Annual Drinking Water Quality Report
Stokes Co. Water & Sewer Authority
PWSID #02-85-025
March, 2019

We're very pleased to provide you with this year's Annual Quality Water Report. This report is a snapshot of last year's water quality. Included are details about where your water comes from, 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.

Drinking water, including bottled water, may be reasonably 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 are 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 crytosporidium and other microbiological contaminants are available from the 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 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 discharge, 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.

The Stokes Co. Water & Sewer Authority purchases its water from the City of Winston-Salem, therefore many substances are tested for at the water source and Winston-Salem's water quality report is attached to provide this information. Other results in this report have been taken from the Public Water Supply website.

During 2018 The Stokes Co. Water & Sewer Authority did not receive any violations for failure to monitor or report contaminants in drinking water.

If you have any questions about this report or concerning your water, please contact Mark Delehant, Public Works Director, P.O. Box 20 Danbury, N.C. 27016 phome 336-593-2415. We want our valued customers to be informed about their water utility.

We routinely monitor for over 150 contaminants in your drinking water according to Federal and State laws. The table below lists all the drinking water contaminants that we detected in the last round of sampling for the 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, 2018.** The EPA or the State requires 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.

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 Stokes Co. Water & Sewer Authority is responsible for providing high quality drinking waster, 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://wwww.epa.gov/safewater/lead.

In this document you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

Non-Detects (ND) - laboratory analysis indicates that the constituent is not present.

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.

Maximum Contaminant Level - the highest level of a contaminant that is allowed in drinking water.

Action Level - the concentration which, if exceeded, triggers treatment or other requirements which a system must follow.

TEST RESULTS

Microbiological Contaminants: None Found

Lead and Copper Contaminants: None Found

Disinfection by-product contaminants (THM/HAA5):

Contaminant	MCL Violation	Date Sampled	Your Water	MCL	Likely Source
Trihalomethanes ppb	No	2/5/18 5/7/18 8/6/18 11/14/18	0.032 0.038 0.067 0.077	8	Disinfection Byproduct
Total Haloaceticacid ppb	No	2/5/18 5/7/18 8/6/18 11/14/18	0.026 0.033 0.019 0.027	6	Disinfection byproduct

Unregulated Contaminant Monitoring Rule

The Safe Drinking Water Act (SDWA) Amendments of 1996 established the Unregulated Contaminant Monitoring Rule (UCMR) that requires the US Environmental Protection Agency (EPA) to issue a list of no more than 30 unregulated contaminants to be monitored by all large public water systems (PWSs) serving over 10,000 customers and a representative sample of small PWSs. The UCMR requires the EPA to develop a Contaminant Candidate List (CCL) every five years. Unregulated contaminants are those for which EPA has not established drinking water standards.

The purpose of unregulated contaminant monitoring is to assist the EPA in determining the occurrence of unregulated contaminants in drinking water and whether future regulations are warranted. The UCMR also requires the EPA to store and maintain a database of analytical results gathered through each UCMR sampling cycle called the National Contaminant Occurrence Database (NCOD).

For this fourth cycle of the UCMR (called UCMR4), Winston-Salem/Forsyth County Utilities began sampling at our three water treatment plants and in our distribution system during the last two quarters of the 2018 calendar year. We will complete our sampling in the first two quarters of the 2019 calendar year.

Under the UCMR4 we are required to sample our source water for 10 cyanotoxins, bromide and organic carbon. Cyanotoxins are algae produced by products which have potentially toxic impacts. Our system has completed all the required cyanotoxin sampling and did not have any detections in our source water. Bromide and organic carbon contribute to disinfection by-product formation. In addition, we have sampled for 20 additional compounds which include two metals, nine pesticides, three alcohols, three semivolatile chemicals and three brominated haloacetic acids (HAA9s). The table below contains all detections of our UCMR4 sampling to date.

UCMR4 Sampling Data	Range of Detections	Average
AT THE TREATMENT PLANT POINTS OF ENTRY		
Manganese, ppb	ND - 1.4	<0.40
AT THE TREATMENT PLANT SOURCE WATERS		
Total Organic Carbon, ppm	2.10 - 3.59	2.57
IN THE DISTRIBUTION SYSTEM		
Total HAA9s, ppb	29.3 - 61.7	43.2
Monochloroacetic Acid, ppb[1]	ND - 4.0	0.6
Dichloroacetic Acid, ppb[1]	8.5 - 30.0	19.5
Trichloroacetic Acid, ppb[1]	13.0 - 25.0	17.3
Monobromoacetic Acid, ppb[1]	ND	ND
Dibromoacetic Acid, ppb[1]	ND	ND
Bromochloroacetic Acid, ppb[2]	1.5 - 5.3	3.4
Bromodichloroacetic Acid, ppb[2]	1.6 - 2.9	2.3
Chlorodibromoacetic Acid, ppb[2]	ND - 0.3	ND
Tribromoacetic Acid, ppb[2]	ND	ND

[1] Currently regulated as HAA5s

[2] Required HAA9 under UCMR 4

ND = Not detected

Winston-Salem / Forsyth County Utilities
Water • Wastewater • Solid Waste

2018 Water Quality Report

Winston-Salem/Forsyth County Utilities is governed by the City/County Utility Commission, which meets on the second Monday of each month at 2 p.m. in City Hall, Room 230, 101 N. Main Street, Winston-Salem, NC. For questions about this report or the quality of our drinking water, call CityLink 311 or 336-727-8000.

Produced by Winston-Salem/ Forsyth County Utilities
101 N. Main Street, Suite 357
Winston-Salem, N.C. 27101
City Link 311 or 336-727-8000

PWSID 0234010

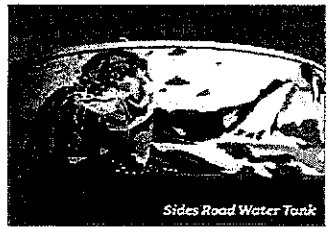
Copies of this report are available at CityofWS.org/waterquality2018
CityofWS.org/wqr2018espanol.

Winston-Salem/Forsyth County Utilities drinking water meets all water quality standards

Winston-Salem/Forsyth County Utilities operates three water treatment facilities drawing water from both the Yadkin River and Salem Lake. Together, these water treatment facilities can produce up to 91 million gallons per day of drinking water. The Neilson and Swann Water Treatment Plants can treat 48 and 25 million gallons per day, respectively, from the Yadkin River. The Thomas Water Treatment Plant can treat 18 million gallons per day from Salem Lake and the Yadkin River.

For 2018, as in previous years, these treatment facilities have met or exceeded all state and federal standards for drinking water quality. This accomplishment reflects the quality and dedication of the employees who work year-round to provide adequate supplies of safe drinking water.

This report includes details about the sources of your drinking water, how it is treated, what it contains, and exactly how it compares to state and federal standards. We provide this updated information annually because we are committed to delivering top-quality drinking water to our customers.


Sides Road Water Tank

Protecting Our Water Sources

Sources of both tap and bottled drinking water include rivers, lakes, 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. Water can also 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 wastewater 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 wastewater discharges, oil and gas productions, 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 come from gas stations, urban storm water runoff, and septic systems.
- Radioactive contaminants which can be naturally occurring or the result of oil and gas production and mining activities.

To ensure that tap water is safe to drink, the Environmental Protection Agency limits the amount of certain contaminants in water provided by public water systems. 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 contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 800-426-4791.

Lead Exposure from Water

Elevated levels of lead in drinking water can cause serious health problems, especially for pregnant women and young children. Lead in drinking water comes primarily from materials and components associated with service lines and home plumbing.

Winston-Salem/Forsyth County Utilities 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 two 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 by calling CityLink 311 (336-727-8000). Information and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at 800-426-4791 or epa.gov/safewater/lead

Treated Water Quality

The following substances were detected in Winston-Salem/Forsyth County public water supply during the 2018 calendar year.

Regulated at the Treatment Plant

Substance	Highest Level Allowed (EPA's MCL[1])	Ideal Goals (EPA's MCLG[2])	Range of Detections	Average Level Detected	Source
Barium, ppb[3]	2000	2000	12.0 - 23.0	16.0	Natural geology; drilling operations; metal refinery wastes
Chromium, ppb	100	100	ND - 3.0	<1.0	Discharge from steel and pulp mills; erosion of natural deposits
Thallium, ppb	2.0	0.5	ND - 1.0	<1.0	Leaching from ore-processing sites; discharge from electronics, glass and drug factories
Fluoride, ppm[4]	4.0[5]	4.0	0.53 - 1.25	0.89	Erosion of natural deposits; water additive to promote strong teeth
Orthophosphate, ppm	0.5 - 5.0	1.0	0.54 - 1.11	0.81	Water treatment additive to prevent pipe corrosion
Total Organic Carbon, ppm	Treatment Technique[6]	n/a	0.95 - 1.70	1.16	Naturally present in the environment
Turbidity, NTU[7]	Treatment Technique[8]	n/a	0.03 - 1.81[9]	0.05	Soil erosion

Regulated in the Distribution System

Total Trihalomethanes, ppb	80 LRAA[10]	0.0	16.3 - 96.6	48.4	Byproducts of drinking water disinfection
Total Haloacetic Acids (5), ppb	60 LRAA[10]	0.0	19.6 - 49.6	31.7	Byproducts of drinking water disinfection
Chlorine, ppm	4.0	4.0	0.08 - 1.55	0.94	Water treatment additive for disinfection
Total Coliforms	Less than 5% positive	0.0	0.00%[11] - 0.55%[11]	0.09%[11]	Naturally present in the environment

Unregulated Substances at the Treatment Plant - Point of Entry

Geosmin, ppt	Not Regulated	3.30 - 9.70	6.18	Byproduct of algae growth
2-methylisoborneol, ppt	Not Regulated	ND - 11.7	2.68	Byproduct of algae growth
Manganese, ppb	Not Regulated	ND - 1.4	<0.40	Naturally present in the environment

Unregulated Substances at the Treatment Plant - Source Water

Geosmin, ppt	Not Regulated	3.30 - 10.3	5.85	Byproduct of algae growth
2-methylisoborneol, ppt	Not Regulated	ND - 53.8	8.64	Byproduct of algae growth
Total Organic Carbon, ppm	Not Regulated	2.10 - 3.59	2.57	Naturally present in the environment

Unregulated Substances in the Distribution System

Total Haloacetic Acids (9), ppb	Not Regulated	29.3 - 61.7	43.2	Byproducts of drinking water disinfection

Regulated at the Consumer's Tap

Lead, ppb	15.0 (action level[12])	0.0	ND - 2.0	<1.0	Corrosion of household plumbing; erosion of natural deposits
Copper, ppb	1300.0 (action level[12])	1300.0	ND - 39.4	14.2	Corrosion of household plumbing; erosion of natural deposits

DEFINITIONS

[1] Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water.

[2] Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health.

[3] ppb - One part per billion. - (For example, one penny in $10,000,000.)

[4] ppm - One part per million. - (For example, one penny in $10,000.)

[5] The EPA's maximum contaminant level for fluoride is 4.0 mg/L, however the State of North Carolina has established a maximum contaminant level of 2.0 mg/L.

[6] Treatment Technique - Treatment technique for total organic carbon was complied with throughout 2018.

[7] NTU - Nephelometric turbidity unit, a measure of the cloudiness of water.

[8] Treatment Technique - 95% of the measurements taken in one month must be below 0.3 NTU. Turbidity treatment technique was complied with throughout 2018.

[9] Lowest monthly annual average - average of last four quarters of samples collected at each location at 17 monitoring sites.

[10] Highest LRAA - Locational running annual average - average of last four quarters of samples collected at each location at 17 monitoring sites.

[11] Annual 1.10 positive out of 193 - 0.54%; November 6.10 positives out of 180 - 5.56%

[12] Action Level - The concentration of a contaminant that triggers treatment or other requirement that a water system must follow. Action levels are reported at the 90th percentile for homes at greatest risk.

[13] On November 29, 2018 a filter malfunction at the Thomas S. Kondrup Water Treatment Plant caused a temporary spike in turbidity. After review by the North Carolina Department of Environmental Quality it was determined no violation occurred since water delivered to the public did not exceed 0.197 NTU as measured at our point of entry to the distribution system.

Utilities 2018 Water Quality Report

Physical & Mineral Characteristics - Calendar Year 2018

CONSTITUENT	ANNUAL RANGE DETECTED	ANNUAL AVERAGE
Alkalinity, ppm	14.5 - 30.5	22.5
Aluminum, ppm	0.004 - 0.038	0.012
Calcium, ppm	3.01 - 4.85	3.9
Carbon Dioxide, ppm	1.0 - 8.0	3.5
Chlorine, ppm	1.01 - 1.88	1.43
Conductivity, micromhos/cm	86.9 - 151.4	102.6
Copper, ppm	ND - 0.041	0.002
Hardness, ppm	9.0 - 30.0	18.6
Iron, ppm	ND - 0.032	0.001
Lead, ppm	ND - 0.002	<0.001
Magnesium, ppm	1.20 - 1.85	1.51
Manganese, ppm	ND - 0.008	0.001
Nickel, ppm	ND - 0.005	<0.001
pH, Standard Units	6.40 - 8.50	7.52
Phosphate, ppm	0.67 - 1.25	0.87
Potassium, ppm	1.50 - 3.74	1.95
Silica, ppm	4.43 - 12.4	9.07
Sodium, ppm	8.3 - 19.9	10.9
Temperature, Deg. C	1.30 - 25.0	17.2
Zinc, ppm	0.172 - 0.280	0.222

ND - Not detected

Cryptosporidium sp. - This is a microscopic organism that, when ingested, can cause diarrhea, fever and other gastrointestinal symptoms. The organism occurs naturally in surface waters (lakes & streams) and comes from animal waste. Cryptosporidium sp. is eliminated by an effective treatment combination of coagulation, sedimentation, filtration and disinfection.

Both of the city's water sources are currently being tested monthly for Cryptosporidium sp. and to date it has not been detected. In addition, Cryptosporidium sp. has never been detected in our treated drinking water.

Special Concerns - Some people may be more vulnerable to contaminants in drinking water than the general population. People whose immune systems have been compromised – such as people 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 for infections.
These people should seek advice about drinking water from their health care providers. Environmental Protection Agency and Centers for Disease Control guidelines on appropriate means to lessen risk of infection by Cryptosporidium sp. and other microbiological contaminants are available from the Safe Drinking Water Hotline at 800-426-4791.

En Español - Si desea recibir una copia de este reporte en Español o si tiene preguntas con respecto a la calidad del agua que consume, por favor comuníquese con el departamento de servicios públicos durante las horas de trabajo, el teléfono es 336-727-8000 o visite CityofWS.org/wqr18espanol.

North Carolina Source Water Assessment

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 the City of Winston-Salem (PWSID 0234010) 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:

Source Water Assessment Program Results Summary

Source Name	Inherent Vulnerability Rating	Contaminant Rating	Susceptibility Rating
SALEM LAKE	Moderate	Higher	Higher
YADKIN RIVER (IDOLS DAM)	Higher	Moderate	Higher
YADKIN RIVER (PW SWANN WTP*)	Higher	Lower	Moderate

Table 2 of SWAP Report for Winston-Salem, September 5, 2017
* Water Treatment Plant (WTP)

The complete SWAP Assessment report for the City of Winston-Salem may be viewed on the Web at: ncwater.org/?page=600. Please indicate your system name (Winston-Salem, City of) and number (0234010).

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 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 (Winston-Salem, City of), number (0234010), 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.