



CITY OF SANFORD WATER FILTRATION FACILITY

7441 POPLAR SPRINGS CHURCH ROAD, SANFORD, NC 27330

2022 ANNUAL WATER QUALITY REPORT

Water System Number: NC 03-53-010

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

We are pleased to present our annual water quality report covering all testing performed between January 1 and December 31, 2022. 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, and 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 Scott Christiansen at 919-777-1803. If you are interested in attending a City Council meeting, the Council meets the first and third Tuesdays of each month at 5 p.m. in the Council Chambers in the Municipal Building at 225 East Weatherspoon Street in Sanford. Meetings are open to the public. Public comment is open during the first meeting of each month. Those who want to make a general public comment must sign up at least 15 minutes prior to the meeting.

What EPA Wants You to Know

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

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. 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 City of Sanford 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

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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, 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 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 City of Sanford's customers are fortunate because they enjoy an abundant water supply from a single surface water source, the Cape Fear River. The Deep, Haw, and Rocky Rivers form the headwaters of the Cape Fear River Basin.

Source Water Assessment Program (SWAP) Results

The North Carolina Department of Environment and Natural Resources (DENR), Public Water Supply (PWS), Source Water Assessment Program (SWAP) conducted assessments for all drinking water sources across North Carolina. The purpose of assessments was to determine the susceptibility of each drinking water source (well or surface water intake) to potential contaminant sources (PCSs). The relative susceptibility rating of the water source for the City of Sanford was determined by combining the contaminant rating (number and location of PCSs with the assessment area) and the inherent vulnerability rating (i.e., characteristics or existing conditions of the watershed and its delineated assessment area). The assessment findings are summarized in the table below:

SOURCE NAME	INHERENT VULNERABILITY RATING	CONTAMINANT RATING	SUSCEPTIBILITY RATING	SWAP REPORT DATE
Cape Fear River	Higher	Moderate	Higher	September 2020

The complete SWAP report for the City of Sanford may be viewed on the Web at <http://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 Annual Water Quality Report 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 (City of Sanford), system number (03-53-010), 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 systems' potential to become contaminated by PCSs in the assessment area.

Water Quality Data of Detected Contaminants

We routinely monitor for over 150 water quality contaminants in your drinking water according to Federal and State laws. The tables below list all the contaminants that we detected in the last round of sampling for each particular

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contaminant group. The presence of contaminants does not necessarily indicate the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done January 1 through December 31, 2022. 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.

Filtered Water Quality Data (Regulated)

TURBIDITY						
CONTAMINANT (UNIT OF MEASURE)	TT VIOLATION Y/N	YOUR WATER	TREATMENT TECHNIQUE (TT) VIOLATION IF:			LIKELY SOURCE OF CONTAMINATION
Turbidity (NTU)-Highest single turbidity measurement	No	0.2	Turbidity > 1 NTU			Soil Runoff
Turbidity (NTU)-Lowest monthly percentage (%) of samples meeting turbidity limits	No	100%	Less than 95% of monthly turbidity measurements are ≤0.3 NTU			
<ul style="list-style-type: none"> Turbidity is a measure of the cloudiness of 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 (UNIT OF MEASURE)	MCL VIOLATION	YOUR WATER	RANGE LOW-HIGH	MCLG	MCL	LIKELY SOURCE OF CONTAMINATION
Fluoride (ppm)	No	0.56	0.09-0.81	4	4	Erosion of natural deposits. Water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
SYNTHETIC ORGANIC CONTAMINANTS						
CONTAMINANT (UNIT OF MEASURE)	MCL VIOLATION	YOUR WATER	RANGE LOW-HIGH	MCLG	MCL	LIKELY SOURCE OF CONTAMINATION
Atrazine (ppb)	No	0.17	N/A	3	3	Runoff from herbicide on row crops
Simazine (ppb)	No	0.07	N/A	4	4	Runoff from herbicide on row crops
COPPER AND LEAD CONTAMINANTS (Tap water samples were collected for copper and lead analysis from 30 sample sites throughout the community during the 3 rd quarter of 2022)						
CONTAMINANT (UNIT OF MEASURE)	YOUR WATER	SITES ABOVE AL/ TOTAL SITES	MCLG	AL	LIKELY SOURCE OF CONTAMINATION	
Copper (ppm) (90 th percentile)	0.118	0/30	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits	
Lead (ppb) (90 th percentile)	<0.003	0/30	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits	

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Filtered Water Quality Data (Regulated)

TOTAL ORGANIC CARBON							
CONTAMINANT (UNIT OF MEASURE)	TT VIOLATION Y/N	YOUR WATER	RANGE MONTHLY REMOVAL RATIO LOW-HIGH	MCLG	TT	LIKELY SOURCE OF CONTAMINATION	COMPLIANCE METHOD
Total Organic Carbon (Removal Ratio) (TOC)-TREATED	NO	1.05	0.97-1.37	N/A	TT	Naturally present in the environment	STEP 1
STEP 1 TOC REMOVAL REQUIREMENTS							
SOURCE WATER TOC (mg/L)				SOURCE WATER ALKALINITY mg/L as CaCO ₃ (in percentages)			
				0-60	>60-120	>120	
>2.0-4.0				35.0	25.0	15.0	
>4.0-8.0				45.0	35.0	25.0	
>8.0				50.0	40.0	30.0	
DISINFECTION RESIDUALS SUMMARY							
CONTAMINANT (UNIT OF MEASURE)	MCL/MRDL VIOLATION Y/N	YOUR WATER (Highest RAA)	RANGE LOW-HIGH	MRDLG	MCL	LIKELY SOURCE OF CONTAMINATION	
Chloramines (ppm)	N	3.48	2.5-3.7	4	4	Water additive used to control microbes	
Chlorine (ppm) {March only}	N	2.52	2.3-2.9	4	4	Water additive used to control microbes	
STAGE 2 DISINFECTION BYPRODUCT COMPLIANCE - Based upon Locational Running Annual Average (LRAA)							
CONTAMINANT (UNIT OF MEASURE)	MCL/MRDL VIOLATION Y/N	YOUR WATER (Highest LRAA)	RANGE LOW-HIGH	MCLG	MCL	LIKELY SOURCE OF CONTAMINATION	
TTHM (ppb) {Total Trihalomethanes}	NO	(Location B04-N. Horner Blvd.)		N/A	80	Byproduct of drinking water disinfection	
Location B01	NO		32.5-110.9				
Location B02	NO		37.1-103.4				
Location B03	NO		31.7-101.7				
Location B04	NO		35.6-123.1				
HAA5 (ppb) {Total Haloacetic Acids}	NO	(Location B01-Branch Drive)		N/A	60	Byproduct of drinking water disinfection	
Location B01	NO		21.1-41.0				
Location B02	NO		23.4-35.0				
Location B03	NO		8.6-33.5				
Location B04	NO		21.0-38.2				

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Raw Water Quality Data (Regulated)

CRYPTOSPORIDIUM
<ul style="list-style-type: none"> The City of Sanford monitored for cryptosporidium in both the Cape Fear River and the facilities reservoir during 2018. Monitoring detected a level of 0.091 oocysts per liter in the Cape Fear River during February. 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. 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, immune-compromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness. We encourage immune-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.

Filtered Water Quality Data (Non-Regulated Secondary Substances)

OTHER MISCELLANEOUS WATER CHARACTERISTICS			
CONTAMINANT (UNIT OF MEASURE)	YOUR WATER	SMCL	LIKELY SOURCE OF CONTAMINATION
Alkalinity	33.6	N/A	Water additive, erosion of natural deposits
Hardness	37.2	N/A	Erosion of natural deposits
pH	7.3	6.0-9.0	Measurement of acid or base neutralizing capacities of water
Sodium (ppm)	25.5	N/A	Water additive, erosion of natural deposits
Sulfate (ppm)	34.4	250 mg/L	Erosion of natural deposits

Emerging Contaminants

Emerging contaminants, or contaminants of emerging concern, are unregulated synthetic or naturally occurring chemicals that are not commonly monitored by water utilities. The health significance of these trace contaminants is under review and the subject of further study and research.

Beginning March 2020, we started monitoring for per and polyfluoroalkyl substances, and 1,4 dioxane monthly. The data presented in the tables is testing done from January 1 through October 31, 2022.

Per and polyfluoroalkyl substances (PFAS) are a class of man-made chemicals used for consumer products such as waterproof and stainproof products, nonstick cookware, food packaging and fire suppression foams.

1,4 dioxane is a clear, flammable liquid used as a solvent or stabilizer in the manufacturing of chemicals, cosmetics, detergents, and shampoos. 1,4 dioxane was below detection on both the raw water and entry point on all samples collected.

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(Non-Regulated)

Per and Polyfluoroalkyl Substances (PFAS)					
	CONTAMINANT (UNIT OF MEASURE)	SAMPLING POINT	YOUR WATER (Average)	RANGE LOW-HIGH	
Acids	PFPeA, Perfluoropentanoic Acid (ppt)	EP	13.03	5.32-29.8	
		RW	12.74	5.07-28.6	
	PFBA, Perfluorobutanoic Acid (ppt)	EP	7.4	4.18-14.8	
		RW	7.17	3.46-12.3	
	PFHxA, Perfluorohexanoic Acid (ppt)	EP	12.23	6.26-23.2	
		RW	12.36	5.57-24.1	
	PFHpA, Perfluoroheptanoic Acid (ppt)	EP	5.34	2.84-9.43	
		RW	5.26	3.04-8.91	
	PFOA, Perfluorooctanoic Acid (ppt)	EP	8.19	6.14-11.5	
		RW	8.05	5.96-11.3	
	PFNA, Perfluorononanoic Acid, (ppt)	EP	1.16	0.8-1.55	
		RW	1.15	0.81-1.54	
PFDA, Perfluorodecanoic acid, (ppt)	EP	0.72	0.47-1.17		
	RW	0.73	0.52-1.22		
	PFUnA (PFUnDA), Perfluoundecanoic acid (ppt)	RW	3.03	0.27-5.79	
Sulfonates	PFBS, Perfluorobutane sulfonic acid, (ppt)	EP	7.33	2.44-15.6	
		RW	7.56	0.86-18.4	
	PFPeS, Perfluoropentane sulfonic acid, (ppt)	EP	0.89	0.54-1.36	
		RW	0.79	0.5-1.39	
	PFHxS, Perfluorohexane sulfonic acid, (ppt)	EP	3.88	2.53-5.95	
		RW	4	2.12-5.98	
	PFHpS, Perfluoroheptane sulfonic acid, (ppt)	EP	0.33	0.26-0.38	
		RW	0.3	0.26-0.34	
	PFOS, Perfluorooctane sulfonic acid, (ppt)	EP	12.19	8.02-16.3	
		RW	12.09	6.99-14.7	
		4:2, FTS (ppt)	EP	0.30	NA
		6:2, Fluorotelomer sulfonic acid, (ppt)	EP	0.89	0.59-1.19
	RW		0.4	NA	

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(Non-Regulated)

Per and Polyfluoroalkyl Substances (PFAS)				
	CONTAMINANT (UNIT OF MEASURE)	SAMPLING POINT	YOUR WATER (Average)	RANGE LOW-HIGH
Other	FBSA, (ppt)	EP	1.12	0.40-1.56
		RW	1.18	0.32-1.81
	PFOSA (ppt)	EP	0.72	NA
		RW	1.31	NA

(Non-regulated)

1,4-Dioxane			
CONTAMINANT (UNIT OF MEASURE)	SAMPLING POINT	YOUR WATER (AVERAGE)	RANGE LOW-HIGH
1,4 Dioxane (ppb)	EP	<2.00	0-<2.00
1,4 Dioxane (ppb)	RW	<2.00	0<2.00

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Health Advisories

A health advisory provides information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water. EPA's health advisories are non-enforceable and non-regulatory, but identify levels to protect all people, including sensitive populations and life stages, from adverse health effects resulting from a lifetime of exposure to these contaminants in drinking water. The advisory also takes into account other potential sources of exposure to these contaminants beyond drinking water (for example, food, air, consumer products, etc.) which provides an additional layer of protection.

In 2022, the EPA published both interim and final health advisories specifically targeting four per and polyfluoroalkyl substances (PFAS).

PFOA and PFOS

The EPA has published interim lifetime health advisories for PFOA and PFOS. These new interim health advisories are below the levels at which analytical methods can measure PFOA and PFOS. The minimum detection levels for measuring these contaminants are listed in the table below. The EPA Science Advisory Board is reviewing the EPA's analysis; therefore, these interim health advisory levels are subject to change. However, the EPA does not anticipate changes that will result in health advisory levels that are greater than the minimum detection levels.

Gen X Chemicals and PFBS

The EPA has published final lifetime health advisories for GenX chemicals and PFBS based on final toxicity assessments.

Summary of the Four Health Advisories

Per and Polyfluoroalkyl Substances (PFAS)		
Contaminant (Unit of Measure)	Lifetime Health Advisory Level/ Value	Minimum Detection Level
PFOA (ppt)	0.004 (Interim)	4
PFOS (ppt)	0.02 (Interim)	4
GenX Chemicals (ppt)	10 (Final)	5
PFBS (ppt)	2,000 (Final)	3

If you are concerned about PFAS in your drinking water:

- Consider and resources and recommendations from your state:
<https://www.epa.gov/pfas/us-state-resources-about-pfas>
- Follow EPA's progress in developing a PFAS National Drinking Water Regulation:
<https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>
- Learn more about PFAS and review the agency's PFAS Strategic Roadmap:
<https://www.epa.gov/pfas/pfas-strategic-roadmap-epas-commitments-action-2021-2024>

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Definitions

- **Action Level (AL)** - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **Distribution System (DS)** - Sampling point in the water distribution system.
- **Entry Point (EP)** - The first sampling point in the water distribution system.
- **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.
- **Minimum Detection Level (MDL)** - The lowest concentration value for quantitative data with known precision and bias for a specific analyte in a specific matrix.
- **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.
- **Not-applicable (N/A)** - Information not applicable/ not required for that particular water system or for that particular rule.
- **Parts per million (ppm) or Milligrams per liter (mg/L)** - One part per million corresponds to minute in 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.
- **Raw Water (RW)** - Sampling point from the water source.
- **Treatment Technique (TT)** - A required process intended to reduce the level of a contaminant in drinking water.