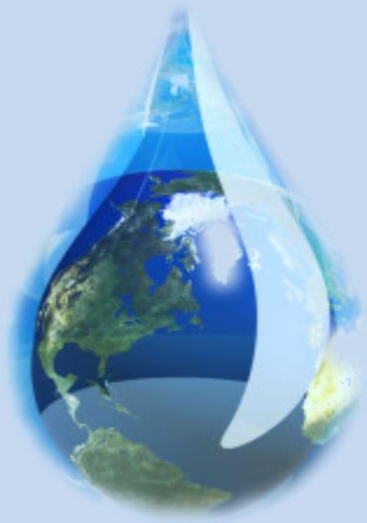
Annual

WATER QUALITY REPORT

Reporting Year 2019



CHATHAM COUNTY
NORTH CAROLINA

PWS ID#: 03-19-126, 03-19-050, 40-19-010

Annual Water Quality Report For 2019

Chatham County, PWS ID#: NC 03-19-126, 03-19-050, 40-19-010

We are pleased to present our annual water quality report, which covers all testing performed between January 1 and December 31, 2019. This report is developed to keep you informed about your water quality, what it contains, and how it compares to standards set by regulatory agencies. To that end, we remain vigilant in meeting the challenges of new regulations, source water protection, water conservation, community outreach and education while continuing to serve the needs of all our water customers. Thank you for allowing us to continue providing you and your family with high quality drinking water.

If you have any questions about this report or concerning your water, please contact Daniel Clevenger at the Chatham County Water Treatment Plant at 919-303-0055. If you are interested in attending a Board of Commissioners (BOC) meeting, the BOC meets the second Monday of each month at 6 p.m. on the 2nd floor of the Historic Courthouse at 40 East Street in Pittsboro. Meetings are open to the public.

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

Where Does My Drinking Water Come From?

North Water System (PWS #03-19-126): Governors Club, Briar Chapel, Bynum, sections of Moncure, Corinth, and Merry Oaks area water customers. The water supply comes from a connection with the Town of Cary's raw water transmission line that withdraws water from Jordan Lake and is treated through the operation of the Chatham County Water Treatment Facility. Built in 1995, it is a multistage treatment facility designed to treat and pump up to 3 million gallons of water every day (MGD). The raw water daily average is 2.00 MGD, and the yearly total raw water is 731.639 MG. The finished water daily average is 1.837 MGD, and the yearly finished total is 670.488 MG. Chatham County purchases some of its water supply for the North Water System from the City of Durham. The daily average from the City of Durham is 0.092 MGD. The City of Durham draws from two surface water sources, Lake Michie and the Little River Reservoir.

Asbury Water System (PWS #40-19-010): Asbury and sections of Moncure area water customers. Chatham County purchases the water supply from the City of Sanford, which draws from a single surface water source from the Cape Fear River. The Haw River, the Deep River, and the Rocky River form the headwaters of the Cape Fear River Basin.

Southwest Water System (PWS #03-19-050): Silk Hope, Highway 902, Bonlee, Harpers Crossroad, and Bennett area water customers. Chatham County purchases the water supply from the Town of Siler City, which draws from a single surface water source from the Rocky River and from the City of Sanford, which draws from a single surface water source from the Cape Fear River. The Haw River, the Deep River and the Rocky River form the headwaters of the Cape Fear River Basin.

Water Restrictions

Chatham County has adopted year-round conservation measures. For more details, visit our web site at www.chathamnc.org.

Chatham County purchases a percentage of its water supply from the Town of Siler City, the City of Sanford and the City of Durham. The County water customers served by Siler City's water (Southwest Water System), Sanford's water (Asbury Water System and parts of the Southwest Water System) and Durham's water (parts of the North Water System) are also required to abide by their water restrictions. For more information, visit the Town of Siler City's website at www.silercity.org, the City of Sanford's website at www.sanfordnc.net or the City of Durham's website at www.durhamnc.gov.

Important Health Information

Some Chatham County water customers may be more vulnerable to elements in drinking water than the general population. Immune compromised persons such as persons undergoing chemotherapy, persons who have undergone organ transplants, persons with HIV/AIDS or other immune system disorders, elderly and infants may be particularly at risk from infections. These persons should seek advice about drinking water from their health care providers. The U.S. Environmental Protection Agency (EPA) and the Centers for Disease Control and Prevention (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 at (800) 426-4791 or www.water.epa.gov/drink/hotline.

Substances That Could Be in Water

To ensure tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration 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 small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

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. In some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Substances that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife. **Inorganic Contaminants**, such as salts and metals, can be naturally occurring or may 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, are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems. **Radioactive Contaminants**, can be naturally occurring or may be the result of oil and gas production and mining activities. For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Lead in Customer Plumbing

Elevated levels of lead, if present, can cause serious health problems especially for pregnant women and young children. Lead in drinking water primarily comes from materials and components associated with service lines and home plumbing. Chatham County is responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When the water in your residential plumbing has been stagnant for several hours, the potential for lead exposure can be minimized 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 (800) 426-4791 or at www.epa.gov/safewater/lead.

Source Water Assessment Program

The North Carolina Department of Environmental Quality (NCDEQ), Public Water Supply (PWS), Source Water Assessment Program (SWAP) conducted assessments for all drinking water sources across North Carolina. The purpose of these assessments is to determine the susceptibility of each drinking water source (well or surface water) to potential contaminant sources (PCS). The relative susceptibility rating of the water source for Chatham County's North Water System was determined by combining the contaminant rating (number and location of PCS with the assessment area) and the inherent vulnerability rating (characteristics or existing conditions of the watershed and its delineated assessment area). The assessment findings are summarized in the table below:

Source System Name	Source Name	Susceptibility Rating	Report Date
North Water System (03-19-126)	Jordan Lake Watershed	Higher	August 2017
Purchased Water Systems	Source Name	Susceptibility Rating	Report Date
Asbury Water System (40-19-010)	Cape Fear River (City of Sanford)	Higher	August 2017
Southwest Water System (03-19-050)	Rocky River (Town of Siler City)	Moderate	September 2017
North Water System (03-19-126)	Lake Michie (City of Durham)	Moderate	September 2017
	Little River Reservior (City of Durham)	Higher	September 2017

The complete SWAP Report for Chatham County North Water System (03-19-126) may be viewed at the Web site https://www.ncwater.org/files/swap/SWAP_Reports/0319126_8_31_2017_17_22.pdf. 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 Annual Water Quality Report was prepared. If you are unable to access your SWAP report on the above Web site, 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 (ex.: Chatham County North Water System), system number (ex.: 03-19-126), 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 PCS in the assessment area.

Emerging Contaminants

Chatham County is committed to providing high-quality, safe drinking water and closely follows the scientific study of contaminants of emerging concern. More than 100,000 chemicals are registered in the United States, and new chemicals and microorganisms continue to be identified. Some of these contaminants can be detected at extremely low levels (parts per trillion - ppt) by continuously improving test methods. For reference, one ppt is approximately the equivalent of one grain of sugar dissolved in an Olympic-sized swimming pool. The health significance of these trace contaminants is often under review, and is the subject of further study and research. The fact that a substance is detectable doesn't mean it is immediately harmful. The EPA issues a health advisory for contaminants of emerging concern when research indicates a potential health impact. Health advisories provide information to the public so state and local agencies can take appropriate action to protect public health. The potential health impacts are usually risk-based, where a small amount of a substance, consumed regularly over a long period of time, may increase the risk of certain diseases for some portion of the population.

The Town of Cary owns and operates a raw water intake on Jordan Lake just north of the Highway 64 bridge. Chatham County purchases raw water from Cary through a connection to their raw water transmission line. Chatham County relies heavily on the raw water testing that the Town of Cary does to stay ahead of the ever changing water quality at Jordan Lake. There has been recent media coverage of 1-4 Dioxane being discharged by industries upstream of Jordan Lake and the Lower Haw River near the City of Greensboro. The Town of Cary, Chatham County and many other water purveyors nationwide have been testing for 1-4 Dioxane for some time now. In 2014, as part of the EPA's 3rd Unregulated Contaminant Monitoring Rule (UCMR3), Chatham County tested for 1-4 Dioxane, along with various other unregulated emerging contaminants in finished (treated) water samples. The results for 1-4 Dioxane showed a detection level of 0.50 parts per billion (ppb) which was similar to the results that the Town of Cary showed. In December of 2018, the Town of Cary tested again for 1-4 Dioxane as part of a bio-filtration effectiveness study they were conducting during one of their water treatment plant upgrades. These results showed a level of 0.42 parts per billion (ppb). Raw water testing continues to take place as part of the Triangle Area Water Supply Monitoring Project (TAWSMP). 1-4 Dioxane is tested bi-monthly at Jordan Lake near the USGS site along Hwy 64. These results are published on the USGS data site at https://nwis.waterdata.usgs.gov/nc/nwis/ . The levels over the past year have ranged from less than 0.200 ppb to 1.07 ppb. The US EPA's lifetime health advisory limit is 200 ppb. Results from much of the testing that the Town of Cary is performing for these emerging contaminants can be found on their website using the following link: https://www.townofcary.org/services-publications/water-sewer-stormwater/water/water-treatment/emerging-contaminants .

Since November of 2017, the Town of Cary, from whom Chatham County purchases its raw water, has been utilizing an independent lab to test the water at their raw water intake. This initial testing detected the presence of perfluorintaed compounds or PFCs. While these PFCs were detected, the levels of these compounds in the raw water was and continues to be well below the health advisory level for Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) which the EPA has set at 70 parts per trillion (combined). Since the initial testing started in November of 2017 (weekly testing initially and is currently done quarterly) concentrations of PFOA and PFOS in the raw water have never exceeded 50 parts per trillion and have routinely stayed in the 20-30 parts per trillion at the raw water intake on Jordan Lake. Despite these levels being below the EPA's health advisory level, Chatham County in conjunction with the Town of Cary decided to take a proactive approach to lower the PFC levels even further. The Town of Cary increased their powder-activated carbon (PAC) treatment at the raw water intake and Chatham County increased theirs as well at their water treatment facility. Through Cary's testing and Chatham County's testing it was determined that PAC proved to have some effectiveness at decreasing perfluorinated compounds including PFOA and PFOS. The levels of PFOA and PFOS in Chatham County's treated water (the water distributed to our customers) have routinely stayed in the 5-10 parts per trillion concentration range and have often been at a level less than 2 parts per trillion.

Chatham County continues to monitor PFC (PFOA and PFOS included) concentrations on a quarterly basis to ensure that our drinking water meets and exceeds EPA and NCDEQ drinking water standards. We are in constant communication with these agencies, discussing what can be done to identify and stop the release of these compounds into the water supply.

Sampling Results

During the past year, we have taken hundreds of water samples to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The tables below show the contaminants that were detected in drinking water. The state requires us to monitor for certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year the sample was taken.

REGULATED SUBSTANCES

				North Water System		Southwest Water System (Purchased Water from The Town of Siler City and the City of Sanford)		Asbury Water System (Purchased Water from The City of Sanford)			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE (Low - High)	AMOUNT DETECTED	RANGE (Low - High)	AMOUNT DETECTED	RANGE (Low - High)	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2013	15	0	1	NA	NA	NA	NA	NA	No	Erosion of natural deposits
Combined Uranium (pCi/L)	2019	5	0	ND	NA	NA	NA	NA	NA	No	Erosion of natural deposits
Combined radium (pCi/L)	2019	20.1	0	ND	NA	NA	NA	NA	NA	No	Erosion of natural deposits
Chloramines (ppm)	2019	[4]	[4]	3.64	1.65 - 4.00	2.57	0.06 - 3.79	3.6	2.42 - 3.75	No	Water additive used to control microbes
Chlorine (ppm)	2019	[4]	[4]	3.37	0.32 - 4.00	2.49	0.6 - 3.7	2.53	2.07 - 2.75	No	Water additive used to control microbes
Flouride (ppm)	2019	4	4	0.75	0.48 - 0.99	0.47	0.47 - 0.47	1.0	NA	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Total Haloacetic Acids [HAA5] - Stage 2 (ppb)	2019	60	NA	16	2 - 22	37	2 - 62	50	10 - 76	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes] - Stage 2 (ppb)	2019	80	NA	29	8 - 35	60	22 - 77	63	21 - 85	No	By-product of drinking water chlorination needed to kill harmful organisms; Formed when source water contains large amounts of organic matter
Total Organic Carbon [TOC] [2] (ppm)	2019	TT	NA	1.78	1.10 - 3.80	NA	NA	NA	NA	No	Naturally present in the environment
Total Organic Carbon [TOC] (removal ratio)	2019	TT	NA	1.62	1.10 - 1.80	1.61	1.49 - 1.72	1.27	1.01 - 1.53	No	Naturally present in the environment
Turbidity [3] (NTU)	2019	TT = 1 NTU	NA	0.081	0.009 - 0.298	0.25	NA	0.15	NA	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2019	TT=95% of samples < 0.3	NA	100	NA	100	NA	100	NA	No	Soil runoff

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

* Some people who drink water containing trihalomethanes in excess of the MCL over many years may have experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.

COPPER AND LEAD CONTAMINANTS SAMPLED IN 2019 - ASBURY WATER SYSTEM [1] (Tap water samples were collected for copper and lead analysis from sample sites throughout the community)

CONTAMINANT (UNIT OF MEASURE)	YEAR SAMPLED	MCLG	AL	AMOUNT DETECTED	SITES ABOVE AL / TOTAL SITES	TYPICAL SOURCE
Copper (ppm) - (90^{th} percentile)	2019	1.3	AL = 1.3	0.111	0 / 30	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb) - (90^{th} percentile)	2019	0	AL = 15	0	0 / 30	Corrosion of household plumbing systems; erosion of natural deposits

SECONDARY SUBSTANCES (NORTH WATER SYSTEM)

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE (Low-High)	VIOLATION	TYPICAL SOURCE
Iron (ppb)	2019	300	NA	14	1 - 90	No	Leaching from natural deposits: Industrial wastes
Manganese (ppb)	2019	50	NA	7	1 - 49	No	Leaching from natural deposits
pH (Units)	2019	6.5 - 8.5	NA	7.53	7.20 - 7.80	No	Naturally occuring
Sulfate (ppm)	2019	250	NA	28	NA	No	Runoff / leaching from natural deposits; Industrial wastes

UNREGULATED SUBSTANCES (NORTH WATER SYSTEM)

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE (Low-High)
Nickel (ppm)	2019	ND	NA
Sodium (ppm)	2019	21.9	NA
Phosphate (ppm)	2019	0.996	0.800 - 1.190
Total Calcium (ppm)	2019	7.94	6.80 - 9.15
Total Hardness (ppm)	2019	31	27 - 36
Total Magnesium (ppm)	2019	2.76	2.32 - 3.21

[1] Copper and Lead testing is performed on each of the three Chatham County Water Systems (North, Asbury and Southwest) once every three years. The Southwest Water System will be tested in 2020 and the North Water System will be tested in 2021.

[2] Depending on the TOC in the source water, the system MUST have a certain percentage removal of TOC or must achieve alternative compliance criteria. If this percentage removal is not achieved, there ia an alternative percentage removal. If a system fails to meet the alternative percentage removal, the system is in violation of a Treatment Technique.

[3] Turbidity is a measure of 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 be less than or equal to 0.3 NTU.

Definitions:

- **Al (Action level)**: The concentration of the contaminant which, if exceeded, triggers treatment or other requirements that 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 Stage 2 Disinfectants and Disinfection Byproducts Rule.
- **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.
- **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.
- **MRDL (Maximum Residual Disinfectant Level)**: The highest level of disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **MRDLG (Maximum Residual Disinfectant 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.
- **NA (Not applicable)**: Information not applicable/ not required for that particular water system or for that particular rule.
- **ND (Not detected)**: Indicates that the substance was not found by laboratory analysis.
- **NTU (Nephelometric Turbidity Units)**: Measurement of the clarity, or turbidity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
- **pCi/L (picocuries per liter)**: A measure of radioactivity.
- **ppt (parts per trillion) or Nanograms per liter (nanograms/L)**: One part substance per trillion parts water. One ppt corresponds to one minute in 2,000 years, or a single penny in $10,000,000.
- **ppb (parts per billion)**: One part substance per billion parts water (or ug/L). One part substance per billion parts water. One ppb corresponds to one minute in 2,000,000 years, or a single penny in $10,000,000,000.
- **ppm (parts per million)**: One part substance per million parts water (or mg/L). One part substance per million parts water. One ppm corresponds to one minute in 2 years, or a single penny in $10,000.
- **Removal ratio**: A ratio between the percentage of a substance actually removed to the percentage of the substance required to be removed.
- **SMCL (Secondary Maximum Contaminant Level)**: Acceptable concentrations of contaminants which cause unpleasant tastes, odors, or colors in the water. SMCLs are for contaminants that will not cause adverse health effects.
- **TT (Treatment Technique)**: A required process intended to reduce the level of a contaminant in drinking water.