level	Unit
Alkalinity	18 – 36	25	ppm
Ammonia	ND – 0.2	0.1	ppm
Hardness	30 – 66	42[1]	ppm
Silica	2 – 8	5	ppm

[1] Norfolk's water averages in the range between soft and slightly hard. This means there is enough hardness for soaps and detergents to work properly, yet not too much to interfere with most industrial applications. To find grains per gallon, divide ppm value by 17.

Unregulated Contaminant Monitoring Rule

EPA uses the Unregulated Contaminant Monitoring (UCM) program to collect data for contaminants suspected to be present in drinking water, but that do not have health-based standards set under the Safe Drinking Water Act (SDWA). Every five years EPA reviews the list of contaminants and selects no more than 30 for a nationwide drinking water survey to provide occurrence data for potential future regulation. The final sampling for UCMR4 occurred in November 2018.

Substance	Likely Source	Norfolk's Range	Norfolk's Highest	Norfolk's Average Level	National MCL	Unit
Total HAA6Br	Byproduct of disinfection process	5.8 – 10	10	7.3	n/a	ppb
Total HAA9	Byproduct of disinfection process	20.6 – 45	45	32.1	n/a	ppb
Substance	Likely Source	Norfolk's Range	Norfolk's Highest	Norfolk's Average Level	National SMCL	Unit
Manganese[1]	Natural in environment	ND – 0.004	0.004	0.001	0.050	ppm

For more information on the UCMR program, visit EPA online at: https://www.epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule.