



# City of Raleigh 2021 Consumer Confidence Report

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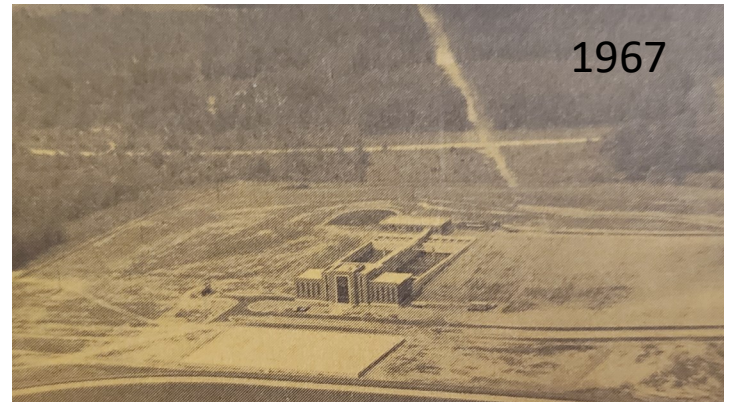


We are excited to provide the 2021 Consumer Confidence Report, which is a summary of last year's drinking water quality. Included are details about your sources of water, what it contains, and how it compares to standards set by regulatory agencies. Our goal is to provide you with a safe and dependable supply of drinking water and we strive to continually improve our water treatment and delivery processes. We are committed to ensuring the high quality of your drinking water and to providing you with this information. If you would like to learn more about this report or request a paper copy, please contact Edward Buchan at [edward.buchan@raleighnc.gov](mailto:edward.buchan@raleighnc.gov) or (919) 996-3471.



## Investing In Our Water Future

The E.M. Johnson Water Treatment Plant is our primary treatment facility and provides approximately 80% of the drinking water our customers require everyday. Originally constructed in 1967, the E.M. Johnson plant could treat up to 36 million gallons per day, and was a critical factor in accommodating Raleigh's tremendous economic growth since that time. This is why we are currently upgrading treatment technology and expanding the treatment capacity to 120 million gallons per day. Through these infrastructure investments, we will ensure we can meet our water needs now and in the coming decades.



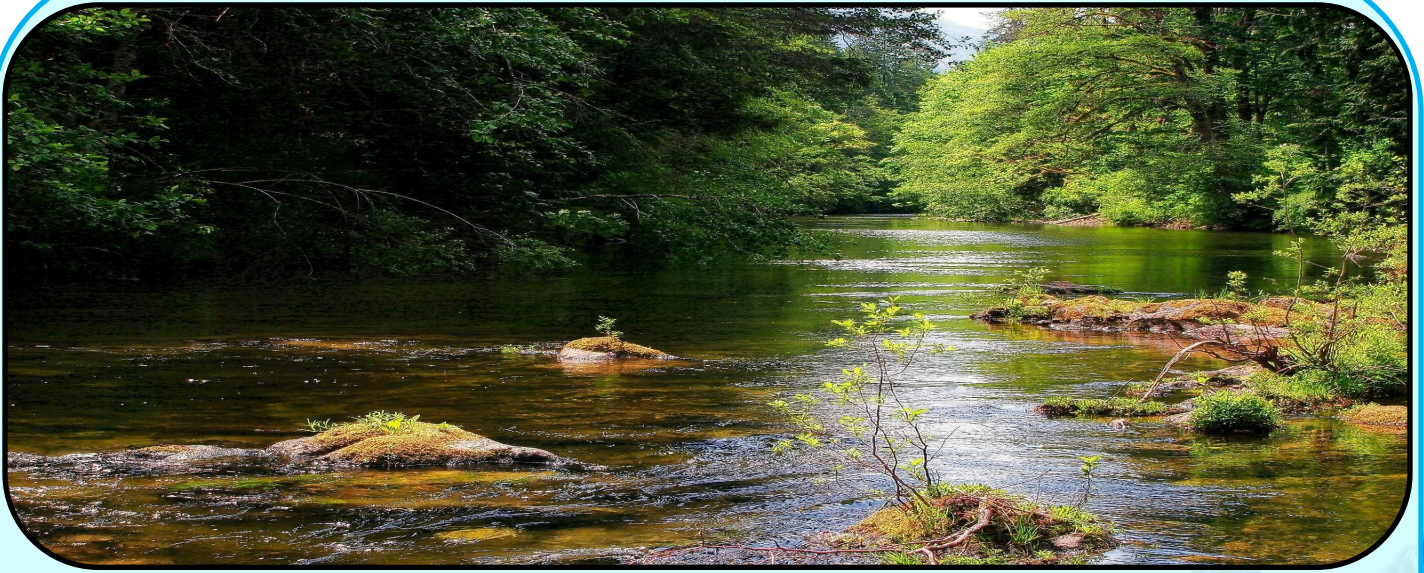
## Going Above and Beyond



We are proud to announce that our Dempsey Benton Water Treatment Plant in Garner, NC was recently recognized with the American Water Works Association's Presidents Award for outstanding filter performance. This award means your water is treated to a level that far exceeds Federal and State requirements. It also represents years of dedication and effort on the part of our treatment plant staff to ensure we provide our customers with the best water we can. The Dempsey Benton plant is one of only 46 other treatment plants in the United States to meet the rigorous requirements of this award.



## Your Drinking Water Sources



The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. In Raleigh's case, our source water comes Falls Lake, located in northern Wake County, and Lake Benson which is located in Garner, NC. 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 contaminants resulting from the presence of animals or from human activity. Contaminants that may be present in source water include microbial contaminants, inorganic contaminants, pesticides and herbicides, organic chemical contaminants and radiological contaminants.

## Source Water Assessment Program (SWAP) Results

The North Carolina Department of Environmental Quality, Public Water Supply (PWS) Section, Source Water Assessment Program (SWAP) conducted assessments for all drinking water sources across North Carolina. The purpose of the assessments was to determine the susceptibility of each drinking water source (well or surface water intake) to Potential Contaminant Sources (PCSs). The results of the assessment are available in SWAP Assessment Reports that include maps, background information and a relative susceptibility rating of Higher, Moderate or Lower.

The relative susceptibility rating of each source for Raleigh Water was determined by combining the contaminant rating (number and location of PCSs within the assessment area) and the inherent vulnerability rating (i.e., characteristics or existing conditions of the well or watershed and its delineated assessment area). The assessment findings are summarized in the table below:

Source Name	Susceptibility Rating
Falls Lake	Higher
Lake Benson	Higher

To help reduce potential impacts of upstream contaminant sources, Raleigh Water established a Watershed Protection Program, which to date has helped permanently protected over 10,000 acres and 117 miles of streams in our drinking watersheds. More information about this program is available at this webpage:

<https://www.upstreammatters.org/>

Raleigh Water also partners with the Center for Applied Ecology at NC State University to provide real time water quality data at Falls Lake to help detect potential water quality issues. More information is available at this webpage:

<https://caae.cals.ncsu.edu/water-quality-data/>



## Get The Lead Out!

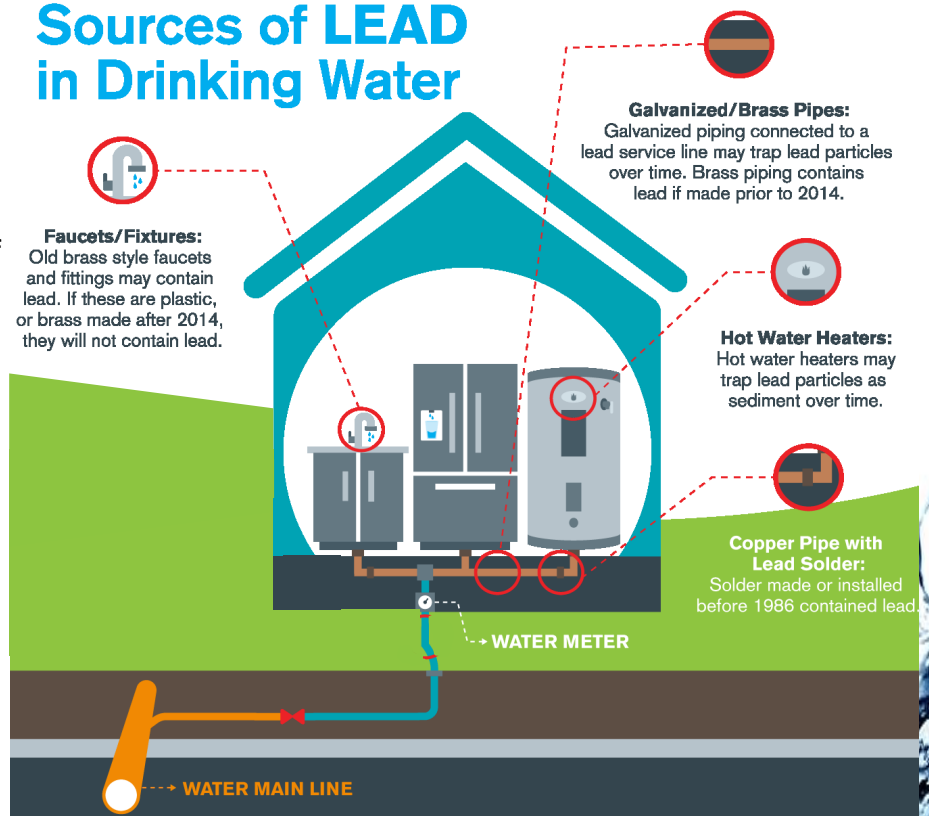
Raleigh Water maintains an active program to minimize the risk of lead exposure through its drinking water supply. Operations staff carefully monitor and adjust pH levels of water to a specific range that reduces the corrosive nature of the water, and a corrosion inhibitor is added in our water treatment process to create and maintain a protective film in pipes that reduces the release of metals, such as lead, from household plumbing. The US EPA Lead and Copper Rule compliance is based on the 90th percentile of samples collected during each monitoring period from homes built in the target period between 1982 and 1985 or homes served by lead service lines. Our water distribution system is below the action level for lead and below the maximum contaminant level (MCL) for copper and is in compliance with the Lead and Copper Rule. Raleigh Water has

always been in compliance with the EPA Lead and Copper Rule. Raleigh Water is currently on reduced monitoring for lead and copper and is required to monitor for lead and copper every three years, although recent new requirements will alter this schedule in the future. Based on the population served, the City is required to monitor at least 50 homes for lead and copper during the compliance year. We currently have 110 homes listed in our Lead and Copper Compliance Monitoring Plan. Raleigh Water is proactive when it comes to public health and safety, in addition to our compliance monitoring; we offer a free Volunteer Lead and Copper Sampling Program. This allows our customers to have their water tested anytime for lead and copper by our laboratory staff at no cost. Raleigh Water customers may request a free kit to test for lead in their drinking water, by calling: 919-996-4H2O (4420) or by email: [watersamples@raleighnc.gov](mailto:watersamples@raleighnc.gov)

## What EPA Wants You to Know

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). Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, people 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 microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

## Sources of LEAD in Drinking Water



## Keeping Your Water Safe:

Laboratory staff from Raleigh Water's Treatment Plant Division perform an extensive level of testing to ensure the safety of your drinking water. Our drinking water laboratories are certified and approved by the State of North Carolina and the US-EPA to perform drinking water quality analyses. In 2021, staff chemists, microbiologist and technicians at the drinking water laboratory collected, tested and analyzed Raleigh's drinking water between 6,000 and 7,000 times per month for many substances such as trace metals, petroleum products, pesticides and bacteria. During 2021, the City of Raleigh was in full compliance with all state and national Drinking Water Regulations. The following data represents results for both the EM Johnson and Dempsey E. Benton water treatment plants.



## EM Johnson Treatment Plant

### MICROBIOLOGICAL CONTAMINANTS

Contaminant (units)	MCL Violation Y/N	Your Water	MCLG	MCL	Like Source of Contamination
E. Coli (presence or absence)	N	0	0	(Note: If either an original routine sample and/or its repeat samples(s) are <i>E. coli</i> positive, a Tier 1 violation exists)	Human and animal fecal waste

### TURBIDITY\*

Contaminant (units)	Treatment Technique (TT) Violation Y/N	Your Water	Treatment Technique (TT) Violation if:	Like Source of Contamination
Turbidity (NTU) - Highest single turbidity measurement	N	0.08	Turbidity > 1 NTU	Soil runoff
Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits	N	100%	Less than 95% of monthly turbidity measurements are ≤ 0.3 NTU	

\*Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. The Turbidity rule requires that 95% or more of the monthly samples must be less than or equal to 0.3 NTU.



## EM Johnson Treatment Plant (cont)

### INORGANIC CONTAMINANTS

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Like Source of Contamination
Fluoride (ppm)	1/5/2021	N	0.61	N/A	4	4	Erosion of natural deposits; water additive which protects dental health; discharge from fertilizer and

### LEAD AND COPPER CONTAMINANTS

Contaminant (units)	Sample Date	Your Water	# of sites found above the AL	MCLG	MCL	Like Source of Contamination
Copper (ppm) (90th percentile)	2019	0.04	0	1.3	AL = 1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (ppb) (90th percentile)	2019	<3	2	0	AL = 15	Corrosion of household plumbing systems, erosion of natural deposits

### RADIOLOGICAL CONTAMINANTS

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Like Source of Contamination
Combined radium (pCi/L)	1/23/2017	N	1	NA	0	5	Erosion of natural deposits

### DISINFECTION BYPRODUCT PRECURSORS CONTAMINANTS

Contaminant (units)	TT Violation Y/N	Your Water (RAA Removal Ratio)	Range Monthly Removal Ratio Low-High	MCLG	TT	Compliance Method (Step 1 or ACC#)	Likely Source of Contamination
Total Organic Carbon (removal ratio) (TOC) - TREATED	N	1.56	1.40 - 1.76	N/A	TT	Step 1	Naturally present in the environment

# EM Johnson Treatment Plant (cont)

## DISINFECTANT RESIDUALS SUMMARY

Disinfectant	Year Sampled	MRDL Violation Y/N	Your Water (highest RAA)	Range Low High	MRDLG	MRDL	Likely Source of Contamination
Chlorine (ppm)	2021	N	2.49	0.00 - 3.68	4	4	Water additive used to control microbes
Chloramines (ppm)	2021	N	2.86	0.05- 3.99	4	4	Water additive used to control microbes

## STAGE 2 DISINFECTION BYPRODUCT COMPLIANCE

Monitoring	Year Sampled	MCL Violation Y/N	Your Water (highest LRAA)	Range Low High	MCLG	MCL	Typical Source
TTHM (ppb)	2021	N	41.5 (highest LRAA at Site B11)	8.60 - 38.2	NA	80	Byproduct of drinking water disinfection
HAA5 (ppb)	2021	N	29.5 (highest LRAA at Site B12)	4.20– 24.6	NA	60	Byproduct of drinking water disinfection

## WATER CHARACTERISTICS CONTAMINANTS

Contaminant (units)	Sample Date	Your Water	Range Low High	Secondary MCL
Sodium (ppm)	1/5/2021	24.0	N/A	N/A
Sulfate (ppm)	1/5/2021	42.8	N/A	250
pH, SU	2021	8.43	8.40 - 8.50	6.5 to 8.5
Alkalinity (ppm)	2021	29.6	22.5 - 40.5	N/A
Hardness (ppm)	2021	22.9	19.6 - 27.4	N/A



# Dempsey Benton Treatment Plant

## TURBIDITY\*

Contaminant (units)	Treatment Technique (TT) Violation Y/N	Your Water	Treatment Technique (TT) Violation if:	Like Source of Contamination
Turbidity (NTU) - Highest single turbidity measurement	N	0.12	Turbidity > 1 NTU	Soil runoff
Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits	N	100%	Less than 95% of monthly turbidity measurements are ≤ 0.3 NTU	

\*Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system. The Turbidity rule requires that 95% or more of the monthly samples must be less than or equal to 0.3 NTU.

## INORGANIC CONTAMINANTS

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Like Source of Contamination
Fluoride (ppm)	1/5/2021	N	0.69	N/A	4	4	Erosion of natural deposits; water additive which protects dental health; discharge from fertilizer and

## DISINFECTION BYPRODUCT PRECURSORS CONTAMINANTS

Contaminant (units)	TT Violation Y/N	Your Water (RAA Removal Ratio)	Range Monthly Removal Ratio Low-High	MCLG	TT	Compliance Method (Step 1 or ACC#)	Likely Source of Contamination
Total Organic Carbon (removal ratio) (TOC) - TREATED	N	1.64	1.45 - 2.11	N/A	TT	Step 1	Naturally present in the environment

## WATER CHARACTERISTICS CONTAMINANTS

Contaminant (units)	Sample Date	Your Water	Range Low High	Secondary MCL
Sodium (ppm)	1/5/2021	31.7	N/A	N/A
Sulfate (ppm)	1/5/2021	53.6	N/A	250
pH, SU	2021	8.39	8.34 - 8.46	6.5 to 8.5
Alkalinity (ppm)	2021	31.6	25.6 - 37.9	N/A
Hardness (ppm)	2021	23.5	19.2 - 27.8	N/A



# Glossary of Terms

**ACTION LEVEL (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

**CHLORAMINATION:** the process of adding ammonia to drinking water which already has chlorine added as a disinfectant. The ammonia combines with the existing chlorine which is called free chlorine to create chloramines.

**CRYPTOSPORIDIUM:** Cryptosporidium is a microorganism that can cause intestinal illness. Raleigh Water voluntarily tests for Cryptosporidium and DID NOT detect Cryptosporidium in its drinking water in 2021.

**HALOACETIC ACIDS (HAAS):** A group of chemicals known as disinfection byproducts. These form when a disinfectant reacts with naturally occurring organic and inorganic matter in the water.

**MAXIMUM RESIDUAL DISINFECTION LEVEL GOAL (MRDLG):** The "Level" (MRDLG) 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 contaminants.

**MAXIMUM RESIDUAL DISINFECTION LEVEL (MRDL):** The "Highest Level" (MRDL) of a disinfectant allowed in drinking water. There is clear evidence that addition of a disinfectant is necessary for control of microbial contaminants.

**MAXIMUM CONTAMINANT LEVEL (MCL):** The "Maximum Allowed" (MCL) is 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 "Goal" (MCLG) is 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.

*Extra Note: MCLs are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.*

**MTBE:** Raleigh Water also tested for Methyl tert-butyl ether (MTBE) and found it to be below the detection limit of 5 ppb for MTBE. At this time no limit for MTBE has been established, however the EPA is considering a limit of 30 ppb.

**NOT-APPLICABLE (N/A):** Information not applicable/not required for that particular water system or for that particular Rule.

**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.

**PARTS PER MILLION (PPM) OR MILLIGRAMS PER LITER (MG/L):** One part per million corresponds to one minute in two years or a single penny in \$10,000.

**PARTS PER BILLION (PPB) OR MICROGRAMS PER LITER:** One part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.

**PICOCURIES PER LITER (PCI/L):** Picocuries per liter is a measure of the radioactivity in water.

**RADON:** Radon is a radioactive gas that you can't see, taste, or smell. It is found naturally occurring throughout the U.S. EPA expects to issue a Radon Rule, which will set a standard for Radon in drinking water. Raleigh Water tested for Radon in its finished water and found it to be <100 pCi/L. There is no current MCL for Radon. However, the EPA is considering a MCL of 300 pCi/L.

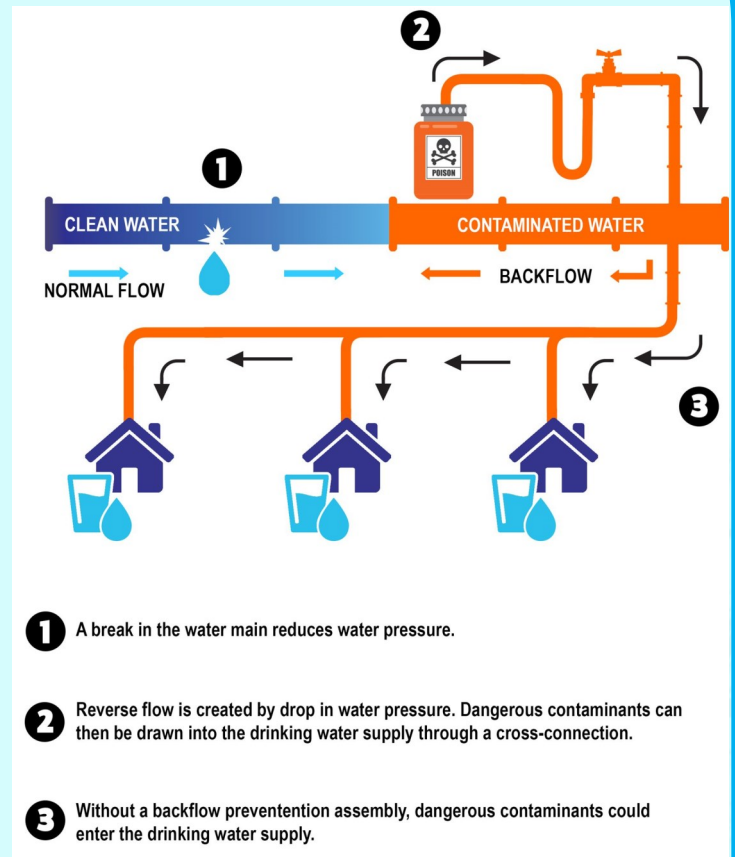
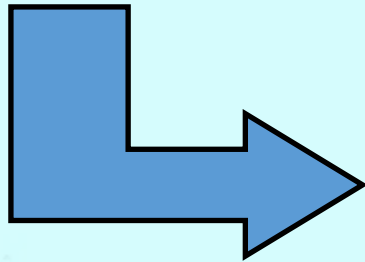
**TOTAL TRIHALOMETHANES (TTHMS):** A group of chemicals known as disinfection byproducts. These form when a disinfectant reacts with naturally occurring organic and inorganic matter in the water.

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

## NEED TO KNOW INFORMATION

### Backflow Prevention Assemblies

Backflow prevention assemblies protect the potable water supply by allowing water to flow only in one direction to prevent potential back-siphonage of pollutants or contaminants from entering the public water supply. All commercial connections including domestic, fire and lawn irrigation are required to have a backflow assembly installed and tested annually. Every residential irrigation system is required to have a backflow assembly installed and then tested every three years. Raleigh Water will be contacting customers with backflow assemblies to help ensure these devices are properly tested. If you would like to know more about backflow prevention, please call: (919) 996-2747.



### Capital Infrastructure Projects for the Capital City

Raleigh Water is dedicated to always providing safe and reliable water services to our customers 24/7/365. This is why we also invest millions of dollars in replacing, upgrading and repairing our critical water utility infrastructure. To find out more about our Capital Projects, please visit our project page to see how we are improving our infrastructure for not only today, but for generations to come:

<https://raleighnc.gov/water-and-sewer/raleigh-water-capital-improvement-program>

### See or Experience a Water Problem?

Please call Raleigh to report an unusual taste or odor with your tap water, a water main break or sanitary sewer backup or overflow. To report a main break or sewer backup/overflow, please call (919) 996-3245. Thank you for your help!