# 2021 Annual Drinking Water Quality Report
# Union County Public Works

Water System Number: "**01-90-413**"

*Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.*

We are pleased to present to you this year's Annual Drinking Water Quality Report. This report is a snapshot of last year's water quality. Included are details about your source(s) of water, what it contains, and how it compares to standards set by regulatory agencies. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water and to providing you with this information because informed customers are our best allies. **If you have any questions about this report or concerning your water, please contact Junior Honeycutt at (704) 289-7044. We want our valued customers to be informed about their water utility. If you want to learn more, please visit our website at www.co.union.nc.us.**

## 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. 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 health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

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. Union County Public Work 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 or at http://www.epa.gov/safewater/lead.

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, in some cases, 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 stormwater 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, urban stormwater runoff, and residential uses; organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and 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, EPA prescribes regulations which 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.

## When You Turn on Your Tap, Consider the Source

The water that is used by Union County Public Works comes from two surface sources, the Catawba River located in Lancaster County, S.C. and the Pee Dee River located in eastern Anson County. During emergency situations, a small portion of our system may receive water from Charlotte Water.

## Source Water Assessment Program (SWAP) Results

The North Carolina Department of Environment and Natural Resources (DENR), 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 Union County 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:

**Susceptibility of Sources to Potential Contaminant Sources (PCSs)**

| Source Name | Susceptibility Rating | SWAP Report Date |
|---|---|---|
| Pee Dee River | Moderate | September 2017 |
| Catawba River | Moderate | Originally April 2003 (Reviewed Annually) |

The complete SWAP Assessment report for the Anson County Water System may be viewed on the Web at: www.ncwater.org/pws/swap. Note that because SWAP results and reports are periodically updated by the PWS Section, the results available on this web site may differ from the results that were available at the time this CCR was prepared. If you are unable to access your SWAP report on the web, you may mail a written request for a printed copy to: Source Water Assessment Program – Report Request, 1634 Mail Service Center, Raleigh, NC 27699-1634, or email requests to swap@ncdenr.gov. Please indicate your system name, number, and provide your name, mailing address and phone number. If you have any questions about the SWAP report please contact the Source Water Assessment staff by phone at 919-707-9098.

The complete SWAP Assessment for the Catawba River Water Treatment Plant can be obtained by contacting the Bureau of Water in Columbia, South Carolina at (803)898-4300 or on the web at www.scdhec.gov.

It is important to understand that a susceptibility rating of "higher" does not imply poor water quality, only the system's potential to become contaminated by PCSs in the assessment area.

## Violations that Your Water System Received for the Report Year

Union County received a MCL violation for E. coli/fecal coliform that covered the time period of March 1, 2020 to March 31, 2020. On March 9, 2020 an exterior frost-proof water spigot was used to collect a water sample. The device apparently was not cleaned good enough to remove all contamination before sample collection. A second test was taken at the same location and was found negative for E. coli but upstream samples tested positive for coliform, thereby confirming the first E. coli positive sample. Retest of the coliform samples were negative for coliform and the E. coli violation ended on March 13, 2020. The water devices that were sampled during the event can't be disinfected completely and do not deliver a true representation of the water in the pipes. We have modified our sampling protocols to limit use of frost-proof spigots to assure this does not happen again.

- ***Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.***

## Water Quality Data Tables of Detected Contaminants

We routinely monitor for over 150 contaminants in your drinking water according to Federal and State laws. The tables below list all the drinking water contaminants that we detected in the last round of sampling for each particular contaminant group. The presence of contaminants does not necessarily indicate that water poses a health risk. **Unless otherwise noted, the data presented in this table is from testing done January 1 through December 31, 2020.** The EPA and the State allow us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, is more than one year old.

**Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulations are warranted.**

### Important Drinking Water Definitions:

***Not-Applicable (N/A)*** – Information not applicable/not required for that particular water system or for that particular rule.

***Non-Detects (ND)*** - Laboratory analysis indicates that the contaminant is not present at the level of detection set for the particular methodology used.

***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 (ug/L)*** - One part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.

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

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

***Maximum Residual Disinfection 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 Disinfection 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 contaminants.

***Locational Running Annual Average (LRAA)*** – The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters under the Stage 2 Disinfectants and Disinfection Byproducts Rule.

***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.

## Tables of Detected Contaminants

**Microbiological Contaminants in the Distribution System -** For systems that collect ***40 or more*** samples per month

| Contaminant (units) | MCL Violation Y/N | Your Water | MCLG | MCL | Likely Source of Contamination |
|---|---|---|---|---|---|
| Total Coliform Bacteria (presence or absence) | Y | 1 | 0 | TT* | Naturally present in the environment |
| *E. coli* (presence or absence) | Y | 1 | 0 | Routine and repeat samples are total coliform-positive and either is *E. coli*-positive or system fails to take repeat samples following *E. coli*-positive routine sample or system fails to analyze total coliform-positive repeat sample for *E. coli*<br><br>Note: If either an original routine sample and/or its repeat samples(s) are *E. coli* positive, a Tier 1 violation exists. | Human and animal fecal waste |

* If a system collecting 40 or more samples per month finds greater than 5% of monthly samples are positive in one month, an assessment is required.

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

During the past year, two Level 2 assessments were required to be completed for our water system. Two Level 2 assessments were completed. In addition, we have taken corrective actions.

*Union County had a total coliform-positive repeat sample following an *E. coli*-positive routine sample. This required us to complete a Level 2 assessment of the system and take corrective action. After thorough investigation, it was determined that a sample collected from a non-approved device resulted in a sample testing positive for E. coli. We have reviewed our sampling pool and made corrections to the type of devices that are allowed to be sampled. These changes in policy will allow for better water monitoring without interference from outside contaminants.

* A Level 2 assessment was required and completed after the exceedance of an MCL for total coliform in April 2020. Additional sampling during this time showed no indication of coliform and an investigation was conducted. Improper handling and collection of the samples was believed to be the issue. Review and training of sample collection and laboratory practices has been conducted to avoid further incidents.

**Lead and Copper Contaminants**

| Contaminant (units) | Sample Date | Your Water | Number of sites found above the AL | MCLG | AL | Likely Source of Contamination |
|---|---|---|---|---|---|---|
| Copper (ppm) ($90^{th}$ percentile) Union County | 2019 | 0.19 | 0 | 1.3 | AL=1.3 | Corrosion of household plumbing systems; erosion of natural deposits |

| | | | | | | |
|---|---|---|---|---|---|---|
| Lead (ppb)<br>(90th percentile)<br>Union County | 2019 | 0 | 3 | 0 | AL=15 | Corrosion of household plumbing systems; erosion of natural deposits |

**Disinfectant Residuals Summary**

| | Year Sampled | MRDL Violation Y/N | Your Water (highest RAA) | Range Low High | MRDLG | MRDL | Likely Source of Contamination |
|---|---|---|---|---|---|---|---|
| Chlorine (ppm) | 2020 | N | 2.87 | 1.4 - 3.3 | 4 | 4.0 | Water additive used to control microbes |
| Chloramines (ppm) | 2020 | N | 1.75 | .98 – 2.71 | 4 | 4.0 | Water additive used to control microbes |

**Stage 2 Disinfection Byproduct Compliance -** Based upon Locational Running Annual Average (LRAA)

| Disinfection Byproduct | Year Sampled | MCL Violation Y/N | Your Water (highest LRAA) | Range Low High | MCLG | MCL | Likely Source of Contamination |
|---|---|---|---|---|---|---|---|
| TTHM (ppb) | | | | | N/A | 80 | Byproduct of drinking water disinfection |
| B01 | 2020 | N | 52 | 39-57 | | | |
| B02 | 2020 | N | 23 | 14-19 | | | |
| B03 | 2020 | N | 52 | 36-68 | | | |
| B04 | 2020 | N | 55 | 42-64 | | | |
| B05 | 2020 | N | 17 | 0-17 | | | |
| B06 | 2020 | N | 16 | 12-19 | | | |
| B07 | 2020 | N | 31 | 30-34 | | | |
| B08 | 2020 | N | 15 | 11-19 | | | |
| HAA5 (ppb) | | | | | N/A | 60 | Byproduct of drinking water disinfection |
| B01 | 2020 | N | 38 | 1-43 | | | |
| B02 | 2020 | N | 13 | 0-12 | | | |
| B03 | 2020 | N | 35 | 28-44 | | | |
| B04 | 2020 | N | 38 | 31-37 | | | |
| B05 | 2020 | N | 13 | 0-13 | | | |
| B06 | 2020 | N | 14 | 10-15 | | | |
| B07 | 2020 | N | 38 | 35-40 | | | |
| B08 | 2020 | N | 13 | 9-16 | | | |

# Consumer Confidence Report
# 2020

System ID/ Permit #SC2920002

## *Is my water Safe?*

*We are pleased to present this year's Annual Water Quality Report (Consumer Confidence Report) as required by the Safe Drinking Water Act (SDWA). This report is designed to provide details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. This report is a snapshot of last year's water quality. We are committed to providing you with information because informed customers are our best allies. You can also find and download a copy of this report from our website, https://crwtp.org.*

## Do I need to take special precautions?

*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 health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).*

## Where does my water come from?

### The Source

Our water source is the Catawba River. Raw water is pumped from the Catawba River into a 23-acre pre -settling reservoir and then to a 90- acre reservoir for secondary raw water settling. The raw water is pumped from the larger reservoir to the water plant for treatment.

### Coagulation & Sedimentation

Chemicals are mixed in the water, which coagulates (forms a solid material around small particles in the raw water), causing them to settle and create a blanket near the bottom of the clarifiers. The blanket acts as a preliminary filter. Over 99% of contaminants are removed at this process stage.

### Filtration

The water flows through filters of anthracite and sand to remove any remaining particles.

### Disinfection

Chloramines are added for microbial disinfection to ensure that the water is safe to drink when it reaches you.

At Catawba River Water Supply Project, we are committed to providing safe, high quality water services to our community, while maintaining a standard of excellence in customer service and environmental conservation. To meet this commitment, we saw the need to construct a much larger reservoir to provide a 30-day supply of water reserve. The larger reservoir does not change the amount of water taken from the river, but it helps reduce its impact on users downstream. The project was completed in 2019.

In 2020 CRWSP made numerous improvements to the facility. This included improvements to the existing treatment trains to improve settleability of solids in the raw water, replacement of filter media, adding 6 million gallons per day of membrane filter technology. Some of these improvements were put into service in 2020. Others will be in service in 2021.

## Source Water assessment and its availability

We have learned through our monitoring and testing that some contaminants are present. Our raw water sources are most susceptible to contamination from runoff or environmental conditions. The EPA has determined that your water is **SAFE** at these levels. Our Source Water Assessment Plan is available upon request. Please contact Catawba River Water Supply Project at 803-286-5957 to arrange to review this document.

**The Catawba River Water Supply Project routinely monitors for constituents in your drinking water according to Federal and State Laws. See water quality data reports for results of our monitoring for January-December 2020.**

If you have any questions about this report, or to request a paper copy please contact:

**Randy Hawkins CASP,**
**CATAWBA RIVER WATER SUPPLY PROJECT**
**Phone: (803) 286-5957**
**Mail: PO Box 214, Van Wyck, SC 29744**
**E-mail rhawkins@crwtp.org**

We want our valued customers informed about their water utility. If you want to learn more, please attend any of our quarterly Catawba River Water Supply Project Board Meetings. Please check our website at (*https://crwtp.org.)* frequently to see when the next meeting is scheduled or contact Randy Hawkins, CASP at (803) 286-5957 for more information regarding meeting schedules.

## Why are there contaminants in my drinking water?

*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 (EPA) 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, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity:*

*Microbial contaminants, such as viruses and bacteria, that 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, urban storm water runoff, and residential uses; organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems; and radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.*

*To ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.*

## How can I get involved? (Water Conservation Tips)

*Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons of water per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference-try one today and soon it will be second nature.*

- *Use a water efficient showerhead. They are inexpensive, easy to install, and can save you up to 750 gallons a month.*
- *Take short showers – a 5-minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.*
- *Run your clothes washer and dishwater only when full. You can save up to 1,000 gallons per month.*
- *Shut off water while brushing your teeth, washing your hair, and shaving and save up to 500 gallons a month.*
- *Water plants only when necessary.*
- *Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowel without flushing, you have a leak. Fixing or replacing it with a new, more efficient model can save up to 1,000 gallons a month.*
- *Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.*
- *Teach your kids about water conservation to ensure a future generation that uses it wisely. Make it a family effort to reduce next month's water bill.*
- *Visit www.epa.gov/watersense for more information.*

## Source Water Protection Tips

**Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:**

- Eliminate excess use of lawn and garden fertilizers and pesticides – they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public system.
- Dispose of chemicals properly; take used motor oil to the recycling center.
- Volunteer in your community. Find a watershed or a wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's Adopt Your Watershed to locate groups in your community or visit the Watershed Information Network's How to Start a watershed Team.
- Organize a storm drain-stenciling project with your local government or water supplier. Stencil a message next to the street drain reminding people "Dump No waste – Drains to River or "Protect Your Water." Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.

## Additional Information for Lead and Copper

See Appendix A for additional information for Lead and Copper

## Water Quality Data Table

In order to ensure that tap water is safe to drink, EPA prescribes regulations, which limit the amount of contaminants in water provided by public water systems. The table below lists all the drinking water contaminants that we detected during the calendar year of this report. Although many more contaminants were tested, only those substances listed below were found in your water. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may improve the taste of drinking water and have nutritional value at low levels. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or this system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old. In this table, you will find terms and abbreviations that may not be familiar to you. To help you better understand these terms, we have provided these definitions below the table.

## Contaminant Table Elements

MCL – expressed as a number >1.0
MCLG – same units as MCL
TT or AL if no MCL
Detected Contaminant data
Date of sample, if sampling is less than annually
Likely sources of contaminants – Appendix A

## Converting Laboratory Units in CCR Units

- The CCR Rule requires MCLs to be presented as numbers greater than or equal to 1.0.
- All results in the CCR must be presented in the same unit of measurement as the MCL.
- Laboratory results may be less than 1.0 and they must be in the same units as MCL.

In this report, you will find many terms and abbreviations that may not be familiar. To help better understand these terms, we have provided the following definitions:

| Unit Descriptions | |
|---|---|
| **Term** | **Definition** |
| **ppm** | ppm: parts per million, or milligrams per liter (mg/l) |
| **ppb** | ppb: parts per billion, or micrograms per liter (mg/l) |
| **ppt** | ppt: parts per trillion or nanograms per liter (nanograms/l |
| **ppq** | Ppq: or pictograms per liter (pictograms/l) |
| **pCi/L** | pCi/L: or picocuries per liter |
| **mrem/yr** | mrem/yr: or millirems/year |
| **mfl/l** | mf/l: or million fibers per liter |
| **NA** | NA: not applicable |
| **ND** | ND: Not detected |
| **NR** | NR: Monitoring not required but recommended. |
| **NTU** | NTU: or nephelometric turbidity unit |
| **TOC** | TOC: or Total Organic Carbon |

| Term | Definition |
|---|---|
| **HLD** | (HLD) or highest level detected |
| **MCLG** | 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. |
| **MCL** | 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. |
| **TT** | TT: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water |
| **AL** | AL: Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. |
| **Variances and Exemptions** | Variances and Exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions. |
| **MRDLG** | MRDLG: Maximum residual disinfection level goal. 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 contaminants. |
| **MRDL** | MRDL: Maximum residual disinfectant level. 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. |
| **MNR** | MNR: Monitored Not Regulated |
| **MPL** | MPL: State Assigned Maximum Permissible Level |

**For more information, please contact:**
**Catawba River Water Supply Project System ID/ Permit #SC292002**

Randy Hawkins
PO Box 214
Van Wyck, South Carolina
Phone 803-286-5957

# 2020 Water Quality Data

## MICROBIOLOGICAL CONTAMINANTS

| Contaminant | Violation Yes/No | Level Detected | Measurement Unit | MCL | MCLG (TT) |
|---|---|---|---|---|---|
| *Total Coliform Bacteria | **No** | 0 Presence | Presence/Absence | Presence of Coliform in 5% of Monthly Samples | 0 Presence |

*** Typical Source of Contamination: Naturally present in the environment. Coliforms are bacteria naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system.**

## Turbidity

| Contaminant | Violation Yes/No | Highest Single Measurement Detected | Measurement Unit | Lowest Monthly Percentile | MCL | MCLG |
|---|---|---|---|---|---|---|
| Turbidity | **Yes** | 1.68 | NTU | 100% | 1.0 | <0.30 |

**Typical Source of Contamination: Soil run off; A measure of "cloudiness" of the water. Sample dates 2020 Violation date: 5/7/20 Public notice was made. See appendix B for more information.**

## Disinfectants/ Disinfection By-Products

| Contaminant | Violation Yes/No | Range of Levels Detected | Maximum Level Detected | Average Level Detected | Measurement Unit | MRDL | MRDLG |
|---|---|---|---|---|---|---|---|
| Chlorine | **No** | 2.12-3.20 | 3.20 | 2.92 | ppm | 4.0 | 4.0 |
| Chlorite | **No** | 0.23-0.54 | 0.54 | 0.40 | ppm | 1.0 | 0.8 |
| Chlorine Dioxide | **No** | BDL-BDL | BDL | BDL | ppm | 0.8 | 0.8 |

**Typical Source: Water additives used to control microbes *BDL Below Detection Limit There is convincing evidence that the addition of a disinfectant is necessary for control of microbial contaminants. Sample Dates 2020**

| Contaminant | Violation Yes/No | Range of Levels Detected | *Highest LRAA Detected | Measurement Unit | MCL | MCLG |
|---|---|---|---|---|---|---|
| Halo-acetic Acid (HAA5s) | **No** | 8.2-8.5 | 9.0 | ppb | 60 | No goal set for total |
| *TTHMs Total Trihalomethanes | **No** | 18.9-19.6 | 20.0 | ppb | 80 | No goal set for total |

**Typical Source: By-products of drinking water disinfectant. Sample Date 2020**
**Parts per billion corresponds to a single penny in $10,000,000.**
***Some people who drink water-containing trihalomethanes in excess of the MCL over many years may experience. problems with their liver, kidneys or central nervous system and may have increased risk of getting cancer.**

## Total Organic Carbon Test Results

| Contaminant | Violation Yes/No | Range of Levels Detected | Measurement Unit | Sample Frequency | **RAA | MCL | MCLG |
|---|---|---|---|---|---|---|---|
| Total Organic Carbon | **No** | 1.4-5.5 | ppm | Monthly | 1.28 | *TT | *TT |

**Typical Source of Contamination: Naturally present in the environment**
***TT is a treatment technique that is a required process intended to reduce the level of contaminant in drinking water.**
****Running Annual average. RAA must be greater than 1.0 to meet compliance.**

## Inorganic Contaminants

| Contaminant | Violation Yes/No | Range of Levels Detected | Highest Level Detected | Average Level Detected | Measurement Unit | MCL | MCLG |
|---|---|---|---|---|---|---|---|
| Fluoride | **No** | 0.62-0.62 | 0.62 | 0.62 | ppm | 4.0 | 4.0 |
| Nitrate (measured as nitrogen) | **No** | 0.93-0.93 | 0.93 | 0.93 | ppm | 10.0 | 10.0 |

**Typical Source of Contamination:**
**Fluoride: Erosion of natural deposits; water additive to promote strong teeth; discharge from fertilizer and aluminum factories**
**Nitrate (measured as nitrogen): Run off from fertilizer use; leakage from septic tanks, sewage, erosion of natural deposits. Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods because of rainfall or agricultural activity. If you are caring for an infant, you should ask for advice from your health care provider.**

## Detected Containments Table
## Lead and Copper Results

| Contaminant | Violation Yes/No | Range Of Levels Detected | Highest Level Detected | 90th Percentile | Measurement Unit | *Sample Frequency | Action Level | MCLG | Sites over Action Level |
|---|---|---|---|---|---|---|---|---|---|
| *Copper | **No** | 0.113-0.581 | 0.581 | 0.436 | ppm | 3 years | 1.3 | 0 | 0 |
| *Lead | **No** | 0.0-4.0 | 4.0 | 2.0 | ppb | 3 years | 15.0 | 0 | 0 |

***Sample Date 7/02/2018. The most recent lead and copper sampling results show no violations.**
**Action Level: A concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.**
**Parts per million corresponds to a single penny in $10,000.**
**Parts per billion corresponds to a single penny in $10,000,000.**

**See Appendix A for more information on Copper and Lead in Drinking Water.**

| General Interest Table | | | | |
|---|---|---|---|---|
| Constituent/ Unit of Measurement | Highest Level Recommended | Range Detected | Highest Level Detected | Average Level |
| **PH** is a measurement of the degree in which water may be acidic or basic. Measured in standard units, on a scale of 0 (most acidic) to 14 (most basic) with 7 being neutral. | 6.5-8.5s.u | 6.96-7. 20s.u | 7.20s.u | 7.09s.u |
| **ALKALINITY** is an unregulated constituent measured (ppm) as calcium carbonate (CaCO3) and refers to a water's buffering capacity the ability to keep the pH stable as acids. | No Standard | 18-27ppm | 27ppm | 21ppm |
| **HARDNESS** denotes high mineral content, mainly calcium and magnesium (ppm) Drinking water is considered soft if less than 70 ppm or 4 grains per gallon. | No Standard | 10-26ppm | 26ppm | 20ppm |
| **SODIUM** is a necessary nutrient in the human body and is found naturally in eroded natural deposits and leaching. Measured in ppm. Note: Tap water may contain sodium over 20 ppm recommended for sodium-restricted diets. | No Standard | 11ppm-11ppm | 11ppm | 11ppm |
| **WATER TEMPERATURE** in the distribution system measured in degrees Celsius. | No Standard | 10.8-29.6 Celsius | 29.6 Celsius | 19.9 Celsius |
| **Total Dissolved Solids** measured as the dissolved minerals in the water. Measured thru conductivity in ppm. | No Standard | 110-144ppm | 144ppm | 126ppm |

# Appendix A

**Lead:** Typical source is corrosion of household plumbing systems and/or erosion of natural deposits. Low levels of exposure in young children, infants and fetuses have been linked to damage to the central and peripheral nervous system, learning disabilities, shorter stature, impaired hearing, and impaired formation and function of blood cells. During pregnancy, lead is released from bones as maternal calcium and is used to help form the bones of the fetus. This is particularly true if a woman does not have enough dietary calcium. Lead can also cross the placental barrier exposing the fetus to lead. This can result in serious effects to the mother and her developing fetus, including reduced growth of the fetus and premature birth.

## 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. The Catawba River water Supply Project 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 or at **http://www.epa.gov/safewater/lead**.

**Copper:** Typical source is corrosion of household plumbing systems and/or erosion of natural deposits. Eating or drinking too much copper can cause vomiting, diarrhea, stomach cramps, nausea, liver damage, and kidney disease. People with Wilson's disease and some infants (babies under one year old) are extra sensitive to copper. To reduce copper intake Let the water run for at least 30-60 seconds before using it for drinking or cooking if the water has not been turned on in over six hours. Use cold water for drinking, making food, and making baby formula. Hot water releases more copper from pipes than cold water. Test your water. In most cases, letting the water run and using cold water for drinking and cooking should keep copper levels low in your drinking water. If you are still concerned about copper, arrange with a laboratory to test your tap water. Testing your water is important if an infant or someone with Wilson's disease drinks your tap water. All testing should be done through an accredited laboratory.

# Appendix B

The Catawba River Water Supply Project did not meet treatment requirements.
On May 7, 2020, the Catawba River Water Supply Project did not meet the turbidity requirements for several hours. This was related to a construction project and a temporary failure of chemical addition that removes turbidity from the water.

A sample taken that day was recorded at 1.68NTUs which exceeded the treatment limit of 1.0NTUs. A notice of the violation for the turbidity violation was sent to customers. Because of this, there was an increased chance that the water may have contained disease-causing organisms. The water was tested and there was no indication of disease-causing organisms.

**This was not an emergency. If it had been you would have been contacted within 24 hours of the occurrence.**

**Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*
*These symptoms are not caused only by organisms in the drinking water.

Catawba Water Supply Project ensured through operations that the water turbidity returned to normal levels within a few hours of the incident.

**Lilyrose2-**
**Here is the information for the 2020 CCr**

**If you have any questions call 704 848 4849**

**Annual Water Quality Report - Reporting Year 2020**

## Regulated Substances

### Anson County Water

| Substance (Unit of Measure) | Year Sampled | MCL [MRDL] | MCLG [MRDLG] | Amount Detected | Range Low-High | Violation | Typical Source |
|---|---|---|---|---|---|---|---|
| Chloramines (ppm) | 2020 | [4] | [4] | 2.34 | 1.0-3.8 | No | Water additive used to control microbes |
| Chlorine (ppm) | 2020 | [4] | [4] | 1.2 | 0.8-2.0 | No | Water additive used to control microbes |
| Fluoride (ppm) | 2020 | 4 | 4 | .0692 | 0.08-1.35 | No | Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories |
| Haloacetic Acids [HAA] (ppb) | 2020 | 60 | NA | 44.75 | 5.0-55.0 | No | By-product of drinking water disinfection |
| TTHMs [Total Trihalomethanes] (ppb) | 2020 | 80 | NA | 52.75 | 37.0-66.0 | No | By-product of drinking water disinfection |
| Total Organic Carbon [TOC] (removal ratio) | 2020 | TT | NA | 1.625 | 1.8-2.5 | No | Naturally present in the environment |
| Turbidity (NTU) | 2020 | TT = 1 NTU | NA | 0.81 | .04-.81 | No | Soil runoff |
| Turbidity (Lowest monthly percent of samples meeting limit) | 2020 | TT = 1 NTU | NA | 96 | NA | Yes | Soil runoff |

## Tap water samples were collected for lead and copper analyses from sample sites throughout the community

### Anson County Water

| Substance (Unit of Measure) | Year Sampled | AL | MCLG | Amount Detected (90th%tile) | Sites Above AL/Total Sites | Violation | Typical Source |
|---|---|---|---|---|---|---|---|
| Copper (ppm) | 2018 | 1.3 | 1.3 | 0.086 | 0/30 | No | Corrosion of household plumbing systems; Erosion of natural deposit |
| Lead (ppm) | 2018 | 15 | 0 | 0.0012 | 0/30 | No | |

## Secondary Substances

## Anson County Water

| Substance (Unit of Measure) | Year Sampled | SMCL | MCLG | Amount Detected | Range Low-High | Violation | Typical Source |
|---|---|---|---|---|---|---|---|
| Iron (ppb) | 2020 | 300 | NA | 23.2 | 0 – 130 | No | Leaching from natural deposits; Industrial wastes |
| Manganese (ppb) | 2020 | 50 | NA | 33.4 | 0 – 290 | No | Leaching from natural deposits |
| Sulfate (ppm) | 2020 | 250 | NA | 20.0 | 20.0 | No | Runoff/leaching from natural deposits; Industrial wastes |
| pH (Units) | 2020 | 6.5-8.5 | NA | 7.2 | 7.0- 8.6 | No | Naturally occurring |

## Unregulated Substances
## Anson County Water

| Substance (Unit of Measure) | Year Sampled | Amount Detected | Range Low-High | Typical Source |
|---|---|---|---|---|
| Bromodichloromethane (ppb) | 2020 | 7.675 | 4-9.6 | NA |
| Chloroform (ppb) | 2020 | 44.75 | 33-55 | NA |
| Sodium (ppm) | 2020 | 12.7 | 12.7-12.7 | NA |

## Unregulated Substances UCMR4 Testing
## Anson County Water

| | | | | |
|---|---|---|---|---|
| Anatoxin-a (ppb) | 2020 | 0.010 | 0.010 - 0.030 | NA |
| Cylindrospermopsin (ppb) | 2020 | .030 | .030 - .090 | NA |
| Microsystin-Total (ppb) | 2020 | .10 | .10 - .30 | NA |

# NOTICE TO THE PUBLIC

## IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

## ANSON COUNTY WATER SYSTEM HAS NOT MET MONITORING REQUIREMENTS

***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 compliance period specified in the table below, we ['did not monitor or test' or 'did not complete all monitoring or testing'] for the contaminants listed and therefore cannot be sure of the quality of your drinking water during that time.***

| CONTAMINANT GROUP** | FACILITY ID NO./ SAMPLE POINT ID | COMPLIANCE PERIOD BEGIN DATE | NUMBER OF SAMPLES/ SAMPLING FREQUENCY | WHEN SAMPLES WERE OR WILL BE TAKEN (Water System to Complete) |
|---|---|---|---|---|
| TURBIDITY (INDIVIDUAL FILTER EFFLUENT) | P01/EP1 | JULY 2020 | CONTINUOUS MONITORING | Computer went out while it was out samples were checked every 4 hours for each Filter. |

**** See back of this notice for further information on contaminants.**

**What should I do?** There is nothing you need to do at this time.

**What is being done?** [Describe corrective action.]
A new computer was purchased and put into service.

***Please share this information with all the 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 mail.***

For more information, please contact:

| Responsible Person | System Name | System Address (Street) |
|---|---|---|
| Amy G. Dawkins | **ANSON COUNTY WATER SYSTEM** | |
| Phone Number | System Number | System Address (City/State/Zip) |
| 704-848-4849 | **NC0304010** | |

**Violation Awareness Date:** **August 5, 2020**

**Date Notice Distributed:** _____ **Method of Distribution:** _____

### Public Notification Certification:

The public water system named above hereby affirms that public notification has been provided to its consumers in accordance with all delivery, content, format, and deadline requirements specified in 15A NCAC 18C .1523.

Owner/Operator: _____ _____ _____
(Signature) (Print Name) (Date)

# *2020 Annual Drinking Water Quality Report*
# *Charlotte Water*

Water System Number: 01-60-010

We are pleased to present to you this year's Annual Drinking Water Quality Report. This report is a snapshot of last year's water quality. Included are details about your source(s) of water, what it contains, and how it compares to standards set by regulatory agencies. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your drinking water. **If you have any questions about this report or concerning your water, please call 311 or 704-336-7600. We want our valued customers to be informed about their water utility. You can also find more information regarding water quality on our website**
https://charlottenc.gov/Water/WaterQuality/Pages/WaterQuality.aspx

## 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. 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 health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

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. Charlotte Water 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 or at https://www.epa.gov/safewater/lead.

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, in some cases, 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, urban storm water runoff, and residential uses; organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems; and 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, EPA prescribes regulations which 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.

## When You Turn on Your Tap, Consider the Source

Mountain Island Lake and Lake Norman supply our treatment plants with high quality water for your home, business or school. These surface waters are part of the Catawba River Basin, which provides water for more than 1.5 million people in our growing region. Charlotte Water operates three water treatment plants, and they collectively treat an average of 109 million gallons of water a day.

## Our Treatment Process

Long before you step in the shower or turn on the tap, Charlotte Water employees have managed numerous processes to protect our drinking water and those who use it. First, we pump the water from Mountain Island Lake and Lake Norman to one of the three water treatment plants - Franklin, Dukes, or Vest. We add powdered activated carbon for taste and odor control followed by aluminum sulfate (alum) in the rapid mix phase to cause dirt particles to coagulate, which are then removed through settling. The water then flows through filters that trap even smaller particles. We add chlorine to prevent bacterial growth and fluoride to promote dental health. We also add lime to adjust the water's pH, which helps prevent pipe corrosion and the leaching of metals into the water. We then pump the water to homes, businesses and storage tanks through over 4,400 miles of water pipes. A schematic of our treatment process can be found at https://charlottenc.gov/Water/Education/Pages/Journey.aspx

## Source Water Assessment Program (SWAP) Results

The North Carolina Department of Environmental Quality (DEQ) 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 Charlotte 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 following table:

**Susceptibility of Sources to Potential Contaminant Sources (PCSs)**

| Source | Inherent Vulnerability Rating | Contaminant Rating | Susceptibility Rating | Date |
|---|---|---|---|---|
| Mt. Island Lake/Catawba River | Moderate | Moderate | Moderate | September 2020 |
| Lake Norman | Higher | Higher | Higher | September 2020 |

Report Date: September 9, 2020

The complete SWAP Assessment report for Charlotte Water may be viewed on the Web at https://www.ncwater.org/?page=600. Note that because SWAP results and reports are periodically updated by the PWS Section, the results available on this web site may differ from the results that were available at the time this Consumer Confidence Report (CCR) was prepared. If you are unable to access your SWAP report on the web, you may mail a written request for a printed copy to: Source Water Assessment Program – Report Request, 1634 Mail Service Center, Raleigh, NC 27699-1634, or email requests to swap@ncdenr.gov. Please indicate your system name, number, and provide your name, mailing address and phone number. If you have any questions about the SWAP report please contact the Source Water Assessment staff by phone at 919-707-9098.

It is important to understand that a susceptibility rating of "higher" does not imply poor water quality, only the system's potential to become contaminated by PCSs in the assessment area.

## Help Protect Your Source Water

Protection of drinking water is everyone's responsibility. Charlotte Water is partnering with Charlotte-Mecklenburg Storm Water Services to expand the scope of source water quality sampling in Lake Norman and Mountain Island Lake. Multiple locations from both source waters are now being monitored. You can help protect your community's drinking water source(s) in several ways: If you see or suspect potential water contaminations, water leaks, or sewage spills, please call **311 or 704-336-7600**. We will respond 24 hours-a-day, 365 days-a-year. Dispose of chemicals properly and take used motor oil to the four Mecklenburg County recycling centers. Put only toilet paper in the toilet. All other products should go in the trash including 'flushable' wipes.

## Violations that Your Water System Received for the Report Year

During 2020, we received **zero** drinking water violations.

## Water Quality Data Tables of Detected Contaminants

We routinely monitor for over 150 contaminants in your drinking water according to Federal and State laws. The following tables list all the drinking water contaminants that we detected in the last round of sampling for each contaminant group. The presence of contaminants does not necessarily indicate that water poses a health risk. **Unless otherwise noted, the data presented in this table is from testing done January 1 through December 31, (2020).** The EPA and the State allow us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data, though representative of the water quality, is more than one year old.
**Note:** Vest WTP was offline for the entire year of 2020 for rehabilitation.

### Important Drinking Water Definitions:

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

*Locational Running Annual Average (LRAA)* – The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters under the Stage 2 Disinfectants and Disinfection Byproducts Rule.

*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.

*Maximum Residual Disinfection 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 Disinfection 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 contaminants.

*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.

*Non-Detects (ND)* - Laboratory analysis indicates that the contaminant is not present at the level of detection set for the particular methodology used.

*Not-Applicable (N/A)* – Information not applicable/not required for that particular water system or for that rule.

*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 (ug/L)* - One part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.

*Parts per trillion (ppt) or Nanograms per liter (nanograms/L)* - One part per trillion corresponds to one minute in 2,000,000 years, or a single penny in $10,000,000,000.

*Parts per quadrillion (ppq) or Picograms per liter (picograms/L)* - One part per quadrillion corresponds to one minute in 2,000,000,000 years or one penny in $10,000,000,000,000.

*Picocuries per liter (pCi/L)* - Picocuries per liter is a measure of the radioactivity in water.

*Running Annual Average (RAA)* – The average of samples taken at all locations throughout the system.

*Total Organic Carbon (TOC)* - has no health effects, however, organics provide a medium for the formation of disinfection byproducts. The TOC compliance criterion applies only to treated water.

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

# Tables of Detected Contaminants

### Microbiological Contaminants in the Distribution System

| Contaminant (units) | MCL Violation Y/N | Result | MCLG | MCL | Likely Source of Contamination |
|---|---|---|---|---|---|
| Total Coliform Bacteria (presence or absence) | N/A | <5% per month | N/A | TT* | Naturally present in the environment |
| E. coli** (presence or absence) Distribution System | **No** | 0 | 0 | Routine and repeat samples are total coliform-positive and either is E. coli-positive or system fails to take repeat samples following E. coli-positive routine sample or system fails to analyze total coliform-positive repeat sample for E. coli<br><br>Note: If either an original routine sample and/or its repeat samples(s) are E. coli positive, a Tier 1 violation exists. | Human and animal fecal waste |

* If a system collecting 40 or more samples per month finds greater than 5% of monthly samples are positive in one month, an assessment is required

**E.coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely- compromised immune systems.

## Turbidity*

| Nephelometric Turbidity Unit (NTU) | Year Sampled | Treatment Technique (TT) Violation Y/N | Water Treatment Plant (WTP) | Result NTU | MCLG | Treatment Technique (TT) Violation if: | Likely Source of Contamination |
|---|---|---|---|---|---|---|---|
| Highest Single Turbidity Measurement | 2020 | **No** | Franklin | 0.47 | N/A | Turbidity > 1.0 NTU | Soil runoff |
| | | | Dukes | 0.42 | | | |
| | | | Vest | Offline | | | |
| Lowest Monthly Percentage (%) of Samples Meeting Turbidity Limits | 2020 | **No** | Franklin | 100% | N/A | Less than 95% of monthly turbidity measurements are ≤0.3 NTU | |
| | | | Dukes | 100% | | | |
| | | | Vest | Offline | | | |

***** Turbidity (NTU) 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 | Year Sampled | MCL Violation Y/N | Water Treatment Plant (WTP) | Result (highest) | Range Low - High | MCLG | Likely source of contamination |
|---|---|---|---|---|---|---|---|
| Fluoride (ppm) | 2020 | No | Franklin | 0.96 | 0.28 - 0.96 | 4 | Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories |
| | | | Dukes | 0.83 | 0 - 0.83 | | |
| | | | Vest* | Offline | Offline | | |

*Fluoride system upgrades account for low readings at Franklin and Dukes WTPs.

## Lead and Copper Contaminants

| Contaminant (units) | Year Sampled | Result | Number of sites found above the AL | MCLG | AL | Likely Source of Contamination |
|---|---|---|---|---|---|---|
| Copper (ppm) (90th percentile) | 2019 | None detected at 90th percentile | 0 | 1.3 | AL=1.3 | Corrosion of household plumbing systems; erosion of natural deposits |
| Lead (ppb) (90th percentile) | 2019 | None detected at 90th percentile | 1 | 0 | AL=15 | Corrosion of household plumbing systems; erosion of natural deposits |

Compliance sampling schedule is once/3yrs.

## Total Organic Carbon (TOC)

| Contaminant (units) | Year Sampled | TT Violation Y/N | Water Treatment Plant (WTP) | Result (RAA Removal Ratio) | Range Monthly Removal Ratio Low – High | MCLG | TT | Likely Source of Contamination | Compliance Method (Step 1 or ACC#__) |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon (removal ratio) (TOC)-TREATED (ppm) | 2020 | No | Franklin | 1.18 | 0.84 - 1.50 | Compliance Method ACC#2 Treated Water <2.00 ppm and Removal Ratio >1.00 | TT | Naturally present in the environment | ACC#2 |
| | | | Dukes | 1.12 | 0.79 – 1.29 | | | | |
| | | | Vest | Offline | Offline | | | | |

| Alternative Compliance Criteria (ACC) | |
|---|---|
| Alt. 1 | Source Water TOC < 2.0 mg/L |
| Alt. 2 | Treated Water TOC < 2.0 mg/L |
| Alt. 3 | Source Water SUVA ≤ 2.0 L/mg-m |
| Alt. 4 | Treated Water SUVA ≤ 2.0 L/mg-m |
| Alt. 5 | Treated Water Alkalinity < 60 mg/L (for softening systems only) |
| Alt. 6 | THM & HAA RAA's ≤ 1/2 MCL & uses only chlorine |
| Alt. 7 | Source TOC RAA < 4.0 mg/L and Source Alkalinity > 60 mg/L and THM & HAA RAAs ≤ 1/2 MCL |

## Disinfectant Residuals Summary

| Contaminant (units) | Year Sampled | MRDL Violation Y/N | Water Treatment Plant (WTP) | Highest Running Annual Average (RAA) | Range Low - High | MRDLG | MRDL | Likely Source of Contamination |
|---|---|---|---|---|---|---|---|---|
| Chlorine (ppm) | 2020 | No | Franklin | 1.32 | 0.86 – 1.79 | 4 | 4.0 | Water additive used to control microbes |
| | | | Dukes | 1.32 | 1.00 – 1.69 | | | |
| | | | Vest | Offline | Offline | | | |
| | | | Distribution System | 1.08 | 0.53 – 1.67 | | | |

## Other Disinfection Byproducts Contaminants

| Contaminant (units) | Year Sampled | MCL/MRDL Violation Y/N | Water Treatment Plant (WTP) | Result | Range Low - High | MCLG | MCL | Likely Source of Contamination |
|---|---|---|---|---|---|---|---|---|
| Chlorite* (ppm) | 2016 | No | Dukes | 0.100 | 0.063 - 0.137 | 0.8 | 1.0 | By-product of drinking water chlorination |
| | | | Distribution System | 0.014 | ND – 0.048 | | | |

*Charlotte Water conducted a commissioning study for the startup of a chlorine dioxide generation system at the Dukes plant over a 2-day period in April 2016 (4/5 & 4/6). The application of chlorine dioxide as a pre-oxidant enhances water quality by reducing disinfection byproducts (DBP), and functions as an oxidizing agent to counter soluble manganese and iron concentrations in untreated, raw water along with providing bacteriological inactivation. The purpose of the commissioning study was to generate chlorine dioxide, apply the chlorine dioxide in the water treatment process, and evaluate performance. Chlorine Dioxide was not fed at any time during 2020; therefore, chlorite was not required to be monitored.

**Stage 2 Disinfection Byproduct Compliance -** Based upon Locational Running Annual Average (highest LRAA)

| Disinfection Byproduct | Year Sampled | MCL Violation Y/N | Your Water (highest LRAA) | Range Low | Range High | MCLG | MCL | Likely Source of Contamination |
|---|---|---|---|---|---|---|---|---|
| **TTHM (ppb)** | 2020 | N | **55.4** | **19.1** | **84.8** | N/A | 80 | Byproduct of drinking water disinfection |
| Location: B01 | | N | 46.7 | 29.3 | 59.9 | | | |
| Location: B02 | | N | 45.9 | 33.0 | 61.0 | | | |
| Location: B03 | | N | 48.6 | 35.6 | 63.5 | | | |
| Location: B04 | | N | 52.9 | 30.5 | 75.0 | | | |
| Location: B05 | | N | 52.1 | 36.4 | 70.9 | | | |
| Location: B06 | | N | 55.4 | 33.1 | 84.8 | | | |
| Location: B07 | | N | 47.0 | 33.9 | 66.4 | | | |
| Location: B08 | | N | 40.8 | 27.7 | 50.8 | | | |
| Location: B09 | | N | 41.6 | 25.2 | 57.0 | | | |
| Location: B10 | | N | 36.5 | 23.5 | 50.0 | | | |
| Location: B11 | | N | 29.3 | 19.1 | 42.0 | | | |
| Location: B12 | | N | 54.5 | 31.8 | 81.8 | | | |
| Location: B13 | | N | 51.0 | 29.7 | 73.2 | | | |
| Location: B14 | | N | 44.2 | 34.0 | 57.9 | | | |
| Location: B15 | | N | 40.9 | 29.0 | 51.7 | | | |
| Location: B16 | | N | 47.0 | 27.4 | 68.2 | | | |
| **HAA5 (ppb)** | 2020 | N | **20.5** | 10.9 | 28.2 | N/A | 60 | Byproduct of drinking water disinfection |
| Location: B01 | | N | 20.5 | 12.2 | 28.2 | | | |
| Location: B02 | | N | 18.7 | 13.4 | 24.2 | | | |
| Location: B03 | | N | 18.7 | 13.0 | 23.5 | | | |
| Location: B04 | | N | 19.3 | 13.4 | 24.3 | | | |
| Location: B05 | | N | 18.9 | 14.5 | 23.7 | | | |
| Location: B06 | | N | 19.0 | 12.2 | 24.2 | | | |
| Location: B07 | | N | 18.1 | 12.8 | 25.6 | | | |
| Location: B08 | | N | 19.2 | 12.6 | 24.3 | | | |
| Location: B09 | | N | 19.3 | 13.2 | 24.1 | | | |
| Location: B10 | | N | 18.7 | 13.2 | 24.2 | | | |
| Location: B11 | | N | 16.8 | 11.9 | 20.7 | | | |
| Location: B12 | | N | 18.3 | 11.6 | 24.5 | | | |
| Location: B13 | | N | 18.3 | 11.2 | 23.0 | | | |
| Location: B14 | | N | 17.0 | 11.8 | 23.6 | | | |
| Location: B15 | | N | 19.6 | 13.4 | 23.8 | | | |
| Location: B16 | | N | 17.7 | 10.9 | 20.7 | | | |

For TTHM: Some people who drink water containing Total Trihalomethanes above the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

For HAA5: Some people who drink water containing Haloacetic Acids above the MCL over many years may have an increased risk of getting cancer.

**Other Miscellaneous Water Characteristics Contaminants* – At Entry Point to Distribution System**

| Contaminant (units) | Year Sampled | Result (average) | Range Low High | Secondary MCL |
|---|---|---|---|---|
| Alkalinity (ppm) | 2020 | 17 | 16 - 18 | N/A |
| Aluminum (ppb) | 2020 | 35 | 30 – 48 | 50-200 ppb |
| Calcium Hardness as CaCO3 (ppm) | 2020 | 19 | 18 – 22 | N/A |
| Chloride (ppm) | 2020 | 6.0 | 5.7 – 6.7 | 250 ppm |
| Conductivity (umhos/cm) | 2020 | 81 | 77 – 84 | N/A |
| Hardness, Total as CaCO3 (ppm) | 2020 | 27 | 25 – 29 | N/A |
| Iron, Total (ppb) | 2020 | 23 | 0 - 40 | 300 |
| Magnesium (ppm) | 2020 | 1.7 | 1.5 – 1.9 | N/A |
| Manganese (ppb) | 2020 | 3 | 0 - 6 | 50 |
| pH | 2020 | 8.55 | 7.54 – 9.33 | 6.5 – 8.5** |
| Silica (ppm) | 2020 | 9.2 | 8.0 – 11.0 | N/A |
| Sodium (ppm) | 2020 | 2.9 | 2.6 – 3.3 | N/A |
| Sulfate (ppm) | 2020 | 8.0 | 7.6 – 8.8 | 250 ppm |
| Total Dissolved Solids (TDS) (ppm) | 2020 | 55 | 51 – 60 | 500 ppm |

* The PWS Section requires monitoring for other misc. contaminants, some for which the EPA has set national secondary drinking water standards (SMCLs) because they may cause cosmetic effects or aesthetic effects (such as taste, odor, and/or color) in drinking water. The contaminants with SMCLs normally do not have any health effects and normally do not affect the safety of your water.
** The PWS Section has established a pH range of 7.0 – 9.2 for Charlotte Water in order to ensure optimal corrosion control treatment.

## Cryptosporidium

Charlotte Water monitors quarterly for Cryptosporidium and Giardia. There were **zero detects** for 2020.

*Cryptosporidium* is a microbial pathogen found in surface water throughout the U.S. Although filtration removes *Cryptosporidium*, the most commonly-used filtration methods cannot guarantee 100 percent removal. Our monitoring indicates the presence of these organisms in our source water and/or finished water. Current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Ingestion of *Cryptosporidium* may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness. We encourage immuno-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. *Cryptosporidium* must be ingested to cause disease, and it may be spread through means other than drinking water.

## Unregulated Contaminants Monitoring Rule (UCMR) 4* – Required by EPA

| Contaminant (units) | Year Sampled | Sample Location | Result (Highest) | Range Low High |
|---|---|---|---|---|
| Bromide (ppb) | 2018 | Raw Water | 40.8 | 23.2 – 40.8 |
| Total Organic Carbon (ppm) | 2018 | Raw Water | 1.87 | 1.62 – 1.87 |
| Manganese (ppb) | 2018 | Entry Point to Distribution System | 121.0 | 0.59 – 121.0 |
| Bromochloroacetic Acid (ppb) | 2018 | Distribution System | 4.93 | 2.53 – 4.93 |
| Bromodichloroacetic Acid (ppb) | 2018 | Distribution System | 3.31 | 1.42 – 3.31 |
| Chlorodibromoacetic Acid (ppb) | 2018 | Distribution System | 1.34 | 0.35 – 1.34 |

* Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring rule is to assist EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulations are warranted.

## Additional Monitoring of Other Contaminants

In addition to participating in the EPA's Unregulated Contaminant Monitoring Rule, Charlotte Water has been working with an outside certified laboratory to analyze drinking water samples for over 740 unregulated contaminants.

**These tables reflect results only when a contaminant is detected.** A full list of all the non-detected contaminants can be found on our website at https://charlottenc.gov/Water/WaterQuality/Pages/NonDetects.aspx

The following tables show the results for trace detects of contaminants with current MCL's (Table 1) and contaminants that are not currently regulated (Table 2). Please note that the detects are extremely small, measured in parts per billion (ppb) and even some in parts per trillion (ppt).

### Table 1 – Regulated Contaminants:

The following contaminants are currently regulated by the EPA and therefore, have MCLs. However, current EPA approved analytical methods for the contaminants listed below, do not have detection levels as low as those offered by our outside lab. Therefore, these contaminants are considered non-detected by EPA and do not show up on our regular annual reports.

| Contaminant (units) | Result (Highest) | MCL | EPA Health Advisory (DWEL) |
|---|---|---|---|
| 2,4-D (ppt) | 61 | 70,000 | 200,000 |
| Atrazine (ppt) | 39 | 3,000 | 700,000 |
| Manganese (ppb) | 4.4 | 50* | 1,600 |
| Simazine (ppt) | 41 | 4,000 | 700,000 |

**Definitions from EPA 2018 Edition of the Drinking Water Standards and Health Advisories Tables:**
MCL: Maximum Contaminant Level
Health Advisory (HA): An estimate of acceptable drinking water levels for a chemical substance based on health effects information; an HA is not a legally enforceable Federal standard, but serves as technical guidance to assist Federal, State, and local officials.
DWEL: Drinking Water Equivalent Level. A DWEL is a drinking water lifetime exposure level, assuming 100% exposure from that medium, at which adverse, noncarcinogenic health effects would not be expected to occur.
***** Secondary DW Regulation: Non-enforceable guidelines. Contaminants may cause aesthetic effects in DW.

## Table 2 - Contaminants Not Regulated by EPA:

| Contaminant (units) | Result (Highest) | EPA Health Advisory (DWEL used unless otherwise noted) |
|---|---|---|
| 1,1,1-Trichloro-2-propanone (ppb) | 1.2 | |
| 1,1-Dichloro-2-propanone (ppb) | 0.6 | |
| Acesulfame-K (ppt) | 38 | |
| Acetaldehyde (ppb) | 6 | |
| Boron (ppb) | 38 | 7,000 [1] |
| Bromochloroacetonitrile (ppb) | 1.2 | |
| Caffeine (ppt) | 13 | |
| Chloropicrin (ppb) | 0.8 | |
| Chromium, Hexavalent (ppb) | 0.09 | |
| Deet (ppt) | 15 | |
| Desethylatrazine (DEA) (ppt) | 7.1 | |
| Des-isopropyl atrazine (DIA) (ppt) | 6.7 | |
| Dibromoacetonitrile (ppb) | 0.8 | |
| Dichloroacetonitrile (ppb) | 1.2 | |
| Iohexal (ppt) | 16 | |
| Metolachlor (ppt) | 9.2 | 350,0000 [1] |
| N-Nitrosodiethylamine (NDEA) (ppt) | 4.2 | |
| N-Nitrosodi-N-butylamine (NDBA) (ppt) | 2.4 | |
| Perchlorate (ppb) | 0.11 | 25 [3] |
| Perfluoropentanoic acid (PFPeA) (ppt) | 2.1 | |
| Salicylic Acid (ppt) | 2.1 | |
| Strontium (ppb) | 30 | 20,000 [1] |
| Sucralose (ppt) | 280 | |
| Thiabendazole (ppt) | 220 | |
| Vanadium (ppb) | 0.60 | |

**Definitions from EPA 2018 Edition of the Drinking Water Standards and Health Advisories Tables:**
Health Advisory (HA): An estimate of acceptable drinking water levels for a chemical substance based on health effects information; an HA is not a legally enforceable Federal standard, but serves as technical guidance to assist Federal, State, and local officials.

**1** DWEL: Drinking Water Equivalent Level. A DWEL is a drinking water lifetime exposure level, assuming 100% exposure from that medium, at which adverse, noncarcinogenic health effects would not be expected to occur

**2** Cancer Group: A qualitative weight-of-evidence judgment as to the likelihood that a chemical may be a carcinogen for humans. Sufficient evidence in animals and inadequate or no evidence in humans.

**3** Subchronic value for pregnant women.

**4** Lifetime HA: The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for a lifetime of exposure, incorporating a drinking water RSC factor of contaminant-specific data or a default of 20% of total exposure from all sources. The Lifetime HA is based on exposure of a 70-kg adult consuming 2 liters of water per day. For Lifetime HAs developed for drinking water contaminants before the Lifetime HA policy change to develop Lifetime HAs for all drinking water contaminants regardless of carcinogenicity status in this DWSHA update, the Lifetime HA for Group C carcinogens, as indicated by the 1986 Cancer Guidelines, includes an uncertainty adjustment factor of 10 for possible carcinogenicity.