

# Drinking Water of the Highest Quality

We want you to know about your drinking water: where we get your water, how it is purified and what is in it. The federal Safe Drinking Water Act (SDWA) sets the standards and this annual water quality report is one of the provisions of those standards. Please take a few minutes to review this very important information and know that reliability, quality and affordability are at the heart of our mission in Public Utilities.

In order to produce the approximately 17 million gallons a day for about 62,562 accounts, more than 199,182 analyses throughout the treatment process are performed annually for treatment of drinking water. Water quality sampling in approximately 400 homes and businesses around the city tells the story of how well we are doing.

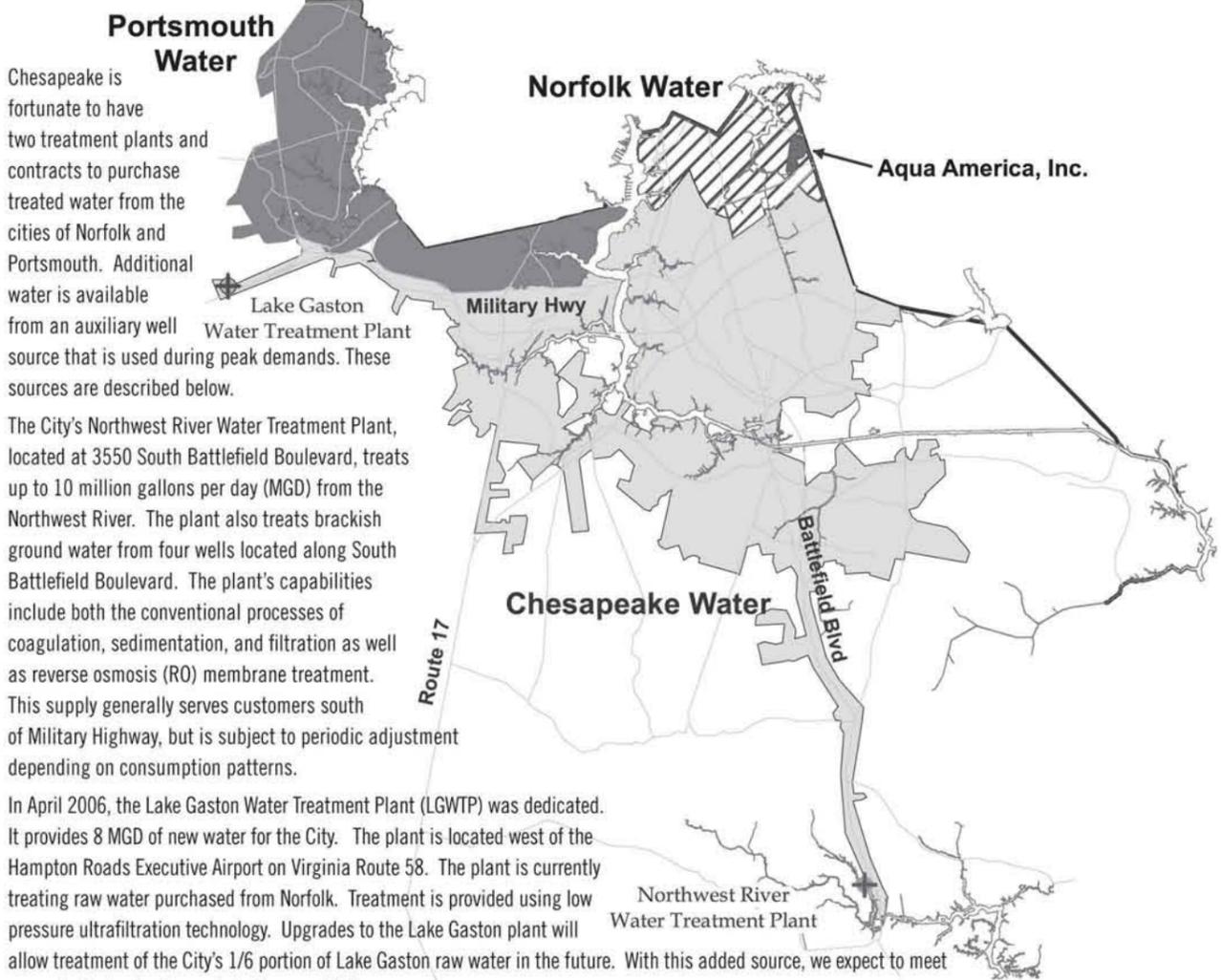
Association with world class organizations helps Public Utilities remain on the cutting edge of technology and committed to continuous improvement. We are members of the American Water Works Association (AWWA) and its Partnership for Safe Water (PSW), an association of water utilities and government entities committed to drinking water quality that is superior to that required by federal regulations. We provide financial support to the American Water Works Association Research Foundation (AWWARF), which funds and publishes the results of many projects every year aimed at improving management and treatment of water and wastewater facilities. We belong to the Association of Metropolitan Water Agencies (AMWA), whose membership is limited to utilities with at least 50,000 customer accounts. We are also members of the American Membrane Technology Association (AMTA), and the Water Environment Federation (WEF).

Locally, the City provides financial and technical support to the regional Hampton Roads Planning District Commission (HRPDC), which coordinates much research, public education and information programs. Some of these programs are the Hampton Roads Water Efficiency Team (HR WET), Hampton Roads Storm Water (HR Storm), Hampton Roads Clean (HR Clean), Hampton Roads Fats, Oils and Grease (HR FOG) the Groundwater Committee, the Water Supply Committee, and Help 2 Others (H2O). We are members of the Hampton Roads Utility and Heavy Contractors Association (HRUHCA) and the Virginia Cross-Connection Control Association (VCCCA)

The City of Chesapeake's "The City That Cares" motto is recognized by Public Utilities in meeting the needs of both external and internal customers. In cooperation with other City departments the Customer Contact Center began operations in July 2005. It provides an easier way for citizens to contact us with concerns and questions. Call 382-CITY (2489) or go online at [www.CityOfChesapeake.net](http://www.CityOfChesapeake.net) and click on the C3 logo. For routine turn-on or turn-off services, Public Utilities' Customer Service section stands ready at 382-6352.



# Reliability Comes from Many Sources



Chesapeake is fortunate to have two treatment plants and contracts to purchase treated water from the cities of Norfolk and Portsmouth. Additional water is available from an auxiliary well Water Treatment Plant source that is used during peak demands. These sources are described below.

The City's Northwest River Water Treatment Plant, located at 3550 South Battlefield Boulevard, treats up to 10 million gallons per day (MGD) from the Northwest River. The plant also treats brackish ground water from four wells located along South Battlefield Boulevard. The plant's capabilities include both the conventional processes of coagulation, sedimentation, and filtration as well as reverse osmosis (RO) membrane treatment. This supply generally serves customers south of Military Highway, but is subject to periodic adjustment depending on consumption patterns.

In April 2006, the Lake Gaston Water Treatment Plant (LGWTP) was dedicated. It provides 8 MGD of new water for the City. The plant is located west of the Hampton Roads Executive Airport on Virginia Route 58. The plant is currently treating raw water purchased from Norfolk. Treatment is provided using low pressure ultrafiltration technology. Upgrades to the Lake Gaston plant will allow treatment of the City's 1/6 portion of Lake Gaston raw water in the future. With this added source, we expect to meet our projected water demands to the year 2040.

Customers in the Indian River and South Norfolk areas, north of Military Highway, receive treated water from the city of Norfolk. Water customers in Western Branch and Deep Creek, north of Military Highway, receive treated water from the city of Portsmouth. These sources are of excellent quality and also meet or exceed the SDWA standards.

The Western Branch Auxiliary Source is located near the Hampton Roads Executive Airport. This source consists of ground water from Wells #1 and #3 and the Aquifer Storage and Recovery (ASR) well. These wells serve a dual purpose. Since fluoride occurs naturally in the native water; the wells are used to provide natural fluoridation to treated water from the LGWTP. In addition, the Auxiliary Source is used to meet peak demand when necessary.

A private water company, Aqua America, has a franchise area in the Norfolk Highlands neighborhood, which serves approximately 450 customers. The Aqua America customer service number is 1-800-537-4865.

## Spotlight on Saving Water and Money

Anytime you can make a connection between "green" activities like saving water and saving your greenbacks is a good day. Here are a few useful water saving tips to do just that:

- Repair dripping faucets and leaky toilets. Dripping faucets can waste about 2,000 gallons of water each year. Leaky toilets can waste as much as 200 gallons each day.
- Water your lawn only when the blades of grass don't snap back from your step.
- Water early in the day to prevent water loss from evaporation.
- Only run the dishwasher and clothes washer when they are fully loaded.
- Defrost frozen food in the refrigerator or in the microwave instead of running water over it.
- Use a broom, rather than a hose, to clean sidewalks and driveways.
- Cover your swimming pool. You'll cut the loss of water by evaporation by 90 percent.

For more conservation and "green" tips check out [www.hrgreen.org](http://www.hrgreen.org).

## EPA Regulatory Initiatives

### Arsenic

Arsenic is a naturally occurring mineral in soil, water, air, plants, and animals. Studies have linked long-term, chronic exposure to arsenic in drinking water to cancer. Compliance with the 10 ppb MCL was required in January, 2006. Water providers must include health information and arsenic concentrations in annual reports for water that exceed 5 ppb (one-half of the MCL). We are pleased to report that the levels of arsenic in all of Chesapeake's public water systems are well below the MCL.

### Ground Water Rule

The EPA has established this rule to provide increased protection against disease-causing viruses and bacteria in public water systems that use ground water sources. The EPA is particularly concerned about the ground water systems that are susceptible to fecal contamination because these systems may be at risk of supplying water that contains harmful pathogens. As a precautionary measure, those regulations are applied to all systems utilizing ground water.

Department of Public Utilities  
Post Office Box 15225  
Chesapeake, VA 23328



# 2010

## Water Quality Report

City of Chesapeake  
Department of Public Utilities

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# Want More Information?

If you have any questions about this report or need more information, please contact the Water Quality Laboratory at 757-382-3550. The following telephone numbers are provided for specific issues or questions:

**Customer Service (billing) 757-382-6352**  
**Laboratory (water quality) 757-382-3550**  
**Water Quality Hot Line 757-382-6360**

Visit our web site for online information at [www.CityOfChesapeake.net](http://www.CityOfChesapeake.net) then click on Public Utilities. Contact us by E-mail at [water@CityofChesapeake.net](mailto:water@CityofChesapeake.net).

Our Business Office is located at City Hall, second floor, 306 Cedar Road, Chesapeake, VA 23322. Normal business hours are 8:30 a.m. to 5:00 p.m., Monday through Friday. Address correspondence to Chesapeake Department of Public Utilities, P.O. Box 15225, Chesapeake, VA 23328.

Director of Public Utilities ..... J. K. Walski, P.E.  
 Assistant Director of Public Utilities ..... William J. Meyer, Jr., P.E.  
 Financial/Customer Service Administrator ..... Markiella A. Moore  
 Utility Engineer ..... S. Dean Perry, P.E.  
 Water Resources Management Administrator ..... A. Craig Maples  
 Water and Wastewater Administrator ..... Theodore F. Garty, P.E.

## Water Works Permit Identification Numbers

Northwest River System (including the Lake Gaston Water Treatment Plant) – PWSID 3550051  
 South Norfolk/Indian River System – PWSID 3550052  
 Western Branch System – PWSID 3550050

## Public Participation

Public Utilities is an enterprise department and is funded by customer fees, not taxes. However it is part of the City of Chesapeake government. Our legislative body is the Chesapeake City Council, which holds hearings on budget and other financial matters, approves contracts, and considers ordinances that create or amend local laws. Some of these matters affect the operation of Public Utilities. The City Council meets on the 2nd, 3rd and 4th Tuesdays of each month at 6:30 p.m. in the City Council Chambers, First Floor City Hall Building, at 306 Cedar Road. The meetings are televised live on WCTV Channel 48, the local government access cable channel, and on the City web site, [www.CityOfChesapeake.net](http://www.CityOfChesapeake.net). Agendas for upcoming meetings are available on the City's web site, or may be requested from the City Clerk's office at 757-382-6151.

## Information for Special Populations

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those with cancer and undergoing chemotherapy, those who have undergone an organ transplant, persons 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. The Environmental Protection Agency/Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Act Hotline at 1-800-426-4791.

## Information about Source Water

A detailed source water assessment was conducted in 2001 by the Hampton Roads Planning District Commission. The Northwest River, like other surface water sources, was determined to have a high susceptibility to contamination. Our deep wells, like other groundwater sources, were determined to be low in susceptibility to contamination using the criteria developed by the state in its approved Source Water Assessment Program. The report consists of maps showing the source water assessment area, an inventory of known land use activities of concern, and documentation of any known contamination within the last 5 years. The report is on file at the Public Utilities Department.

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, and can pick up substances resulting from the presence of animals or from human activity. Substances that may be present in source water include: (1) microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; (2) inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; (3) pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; (4) organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and may also originate from gas stations, urban stormwater runoff, and septic systems; (5) radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure the tap water is safe to drink, the EPA prescribes regulations that limit the amount of contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the similar protection for public health.

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 Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791 or accessing the EPA website at [www.epa.gov/safewater](http://www.epa.gov/safewater).

# 2010 Water Quality Table

The table contains the highest level and range, if available, detected by analyses performed in calendar year 2010, or the most recent testing in accordance with the regulations. An additional 180 compounds were tested for and not detected.

## Regulated Substances

Substance (Unit)	MCL	MCLG	NWR & LG	N	P	Likely Source	Meets EPA Stds.
			highest & range	highest & range	highest & range		
Antimony (ppb)	6	NA	0.11 ND – 0.11	NA	NA	Discharge from petroleum, refineries, retardants, ceramics, electronics & solders	Yes
Arsenic (ppb)3	10	NA	0.3 ND – 0.3	ND	ND	Erosion of natural deposits; runoff from orchards, glass & electronics production wastes	Yes
Barium (ppb)	2000	2000	27 ND – 27	40 27 – 40	26 NA	Erosion of natural deposits; discharge from metal refineries	Yes
Chlorine, Total (ppm) annual	MRDL 4	MRDLG 4	2.77 0.15 – 4.40	2.44 0.09 – 3.68	2.11 0.03 – 3.44	Water additive used to control microbes	Yes
Nitrate (ppm)	10	10	0.21 0.06 – 0.21	0.45 0.12 – 0.45	0.15 NA	Runoff from fertilizer use, leaching from septic tanks, sewage, erosion of natural deposits	Yes
Total Organic Carbon (TOC) (ppm) lowest annual avg.	TT (1.00 annual average removal ratio)	NA	1.38 1.01 – 1.75	2.5 1.9 – 3.4	3.18 1.92 – 3.18	Naturally present in environment	Yes
Fluoride (ppm) level detected	MCL/ MCLG 4	Entry Point #1 1.0 NA	Entry Point #2 0.9 NA	1.0 0.1 – 1.2	0.68 0.64 – 1.52	Naturally present in environment, water additive which promotes strong teeth	Yes

## Radionuclides

Substance (Unit)	MCL	MCLG	NWR & LG (2008)#		N (2010)	P (2010)	Likely Source	Meets EPA Stds.
			EP#1	EP#2				
Beta/alpha photon emitters (pCi/L)	50	Zero	13.0	2.7*	3.6*	2.7	Decay of natural and man-made deposits	Yes
Gross alpha particle (pCi/L)	15	Zero	8.3	ND	ND	NA	Erosion of natural deposits	Yes
Combined radium-226/228 (pCi/L) #next test will be in 2014	5	Zero	0.98	0.13 ND – 0.5	0.8 ND – 0.8	N/A	Erosion of natural deposits	Yes

1. EPA considers 50 pCi/L to be the level of concern for Beta particles  
 2. Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of developing cancer.

Substance (Unit)	MCL	MCLG	NWR	LG	N	P	Likely Source	Meets EPA Stds.
Turbidity - clarity (NTU)	Max TT, 1	NA	0.23 0.05 – 0.23	0.13 0.03 – 0.13	0.29 NA	0.10 0.06 – 1.0	Soil runoff	Yes
	Min TT, less than or equal to 0.3, greater than 95%	NA	97	100	100	100		

## Disinfection by-products

Substance (Unit)	MCL	MCLG	NWR & LG		N		P		Likely Source	Meets EPA Stds.
			Range at Sampling Sites**	Highest Running Average**	Range at Sampling Sites*	Highest Running Average**	Range at Sampling Sites*	Highest Running Average**		
THM – Total Trihalo-methanes (ppb)	80*	0	5 – 50	28	28 – 73	54	34 – 59	44	By-product of product of drinking water chlorination	Yes
HAA – Total Haloacetic Acids (ppb)	60*	0	2 – 28	20	19 – 48	39	21 – 37	29	By-product of product of drinking water chlorination	Yes

\* Range of individual readings. \*\* MCL is the highest running annual average allowed for the year.

## Microorganisms

Substance	MCL	MCLG	NWR & LG	N	P	Likely Source	Meets EPA Stds.
Total Coliform Bacteria	5% or less of monthly samples are positive	0	0	0	2% October 2010	Naturally present in the environment	Yes

## Lead and Copper (90th percentile)

Substance (Unit)	MCL	MCLG	NWR & LG 90th % Range	N 90th % Range (2008)	P 90th % Range (2009)	Likely Source	Meets EPA Stds.
Copper (ppm) [house tap]	AL=1.3	1.3	0.100 ND – 0.108	ND	0.179 ND – 0.23	Corrosion of household plumbing	Yes
Lead (ppb) [house tap]	AL=15	0	5 ND – 41	1.89 ND – 4.33	2.23 ND – 9.29	Corrosion of household plumbing	Yes
# of Samples above AL of 1.3 ppm for copper			0 out of 61	0 out of 30	0 out of 30		Yes
# of Samples above AL of 15 ppb for lead			1 out of 61	0 out of 30	0 out of 30		Yes

1. The Northwest River system completed the first reduced monitoring program in 2010. The next monitoring period will be in 2013 for 50 samples. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water occurs primarily from materials and components associated with service lines and home plumbing. The City of Chesapeake is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has not been used for several hours, you can minimize the potential for lead exposure by flushing your tap for 15 to 30 seconds until it becomes cold or reaches a steady temperature 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 or at [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).

2. System is on Reduced Monitoring: This means after meeting 3 consecutive years of lead and copper monitoring with results below the Action Level, EPA reduces sampling frequency to once every three years. The next testing for Norfolk will be in 2011 and Portsmouth will be in 2012.

## Additional Water Quality Parameters

These substances are not considered harmful, but some can affect the taste and odor of drinking water.

Substances (Unit)	Suggested Limit	NWR & LG highest level & range	N highest level & range	P highest level & range
Aluminum (ppm)	0.05 – 0.20	ND	0.08 0.01 – 0.08	NA
Ammonia (ppm)	None	0.78 0.54 – 0.78	NA	NA
Chloride (ppm)	250	133 48 – 133	47 10 – 47	16
Diethylphthalate (ppb)	NA	NA	2.1 ND – 2.1	NA
Hardness – total (ppm)	None	32 1 – 32	63 31 – 63	32 16 – 32
Manganese (ppm)	0.05	ND	0.02 ND – 0.02	NA
Nickel (ppb)	100	0.9 ND – 0.9	2 ND – 2	NA
pH (pH units)	6.5 – 8.5	9.9 7.0 – 9.9	9.5 6.7 – 9.5	7.9 7.0 – 7.9
Sodium (ppm)	250	93 77 – 93	24 9 – 24	NA
Sulfate (ppm)	250	10 ND – 10	31 23 – 31	44 NA
Zinc (ppm)	5	0.22 0.19 – 0.22	NA	NA

# Table Definitions

Substances in your drinking water are routinely reported to the Virginia Department of Health in accordance with Federal and State Regulations. The 2010 Water Quality Table shows the results of our monitoring for the period of January 1st to December 31st 2010 unless otherwise stated. In the table and elsewhere in this report you will find many terms and abbreviations you might not recognize. The following definitions are provided to help you better understand these terms:

**Additional Water Quality Parameters** – the compounds that may affect drinking water aesthetics such as taste, odor and color.

**AL (Action Level)** – the concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

**Detected Substances** – compounds detected in Chesapeake's drinking water during calendar year 2010. All amounts detected are below SDWA maximum allowable levels. The SDWA requires that the highest value detected and the range, if available, during the calendar year be provided in the report. An additional 180 compounds were tested for and not detected. A full list of these test results is available from the Chesapeake Water Quality Laboratory at 757-382-3550.

**HAAs (Haloacetic Acids)** – byproducts of disinfection.

**Likely Source** – the major sources of the compounds detected in finished water.

**LG (Lake Gaston Water Treatment Plant)** – the highest level and range, if available, of the compounds detected in the finished water processed at the Lake Gaston Water Treatment Plant (Entry Point #2), a combined surface water source, Western Branch Wells #1 and #3 and Aquifer Storage and Recovery (ASR) water sources, as needed, to meet heavy demand.

**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)** – a level of disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects.

**MRDLG (Maximum Residual Disinfectant Level Goal)** – the maximum level of a disinfectant added for water treatment at which no known or anticipated adverse health effects would occur, and which allows an adequate margin of safety. MRDLGs are nonenforceable health goals and do not reflect the benefit of the addition of the chemical for control of waterborne microbial contaminants.

**mrem/year** – millirems per year is a measure of radiation.

**N (Norfolk System Results)** – the highest level and range, if available, of the compounds detected in the finished water supplied by the City of Norfolk for Chesapeake customers.

**NA** – not available.

**ND** – not detected, lab analysis indicates that the contaminant is not present or was below the level of detection.

**NTU (Nephelometric Turbidity Unit)** – a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

**NWR (Northwest River System Results)** – the highest level and range, if available, of the compounds detected in the finished water processed at the Northwest River Water Treatment Plant (Entry Point #1), a combined surface and brackish well water source.

**P (Portsmouth System Results)** – the highest level and range, if available, of the compounds detected in the finished water supplied by the City of Portsmouth for Chesapeake customers.

**pCi/L (Picocuries per Liter)** – a measure of radioactivity.

**ppb (parts per billion)** – One part per billion is the equivalent of one minute in 2,000 years, or one penny in \$10,000,000.

**ppm (parts per million)** – one part per million is the equivalent of one minute in 2 years, or one penny in \$10,000.

**Plant Effluent** – water leaving the plant after going through the treatment process.

**TOC (Total Organic Carbon) TT** – this value represents the waterworks' ability to meet TOC percent removal requirements based on an annual average of the monthly percent removal ratios. TOC percent removal requirements are met when the value is greater than or equal to 1.00.

**TT (Treatment Technique)** – a required process intended to reduce the level of a contaminant in drinking water.

**THMs (Total Trihalomethanes)** – compounds formed during the disinfection of drinking water.