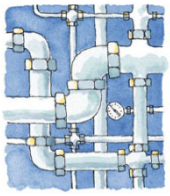

Clemson University Water System

System No, SC3910006

Clemson, SC

2020 Annual Water-Quality Report

Developed June 10, 2021

Clemson University is committed to providing students, faculty, and staff with a safe and reliable supply of high-quality drinking water. We test our water using sophisticated equipment and advanced procedures. The water supplied by Clemson University Water System meets state and federal standards for both appearance and safety. This annual "Consumer Confidence Report," required by the Safe Drinking Water Act (SDWA), tells you where your water comes from, what our tests show about it, and other things you should know about drinking water.

The U.S. Environmental Protection Agency (EPA) and the S.C. Department of Health and Environmental Control (DHEC) have strict standards for all drinking water. These standards are designed to protect consumers from bacteria and water-borne illnesses. In order to protect our customers, water samples are taken all over the campus once a month and the lab results are reviewed by DHEC. Since we are only a distribution system, we do not actually filter or treat our water and therefore depend on our water supplier to furnish us with most of our test results that are listed in this report labeled **Anderson Regional Joint Water System** (ARJWS) Water Quality Table. In addition to continuously monitoring some parameters, the operators at the ARJWS Plant perform over 200 laboratory tests of the water daily.

Water Source

The Clemson University Water System is supplied by ARJWS Hartwell Lake Filter Plant which draws its water from the U.S. Army Corps of Engineers' Hartwell Lake Reservoir lying along the border of upstate South Carolina and Georgia. This water is piped into the CU Water System through three metering stations.

An Explanation of the Water Quality Data Table

The table shows the results of our water-quality analyses. Every regulated contaminant that was detected in the water, even the most minute trace, is listed here. The table contains the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health, the amount detected, the usual sources of such contamination, footnotes explaining our findings, and a key to units of measurement. Definitions of MCL and MCLG are important.

Terms used in the Water Quality Tables and in other parts of this report are defined here.

Maximum Contaminant Level or 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 or MCLG: The level of contaminant in drinking water below which there is not known or expected risk to health. MCLGs allow for a margin of safety.

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirement that a water system must follow.

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

Maximum Residual Disinfectant Level or (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal or (MRDLG): The level of drinking water disinfectant below which there is not known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

Total Organic Carbon (TOC): The measure of the total amount of organic matter within a water solution. For drinking water purposes, it is an indicator of the overall water quality prior to and after treatment.

The data presented in this report is from the most recent testing done in accordance with regulations.

Key To Tables	
AL = Action Level	NTU = Nephelometric Turbidity Units
BDL = Below Detectible Level	pCi/L = picocuries per liter (a measure of radioactivity)
MCL = Maximum Contaminant Level	ppm = parts per million, or milligrams per liter (mg/L) (this compares to one penny in $10,000)
MCLG = Maximum Contaminant Level Goal	ppb = parts per billion, or micrograms per liter (µg/L) (this compares to one penny in $10,000,000)
MFL = Million fibers per liter	ppt = parts per trillion, or nanograms per liter
mrem/year = millirems per year— (a measure of radiation absorbed by the body)	ND = Non-detectable
MRDL = Maximum Residual Disinfectant Level	RAA = Running Annual Average
MRDLG = Maximum Residual Disinfectant Level Goal	TT = treatment technique

The Secondary Standards

Unlike **primary** drinking water regulations, **secondary** drinking water regulations are **not** designed to protect the public health. Instead, they are intended to protect "public welfare" by providing guidelines regarding the **taste, odor, color,** and other **aesthetic aspects** of drinking water, which do **not** present a health risk. Our water supplier, ARJWS analyzes the water for secondary drinking water standards on a regular basis. The following information is based on analyses conducted during calendar year 2020:

Constituent	Annual Average	MCL
pH	7.11 (Units)	6.5 – 8.5
Alkalinity	12.19 mg/L	N/A
Chlorine	1.67 mg/L	4.0 mg/L
Hardness	16.83 mg/L	N/A
Iron	BDL	0.30 mg/L
Manganese	0.009	0.05 mg/L
Sodium	5.8 mg/L	N/A
Sulfate	10.7 mg/L	250 mg/L

Source Water Assessments and Protection Plan

Source Water Assessment Plans (SWAP's) were completed for all public systems in South Carolina by in May 2003. SWAPs identify potential sources of contamination to drinking water supplies. The SC Department of Health and Environmental Control has completed the plans for all SC public water systems. A copy of this assessment report can be obtained by contacting the SC DHEC Bureau of Water in Columbia, South Carolina at (803) 898-4300.

Anderson Regional Joint Water System -- Water Quality Table

Contaminant	Date Tested	Unit	MCL	MCLG	Results	Range	Major Sources	Violation
Microbiological Contaminants								
Total Coliform Bacteria	2020	# per month	0	0	0		Coliforms are bacteria that are naturally present in the environment & are used as an indicator that other, potentially-harmful, bacteria may be present.	NO
Fecal Coliform and *E colli* Bacteria	2020	# per month	0	0	0		Fecal coliforms & *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, and people with severely-compromised immune systems.	NO
Inorganic Contaminants								
Lead**	2019	ppb	AL=15	0	90^{th} % = 0.000	ND	Corrosion of household plumbing systems; Erosion of natural deposits	NO
Copper	2019	ppm	AL=1.3	1.3	90^{th} % = 0.026	0..006 – 0.027	Corrosion of household plumbing systems; Erosion of natural deposits	NO
Turbidity	2020	NTU	0.5	< 0.10	0.03	0.02 – 0.04	Soil runoff.	NO
Fluoride	2020	ppm	4	4	0.63	0.37 – 0.73	Erosion of natural deposits: water additive which promotes strong teeth; discharge from fertilizer and aluminum factories.	NO
Nitrate	2020	ppm	10	10	0.14	0.14	Runoff from fertilizer use: leaching from septic tanks, sewage; erosion of natural deposits	NO
Volatile Organic Contaminants								
Total Trihalomethanes (TTHMS)	2020	ppb	80	No goal for total	RAA = 11	6.0 – 15.6	By-product of drinking water chlorination	NO
Haloacetic Acids (HAA)	2020	ppb	60	No goal for total	RAA = 6	3.0 - 8.8	By-product of drinking water chlorination	NO
Chlorine	2020	ppm	4	MRDLG = 4	RAA = 1.67	1.57 – 1.71	Water additives used to control microbes	NO

Also during 2020, ARJWS was monitored for PCBs/Toxaphene*. No detections were noted.

*<u>*Polychlorinated biphenyls (PCBs*</u>) are man-made chemicals that belong to a family of chemicals known as chlorinated hydrocarbons. PCBs were manufactured in the U.S. from 1929 until 1979, when their manufacture was banned due to concerns about their persistence, bioaccumulation, and potential for adverse effects on human health and the environment. Because PCBs are chemically stable with a high boiling point, and non-flammable with excellent electrical insulating properties, PCBs were used in hundreds of industrial and commercial applications including electrical, heat transfer and hydraulic equipment; as plasticizers in paints, plastics and rubber products (including caulk) and in many other industrial applications.

<u>*Toxaphene*</u>, a synthetic organic chemical, is an amber, waxy organic solid with a piney color. It was used as an insecticide for cotton and vegetables, an on livestock and poultry. In 1982, most of its uses were banned and in 1990, all uses were banned in the United States. EPA regulates toxaphene in drinking water to protect public health. Toxaphene may cause health problems if present in public or private water supplies in amounts greater than the drinking water standard set by EPA.

**Lead in Drinking Water: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. For 2019, ARJWS had no sites tested exceed the action level. ARJWS is on reduced monitoring for lead and copper. Its next monitoring event will be in 2022. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. ARJWS is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at 1-800-426-4791 or at http://www.epa.gov/safewater/lead.

Water Quality Table Footnotes

As you can see from the above table, the ARJWS had no violations. The above table shows only the contaminants that had detections. The water supplied to Clemson University from ARJWS met or exceeded all Federal and State requirements.

Table of Total Organic Carbon (TOC) Removal

Anderson Regional Joint Water System -- 2017							
Contaminant	Sample Frequency	MCL**	Results*	Average Source Water TOC	Source Water Range	Likely source of contamination	Violation
Total Organic Carbon (TOC)	Monthly	Treatment Technique (TT) required if target not met through Step 1 criterion.	39 % removal,	1.82 mg/L	1.50 – 2.00 mg/L removal	Naturally present in the environment	No

*For source water TOC level **greater** than 2.0 mg/L, 35% removal is required.
For source water TOC level **less** than 2.0 mg/L, an Alternative Criteria 1 is used. Lake Hartwell routinely meets this Alternative Criteria, as the source water TOC is typically below 2.0 mg/L.

**If TOC removal levels are under 35%, and the source water TOC exceeds 2.0 mg/L, the Treatment Technique criterion for TOC under Step 1 is required. The Step 1 criterion is defined by USEPA regulation R.61-58.13.F.

Clemson University Water System -- Water Quality Table

(Data collected during calendar year 2017)

COLIFORM BACTERIA MEASURED IN THE DISTRIBUTION SYSTEM						
Contaminant	**MCLG**	**TT**	**Result**	**Date of Samples**	**Was TT Exceeded?**	**Typical Source**
Total Coliform	N/A	TT*	No positive E. coli results	2020	No	Naturally present in the environment

On April 6, 2016 SCDHEC required Public Water Systems to implement the Revised Total Coliform Rule (RTCR).
Under the RTCR, a Treatment Technique (TT) violation is defined as any of the following:

- E. coli positive repeat sample followed by a total coliform positive routine sample
- Total coliform positive repeat sample following a E. coli routine sample
- Failure to take all required repeat samples following an E. coli positive routine sample
- Failure to test for E. coli when any repeat sample tests positive for total coliform

Contaminant	Date Tested	Units	Action Level	90TH Percentile Value	MCLG	Sampling Sites Exceeding Action Level	Possible Sources	Violation
Inorganic Contaminants								
Lead**	2020	ppb	15	0.0	0	0	Corrosion of household plumbing systems; Erosion of natural deposits	NO
Copper	2020	ppm	1.3	0.16	1.3	0	Corrosion of household plumbing systems; Erosion of natural deposits	NO

Contaminant	Date Tested	Units	MCL	MCLG	Running Annual Avg	Range	Major Sources	Violation
Volatile Organic Contaminants								
Total Trihalomethanes (TTHMS)	2020	ppb	80	No goal for total	60	14 – 78	By-product of drinking water chlorination	NO
Haloacetic Acids (HAA)	2020	ppb	60	No goal for total	15	7 - 22	By-product of drinking water chlorination	NO
Chlorine	2020	ppm	4	MRDLG = 4	1.13	0.08 – 1.65	Water additive used to control microbes	NO

Water Quality Table Footnotes

**Lead in Drinking Water: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. For 2020, the Clemson University Water System had no sites tested exceed the action level. Clemson University is on a reduced monitoring schedule for lead and copper. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Clemson University 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.

Contaminants not detected

ARJWS Water Treatment Plant was monitored for contaminants per the Unregulated Contaminant Rule 3 (UCMR3) in 2020. No concerning detections were noted. If you have any questions regarding this list, please contact Chris Weber, ARJWS Operations Manager by phone at (864) 332-6534 or email at bbates@arjwater.com.

The following is a list of contaminants that ARJWS tested for **but not were not detected** in the drinking water:
Arsenic, Cadmium, Chromium, Cyanide (total), Mercury, Nickel, Selenium, Hexachlorocyclopentadiene, Propachlor, Hexachlorobenzene, Lindane, Heptachlor, Aldrin, Alachlor, Heptachlor Epoxide, Chloradane, Metolachlor, Butachlor, Dieldrin, Endrin, Methoxychlor, Toxaphene, Simazine, Atrazine, Metribuzin, DBCP, EDB,2,4,5-TP (Silvex), PCP, Methlyene Chloride, Di-2-(Ethylhexyl) Adipate, Di-2-(Ethylhexyl) Phthalate, Aldicarbsulfoxide, Aldicarbsulfone, Oxamyl (Vydate), Methomyl, 3-Hydroxycarbofuran, Aldicarb, Carbofuran, Carbaryl(Sevin), Dalapon, Dicamba, 2, 4-D, Glyphosphate, Dinoseb, Picloram, Benzo(a)Pyrene, p-Isopropyltoluene, Chloromethane, Dichlorodifluoromethane, Bromomethane, Chloroethane, Hexachlorobutadiene, Naphthalene, 1,2,3-Trichlorobenzene, Cis-1,2-Dichloroethene, 1,3 Dichloropropene, Dibromomethane, Antimony, Diquat, 1,1-Dichloropropene, 1,2-Dichloropropane, 2,2 Dichloropropane, trans-1,3 Dichloropropene, 1,2,3-Trichloropropane, 1,3-Dichloroporpane, 1,2,4-Trimethlylbenzene, 1,2,4-Trichlorobenzene, n-Butylbenzene, Beryllium, 1,3,5-Trimethylbenzene, Tert-Butylbenzene, Sec-Butylbenzene, Bromochloromethane, Xylenes (total),2-Chlorotoluene, 4-Chlorotoluene,1,2-Dichlorobenzene,1,3-Dichlorobenzene,1,4-Dichlorobenzene,Vinyl chloride, 1,1-Dichloroethlyene, 1,1-Dichloroethane, Trans-1,2-Dichloroethene, 1,2-Dichloroethane, 1,1,1-Trichloroethane, Thallium, Carbon Tetrachloride, Trichloroethylene, 1,1,2-Trichloroethane, Tetrachloroethane, 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, Chlorobenzene, Benzene, Toluene, Ethylbenzene, Bromobenzene, Isopropylbenzene, Styrene, MTBE, n-Propylbenzene, Barium, Trichlorofluoromethane, BCHG-Gamma, M-Dichlorobenzene, D-Dichlorobenzene, P-Dichlorobenzene, and Tetrachloroethylene.

* DCPA degradates are not separately determined by these methods; therefore, they will be reported as the sum of both degradates.

In 2017 the USEPA selected the Clemson University Water System to be one of the randomly chosen small systems to be included in the pool of systems that were required by the UCMR4 to sample for cyanotoxins in the summer of 2020. The results of all eight samples were below the detection limit.

Required Additional Health Information

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

Drinking water, including bottled water, may reasonably be expected to contain at least a small amount of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. The MCL's 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. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline 1-800-426-4791.

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 human activity.

Contaminants that may be present in source water include:

(A) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

(B) 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.

(C) Pesticides and herbicides, which may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.

(D) Organic chemical contaminants, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff and septic systems.

(E) Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

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/Center for Disease Control 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).

National Primary Drinking Water Regulation Compliance

We will be happy to answer any questions about this report or the Clemson University Water System. If you have any questions please call Billy Bolger at (864) 656-2565 or e-mail Billy at wbolger@clemson.edu.

Water quality data for community water systems throughout the United States is available on the web at https://echo.epa.gov/help/sdwa-faqs.

A copy of this report is posted on the internet at:

http://cufacilities.sites.clemson.edu/documents/utility/Annual%20Water-Quality%20Report.pdf