

**Union County
Government**

EST. 1842



2018

drinking
water
QUALITY
report

Union County Water System
Water System Number: 01-90-413
For Jan 1, 2017 to Dec 31, 2017

Union County
Department of Public Works
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Union County Public Works Vision

Statement:

We are recognized for providing exemplary service through the engagement of our employees in the efficient and effective management of our assets and resources.



Dear Union County Customer,

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 Junior Honeycutt at (704) 289-7044. We want our valued customers to be informed about their water utility. If you want to learn more, please visit our website at www.co.union.nc.us.

Sincerely,
Junior Honeycutt
Union County Public Works
Water Superintendent,
500 North Main Street

2017 Year in Review



For 365 days a year, rain, snow, sleet or hail, approximately 120 Union County Water and Wastewater employees strive to excel in all they do; from installing pipes to engineering to laboratory testing, and most importantly, customer service. Our Water Quality Report is a reflection of that commitment.

Major accomplishments of 2017 include:

- Added 19 miles of water main
- Initiated new online payment processing platform
- Began rollout of new work and maintenance management system
- Started construction of 1 billion gallon reservoir to feed water treatment facility
- Galvanized water line replacement
- New water customers: 1,218

Facts About Drinking Water

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. Union County Public Works 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:

- **Microbial contaminants**, such as viruses and bacteria, that 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 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, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems
- **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 that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (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 Union County Public Works comes from two surface sources, the Catawba River located in Lancaster County, S.C. and the Pee Dee River located in eastern Anson County.

Water Treatment Plant Honored for Surpassing Standards

The Catawba River Water Treatment Plant (CRWTP), which provides the majority of Union County's water supply, was honored for surpassing federal and state drinking water standards.

The CRWTP was recognized by the South Carolina Department of Health and Environmental Control for achieving the 2017 Area-Wide Optimization Program (AWOP) water quality goals. While all systems have to meet strict state and federal drinking water standards, AWOP establishes performance goals that are significantly more stringent. Through its participation in AWOP, achieved water quality that is about three times better than the EPA's standards. The plant began participating in AWOP in 2003 and has been recognized for achieving the AWOP goals 14 of the last 16 years.

Source Water Assessment Program (SWAP) Results

The North Carolina Department of Environment and Natural Resources (DENR), 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 Union County 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	Susceptibility Rating	SWAP Report Date
Pee Dee River	Moderate	September 2017
Catawba River	Moderate	Originally April 2003 (Reviewed Annually)

The complete SWAP Assessment report for Union County 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.

The complete SWAP Assessment for the Catawba River Water Treatment Plant can be obtained by contacting the Bureau of Water in Columbia, South Carolina at (803)898-4300 or on the web at www.scdhec.gov.

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.

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, 2017.** 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.

Future Water Needs

PROJECT BENEFITS:



A LONG-TERM WATER SUPPLY FOR RESIDENTS.



REDUCED DEPENDENCY ON THE CATAWBA RIVER



INFRASTRUCTURE FUNDING FOR NORWOOD



SUPPORT FOR CONTINUED ECONOMIC GROWTH IN UNION COUNTY AND NORWOOD

Union County is working with the Town of Norwood to ensure long-term, sustainable water supply for current and future service areas in the Yadkin River Basin. This project, known as the Yadkin Regional Water Supply Project or YRWSP, will include a new water intake and pump station on Lake Tillery in Norwood, a new water treatment plant in Union County and an approximately 28-mile pipeline to bring water to Union County residents in the Yadkin River Basin, providing Yadkin water for Yadkin needs. This capacity of this project is designed to supply water based on the combined 30-year needs of both Norwood and Union County, up to 19.5 mgd.

2017 MILESTONES

In the past year, the YRWSP has made significant progress towards securing a long-term, sustainable water supply for Union County. The project will reduce our dependence on the Catawba River and support economic growth within Union County and neighboring regions.



Program manager engaged to guide project towards completion.



The property for the Water Treatment Plant was identified and negotiations to acquire the property were initiated.



The North Carolina Environmental Management Commission awarded Union County an Interbasin Transfer Certificate to transfer 23 MGD from the Yadkin River to the Rocky River.



Preliminary route for the raw water and finished water pipeline were identified.

The preliminary route represents a desktop planning route for further analysis.



The YRWSP was separated into two projects: the intake facility and raw water pipeline and the water treatment plant and finished water pipeline. Union County selected the progressive design-build method to deliver the projects.



Three public meetings were held in the fall of 2017 to discuss project progress.

Design-build can allow for infrastructure projects to be streamlined and built more quickly.



The property for the water intake and pump site was identified and acquired.



A draft Lake Use Permit was submitted to Duke Energy. This permit will allow for construction of facilities that are in the lake or on the shoreline.



Pump station concepts were completed, including architectural renderings of the site.



Request for Qualifications (RFQ) was drafted to prepare for the selection of a Design-Build engineering firm(s) in 2018.

PROJECT TIMELINE

2004

Rocky River Water Supply feasibility study completed.

2005

Water Supply Master Plan Draft

2008

Eastern Water Supply Preliminary Engineering Report

2011

Eastern Water Supply Feasibility Study, Project Partner Assessment and Comprehensive Water and Sewer Master Plan

2012 TO 2013

Interlocal Intake and Transmittal Agreement (Norwood-Union County) signed

2013 TO 2017

Environmental Impact Statement and Interbasin Transfer process completed



Water Supply

Union County jointly owns and operates the Catawba River Water Treatment Plant with the Lancaster County Water and Sewer District (LCW&SD) in Lancaster SC. Currently 80% of our water needs are met through this facility. Union County also has a purchase water agreement with Anson County, NC to purchase up to four million gallons daily. Union County currently has a total of 25 million gallons per day (MGD) water supply capacity.

How is my water treated?

What does it take to get clean, safe water into your home? We've broken down the steps for you below.

Water Source - From wells, lakes or rivers to the water treatment plant.

Sedimentation - The dirt settles to the bottom, while the clean water flows to filtration.

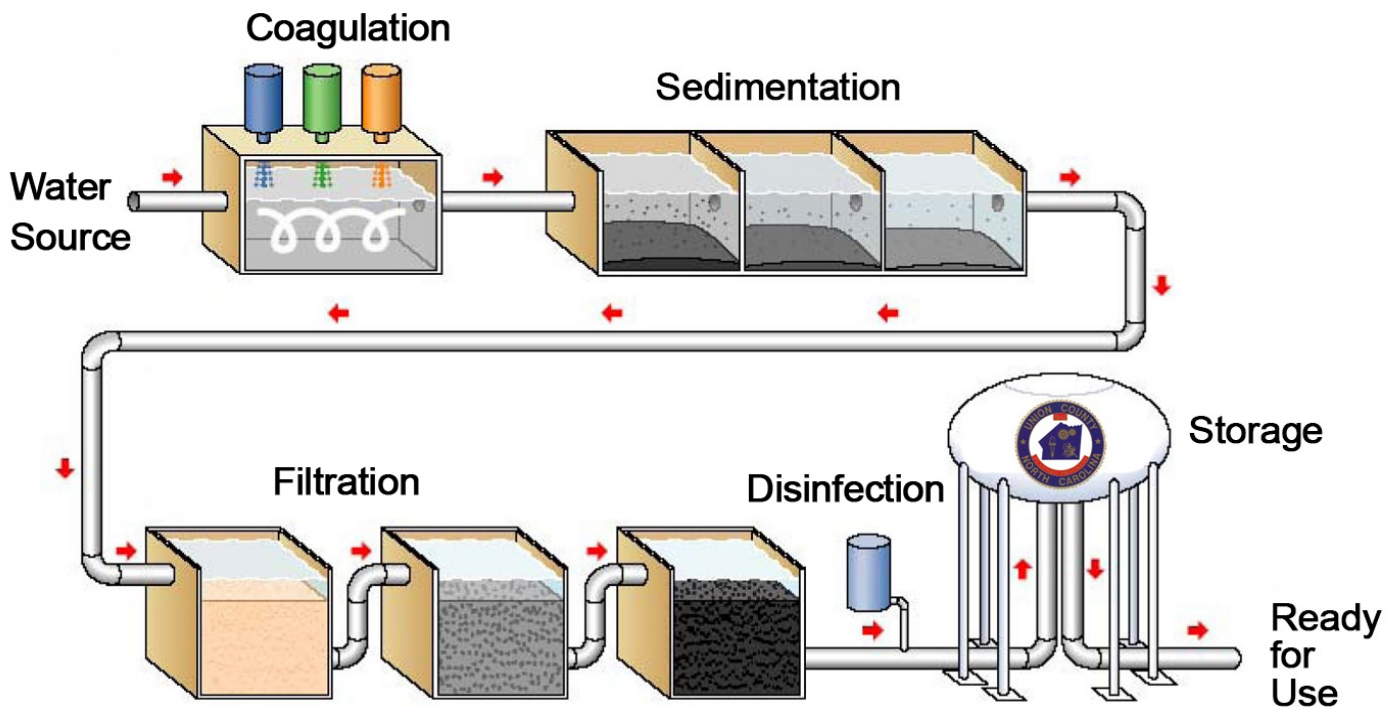
Coagulation - Special compounds remove the dirt particles from water. Alum and other chemicals are added to form sticky particles called "floc" which attract dirt particles. The combined weight of the dirt and floc become heavy enough to sink to the bottom during sedimentation.

Filtration - Water passes through filters, some made of layers of sand, gravel, and charcoal, to purify it further.

Disinfection - A small amount of chlorine is added to kill any bacteria or microorganisms that may be in the water.

Storage - Pumped to water towers. Water is placed in a closed tank or reservoir in order for disinfection to take place.

Ready for Use - Flows through pipes to homes and businesses in the community.



Water Quality Definitions

Included in this report are tables containing levels of contaminants that have been detected in our water. In all cases, although they are present, they are below prescribed levels by the EPA, and pose no risk known health risk at these levels. We have listed a few definitions to help you understand the information in the tables.

AL (Action Level) - The concentration of a contaminant that triggers treatment or other required actions by the water supply.

Locational Running Annual Average (LRAA) - The average of a 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.

Maximum Residual Disinfectant 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 Disinfectant 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.

Non-Detects (ND) - Laboratory analysis indicates that the contaminant is not present at the level of detection set for the particular methodology used.

Not-Applicable (N/A) - Not applicable.

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

ppb - Parts per billion or micrograms per liter (ug/L).

ppm - Parts per million or milligrams per liter (mg/L).

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

Turbidity - 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.

Putting it in Perspective

Some compounds found in water are measured in very small units - parts per billion (ppb) or parts per million (ppm). To help you visualize how very small these units are, here are a few illustrations.

One part per billion equates to:

- One second in 32 years
- One drop in a railroad tanker car
- One penny in 10 million dollars
- One ounce in 7,350,000 gallons of water

One part per million equates to:

- One inch in 16 miles
- One minute in two years.
- One penny in 10 thousand dollars
- One ounce in 7,350 gallons of water



Tables of Detected Contaminants

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

Contaminant (units)	MCL Violation Y/N	Your Water	MCLG	MCL	Likely Source of Contamination
Total Coliform Bacteria (presence or absence) Union County	N	7	0	5% of monthly samples are positive Note: If either an original routine sample and/or its repeat samples(s) are fecal coliform or <i>E. coli</i> positive, a Tier 1 violation exists.	Naturally present in the environment
Fecal Coliform or <i>E. coli</i> (presence or absence) Union County	N	0	0		Human and animal fecal waste

Turbidity*

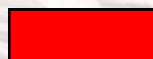
Contaminant (units)	Treatment Technique (TT) Violation Y/N	Your Water	MCLG	Treatment Technique (TT) Violation if:	Likely Source of Contamination
Turbidity (NTU) - Highest single turbidity measurement Anson Catawba	Y N	2.5 NTU 0.09 NTU	N/A	Turbidity > 1 NTU	Soil runoff
Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits Anson Catawba	N N	97.7% 100%	N/A	Less than 95% of monthly turbidity measurements are \leq 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.



= within acceptable limits



= exceeds acceptable limits

Inorganic Contaminants

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range		MCLG	MCL	Likely Source of Contamination
				Low	High			
Fluoride (ppm)								
Anson	2017	N	.55	0.13	1.18	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Catawba	2017	N	.89	0.89	0.89			

Nitrate/Nitrite Contaminants

Contaminant (units)	Sample Date	MCL Violation Y/N	Your Water	Range		MCLG	MCL	Likely Source of Contamination
				Low	High			
Nitrate (as Nitrogen) (ppm)								
Catawba	2017	N	2.1	2.1	2.1	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

Unregulated VOC Contaminants

Contaminant (units)	Sample Date	Your Water (average)	Range	
			Low	High
Chloroform (ppb)				
Anson	2017	49.7	27	68
Bromodichloromethane (ppb)				
Anson	2017	9.32	8	13

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)						
Union County	2016	0.24	0	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb) (90 th percentile)						
Union County	2016	6.0	3	0	AL=15	Corrosion of household plumbing systems; erosion of natural deposits



= within acceptable limits



= exceeds acceptable limits

Total Organic Carbon (TOC)

Contaminant (units)	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				N/A	TT	Naturally present in the environment	SUVA Method
Anson	N	2.0	1.5 – 2.6				
Catawba	N	1.09	1.09				

Disinfectant Residuals Summary

	Year Sampled	MRDL Violation Y/N	Your Water (highest RAA)	Range		MRDLG	MRDL	Likely Source of Contamination
				Low	High			
Chlorine (ppm)								
Anson	2017	N	1.2	0.7	2.1	4	4.0	Water additive used to control microbes
Catawba	2017	N	2.80	2.8	2.8			
Chloramines (ppm)								
Union County	2017	N	2.06	.15	3.16	4	4.0	Water additive used to control microbes
Chlorine dioxide (ppb)								
Catawba	2017	N	ND	ND		800	800	Water additive used to control microbes



= within acceptable limits



= exceeds acceptable limits

Stage 2 Disinfection Byproduct Compliance - Based upon Locational Running Annual Average (LRAA)

Disinfection Byproduct	Year Sampled	MCL Violation	Your Water (highest LRAA)	Range		MCLG	MCL	Likely Source of Contamination
				Low	High			
TTHM (ppb)						N/A	80	Byproduct of drinking water disinfection
B01	2017	N	65	56-65				
B02	2017	N	19	17-19				
B03	2017	N	55	47-55				
B04	2017	N	57	46-57				
B05	2017	N	18	17-18				
B06	2017	N	17	16-17				
B07	2017	N	55	48-55				
B08	2017	N	16	16-16				
HAA5 (ppb)						N/A	60	Byproduct of drinking water disinfection
B01	2017	Y	66	54-66				
B02	2017	N	14	10-14				
B03	2017	N	60	51-60				
B04	2017	N	59	52-59				
B05	2017	N	19	18-19				
B06	2017	N	20	17-20				
B07	2017	N	60	50-60				
B08	2017	N	21	19-21				

Other Disinfection Byproducts Contaminants

Contaminant (units)	MCL/ MRDL Violation Y/N	Your Water	Range		MCLG	MCL	Likely Source of Contamination
			Low	High			
Chlorite (ppm) Catawba	N	0.66	0.21	0.67	0.8	1.0	By-product of drinking water chlorination

 = within acceptable limits  = exceeds acceptable limits

****NOTE (Spanish) Para más información o explicación sobre la calidad de agua por favor llame (704) 296-4229 para español.**



Violations that Your Water System Received for the Report Year

Turbidity

To ensure our customers' safety, we routinely monitor for the presence of drinking water contaminants. Monitoring results for water samples taken on August 23-24, 2017 showed that we exceeded the EPA's standard for Turbidity in the water supplied by the Anson County Water Treatment Plant.

The high turbidity was caused by a malfunctioning alum pump. The pump was repaired and the system returned to compliance on August 24, 2017. Turbidity by itself has no health effects. However, very high levels of turbidity can sometimes interfere with the disinfection process that we use to make customers' tap water safe on the long journey from our treatment works to their tap. The tiny suspended particles can sometimes shield viruses and bacteria which would normally be destroyed by the disinfectant.

We conduct over 100 tests each month on the public water system to determine if there is an issue with bacteriological growth. Our bacteriological testing affirmed the Union County water system remained in compliance with state and federal regulations, despite the turbidity exceedance at the Anson County Water Plant. There were no issues before, during or after this event.

Haloacetic Acids

As previously notified during 2017, the eastern portion of our water system supplied by Anson County, received a Disinfection Byproducts (DBPs) Maximum Contaminant Level (MCL) Violation. The highest Total Haloacetic Acids locational running annual average (LRAA) concentration of the water samples collected during the period ending September 30, 2017 was 0.066 mg/L which exceeded the established MCL of 0.060 mg/L.

Potential health effects note that some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer. As a result of the exceedance, Union County received an Administrative Order to return to compliance by developing a plan to reduce DBP levels in the drinking water, comply with the MCL for Total Haloacetic Acids by March 31, 2018 and continue to monitor quarterly until further notice.

Union County has met all requirements since the violation period ending September 30, 2017. Additionally, Union County currently follows 22 sets of regulations, including the EPA's, to meet its water quality standards.