Naturally Occurring Bacteria

The simple fact is, bacteria and other microorganisms inhabit our world. They can be found all around us: in our food; on our skin; in our bodies; and in the air, soil, and water. Some are harmful to us and some are not. Coliform bacteria are common in the environment and are generally not harmful themselves. The presence of this bacterial form in drinking water is a concern because it indicates that the water may be contaminated with other organisms that can cause disease. Throughout the year, we tested many water samples for coliform bacteria. In that time, none of the samples came back positive for the bacteria. Federal regulations now require that public water that tests positive for coliform bacteria must be further analyzed for fecal coliform bacteria. Fecal coliform are present only in human and animal waste. Because these bacteria can cause illness, it is unacceptable for fecal coliform to be present in water at any concentration. Our tests indicate no fecal coliform is present in our water.

Lead and Drinking Water

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. City of Monroe is responsible for providing high quality drinking water, but cannot control the variety of materials used in household 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.

En Español

Este informe incluye información importante sobre el agua potable. Si tiene preguntas o comentarios sobre éste informe en español, favor de llamar al tel. (704) 282-4601 – para hablar con una persona bilingüe en español.

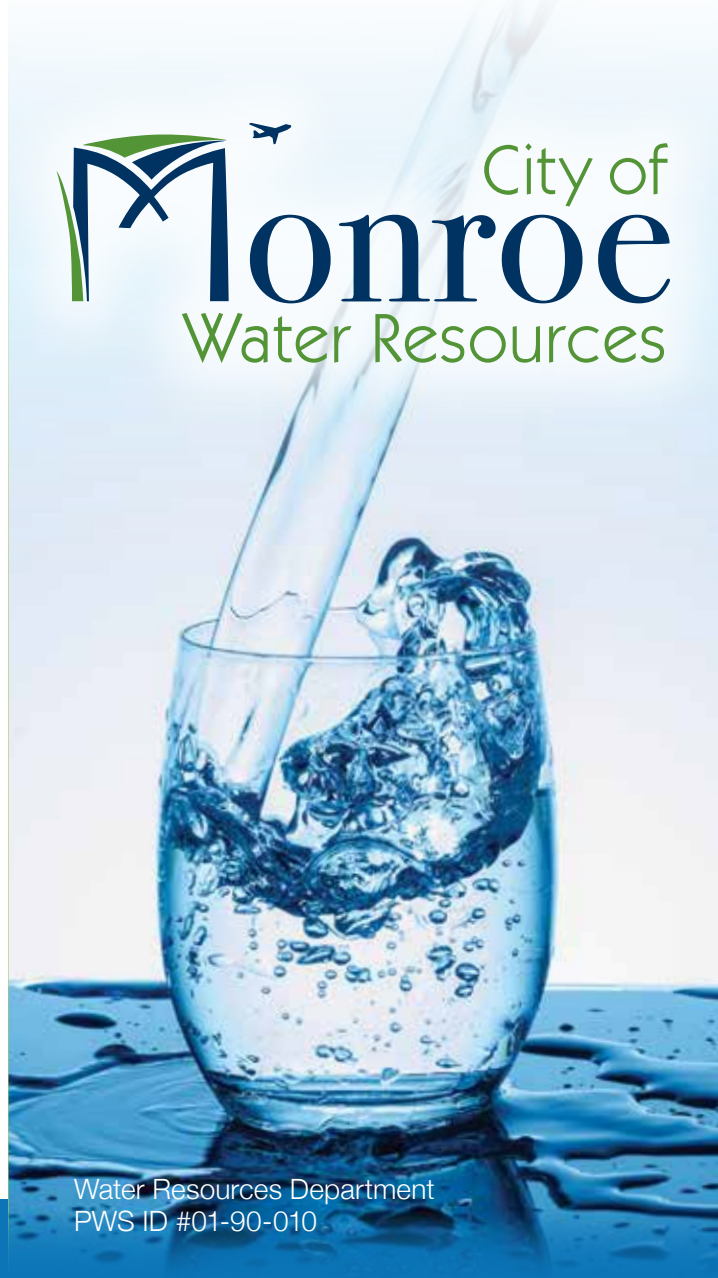
City of Monroe Water Resources
PO Box 69
Monroe, NC 28111

Public Participation Opportunities

The City has a Public Enterprise Committee made up of citizens, city council members, and city staff. This committee meets the third Tuesday of each month at 3:30 pm at City Hall, 300 W. Crowell St., Monroe, to discuss water and environmental issues.

If you have any questions about this report or concerning your water, please contact David Rankin, Water Treatment Superintendant, at 704-282-4668. We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled meetings.

City of Monroe Water Resources



Water Resources Department
PWS ID #01-90-010

2018 Annual Drinking Water Quality Report

Meeting the Challenge

The City of Monroe is pleased to share this report with you. This report is a summary of the quality of the water we provide our customers. The analysis covers January 1 through December 31, 2018, and was made by using the data from the most recent U.S. Environmental Protection Agency (EPA) required tests. We hope this information helps you become more knowledgeable about what's in your drinking water.

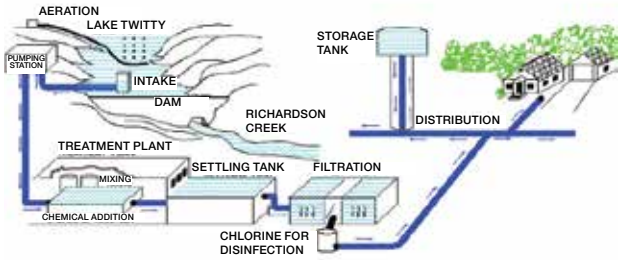
Where Do We Get Our Drinking Water?

The water used by the City of Monroe comes from different sources. The majority is from Monroe lakes with an intermittent supply from the Catawba River located in Lancaster County, S.C.

The Monroe lakes include Lake Twitty, Lake Lee, and Lake Monroe. Together, these lakes store over two billion gallons of water and can provide our customers with up to 11 million gallons of water per day. The Catawba River source can provide an additional 1.99 million gallons per day.

How Is My Water Treated and Purified?

Water from Monroe lakes receive extensive treatment at the John Glenn Water Treatment Plant. First, chemicals are mixed with the raw water to force the small, suspended particles to clump together. Water then flows into settling basins where solids are removed. Water is filtered through carbon and sand beds to remove any remaining particles. Chlorine and ammonia are added to disinfect the water and to ensure that it is safe to drink when it reaches the customer. Fluoride is added to our water to promote dental hygiene. Finally, we adjust the pH to reduce corrosion in the pipes of the distribution system and in your home or business. Catawba water receives similar treatment.



Source Water Assessment

The North Carolina Department of Environmental Quality (NCDEQ), 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 City of Monroe 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
Monroe Lakes	Moderate	July 12, 2017
Catawba River	Moderate	April 2003 (Reviewed Annually)

The complete SWAP Assessment report for City of Monroe 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 the 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 the system name, number, and provide your name, mailing address and phone number. If you have any questions about the SWAP report please contact the Source Water Assessment staff by phone at 919-707-9098.

It is important to understand that a susceptibility rating of "higher" does not imply poor water quality, only the system's potential to become contaminated by PCSs in the assessment area.

City Lakes Now Classified by NCDEQ as Impaired

City of Monroe lakes (Twitty, Lee, and Monroe) are listed on the 2018 North Carolina Department of Environmental and Natural Resources Impaired Water 303(d) List. This means that the raw water quality in the lakes does not meet certain parameters set by the State. These water quality parameters are mostly related to nutrient enrichment (nitrogen and phosphorus) in the water. While there is no immediate human health implications or concerns, the impaired water quality does increase the cost of water treatment, creates taste and odors in the treated water, and creates future challenges with meeting treated water regulations. Sources of nutrients that may enter the lakes from rainwater runoff include:

- Animal droppings
- Fertilizers
- Urban stormwater runoff
- Runoff from agricultural land
- Septic tanks

How can you help?

Please help us be good stewards of our water resources!

- Use fertilizer sparingly. Many plants don't need much fertilizer or as often as you think.
- Don't fertilize before a rain storm and clean up any spilled fertilizer promptly.
- Have your soil tested and follow soil test recommendations.
- Choose a no phosphorus and slow-release nitrogen fertilizer. Check the second number on the package for phosphate content. Formula 26-0-3, for example, means no phosphate.
- Use a drop spreader or a rotary spreader with a side guard to keep fertilizer on the lawn and off driveways, roadways and walkways. Sweep up excess fertilizer from paved surfaces.
- More fertilizer is NOT better! Whatever is not taken up by the plant runs off in the next rain event.
- Pick up pet waste promptly. Pet waste can contain harmful bacteria as well as nutrients that cause excess algae and weed growth in lakes and rivers.

For more information visit www.monroenc.org

Information on Impaired Water 303(d) List
http://portal.ncdenr.org/web/wq/ps/mtu/assessment

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.

2018 Test Results

PWS ID #01-90-010

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, 2018. 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.

Definitions

- **Not-Applicable (N/A) –** Information not applicable/not required for that particular water system or for that particular rule.
- **Non-Detects (ND) -** Laboratory analysis indicates that the contaminant is not present at the level of detection set for the particular methodology used.
- **Parts per million (ppm) or Milligrams per liter (mg/L) -** One part per million corresponds to one minute in two years or a single penny in $10,000.
- **Parts per billion (ppb) or Micrograms per liter (ug/L) -** One part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.
- **Parts per trillion (ppt) or 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.
- **Parts per quadrillion (ppq) or Picograms per liter (picograms/L)** - One part per quadrillion corresponds to one minute in 2,000,000,000 years or one penny in $10,000,000,000,000.
- **Picocuries per liter (pCi/L) -** Picocuries per liter is a measure of the radioactivity in water.
- **Million Fibers per Liter (MFL) -** Million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.
- **Nephelometric Turbidity Unit (NTU) -** Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
- **Action Level (AL) -** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **Treatment Technique (TT) -** A required process intended to reduce the level of a contaminant in drinking water.
- **Maximum Residual Disinfection Level (MRDL) –** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **Maximum Residual Disinfection Level Goal (MRDLG) –** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **Locational Running Annual Average (LRAA) –** The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters under the Stage 2 Disinfectants and Disinfection Byproducts Rule
- **Maximum Contaminant Level (MCL) -** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
- **Maximum Contaminant Level Goal (MCLG) -** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

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).

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

Contaminant (units)	Sample Date	Violation Y/N	Your Water	MCLG	MCL	Likely Source of Contamination
Total Coliform Bacteria	2018	N	0	0	1 positive sample / month	Naturally present in the environment
Fecal Coliform or E. coli	2018	N	0	0	1 positive sample / month	Human and animal fecal waste

Turbidity*

Contaminant	Treatment Technique (TT) Violation	Your Water	MCLG	Treatment Technique (TT) Violation if:	Likely Source of Contamination
Turbidity (NTU) - Highest single turbidity measurement	N	0.33 NTU	N/A	Turbidity > 1 NTU	Soil runoff
Turbidity (NTU) - Lowest monthly percentage (%) of samples meeting turbidity limits	N	100%	N/A	Less than 95% of monthly turbidity measurements are ≤ 0.3 NTU	Soil runoff

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

Inorganic Contaminants

Contaminant (units)	Sample Date	Violation Y/N	Your Water	MCLG	MCL	Likely Source of Contamination
Fluoride (ppm)	6/12/18	N	ND	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories

Nitrate/Nitrite Contaminants

Contaminant (units)	Sample Date	Violation Y/N	Your Water	Range	MCLG	MCL	Likely Source of Contamination
Nitrate (as Nitrogen) (ppm)	6-12-18	N	ND	N/A	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (as Nitrogen) (ppm)	6-12-18	N	ND	N/A	1	1	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

Nitrate: Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health care provider.

Lead and Copper

Contaminant (Units)	Sample Date	Violation Y/N	Your Water	# Sites Over AL	MCLG	AL	Likely Source of Contamination
Copper (ppm) at 90th percentile	2017	N	0.152	0/30	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb) at 90th percentile	2017	N	ND	0/30	0	AL=15	Corrosion of household plumbing systems, erosion of natural deposits

Total Organic Carbon (TOC)

Contaminant (units)	Sample Date	TT Violation Y/N	Your Water (Removal Ratio)	Range of Monthly Removal Ratios	MCLG	TT	Compliance Method	Likely Source of Contamination
Total Organic Carbon (removal ratio) (TOC)-TREATED	2018	N	1.55	1.40-1.74	N/A	TT	Step 1 SUVA Method	Naturally present in the environment

Depending on the TOC in our source water, the system MUST have a certain % removal of TOC or must achieve alternative compliance criteria. If we do not achieve that % removal, there is an alternative % removal. If we fail to meet the alternative % removal, we are in violation of a Treatment Technique.

Disinfectants and Disinfection Byproducts Contaminants

Contaminant (Units)	Sample Date	Violation Y/N	Your Water (Avg.)	Range	MCLG	MCL	Likely Source of Contamination
Chloramines (ppm) - Monroe Lakes	2018	N	3.18	2.53-3.31	4	0	Water additive used to control microbes
- Catawba River	2018	N	2.71	1.54-2.97			

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

Contaminant (Units)		Sample Date	Violation Y/N	Your Water (Avg.)	Range	MCLG	MCL	Likely Source of Contamination
TTHM (ppb) [Total Trihalomethanes]	B01	2018	N	53	40-75	N/A	80	By-product of drinking water disinfection
	B02	2018	N	44	26-47	N/A	80	
	B03	2018	N	51	38-73	N/A	80	
	B04	2018	N	52	37-68	N/A	80	
HAA5 (ppb) [Total Haloacetic Acids]	B01	2018	N	29	25-33	N/A	60	By-product of drinking water disinfection
	B02	2018	N	24	14-29	N/A	60	
	B03	2018	N	28	25-30	N/A	60	
	B04	2018	N	27	15-33	N/A	60	

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

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

Synthetic Organic Chemical (SOC) Contaminants Including Pesticides and Herbicides

Contaminant (Units)	Sample Date	Violation Y/N	Your Water (Avg.)	Range	MCLG	MCL	Likely Source of Contamination
Altrazine (ppb)	05/15/18	N	0.315	0.06-0.16	MRDLG = 3	MRDL = 3	Runoff from herbicide used on row crops
Simazine (ppb)	05/18/18	N	0.0925	ND-0.37	MRDLG = 4	MRDL = 4	Herbicide runoff

Water Characteristic Contaminants

Contaminant (Units)	Sample Date	Violation Y/N	Your Water (Avg.)	Range	SMCL	Likely Source of Contamination
pH	06/12/18	N	7.6	7.6-7.6	6.5-8.5	Erosion of natural deposits
Sodium (ppm)	06/12/18	N	61.67	61.67-61.67	N/A	Sodium refers to the salt present in the water and is generally naturally occurring.

All Drinking Water May Contain Contaminants

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).

Substances that Could Be in Water

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 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 which limit the amount of certain contaminants in water provided by public water systems.

Cryptosporidium

Our system monitored for Cryptosporidium and found levels of 0.00 cysts/L in our source water. (None Detected)

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 does not indicate the presence of these organisms in our source water and/or finished water. Current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Ingestion of Cryptosporidium may cause cryptosporidiosis, an abdominal infection. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immuno-compromised people, infants and small children, and the elderly are at greater risk of developing life-threatening illness. We encourage immuno-compromised individuals to consult their doctor regarding appropriate precautions to take to avoid infection. Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water.