



# ANNUAL WATER QUALITY REPORT

Prince George County Central Water System - PWSID No. 3149700

Water testing performed in 2017

## Water Quality Meets Regulatory Mark

Prince George County's Department of Utilities is committed to providing its customers with a safe and reliable supply of high-quality drinking water. The quality of our drinking water is verified through regular testing using sophisticated equipment and advanced procedures. The annual "Consumer Confidence Report," required by the Safe Drinking Water Act (SDWA), explains where your water comes from, what our test results show about its quality, and contains other useful information concerning the water Utilities provides to its customers. This year, in an effort to be more environmentally and financially responsible and in response to new federal guidance, we are making the annual Consumer Confidence Report available in a digital format via our website rather than mailing it to each of our customers. Customers that want a paper copy can obtain one by calling Utilities at (804) 722-8706 and requesting that a copy be mailed to them or by stopping by our office during normal business hours and picking up a copy. Utilities can also be contacted with any questions or comments about this report or your service.



## Where Does My Water Come From?

Prince George County's Department of Utilities provides water to its customers from a variety of sources and locations. The Water System provides water from both surface water and groundwater sources.

The Central Water System is supplied by a surface water source, the Appomattox River via the Appomattox River Water Authority Water Treatment Plant. In addition, groundwater is pumped into six separate rural water systems. Our groundwater wells are deep-drilled wells that withdraw water from the Potomac Aquifer. Our six rural groundwater systems include Beechwood/Jordan on the James, Rivers Edge, Cedarwood, Prince George Woods, Food Lion Industrial, and Route 301.



## Meeting the Challenge

Prince George County Utilities provides service to approximately 3,500 water and wastewater customers.

Utilities is a self-supporting enterprise whereby the operations and capital expenditures are funded with revenues generated from customer user fees and one-time fees paid for capacity at the time of connection.

The Prince George County Water System supports approximately 3,000 water customers with an average daily use of approximately 840,000 gallons.

In addition to the water sources mentioned above the Prince George County Water System includes one water booster pumping station and six water storage tanks. The water transmission and distribution system is comprised of approximately 75 miles of waterline ranging in size from 2 to 16 inches in diameter.

**Prince George County: A Global Community Where Families Thrive & Businesses Prosper**



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## The Water Treatment Process

The treatment processes at the Appomattox River Water Authority Water Treatment Plants consist of four steps. First, coagulants are added causing small particles in the water to adhere to one another and grow in size. Next, flocculation causes these small particles to grow even larger, after which the water passes to a settling basin where the large, heavy particles settle to the bottom for removal. In the third step, water is filtered to remove fine particles not removed in the settling process. Finally, the water is disinfected with chloramines and fluoride is added to help protect teeth. The treatment of well water at the Cedarwood, Beechwood Manor, Jordan on the James, Food Lion Industrial and 301 systems includes disinfection through chlorination. The Jordan on the James system also uses greensand filtration for iron and manganese removal.

## Cryptosporidium in Drinking Water

Cryptosporidium is a microbial parasite found in surface water throughout the United States. Lake Chesdin on the Appomattox River, which is the source water for the Appomattox River Water Authority Water Treatment Plant, was analyzed monthly for the presence of cryptosporidium for a two-year period ending in February 2017. Test results showed the Lake Chesdin water source with a 12-month average of 0.039 Oocysts/L, which is well below the EPA's action level of 0.075 Oocysts/L. Cryptosporidium is very hard to kill but greatly reduced with treatment and disinfection. These processes are performed at the Appomattox River Water Treatment Facility. There is no indication that Cryptosporidium has ever been present in Prince George County Utilities' drinking water.

*The Environmental Protection Agency has finalized and implemented the Stage 2 Disinfectants & Disinfection Byproduct Rule (Stage 2 DBPR) & the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR): Stage 2 DBPR provides increased protection against the health effects associated with disinfection byproducts. LT2ESWTR further protects public health against Cryptosporidium and other microbial pathogens in drinking water.*

## Lead in Drinking Water

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. Public 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 at (800) 426-4791 or <http://www.epa.gov/safewater/lead>.

### National Primary Drinking Water Regulation Compliance

Please contact us at (804) 722-8706 with any questions you might have about the Prince George County Department of Utilities or about your water quality and visit our website at [http://www.princegeorgecountyva.gov/residents/property\\_and\\_taxes/engineering\\_and\\_utilities/index.php](http://www.princegeorgecountyva.gov/residents/property_and_taxes/engineering_and_utilities/index.php) for other useful information and conservation tips.

### Source Water Assessment

The U.S. Environmental Protection Agency required the Virginia Department of Health (VDH) to evaluate the susceptibility of a water system's source water becoming contaminated. Contamination sources and pathways were reviewed using maps, known and observed activities, water quality data, and information about the Appomattox River Water Authority. Based on the criteria used in the study, the VDH found that on a relative basis, Lake Chesdin is of high susceptibility to contamination. This does NOT mean that your drinking water is unsafe. The Appomattox River Water Authority successfully uses multiple protection barriers to assure a high quality water supply as described in the rest of this report. A copy of the source water assessment report is available by contacting the Appomattox River Water Authority at (804) 590-1145.



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## Additional Health Information

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 (800) 426-4791.

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. Contaminants 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 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, storm water runoff, and residential uses.
- ❖ Organic chemical contaminants, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.
- ❖ Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Some people may be more vulnerable to contaminants in drinking water than the general population. Immune-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 persons, 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* are available from the Safe Drinking Water Hotline (800) 426-4791.

## Detected Contaminants

The table located on the following page shows the results of our water quality analyses for the 2017 calendar year. The Environmental Protection Agency (EPA) requires Prince George County Utilities to routinely monitor a wide range of drinking water contaminants. Every regulated contaminant that was detected in the water, even in trace amounts, is listed here. Some contaminants are not tested annually since their levels generally do not change over time.

### Definitions (see also page 6 for expanded definitions)

AL = Action Level - the concentration of a contaminant which if exceeded, triggers treatment or other requirements which a water system owner must follow

MCL = Maximum Contaminant Level

MCLG = Maximum Contaminant Level Goal

MRDL = Maximum Residual Disinfectant Level

MRDLG = Maximum Residual Disinfectant Level Goal

MFL = Million Fibers per Liter

ppm = parts per million, or milligrams per liter (mg/l)

ppb = parts per billion, or micrograms per liter (µg/l)

ppt = parts per trillion or nanograms per liter (ng/l)

pCi/L = picocuries per liter (a measure of radioactivity)

ND = None Detected

N/A = Not Applicable

RR = Removal Ratio – A ratio between the percentage of total organic carbon actually removed to the percentage of total organic carbon required to be removed

TT = Treatment Technique – A required process intended to reduce the level of a contaminant in drinking water



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Prince George County Water System - Water Quality Table								
Regulated Contaminants								
Inorganic Contaminants								
Contaminant	Date Tested	Unit	Action Level (AL)	MCLG	90th Percentile	Individual Samples Above AL	Major Sources	Violation
Copper	2017	ppm	1.3	1.3	0.072 <sup>1</sup>	None <sup>2</sup>	Corrosion of household plumbing systems.	No
Lead	2017	ppb	15	0	<2 <sup>1</sup>	None <sup>2</sup>		No
Contaminant	Date Tested	Unit	MCL	MCLG	Detected	Range	Major Sources	
Chlorine	2017	ppm	MRDL = 4 As Cl <sub>2</sub>	MRDLG = 4 As Cl <sub>2</sub>	1.9 <sup>5</sup>	0.1-3.5 <sup>8</sup>	Water additive used to control microbes	No
Chlorine Dioxide	2017	ppm	MRDL = 0.8	MRDLG=0.8	ND	ND/0.12 <sup>8</sup>		No
Fluoride	2017	ppm	4	4	0.63	<0.10/0.89	Erosion of natural deposits; Water additive for strong teeth.	No
Nitrate+Nitrite	2017	ppm	10	10	0.15 <sup>6</sup>	0.15	Runoff from fertilizer use; Leaching from septic tanks; Erosion of natural deposits.	No
Chlorite	2017	ppm	1	0.8	0.16 <sup>5</sup>	<0.1-0.45	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits	No
Microbiological Contaminants								
Total Coliform Bacteria	2017	N/A	Presence of Coliform bacteria in >5% of monthly	0	0% <sup>7</sup>	N/A	Naturally present in the environment	No
Total Organic Carbon (TOC)	2017	N/A	TT=running annual avg	N/A	1.37 <sup>3</sup>	1.17/1.56	Naturally present in the environment	No
Turbidity	2017	NTU	TT=1 NTU MAX	0	0.143	0.033	Soil runoff	No
			TT, < or = 0.3 NTU (95% of readings)		100% <sup>4</sup>			
Radioactive Contaminants								
Combined Radium	10/2014	pCi/L	5	0	<0.6 <sup>6</sup>	N/A	Erosion of natural deposits.	No
Alpha Emitters	10/2014	pCi/L	15	0	<0.6 <sup>6</sup>	N/A	Erosion of natural deposits.	No
Beta Emitters	10/2014	pCi/L	50 <sub>9</sub>	0	4.9 <sup>6</sup>	N/A	Erosion of natural deposits.	No
Disinfection By-Products								
TTHMs (Total Trihalomethanes)	2017	ppb	80	N/A	39 <sup>5</sup>	(28-45) <sup>8</sup>	By-product from drinking water chlorination.	No
HAA5 (Haloacetic Acids)	2017	ppb	60	N/A	25 <sup>5</sup>	(ND-27) <sup>8</sup>	By-product from drinking water chlorination.	No

1 Copper and Lead – 90th percentile value of the latest round of sampling during June-Sept 2017.

2 Number of individual samples that exceeded the 15 ppb (Lead) or 1.3 ppm. (Copper).

3 The detected level is the lowest rolling annual average removal ratio. Range is minimum and maximum of individual samples collected. A detected TOC level greater than or equal to 1 indicates the water system complies with TOC removal requirements.

4 Turbidity is a measure of the cloudiness of water. The highest single measurement and the lowest monthly percentile of samples meeting the turbidity limits.

5 Amount detected is the highest rolling annual average.

6 The reported value is the highest measurement.

7 Total Coliform – Highest monthly percent of total coliform bacteria.

8 Range is the lowest and highest of all samples.

9 The MCL for beta particles is 4 millirem/year. EPA considers 50 pCi/L to be the level of concern.

## Protecting Your Water

Have you ever considered all of the places that you use water in your home? You may be surprised by how many diverse ways water can be used. The water entering your home is free of contamination; however, it is your responsibility to protect the water on your property or in your home. Drinking water systems may become contaminated through uncontrolled cross-connections or backflows.

### What is a Cross-Connection?

A “cross-connection” is any connection between your drinking water and a source of contamination. A cross-connection exists when there is a physical connection between drinking water piping and another system. An example is a lawn irrigation system or fire sprinkler system connected to both the public water system and another water source. It is important to eliminate cross-connections to prevent contamination of the water system.

### What is a Backflow?

A “backflow” occurs when water in a hose or a water pipe goes backward. This is caused by a change in water pressure. When a backflow occurs, contaminants can end up in your home piping. For example, if while washing your car there is a significant water pressure drop while the hose is submerged in a bucket of soapy water, the water could flow backwards if a proper backflow preventer is not installed. Care should be taken to make sure proper backflow preventers are installed on all fixtures.



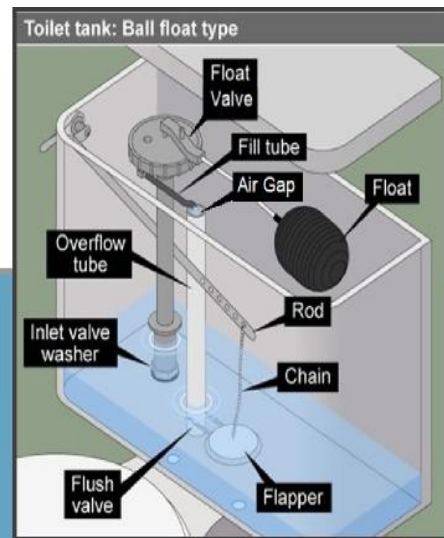
Vacuum Breaker

### Where can Backflow occur?

- ❖ Irrigation systems: Irrigation systems make watering your lawn or garden much easier, but if not properly constructed, a backflow can occur. Backflow protection should be provided on all irrigation systems with a reduced pressure zone device (RPZ), or a pressure type anti-siphon vacuum breaker (PVB) which must be inspected and **serviced annually**.
- ❖ Hose Bibs: The ordinary garden hose is one of the most common ways to contaminate the water supply. This can happen when one end of the hose is attached to an outdoor faucet, and the other end is connected to an aspirator type bottle or submerged in a liquid. Insecticides or other chemicals can be siphoned back into the drinking water supply. You can easily prevent the possibility of this type of contamination by installing a hose bib vacuum breaker. This is a small, inexpensive device that simply attaches to a threaded hose bib. Vacuum breakers are required to be installed on all hose bibs.
- ❖ Sinks, Tubs, Tanks: The faucets in your bathroom or kitchen must be located so that the end of the faucet is above the overflow level of the sink or tub. Fill lines to water troughs, pools and tanks must also be physically separated or “air-gapped”. If there is no air-gap, the contents can be “back siphoned” into the water line.
- ❖ Toilets: Toilets need water to flush the waste materials into the sewer system. The water that flushes the toilet enters into the toilet tank from the small hose or pipe connected to the bottom of the tank. It is essential that that float-valve inside of the tank is the correct type so that the contents of the tank don’t get back into the drinking water in your home.

## IMPORTANT NOTICE

Cross-connections and backflows are most commonly found in irrigation systems and can create health hazards. The safety of Prince George County's water system is at risk when backflow prevention devices are not installed or maintained properly. These devices on irrigation systems must be inspected and serviced annually. An excellent time to have backflow prevention devices inspected and serviced is in the fall when systems are winterized. When returning the system to service in the spring, care should be taken not to damage the device. Please be a good neighbor and join Prince George County Utilities in keeping our drinking water system safe. For more information, please contact customer service at (804) 722-8706 or visit us on the web at [http://www.princegeorgeva.org/residents/property\\_and\\_taxes/engineering\\_and\\_utilities/index.php](http://www.princegeorgeva.org/residents/property_and_taxes/engineering_and_utilities/index.php).



## Definitions

- **Maximum Contaminant Level (MCL):** 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.
- **Maximum Contaminant Level Goal (MCLG):** 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.
- **Treatment Technique (TT):** A required process intended to reduce the level of a contaminant in drinking water.
- **Action Level (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **Maximum Residual Disinfectant Level (MRDL):** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **Maximum Residual Disinfectant Level Goal (MRDLG):** 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.



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