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 safe 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 2012, Norfolk tap water met all federal requirements.

City of Norfolk
Department of Utilities
Contact Information:

400 Granby Street
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

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

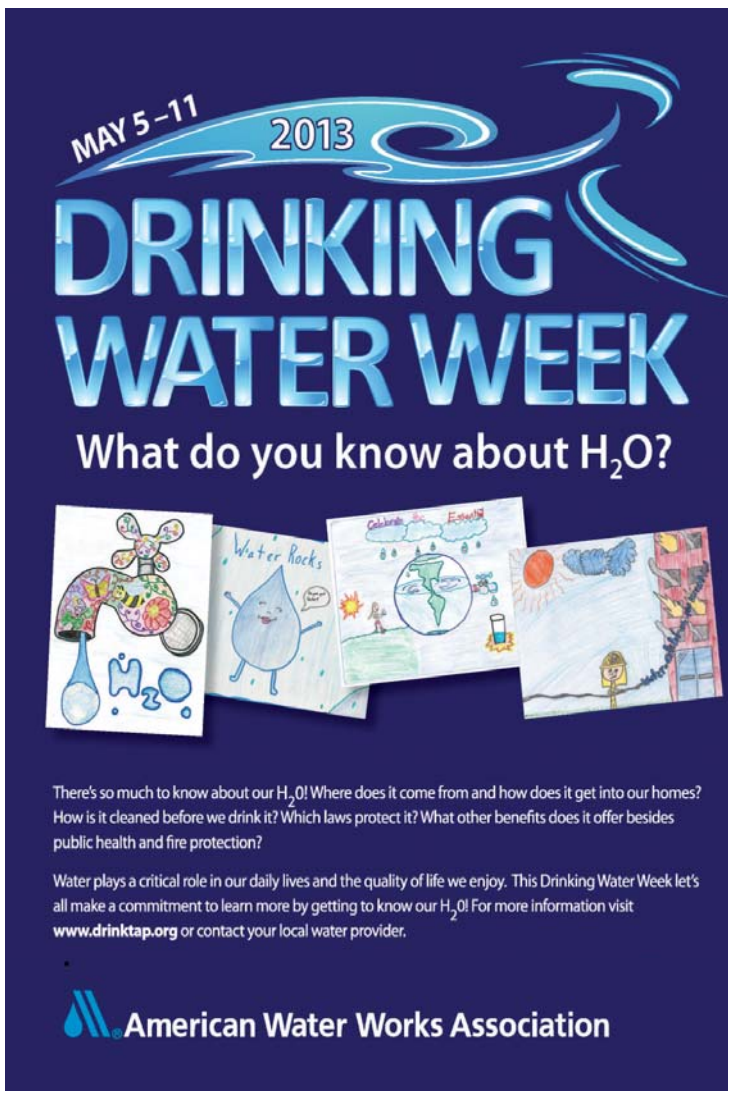
Department of Utilities

2013 Water Quality Report

Based on 2012 Testing Data

Top Quality Drinking Water
Top Quality Service
757-664-6700
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.



Norfolk Drinking Water

Celebrating 140 Years of Quality Service!

Norfolk Water Treatment Plant Then

Before the days of a water distribution system, Norfolk residents relied on shallow community wells and cisterns for their daily needs. As Norfolk grew, the demand for fresh water was increasing. Relief came with major changes that occurred in May 1873, when water from local lakes and streams began flowing from our Moores Bridges pump house to 55 neighborhood hydrants. It was heralded by reports in the Norfolk Virginian newspaper: "water is at last running through our streets from the hydrants and will soon be introduced to our houses…We have tasted some of the water from the hydrants and, considering that it has been running several miles through pipes, it may be called good."

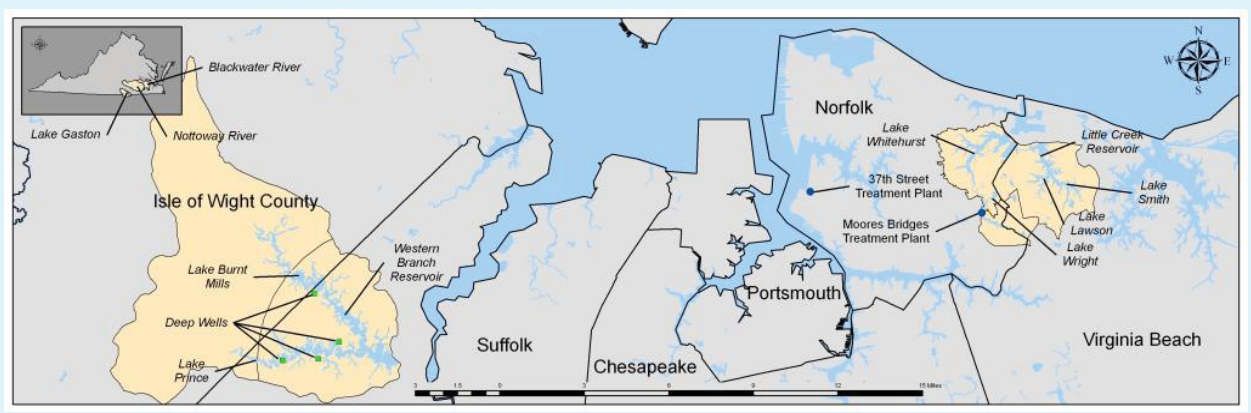
Norfolk Begins Filtering Drinking Water

As Norfolk's population grew to over 35,000 residents, concerns arose about water quality, and in 1890 the City began filtering and treating its drinking water, setting a precedent for providing top-quality water. Again, the newspaper reported "There is an abundance of water; it is getting cleaner and consequently purer every day; there is no sediment now; the filter plant is doing the service expected and guaranteed to do."

Norfolk's Water Treatment Plants Today

Today, Norfolk's drinking water continues to be heralded as among the best in the nation. And since those days of pumping directly from lakes and streams, our water treatment plants have evolved with new technology, enhanced processes and highly skilled employees to provide essential water that supports public health, enriches our lives and fuels economic growth.

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
- **MICROBIOLOGICAL CONTAMINANTS** are used as an indicator that other, potentially harmful bacteria may be present
- **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 they cannot be above the MCL
- **SMCL (Secondary Maximum Contaminant Levels)**, which 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).
> – Greater than.
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	MCL	MCLG	Unit	Meets EPA Standards
Barium	Erosion of natural deposits	0.02 - 0.04	0.04	0.03	2	2	ppm	✓
Chloramine	Drinking water disinfectant	2.5 - 3.6[1]	3.6[1]	3.0[1]	4[2]	4[3]	ppm	✓
Chlorine, Free	Drinking water disinfectant	0.9 - 4.0	2.5[1]	2.5[1]	4[2]	4[3]	ppm	✓
Fluoride	Added to prevent tooth decay	0.1 - 1.2	0.7[1]	0.7	4	4	ppm	✓
Gross Beta	Erosion of natural deposits	2.4 - 3.3	3.3	2.9	50[4]	0	pCi/L	✓
Nitrate as Nitrogen	Erosion of natural deposits, runoff	0.12 - 0.35	0.35	0.23	10	10	ppm	✓
Total Organic Carbon	Occurs naturally in environment	2.3 - 3.4[1]	3.4[1]	2.8[1]	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

Substance	Likely Source	Norfolk's Measured Range (Individual Results)	Norfolk's Average Level (Individual Results)	Norfolk's Highest Quarterly Running Annual Average	Quarterly Running Annual Average: National MCL	Quarterly Running Annual Average: National MCL	Unit	Meets EPA Standards
Haloacetic Acids (HAA5)	Byproduct of disinfection process	26 - 45	35	37	60	0	ppb	✓
Trihalomethanes (TTHM)	Byproduct of disinfection process	43 - 76	58	59	80	0	ppb	✓

Turbidity

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

Microbiological Contaminants

Substance	Likely Source	Norfolk Samples Indicating Bacteria Present	Norfolk's Highest Monthly % of Positive Samples	Norfolk's Months of Presence	National MCL	National MCLG	Meets EPA Standards
Total Coliform Bacteria	Natural in environment	4	1.3%	May, June, Oct	5% of samples per month positive for total coliform	0%	✓

Lead and Copper in Customers' Homes (data from 2011 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. In 2011, no lead was detected at the monitoring level.[1]

Substance	Likely Source	Norfolk's Results[1]	Norfolk Homes Exceeding Action Level	Action Level	Unit	MCLG	Meets EPA Standards
Lead	Household plumbing corrosion	< 2.5	0	15	ppb	0	✓
Copper	Household plumbing corrosion	0.1	0	1.3	ppm	1.3	✓

[1] Lead and copper compliance is measured at the 90th percentile of all samples taken during the 2011 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[1]	Unit
Aluminum	Erosion of natural deposits; also from the use of chemicals at water treatment plant	0.02 - 0.09	0.09	0.05	0.20	ppm
Boron	Erosion of natural deposits	ND - 0.1	0.1	ND	n/a	ppm
Chloride	Natural in environment	15- 25	25	19	250	ppm
Iron	Natural in environment	0.01 - 0.11	0.11	0.04	0.3	ppm
Manganese	Natural in environment	ND - 0.04	0.04	0.01	50	ppm
Metolachlor	Agricultural use	ND - 0.05	0.05	ND	n/a	ppm
Molybdenum	Corrosion of plumbing materials	ND - 0.003	0.003	ND	n/a	ppm
pH	Adjusted during the water treatment process	7.4 - 7.9[1]	7.9[1]	7.6[1]	6.5 - 8.5	pH units
Nickel	Corrosion of plumbing materials	ND - 0.003	0.003	0.002	n/a	ppm
Sodium	Natural in environment; also from the use of chemicals at water treatment plant	10 - 26	26	17	n/a[2]	ppm
Sulfate	Natural in environment; also from the use of chemicals at water treatment plant	25 - 35	35	29	250	ppm
Total Dissolved Solids	Natural in environment	89-123	123	103	500	ppm
Vanadium	Erosion of natural deposits	ND - 0.004	0.004	ND	n/a	ppm
Zinc	Natural in environment; also from the use of chemicals at water treatment plant	0.01 - 0.25	0.25	0.12	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

The substances listed below are not regulated by the EPA; however, the Water Quality Lab provides this information as a service to our customers.

Substance	Norfolk's Range	Norfolk's Average Level	Unit
Alkalinity	13 - 35	23	ppm
Ammonia	ND - 0.9	0.1	ppm
Hardness	25- 64	41	ppm
Silica	2 - 6	4	ppm