

2021 Annual Drinking Water Quality Report

Brookdale Development

Water System Number: 20-13-008

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 Silas Bolen at (704) 455-4669. We want our valued customers to be informed about their water utility.**

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. The Town of Harrisburg 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 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

The water that is used by this system is Purchased water from the City of Charlotte.

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 Brookdale Development 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	Inherent Vulnerability Rating	Contaminant Rating	Susceptibility Rating	SWAP Report Date
Lake Norman	Higher	Higher	Higher	September 2020
Mountain Island Lake	Moderate	Moderate	Moderate	September 2020

The complete SWAP Assessment report for Brookdale Development 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.

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. We have implemented the following source water protection actions: You can help protect your community’s drinking water source(s) in several ways: (examples: dispose of chemicals properly; take used motor oil to a recycling center, volunteer in your community to participate in group efforts to protect your source, etc.).

Violations that Your Water System Received for the Report Year
During 2021, there were 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 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, (2021).** 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.

Parts per trillion (ppt) or Nano grams per liter (Nano grams/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 Pico grams per liter (Pico grams/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.

Million Fibers per Liter (MFL) - Million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.

Nephelometric Turbidity Unit (NTU) - Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Action Level (AL) - The concentration of a contaminant which, if exceeded, triggers treatment or other 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

REVISED TOTAL COLIFORM RULE (Samples taken January 1, 2019 through December 31, 2019):

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

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

***E.coli* - 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 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.**

Fecal Indicators (enterococci or coliphage) - Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health 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	Your Water NTU	MCLG	Treatment Technique (TT) Violation if:	Likely Source of Contamination
Turbidity (NTU) - Highest single turbidity measurement	2021	N	0.312	N/A	Turbidity > 1 NTU	Soil runoff
Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits	2021	N	100%	N/A	Less than 95% of monthly turbidity measurements are ≤ 0.3 NTU	

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

Inorganic Contaminants

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Likely Source of Contamination
Fluoride (ppm)	2021	N	0.95	0.28 - 0.96	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories

Asbestos Contaminant

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range Low High	MCLG	MCL	Likely Source of Contamination
Total Asbestos (MFL)	2020	N	N/D	N/A	7	7	Decay of asbestos cement water mains; erosion of natural deposits

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)	2021	ND	0	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb) (90 th percentile)	2021	ND	0	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits

Total Organic Carbon (TOC)

Contaminant (units)	Year Sampled	TT Violation Y/N	Your Water (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)	2021	N	1.03	0.38-1.33	Compliance Method ACC#2 Treated Water <2.00 (ppm)	TT	Naturally present in the environment	ACC#2

Disinfectant Residuals Summary

	Year Sampled	MRDL Violation Y/N	Your Water (highest RAA)	Range		MRDLG	MRDL	Likely Source of Contamination
				Low	High			
Chlorine (ppm)	2021	N	0.45	0.29	0.59	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		MCLG	MCL	Likely Source of Contamination
				Low	High			
TTHM (ppb)								
Location (Ex. B01)	2021	N	0.05	0.04	0.0664	N/A	80	Byproduct of drinking water disinfection
HAA5 (ppb)								
Location (Ex. B01)	2021	N	0.01575	0.012	0.0194	N/A	60	Byproduct of drinking water disinfection

For TTHM: *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 systems, and may have an increased risk of getting cancer.*

For HAA5: *Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer*

Other Miscellaneous Water Characteristics Contaminants

Contaminant (units)	Sample Date	Your Water	Range		SMCL
			Low	High	
Alkalinity (ppm)	2021	17	15-20		N/A
Aluminum	2021	34	26-56		50-200 ppb
Calcium Hardness as CaCO ₃ (ppm)	2021	20	17-23		N/A
Chloride (ppm)	2021	5.8	5.2-6.2		250 ppm
Conductivity (umhos/cm)	2021	85	77-89		N/A
Hardness Total as CaCO ₃ (ppm)	2021	27	24-31		N/A
Iron	2021	22	7 - 49		300
Magnesium	2021	1.7	1.5-2.0		N/A
Manganese	2021	3	0-4		50
pH	2021	8.60	7.25-9.67		6.5-8.5**
Silica (ppm)	2021	9.8	8.9-10.8		N/A
Sodium (ppm)	2021	3.3	2.7– 3.7		N/A
Sulfate (ppm)	2021	8.1	7.7 – 9.7		250 ppm
Total Dissolved Solids (TDS) (ppm)	2021	57	42-64		500 ppm

***The PWS Section requires monitoring for other misc. contaminants, some of which the EPA has not 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 in order to ensure optimal corrosion control treatment.**

Cryptosporidium

Charlotte Water monitors quarterly for Cryptosporidium and Giardia. There were **zero detects** for 2021.

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.

The following table reflects results only when a contaminant is detected.

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 traces of contaminants are considered non-detected by the EPA.

Contaminant (units)	Result (Highest)	MCL	EPA Health Advisory (DWEL)
Atrazine	8	3000	700,000
Manganese	2	50*	1600
Simazine	10	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 the health effects information; an HA is not a legally enforceable Federal standard, but serves as a 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.

Contaminants Not Regulated by EPA:

Contaminant (units)	Result Highest	EPA Health Advisory (DWEL) used unless otherwise noted
1,1,1 – Trichloro – 2 -propanone (ppb)	0.6	
Acesulfame -K (ppt)	47	
Albuterol (ppt)	47	
Bezafibrate (ppt)	54	
Boron (ppb)	28	7,000 ¹
Bromochloroacetic Acid (ppb)	3.1	
Bromochloroacetonitrile (ppb)	0.8	
Caffeine (ppt)	260	
Chromium, Hexavalent (ppb)	0.1	
Desethylatrazine (DEA) (ppt)	37	
Diaminochlorotriazine (DACT) (ppt)	21	
Dichloroacentrile (ppb)	1.1	
Erucylamide (ppb)	8	
Iohexal (ppt)	23	
Perchlorate (ppb)	0.06	25 ³
Perfluorohexanoic acid (ppt)	1.8	
Perfluorooctanoic Acid (ppt)	1.8	
Perfluoropentanoic acid (PFPeA) (ppt)	1.7	
Perfluorooctanesulfonic acid (ppt)	1.8	
Perfluorooctanesulfonamide (ppt)	1.8	
Salicylic Acid (ppt)	470	
Stontium (ppb)	34	20,000 ¹
Sucralose (ppt)	820	
Theophylline	19	

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 legally enforceable Federal standard, but serves as a 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 judgement as to the likelihood that a chemical may be a carcinogen for humans. Sufficient evidence in animals and inadequate orno 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 or noncarcinogenic effects or 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 group C carcinogens, as indicated by the 1986 Cancer Guidelines, includes an uncertainty adjustment factor of 10 for possible carcinogenicity.

