

# What were the results from last year's testing?

CONTAMINANTS DETECTED	MCLG	MCL	CITY WATER RESULTS	# OF SAMPLES > AL	RANGE OF DETECTIONS	VIOLATION?	TYPICAL SOURCE OF CONTAMINANT
<b>MICROBIOLOGICAL COMPOUNDS</b>							
Total Coliform Bacteria <sup>1</sup>	0	presence of coliform in 5% of samples per month	1.8% <sup>2</sup>	n/a	0 - 1.8% per month	No <sup>2</sup>	Naturally present in the environment
Fecal Coliform Bacteria (as <i>E. coli</i> ) <sup>1</sup>	0	<sup>3</sup> See Footnote	0	n/a	0 per month	No <sup>2</sup>	Human and animal fecal waste
Turbidity (Max single measurement)	n/a	1 <sup>4</sup>	0.27 NTU	n/a	n/a	No	soil runoff
Turbidity (% of samples below 0.3 NTU)	n/a	95%	100%	n/a	100%	No	soil runoff
<b>RADIOACTIVE CONTAMINANTS</b>							
Combined Radium <sup>5</sup>	0 pCi/L	5 pCi/L	0.6 pCi/L	n/a	ND - 0.6 pCi/L	No	Erosion of natural deposits
Gross Alpha <sup>5</sup>	0 pCi/L	15 pCi/L	0.4 pCi/L	n/a	ND - 0.4 pCi/L	No	Decay of natural deposits
Gross Beta <sup>5,6</sup>	0 pCi/L	50 pCi/L	4.4 pCi/L	n/a	3.1 - 4.4 pCi/L	No	Erosion of natural deposits
<b>INORGANIC COMPOUNDS</b>							
Copper <sup>7</sup>	1.3 ppm	1.3 ppm (AL)	0.068 ppm <sup>8</sup>	0	ND - 0.088 ppm	No	Corrosion of household plumbing systems, erosion of natural deposits
Lead <sup>7</sup>	0 ppb	15 ppb (AL)	< 2.00 ppb <sup>8</sup>	0	ND - 6.01 ppb	No	Corrosion of household plumbing systems, erosion of natural deposits
Fluoride <sup>9</sup>	4 ppm	4 ppm	0.62 ppm	n/a	0.48-0.85 ppm	No	Water additive that promotes strong teeth
Barium	2 ppm	2 ppm	0.015 ppm	n/a	ND - 0.015 ppm	No	Discharge from drilling wastes, discharge from metal refineries, erosion of natural deposits
Nitrate	10 ppm	10 ppm	0.16 ppm	n/a	ND - 0.16 ppm	No	Runoff from fertilizer use, leaching from septic tanks, sewage
<b>DISINFECTANTS AND DISINFECTION BY-PRODUCTS</b>							
(TTHMs) Total Trihalomethanes	n/a	80 ppb	40 ppb <sup>10</sup>	n/a	13 - 74 ppb	No	Byproduct from disinfection
Haloacetic Acid (HAAs)	n/a	60 ppb	47 ppb <sup>10</sup>	n/a	25 - 68 ppb	No	Byproduct from disinfection
Free Residual Chlorine	MRDL = 4 ppm	MRDLG = 4 ppm	1.11 ppm	n/a	0.10 - 1.89 ppm	No	Water additive to control microbes (disinfectant)

<sup>1</sup> Unit of measurement for total coliform bacteria and *E. coli* is the presence or absence of bacteria in a 100 mL sample.  
<sup>2</sup> One sample taken in August 22nd, 2016 (out of total 55 monthly samples for the City) was positive for Total Coliform bacteria. The sample was immediately resampled, along with a check sample from within five service connections upstream and downstream of the initial sample site (3 samples total). All resamples and upstream/downstream samples came back negative for bacteria, indicating the most likely reason for this positive result was laboratory or sampling error. This does not constitute a violation of the MCL.  
<sup>3</sup> *E. coli* MCL: A routine sample and a repeat sample are total coliform positive, and at least one is also *E. coli* positive.  
<sup>4</sup> The MCL for turbidity is for no single measurement to exceed 1 NTU, and for 95% of all measurements to be below 0.3 NTU.  
<sup>5</sup> Last Sampled in 2011, and sampling not required annually.  
<sup>6</sup> EPA considers 50 pCi/L to be the level of concern for beta particles.  
<sup>7</sup> Sampled in August and September 2016 from select, relatively high-risk residences.  
<sup>8</sup> The value reported is the 90th percentile of all data (34 samples) collected.  
<sup>9</sup> Compliance results for fluoride are from the annual inorganics sample. Range of results includes monthly split sample lab results.  
<sup>10</sup> TTHM and HAA results are averaged over four quarters at each sampling location to determine compliance with the MCL.

## What are these contaminants and their potential health risks?

**TURBIDITY** is a measure of the clarity of the water and has no health effects. However, turbidity can interfere with disinfection and may provide a medium for microbial growth. Elevated turbidity may indicate the presence of disease-causing organisms.

**TOTAL COLIFORM AND E. COLI BACTERIA.** Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. *E. coli* in particular may indicate the presence of human or animal waste. Microbes in these wastes can cause short-term effects such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special healthy risk for infants, young children, and people with severely compromised immune systems.

**COMBINED RADIUM, AND ALPHA AND BETA PARTICLES** are naturally occurring. Certain minerals are radioactive and may emit forms of radiation. When these minerals are eroded into the source water, testing may indicate their presence. Some people who drink water containing radium, or alpha or beta emitters, over many years may have an increased risk of getting cancer.

**BARIUM** is a metal that is naturally-occurring in rock and the soil. Some people who drink water containing barium in excess of the MCL over many years may experience an increase in their blood pressure. a metal that is naturally-occurring in rock and the soil. Some people who drink water containing barium in excess of the MCL over many years may experience an increase in their blood pressure.

**FLUORIDE** is added at the water treatment plant to promote strong teeth. Some people who drink water containing fluoride in excess of the MCL over many years could develop bone disease with pain and tenderness of the bones.

The 1994 Federal **LEAD** and **COPPER** Rule mandates a household testing program for these substances. The values reported above are from this household-testing program. No lead or copper was found in the drinking water at the WTPs.

• **LEAD.** Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children should show slight deficits in attention span and learning abilities. Adults over many years could possibly develop kidney problems or high blood pressure.

• **COPPER.** Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short period of time could experience gastrointestinal distress. People with Wilson's disease should consult their doctor.

**NITRATE** is an inorganic form of nitrogen found primarily in fertilizers, sewage, and runoff from natural deposits. Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and "blue baby" syndrome.

**TRICHALOMETHANES AND HALOACETIC ACIDS** are formed by the interaction of certain chlorine-based disinfectants with naturally occurring organic matter. Disinfectants are added to inactivate disease-causing pathogens. Organic matter is naturally present from leaves and decaying plants in the source water. Some people who drink water containing these compounds in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.

**CHLORINE** is a water additive used to control disease-causing microbes. Some people who use water containing chlorine well in excess of the MRDL could experience irritation effects to their eyes, skin, nose, as well as stomach discomfort.

## Additional Information for Lead

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. RWSA and the City are responsible for providing high quality drinking water by using corrosion inhibitors added to the water to coat the pipes and having only lead-free pipes installed to carry drinking water; however, we cannot control the variety of materials used in plumbing components of homes and businesses. 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. Also, use cold water and not hot water for drinking and cooking. If you are concerned about lead in your water, you may wish to have your water tested. The periodic lead and copper testing at select, high-risk households took place in the summer of 2016 (see chart data). 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>.



The table in this report shows which contaminants were detected in your drinking water. Before trying to read and understand the table, there are a few terms which need to be defined.

**MAXIMUM CONTAMINANT LEVEL GOAL (MCLG):** The level of a contaminant in drinking water below which there is no known or expected health risk. MCLGs allow for a margin of safety.

**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 possible using the best available treatment technology.

**MAXIMUM RESIDUAL DISINFECTANT LEVEL (MRDL):** The highest level of a disinfectant allowed in drinking water. There is growing 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.

**PPB:** Parts per billion, or micrograms per liter (µg/L). One part substance per billion parts of solution.

**PPM:** Parts per million, or milligrams per liter (mg/L). One part substance per million parts of solution.

**pCi/L:** PicoCuries per liter. This is a measure of radioactivity.

**N/A:** Not applicable.

**NEPHELOMETRIC TURBIDITY UNIT (NTU):** Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

**ACTION LEVEL (AL):** The concentration of a contaminant, which, if exceeded, triggers treatment or other actions by the water provider.

**TREATMENT TECHNIQUE (TT):** A required process intended to reduce the level of a contaminant in drinking water.

**NON DETECT (ND):** Test result below the method detection limit.

## What do all these numbers mean?

**Most importantly, this information shows that your drinking water met and exceeded all regulatory requirements during 2016.** We are fortunate to have reliable sources for our drinking water needs and well-operated treatment facilities. Additional information is provided below that will give you more details on each contaminant detected in your drinking water. For information on the health risks associated with long term exposure to these contaminants at levels in excess of the MCL, please visit [www.charlottesville.org/waterquality](http://www.charlottesville.org/waterquality).

## CRYPTOSPORIDIUM IN DRINKING WATER

*Cryptosporidium* is a microbial pathogen found in surface waters throughout the United States. Ingestion of *Cryptosporidium* may cause an abdominal infection characterized by nausea, diarrhea, and abdominal cramps that healthy individuals can overcome within a few weeks. However immuno-compromised people are at risk of developing a potentially life-threatening illness. In November 2003, RWSA began a two year study to determine the occurrence of this parasite in the raw sources of each of the three Urban Area WTPs. Results of that monitoring do reveal its occasional presence in very small concentrations (< 0.05 organisms per liter) in our reservoirs. Although filtration removes *Cryptosporidium*, the most commonly used filtration methods cannot guarantee 100% removal. The RWSA makes every effort to optimize the filtration processes at all of the WTPs to ensure the greatest degree of *Cryptosporidium* removal. Based on the results of this study, RWSA have been placed in the lowest risk category for exposure to *Cryptosporidium*. A second round of *Cryptosporidium* sampling is being conducted monthly for two years in 2015 - 2017; to date no *Cryptosporidium* has been detected in any of the source waters as part of that monitoring program.

## What is Water Hardness?

If substantial amounts of either calcium or magnesium (both nontoxic minerals) are present in drinking water, the water is said to be hard. The hardness of finished water in the City water system averages 25.5 mg/L which is equivalent to 1.49 grains per gallon. This is mainly calcium. The water may be described as soft to slightly hard.

## Fluoride

Fluoridated water is highly supported by the Virginia Department of Health, the American Medical Association, American Dental Association, Centers for Disease Control (CDC), and the majority of health professionals in the U.S. Please visit [www.cdc.gov/fluoridation](http://www.cdc.gov/fluoridation) if you would like further information on the health impacts of fluoridated water.

## Revised Water Treatment Process Coming Soon

RWSA was granted an extension by the VDH to the new, stricter requirements of the Stage 2 Disinfectant Byproducts Rule (TTHM/HAA5) regulations while improvements can be completed at the RWSA WTPs to incorporate an advanced treatment process that employs granular activated carbon (GAC). **RWSA will complete these upgrades at all of their plants in 2017.** Until then, RWSA is adding powdered activated carbon (PAC) at each WTP as one means of helping to meet the new water quality standards and to provide the best water possible. In addition to lowering the levels of disinfection by-products, the use of GAC should improve the taste and odor of your water.

## What if I am immuno-compromised?

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 healthcare providers. USEPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from EPA's Safe Drinking Water Hotline (800-426-4791) or visit their website ([www.epa.gov/safewater](http://www.epa.gov/safewater)).

# Continuing our Commitment

Rivanna Water and Sewer Authority (RWSA), and the City of Charlottesville (City), in partnership with the Virginia Department of Health (VDH), work to ensure that you receive a safe and reliable supply of drinking water. As part of that ongoing commitment, we are providing you with this report on the quality of your drinking water. While this annual report is currently required by the United States Environmental Protection Agency (US EPA), we wish to use this opportunity to assure you that **the quality of your drinking water meets and exceeds all regulatory requirements** and your expectations for safety, reliability and quality. RWSA collects, stores, and treats the water; then the City buys the treated water from RWSA and distributes it to you through their distribution system.



# Where does my water come from?

RWSA operates two water treatment plants (WTP) that provide water to the City of Charlottesville. The plants are the South Rivanna WTP and the Observatory WTP. Each plant employs both chemical and physical treatment processes before releasing water into the distribution system. Sodium hypochlorite is used at both South Rivanna and Observatory for disinfection.

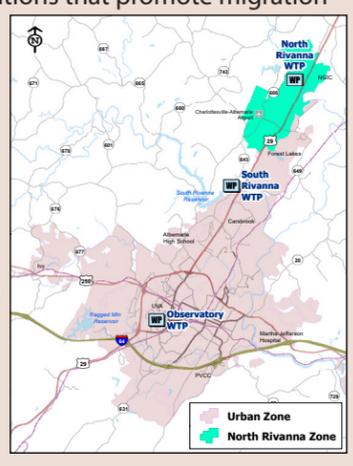


Fluoride is added at all treatment plants to promote good dental health. The water treatment plant that provides water to your tap may vary from day to day depending on the daily production of water at each plant, the level of storage in the system and your location.

The North Rivanna WTP draws water from the North Fork Rivanna River and serves customers located in Northern Albemarle County. The South Rivanna WTP draws water from the South Fork Rivanna Reservoir.

The Observatory WTP draws water from both the Ragged Mountain and Sugar Hollow Reservoirs.

Under a program developed by VDH, a source water assessment for the Albemarle/Charlottesville Urban Area was completed by the VDH on March 25 and September 4, 2002. This assessment determined that the raw water sources named above may be susceptible to contamination. All surface water sources are exposed to a wide array of contaminants at varying concentrations and changing hydrologic, hydraulic and atmospheric conditions that promote migration of contaminants from land use activities of concern within the assessment area. More specific information may be obtained by contacting the water system representative listed at the end of this insert.



# What standards does my water have to meet?

The information in this report has been collected and reported in accordance with the drinking water standards established by the USEPA and the VDH. In the year 2016, RWSA collected and tested hundreds of hourly, daily, weekly, monthly, quarterly, and annual samples to ensure the quality of your water. Sample sources included the rivers and reservoirs from which the WTPs draw water, the WTPs themselves, and numerous locations in the City's distribution system.

The sources of drinking water may 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, as well as substances resulting from the presence of animals or human activity. 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 EPA's Safe Drinking Water Hotline (800-426-4791) or visit their website (www.epa.gov/safewater).

For the Spanish-speaking members of our community: Este nforme contiene informacion muy importante. Traduzcalo o hable con un amigo quien lo entienda bien.



City of Charlottesville  
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Water testing performed in 2016

# Annual Water Quality Report 2017

## How do I get more information?

The City of Charlottesville and the Rivanna Water & Sewer Authority are committed to providing you, the customer, with this information because informed customers are our best allies. We hope that this report was easy to read and easy to understand. We encourage you to contact us and let us know what you think about your Consumer Confidence Report. Suggestions on how to make your CCR better are welcomed. For more information about your water and for any comments, you can contact Lauren Hildebrand at (434) 970-3800 or at hildebrand@charlottesville.org.

Check out the Charlottesville Water Conservation website for more information on saving water and landscaping, and more!  
www.charlottesville.org/waterconservation

Utilize City Rebates & Resources  
\$100 WaterSense Toilet Rebate  
\$30 Rain Barrel Rebate  
Free Water Conservation Kits

Be Water Smart!

- CHECK** for leaks from faucets & sprinklers
- TWIST** to tighten hose & pipe connections
- REPLACE** fixtures as necessary with WaterSense labeled products

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**Rivanna Water & Sewer Authority Board of Directors** holds a monthly meeting in which there is a public comment period. These meetings are held every fourth Tuesday at 2:15pm in the Rivanna Water & Sewer Authority's Administration Building conference room, 2nd floor, 695 Moores Creek Lane, Charlottesville. Please feel free to attend. Contact (434) 977-2970 for directions or the date of the next meeting.

Keep our community safe and clean. Prevent sewer blockages and overflows by keeping fats, oils and grease (FOG) out of drains. To learn how to properly dispose of FOG, and for more information, visit: [www.charlottesville.org/fog](http://www.charlottesville.org/fog)

## Avoid the Clog... Keep out the FOG

State Health Officials have advised us of an inadvertent failure to perform required monitoring in accordance with the Virginia Waterworks Regulations. We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During the February 2017 sampling, we did not complete all monitoring sites for coliform bacteria. Therefore, we cannot be sure of the quality of the water at that time. Fifty (50) samples were required for analysis and forty-eight (48) were analyzed. State Health Officials believe that there is little need for the concern about the safety of your water because past records show that our waterworks has had no documented problems with bacteriological contamination; however, routine sampling and examination are required to determine the quality of the water delivered to our customers.

**There is nothing you need to do at this time as the situation has been resolved.** We have since been collecting and have analyzed the required number of bacteriological samples. For more information, please contact Ms. Lauren Hildebrand, Director of Utilities, at 434-970-3800. (Please share this information with all other people who drink this water, especially those who may not have received this notice directly for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or by mail.

NOTICE TO CONSUMERS OF THE CITY OF CHARLOTTESVILLE WATER UTILITY