City of Norfolk 2006 Water Quality Report
(2005 data)

The Norfolk Department of Utilities enhances the quality of life in South Hampton Roads by providing high quality drinking water to more than 800,000 people every-day.

Norfolk Pure is the clean, refreshing, reliable drinking water you get each time you turn on your faucet. Nothing can be more valuable to you and your family.

Norfolk Pure: the value is in its quality!

We send this report to you every year, so that you will know about the high quality of your drinking water. For more frequent water quality information, visit our website at

www.norfolk.gov/utilities

or call our Water Quality lab at 441-5678 to speak to one of our water chemists.

This is our water quality "report card"

The water quality information listed in this report is based on tests conducted on treated water samples taken from 70 locations throughout Norfolk, between January 2005 and December 2005. Throughout the year, we tested for substances that are regulated, and even those not regulated, by the EPA. Every regulated substance detected in the water is listed here. Not listed are the hundreds of other compounds for which we tested that were not detected in the water at all.

A+

At our two state-of-the-art treatment plants the source water is filtered, treated, and disinfected to become your drinking water. At every step of the treatment process, and throughout the distribution system, the water is tested for quality.

From source to tap, our treatment and monitoring enhances the quality and turns our most precious natural resource into top quality drinking water.

All substances detected in Norfolk's drinking water are below allowed levels and meet the government standards.

Water quality information for special populations

All drinking water, including bottled water, may reasonably be expected to contain small amounts of some contaminants. While their presence does not indicate that the water poses a health risk, *some people may be more vulnerable to substances in drinking water than the general population. Immuno-compromised persons such as people undergoing chemotherapy, organ transplant patients, people with HIV/AIDS or other immune system disorders, some elderly and infants can be particularly at risk of infections. These people should seek drinking water advice from their health care providers.*

To ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) has developed regulations limiting the amount of certain contaminants in water provided by public water systems. The EPA and the Centers for Disease Control and Prevention guidelines on reducing the risk of infection by cryptosporidium and other microbial contaminants are available from the

EPA Safe Drinking Water Hotline: (800) 426 - 4701

We protect our reservoirs, where water treatment begins.

In 2001 the Hampton Roads Planning District Commission conducted a study on all the water sources in the area, including Norfolk's, to determine the susceptibility of reservoirs, rivers, and wells to contamination. The report determined that wells were fairly safe from contamination, and reservoirs, in general, have the greatest possibility of being contaminated by accidental discharge of waste materials. Our water treatment process, however, removes those contaminants.

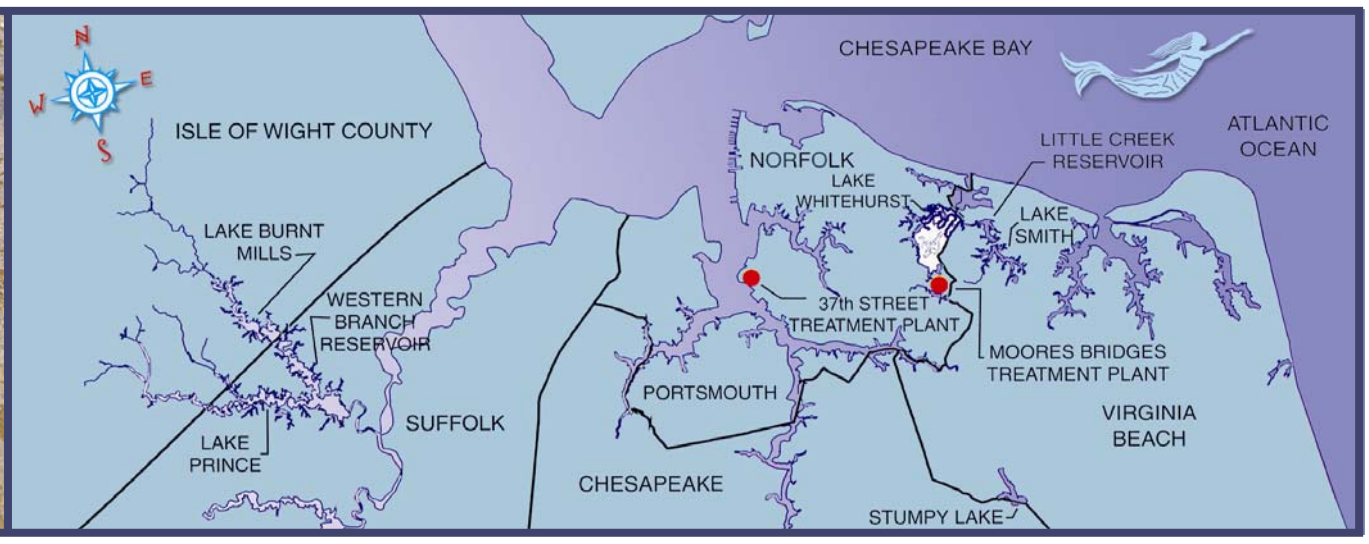
As water flows over the land on its way to our lakes, it dissolves naturally-occurring minerals and can pick up substances that result from the presence of animals or human activity. The substances that may be present in source water include:

- **Microbials**, such as viruses and bacteria, which may come from agriculture and wildlife in the watershed;
- **Inorganics,** such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil/gas production, mining, or farming;
- **Pesticides and herbicides**, which may come from a variety sources such as agriculture, urban stormwater runoff, and residential uses;
- **Organic chemicals**, including synthetic and volatile organic chemicals, which are by-products of industrial processes that can come from gas stations, urban stormwater runoff, and septic systems;
- **Cryptosporidium and Giardia,** which are microscopic one-celled organisms that get into lakes and streams through runoff of infected animal wastes;
- **Algae**, found in all lakes and streams, which can cause taste and odor in drinking water, but are not generally harmful.

We reduce and help control these substances by running thousands of tests per year and performing in-lake treatments to ensure the quality of our source water before we treat it.

Norfolk's drinking water comes from the following water sources:

- ► Western Branch Reservoir
- ► Lake Prince ► Lake Burnt Mills
- ► Lake Wright ► Lake Whitehurst
- ► Little Creek Reservoir
- ► Lake Smith ► Lake Lawson
- ► Lake Gaston ► Four deep wells
- ► Nottoway and Blackwater Rivers



The City of Norfolk water treatment plants had no violations of the EPA standards in 2005.

Table Definitions

- **SUBSTANCE**, name;
- **Nat'l MCL (maximum contaminant level)**, the highest level allowed by regulation;
- **Nat'l MCGL (maximum contaminant goal level)**, the ideal goals;
- **TT (treatment technique)**, the treatment technique used to reduce the level of the substance;
- **AL (action level),** the amount required to trigger treatment or other action;
- **LIKELY SOURCE**, where it could come from;
- **REGULATED SUBSTANCES** are regulated by the EPA and they cannot be above the MCL;
- **TURBIDITY** is a measure of the cloudiness of water, which is not necessarily harmful, but can interfere with the disinfection of drinking water;
- **MICROBIOLOGICAL CONTAMINANTS** are used as an indicator that other, potentially harmful bacteria may be present;
- **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.

Regulated Substances

Substance	Likely source	Norfolk's measured range	Norfolk's avg. level	Norfolk's highest level	Nat'l MCL	Nat'l MCLG	Unit	Meets EPA stds.
Barium	Erosion of natural deposits	30 - 37	33	37	2000	2000	ppb	☑
Chloramine	Drinking water disinfectant	2.4 - 3.1	2.8	3.1	4	4	ppm	☑
Fluoride	Added for the prevention of tooth decay	0.07 - 1.18	0.91	1.07*	4	4	ppm	☑
Gross Alpha Activity	Erosion of natural deposits	0.5 - 0.6	0.6	0.6	15	0	pCi/L	☑
Gross Beta Activity	Erosion of natural deposits	3.2 - 3.3	3.3	3.3	50**	n/a	pCi/L	☑
Haloacetic Acids (HAA5)	Drinking water disinfection by-product	13 - 48	26	28***	60	n/a	ppb	☑
Nitrate as Nitrogen	Erosion of natural deposits, runoff	0.14 - 0.21	0.16	0.21	10	10	ppm	☑
Radium 226/228	Erosion of natural deposits	0.4 - 0.8	0.6	0.8	5	0	pCi/L	☑
Total organic carbon	Occurs naturally in environment	1.20 - 2.72	1.92	2.72	TT	n/a	ppm	☑
Trihalomethanes (TTHM)	Drinking water disinfection by-product	16 - 77	39	41***	80	n/a	ppb	☑

* This number is the highest monthly value of compliance samples for the calendar year
** EPA considers 50 pCi/L to be the level of concern for Beta particles; Norfolk's highest level for the year is 3.3
*** This number is the highest quarterly running average of compliance samples for the calendar year

Turbidity

Substance	Likely source	Norfolk's lowest monthly % of samples meeting limit	Norfolk's highest level (NTUs)	Nat'l MCL	Nat'l MCLG	Unit	Meets EPA stds.
Turbidity	Soil runoff	99.54%	0.57	<95%	n/a	NTU	☑

Microbiological Contaminants

Substance	Likely source	Norfolk's samples indicating bacteria presence	Norfolk's highest monthly % of positive samples	Norfolk's months of sampling	Nat'l MCL	Nat'l MCLG	Meets EPA stds.
Total coliform bacteria	Natural in environment	3	0.7%	June, July, September	>5% of all samples positive for total coliform	0	☑

Lead and Copper in Customers' Homes *(data from 2005 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 2005, no lead was detected at the monitoring level.*

Copper is typically found in very low levels in homes and comes from the corrosion of copper plumbing and brass fixtures.

Substance	Likely source	Norfolk's results	Norfolk homes exceeding action level	Nat'l action level	Unit	Nat'l MCLG	Meets EPA stds.
Copper	Household plumbing corrosion	0.2*	0	1.3	ppm	1.3	☑

* Lead and copper compliance is measured at the 90th percentile of all samples taken

Unregulated Monitored Substances

Substance	Likely source	Norfolk's range	Norfolk's avg. level	Norfolk's highest level	Nat'l MCL	Unit
Aluminum	Erosion of natural deposits; also from addition of treatment chemicals at the water treatment plant	ND - 0.02	ND	0.02	n/a	ppm
Manganese	Natural in environment	ND - 16	ND	16	n/a	ppb
Sodium	Natural in environment; also from addition of treatment chemicals at the water treatment plant	7 - 27	15	27*	n/a	ppm
Sulfate	Natural in environment; also from addition of treatment chemicals at the water treatment plant	23 - 41	30	41	n/a	ppm

* For physician-prescribed "no salt diets," a limit of 20 ppm is suggested

Other Information

The substances listed in this table are not regulated by the EPA; however, the water quality laboratory receives frequent calls about them, so we provide this information as a service to our customers.

Substance	Norfolk's range	Norfolk's avg. level	EPA's suggested limit	Unit
Chloride	12 - 21	17	250	ppm
Hardness	31 - 65	46	n/a	ppm
pH (acidity)	6.5 - 8.5	7.2	6.5 - 8.5	pH units
Silica	2 - 9	5	n/a	ppm
Total Dissolved Solids	96 - 131	113	500	ppm